

United States International Trade Commission

# Olive Oil: Conditions of Competition between U.S. and Major Foreign Supplier Industries

Investigation No. 332-537

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August 2013



# **U.S. International Trade Commission**

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**Address all communications to  
Secretary to the Commission  
United States International Trade Commission  
Washington, DC 20436**

# **U.S. International Trade Commission**

Washington, DC 20436  
*www.usitc.gov*

## **Olive Oil: Conditions of Competition between U.S. and Major Foreign Supplier Industries**

Investigation No. 332-537



*This report was prepared principally by*

***Project Leader***

Brendan Lynch

[brendan.lynch@usitc.gov](mailto:brendan.lynch@usitc.gov)

***Deputy Project Leader***

Alison Rozema

[alison.rozema@usitc.gov](mailto:alison.rozema@usitc.gov)

***Office of Industries***

Katherine Baldwin, Renee Berry, Caitlin Blair, Joanna Bonarriva,  
John Fry, John Giamalva, and Michael McConnell

***Office of Economics***

Jose Signoret

***Office of the General Counsel***

William Gearhart

***Content Reviewers***

William Powers and Alan Treat

***Office of Analysis and Research Services***

Peg Hausman and Jeremy Wise

***Administrative Support***

Phyllis Boone, Monica Reed, and Wanda Tolson

***Help Desk and Customer Service Division***

Sonya Wilson

***Under the direction of:***

Jonathan Coleman, Chief

Agriculture and Fisheries Division

## **Correction**

For the U.S. International Trade Commission, *Olive Oil: Conditions of Competition between U.S. and Major Foreign Supplier Industries*, Investigation No. 332-537, USITC Publication 4419 (August 2013).

Five times throughout the report, the Australian Olive Association was inaccurately referred to as the Australian Olive Oil Association. These two entities are different, and the work of the Australian Olive Association was wrongly attributed to the Australian Olive Oil Association. This error has been corrected in the following places: on the acronyms list (page ix), in the executive summary (page xiv), in box 3.5 in chapter 3 (page 3-12), in the chapter 3 bibliography (page 3-21), and in chapter 4 (page 4-12).

The Commission regrets the error.

October 21, 2013



# Abstract

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This report describes and analyzes the factors affecting competition between the United States and major olive oil producing countries. It provides: (a) an overview of global production, consumption, exports, and imports during 2008–12 and 2013 where available; (b) an analysis of the factors impacting consumption in the U.S. market; (c) profiles of the olive oil industries in the United States and other major producing countries; and (d) an examination of competition between firms and countries in both the global and U.S. market.

Global demand for and consumption of olive oil have increased significantly since the 1990s. While the United States and other “New World” players, such as Australia, Argentina, and Chile, have emerged as both producers and consumers, countries in the European Union (EU) and North Africa still dominate global production, consumption, and trade. Almost 60 percent of global exports by volume were intra-EU trade flows during 2008–12. The largest bilateral trade flows during this period were Spanish exports of olive oil to Italy, where large multinational companies source oil from around the world, blend and bottle it, and then re-export the final product to third-country markets, including the United States.

The benchmark for international standards for determining the grade of an olive oil are set by the International Olive Council. Our findings suggest that the current standards for extra virgin olive oil are widely unenforced and allow a wide range of olive oil qualities to be marketed as extra virgin. Broad and unenforced standards can lead to adulterated and mislabeled product, weakening the competitiveness of high-quality U.S.-produced olive oil in the U.S. market. In addition, many U.S. consumers are unable to distinguish quality differences and, as a result, gravitate toward less costly oils, giving an advantage to large bottlers that sell low-cost imported product.





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# ACRONYMS

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ADA	Morocco Agence pour le Developement Agricole
AEMO	Asociación Española de Municipios del Olivo (Spanish Association of Olive Municipalities)
Agence du Partenariat pour le Proges	Agency of Partnership for Progress, or MCA-Morocco
AOA	Australian Olive Association
AOOPA	American Olive Oil Producers Association
APIA	Agriculture Investments Promotion Agency
CAP	Common Agricultural Policy
CFIA	Canadian Food Inspection Agency
CHILEOLIVA	Chilean Association of Olive Oil Producers
COOC	California Olive Oil Council
COP	Code of Practice (Australia)
COR	California Olive Ranch
CREA	Regional Agricultural Experimentation Consortium of Argentina
DAGs	1,2-diacylglycerol
EC	European Commission
EU	European Union
EVOO	Extra virgin olive oil
FAMEX	Export Market Access Fund
FAS	Foreign Agricultural Service (USDA)
FCIC	Federal Crop Insurance Corporation
FDA	Food and Drug Administration
FFA	free fatty acid
FOPRODEX	Export Promotion Fund (Tunisia)
FOPROHOC	Fund for the Promotion of Packed Olive Oil (Tunisia)
FSDO	Special Fund for the Development of Olive Growing Tunisia)
FY	fiscal year
GFSI	Global Food Safety Initiative
GTIS	Global Trade Information System
ha	hectare
HACCP	Hazard Analysis and Critical Control Points
HD	high-density
HS	Harmonized System (global tariff system)
INTA	National Institute of Agricultural Technology (Argentina)
IOC	International Olive Council
IPA	Inward Processing Agreement
kg	kilogram
MCC	Millennium Challenge Corporation
MFN	most-favored nation
MY	Marketing Year
mt	metric ton
NAOOA	North American Olive Oil Association
NASS	National Agricultural Statistics Service
OECD	Organization for Economic Cooperation and Development
ONH	Office National de l'Huile (Tunisian National Olive Board)
OOPC	Promotional Committee for Olive and Olive Oil (Turkey)

# ACRONYMS—*Continued*

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PDO	protected designation of origin
PET	Polyethylene terephthalate
PGI	protected geographical indication
PPP	pyropheophytins
PSA	Private Storage Aid
PSE	Production Support Estimate
PV	peroxide value
QMP	Quality Monitoring Program (USDA)
SCBGP	Specialty Crop Block Grant Program
SHD	super high-density
SOIVRE	Servicio Oficial de Inspección, Vigilancia y Regulación de Las Exportaciones (Spanish Office of Export Surveillance, Certification, and Regulation)
SPS	Single Payment Scheme
TL	Turkish lira
TRQ	tariff-rate quota
TurkStat	Turkish Statistical Institute
UAE	United Arab Emirates
UC Davis	University of California at Davis
UF-IFAS	University of Florida Institute of Food and Agricultural Sciences
UNAPROL	Italian olive growers association
UNIDO	United Nations Industrial Development Organization
USDA	U.S. Department of Agriculture
UV	ultraviolet
WTO	World Trade Organization



# Executive Summary

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## Introduction

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Starting in the early 1990s, global consumption of olive oil began to increase as the product's appeal spread beyond the Mediterranean region to nontraditional markets. Growth in olive oil demand has led to an expansion in global production beyond the Mediterranean, and while the region continues to supply almost 97 percent of the world's olive oil, an increasing share is accounted for by so-called "New World" producing countries, specifically the United States, Australia, Argentina, and Chile.

Although U.S. production of olive oil remains small on a global scale, the United States is among the nontraditional producing countries that are responding to higher global demand, and output has risen quickly in recent years. Between marketing years (MY) 2007/08 and MY 2012/13,<sup>1</sup> U.S. production increased by 50 percent annually on average, albeit from a small base, as producers responded to rising domestic demand and the potential profitability of investing in olive groves. But recent investment in U.S. olive oil production has slowed in reaction to lower global prices following a succession of bumper crops in Spain, and because of concern among U.S. producers that their competitive position in the domestic market is threatened by a lack of regulatory oversight.

U.S. and global consumption of olive oil has risen in spite of increased scrutiny from the media, government regulators, and policy makers following allegations of fraudulent practices in the sector. These practices mislead consumers through either mislabeling or adulteration. Mislabeling occurs when olive oil does not meet the standards for the grade (usually "extra virgin") that appears on the label, while adulteration occurs when olive oil is blended with other oils, yet is labeled as 100 percent olive oil. Certain widely publicized reports concluded that many top-selling brands labeled as extra virgin failed to meet the standards established by the International Olive Council (IOC) for this grade.

According to U.S. producers, mislabeled and adulterated olive oil enters the U.S. market, in part, because of a lack of mandatory enforceable product standards and testing in the United States. However, a debate has arisen about the correct standards for defining extra virgin olive oil and the appropriate mechanisms for enforcing the standards.

The Committee on Ways and Means (Committee) of the House of Representatives asked the United States International Trade Commission (USITC) to examine and report on the conditions of competition between U.S. and major foreign olive oil supplier industries.<sup>2</sup> The Committee requested that the report cover the period 2008 through 2012. Specifically, the Committee asked that the USITC's report include the following:

- an overview of the commercial olive oil industry in the United States and major supplier countries, including production of olives for olive oil

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<sup>1</sup> A marketing year spans October 1 to September 30 the following year. Production and consumption data are reported by marketing year throughout the report, while trade data is generally provided on a calendar year basis.

<sup>2</sup> The request letter is appendix A and *Federal Register* notice is appendix B of this report.

processing, planted acreage and new plantings, processing volumes, processing capacity, carryover inventory, and consumption;

- information on the international market for olive oil, including U.S. and foreign supplier imports and exports of olive oil in its various forms, olive oil trade between the European Union (EU) and North African countries, and a history of the tariff treatment and classification of olive oil in the United States and major supplier countries;
- a qualitative and, to the extent possible, quantitative assessment of the role of imports, standards and grading, prices, and other factors on olive oil consumption in the U.S. market; and
- a comparison of the competitive strengths and weaknesses of the commercial olive production and olive oil-processing industries in the major producing countries and the United States, including factors such as industry structure, input production costs and availability, processing technology, product innovation, government support and other government intervention, exchange rates, and pricing and marketing regimes, plus the steps each respective industry is taking to increase its competitiveness.

## Major Findings and Observations

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### *Global Overview*

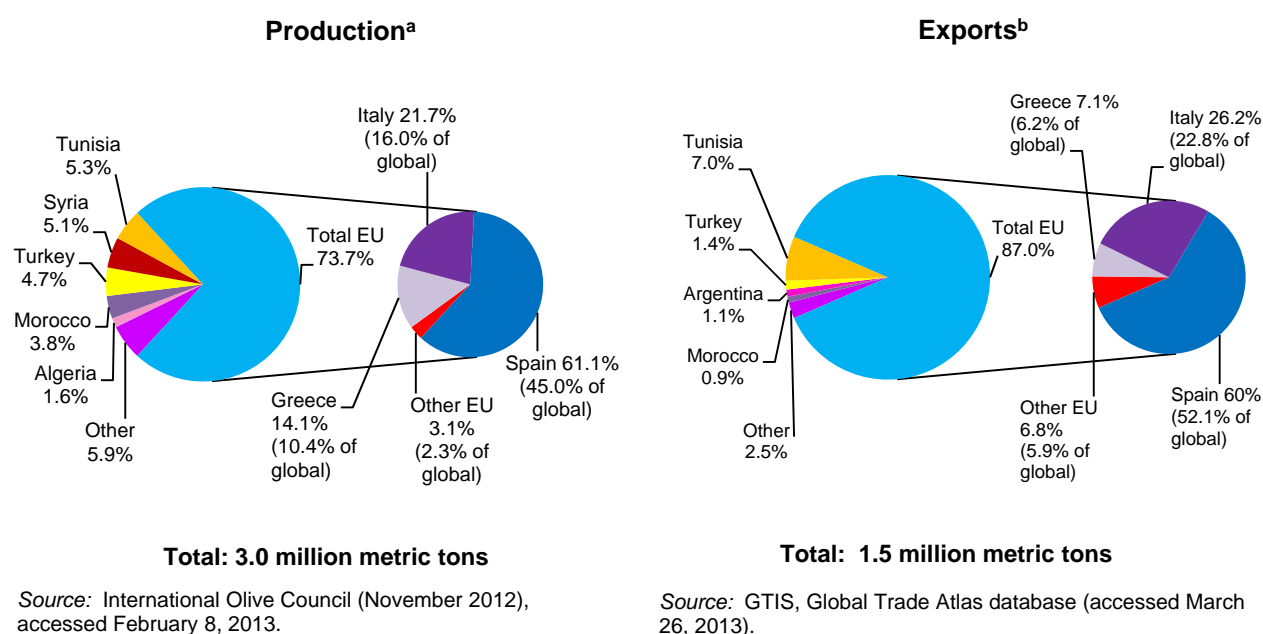
**World olive oil production, consumption, and trade is highly concentrated in the Mediterranean region, primarily in southern EU countries.**

During MY 2007/08–12/13, about 97 percent of the world’s olive oil production and 80 percent of global olive oil consumption was centered in countries bordering the Mediterranean. Within the Mediterranean region, both production and consumption was highly concentrated in the EU, with the bulk produced and consumed in Spain, Italy, and Greece. During 2008–12, the EU accounted for 87 percent of global olive oil exports by volume, made up largely of exports from Spain (52 percent) and Italy (23 percent) (figure ES.1). However, intra-EU trade flows comprise the majority of global exports, accounting for 57 percent of global export volume during 2008–12. The largest bilateral trade flows during this period were Spanish exports to Italy, which accounted for roughly one-quarter of global olive oil exports.

**Most of the recent growth in olive oil consumption occurred outside the traditional Mediterranean producing and consuming countries.**

A substantial and increasing share of global consumption is by countries that are not traditional olive oil producers. In particular, the United States, which accounted for about 9 percent of world olive oil consumption during MY 2007/08–11/12, is now the world’s third-largest olive oil-consuming country, behind Italy and Spain. U.S. consumption has risen by more than 50 percent since MY 2000/01 and continues to grow at 4–5 percent annually. A key driver of growth is promotional campaigns directed toward health-conscious, high-income consumers highlighting the nutritional benefits of olive oil. Australia, Canada, China, and Japan have experienced strong consumption growth as well.

**FIGURE ES.1** Olive oil: Share of global production and exports, 2008–12 average



<sup>a</sup>Data covers marketing years 2007/08 through 2011/12. A marketing year spans October 1 to September 30 the following year.

<sup>b</sup>Trade data is presented on a calendar year basis, and includes intra-EU trade.

## Major Findings

### International standards for extra virgin olive oil allow a wide range of olive oil qualities to be marketed as extra virgin.

Standards are necessary to guarantee the authenticity, quality, freshness, and safety of olive oil. Commercial grades for olive oil established by the IOC have traditionally been the benchmark throughout the world. However, in recent years considerable attention has been paid to international standards for grading, with the debate focused on the appropriate standards for the extra virgin category. The challenge is that the standards need to be broad enough to accommodate oil from diverse local olive varieties, but narrow enough to protect against fraud and adulteration. Although the term “extra virgin” is generally understood to denote the highest quality of olive oil, industry representatives report that the current standards are easily met by producers and allow olive oil marketed as “extra virgin” to represent a wide range of qualities.

### International standards for extra virgin olive oil are mostly unenforced.

Despite a proliferation of olive oil standards for grading at the international and national level, there are few governmental bodies that enforce these standards along with sanctions for noncompliance. Mandatory official testing and sanctions occur in the EU and Canada; however, they test only a very small percentage of the oil exported from Italy and Spain, the leading global sources. The United States does not have mandatory testing, nor does it impose penalties for noncompliance. This lack of enforcement has resulted in a long history of fraudulent practices (adulteration and mislabeling) in the olive oil sector.

**Broad and mostly unenforced standards lead to adulterated and mislabeled products, weakening the competitiveness of U.S.-produced olive oil in the U.S. market.**

Broad and unenforced global standards have made it easier to label and sell olive oil as “extra virgin” even when it does not meet the quality criteria for that grade, or when it is a mix of extra virgin oil and refined olive oil. The lack of enforcement of standards has also made it easier to label and sell olive oil blended with other oils (such as sunflower or canola) as 100 percent olive oil. Moreover, a wide range of olive oil qualities can be marketed as extra virgin, which dilutes the extra virgin category and lowers the value of all oils with that label. Because of the wide differences in quality and price among olive oils marketed as “extra virgin” in the United States, consumers’ have mixed perceptions of extra virgin olive oil. Tighter standards for extra virgin oil would allow high-quality producers in the United States and other countries to differentiate their products more effectively.

**Efforts to change standards and strengthen enforcement have created tension between major supplying countries.**

There are differences of opinion between New World and Old World Mediterranean producers, as well as between premium and lower-quality olive oil producers, over what the appropriate standards are for oils to meet the extra virgin grade. For example, there is disagreement over strengthening the extra virgin standard by using new testing methods (e.g. pyropheophytins (PPPs) and 1,2-diacylglycerol (DAGs)) that may detect adulterated or degraded olive oil.

Maintaining existing IOC standards is typically advocated by those who believe that the extra virgin category should be more, rather than less, inclusive. Proponents of this view include mass-market sellers of extra virgin oil that compete primarily on price, rather than on high quality. These producers claim that global trade in olive oil would be disrupted by standards that differ by country and that any changes to standards should be made through the IOC. More recently, efforts to strengthen standards have been made by Australia and the United States. The Australian Olive Association developed its own set of standards for domestic olive oil that include new chemical tests, testing of oil in retail outlets, and stricter labeling requirements. U.S. domestic olive oil producers are considering ways to strengthen official enforcement of olive oil standards in the United States, including advocating for a U.S. Department of Agriculture marketing order and a U.S. Food and Drug Administration standard of identity for olive oil.

**EU government support programs contribute to higher overall supplies of olive oil, reducing global olive oil prices.**

European producers receive significant financial support through a variety of Common Agricultural Policy (CAP) programs, including decoupled direct income payments to farmers, support for rural development programs, funding for quality improvement initiatives, and subsidized storage. Of these, direct payments provide most of the support. According to the European Commission’s Directorate-General for Agriculture, these payments generally account for between 25 and 50 percent of olive farm income, depending on the year and the type of farm. In Spain and Italy, direct payments typically range between €400 and €800 per hectare (ha) (\$217 to \$434 per acre).<sup>3</sup> Because global wholesale olive oil prices are determined by the interaction of global supply and demand

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<sup>3</sup> One hectare is equivalent to 2.471 acres.

factors, EU programs that maintain or increase olive oil production by supporting otherwise unprofitable farmers reduce prices for global bottlers and marketers.

**Olive oil marketers aim to differentiate their products by brand and level of quality, but price remains one of the most important factors in U.S. consumer purchasing decisions. This is due, in part, to a lack of consumer awareness of quality differences.**

Competition for sales of olive oil in the U.S. market is affected by a firm's ability to differentiate its products and to market favorable characteristics of their oil. Many companies, including U.S. producers, use marketing strategies that highlight characteristics such as country of origin, health benefits, quality of the brand, and price. However, many U.S. consumers are unfamiliar with the product and unable to distinguish quality differences and, as a result, gravitate toward less costly oils. This gives an advantage to large olive oil bottlers that focus on "cost leadership" and capture market share by selling low-cost imported product. In contrast to the large importers, most U.S. producers sell smaller volumes of higher quality olive oil, which is more costly to produce and is sold at higher prices.

**U.S. farm-level production costs for olive oil match those of many of its competitors, but lack of scale and high capital costs result in higher delivered costs and prices at the retail level.**

The majority of U.S. olives for oil production are grown in efficient super-high-density (SHD) groves. As a result, at the grower level, the range of costs per kilogram (kg) of oil produced overlaps those of other countries. However, lack of scale hinders U.S. firms by increasing their unit costs at various stages throughout the supply chain, including bottling, transportation, distribution, and marketing. In addition, U.S. producers have high capital costs and focus exclusively on producing high-quality extra virgin oil, which requires early harvesting and increases costs in other ways. U.S. producers are also generally vertically integrated in growing and milling, which increases quality control but has typically been associated with smaller-scale production.

**At the retail level, U.S.-produced olive oil is not a significant substitute for foreign extra virgin olive oil or other grades of olive oil.**

Using weekly national retail sales data from February 2010 to February 2013, an econometric analysis estimated the relationships of demand in the retail market between branded foreign extra virgin olive oil, private label extra virgin, domestic branded extra virgin, and non-extra virgin olive oils. The results show that of all the categories examined, demand for domestically produced olive oil is the least responsive to increases in its own price. Moreover, there is little evidence that purchases of domestic branded extra virgin olive oil are significantly affected by price changes in the other oil categories. This suggests that consumer purchases of domestic olive oil are less motivated by price relationships than by other attributes of the product, such as the product's domestic origin or its reputation for high quality. Additionally, demand for foreign, private label, and non-extra virgin oils is only minimally affected by changes in the price of U.S. domestic oil. This finding may be explained by the fact that domestic oil is not available at many retail establishments.

## *Other Industry Observations*

### **Sales of Olive Oil in the U.S. Market**

**The United States is the world's second-largest olive oil-importing country, and its domestic market is overwhelmingly supplied by imports.**

Imports accounted for 97 percent of U.S. consumption of olive oil in 2012, by volume. The United States is the world's second leading olive oil-importing country behind Italy. U.S. olive oil imports have risen significantly since the early 1990s, although the pace of growth has dropped sharply during the past five years. Traditionally, Italy and Spain have been major suppliers of olive oil to the U.S. market. However, their shares of U.S. imports have fallen, mostly because of the emergence of Tunisia, Morocco, Argentina, and Chile as suppliers to the U.S. market, particularly at the expense of Italy. Approximately two-thirds of U.S. olive oil imports are in consumer-ready bottles, while one-third are in bulk. Imported bulk oil is destined for U.S. bottling plants that blend oils from other source countries and from diverse olive varieties into preset flavor profiles. Olive oil is sold in retail outlets (35–40 percent by volume), to the food service industry (e.g., restaurants and hotels) (40–45 percent by volume), and as an ingredient in processed foods (20 percent by volume). In the highly competitive U.S. olive oil market, many firms that rely on imported oil strive to be low-cost suppliers through economies of scale to gain market leadership, aiming to sell higher volumes of olive oil at lower prices.

**Per capita consumption of olive oil in the U.S. market is low but growing rapidly, largely due to greater awareness of the health benefits of olive oil.**

Olive oil consumption in the U.S. market has increased steadily over the past decade, although per capita consumption remains low in comparison to consumption in Mediterranean countries. Olive oil competes with other vegetable oils but, despite its higher price, has enjoyed strong growth rates in recent years. This growth is largely attributed to consumers' greater awareness of the health benefits of olive oil. In 2011, only 40 percent of U.S. households purchased olive oil, and given the size of the U.S. market, even a small increase in this share would have a significant impact on the total volume of U.S. consumption.

**U.S. retail consumers are generally unfamiliar with the range of olive oil grades, although they tend to favor extra virgin olive oil.**

U.S. consumers generally prefer milder olive oils to strong, pungent, bitter, and flavorful ones. However, many consumers remain unfamiliar with the product and do not know what product attributes distinguish one quality level from the next. As a result, it is difficult for many U.S. consumers to judge what is good value for their money when making their olive oil purchases. Nonetheless, retail purchases are concentrated in the extra virgin category. There is also a smaller, but growing, consumer market segment for olive oil in the United States made up of consumers concerned with natural, organic, and gourmet foods. Consumer interest in food quality and sourcing has increased in recent years, as has interest in specialty or niche food products. Consumers in this segment are willing to pay premiums for higher-quality olive oil.

**In the U.S. market, competition between firms and between producing countries occurs at different stages along the olive oil value chain.**

In the U.S. market, competition among firms exists at the retail level where distinct business models are used to attract purchases by different types of consumers. Broadly, two types of business models are employed—cost leadership aimed at attracting consumers that base their purchasing decisions mostly on price, and product differentiation aimed at attracting consumers seeking high quality. Competition between producing countries primarily occurs further up the value chain—at the bottler level, rather than at the retail level. While each olive oil producing country has different competitive advantages and disadvantages (table ES. 1), industries in many countries (including Spain, Greece, and Tunisia) are oriented toward bulk oil sales to bottlers, mainly located in Italy, who blend and bottle oils from many sources. Therefore, competition between producing countries is primarily for sales to bottlers, and direct competition between countries in the U.S. retail market is minimal.

## **Olive Oil Production in the United States**

**The U.S. olive oil-producing industry encompasses two distinct business models that differ in production practices, scale, and marketing outlets.**

Olive oil is produced on a commercial scale in Texas and Georgia, but California accounts for the vast majority of U.S. production. In California, almost 90 percent of growers practice traditional low-density or medium-density olive production methods, but these account for only about 20 percent of total production. Their operations are typically small, with 20 acres or less, and they mostly use manual labor for harvesting. Olive oil from this segment typically enters niche marketing chains, such as boutique stores, farmers' markets, roadside stands, and Internet sales. The remaining 80 percent of California's olive oil production comes from SHD groves. These operations are large, typically about 100 acres or more; they rely entirely on mechanical harvesting and are intensively managed. These large producers typically market their product on retail shelves and are more likely to compete directly with imports. U.S. oil produced under this system is mainly directed toward the retail market, but smaller volumes are also marketed toward food service.

**The U.S. olive oil industry produces high-quality extra virgin olive oil.**

U.S. olive oil producers focus on quality and traceability. Large groves are intensively managed to ensure the production of high-quality fruit, and large U.S. olive mills mandate that olives delivered to them for milling meet extensive quality standards. Olives are harvested at the peak of ripeness, and nearly all olives are milled within 24 hours of harvest. These conditions help U.S. olive oils to have low free fatty acid levels (a measure of high quality) and positive taste attributes.

## **Production in the European Union**

**Global olive oil prices are driven by Spanish production.**

On average, Spain produces almost half of the world's olive oil supply. As a result, Spanish production is a main determinant of global prices. Beginning in MY 2009/10, Spain experienced three consecutive bumper crops which resulted in a three-year period

**TABLE ES.1** Olive oil production characteristics of selected countries

	Olive production characteristics	Oil processing characteristics	Oil characteristics	Competitive advantages	Competitive disadvantages
United States	<ul style="list-style-type: none"> <li>• Mix of artisanal and modern, mechanized production</li> <li>• Majority of production is from SHD groves</li> </ul>	<ul style="list-style-type: none"> <li>• Modern and efficient</li> <li>• Only a few high-capacity mills</li> </ul>	<ul style="list-style-type: none"> <li>• High-quality extra virgin</li> </ul>	<ul style="list-style-type: none"> <li>• High quality</li> <li>• Growing domestic market</li> <li>• Highly efficient production systems</li> </ul>	<ul style="list-style-type: none"> <li>• Small scale</li> <li>• Difficulty differentiating product due to lack of enforced standards</li> <li>• Little government assistance</li> </ul>
Spain	<ul style="list-style-type: none"> <li>• Mostly semi-mechanized, traditional groves</li> <li>• Some large-scale intensive and SHD groves</li> </ul>	<ul style="list-style-type: none"> <li>• Processing done mostly by grower-owned cooperatives</li> <li>• Large scale, efficient mills</li> </ul>	<ul style="list-style-type: none"> <li>• 35 percent extra virgin</li> <li>• Wide range of extra virgin and lower-grade oils</li> </ul>	<ul style="list-style-type: none"> <li>• Market power and scale of production</li> <li>• Low cost of production</li> <li>• Supportive government programs</li> </ul>	<ul style="list-style-type: none"> <li>• Reliance on bulk market</li> <li>• Lack of marketing expertise and product differentiation</li> </ul>
Italy	<ul style="list-style-type: none"> <li>• Mostly small groves with traditional planting densities</li> <li>• Mostly hand harvested</li> </ul>	<ul style="list-style-type: none"> <li>• Large number of small mills</li> <li>• Mix of traditional and modern mills</li> <li>• Hub of blending and bottling oil from around the world</li> </ul>	<ul style="list-style-type: none"> <li>• Mostly extra virgin production</li> <li>• Wide range of grades, qualities, olive varieties, and flavor profiles</li> </ul>	<ul style="list-style-type: none"> <li>• Reputation for high quality</li> <li>• Recognition of Italian brand</li> <li>• Supportive government programs</li> </ul>	<ul style="list-style-type: none"> <li>• High cost of production</li> <li>• Fragmented supply chain</li> </ul>
Greece	<ul style="list-style-type: none"> <li>• Mostly small groves with traditional planting densities</li> <li>• Mostly hand harvested</li> </ul>	<ul style="list-style-type: none"> <li>• Large number of small mills</li> <li>• Very few bottlers</li> </ul>	<ul style="list-style-type: none"> <li>• Mostly flavorful extra virgin</li> </ul>	<ul style="list-style-type: none"> <li>• High quality</li> <li>• Supportive government programs</li> </ul>	<ul style="list-style-type: none"> <li>• High cost of production</li> <li>• Poor marketing infrastructure</li> <li>• Reliance on bulk market</li> </ul>
Morocco	<ul style="list-style-type: none"> <li>• Mostly traditional planting densities</li> <li>• Mostly hand harvested</li> </ul>	<ul style="list-style-type: none"> <li>• Large number of small mills</li> <li>• Mostly traditional milling techniques</li> </ul>	<ul style="list-style-type: none"> <li>• One-third extra virgin</li> <li>• Limited volume of flavorful and high-quality oil</li> </ul>	<ul style="list-style-type: none"> <li>• Proximity and trade preferences with the EU</li> <li>• Commercial relationship with U.S. bottler</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of product differentiation</li> <li>• High cost of production</li> <li>• Poor quality of traditional production</li> </ul>
Tunisia	<ul style="list-style-type: none"> <li>• Mostly traditional planting densities</li> <li>• Mostly hand harvested</li> </ul>	<ul style="list-style-type: none"> <li>• Many small mills using traditional techniques</li> <li>• Growth in modern, higher-capacity mills</li> </ul>	<ul style="list-style-type: none"> <li>• Mild flavor useful for blending</li> </ul>	<ul style="list-style-type: none"> <li>• Proximity and trade preferences with the EU</li> <li>• Export-oriented government support programs</li> <li>• Low cost of production</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of product differentiation</li> <li>• Reliance on bulk market</li> <li>• Poor quality of traditional production</li> </ul>
Chile	<ul style="list-style-type: none"> <li>• Mostly SHD production</li> <li>• Mostly mechanical harvesting</li> </ul>	<ul style="list-style-type: none"> <li>• Small number of modern, efficient mills</li> <li>• Most mills have excess capacity that will accommodate growth</li> </ul>	<ul style="list-style-type: none"> <li>• Mostly high-quality extra virgin</li> </ul>	<ul style="list-style-type: none"> <li>• Reputation for high quality</li> <li>• Low cost of production</li> <li>• Southern hemisphere location</li> </ul>	<ul style="list-style-type: none"> <li>• Lack of sufficient marketing channels to meet ongoing production growth</li> </ul>
Australia	<ul style="list-style-type: none"> <li>• Mostly intensive groves</li> <li>• Mostly mechanical harvesting</li> </ul>	<ul style="list-style-type: none"> <li>• Modern and efficient</li> <li>• Only a few high-capacity mills</li> </ul>	<ul style="list-style-type: none"> <li>• Mostly high-quality extra virgin</li> </ul>	<ul style="list-style-type: none"> <li>• Reputation for high quality</li> <li>• Southern hemisphere location</li> </ul>	<ul style="list-style-type: none"> <li>• Rising cost of production</li> <li>• Extreme weather conditions have reduced yields</li> </ul>
Argentina	<ul style="list-style-type: none"> <li>• Majority of production from SHD groves</li> <li>• Large number of traditional groves still remain</li> </ul>	<ul style="list-style-type: none"> <li>• Mix of modern, highly efficient mills and some using older technologies</li> <li>• Concentrated among a handful of firms</li> </ul>	<ul style="list-style-type: none"> <li>• Mostly extra virgin</li> </ul>	<ul style="list-style-type: none"> <li>• Southern hemisphere location</li> <li>• Variety of microclimates</li> <li>• High number of olive varieties</li> </ul>	<ul style="list-style-type: none"> <li>• Rising cost of production</li> <li>• Farmers leaving the industry due to poor recent production</li> <li>• Extreme weather conditions</li> </ul>

Source: Compiled by USITC staff.



of gradually declining global prices. However, a severe drought in Spain in MY 2012/13 cut production by more than 60 percent. In response, between June 2012 and January 2013 producer prices in Italy and Greece rose by approximately 30 percent, while prices in Spain increased by about 60 percent.

**Spain is focused on large-scale, low-cost production, most of which is a primary input for major international bottling companies.**

Spanish olive oil production encompasses a range of farm types and production methods. Generally, Spanish operations are larger than in other EU countries, and economies of scale translate into low-cost production. The industry is dominated by a large number of grower cooperatives that create scale economies and focus on producing large volumes, rather than high-quality oil. Because growers are paid largely on the basis of quantity supplied, they typically harvest later in the season in order to maximize the oil content of the fruit. However, late harvesting diminishes the quality of their oil due to olive degradation. Because much of the Spanish sector is focused on producing large volumes instead of quality, it primarily supplies oil in bulk to the large bottling companies in Spain and Italy.

**Many Italian growers focus on producing higher-quality oil using mostly traditional methods.**

Growing and milling are highly fragmented in Italy, with small farms and a very large number of small mills. Production in Italy is expensive, but many producers emphasize and market the high quality of their oil. Many traditional producers in Italy argue that the market power of the large-scale blenders and bottlers drives down prices and makes traditional production unprofitable, while at the same time reducing the value of the “Italian” brand by marketing lower-quality imported product under Italian brand names.

**Italy plays a key role in the global olive oil supply chain as trader, blender, and bottler.**

Olive oil bottled in Italy has name recognition and cachet in export markets, especially in the United States. As a result, Italy is home to large companies (including some that are Spanish owned) that specialize in blending, marketing, and distribution. Most are not vertically integrated into oil production themselves, but instead source bulk oil from mills around the world (although mostly from Europe outside Italy), seeking the lowest price. These companies create a consistent, mild flavor profile for consumers around the world and compete in retail and food service markets on the basis of price, rather than competing in markets for higher-valued, more differentiated olive oils.

**Greece produces high-quality oil, though most of its exports are destined to Italy for blending and bottling.**

Greece plays an important role in global olive oil production, but little of its oil enters world markets as a bottled Greek product. Most Greek olive oil is consumed domestically (mostly sold directly by the mill to the final consumer), as Greece has the highest per capita olive oil consumption in the world. Of the remainder, most is exported to major bottlers in Italy for blending with other extra virgin olive oils from various sources. Greek extra virgin oil is recognized by blenders and bottlers as a component that raises the overall quality and flavor profile of a blend. Recent industry and government initiatives seek to increase Greek oil’s competitiveness by reducing the sector’s

dependence on bulk exports to Italy and focusing more on selling differentiated Greek product.

## **Production in North Africa**

**North Africa is the largest olive oil-producing region outside the EU.**

The two largest producers and exporters of olive oil in the region are Tunisia and Morocco, which together accounted for 9 percent of global production and 20 percent of exports in MY 2011/12. The EU has traditionally provided a reliable export market for North African producers due to their close proximity to the EU's large bottlers.

**Tunisia produces low-cost, neutral-flavored oil that is primarily exported to Italy for blending with other oils, then bottled and re-exported around the world under Italian brand names.**

Tunisian domestic consumption of olive oil is low in comparison with its production, leaving large supplies available for export. Tunisia has historically been an important supplier to the Italian market, due to its ability to supply neutral-flavored oil that is ideal for blending. Partly because of the olive varieties commonly grown in Tunisia, Tunisian olive oil—even oil that meets the IOC's extra virgin standards—is generally bland, with neither a bitter nor a fruity flavor profile. These flavor characteristics are in demand by bottlers seeking oils to blend with more bitter and pungent oils from Italy and Greece, in order to create oil with a taste profile preferred by many consumers, including those in the United States. While this demand ensures a market for low-cost, lower-quality oil, it makes it difficult for the industry to move into potentially more profitable marketing outlets based on higher-quality, differentiated products.

**Morocco is only a major participant in global olive oil trade during bumper crops, since olive oil prices tend to be high in the Moroccan market.**

Despite relatively low per capita consumption levels, olive oil prices in Morocco are high relative to global olive oil prices, both at the retail and village level. Producers therefore target the domestic market before looking to export. As a result, the amount of product available for export is generally quite small, but varies annually because production in Morocco is highly dependent on sufficient and timely rainfall. Moroccan exports grew dramatically after production reached record levels during MY 2009/10 and MY 2010/11 owing to ideal weather conditions, resulting in greater availability of supply for export. In addition, a commercial partnership established in 2009 between Pompeian Olive Oil Company, a U.S. blender, bottler, and marketer of olive oil, and Aïcha, a Moroccan olive oil producer, spurred the increase in exports to the United States. With the drop in Moroccan olive oil production in MY 2011/12 and 2012/13, supplies available for export fell.

## **Production in New World and Middle Eastern Countries**

**New World Countries produce mostly high-quality extra virgin olive oil, yet face challenges in differentiating their products on the global market.**

Over the past decade, olive oil production in Chile, Australia, and Argentina has increased dramatically. As in the United States, these countries use mostly modern growing and milling techniques, and produce mainly high-quality extra virgin olive oil.

Despite their recent production growth and a rise in their exports, New World producers face several challenges restricting their expansion. They must compete with established European producers that benefit from scale, government support, and low costs of production. They also view the international standards for grading extra virgin olive oil as weak, favoring EU producers, and lacking enforcement. According to these producers, their challenge is to differentiate their products based on quality when international standards allow large volumes of lower-quality oils to be labeled as extra virgin.

**Turkey and Syria are large olive oil producers, though not fully integrated into global markets, and prospects for export expansion are uncertain.**

Olive oil is produced throughout the Middle East, but Turkey and Syria are by far the largest producing countries. Both Turkey and Syria rely mostly on traditional production methods and lack modern equipment, resulting in variable olive oil production volumes and qualities. The main sales outlets for both Turkish and Syrian olive oil are their own domestic markets and exports to neighboring Middle East countries. The potential to expand exports is much greater for Turkey than Syria. In Turkey, planted acreage and production continue to expand, potentially providing surpluses for increased exports. In contrast, after years of expansion aided by government support, Syrian production and exports have declined as a result of the civil war that began in early 2011. For Syria, both future production volumes and integration into the global market will depend on ending the political unrest.



# CHAPTER 1

## Introduction

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### Overview

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The olive tree is among the oldest cultivated trees in the world, and olive oil has been produced and consumed in the Mediterranean region for several millennia. Starting in the early 1990s, olive oil consumption began to increase as the product's appeal spread beyond the Mediterranean region to nontraditional markets. Global demand has grown as the health benefits of olive oil consumption have become better known<sup>1</sup> and as disposable incomes, particularly in developing countries, have risen and allowed for greater expenditures on high-value food products. This growth in demand triggered an expansion in global production beyond the Mediterranean, and while the region continues to supply over 90 percent of the world's olive oil, an increasing share is accounted for by so-called "New World" producing countries outside of the Mediterranean, including the United States. At the same time, Mediterranean producers have expanded their sales efforts beyond their home markets, where consumption has been stable or even declining.

Although U.S. production of olive oil remains small on a global scale, the United States is among the nontraditional producing countries that are responding to higher global demand, and output has risen quickly in recent years, albeit from a small base. Between marketing year (MY) 2007/08 and MY 2012/13, U.S. production increased from only 2,000 metric tons (mt) to 12,000 mt—equivalent to more than 50 percent growth each year—as producers responded to rising domestic demand and to incentives derived from the use of mechanical harvesting and the low water requirements of olive trees. But recently, investment in U.S. olive oil production has slowed because of declining global prices following bumper Spanish crops and because of the widespread view among U.S. producers that their competitive position in the domestic market is threatened by a lack of regulatory oversight.

Olive oil is not part of the traditional American diet, and its consumption is not nearly as widespread as that of soybean or canola oil. It is estimated that only around 40 percent of U.S. households purchase olive oil.<sup>2</sup> In 2012, U.S. consumption per capita was just 1 liter, significantly less than in European countries such as Greece (20 liters) and Spain (14 liters). Nonetheless, U.S. olive oil consumption is growing rapidly (5 percent annually between 2008 and 2012), while consumption of other vegetable oils is declining. In 2012, the United States was the world's third-largest consuming market by volume behind Italy and Spain, and the second-largest importer, behind Italy. Because of recent demand growth and currently low levels of per capita consumption, the United States is widely viewed by producers and marketers as a market with tremendous growth potential.

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<sup>1</sup> For example, olive oil features significantly in the "Mediterranean diet" that became popular in the 1990s; this diet emphasizes weight loss and other elements promoting coronary health.

<sup>2</sup> Industry representative, interview by USITC staff, Tuscany, Italy, January 30, 2013; USITC, hearing transcript, 128, December 5, 2012 (testimony of Eryn Balch, North American Olive Oil Association).

Numerous recent studies and reports have concluded that the olive oil sold both in the United States and abroad is often mislabeled or adulterated, resulting in misled consumers. Mislabeling occurs when olive oil does not meet the standards for the grade (usually “extra virgin”) that appears on the label, or when the oil’s country of origin is misrepresented. Adulteration occurs when olive oil is blended with seed oils, yet is labeled as 100 percent olive oil. In 2010, the U.S. Department of Agriculture (USDA) Foreign Agricultural Service (FAS) classified olive oil as one of the largest sources of agricultural fraud in the European Union (EU), based on the high frequency of mislabeling.<sup>3</sup> Similarly, a study appearing in the *Journal of Food Science* showed that olive oil was the most commonly referenced adulterated food in scholarly articles from 1980 to 2010.<sup>4</sup> Reports by the University of California at Davis, *Consumer Reports* magazine, and the Spanish Organization of Consumers and Users, among many others, have concluded that when samples have been taken from retail shelves and tested, many top-selling brands labeled as extra virgin failed to meet at least one of the standards set out by the International Olive Council (IOC) for defining a product as extra virgin olive oil. In statements submitted to the U.S. International Trade Commission (Commission or USITC), both U.S. producers and importers of olive oil acknowledged that mislabeling and adulteration do occur, but they differ on the frequency of which these things are happening, the impact they are having on competition, and the proper methods for reducing their occurrence.

According to many U.S. producers, incidences of mislabeled and adulterated olive oil entering the U.S. market are, in part, a consequence of a lack of mandatory enforceable product standards and testing in the United States.<sup>5</sup> However, the setting of standards and establishment of testing protocols is controversial, and an ongoing debate has arisen about what the standards for defining extra virgin olive oil should be and the appropriate mechanisms for enforcing the standards. The debate is being fueled primarily by the “New World” olive oil producing countries (including the United States, Chile, Argentina, and Australia), where production systems are characterized by intensive grove plantings, heavy use of mechanization, vertical integration, and a focus on producing high-quality extra virgin olive oil. New World producers argue, along with many premium olive oil producers in the Mediterranean, that mislabeled and adulterated olive oil puts premium olive oil producers at a disadvantage by depressing prices for all truly extra virgin olive oil and by limiting their ability to differentiate their product. Many New World producers also contend that the current IOC standards are weak, that they do not use the most modern technology, and that the lack of mandatory testing in the United States results in a wide range of qualities being marketed as extra virgin while allowing

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<sup>3</sup> USDA, FAS, *Italy: Olive Oil Update*, July 6, 2010, 3.

<sup>4</sup> Moore, Spink, and Lipp, “Development and Application of a Database of Food Ingredient Fraud,” 2012, 118–26. In April and May of 2007, more than 10,000 cases of containers labeled as extra virgin olive oil confiscated from storage facilities in New York and New Jersey by U.S. Food and Drug Administration (FDA) inspectors and U.S. marshals were found to contain soybean oil and low-quality olive pomace oil (described later in this chapter). FDA, “The Enforcement Story 2007,” 2008, 4–30; AOOPA, written submission to the USITC, December 12, 2012, 11.

<sup>5</sup> Industry representatives, interviews by USITC staff, California, November 13–15, 2012; USITC, hearing transcript, December 5, 2012, 11 (testimony of Adam Englehardt, California Olive Ranch).

widespread mislabeling to occur.<sup>6</sup> As a result, most premium olive oil producers favor stricter standards, enforced by mandatory and extensive testing.<sup>7</sup>

Opposing this view are certain importers and large-scale producers. Many of these firms blend and bottle olive oils from all over the world and compete for customers primarily on the basis of price. They argue that tighter standards and stricter enforcement would increase their costs significantly, because extensive testing is expensive and because bottlenecks arising from testing would decrease the efficiency of their supply chains.<sup>8</sup> According to the North American Olive Oil Association, such cost increases would translate into higher consumer prices, potentially pricing many consumers out of the olive oil segment in the United States.<sup>9</sup>

The Committee on Ways and Means (Committee) of the House of Representatives asked the USITC to conduct an investigation and provide a report on the conditions of competition between U.S. and major foreign olive oil supplier industries.<sup>10</sup> The Committee requested that the report primarily focus on the period 2008 through 2012.

The Committee asked for the USITC's report to include the following:

- An overview of the commercial olive oil industry in the United States and major supplier countries, including production of olives for olive oil processing, planted acreage and new plantings, processing volumes, processing capacity, carry-over inventory, and consumption;
- Information on the international market for olive oil, including U.S. and foreign supplier imports and exports of olive oil in its various forms, olive oil trade between the European Union and North African countries, and a history of the tariff treatment and classification of olive oil in the United States and major supplier countries;
- A qualitative and, to the extent possible, quantitative assessment of the role of imports, standards and grading, prices, and other factors on olive oil consumption in the U.S. market; and
- A comparison of the competitive strengths and weaknesses of the commercial olive production and olive oil-processing industries in the major producing countries and the United States, including factors such as industry structure, input production costs and availability, processing technology, product innovation, government support and other government intervention, exchange rates, and pricing and marketing regimes, plus the steps each respective industry is taking to increase its competitiveness.

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<sup>6</sup> Industry representatives, interviews by USITC staff, California, November 13–15, 2012; AOOPA, written submission to the USITC, November 28, 2012, 4; USITC, hearing transcript, December 5, 2012, 37 (testimony of Dr. Selina Wang, University of California at Davis).

<sup>7</sup> Industry representatives, interviews by USITC staff, California, November 13–15, 2012; industry representatives, interview by USITC staff, Madrid, Spain, January 21, 2013; industry representatives, interviews by USITC staff, Tuscany, Italy, January 31, 2013.

<sup>8</sup> Industry representatives, interviews with USITC staff, Tuscany, Italy, January 30, 2013; North American Olive Oil Association (NAOOA), written submission to the USITC, December 17, 2012, 18–20.

<sup>9</sup> NAOOA, written submission to the USITC, December 17, 2012, 58.

<sup>10</sup> The request letter is appendix A, and the *Federal Register* notice is appendix B.

## Scope of the Report

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In response to the Committee's request, this report examines the conditions of competition among U.S. and major foreign olive oil supplier industries. This investigation focuses on olive oil, and consequently the product scope is mostly limited to olive oil classified within the Harmonized Tariff Schedule of the United States (HTS) heading 1509 ("Olive oil and its fractions, whether or not refined, but not chemically modified").<sup>11</sup> As requested by the Committee, the report provides four types of information: (1) information on production, consumption, and trade, with an overview of the international market for olive oil; (2) overviews of the commercial olive oil industries in the United States and other major supplying countries; (3) analysis of the factors that affect the competitiveness of the major olive oil-producing countries; and (4) an assessment of the role of imports and other factors, such as standards and pricing, on consumption in the United States.

The remainder of chapter 1 provides an overview of the grades and standards of olive oil, as well as the olive oil production process and supply chain. Chapter 2 provides information and analysis on production, consumption, and trade worldwide. Chapter 3 describes the standards that exist globally for determining olive oil grades, as well as the effectiveness of the mechanisms used to enforce those standards. In addition, the chapter discusses how the current enforcement of standards impacts competition both in the U.S. and global olive oil market. The U.S. olive oil market and demand-side factors impacting competition in the U.S. market, such as consumer price sensitivity, branding, and consumer education, are discussed in chapter 4. Chapters 5 through 8 describe industries in the major producing countries, focusing on the supply-side factors, such as production methods and producers' efficiency, that affect their competitive position in the global market. Because production methods, cost structures, and quality vary dramatically even within the large producing countries, the report attempts to assess competition by grade and market segment. Chapter 5 describes production in the United States. Production in the EU is covered in chapter 6, with a focus on the major producing countries Spain, Italy, and Greece. Chapter 7 describes production in North Africa, specifically Morocco and Tunisia. Chapter 8 provides an overview of production in the "New World" olive oil-producing countries whose role in the global market has increased over the last decade, specifically Chile, Argentina, and Australia. In addition, the chapter includes a brief description of the industries in Turkey and Syria, the two largest Middle Eastern producing countries.

## Approach

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As requested by the Committee, this report uses both qualitative and quantitative methods to evaluate the global olive oil market. Data were gathered for the report by reviewing existing literature and conducting extensive interviews with sources knowledgeable about the industry, including representatives from individual firms, trade associations, academia, and traders. USITC staff gathered information from individuals and companies with operations throughout the supply chain, from the grove to the mill and all the way to

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<sup>11</sup> Certain olive residue oils are classified under the HTS 4-digit code 1510, but these products were not critically analyzed because of their lack of importance both in global trade and the U.S. market.



the retail shelves. Information was also provided to the Commission at a public hearing, where testimony was provided by representatives of the olive oil industry. USITC staff also held extensive meetings with both U.S. and foreign government officials. Staff traveled to California, Spain, Morocco, and Italy to meet government officials, researchers, farmers, cooperatives and trade associations, millers, and bottlers. They also interviewed officials at the European Commission (EC) in Brussels.

USITC staff also used quantitative methods to analyze the global olive oil industry. Data on production, consumption, and trade were obtained from a variety of sources, including Global Trade Information Services; USITC's DataWeb, which uses official statistics of the U.S. Department of Commerce (USDOC); the IOC; the EC; Italian, Spanish, and Moroccan government websites; and the U.S. Department of Agriculture. USITC staff analyzed dynamics in the U.S. market by using national and regional Nielsen retail point-of-sale data. The Nielsen data covered over 2,000 olive oil products sold in retail outlets on a weekly basis during 2010–12, across all regions of the United States. These data allowed staff to identify recent consumption trends and preferences in great depth, and were used as inputs into an econometric model that estimated how changes in three variables—the price of a given olive oil product, the price of competing products, and U.S. income—would affect demand for that product.

## **Olive Oil Grading and Standards**

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The quality of olive oil is an important factor contributing to a producer's competitiveness in the global market, and as mentioned earlier, issues involving quality definition, standards, testing, and enforcement have become a considerable source of controversy within the sector. Olive oil is classified into distinct grades developed to indicate a level of quality depending on a variety of criteria, including method of production and oil characteristics, such as acidity, odor, flavor, and the absence of defects. Precise definitions and names of each grade of olive oil vary somewhat by standard-setting body, but the primary grades used are virgin olive oil, olive oil, refined olive oil, and olive pomace oil (table 1.1). Virgin olive oil, by definition, is produced only by mechanical processes (i.e., not refined by chemical means). The chemical standards also serve to denote purity; olive oil cannot contain other vegetable oils.

Olive oil is graded using a set of chemical and sensory (e.g., taste and smell) parameters, such as levels of free fatty acids, peroxide value, and flavor and fruitiness, and specific standards have been established for these parameters.<sup>12</sup> The most widely used standards for grading olive oil are issued by the IOC, though other standards have been established by other international bodies (such as the Codex Alimentarius Commission) and by certain national governments. Individual parameter levels and testing methods vary slightly depending on the country and standard-setting body.

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<sup>12</sup> For example, the level of free fatty acid in an olive oil is one parameter that determines its grade (the lower the level of free fatty acids, the higher the grade). The IOC standards for free fatty acids are less than 0.8% for extra virgin and less than 2.0% for virgin olive oil.

**TABLE 1.1** Olive oil grade descriptions

Grade	Description and notes
Virgin	Oils obtained from olives that have not undergone any treatment other than washing, decanting, centrifugation, and filtration. Virgin oil is obtained during the first pressing of whole olives.
Extra virgin	<ul style="list-style-type: none"> <li>o The highest grade of virgin olive oil, which exhibits some fruitiness and is free of taste defects.</li> </ul>
Virgin	<ul style="list-style-type: none"> <li>o Oil that is fit for human consumption, has reasonably good flavor, but may exhibit taste defects.</li> </ul>
Lampante virgin	<ul style="list-style-type: none"> <li>o Virgin oil that is not fit for human consumption without further processing and contains flavor and odor defects.</li> </ul>
Olive oil	Oil that is made from blending virgin and refined olive oil. This oil is fit for human consumption and makes up the majority of global olive oil sales.
Refined olive oil	Olive oil that has been refined into an edible product yet maintains the initial glyceridic structure of olive oil. The refining process heats the oil to rid it of flavor flaws such as rancidity. Refined oil does not contain the same beneficial nutrients as virgin oil.
Olive pomace oil	Olive pomace is the solid remains (skins, pulp, seeds, etc.) left over from the first press of olives for oil. Olive pomace oil is extracted from the pomace using chemical solvents and must be refined to be fit for human consumption. Once refined, it is typically mixed with virgin oils for consumption.

Source: Compiled by USITC staff.

Grades and standards have also become a source of controversy within the global industry, particularly regarding appropriate standards and testing procedures for the extra virgin category of olive oil. Throughout the olive oil industry, it is widely viewed that the IOC standards for extra virgin olive oil are broad and allow a wide range of olive oil qualities to meet the extra virgin standard.<sup>13</sup> Thus, producers of high-quality extra virgin olive oil find it difficult to differentiate their product from low-end extra virgin olive oil, and this weakens their ability to command a price premium from consumers seeking high-quality oils. Certain premium extra virgin olive oils are considered to be the highest quality because they easily pass the chemical standards defined by the IOC for extra virgin and also have a very fruity and robust flavor profile. On the other hand, lower-quality extra virgin olive oils, many of which consist of blended oils from different producers around the world, have chemical traits that typically test at or close to the allowable parameters for the extra virgin category, and also have a more neutral, mild flavor. Many industry officials claim that by setting standards for extra virgin that are easily met, the IOC is favoring the interests of its Mediterranean members that are the

<sup>13</sup> Industry representatives, interviews by USITC staff, California, November 13–15, 2012; industry representatives, interviews by USITC staff, Madrid and Andalucia, Spain, January 21–25, 2013; industry representatives, interviews by USITC staff, Meknes, Morocco, January 27–28, 2013; industry representatives, interviews by USITC staff, Tuscany and Puglia, Italy, January 30 and February 4, 2013.

primary suppliers of lower-quality extra virgin olive oil in the global market instead of the interests of consumers.<sup>14</sup>

Testing, including how to test, what to test, and when to test, is another controversial factor complicating the effectiveness of global standards for olive oil. For example, it is generally recognized in the industry that no single chemical test can determine an oil grade, since olive oil quality depends on several criteria whose attributes change with time.<sup>15</sup> Olive oil naturally begins degrading from the time of harvest until it is finally consumed, and the rate of degradation varies depending on the olive variety and handling conditions. As a result, there is also a debate as to the appropriate point in the supply chain at which testing should take place.

## **Olive Oil Production Process and Supply Chain**

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The olive oil supply chain consists of growers, millers, refiners, bottlers, and retailers (figure 1.1). Supply chains vary across countries and quality segments, based on different degrees of vertical integration and different business models for marketing olive oil to the final consumer. However, distinctions occur during the production process as well, especially at the farm level where the olives that are the primary driver of total olive oil cost and quality are grown.

### ***Olive Production***

Olive oil production begins in the groves where the olives are grown. The quality and the oil content of the olives produced during the growing season depend on several factors, including elevation, temperature, humidity, rainfall, soil quality, and slope of the land. Farm management practices, such as pruning and harvesting techniques, are also important. Proper pruning is required to achieve high yields by keeping the tree size manageable, maintaining the surface of the fruiting wood, and increasing light inside the canopy. Olive trees have a natural alternate bearing harvest cycle, and proper pruning and crop management help to mitigate these year-to-year swings in production.

The olive variety also affects the flavor profile and perishability of the olive oil produced. Certain varieties, such as the Koroneiki commonly grown in Greece and the Coratina commonly grown in Italy, produce bitter and pungent oils, while others, such as the Picual and Arbequina varieties, produce fruitier oils that are sweeter and slightly less bitter.<sup>16</sup> However, it is difficult to generalize the flavor profile of a particular olive variety. For example, oil produced from an Arbequina olive in Catalonia, Spain, may taste different than an Arbequina oil produced in Andalusia, Spain, because of different soil qualities and weather conditions in each region during a particular year. The variety

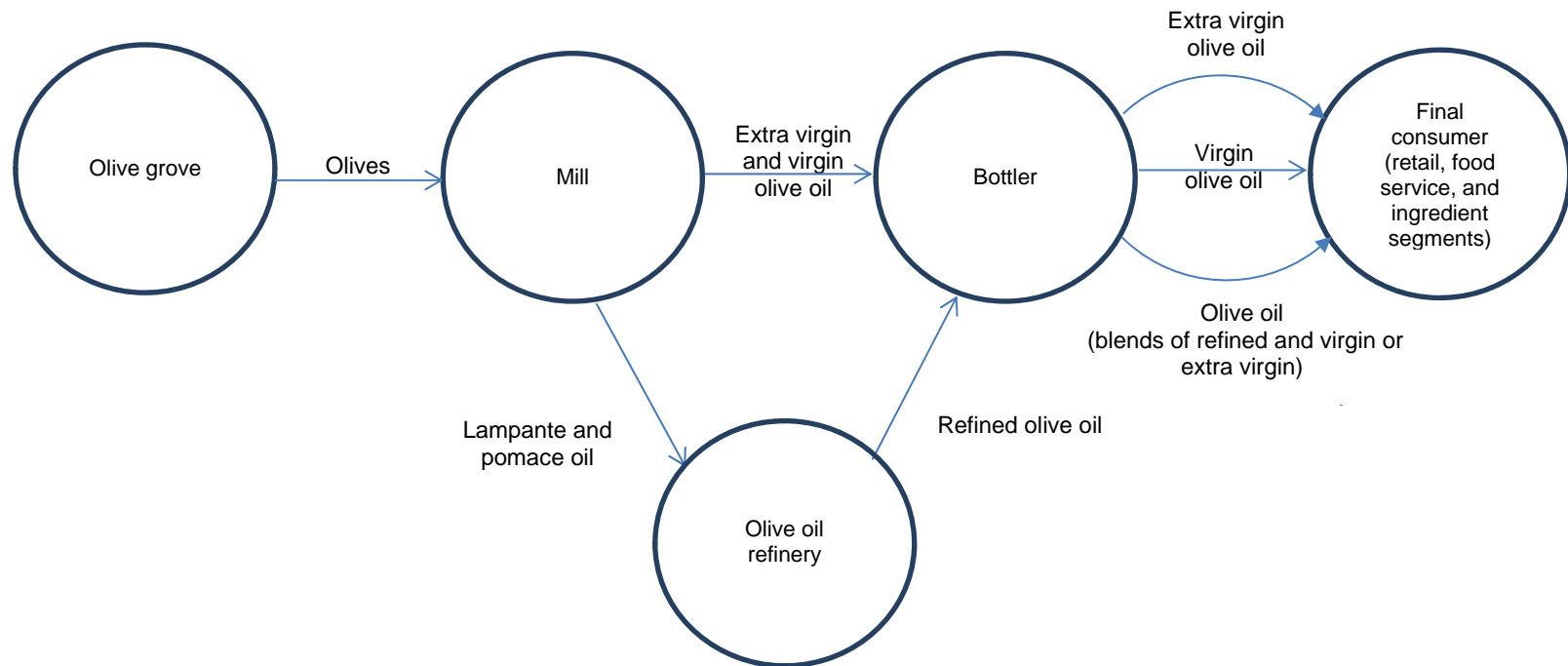
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<sup>14</sup> USITC, hearing transcript, December 5, 2012, 148–149 (testimony of Leandro Ravetti, Boundary Bend Limited); USITC, hearing transcript, December 5, 2012, 157 (testimony of Dr. Rodney Mailer, New South Wales Department of Agriculture, Australia); industry representatives, interviews by USITC staff, California, November 13–15, 2012.

<sup>15</sup> AOOPA, written submission to the USITC, February 12, 2013; USITC, hearing transcript, December 5, 2012, 28 (testimony of Bruce Golino, Santa Cruz Olive Tree Nursery and California Olive Oil Council).

<sup>16</sup> Royal Spanish Academy of Gastronomy, “Olive Oils in 21st Century Gastronomy,” 2010, 77–79, 93.

**FIGURE 1.1** Production and marketing system for olive oil



Source: Compiled by USITC staff.

of an olive also impacts an olive oil's shelf life. For example, Arbequina oil tends to degrade faster than other olive oils even under ideal storage conditions.<sup>17</sup>

The planting density of the olive trees is a key factor determining the output of an olive grove because it affects the amount of olives and olive oil produced per hectare (ha), as well as the method used to harvest the olives. Planting densities can range from 50 to over 1,000 trees per ha (table 1.2). In traditional groves throughout southern Europe and Northern Africa, some of which were planted more than 100 years ago, the spacing between trees is vast, often between 30 and 60 feet. As a result, yields may be less than 1 mt of olives per ha, compared with 13 mt in super high-density (SHD) groves.

**TABLE 1.2** Olive grove planting densities

	Traditional	Intensive	Super high-density
Trees per hectare	40–200	200–600	1,000–1,200
Tree spacing: meters (m) between trees	7–20 m	Within rows, 3–4 m; between rows, 6–8 m	Within rows, 1–1.5 m; between rows, 3–4 m
Harvesting method	Hand harvested, sometimes assisted by the use of branch or trunk shakers	Branch shakers or trunk shaker	Over-row mechanical harvester
Yield of olives (mt/ha)	0.5–5.0	6–8	10–13

Source: Compiled by USITC staff.

Traditional groves are often located on hillsides, typically are not irrigated, and use limited inputs, such as fertilizer. If traditional groves are located on flat land with enough rainfall, and proper farm management techniques are used, including pruning and fertilizing, yields can increase to 5 mt or higher, but this is rare. The method of harvesting, which for many growers is the largest component of their total cost of production, also varies depending on planting density. Most traditional and intensive groves are harvested by hand, although some use semi-mechanized harvesting methods, either with a machine that shakes the trunk of the olive tree or with a long pole with hooks and fingers at the end that vibrate and shake the tree foliage. Traditional and semi-intensive, semi-mechanized groves account for the majority of global production.

SHD groves, making up approximately only 2–3 percent of global production, are characterized by closer tree spacing, significant tree pruning and maintenance, and fully mechanized harvesting. SHD groves require flat terrain to allow harvesting by over-the-row mechanical harvesters. SHD groves also need access to enough water for irrigation. One of the advantages of SHD production is that olives can be harvested at a specific maturity and milled within hours, before the olives start to degrade and ferment. In certain producing regions, this capital-intensive production method is especially attractive in that it does not rely on unpredictable manual labor for harvest.

A key decision for growers is when to harvest their crop, because there is a tradeoff between oil quality and volume as the harvesting season progresses. Producers of premium extra virgin olive oil harvest their olives early in the season (October, November, and December in the Northern Hemisphere) before they are fully ripe and when the oil content of the fruit is lower. Olives harvested early have low acidity and a

<sup>17</sup> Royal Spanish Academy of Gastronomy, “Olive Oils in 21st Century Gastronomy,” 2010, 79; industry representatives, interviews by USITC staff, Andalusia, Spain, January 23, 2013.

more fruity, or pungent, oil that contains more healthy nutrients, such as polyphenols. Olives that are harvested late in the season (January, February, or even March) produce lower-quality oil that has a milder flavor and contains fewer beneficial health attributes. However, olives harvested later in the season typically have a much higher oil content and so provide more output per hectare. This higher oil content translates into lower production costs per unit for millers, but at the expense of quality.<sup>18</sup>

## *Milling*

After harvesting, olives are delivered to a mill for processing into oil. On arrival, the olives are washed and the stray leaves and stems removed. Next, the olives are mashed into a paste. In most modern mills, the paste is then moved into a horizontal malaxer (mixer) for 20 to 60 minutes depending on olive variety and ripeness of the olives in order to allow the small olive oil droplets to combine into bigger ones. Longer malaxation times increase oil yields but result in more oxidation, which shortens the shelf life of the final product. After malaxation, the oil is separated from the other olive components. Historically this was done with large stone presses, but in modern mills, decanter centrifuges are used. This phase of the production process varies slightly between mills (see box 1.1). The oil coming out of the first decanter centrifuge is typically further processed to separate the remaining heavier water from the oil by using a second vertical centrifuge that rotates faster.<sup>19</sup>

### **BOX 1.1** Olive milling technology

Olive milling technology has evolved over time. Oil is produced using either stone pressure mills, where olives are crushed with a traditional press, or continuous two- or three-phase mills that utilize decanter centrifuges to separate the oil from the mash. While stone pressure mills are still in use today, the bulk of global olive oil production is no longer produced in this way. Most modern mills use either two- or three-phase decanter centrifuges to separate the oil from the other olive components. Two-phase mills use the most recently developed equipment to separate the olive mash into oil and a wet pomace, or paste. Alternatively, in the three-phase system, the olive mash is first diluted with water in order to reduce the thickness. The decanter then separates the mash into the oil, wastewater containing coarse particles, and the olive pomace. While three-phase mills are still very common, many producers have shifted to two-phase production because it doesn't require additional water, produces less waste, and has a smaller overall environmental impact.<sup>a</sup>

<sup>a</sup> Intech, *Olive Germplasm: The Olive Cultivation, Table Olive and Olive Oil Industry in Italy*, December 5, 2012, 174; Royal Spanish Academy of Gastronomy, "Olive Oils in 21st Century Gastronomy," 2010, 222; industry representatives, interviews by USITC staff, Tuscany, Italy, January 31, 2013.

<sup>18</sup> Industry representatives, interviews by USITC staff, California, November 13–15, 2012; industry representatives, interviews by USITC staff, Madrid and Andalusia, Spain, January 21–25, 2013; industry representatives, interviews by USITC staff, Meknes, Morocco, January 27–28, 2013; industry representatives, interviews by USITC staff, Tuscany and Puglia, Italy, January 30 and February 4, 2013.

<sup>19</sup> Royal Spanish Academy of Gastronomy, "Olive Oils in 21st Century Gastronomy," 2010, 216–221; industry representatives, interviews by USITC staff, Tuscany, Italy, January 31, 2013.

## ***Refining***

Both olive pomace and lampante oils are low-grade oils that must be further processed to make them fit for human consumption.<sup>20</sup> These oils go through a refining process that utilizes both heat and chemicals to neutralize acidity and remove flavor defects, as well as deodorize and decolor the oil. This process results in a flavorless, odorless oil that is fit for human consumption. Typically, refineries are managed and owned by the companies that specialize in bottling and marketing the product. This refined oil is blended by bottling companies with virgin oils to create what is commonly marketed as “olive oil.” Olive oil products of this type typically include anywhere from 3 percent to 12 percent virgin olive oil, with the remainder being refined olive oil.<sup>21</sup>

## ***Bottling and Marketing***

After milling and, if necessary, refining, the oil moves to the bottling and marketing stage of the production process. Firms that bottle olive oil typically also market their products, targeting different sales outlets and types of consumers. Sales outlets for olive oil are retail and foodservice, with each outlet facing consumers with different preferences and knowledge about the product. The retail segment is made up of consumers buying olive oil that is bottled for home use and sold at grocery stores, farmers’ markets, and gourmet and boutique food stores, as well as discount retailers. The food service segment consists of restaurants and processed food producers that use olive oil as an ingredient. Olive oils distributed in the food service segment are typically of lower quality or grades, sold in larger volumes and at lower prices.

Consumer preferences in the olive oil sector are often driven by knowledge of and exposure to the product. Bottlers have to consider these factors when determining how to market their product and which segments to target. Many consumers, especially retail customers in the United States, prefer milder oil that is neutral in flavor, partially because this is the flavor profile they are most commonly exposed to in the oils they use. In the United States, according to research conducted by sensory scientists at University of California at Davis, a high percentage of consumers see bitterness and pungency, which are actually attributes of high-quality, nutritionally beneficial oils, as negative features in olive oil. Many consumers prefer oils that are somewhat rancid and musty, even though these are defects associated with oils that are not classified as extra virgin.<sup>22</sup> But even among experienced olive oil consumers, flavor profile preferences vary. Just as a wine drinker might prefer one wine varietal over another, many consumers prefer the milder taste of buttery and fruity oils over highly spicy, bitter, and pungent-tasting olive oils. As a result, bottlers have to determine what type of consumer will demand their product.

Broadly, bottlers must appeal to one of two consumer types, whether in retail or foodservice outlets. First, there are bottlers of premium oils that compete by targeting consumers with knowledge of the product, who make their purchasing decision more on

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<sup>20</sup> As noted earlier, pomace oil is produced by extracting oil from the solid olive remains that are left after the first press. Olive oil of the lampante grade is a virgin oil from the initial press of olives, but it is typically produced from overripe or degraded olives with a high degree of acidity. While these two grades of oil account for the majority of refined oils, virgin oils are also occasionally refined, primarily in Spain, when the demand and prices for refined oil are high and the market for virgin olive oil is limited.

<sup>21</sup> Industry representatives, interviews by USITC staff, Andalusia, Spain, January 24, 2013; industry representatives, interviews by USITC staff, Tuscany, Italy, January 30, 2013.

<sup>22</sup> Industry representatives, interviews by USITC staff, California, November 14, 2012.

the basis of product attributes (such as fruitiness or bitterness) than price. Premium oils are often sold in gourmet food stores to consumers who are less price sensitive. Many of the producers targeting the premium extra virgin oil segment of the market are fully vertically integrated, owning the olive groves, mills, and bottling facilities. This allows them to maintain strict control of the product along the entire supply chain. As noted, the olives used for premium oils are harvested early in the season in order to maximize the quality and fruitiness of the oil. The olives are milled in smaller, fully traceable batches so that the producer can adjust the milling specifications, such as temperature, in order to fully highlight the flavor characteristics of the olives being milled. These production methods make premium olive oil expensive to produce.

Second, there are large bottling companies that compete by selling a relatively low-cost product, marketed to price-conscious consumers, who typically prefer milder and blander oil. These large-scale bottlers, many located in northern Italy and accounting for a significant share of the olive oil traded internationally, employ a business model that involves less vertical integration. These bottlers neither own groves nor operate mills. Instead, they purchase olive oil in bulk from sources all over the world. Typically the bottlers receive samples of oils from prospective suppliers, and having tested the oil, negotiate a price based on volume, quality, and global market prices. Bottlers then blend the oils to create the desired flavor profile, bottle it in retail-ready containers, and market it either under their own brand names or private labels.<sup>23</sup> By focusing on large-scale bottling, these operations benefit from economies of scale that result in lower unit costs and an ability to deliver highly price-competitive products to retail and foodservice outlets. While these two business models target different segments of the market, they do compete for a relatively small number of consumers who know enough about olive oil to look for quality and certain flavors, but at reasonable prices.

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<sup>23</sup> Industry representatives, interviews by USITC staff, Andalusia, Spain, January 23–24, 2013; industry representatives, interviews by USITC staff, Meknes, Morocco, January 27–28, 2013; industry representatives, interviews by USITC staff, Tuscany, Italy, January 30, 2013. Not all olive oil producers choose to market branded olive oil in the United States. Several firms that produce large volumes of olive oil sell their products under a private label, often the retailer's label and name (e.g., Safeway, Giant, and Publix).



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# CHAPTER 2

## Global Overview

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### Overview

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Global olive oil production, consumption, and trade are centered in countries surrounding the Mediterranean Sea (figure 2.1). The Mediterranean climate, with its long, hot, dry summers and mild winters, provides ideal growing conditions for olive trees, which have been cultivated in the region for several millennia. During marketing years (MY) 2007/08–11/12,<sup>1</sup> about 97 percent of the world's olive oil production came from countries bordering the Mediterranean. Within the Mediterranean region, production was highly concentrated in the European Union (EU),<sup>2</sup> which supplied close to three-quarters of global production—45 percent originating in Spain, 16 percent in Italy, and 10 percent in Greece—during this period. Almost one-quarter of global olive oil was produced in non-EU Mediterranean countries, led by Tunisia, Syria, Turkey, and Morocco. Non-Mediterranean countries, most notably Argentina, Australia, and Chile, accounted for a very small share of world production, albeit a growing one. The United States was not a major producing country, supplying less than one-fifth of 1 percent of world olive oil production during MY 2007/08–11/12.

While global consumption of olive oil is also centered in the Mediterranean region, it is less concentrated than production (figure 2.1). Between MY 2007/08 and MY 2011/12, Mediterranean countries accounted for about 80 percent of global olive oil consumption, led by Italy (23 percent) and Spain (19 percent). Non-EU Mediterranean countries consumed about 17 percent of global consumption. An important and increasing share of global consumption is by countries that are not traditional olive oil producers, particularly the United States, which accounted for about 9 percent of world olive oil consumption during MY 2007/08–11/12.

Like production and consumption, global trade in olive oil is concentrated among countries of the Mediterranean region, particularly countries within the EU (figure 2.1). During 2008–12, the EU accounted for 87 percent of global olive oil exports (including intra-EU exports) by volume, made up largely of exports from Spain (52 percent) and Italy (23 percent). However, the vast majority of global exports were intra-EU trade flows, which accounted for 57 percent of global export volume during 2008–12. The largest bilateral trade flows during this period were Spanish exports of olive oil to Italy, which amounted to 358,000 metric tons (mt) (more than \$1 billion) annually, roughly one-quarter of global export volumes. Outside the EU, Tunisia is the only country with significant exports.

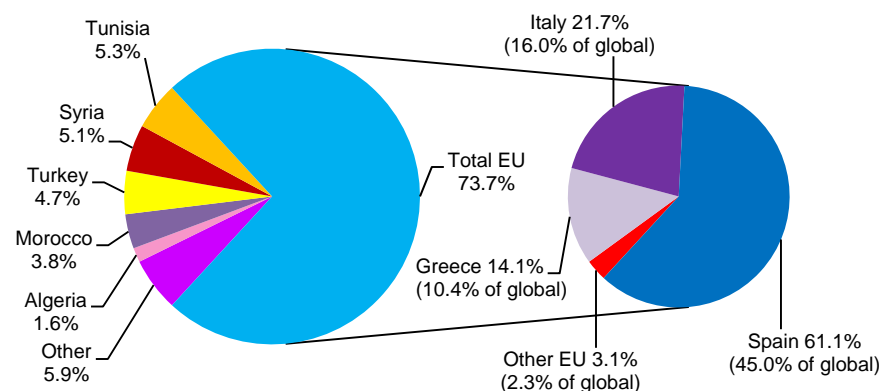
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<sup>1</sup> A marketing year spans October 1 to September 30 the following year.

<sup>2</sup> Prior to July 1, 2013, EU member states were Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, and the United Kingdom. On July 1, 2013, Croatia became the 28th EU member, but Croatia is not included in the aggregated EU data in this report. For the remainder of the report the EU-27 will be referred to simply as the EU.

**FIGURE 2.1** Olive oil: Share of global production, consumption, exports and imports, 2008–12 average

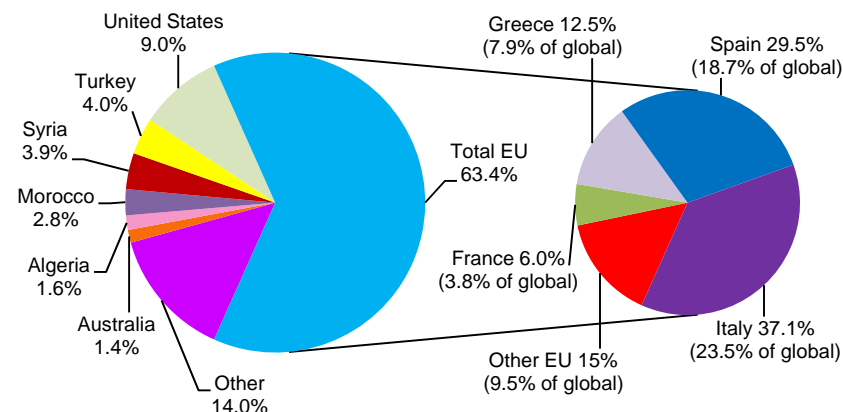
**Production<sup>a</sup>**



**Total: 3.0 million metric tons**

Source: IOC, "Table 1: [World] and [EU] Production," November 2012.

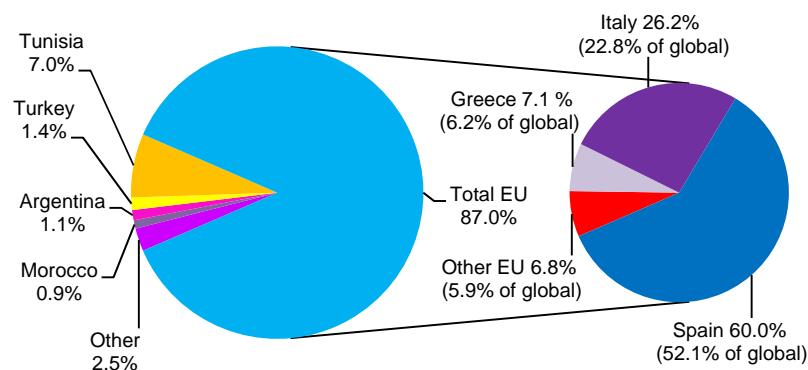
**Consumption<sup>a</sup>**



**Total: 3.0 million metric tons**

Source: IOC, "Table 4: [World] and [EU] Consumption," November 2012.

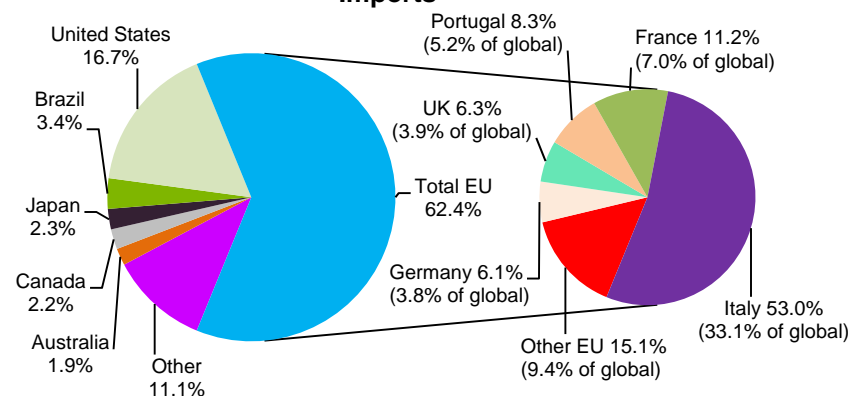
**Exports<sup>b</sup>**



**Total: 1.5 million metric tons**

Source: GTIS, Global Trade Atlas database (accessed March 26, 2013).

**Imports<sup>b</sup>**



**Total: 1.6 million metric tons**

Source: GTIS, Global Trade Atlas database (accessed March 26, 2013).

<sup>a</sup>Data covers marketing years 2007/08 through 2011/12. A marketing year spans October 1 to September 30 the following year.

<sup>b</sup>Includes intra-EU trade.

The EU's share of global imports (including intra-EU imports) was 62 percent by volume during 2008–12, of which Italy accounted for 33 percent (figure 2.1). The United States was the second-largest olive oil-importing country during this period, with 17 percent of global imports. Other important global importers were Brazil, Japan, Canada, and Australia. Although these countries combined accounted for only about 10 percent of global imports between 2008 and 2012, imports by each grew dramatically during the period.

The International Olive Council (IOC) is an intergovernmental organization that provides a forum for interaction and discussion among the world's leading olive oil-producing and consuming countries. It plays a major role in setting standards for trade (box 2.1). Headquartered in Madrid, Spain, the IOC was established in 1959 under the auspices of the United Nations. Over time, IOC membership has grown to include the EU and 16 olive oil-producing countries (Albania, Algeria, Argentina, Croatia, Egypt, Iran, Iraq, Israel, Jordan, Lebanon, Libya, Montenegro, Morocco, Syria, Tunisia, and Turkey) that account for 90–95 percent of global production. The United States is not a member of the IOC.

#### **BOX 2.1** International Olive Council

IOC activities cover four major areas.<sup>a</sup> First, it provides economic analysis of the global market by collecting data and publishing annual reports on production, consumption, trade, stocks, and prices. Second, the IOC offers its members support in technical and chemical aspects of olive oil production. For example, it promotes technology to modernize olive growing; it sets standards for physical, chemical, and organoleptic (sensory) characteristics of olive oil; it trains and certifies sensory panels to evaluate olive oil from different sources; and it administers voluntary quality-monitoring programs (such as the North American Olive Oil Association seal).<sup>b</sup> Third, the IOC undertakes product promotion, mostly in the form of market studies, promotional campaigns in both member and nonmember countries, and media relations. Fourth, the IOC funds and helps disseminate scientific research by multiple sources that demonstrates the health benefits of consuming olive oil.

The IOC is governed by a Council of Members consisting of delegates from member countries (one delegate per member). The IOC allocates 1,000 participation shares among its members, with members receiving shares based on their average olive oil production and exports over the past six years. In 2013, the EU holds 684 shares, while no individual member can receive less than 5 shares. Because the United States is a small global producer of olive oil, it would likely receive the minimum 5 shares if it were to become an IOC member.<sup>c</sup>

The Council of Members sets up committees and subcommittees that deal with specific aspects of olive oil production and trade. Current committees are the Economic Committee, the Technical Committee, the Promotion Committee, the Financial Committee, and the Advisory Committee, each composed of one delegate per member. The council meets twice a year, and proposals made by the Committees are adopted if more than half the members, accounting for 82 percent of the participation shares, approve. However, votes are often postponed until the next Council meeting if a consensus is not reached prior to a vote.<sup>d</sup>

<sup>a</sup> International Olive Council website, <http://www.internationaloliveoil.org/> (accessed March 7, 2013).

<sup>b</sup> More information on the NAOOA seal program is provided in chapter 3 and on the NAOOA website <http://www.naooa.org/sealprogram>.

<sup>c</sup> IOC representative, interview by USITC staff, Madrid, Spain, January 21, 2013.

<sup>d</sup> IOC representative, email to USITC staff, July 26, 2013.

# Global Production of Olive Oil

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## *Global Production Trends*

Since the early 1990s, global production of olive oil has more than doubled, exceeding 3.4 million mt in MY 2011/12 (table 2.1). Production growth was consistent through MY 2011/12 until a drought in Spain dramatically reduced global production to 2.5 million mt in MY 2012/13. Stronger growth occurred in the 1990s than in the 2000s, with production rising almost 6 percent annually between MY 1990/91 and MY 2000/01.<sup>3</sup> The vast majority of the growth in the 1990s came from the EU, especially Italy, Spain, and Greece, following an expansion in the area of productive olive trees, as well as improvements in yields.<sup>4</sup> Between MY 2000/01 and MY 2011/12, the annual rate of global production growth fell to about 2.6 percent. During this period, 40 percent of the rise in production came from outside the EU. Growth was especially strong in non-EU Mediterranean countries, such as Syria, Tunisia, and Morocco, where production was spurred by domestic and foreign investment that both increased the area planted and improved yields through irrigation and modern harvesting methods.<sup>5</sup> During MY 2000/01–11/12, production in the EU grew about 2 percent annually, with strong growth in Spain and Portugal largely offset by lower production in Italy and Greece.

According to industry experts, the introduction of decoupled income support under the 2004 reform of the EU's Common Agricultural Policy (CAP) led to lower support for producers and contributed to the drop in Italian and Greek production.<sup>6</sup> In addition, the so-called "New World" producing countries outside the Mediterranean region have emerged as important sources of olive oil in recent years, as production from these suppliers increased by 9.5 percent annually between MY 2007/08 and MY 2011/12. In particular, production in Southern Hemisphere countries Chile and Australia grew rapidly during this period. These countries benefit from intensive and efficient production methods, counterseasonal production to supply the world's major markets in the Northern Hemisphere, and the ability of exporters to use previously established marketing channels for other products, such as wine, to get their olive oil into high-value gourmet food markets.<sup>7</sup>

Projections by the IOC for MY 2012/13 indicate a sharp drop in global production following a dramatic decline in Spanish production. According to the Spanish Olive Oil Agency, Spanish production in MY 2012/2013 fell to only 614,100 mt, a decline of 62 percent compared with MY 2011/12, following unfavorable weather during much of

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<sup>3</sup> Global olive oil production trends are increasingly influenced by changes in the structure of the world market, characterized by increasing concentration of production in the hands of large, multinational bottling firms. Industry concentration is also increasing in the retail sector offering branded, private label products. Anania and Pupo D'Andrea, "Olive Oil in the Mediterranean," Winter 2011, 5.

<sup>4</sup> European Commission, Eurostat database (accessed March 26, 2013).

<sup>5</sup> Mohammad, "Trade in Olive Oil in Syria," December 2006, 5; Occhinegro, "The Global Market for Olive Oil," June 17–18, 2008; industry representative, interview by USITC staff, Meknes, Morocco, January 26–29, 2013. For more information on production trends in these markets, see chapters 7 and 8.

<sup>6</sup> Decoupled income support is assistance for producers that is not linked to prices or production. According to the WTO Agreement on Agriculture, such support is considered non-trade-distorting. Anania and Pupo D'Andrea, "Olive Oil in the Mediterranean," Winter 2011, 6. More detail on EU policies can be found in chapter 6.

<sup>7</sup> For more information on production trends and factors of competition in nontraditional markets, see chapter 8.

**TABLE 2.1** Olive oil: World production, marketing years 1990/91, 2000/01, 2007/08–12/13 (1,000 mt)

Country/region	1990/91	2000/01	2007/08	2008/09	2009/10	2010/11	<sup>a</sup> 2011/12	<sup>b</sup> 2012/13
Spain	639.4	973.7	1,236.1	1,030.0	1,401.5	1,391.9	1,613.4	614.1
Italy	163.3	509.0	510.0	540.0	430.0	450.0	450.0	490.0
Greece	170.0	430.0	327.2	305.0	320.0	301.0	295.0	350.0
Tunisia	175.0	130.0	170.0	160.0	150.0	120.0	180.0	220.0
Syria	83.0	165.0	100.0	130.0	150.0	180.0	<sup>c</sup> 198.0	<sup>c</sup> 198.0
Turkey	80.0	175.0	72.0	130.0	147.0	160.0	191.0	195.0
Morocco	36.0	35.0	85.0	85.0	140.0	130.0	120.0	100.0
Portugal	20.0	24.6	36.3	53.4	62.5	62.9	76.2	68.6
Algeria	6.0	26.5	24.0	61.5	26.5	67.0	54.5	56.5
Jordan	8.0	27.0	21.5	18.5	17.0	27.0	35.5	35.0
Chile	<sup>(d)</sup>	<sup>(d)</sup>	6.5	8.5	12.0	16.0	21.5	21.5
Australia	<sup>(d)</sup>	1.0	12.0	15.0	18.0	18.0	19.0	19.0
Lebanon	6.0	6.0	10.5	12.0	9.0	32.0	18.0	18.0
Argentina	8.0	4.0	27.0	23.0	17.0	20.0	32.0	17.0
Libya	7.0	4.0	13.0	15.0	15.0	15.0	15.0	15.0
United States	0.3	0.4	1.4	1.8	2.9	4.1	4.5	8.3
All other	50.3	54.2	59.9	79.6	55.0	90.2	83.4	82.4
Total	1,452.3	2,565.4	2,712.4	2,668.3	2,973.4	3,075.1	3,407.0	2,508.4
EU	994.0	1,940.5	2,118.5	1,939.0	2,224.5	2,209.0	2,444.0	1,532.5
Non-EU, Mediterranean	409.5	596.0	519.5	652.0	671.5	780.5	856.5	881.0
New World suppliers	48.8	28.9	74.4	77.3	77.4	85.6	106.5	94.3

Source: IOC, "Table 1: [World] and [EU] Production," November 2012; Government of Spain, Ministry of Agriculture, Food and the Environment, Olive Oil Agency website, [http://aplicaciones.magrama.es/pwAgenciaAO/InfMercadosAceite\\_BalanCampa.aao?opcion\\_seleccionada=4000&control\\_acceso=S&idioma=ING](http://aplicaciones.magrama.es/pwAgenciaAO/InfMercadosAceite_BalanCampa.aao?opcion_seleccionada=4000&control_acceso=S&idioma=ING) (accessed August 5, 2013); California Olive Oil Council representative, email to USITC staff, June 11, 2013.

Note: A marketing year spans October 1 to September 30 the following year.

<sup>a</sup>Provisional.

<sup>b</sup>Projected.

<sup>c</sup>IOC estimates for MY 2011/12 and 2012/13 Syrian production may not take into account the current conditions on the ground. Industry representatives reported that Syrian production has declined as a result of the political unrest and the outbreak of the civil war.

<sup>d</sup>Not available.

the growing season that significantly reduced yields.<sup>8</sup> As a result of reduced Spanish production, global olive production is expected to fall by more than 26 percent.

## *Comparison of Oil Production Costs*

While factors such as bottling, distribution, marketing and promotions, and retail margins impact the price of olive oil, the oil itself accounts for over half of the final delivered cost of olive oil (for more information on the other factors impacting pricing, see chapter 4). As a result, the cost of producing oil is an important determinant of production trends and competitiveness in the global market. But making fair production cost comparisons is difficult because the elements of production systems at the grower level, such as the density of the grove, harvesting methods, and the timing of harvest, vary widely across global suppliers. In many cases, costs of oil production differ even within individual countries and growing regions. Meaningful cross-country comparisons require costs to be assessed on both a per hectare and per unit of oil produced basis. This is because growers operating intensively managed, highly productive groves typically have higher costs per

<sup>8</sup> Government of Spain, Ministry of Agriculture, Olive Oil Agency website, [http://aplicaciones.magrama.es/pwAgenciaAO/InfMercadosAceite\\_BalanCampa.aao?opcion\\_seleccionada=4000&control\\_acceso=S&idioma=ING](http://aplicaciones.magrama.es/pwAgenciaAO/InfMercadosAceite_BalanCampa.aao?opcion_seleccionada=4000&control_acceso=S&idioma=ING) (accessed June 19, 2013).

hectare (because of high input use), but lower costs per unit of oil produced, compared with growers operating more traditional production systems.

Costs on a per hectare basis vary widely depending on the type of farm and production method. Most olive growers in the Mediterranean region farm inherited small family plots and use traditional production methods, harvesting olives from trees that may be more than a century old. Such growers likely have never made significant investments to establish their operations, have minimal or no land costs, use little mechanization, and purchase few inputs. Traditional groves are typically labor-intensive operations, but because they rely mostly on family labor, labor costs are minimized. Therefore, per hectare production costs on traditional olive farms tend to be relatively low (see chapters 6 and 7).

In contrast to traditional production systems, newer super-high-density (SHD) plantations, such as those in California, and other recently planted intensive groves generally carry the burden of high initial investments needed to establish the groves and to buy harvest machinery (see chapters 5 and 6). SHD producers in the United States and around the world typically face higher fixed production costs than their main global competitors (those that account for the majority of traded olive oil).<sup>9</sup> On the other hand, while per hectare costs on a SHD farm are higher than on traditional farms, the costs per kilogram of oil produced tend to be lower because they have far higher tree densities and yields. For example, many SHD farms in California and Spain produce more than 10 mt of olives per hectare, compared to between only 1 and 4 mt on most traditional groves.

Because of the range of cost structures and oil qualities, an itemized cost-of-production comparison between U.S. producers and their competitors may oversimplify market realities. While there is no single source of data that publishes comprehensive global costs of production using a consistent methodology, illustrative production costs on a per kilogram of oil produced basis for different production systems are shown in table 2.2. For SHD farms in Spain and California, per kilogram of oil production costs can be as low as €1.32 (\$1.70) and €1.43 (\$1.84), respectively, compared with traditional farms in Spain, where costs can be as high as €3.06 (\$3.95), and in Italy, where they can be up to €5.80 (\$7.48).<sup>10</sup> It is important to note that the cost of production is also impacted by the quality of the oil produced. For example, the €5.80 (\$7.48) cost represents production costs in Tuscany, Italy, where most growers use traditional production methods that increase costs in to order improve the quality of the oil produced.<sup>11</sup> For more specific information on production costs by method and country, see chapters 5–8. The farm-level costs of production data given in table 2.2 represent averages and are useful for general

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<sup>9</sup> Industry representatives, interviews by USITC staff, California, November 14, 2012. Less than 10 percent of the imported extra virgin olive oil sold at retail in the U.S. market is produced under a strategy similar to that of most U.S. olive oils, namely high-quality, single-source oil. The remainder is produced by firms that bottle/blend a variety of oils under more of a cost leadership strategy. Nielsen, U.S. Retail Market Data, 2013.

<sup>10</sup> The 2012 U.S. Federal Reserve annual average exchange rate of 1.29 U.S. dollars per euro was used for currency conversions.

<sup>11</sup> Premium, artisanal, “estate” extra virgin olive oil producers are typically considered traditional because they largely cultivate olives by traditional methods on trees that have been owned for generations. They extract oil in small batches with the latest milling technology and market their branded oils both domestically (including through agritourism) and in export markets. These producers have a high cost structure not only because they harvest their olives early, when the olives have a low oil content, but also because they rely on well-trained, experienced labor for harvesting, pruning, and milling. While this high-quality approach to the market is similar to that of California SHD producers, their cost structure differs because their tree variety and spacing require extensive labor.



**TABLE 2.2** Olive oil: Farm-level cost of production by country and production method

Country and production method	Production cost (€/kg)
Spain (SHD)	1.32
Spain (intensive)	1.29 (irrigated)–1.66 (non-irrigated)
California (SHD)	1.43–2.02 <sup>a</sup>
Morocco	1.61–2.24
Spain (traditional)	1.97 (semi-mechanized)– 3.06 (hand harvested)
Italy	3.53– 5.80 <sup>b</sup>

*Source:* Industry representative, telephone interview by USITC staff, May 6, 2013; industry representative, interview by USITC staff, California, November 15, 2012; UCCE, *Sample Costs: Sacramento Valley*, 2007, 19; AEMO, “Aproximación a los Costes del Cultivo del Olivo” [Approximating the costs of olive growing], June 2010; Bungaro, “Olio: le novità introdotte dalla nuova legge anti contraffazione” [Oil: new law combating counterfeiting], n.d. (accessed May 9, 2013); IOC, *Morocco 2012*, 8.

*Note:* Californian and Italian costs are reported grower costs, while Spanish costs are constructed based on the average costs per hectare for each production method in 2009 and oil yields of between 18 and 19 percent per kilogram of olives. The Californian costs reflect the range of typical olive yields reported by industry representatives using a 16 percent oil content. However, the time of harvest and the corresponding oil content of the olives, which is an important determinant of per unit production costs, vary by year, country, and individual grower.

<sup>a</sup>U.S. costs were reported as \$6.38 to \$9.00 per gallon of oil produced. The 2012 U.S. Federal Reserve annual average exchange rate of 1.29 U.S. dollars per euro was used for currency conversions.

<sup>b</sup>The Italian costs are average costs from two olive oil-producing regions, specifically Puglia and Tuscany, that represent the range of costs in Italy. In Puglia, production is more intensive and represents the lower end of the range. Production in Tuscany, which represents the upper end of the range, relies heavily on traditional methods and tends to be much more expensive.

comparisons. However, they do not fully account for varying oil yields, which often differ depending on the quality of the oil and market segment the producer is targeting.

As mentioned earlier, overall per unit costs of production are generally higher for high-quality olive oil, even without considering whether the olives are grown in traditional or intensive groves. This is due to the fact that high-quality oil is produced from just-ripe olives, which are harvested earlier and yield less oil than olives that are left on the trees longer.<sup>12</sup> Correspondingly, growers can harvest olives later in the season in order to increase oil content and produce larger volumes of oil per hectare. This practice lowers per unit costs, but also reduces the quality of the oil.

## Global Consumption of Olive Oil

Global olive oil production has risen in response to strong and consistent growth in global consumption over the past several decades. World consumption of olive oil grew at 3 percent annually between MY 1990/91 and MY 2011/12, but the growth rate was much higher during the 1990s than the 2000s—4.5 percent annually compared with 2 percent annually. Historically the EU was the main driver of global consumption growth, and between MY 1990/91 and MY 2000/01, roughly two-thirds of all growth occurred in the EU (table 2.3). In part the rise in EU consumption was due to EU-financed promotion programs that highlighted the health and quality characteristics of olive oil, as well as historical and cultural ties with the product as a food staple.<sup>13</sup> However, since

<sup>12</sup> Industry representative, interview by USITC staff, Madrid, Spain, January 21, 2013.

<sup>13</sup> Anania and Pupo D’Andrea, “Olive Oil in the Mediterranean,” Winter 2011, no. 16, 5.

**TABLE 2.3** Olive oil: World consumption, marketing years 1990/91, 2000/01, 2007/08 –12/13 (1,000 mt)

Country/region	1990/91	2000/01	2007/08	2008/09	2009/10	2010/11	<sup>a</sup> 2011/12	<sup>b</sup> 2012/13
Italy	540.0	729.0	705.0	710.0	675.7	660.0	724.5	695.0
Spain	394.1	580.8	546.3	533.06	539.4	554.2	582.1	550.0
United States	88.0	201.7	240.4	251.6	255.8	272.1	296.2	302.2
Greece	204.0	270.0	264.0	229.0	228.5	227.5	212.5	208.0
Turkey	55.0	72.5	85.0	108.0	110.0	131.0	150.0	160.0
Syria	62.0	110.0	80.0	110.0	120.5	130.5	135.5	135.5
France	28.0	92.0	101.6	113.5	114.8	112.8	111.2	112.5
Morocco	37.0	45.0	65.0	70.0	90.0	100.0	90.0	85.0
Portugal	27.0	60.5	75.8	87.5	87.8	82.0	73.8	73.8
Algeria	7.0	26.0	25.0	55.0	33.5	59.0	57.0	55.5
Australia	13.5	31.0	35.0	37.0	44.0	44.0	44.5	42.5
Japan	4.0	30.0	29.0	30.0	40.5	35.5	42.0	42.0
Tunisia	54.5	58.0	50.0	21.0	30.0	30.0	40.0	40.0
China	( <sup>c</sup> )	( <sup>c</sup> )	( <sup>c</sup> )	12.0	18.0	29.5	40.0	41.0
Canada	10.0	24.5	29.0	30.0	37.0	40.0	38.5	38.0
Russia	5.0	4.0	17.0	15.0	22.0	21.0	24.0	24.0
Mexico	4.0	6.5	10.0	9.5	9.0	10.0	11.0	11.0
All other	133.4	256.2	390.8	404.4	443.3	519.0	539.4	529.2
Total	1,666.5	2,590.5	2,754.5	2,831.5	2,902.0	3,061.0	3,210.0	3,137.0
EU	1,214.5	1,835.0	1,866.0	1,858.0	1,846.0	1,866.5	1,917.0	1,856.9
Non-EU, Mediterranean	253.5	372.5	396.0	472.5	472.5	559.5	597.5	584.5
New World suppliers	198.5	383.0	492.5	501.0	583.5	635.0	695.5	695.6

Source: IOC, "Table 4: [World] and [EU] Consumption," November 2012; USITC staff calculations based on industry representatives, email to USITC staff, June 11, 2013.

Note: A marketing year spans October 1 to September 30 the following year.

<sup>a</sup>Provisional.

<sup>b</sup>Projected.

<sup>c</sup>Not available.

MY 2000/01, EU consumption growth has slowed as consumption in both Italy and Greece has declined, reflecting the persistent economic weakness in these two countries.<sup>14</sup> Global consumption is projected to fall in MY 2012/13 to 3.1 million mt, about 2 percent lower than in MY 2011/12, mostly from lower consumption in Spain and Italy.

Since MY 2000/01, the vast majority of consumption growth has occurred outside the EU, led by the United States, the world's third-largest olive oil-consuming country behind Italy and Spain. U.S. consumption has increased by more than 50 percent since MY 2000/01 and continues to grow at 4–5 percent annually. Industry experts view promotional campaigns directed toward health-conscious, higher-income consumers that focus on the nutritional benefits of olive oil as key drivers of this expansion. Strong consumption growth is observed in other high-income countries as well, such as Canada, Japan, and Australia.<sup>15</sup> Growth in nontraditional markets also has been driven by rising per capita income in developing countries, competitive prices for olive oil vis-à-vis other vegetable oils, increased availability, and strong promotional campaigns that have exposed consumers to olive oil in nontraditional markets, such as China and northern

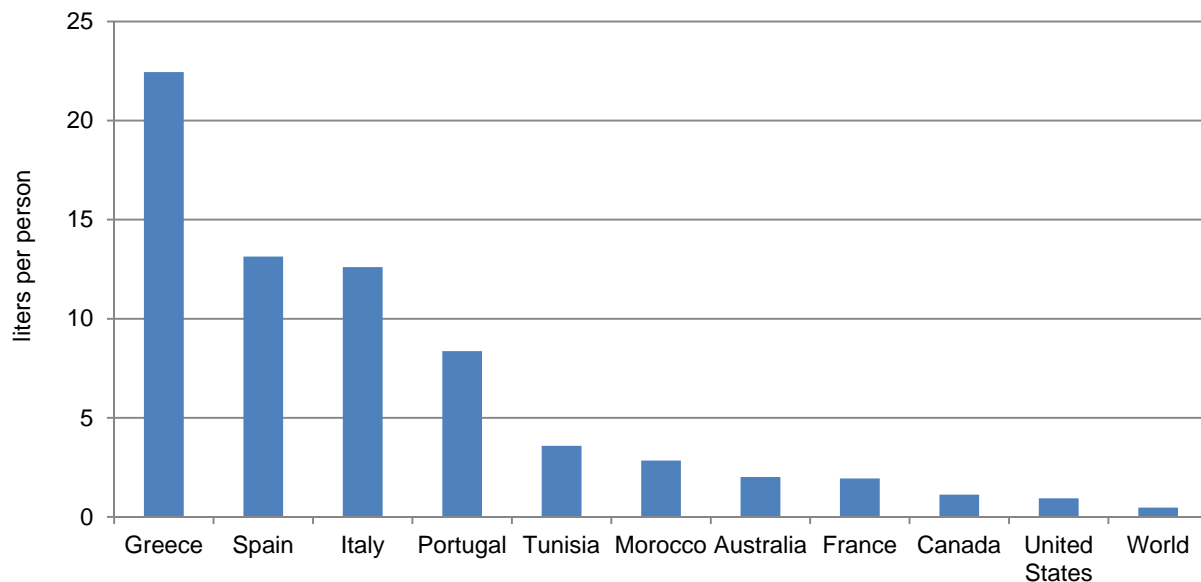
<sup>14</sup> Occhinegro, "The Global Market for Olive Oil," June 17–18, 2008.

<sup>15</sup> Bauer, "The U.S. Import Market," 2011, 26.

Europe.<sup>16</sup> Another recent driver of global olive oil consumption has been the trend toward more strongly differentiated products, such as organic olive oil and oils with certified geographic indications or certified denominations of origin.<sup>17</sup>

On a per capita basis, Greece is the world's leading consumer of olive oil, exceeding 20 liters per person per year, a level that has remained fairly stable over the past 20 years (figure 2.2). Spain and Italy are also leading per capita consumers of olive oil, ranging between about 12 and 14 liters during MY 2007/08–11/12. In comparison, U.S. per capita consumption is just one liter annually, although it has risen steadily over time and is more than double the world average. The low level of world per capita consumption, at only 0.5 liters, implies significant potential for global consumption growth as per capita incomes rise and awareness of the product's positive health attributes increases.

**FIGURE 2.2** Olive oil: Annual per capita consumption for selected countries, average MY 2007/08–11/12



Source: Consumption data were sourced from IOC, "Table 4: [World] and [EU] Consumption," November 2012; population data were sourced from the Food and Agriculture Organization database.

## Trends in Global Trade

### *Global Imports*

Global imports of olive oil rose over the past decade, expanding from \$2.2 billion in 2000 to \$5.4 billion in 2012 (almost 8 percent average annual growth). This growth was the

<sup>16</sup> Ibid.

<sup>17</sup> Country or region of origin often implies product quality to the consumer. Anania and Pupo D'Andrea, "The Global Market for Olive Oil," 2008.

result of increases in both trade volumes and unit values (table 2.4). Trade volume grew about 5 percent annually throughout the period. The majority of the growth in trade value occurred in the first half of the period. Between 2000 and 2008, the value of trade grew 14 percent on average annually before decreasing 3 percent annually between 2008 and 2012 as a result of declining prices. Import unit values were generally consistent with trends in global olive oil prices, falling sharply during 2008–12; in 2012, they were 27 percent lower than in 2008. World prices fell during this period largely in response to higher production and inventory levels (box 2.2). In addition to the drop in global prices, the weakening of the euro vis-à-vis the dollar between 2008 and 2012 pushed down the dollar-denominated import unit values even further.<sup>18</sup>

**TABLE 2.4** Olive oil: World imports, 2000, 2008–12

Product	2000	2008	2009	2010	2011	2012
Quantity (1,000 mt)						
Virgin <sup>a</sup>	753.5	1,159.2	1,166.5	1,327.1	1,399.5	1,401.0
Refined <sup>b</sup>	296.3	315.3	304.5	328.0	329.8	370.9
All	1,049.7	1,474.6	1,471.0	1,655.1	1,729.2	1,771.9
Value (million \$)						
Virgin <sup>a</sup>	1,536.0	4,913.1	4,066.1	4,354.6	4,735.1	4,403.9
Refined <sup>b</sup>	634.5	1,251.0	1,008.4	1,017.1	1,025.1	1,028.9
All	2,170.6	6,164.4	5,097.9	5,399.7	5,800.2	5,432.9
Unit values (\$ per mt)						
Virgin <sup>a</sup>	2,038.6	4,238.3	3,485.7	3,281.4	3,383.4	3,143.5
Refined <sup>b</sup>	2,141.7	3,967.1	3,311.9	3,100.5	3,108.7	2,773.8
All	2,067.7	4,180.5	3,465.6	3,262.5	3,354.2	3,066.1

Source: GTIS, Global Trade Atlas database (accessed June 8, 2013).

<sup>a</sup>Olive oil and its fractions, virgin but chemically modified (HS1509.10).

<sup>b</sup>Olive oil and its fractions, refined but not chemically modified (HS1509.90).

<sup>18</sup>For example, between 2008 and 2012, the olive oil price reported for Jaén, Spain, fell from €2,474 to €1,891 per mt (a 6.5 percent average annual decline). Because the euro depreciated during this period from \$1.464 to \$1.285, the dollar-denominated Jaén price fell from \$3,622 to \$2,431 per mt (a 9.5 percent annual decline).

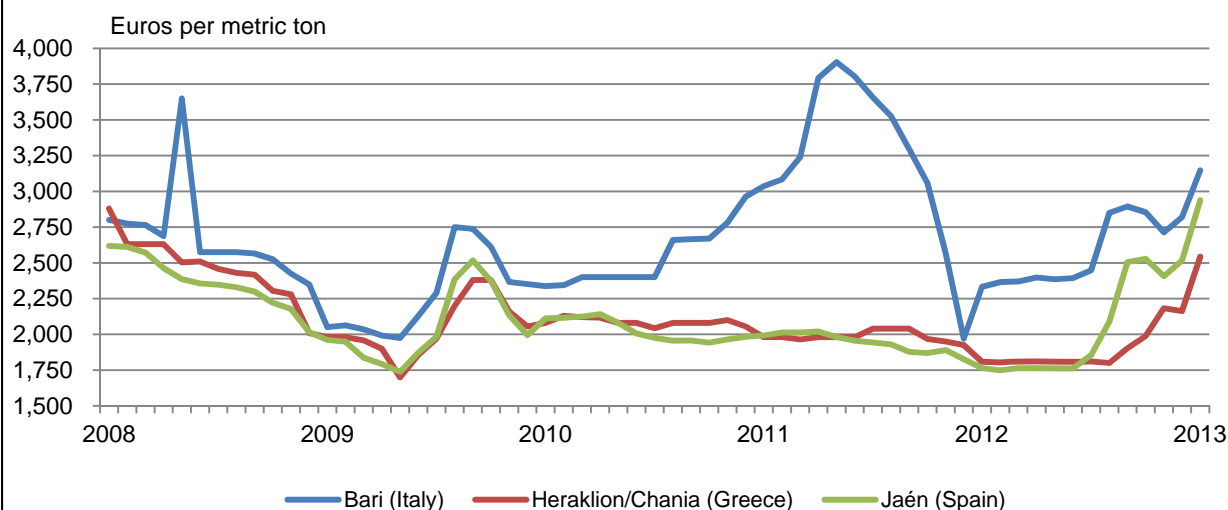
## BOX 2.2 International olive oil prices

Since the EU is the largest producer and exporter of olive oil, international prices are largely determined by demand and supply in the EU, particularly Spain (which accounted for almost one-half of global olive oil production in MY 2011/12).<sup>a</sup> Prices paid to producers for extra virgin olive oil are reported for the regions of Bari (Italy), Heraklion/Chania (Greece), and Jaén (Spain) (see figure below). These prices not only directly reflect about three-quarters of global olive oil supply, but also influence export prices in non-EU producing countries. Prices are largely determined by production, consumption, and stock levels in major markets.

Between 2008 and 2012, prices quoted in all three regions declined, dropping by 6.5 percent annually in Jaén, 3.7 percent in Heraklion/Chania, and 1.1 percent in Bari over this period. The overall drop in global price can be linked to the fact that world production growth outpaced consumption growth for most of this period. This trend was led by Spain, where between MY 2007/08 and MY 2011/12, production grew by an average of about 7 percent annually, while consumption rose just 1.5 percent annually. As a result, the ratio of inventories to consumption rose to almost 30 percent by MY 2011/12. The uptick in prices in the second half of 2012 was a response to the expectation of lower global production in MY 2012/13 following poor growing and harvesting conditions in Spain.

While the Jaén and Heraklion/Chania price series track each other very closely, the Bari price is more volatile and tends to diverge from the others, especially during price spikes in mid-2008 and mid-2011. According to EU industry representatives, one reason for the divergence is that the Bari price tends to be slightly disconnected from global prices, reflecting local supply/demand conditions. Accordingly, the rise in the Bari price beginning in late 2010 was in part the result of speculation about a possible poor MY 2010/11 harvest in Puglia and potential shortages. Prices then fell sharply once the crop was sold the following summer. Price divergence may also reflect quality and cost differences between the oils represented by the Bari and Jaén prices.

**Selected European extra virgin olive oil prices, 2008–13<sup>b</sup>**



<sup>a</sup> OLIVÆ, "The World Market in Figures," no. 117, 2012, 30.

<sup>b</sup> EC, DG Agriculture and Rural Development, "Commodity Price Monitoring" (accessed June 20, 2013).

Over time there has been a shift in the composition of olive oil trade, with virgin olive oil accounting for a higher share of world trade at the expense of refined olive oil (table 2.4).<sup>19</sup> Between 2000 and 2012, trade in virgin olive oil (HS 1509.10) increased by 10 percent annually by value, while refined olive oil (HS 1509.90) imports rose by about 4 percent. As a result, the share of world trade accounted for by virgin olive oil increased from roughly 70 percent to 80 percent. While trade data on extra virgin olive oil are not available because it is not broken out in the tariff schedule, growth in trade of virgin oils was driven largely by rapidly increasing consumer demand for high-quality extra virgin olive oils.

Imports are dominated by the EU, with most trade occurring among EU countries (table 2.5, figure 2.3). During 2008–12, the EU accounted for about 60 percent of global olive oil trade, in terms of both value and volume. About one-half of global trade was accounted for by intra-EU trade flows; in fact, about 90 percent of the olive oil imported by EU countries is sourced from other EU countries. Most EU olive oil imports not sourced within the EU are from the Mediterranean region, mainly Tunisia and Morocco. In addition to proximity to the EU market, several non-EU Mediterranean countries receive preferential access to the EU market (box 2.3).

Italy is by far the world's leading importing country, accounting for about one-third of global trade in olive oil over the past decade, supplied mostly by Spain and Greece. Italy's olive oil imports consist largely of bulk product, which is bottled in Italy and exported (see chapter 6). France, Germany, Portugal, and the United Kingdom were among the top 10 importing countries during 2008–12, supplied mostly by Italy and Spain. Imports by these countries have grown steadily over the past decade in response to increased domestic consumption, fueled by rising incomes and consumers' greater awareness of the positive attributes of the product.<sup>20</sup>

The United States is the world's second leading olive oil-importing country behind Italy (figure 2.4 and table 2.5). U.S. olive oil imports grew significantly starting in the early 1990s, although the pace of growth fell sharply during 2008–2012. Beginning in 2008, the volume of imports rose by about 6 percent annually, while import values fell almost 2 percent. This divergence can be explained by the 2008–12 drop in olive oil import unit values by an average of 7 percent annually for EU suppliers and 8 percent annually for non-EU suppliers, with unit values from all suppliers dropping by more than \$1,000 per mt over the period.<sup>21</sup> This follows the pattern of lower world prices discussed in box 2.2 above.

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<sup>19</sup> International tariff nomenclature is harmonized at the 6-digit level. Olive oil falls under two 6-digit codes—HS 1509.10 (olive oil and its fractions, virgin but not chemically modified) and HS 1509.90 (olive oil and its fractions, refined but not chemically modified). Because there is no separate code for extra virgin olive oil, trade in extra virgin olive oil falls under 1509.10.

<sup>20</sup> Datamonitor, *Study on the Promotion of Consumption of Olive Oil*, 2010.

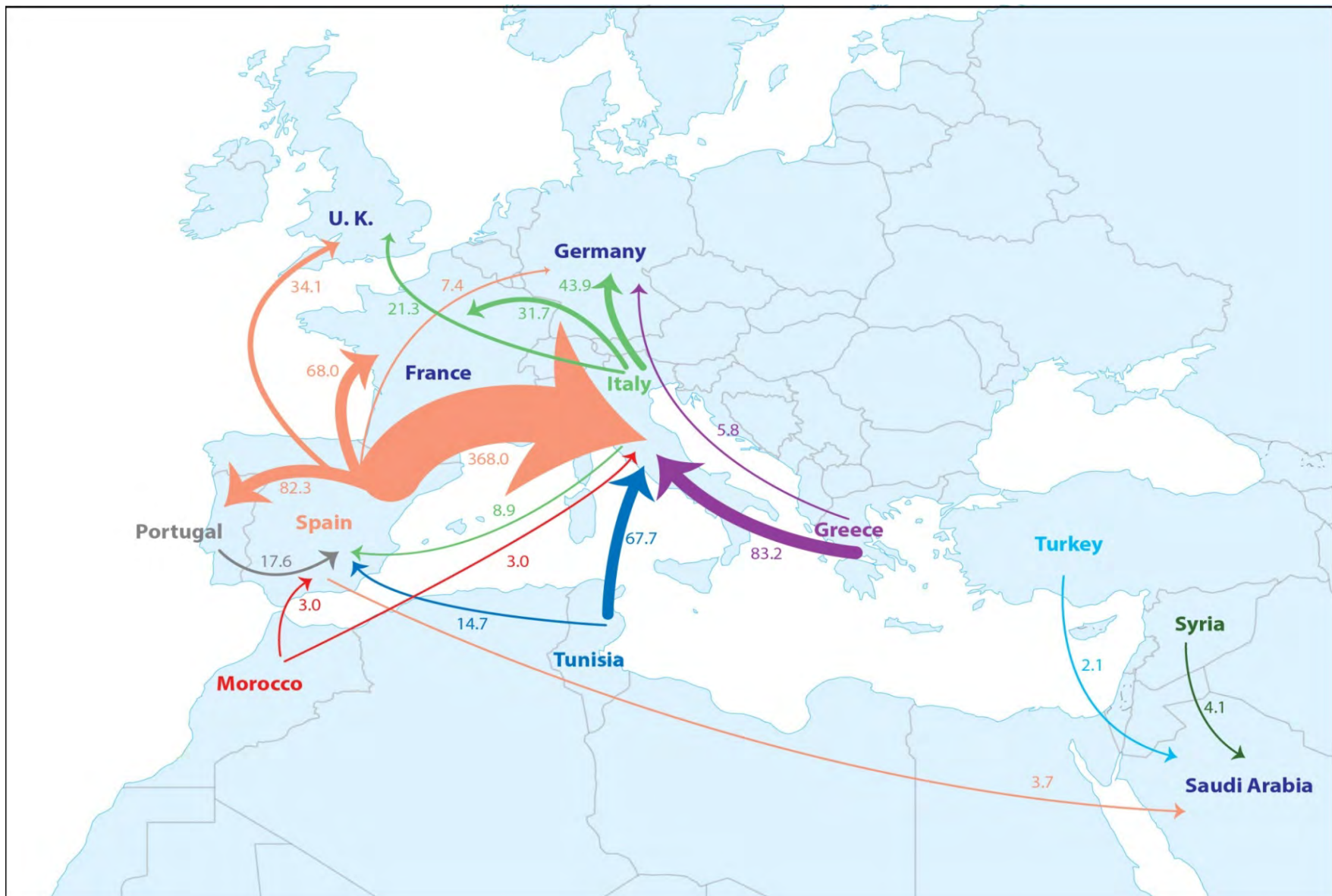
<sup>21</sup> Based on world import unit values for HS 1509. GTIS, Global Trade Atlas database (accessed June 19, 2013).

**TABLE 2.5** World: Imports of olive oil (HS1509), 2000, 2008–12 (includes intra-EU trade)

Country	2000	2008	2009	2010	2011	2012
Quantity (1,000 mt)						
Italy	415.7	492.8	470.0	569.0	584.2	559.5
United States	194.4	243.6	260.0	262.3	276.0	306.8
France	83.4	110.3	114.0	113.6	114.3	115.9
Portugal	38.8	76.3	70.5	83.8	87.9	100.6
Brazil	25.9	42.8	44.6	52.5	62.9	73.5
Spain	13.5	56.9	48.3	48.4	47.7	73.3
United Kingdom	43.7	61.0	58.0	62.5	64.7	66.1
Germany	34.4	53.6	60.1	62.1	65.8	65.2
Japan	27.3	29.6	33.1	39.7	36.3	46.4
China	0.2	10.2	12.5	21.3	32.8	41.3
Canada	24.2	32.8	31.0	38.1	39.7	40.1
Australia	27.0	23.7	30.7	36.2	29.5	33.4
All other	121.1	241.0	238.0	265.7	287.5	249.7
Total	1,049.7	1,474.6	1,471.0	1,655.1	1,729.2	1,771.9
Total EU	671.1	939.5	911.6	1,036.2	1,071.7	1,082.3
EU internal trade	564.0	788.7	815.0	952.7	994.0	975.2
EU external trade	107.8	150.8	96.6	83.5	77.7	107.1
Value (million \$)						
Italy	735.1	1,861.7	1,369.6	1,542.0	1,622.0	1,430.0
United States	413.4	1,006.5	879.8	868.6	925.2	938.5
France	176.0	467.2	408.3	384.1	418.9	373.6
Portugal	65.1	279.0	208.1	211.5	227.6	253.8
Brazil	74.5	231.2	210.4	231.6	286.3	311.7
Spain	25.8	204.5	126.2	116.5	119.8	140.9
United Kingdom	87.0	268.3	213.6	208.6	216.0	201.7
Germany	87.8	293.8	273.4	250.8	279.1	253.3
Japan	91.1	176.7	170.6	197.8	185.8	210.3
China	0.4	48.6	50.2	84.0	140.1	158.1
Canada	58.5	155.7	133.1	148.5	156.4	148.2
Australia	62.7	102.9	123.8	140.7	118.3	116.8
All other	293.3	1,068.3	930.7	1,007.3	1,104.7	896.5
Total	2,178.3	6,164.4	5,097.9	5,399.7	5,800.2	5,432.9
Total EU	1,284.5	3,802.5	2,953.5	3,085.9	3,291.8	3,016.3
EU internal trade	1,098.2	3,224.8	2,678.0	2,848.1	3,070.2	2,754.7
EU external trade	186.3	577.7	275.5	237.8	221.6	261.6

Source: GTIS, Global Trade Atlas database (accessed June 19, 2013).

**FIGURE 2.3** Olive oil: Major trade flows in the EU and Mediterranean region, 2008–12



Source: GTIS, Global Trade Atlas database (accessed June 10, 2013).

Note: Trade amounts are shown in thousands of metric tons.



**BOX 2.3 Trade preferences between the EU and Mediterranean countries**

In 2011, 95 percent of olive oil imports in the EU were from countries surrounding the Mediterranean, both from other EU countries, such as Spain, and from non-EU countries, such as Tunisia and Morocco. Trade between EU countries (e.g., imports into Italy from Spain) was duty free under the EU customs union. Imports of olive oil into the EU from other countries surrounding the Mediterranean (e.g., Tunisia and Morocco) were generally subject to preferential rates of duty under tariff-rate quota systems and other arrangements. These systems and arrangements had the general effect of permitting most Mediterranean-area olive oil to enter the EU duty-free.<sup>a</sup>

**Preferential tariff treatment<sup>b</sup>**

Duty rates of “free” are applied to imports of olive oil from Albania, Bosnia and Herzegovina, Kosovo, Montenegro, Serbia, Andorra, Croatia, Macedonia, and San Marino. Egypt, Israel, Jordan, and Lebanon all receive quota-free, duty-free treatment on refined olive oil (HS 1509.90). The EU has a free trade agreement with Chile in which Chilean olive oil enters the EU market without a duty. Preferential rates are also extended to Algeria and Turkey. Imports from six countries are subject to tariff-rate quotas, under which the in-quota rate is “free” and the over-quota rate is the most-favored nation (MFN) rate. In 2011, the quota amounts were as follows: Algeria, 1,000 mt (HS 1509 and 1510); Jordan, 12,000 mt (HS 1509.10); Lebanon, 1,000 mt (HS 1509.10 and 1510); Occupied Territory of Palestine, 3,000 mt (HS 1509.10); Tunisia, 56,700 mt (HS 1509.10); and Turkey, 100 mt (HS 1509.10). The quota administration varies by country. For example, the Tunisian quota is allocated on a monthly basis and the quantity also varies by the month. The quota for other countries, such as Jordan and Lebanon, is allocated on a first-come, first-served basis.

**The Inward Processing Arrangement**

Under the Inward Processing Arrangement (IPA), EU member countries may import olive oil from a non-EU source duty free, provided an equivalent amount, in terms of quantity and quality, of olive oil is re-exported after it has been processed in the EU.<sup>c</sup> Processing activities include blending with other oils and bottling. During 2009–11, about two-thirds of EU imports (excluding intra-EU trade) were imported under the IPA, mainly from Tunisia and Morocco, with most of the remainder qualifying for duty-free access.

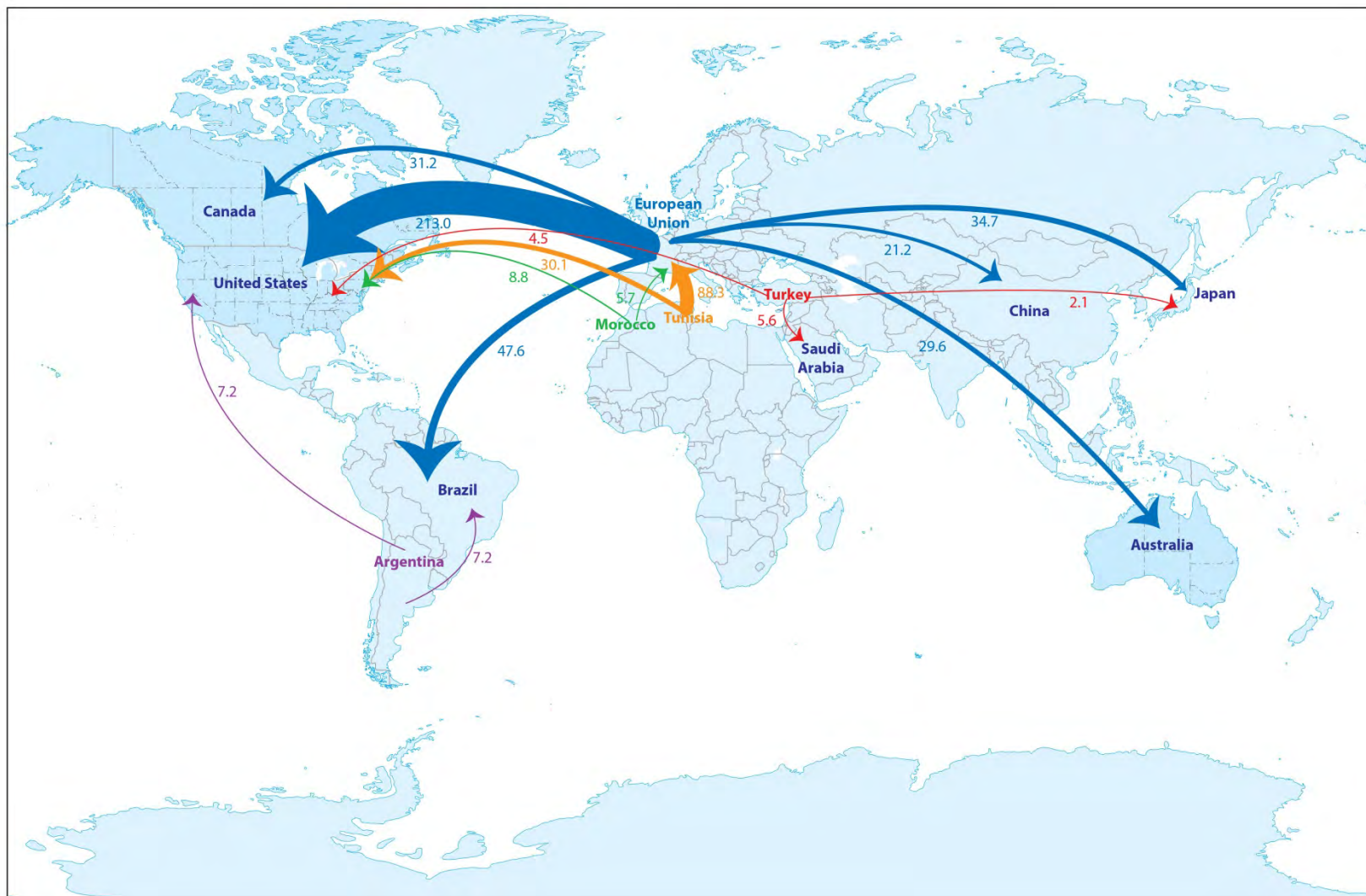
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<sup>a</sup> Anania and Pupo D’Andrea, “Olive Oil in the Mediterranean,” Winter 2011, 1–6.

<sup>b</sup> EC, COMTEXT database (accessed February 15, 2013); TARIC database (accessed February 15, 2013).

<sup>c</sup> Gil and Ben Kaabia, “Import Demand Analysis for Olive Oil,” 2004, 11.

**FIGURE 2.4** Olive oil: Major global trade flows, 2008–12



Source: GTIS Global Trade Atlas database (accessed June 10, 2013).

Note: Trade amounts are shown in thousands of metric tons. Intra-EU trade flows are not included.

In a written submission to the USITC, the American Olive Oil Producers Association (AOOPA) highlighted the role of exchange rates in determining prices on the U.S. market. It noted that a few years ago, the high value of the euro (which peaked at \$1.60 per euro in mid-2008) provided some limited protection for the domestic industry. Since then the euro has depreciated to around \$1.30, thereby lowering the price of EU olive oil when denominated in U.S. dollars.<sup>22</sup>

Since the early 1990s, Italy and Spain have been major suppliers of olive oil to the U.S. market (table 2.6). However, their share of U.S. imports has fallen over time; from a high of about 95 percent in 1990, it stabilized at around 80 percent during 2008–12. This is mostly because of the emergence of Tunisia, Morocco, Argentina, and Chile as suppliers to the U.S. market at the expense of Italy. An important recent trend is the growth of U.S. imports from Morocco, which rose from \$2 million in 2009 to \$61 million in 2011, largely driven by bulk imports for bottling in the United States.<sup>23</sup> The sharp drop in U.S. imports from Morocco in 2012 was a result of a weather-related drop in Moroccan production coupled with continued strong growth in domestic consumption in Morocco.<sup>24</sup>

Other trends can be observed in U.S. olive oil imports over time. For example, an increased share of U.S. imports is accounted for by virgin olive oil (table 2.7). In the early 1990s, the shares of virgin and refined olive oil imports were roughly 30 percent and 70 percent, respectively. By 2000, the shares were roughly even, and by 2012 imports of virgin olive oil were double those of refined. The trend toward higher imports of virgin olive oil reflects increased consumer awareness and stronger demand for higher-quality extra virgin olive oils in the U.S. market.<sup>25</sup>

There has also been a shift toward increasing quantities of U.S. imports of olive oil in bulk shipments instead of bottled. U.S. olive oil import data are broken out between bottled and bulk.<sup>26</sup> During the 1990s, less than 20 percent of imports were in bulk. However, starting in 2008, more and more imports consisted of bulk shipments, and by 2012, bulk shipments accounted for 38 percent of U.S. import volumes (32 percent by value). This near-doubling of bulk imports reflects increased capacity for olive oil bottling within the United States as companies have invested in U.S. bottling to improve just-in-time delivery capabilities, move quality control systems closer to the final consumer, and reduce shipping costs.<sup>27</sup>

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<sup>22</sup> American Olive Oil Producers Association, written submission to USITC, February 12, 2013, 26–27.

<sup>23</sup> Industry representative, interview by USITC staff, Maryland, December 20, 2012.

<sup>24</sup> Industry representative, interview by USITC staff, Meknes, Morocco, January 26–29, 2013.

<sup>25</sup> See chapter 4 for a detailed description of recent U.S. market trends in olive oil.

<sup>26</sup> The Harmonized Tariff Schedule of the United States (HTS) breaks out olive oil trade by size of container (specifically, whether the container holds more or less than 18 kilograms). Imports in containers less than 18 kg are considered to be in bottles ready for retail sale, while imports in containers over 18 kg are considered to be in bulk. Olive oil in bulk containers is either bottled for retail sale in the United States, or directly sold to the food service and ingredients sectors. In 2009, the food service and ingredients sectors reportedly accounted for about two-thirds of the olive oil consumed in North America. Datamonitor, *Study on the Promotion of Consumption of Olive Oil*, 2010, 23.

<sup>27</sup> Datamonitor, *Study on the Promotion of Consumption of Olive Oil*, 2010; industry representative, telephone interview by USITC staff, July 2, 2013.

**TABLE 2.6** Olive oil: U.S. imports by country (HS1509), 1990, 2000, and 2008–12

Country	1990	2000	2008	2009	2010	2011	2012
Quantity (1,000 mt)							
Italy	75.7	148.4	145.2	145.6	138.1	140.9	155.0
Spain	16.6	28.6	48.6	50.3	66.0	61.5	81.6
Tunisia	1.2	4.7	25.4	34.8	26.5	24.1	39.6
Morocco	0.0	0.1	2.9	0.6	11.4	23.7	5.4
Argentina	0.0	0.5	6.2	9.6	3.4	11.6	5.4
Chile	0.0	0.0	0.3	0.4	1.1	2.4	5.4
Greece	1.3	4.3	4.2	4.7	4.3	4.2	4.8
All other	1.9	7.9	11.1	14.5	12.7	10.0	9.7
Total	96.7	194.4	243.6	260.0	262.3	276.0	306.8
EU	95.1	183.2	200.4	202.3	210.4	208.7	243.3
Value (million \$)							
Italy	156.6	310.5	619.1	518.7	481.8	509.7	519.5
Spain	34.7	63.3	192.1	164.0	205.1	191.0	220.5
Tunisia	2.8	9.5	96.9	97.1	81.0	73.6	101.4
Morocco	0.1	0.1	9.6	2.0	27.9	61.0	14.7
Argentina	0.0	2.4	23.0	27.0	10.4	32.4	14.2
Chile	0.0	0.0	2.1	2.7	5.0	8.9	16.6
Greece	2.8	10.2	19.3	19.0	17.5	17.6	18.5
All other	4.1	17.4	46.4	52.0	45.0	39.9	32.9
Total	201.1	413.4	1,006.5	879.8	868.6	925.2	938.3
EU	197.7	388.8	840.2	707.9	712.1	726.0	766.0
Unit value (\$ per mt)							
Italy	2,069	2,092	4,264	3,563	3,489	3,617	3,352
Spain	2,090	2,213	3,953	3,260	3,108	3,106	2,703
Tunisia	2,333	2,021	3,815	2,790	3,057	3,054	2,561
Morocco	<sup>(a)</sup>	1,000	3,310	3,333	2,447	2,574	2,722
Argentina	<sup>(a)</sup>	4,800	3,710	2,813	3,059	2,793	2,630
Chile	<sup>(a)</sup>	<sup>(a)</sup>	7,000	6,750	4,545	3,708	3,074
Greece	2,154	2,372	4,595	4,043	4,070	4,190	3,426
All other	2,158	2,203	4,180	3,586	3,543	3,990	3,392
Total	2,080	2,127	4,132	3,384	3,311	3,352	3,059
EU	2,079	2,122	4,193	3,499	3,385	3,479	3,148

Source: GTIS, Global Trade Atlas database (accessed June 19, 2013).

<sup>a</sup>Not available.

**TABLE 2.7** Olive oil: U.S. imports by product, 1990, 2000, and 2008–12

Product	1990	2000	2008	2009	2010	2011	2012
Quantity (1,000 mt)							
Virgin							
Bottled <sup>a</sup>	20.9	75.2	121.1	126.9	122.4	127.9	137.1
Bulk <sup>b</sup>	7.8	17.6	47.6	52.7	58.8	61.3	67.6
Total	28.7	92.8	168.6	179.6	181.2	189.2	204.7
Other							
Bottled <sup>c</sup>	58.5	90.7	53.9	56.7	51.1	49.9	52.0
Bulk <sup>d</sup>	9.5	10.9	21.1	23.7	30.0	37.0	50.1
Total	67.9	101.6	75.0	80.4	81.1	86.9	102.1
Grand total	96.7	194.4	243.6	260.0	262.3	276.0	306.8
Value (million \$)							
Virgin							
Bottled <sup>a</sup>	46.2	171.4	549.6	482.6	460.2	496.7	491.3
Bulk <sup>b</sup>	17.1	40.5	184.2	161.4	179.4	184.2	182.6
Total	63.3	212.0	733.7	644.0	639.6	680.9	674.0
Other							
Bottled <sup>c</sup>	121.7	182.1	200.1	175.9	155.2	151.4	151.0
Bulk <sup>d</sup>	16.1	19.3	72.7	59.9	73.9	92.9	113.5
Total	137.8	201.5	272.7	235.8	229.0	244.3	264.5
Grand total	201.1	413.4	1,006.5	879.8	868.6	925.2	938.5
Unit value (\$ per mt)							
Virgin							
Bottled <sup>a</sup>	2,209	2,278	4,539	3,803	3,760	3,884	3,583
Bulk <sup>b</sup>	2,192	2,304	3,871	3,062	3,052	3,007	2,703
Total	2,205	2,283	4,351	3,586	3,530	3,600	3,292
Other							
Bottled <sup>c</sup>	2,081	2,008	3,715	3,101	3,037	3,037	2,901
Bulk <sup>d</sup>	1,701	1,779	3,441	2,525	2,458	2,511	2,268
Total	2,028	1,983	3,638	2,931	2,823	2,813	2,590
Grand total	2,081	2,127	4,131	3,383	3,311	3,352	3,059

Source: USITC, Dataweb (accessed June 19, 2013).

Note: 18 kg of olive oil converts to about 1.4 U.S. gallons.

<sup>a</sup>Virgin olive oil, not chemically modified, in containers under 18 kg (1509.10.20).

<sup>b</sup>Virgin olive oil, not chemically modified, in containers 18 kg or larger (1509.10.40).

<sup>c</sup>Non-virgin olive oil, not chemically modified, in containers under 18 kg (1509.90.20).

<sup>d</sup>Non-virgin olive oil, not chemically modified, in containers 18 kg or larger (1509.90.40).

Apart from the EU and United States, other major olive oil-importing countries are Brazil, Japan, Canada, China, and Australia (figure 2.4 and table 2.5). Brazilian imports grew about 15 percent annually between 2008 and 2012, with most sourced from Portugal and Argentina. While imports by Japan and Canada grew steadily during 2008–12, imports by China more than quadrupled over this time period, reaching \$158 million in 2012. In China, growth in olive oil consumption for home use and by hotels and restaurants has been considerable, driven by rising per capita incomes and greater awareness of the nutritional and health benefits of olive oil.<sup>28</sup>

<sup>28</sup> Lazzeri, “The Chinese Olive Oil Sector,” Winter 2011, 9.

## *Global Exports*

As noted earlier, most global olive oil exports are from countries bordering the Mediterranean (table 2.8). Spain is by far the world's leading exporting country, accounting for about half of global exports during 2008–12, with roughly three-quarters destined for the EU market (mostly Italy). Italy is the second leading global olive oil-exporting country. It has accounted for about 23 percent of global exports since 2008, of which close to one-third were sent to the United States. Other EU countries, mainly Greece and Portugal, together accounted for about 12 percent of global exports between 2008 and 2012.<sup>29</sup> Major markets for Greece are within the EU, while about one-half of Portuguese olive oil is sent to Brazil. The United States is not a target market for either country.

Outside the EU, Tunisia is by far the leading olive oil-exporting country, while Moroccan exports have been growing strongly from a low base. Tunisia accounted for as much as 11 percent of world exports by value in 2008, most destined for Italy and the United States. However, its exports dropped sharply during 2009–11, largely because of a fall in production associated with poor weather conditions.<sup>30</sup> Moroccan exports of olive oil rose more than 15-fold from 2008 to 2011, expanding from about 2,000 mt to 30,500 mt. Close to 60 percent of Moroccan exports are sent to the United States, with Italy and Spain as other important markets.<sup>31</sup> The growth in Moroccan exports resulted from increased production following three consecutive years of ideal weather conditions and government-supported private sector investment, including planting of high-yielding trees and wider use of advanced management practices (see chapter 7).<sup>32</sup> In addition, a commercial partnership established in 2009 between Pompeian Olive Oil Company, a U.S. blender, bottler, and marketer of olive oil, and Aïcha, a Moroccan olive oil producer, spurred the increase in exports to the United States.<sup>33</sup> As noted, owing to a shortfall in production, Moroccan exports dropped in 2012 to 11,600 mt and are expected to fall further in 2013.

The United States is a small exporter of olive oil. During 2008–12, U.S. olive oil exports averaged about \$23 million annually (or 7,000 mt). U.S. exports include domestically produced oil, but the majority of export shipments are transshipments and imported oil that is bottled and then re-exported.<sup>34</sup> While certain U.S. producers have begun using trade shows and marketing campaigns to increase awareness in and shipments to countries like Japan and China, most U.S. exports consist of bottled virgin olive oil sold to Canada and Central America.<sup>35</sup>

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<sup>29</sup> The EU has not used export refunds for olive oil surplus disposal since 1998.

<sup>30</sup> AOOPA, written submission to USITC, November 26, 2013, 47.

<sup>31</sup> GTIS, Global Trade Atlas database (June 19, 2013).

<sup>32</sup> Industry representative, interview by USITC staff, Meknes, Morocco, January 26–29, 2013.

<sup>33</sup> Industry representative, interview by USITC staff, Maryland, December 20, 2012; industry representative, interviews by USITC staff, Meknes, Morocco, January 26–28, 2013.

<sup>34</sup> AOOPA, written submission to USITC, November 26, 2012, 19.

<sup>35</sup> GTIS, Global Trade Atlas database (accessed June 19, 2013); industry representative, interviews by USITC staff, California, November 15, 2013.

**TABLE 2.8** World: Exports of olive oil (HS1509), 2000, 2008–12 (includes intra-EU trade)

Country	2000	2008	2009	2010	2011	2012
Quantity (1,000 mt)						
Spain	419.3	654.5	661.6	851.7	850.7	826.9
Italy	265.4	306.3	294.4	343.3	363.4	378.0
Tunisia	113.9	169.0	141.7	108.8	100.3	<sup>(a)</sup>
Greece	113.4	86.8	92.0	79.7	112.1	128.4
Portugal	19.6	40.4	43.4	54.2	76.7	96.4
Turkey	14.6	17.2	29.7	18.3	12.7	23.5
Syria	<sup>(a)</sup>	<sup>(a)</sup>	19.2	17.5	<sup>(a)</sup>	<sup>(a)</sup>
Argentina	6.2	15.6	19.0	12.0	22.2	15.7
Morocco	<sup>(a)</sup>	2.0	3.1	20.8	30.5	11.6
United States	5.4	6.4	5.4	5.7	7.3	9.3
France	3.6	5.0	5.0	5.7	6.2	6.4
Germany	0.7	3.5	4.6	6.1	5.9	5.0
Australia	0.3	4.1	6.8	5.5	6.6	3.3
All other	9.3	23.9	43.6	25.4	35.0	40.2
Total	971.7	1,334.8	1,369.3	1,554.7	1,629.7	1,542.9
Total EU-27	827.8	1,107.5	1,113.6	1,353.3	1,432.4	1,456.7
EU-27 internal trade	543.6	743.8	740.4	894.7	936.8	898.7
EU-27 external trade	284.2	363.7	373.2	458.6	495.6	558.0
Value (million \$)						
Spain	825.7	2,704.2	2,157.4	2,476.6	2,589.0	2,374.1
Italy	714.7	1,631.1	1,341.8	1,465.5	1,633.1	1,546.0
Tunisia	192.9	620.3	395.7	308.8	286.1	<sup>(a)</sup>
Greece	231.6	385.5	324.5	283.1	378.9	416.4
Portugal	54.4	207.4	189.9	215.1	290.1	339.3
Turkey	29.1	71.0	96.2	63.8	49.5	76.5
Syria	<sup>(a)</sup>	<sup>(a)</sup>	65.7	65.5	<sup>(a)</sup>	<sup>(a)</sup>
Argentina	23.1	64.5	62.6	42.9	69.9	49.5
Morocco	<sup>(a)</sup>	7.8	10.0	55.0	75.0	30.3
United States	6.2	23.1	18.9	19.1	24.9	30.1
France	13.0	44.3	36.2	35.9	40.3	38.9
Germany	2.3	21.9	23.7	26.3	29.3	22.7
Australia	0.6	18.3	29.7	21.8	22.7	14.9
All other	22.4	99.6	136.2	106.2	140.0	147.4
Total	2,115.9	5,898.8	4,888.6	5,183.3	5,628.9	5,085.7
Total EU-27	1,857.2	5,046.9	4,127.5	4,554.5	5,034.2	4,803.8
EU-27 internal trade	1,097.1	3,120.6	2,484.7	2,655.1	2,910.1	2,638.0
EU-27 external trade	759.6	1,926.2	1,642.7	1,899.4	2,124.1	2,165.8

Source: GTIS, Global Trade Atlas database (accessed June 19, 2013).

<sup>a</sup>Not available.

### *International Tariff Treatment for Olive Oil*

With the exception of the EU, global tariffs on olive oil are generally low, as indicated in table 2.9. Although World Trade Organization (WTO) bound tariffs are as high as 127.5 percent (Israel) among these countries, applied rates are 10 percent or less, with the exception of the EU. In 2011, duty rates of “free” were applied to imports into Australia, Canada, Japan, India, and Mexico. The United States imposes tariffs of \$34 per mt for imports of olive oil in bulk and \$50 per mt for bottled, translating into ad valorem

**TABLE 2.9** Olive oil: MFN applied and bound tariffs for major importing countries/regions, 2011 (percent)

Country <sup>a</sup>	HS 1509.10		HS 1509.90	
	Applied	Bound	Applied	Bound
United States <sup>b</sup>	1	1	1	1
EU-27 <sup>b</sup>	53–72	53–72	49	49
Australia	0	0	0	0
Brazil	10	35	10	35
Canada	0	0	0	0
China	10	10	10	10
Japan	0	0	0	0
India	7.5	45	7.5	40
Mexico	0	45	0	45
Israel	8	127.5	8	127.5
Russia	10	10	10	10
South Africa	10	81	10	81
Saudi Arabia	5	12	5	12
South Korea	8	27	8	27
Switzerland	0	0	0	0
United Arab Emirates	5	15	5	15

Source: WTO, *Consolidated Tariff Schedules database (CTS)*.

<sup>a</sup>Countries listed accounted for more than 96 percent of global imports in 2011.

<sup>b</sup>Ad valorem equivalent of specific tariffs, calculated using 2011 import unit values.

equivalent tariffs of about 1 percent. Only the EU imposes significant tariffs on olive oil, ranging between €1,226 per mt and €1,346 per mt (roughly \$1,650–\$1,800 per mt). While these tariffs represent ad valorem equivalent tariffs of close to 50 percent or more, the vast majority of EU imports are sourced either internally or under preferential trade arrangements with non-EU Mediterranean countries, such that only a negligible amount of imports are assessed the full MFN rates (see box 2.3). The United States does not receive preferential market access for olive oil and U.S. producers report that the high EU MFN tariff rates prohibit U.S. sales to the EU in years when supplies might be available for export.<sup>36</sup>

<sup>36</sup> Industry representative, interview by USITC staff, Washington, DC, June 26, 2013.



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# CHAPTER 3

## Olive Oil Standards and Enforcement

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### Overview

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In the United States, quality standards are intended to ensure that only acceptable-quality products are in the U.S. marketplace, support consumer satisfaction, encourage repeat purchases, and thereby increase sales for the good covered by the standard.<sup>1</sup> For olive oil, the benchmark for standards internationally is set by the International Olive Council (IOC).<sup>2</sup> The IOC's members account for the vast majority of global olive oil production, and its standards are intended to establish quality and purity levels for olive oil traded internationally. To do so, the standards provide classifications for distinct quality grades, prohibit olive oils containing other edible oils, and require that virgin olive oils be extracted only by mechanical processes (i.e., not by chemical means).

In recent years, a growing segment of the global olive oil industry has expressed concerns about current IOC standards for olive oil, particularly those for extra virgin. A principal concern is that the standard for extra virgin olive oil is too broad, thereby allowing a wide range of olive oil qualities to be classified as extra virgin. With increasing amounts of olive oil being produced outside the traditional Mediterranean growing region, the challenge is for standards to be broad enough to accommodate olive oils extracted from the diverse olive varieties grown worldwide, but at the same time narrow enough to protect against fraud and adulteration.<sup>3</sup> Tighter extra virgin standards would allow high-quality producers that can meet them, such as those in the United States, to further differentiate their product. At the same time, while official enforcement is necessary to guarantee compliance with standards, currently few governmental bodies provide such enforcement with sanctions for noncompliance. Many producers believe that broad and unenforced olive oil standards work to the advantage of unscrupulous producers and fail to benefit both high-quality producers and olive oil consumers.

### The Importance of Standards and Enforcement for Olive Oil Competitiveness

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For most agricultural products, grades and standards are important to producers because they provide a way to differentiate their products from those of competitors. Product differentiation involves highlighting product traits that consumers see as desirable and for which they are willing to pay extra. In the case of olive oil, standards include the “extra virgin” grade, which is generally understood by consumers to denote the highest-quality oil and thus allows them to differentiate among olive oil products. However, according to industry representatives, the current global standards for the extra virgin grade are so

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<sup>1</sup> USDA, AMS, “International Marketing.”

<sup>2</sup> The IOC, an intergovernmental organization created in 1959 under the auspices of the United Nations for the olive and olive oil sector is responsible for administering the International Agreement on Olive Oil and has established commercial grades for olive oil.

<sup>3</sup> IOC representative, interview by USITC staff, Madrid, Spain, January 21, 2013.

broad that olive oil currently marketed as “extra virgin” contains a wide range of qualities and sells at a wide range of prices.<sup>4</sup> In the United States, because of these wide differences in quality and price, even within the extra virgin grade, consumers find it difficult to tell what is truly high quality and what is good value. If extra virgin standards were tighter, producers that could meet them, such as U.S. producers of high-quality extra virgin olive oil, could further differentiate their products. U.S. producers believe that the high quality of U.S. olive oil will drive consumption of their product, much as it has for other commodities produced in California, if the product can be differentiated with the help of tighter standards.<sup>5</sup>

In addition to product differentiation, the establishment and enforcement of standards for agricultural products can help ensure the integrity of the label and authenticity of the product. In the case of olive oil, there is a long history of fraud (adulteration and mislabeling) in the sector.<sup>6</sup> In part this stems from the lack of enforcement of olive oil standards, leading to sales of olive oil labeled as “extra virgin” that does not meet the standards for that grade. Lack of standards enforcement has also allowed extra virgin oil blended with refined (“soft deodorized”) olive oil to be sold as extra virgin, and has allowed olive oil blended with seed oils to be sold as 100 percent olive oil.<sup>7</sup>

Recent studies and press reports support U.S. producers’ claim that some “extra virgin” oils purchased by U.S. consumers do not, in fact, meet the extra virgin grade criteria.<sup>8</sup> Such reports have been echoed in various other countries by both producer and consumer groups. U.S. producers and importers of olive oil both acknowledge the need for enforcement of standards in the United States. However, the two sides disagree on the extent to which noncompliant olive oils can be found in the market, the impact that those oils are having on competition in the U.S. market, and the type and frequency of testing that should be required to ensure compliance with standards.<sup>9</sup> The North American Olive Oil Association (NAOOA), an industry trade organization representing importers, maintains that random testing of supermarket samples shows that less than 2 percent of oils sold at retail have evidence of adulteration. Similarly, the IOC reports that less than 10 percent of the 200 oils it samples annually show any chemical anomalies that suggest

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<sup>4</sup> Industry representatives, interviews by USITC staff, California, November 13–15, 2012; industry representatives, interview by USITC staff, Madrid, Spain, January 21, 2013; industry representative, interview by USITC staff, Tuscany, Italy, February 4, 2013; industry representatives, telephone interview by USITC staff, February 15, 2013; Gustafson and Lybbert, “What’s Extra Virgin?” University of California, n.d. (accessed June 18, 2013).

<sup>5</sup> California olive oil producers specifically attributed the growth in U.S. pistachio production and consumption to the industry’s focus on high quality, which is enforced by U.S. mandatory grade standards. USITC hearing transcript, December 5, 2012, 116 (testimony of Gregg Kelley, California Olive Ranch). U.S. producers also mentioned grapes, almonds, walnuts, and tomatoes as specialty Mediterranean crops produced in California that have become globally competitive through a focus on high quality. USITC hearing transcript, December 5, 2012, 17 (testimony of Gregg Kelley, California Olive Ranch); USITC hearing transcript, December 5, 2012, 54 (testimony of Adam Englehardt, California Olive Ranch).

<sup>6</sup> USITC hearing transcript, December 5, 2012, 119 (testimony of Tom Mueller, Author); Moore, Spink, and Lipp, “Development and Application of a Database of Food Ingredient Fraud,” 2012, 118–26; Mueller, “Slippery Business,” August 13, 2007.

<sup>7</sup> Soft deodorized olive oil is produced through a process of “soft-column deodorization” which involves allowing the oil to react to steam at a temperature of 230–40 degrees Celsius to eliminate off flavors and odors. Olive oils treated with this process are considered refined and therefore do not meet the standard for the extra virgin and virgin grades.

<sup>8</sup> Chen, “Forget the IRS,” May 17, 2013; Aubrey, “U.S. Olive Oil Makers,” December 6, 2012; Frankel et al., “Report: Tests Indicate,” July 2010.

<sup>9</sup> NAOOA, written submission to the USITC, February 12, 2013, 3; AOOPA, written submission to the USITC, November 28, 2012, 4.

mislabeling of an oil's appropriate grade.<sup>10</sup> On the other hand, an analysis by the University of California, Davis, concluded that 73 percent of samples from the top-selling brands failed sensory tests (e.g., taste and aroma) for extra virgin olive oil and that 28 percent of samples failed at least one IOC chemical test for extra virgin olive oil.<sup>11</sup>

Key to any discussion of olive oil standards and enforcement is identifying the reasons why extra virgin olive oils may fail chemical and sensory tests. While considerable work is ongoing, olive oil testing is not yet foolproof in this area.<sup>12</sup> It is widely agreed that olive oil adulteration with seed oils has become a less significant problem globally and in the U.S. market, likely attributable to lower olive oil prices relative to prices of common adulterant seed oils.<sup>13</sup> Mislabeling, however, is more of a problem, and U.S. industry representatives report that there are currently two main enforcement challenges in the U.S. market: detecting old and/or rancid oils that do not meet the extra virgin standard (an issue of quality), and detecting oils labeled extra virgin that are actually adulterated with soft deodorized oil (an issue of purity).<sup>14</sup> The quality issue is particularly problematic. According to U.S. industry representatives, it is not clear if the olive oils labeled extra virgin that fail IOC extra virgin tests were intentionally mislabeled at the time of production, or whether they met the chemical tests at the time of bottling but subsequently degraded in transit or on retail shelves (box 3.1).<sup>15</sup>

## Olive Oil Standards

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Creating universal and internationally accepted grade standards for olive oil is difficult because the chemical composition of olive oil varies naturally, based on olive variety and country of origin. The challenge is to create standards that are broad enough to accommodate the naturally occurring chemical differences in regional olive varieties, yet are narrow enough to protect against fraud and adulteration.

### *Chemical and Sensory Testing Criteria*

There are two methods of testing whether olive oil meets the standards for specific grades: chemical and sensory ("organoleptic"). It is generally recognized in the industry that no single chemical test can determine the grade of an olive oil. Rather, the levels of several chemical compounds must be measured and, for extra virgin and virgin, the results must be confirmed by sensory analysis. Testing is complicated by olive oil's natural perishability, which results in changes in chemical composition over time. Some chemical tests measure levels of certain chemical compounds related to quality, while others measure purity (box 3.2). Sensory testing is deemed necessary to determine extra

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<sup>10</sup> NAOOA, "Frequently Asked Questions on Recent Olive Oil News," February 2012; *Olive Oil Times*, "IOC Weighs in on Davis Study," n.d. (accessed June 18, 2013).

<sup>11</sup> Frankel et al., *Evaluation of Extra-Virgin Olive Oil*, April 2011.

<sup>12</sup> Industry representative, telephone interview by USITC staff, February 5, 2013.

<sup>13</sup> Industry representative, interview by USITC staff, Puglia, Italy, February 4, 2013; USITC, hearing transcript, December 5, 2012, 171 (testimony of Dr. Rodney Mailer, Charles Sturt University); industry representative, interview by USITC staff, Rome, Italy, February 1, 2013; industry representative, telephone interview by USITC staff, February 5, 2013. Estimates are that less than 10 percent of olive oil is adulterated with other seed oils. Industry representative, telephone interview by USITC staff, February 5, 2013.

<sup>14</sup> Industry representative, telephone interview by USITC staff, February 5, 2013.

<sup>15</sup> Ibid.

### BOX 3.1 Olive oil perishability and quality

Many U.S. consumers, including distributors and marketers, fail to realize how perishable olive oil is. Olives and olive oil begin degrading from the time of the olive harvest as heat, light, and oxygen speed up the enzymatic breakdown of the olives and the oil, creating rancidity. Thus the shelf life and quality of olive oil depends on various factors throughout the production and distribution chain. The olive variety, method of harvest, condition of harvested olive, time from harvesting to milling, type of milling/extraction system, and length and type of olive oil storage all affect both the olive oil's quality and its shelf life.<sup>a</sup> Because olive oil is so perishable, its quality is further determined by the methods used in the bottling, handling, and distribution stages. For example, millers and bottlers may top off olive oil storage tanks as well as individual bottles with nitrogen to slow oxidization.<sup>b</sup> Metal tins or tinted glass bottles also aid in shielding the oil from oxygen and light.<sup>c</sup>

The shelf life and freshness of an olive oil are typically signaled to consumers through a "best before" date on the label, although this is not mandatory for U.S. olive oil labels. From a producer's perspective, an ideal shelf-life designation adequately reflects the freshness of the oil when bottled, but also is long enough to cover the time the oil spends in transit and sitting on a retail shelf. Until recently, shelf life for olive oil was generally accepted as approximately two years. However, some industry representatives now note that whether any extra virgin olive oil will remain fresh and continue to meet the extra virgin standard for two years depends on a number of factors, particularly the olive variety used, the quality of the oil at bottling, and storage and handling conditions throughout production and distribution. Some in the industry favor shorter time frames for "best before" dates to ensure that the consumer buys a quality product, or advocate including a harvest date on the label to give the consumer more information about freshness.<sup>d</sup> Some producers are conducting research on appropriate "best before" dates for specific oils, but most agree that more needs to be done.<sup>e</sup>

Most in the industry agree on the need for a "best before" date, even though this is difficult to mandate and there is disagreement about how to calculate it. Bottlers tend to favor a requirement for a "best before" date based on the bottling date, because they do not produce the oil and may not be able to vouch for a harvest date. Some large bottlers would also like to see the rest of the distribution chain be more responsible in handling their olive oil products and take responsibility for olive oil that has degraded throughout the distribution chain and on retail shelves.<sup>f</sup>

<sup>a</sup> Industry representatives, interviews by USITC staff, Tuscany and Puglia, Italy, January–February 2013.

<sup>b</sup> Industry representatives, interviews by USITC staff, Andalusia, Spain, January 23–24, 2013.

<sup>c</sup> Polyethylene terephthalate (PET) plastic bottles, although popular for packaging in the United States, are more porous than glass and may be less effective at protecting olive oil from light and oxygen. Industry representative, interview by USITC staff, Andalusia, Spain, January 24, 2013.

<sup>d</sup> Industry representative, interview by USITC staff, Madrid, Spain, January, 22, 2012.

<sup>e</sup> Industry representative, interview by USITC staff, Andalusia, Spain, January 24, 2013.

<sup>f</sup> Industry representative, interview by USITC staff, Madrid, Spain, January 22, 2013.

### BOX 3.2 Olive oil chemistry

Certain chemical criteria, such as levels of peroxide, free fatty acids (FFAs), and ultraviolet (UV) absorbency, have traditionally been recognized as crude indicators of olive oil quality by indicating the extent to which the oil has degraded at the time of testing.<sup>a</sup> FFA and peroxide levels rise when enzymes in the olive and olive oil break down from exposure to heat, light, and oxygen over three oxidation phases. Neither free fatty acids nor peroxide are discernible by human senses, but both are a prelude to rancidity. At the same time, these tests are not definitive indicators of age: both new and older oils can have high FFA levels, and peroxide levels can rise and then fall over time during the oil's secondary oxidation phase. For this reason, UV absorbance values, which rise during secondary oxidation, are a better indicator of age. In addition, testing for levels of other chemical compounds, such as linoleic acid and campesterol, can indicate olive oil purity by detecting possible adulteration with refined olive oil or seed oils, which have different chemical structures than olive oil.<sup>b</sup>

<sup>a</sup> Olive Oil Times, "Olive Oil Analysis Discussed," May 7, 2012.

<sup>b</sup> Mailer, "Chemistry and Quality of Olive Oil," August 2006.

virgin status, which requires the oil to have no sensory defects and to manifest at least some positive olive fruitiness, bitterness, or pungency. Trained tasters can sense defects in the oil that go undetected by chemical means, and which can be described by terms such as “winey-vinegary,” “musty,” “fusty,” and “rancid” (box 3.3).

### **BOX 3.3** Olive oil sensory testing

IOC grading standards require that extra virgin olive oil be free of sensory defects and have some positive sensory attributes, traits which, to date, can only be judged by a tasting panel. Therefore the IOC requires sensory, or panel, testing to assess oil as being virgin or extra virgin grade. With this method, a panel of human evaluators record their sensory responses to the products being tested. Statistical analysis is then employed to generate inferences and insights regarding the product.<sup>a</sup> An olive oil that meets all chemical standards for the extra virgin grade can still fail to make the grade if a certified sensory panel finds that the positive sensory attributes are absent and/or a defect is present.

The IOC provides written sensory evaluation standards for olive oil, including definitions of sensory properties and defects and a point system for assigning grades or classifications; it also prescribes methods of panel training and certifies laboratories evaluating olive oil. In a panel test, a group of 8 to 12 trained panel testers taste and evaluate the olive oils in testing rooms. The IOC recommends that a maximum of four olive oil samples be evaluated in each session, with a maximum of three sessions per day, per tester, to avoid tasting fatigue. In addition, palates should be cleansed between samples and a minimum of 15 minutes should elapse between sessions.

Given these time requirements and the time and cost needed to train a panel tester, sensory panel testing can be a bottleneck, especially in view of the vast amount of virgin and extra virgin olive oil that is globally traded and marketed. The Organizzazione Nazionale Assaggiatori Olio de Oliva (Italy’s national association of olive oil testers) reports that there currently are not enough trained olive oil panelists worldwide.<sup>b</sup> The number of active panels necessary to test the globally available volume of extra virgin olive oil has been estimated at 1,000,<sup>c</sup> yet in Spain, the largest single-country producer of olive oil, there were only 13 IOC-accredited sensory panels in 2013.<sup>d</sup>

While many premium producers argue that sensory testing is necessary in order to identify oils that are low quality but can still pass chemical tests, the NAOOA says that sensory panel testing brings with it problems of its own, including the subjectivity of panel testers and a potential lack of harmonization among panels.<sup>e</sup> In the EU, official testing allows for some subjectivity in panel testing in that if an extra virgin sample fails one panel test, it can be sent to a “referee panel” for a second opinion.<sup>f</sup> According to NAOOA, the Organizzazione Nazionale Assaggiatori Olio de Oliva reports that “in roughly 25 percent of the cases in Spain the panels do not agree.”<sup>g</sup> Because of these drawbacks, global industry is researching ways to identify chemical markers in extra virgin olive oil that match official sensory terms.<sup>h</sup> If such methods were found and accepted by all industry players, it would relieve the uncertainty surrounding sensory panel testing for extra virgin olive oil.

<sup>a</sup> ASTM, “Sensory Evaluation Methods.” (accessed June 18, 2013).

<sup>b</sup> Industry representative, interview by USITC staff, Tuscany, Italy, January 30, 2013.

<sup>c</sup> Industry representative, telephone interview by USITC staff, February 5, 2013.

<sup>d</sup> IOC, “List of Laboratories,” December 2012.

<sup>e</sup> NAOOA, written submission to the USITC, February 12, 2013, 5; industry representatives, interviews by USITC staff, Puglia, Italy, February 4, 2013.

<sup>f</sup> Industry representative, interview by USITC staff, Maryland, December 20, 2012.

<sup>g</sup> NAOOA, written submission to the USITC, February 12, 2013, 4.

<sup>h</sup> USITC, hearing transcript, December 5, 2012, 109–11 (testimony of Dr. Selina C. Wang, UC Davis).

The parameters for key chemical compounds for extra virgin olive oil set by various standard-setting bodies are presented below (table 3.1). Differences in current standards tend to involve acceptable levels of free fatty acids (linolenic, linoleic, oleic acid, and others), which can indicate oil quality; of sterols (particularly campesterol), which can indicate the presence of seed oil; and of alkyl esters, pyropheophytins (PPP), and 1,2-diacylglycerol (DAG), which may indicate that olive oil is old or has been produced

**TABLE 3.1** Primary biochemical parameters for extra virgin grade olive oil in international standards

		IOC	Codex	EU	USDA	California Olive Oil Council	North American Olive Oil Association	Australian Olive Association
Free fatty acid	A crude indicator of quality based on the hydrolytic breakdown of fatty acid chains.	≤ 0.8%	≤ 0.8%	≤ 0.8%	≤ 0.8%	≤ 0.5%	≤ 0.8%	≤ 0.8%
Peroxide value (PV)	A crude indicator of the amount of oxidation that has taken place in the oil.	≤ 20	≤ 20	≤ 20	≤ 20	≤ 20	≤ 20	< 20
UV coefficients (K232)	A more delicate indicator of oxidation, particularly of that caused by heat in the refining process. Measuring oil's UV light absorbancy indicates the quantity of certain oxidized compounds that resonate at certain wavelengths.	≤ 2.5	≤ 2.5	≤ 2.5	≤ 2.5	≤ 2.5	≤ 2.5	≤ 2.5
Alkyl ester	Elevated levels can indicate oil made from fermented olives or adulterated with refined olive oil.	75 mg <sup>a</sup>	na	75 mg	na	na	na	na
Linolenic acid	Elevated levels can indicate adulteration with vegetable oil.	≤ 1.0	na	≤ 1.0	≤ 1.5	na	na	≤ 1.5
Campesterol	Elevated levels can indicate adulteration with vegetable or refined olive oil.	≤ 4.5 <sup>b</sup>	≤ 4.0	≤ 4.0	≤ 4.5	na	na	≤ 4.8
Pyropheophytins (PPP)	Elevated levels of PPP can indicate oxidation or adulteration with refined olive oil.	na	na	na	na	na	na	≤ 17
Diacylglycerols (DAG)	Reduced levels of 1,2 DAG can indicate oxidation or adulteration with refined olive oil.	na	na	na	na	na	na	≥ 35

Source: Devarenne and Vossen, *Understanding the USDA Olive Oil Standards*, September 2010; Codex Alimentarius, *Standard for Olive Oils and Olive Pomace Oils*, 2009; Mailer, *A World Tour of Olive Oil Standards*, n.d; California Olive Council, "The Certification Process."; IOC, "Nota de Prensa," May 27, 2013.

<sup>a</sup>In May 2013, the IOC adopted new parameters for alkyl esters in the extra virgin standard. Beginning in October 2013, the current 75 mg/kg limit for alkyl esters will be replaced by a limit of 40 mg/kg for ethyl esters only in MY 2013/14, then to 35 mg/kg in MY 2014/15, and 30 mg/kg in MY 2015/16.

<sup>b</sup>In May 2013, the IOC adopted a new upper limit for campesterol of 4.5 in the extra virgin standard. For oils that contain more than 4 percent but less than 4.5 campesterol, additional tests are required.



from poor-quality olives, or that extra virgin oil has been blended with soft deodorized olive oil.

### ***International Standard Setting***

Several international bodies are involved with standards for olive oil. Some bodies set limits on biochemical compounds for various grades of olive oil, others approve scientific methods for determining their levels, and some do both. The IOC, the Codex Alimentarius Commission (Codex),<sup>16</sup> the European Commission, and many national governments set standards which specify limits on certain key biochemical compounds in olive oil for grading purposes. The American Oil Chemists Society, the IOC, the International Standards Organization (ISO), the Association of Analytical Communities International, and the European Committee for Standardization are involved in developing and setting methods for analyzing olive oil composition.

The IOC, an intergovernmental organization created in 1959 under the auspices of the United Nations for the olive and olive oil sector (see chapter 2, box 2.1), is responsible for administering the International Agreement on Olive Oil and has established commercial grades for olive oil. IOC standards have traditionally been the benchmark for olive oil standards throughout the world, because until recently nearly all olive oil was produced in IOC-member countries. For example, the Codex olive oil standards are closely aligned with those of the IOC. In addition, some national olive oil standards are based on the IOC standards and/or the Codex standards with or without modifications (see table 3.1). These countries include the United States, where the U.S. Department of Agriculture (USDA) revised its standards for olive oil in 2010. USDA standards for olive oil closely match those of the IOC, even though the United States is not an IOC member (box 3.4).<sup>17</sup> Following the revision of the USDA standards, U.S. producers have advocated for certain other core tests for extra virgin.<sup>18</sup> Often in reaction to perceived shortcomings of national grading standards, olive oil producer industry organizations in various countries have devised their own (in some cases more stringent) industry standards, particularly for extra virgin olive oil (see table 3.1).

## **Debate Over International Standards**

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In recent years, considerable attention has been given to the standards used for grading olive oil, mostly focused on IOC standards for extra virgin olive oil. There appears to be an overall consensus within the global industry that the current IOC standards for extra

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<sup>16</sup> Codex is a United Nations organization through which member countries, including the United States, formulate and harmonize international food standards.

<sup>17</sup> The revised USDA olive oil grade standards include the same requirements as the IOC standard except for slightly higher limits for linolenic acid and campesterol to account for domestic variation from the IOC limits. Also, the IOC definition for “ordinary olive oil” is not included in the U.S. standards because of its limited recognition and unpalatability. For this reason, the revised U.S. grade standards involve eight grades instead of nine. 75 Fed. Reg. 22363 (April 28, 2010).

<sup>18</sup> U.S. producers advocate for the core tests for extra virgin to be free fatty acids (FFA), peroxides value (PV), UV coefficients (UV), panel test (PAT), pyropheophytins (PPP), and diacylglycerols (DAGs). Except for the PPP and DAGs, all of these tests are currently required by the IOC standard. For refined olive oils and their blends, they would be free fatty acids, peroxides value, UV coefficients, fatty acid profile (FAP), sterols (STE), and erythrodil and uvaol (E+U). AOOPA, written submission to the USITC, February 12, 2013, 15.

#### **BOX 3.4 U.S. participation in the IOC**

Membership in the IOC requires official government participation because it obligates the member country to adopt and enforce the International Agreement on Olive Oil, an international treaty. Members must also fund the organization, provide it with statistical data, and incorporate its norms and standards into national laws. The United States is not a member of the IOC, but it has observer status, which allows it to follow the technical work undertaken in the IOC committees. The U.S. government states that for both policy and financial reasons it does not wish to become a member of the IOC.<sup>a</sup>

One issue is the standards developed by the IOC for grading olive oil. The United States views these standards as not representative of all global olive oil production due to the IOC's weighted voting structure, which, according to U.S. government officials, keeps the IOC from currently being recognized as a standards-setting body by the World Trade Organization (WTO).<sup>b</sup> Instead, the U.S. government is working to adopt olive oil standards through Codex, which the WTO does recognize as an official standards-setting body.

At the same time, the U.S. stance on membership in the IOC is related to broader U.S. government policy on U.S. membership in international commodity organizations. According to U.S. government officials, the U.S. government would like to curb U.S. membership in such groups; indeed, the trend over the last decade has been for the U.S. government to withdraw from them. The U.S. Congress has recently pressed the Department of State further, via legislation, in this regard. The joint explanatory statement (H. Rept. 112-331) accompanying the Department of State, Foreign Operations, and Related Programs Appropriations Act, 2012 (Div. I, Public Law 112-74) requests that the Department of State "conduct a review of United States membership in each international organization supported by the Contributions to International Organizations account and prioritize United States participation in, and funding for, each organization in accordance with United States policy goals."<sup>c</sup>

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<sup>a</sup> U.S. Department of State and U.S. Department of Agriculture officials, email to USITC staff, May 1, 2013.

<sup>b</sup> Ibid.

<sup>c</sup> Ibid.

virgin olive oil permit a wide range of oil qualities to qualify as extra virgin. For example, the IOC benchmark standard sets a limit on FFA of 0.8 percent and on PV of 20 to qualify as extra virgin, even though many producers and purchasers (both in and outside the IOC) concede that, considering olive oil's perishability, the threshold for both FFA and PV values should be lower. Producers point out that it is not difficult to produce olive oil with an FFA level lower than 0.5 percent, and many will not market a product with a PV higher than 12.<sup>19</sup> Because the extra virgin standards are so broad, they are not useful for differentiating high-quality and low-quality extra virgin olive oils in the global market. As a result, consumers are not clear as to the characteristics of high-quality extra virgin olive oil, which undermines the competitiveness of high-quality producers, both globally and in the U.S. market.<sup>20</sup>

IOC extra virgin standards have led to a divide among producers, between those producing high-quality oils that surpass the IOC standards by large margins and therefore wish to see the IOC standards tightened, and those that market extra virgin olive oils whose chemical compound levels only mirror the current extra virgin thresholds and therefore view the IOC standards as satisfactory. Those favoring the status quo have developed production systems and pricing strategies in response to the current standards.

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<sup>19</sup> Industry representatives, interviews by USITC staff, California, November 13, 2012; industry representatives, interviews by USITC staff, Washington, DC, April 9, 2013; industry representative, interview by USITC staff, Madrid, Spain, January 21, 2013; industry representatives, interviews by USITC staff, Meknes, Morocco, January 27, 2013; industry representatives, interviews by USITC staff, Puglia, Italy, February 4, 2013.

<sup>20</sup> Industry representative, interview by USITC staff, Puglia, Italy, February 5, 2013; industry representative, interview by USITC staff, Andalusia, Spain, January 23, 2013; USITC, hearing transcript, December 5, 2012, 28 (testimony of Bruce Golino, Santa Cruz Olive Tree Nursery).

Also, some large bottling companies that market mild-flavored extra virgin olive oil with chemical traits close to the threshold recognize that the current IOC extra virgin standard is broad,<sup>21</sup> but insist that global trade in olive oil would be disrupted by unharmonized standards and argue that any changes to standards be done through the IOC. On the other hand, producers of higher-quality oils argue that tighter standards would increase consumption, particularly in the U.S. market, by reducing consumer confusion.<sup>22</sup>

There is also a debate within the industry over how to measure the quality and purity of extra virgin olive oil.<sup>23</sup> The chemical tests included in the IOC standards that measure quality are not definitive in determining the age of an olive oil, which can be an indicator of freshness. Olive oil producers in the United States and Australia report frustration over the IOC's reluctance to consider what they view as the most advanced chemical tests available for this purpose.<sup>24</sup> Regarding purity, there is currently no agreement about which chemical compounds best detect adulteration, such as the presence of soft deodorized oil in extra virgin olive oil.<sup>25</sup> IOC representatives maintain that the tests and other methods proposed to date are inadequate for detecting olive oil impurities and that more research is needed.<sup>26</sup>

## ***IOC Membership***

The standards debate is complicated by the fact that IOC standards impact trade worldwide, yet are established only by members of the IOC, which is largely made up of major olive oil-producing countries.<sup>27</sup> Thus nonmembers, including major olive oil-consuming countries and New World oil-producing countries, have little or no say in how standards are set. And, despite its 17-country membership, the IOC agenda is largely set by EU countries with large production and exports, particularly Spain and Italy.<sup>28</sup> Reportedly, large multinational olive oil blenders/bottlers in those countries have been particularly active in influencing the activities of the organization through their official EU representatives.<sup>29</sup> Although in recent years the IOC has acknowledged the importance of balancing the needs of olive oil producers all over the world as well as the needs of olive oil-consuming countries, its institutional structure remains the same.

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<sup>21</sup> Industry representatives, interviews by USITC staff, Andalusia, Spain, January 23, 2013.

<sup>22</sup> USITC hearing transcript, December 5, 2012, 115 (testimony of Gregg Kelley, California Olive Ranch); industry representatives, interviews by USITC staff, California, November 13–15, 2012.

<sup>23</sup> USITC, hearing transcript, December 5, 2012, 28–31 (testimony of Bruce Golino, Santa Cruz Olive Tree Nursery).

<sup>24</sup> AOOPA, written submission to the USITC, December 12, 2012, 14; USITC, hearing transcript, December 5, 155–57 (testimony of Dr. Rodney Mailer, Charles Sturt University).

<sup>25</sup> Industry representative, telephone interview by USITC staff, May 28, 2013.

<sup>26</sup> IOC representative, interview by USITC staff, Madrid, Spain, January 21, 2013. As part of its continuing efforts in this regard, an international olive oil seminar jointly organized by the European Commission's Directorate-General for Agriculture and the Joint Research Centre (located in Geel, Belgium) with the IOC was held in June 2013. Representatives from the U.S. Department of Agriculture, UC-Davis Olive Center, and American Oil Chemists' Society participated in the workshop. The seminar focused on "the evaluation of the quality parameters of edible olive oils as well as their traceability and authentication" and resulted in the creation of "terms of reference" for an international research project, open to EU Member States and any international cooperation, on olive oil authentication to be launched by early 2014. EC, "Scientific Workshop on Olive Oil Authentication (Madrid, 10-11 June 2013)," n.d (accessed July 25, 2013).

<sup>27</sup> EU countries are members of the IOC through EU membership. This EU membership comprises several producing countries (e.g., Spain, Italy, Greece, and France) but also nonproducing, primarily consuming countries (e.g., Germany and England).

<sup>28</sup> Industry representative, phone interview by USITC staff, February 5, 2013; USITC, hearing transcript, December 5, 2012, 30 (testimony of Bruce Golino, Santa Cruz Olive Tree Nursery).

<sup>29</sup> Vivante, "Tests Find Higher Alkyl Ester Levels in Supermarket Olive Oils," n. d. (accessed June 18, 2013).

The IOC institutional framework allows standards to evolve over time to reflect changing science and the needs of its members. However, because changes to standards are normally adopted by consensus, they evolve slowly.<sup>30</sup> As noted in chapter 2, if consensus cannot be reached on an issue, IOC rules allow a vote to be taken through a system of shares allocated to members. In order to adopt new measures, both a majority of members and 82 percent of participation shares, which are divided among members based on a formula that takes into account average oil production and exports, must vote in favor. This structure gives the EU the vast majority of the shares for approvals. The IOC's bureaucratic nature and the small voice allotted to non- or small-producing countries have driven the olive oil industries in other countries to develop their own olive oil standards, such as the recent Australian standards (see box 3.5 and chapter 8) and the efforts of U.S. producers, described below.<sup>31</sup>

## ***Evolution of IOC Standards***

Several recent issues highlight the ongoing debate over chemical standards and methods of testing for olive oil. At the heart of several of these debates are producers' strategies for differentiating their products in terms of quality to more effectively compete in the marketplace. Two debates over specific tests and testing procedures highlight the different views. For example, there have been differences of opinion between producers of premium and lower-quality extra virgin oil on new methods for detecting adulterated and/or rancid olive oil (DAG/PPP) and for strengthening the extra virgin standard (alkyl esters). Another issue, regarding the limit for campesterol, involves New World producers achieving recognition of regional differences in their extra virgin olive oil. Most recent changes to IOC standards in May 2013 included changes to the limits on alkyl esters and campesterol in extra virgin olive oil.

### **DAG/PPP**

Two chemical tests for olive oil, one measuring levels of pyropheophytins (PPP) and the other measuring levels of 1,2-diacylglycerol (DAG), were recently developed as part of the ongoing effort to test for olive oil freshness, quality, and authenticity.<sup>32</sup> Australian and U.S. industry representatives believe that, in addition to UV absorption, these tests are strong indicators of olive oil age, poor storage conditions, and adulteration with deodorized olive oil, as well as oil made from deteriorated fruit.<sup>33</sup> For example, these tests have been endorsed by the American Oil Chemists' Society, which reports that testing for PPP helps analysts detect thermally treated olive oils and estimate the age of

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<sup>30</sup> IOC representative, interview by USITC staff, Madrid, Spain, January 21, 2013.

<sup>31</sup> USITC, hearing transcript, December 5, 2012, 150–54 (testimony of Mr. Leandro Ravetti, Boundary Bend, Ltd.); USITC, hearing transcript, December 5, 2012, 49 (testimony of Bruce Golino, Santa Cruz Olive Tree Nursery); industry representative, telephone interview by USITC staff, February 5, 2013.

<sup>32</sup> The PPP test measures the degree to which chlorophylls in the olive oil have degraded to pyropheophytin, which deteriorates at a predictable pace. Such degradation is sped up by even short periods at high temperatures—such as those present during the deodorizing or soft-column refining process—making it a useful indicator of the presence of deodorized olive oil as well as of the age of an oil, according to proponents. The DAG test measures the proportion of two forms of diacylglycerol (DAG): 1,2 and 1,3. In good-quality fresh oil, the prevalent form of DAG is the 1,2 form, where the fatty acids are bonded to a glycerol molecule in the 1 and 2 positions. However, the bond on the 2 position is weak and easily broken, leading to the migration of that 2-position fatty acid to the 3 position. This results in the much more stable 1,3 DAG. According to proponents of the DAG test, the ratio of 1,2 DAG to the total DAG is a good indicator of the quality of the original olive fruit and the processing as well as an indicator of the age of an oil, since the migration from 1,2 to 1,3 DAG takes place naturally as oil ages. Devarenne, “Olive Oil Analysis,” May 7, 2012.

<sup>33</sup> Devarenne, “Olive Oil Analysis,” May 7, 2012.

the oil, while the DAG test indicates the presence of 1,2-diglycerides, a characteristic of fresh olive oil.<sup>34</sup> In addition, researchers at the University of California, Davis, Olive Center showed a direct correlation between sensory findings and results for PPP and DAG in the supermarket oils they tested.<sup>35</sup>

In spite of these findings, DAG and PPP tests have not been adopted by the IOC in chemical standards for extra virgin olive oil,<sup>36</sup> and Australia is the only country to require olive oil to undergo PPP and DAG tests to meet its national voluntary standards (box 3.5). DAG and PPP tests were initially proposed in the IOC chemical committee in 2005/06 and again in 2008, but consideration of the tests never moved past the testing stage of the initial IOC chemical working group. The working group concluded that the PPP and DAG tests may be useful for measuring the freshness of an oil, but not its quality or purity. The group also stated that when the test was used to determine extra virgin status, it was found to contradict the results of the other chemical and sensory tests in the current standard.<sup>37</sup> While the IOC debates the usefulness of these tests, U.S. olive oil producers are working with other like-minded global producers to institute DAG and PPP tests as acceptable testing methods for olive oil standards.<sup>38</sup>

## Alkyl Esters

High levels of alkyl esters in extra virgin olive oil have been found to indicate poor-quality olives or extra virgin oils blended with soft deodorized oils.<sup>39</sup> In November 2009, the IOC recognized the usefulness of this criterion in finding fraud via an addition to its grading standards: a limit on total alkyl esters in virgin olive oils of 75 milligrams per kilogram (mg/kg). The EU followed in 2011 by adopting the IOC limit. This new EU limit sparked a debate within the EU over the appropriate level of alkyl esters in extra virgin olive oil.<sup>40</sup> At the time, EU producers of high-quality extra virgin olive oil stated that the EU limit was far too high and should be lowered to 25 mg/kg or 50 mg/kg, while producers in Spain argued for a 100 mg/kg limit.<sup>41</sup> In response to Italian industry concerns about the global image of its olive oil quality, in 2012, the Italian government

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<sup>34</sup> Gertz, "Keynote Presentation," May 18, 2008.

<sup>35</sup> Frankel et al., *Report*, July 2010.

<sup>36</sup> According to the IOC, a "nonfresh" older oil can still be of high quality, while a brand-new oil may not be high quality, so using these tests would not be appropriate for a mandatory standard. In addition, any measurement of freshness (parameters on PPP and DAG levels) would vary by the olive variety. The IOC states that the alkyl esters test, which is part of the current IOC standard, serves a function similar to that of the DAG and PPP tests. The IOC chemical committee determined that the research presented did show that the DAG and PPP tests could be a measure of purity, not quality, if test results were presented as a ratio of triglycerides to diglycerides. In fact, global olive oil companies have begun to use these tests to measure the quality of olive oil for internal purposes, but do not support it at the IOC as part of a mandatory standard for final products. Industry representative, interview by USITC staff, Tuscany, Italy, January 2013; IOC representative, interview by USITC staff, Madrid, Spain, January 21, 2013.

<sup>37</sup> IOC representative, interview by USITC staff, Madrid, Spain, January 21, 2013.

<sup>38</sup> AOOPA, written submission to the USITC, December 12, 2012, 18. In addition to conventional methods for measuring DAG and PPP levels, research into the design of a simple and quick quality control system for detecting quality, authenticity, origin, and age based on near-infrared (NIR) technology is ongoing. Gertz, "Rapid Assessment of Quality Parameters," June 2013. This method is currently being used in internal testing by some olive oil producing firms, including in the United States. Industry representatives, interview by USITC staff, Washington, DC, June 26, 2013.

<sup>39</sup> Pérez-Camino et al., "Alkyl Esters," August 13, 2008; Gómez-Coca, et al., "Fatty Acid," December 2012.

<sup>40</sup> IOC representative, interview by USITC staff, Madrid, Spain, January 21, 2013.

<sup>41</sup> Industry representatives, interviews by USITC staff, Puglia, Italy, February 4–5, 2013; Vivante, "Tests Find Higher Alkyl Ester Levels," n.d. (accessed June 18, 2013).

### BOX 3.5 Australian standards

In an effort to address the elements of international olive oil grading standards that it felt were inadequate, the Australian Olive Association developed its own set of standards for domestic olive oil in 2005. The main purpose of these standards, known as the Code of Practice (COP), is to educate consumers and enhance the products and production processes of Australian-produced olive oil.<sup>a</sup> The essence of the COP standards was adopted in July 2011 by Standards Australia, an independent, nongovernmental Australian standards organization, with the goal of providing a scientifically based, consumer-oriented Australian standard.<sup>b</sup>

There are several key components that distinguish the Australian standards from other grading standards. They use many of the same chemical tests as the IOC standard to identify adulterated oil and test quality. However, Australian producers note that the IOC's chemical limits were established using data from European oils and do not take into account variations that stem from the different varieties and growing conditions found outside of Europe and North Africa. The producers argue that this situation prevents many high-quality oils from New World producers from qualifying for IOC quality standards.<sup>c</sup> The chemical parameters of the Australian standard address these differences, allowing for natural variations in some areas and stricter standards in others, particularly campesterol and linolenic acid.<sup>d</sup> The standard also requires both the DAG and PPP chemical tests. The standard is also distinguished by its provision for randomly testing bottles of olive oil taken off retail shelves, rather than at production facilities, in order to capture the degradation that naturally occurs over time. This deterioration is exacerbated by heat and UV exposure throughout the distribution chain.

Other elements of the Australian standard are designed to give the consumer more information. A "best before" date on the bottle's label is required and cannot exceed two years from the bottling date. The standard's chemical limits are set at minimum levels, with the understanding that olive oil would be produced at a much higher quality but would still be able to meet these minimum standards near the end of its shelf life. Finally, the standard also bans the use of terms on labels which it deems misleading, such as "Premium," "Super," "Light," or "Pure," to provide consumers more clarity about the contents of the product.<sup>e</sup>

Currently the Australian standard is voluntary. However, Australian producer signatories that are found to be out of compliance may have action taken against them by the Australian Competition and Consumer Commission, another nongovernmental body.<sup>f</sup> There is currently no government regulation enforcing the standards, although there is support from Australian producers and some retailers to potentially codify a standard into Australian law in the future.<sup>g</sup>

<sup>a</sup> AOA, "Code of Practice" (accessed March 14, 2013).

<sup>b</sup> Industry representative, email to USITC staff, March 13, 2013.

<sup>c</sup> USITC, hearing transcript, December 5, 2012, 148–54 (testimony of Leandro Ravetti, Boundary Bend Limited); Ravetti, written submission to the USITC, November 29, 2012.

<sup>d</sup> Industry representative, email to USITC staff, February 4, 2013.

<sup>e</sup> Standards Australia, "Olive Oils and Olive-Pomace Oils," July 20, 2011, 16

<sup>f</sup> Industry representative, email to USITC staff, February 4, 2013; Standards Australia, "About us."

<sup>g</sup> USITC, hearing transcript, December 6, 2012, 202 (testimony of Leandro Ravetti, Boundary Bend Limited).

mandated a national limit of 35 mg/kg of alkyl esters for olive oil produced in Italy.<sup>42</sup> In May 2013, the members of the IOC agreed to replace the limit for total alkyl esters with a limit on ethyl esters only in a staged process. Alkyl esters in olive oil include fatty acid methyl esters as well as fatty acid ethyl esters. Beginning in October 2013, the maximum level for ethyl esters will fall from the current 75 mg/kg to 40 mg/kg in 2013/14, then to 35 mg/kg in 2014/15, and finally to 30 mg/kg in 2015/16.<sup>43</sup>

<sup>42</sup> Butler, "Unaprol President Urges European Commission to Lower Alkyl Ester Limits," January 8, 2012. Italian government officials, interview by USITC staff, Rome, Italy, February 1, 2013. Bungaro, "Olio: le novità introdotte dalla nuova legge anti contraffazione" [Oil: new law combating counterfeiting], n.d.

<sup>43</sup> IOC, "Nota de Prensa" [press release], May 27, 2013. The new limit on ethyl esters, along with several other changes to chemical limits for olive oil, was adopted by the IOC in May 2013 in an effort to combat fraud and adulteration in olive oil. IOC representative, email communication with USITC staff, July 4, 2013.

## Campesterol

Campesterol is a naturally occurring plant sterol in olive oil. Efforts have been made by Australia and Argentina, with support from the United States, to change the current parameters in the Codex standards for extra virgin olive oil. The current Codex standards set an upper limit for campesterol in extra virgin olive oil of 4 percent. Proponents of this limit contend that a larger value can indicate the addition of seed oils or refined oils (like sunflower, soy, canola, or cottonseed). However, some global producers, including those in the United States and Australia, have found that extra virgin olive oil produced in certain countries, particularly those outside the Mediterranean, tend to have naturally occurring campesterol levels greater than 4 percent.<sup>44</sup> Producers of extra virgin olive oils with elevated campesterol levels have also noted that owing to the sterol's likely beneficial properties of balancing cholesterol levels in the human body, this type of extra virgin olive oil should not be disqualified from the extra virgin category by the restrictive parameters for campesterol in the current standard, and that the need for a way to detect adulterated oil can be met by adjusting several other chemical parameters in the standard.<sup>45</sup>

In 2011, the Australian government proposed raising the campesterol limit for extra virgin olive oil in the Codex standards to 4.8 percent.<sup>46</sup> The proposal was supported by the United States and other similarly affected, non-Mediterranean producers of olive oil, but was opposed by EU member countries and the IOC.<sup>47</sup> According to U.S. industry sources, at that time the IOC argued that raising the level would allow more fraudulent olive oil in the global market.<sup>48</sup> Australia's response to this concern was to propose lowering the standard on stigmasterol in olive oil from 3.9 percent to 1.9 percent, a change it believed would effectively protect against olive oil fraud.

In May 2013, the IOC adopted a new upper limit for campesterol of 4.5 percent in its standards for extra virgin olive oil, with additional limits on other chemical tests for extra virgin olive oil with campesterol levels between 4 and 4.5 percent.<sup>49</sup> The IOC rationale for this and other changes made to the standards at that time was "to intensify the fight against fraud and adulteration."<sup>50</sup> U.S. industry representatives called the change a step in the right direction, but noted that the new IOC campesterol standard still excludes a large share of olive oils produced outside the Mediterranean region from the extra virgin category.<sup>51</sup>

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<sup>44</sup> In an examination of global olive oils by the Australian government with the assistance of the governments of the United States and New Zealand, over 800 samples from Australia, 60 samples from the United States, over 400 samples from Argentina, and some olive oils from the EU were found to have campesterol levels greater than 4 percent. Government of Australia, "Discussion Paper on the Revision of the Limit for Campesterol," November 2012; AOOPA, written submission to the USITC, February 12, 2013, 30.

<sup>45</sup> AOOPA, written submission to the USITC, February 12, 2013, 31.

<sup>46</sup> USDA, FSIS, "Draft U.S. Positions for the 23rd Session," n.d.

<sup>47</sup> USDA, FSIS, "Report of the U.S. Delegate," April 19, 2011.

<sup>48</sup> AOOPA, written submission to the USITC, February 12, 2013, 31.

<sup>49</sup> The new campesterol limit allows any virgin or extra virgin olive oil which contains more than 4 percent but less than 4.5 percent campesterol to be recognized as virgin or extra virgin olive oil as long as it has a stigmasterol content of less than 1.4 percent, a delta-7-stigmastasterol content of less than 0.3 percent, and complies with the other extra virgin or virgin parameters. IOC representative, email communication to USITC staff, July 4, 2013.

<sup>50</sup> IOC representative, email communication to USITC staff, July 4, 2013.

<sup>51</sup> Industry representatives, interview by USITC staff, Washington, DC, June 26, 2013.

## Effectiveness of Standards

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Even well-crafted standards can lose their effectiveness without enforcement. However, despite the proliferation of olive oil standards at the international and national governmental levels, there are few governmental bodies that provide mandatory enforcement of grading standards with sanctions for noncompliance. As a result, a very small share of total global olive oil production is actually officially tested.<sup>52</sup> While the IOC gives support to members and nonmembers for maintaining standards, such as providing expertise and certification and training programs for testing, it does not have enforcement powers.<sup>53</sup> Lack of enforced regulation may provide an opportunity and incentive for fraudulent behavior by some firms, as described above. The EU and Canada are two economies that do have official government enforcement regimes in place for olive oil.

Standards enforcement involves olive oil testing, which can be done at production facilities, at points of consumption (e.g., retail outlets), or both. Olive oil testing at the point of production can be motivated by several factors: business contracts covering purchases of olive oil to be used as raw material for blending; official government requirements for compliance with standards (in limited cases); and the desire to use test results for marketing purposes (e.g., for quality seals). Enforcement of olive oil standards at the point of consumption is generally motivated by a desire to ensure that consumers purchase the grade and type of olive oil that is specified on the label.

### *Internal Testing by Private Companies*

Olive oil producers test olive oil at various stages of the production process. Producers may test the fruit before olives are milled; often, if they employ contract growers, the purpose is to determine oil content and olive quality for payment to growers. In some cases, producers may test the olives to help mill operators fine-tune the milling process in order to enhance the quality attributes of the milled oil. Oil may again be tested after milling and before storing; after blending oils of separate milled batches; and at the point of bottling. Bottlers/blenders that contract for milled oil may test supplies of olive oil raw material at the point of entry into their bottling plant. Producers of bottled product, both large and small, generally test for the final time at the point of bottling.<sup>54</sup>

Most large olive oil producers and bottlers maintain quality control systems to ensure authenticity and the desired grade in their products.<sup>55</sup> Contractual commercial arrangements motivate much olive oil testing, as growers and millers need to be sure of the quality of olives received before paying for them, and bottling/blending companies must ensure that olive oil deliveries meet the specifications contracted. Blending/bottling operations test their blended oils to ensure they meet internal benchmarks, including predetermined flavor profiles and overall consistency. Once bottled, olive oil is tested to ensure that food safety and minimum quality standards are met for proper labeling. In some cases, retail buyers require such tests as a condition of purchase, to ensure both

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<sup>52</sup> Industry representative, telephone interview by USITC staff, February 5, 2013; industry representative, interview by USITC staff, Puglia, Italy, February 4, 2013.

<sup>53</sup> IOC representative, interview by USITC staff, Madrid, Spain, January 21, 2013.

<sup>54</sup> Industry representative, interview by USITC staff, Maryland, December 20, 2012.

<sup>55</sup> NAOOA, written submission to the USITC, February 12, 2013, 2.



quality and traceability back to the original oil supplier.<sup>56</sup> Some producers may further test to qualify their oil for a certification program which permits the use of a quality seal on the label. Some producers also conduct checks at the end of the distribution chain by contracting with independent auditors who pull shelf samples from retail stores for testing.<sup>57</sup>

## *Official Testing*

As mentioned above, official government enforcement regimes for olive oil exist in only a few countries. In the EU, grading standards for olive oil are codified into law, and official testing of olive oil production is mandatory for both domestically marketed products and products for export.<sup>58</sup> However, EU regulations require testing only for a very small share of EU production. Newly adopted regulations in the EU require one official chemical test per 1,000 mt, or 0.1 percent, of olive oil marketed in the EU.<sup>59</sup>

Approaches for testing differ from country to country. The Spanish government's system of inspection for exports is conducted by SOIVRE (the Spanish Office of Export Surveillance, Certification, and Regulation). Physical inspections are conducted through risk-based analysis; the Spanish government reported that about 11 percent of exports are chemically tested in this program.<sup>60</sup> In 2012 there were a total of 770 inspections conducted by Spanish regional governments and 23 percent were found to be noncompliant.<sup>61</sup> In Italy, inspection is carried out by the law enforcement unit of the Carabinieri tasked with combating food fraud. The Carabinieri use traditional law enforcement techniques, sanitary inspections, and lab testing to uncover fraud in the olive oil sector.<sup>62</sup> In Italy, the recently passed Mangiello law (October 2012) mandates tighter olive oil quality standards, more extensive testing, and significantly increased penalties for oil fraud (see page 6-33).<sup>63</sup>

The Canadian Food and Inspection Agency (CFIA) has a program to detect and reduce the occurrence of adulterated olive oil in Canada. Through the CFIA's Fair Labeling Practices program, product labels and industry controls are assessed to ensure that olive oil products meet labeling requirements, and product samples are analyzed to check for adulteration with other oils and to verify that CFIA's standards for virgin and extra virgin olive oil are met. In this program, inspectors send 80–100 samples for analysis annually, and they often target products that are the subject of consumer or trade complaints of alleged adulteration. CFIA reports that the percentage of noncompliant samples fell from 47 percent in 2006–07 to 11 percent in 2009–10.<sup>64</sup> Since that time noncompliant samples rose to just over 30 percent in 2010–11 and 2012–13.<sup>65</sup>

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<sup>56</sup> Industry representative, telephone interview by USITC staff, March 18, 2013.

<sup>57</sup> Industry representative, interview by USITC staff, Maryland, December 20, 2012.

<sup>58</sup> EC official, email to USITC staff, June 28, 2013.

<sup>59</sup> EC official, interview by USITC staff, Brussels, Belgium, February 26, 2013.

<sup>60</sup> Government of Spain, "Export of Olive Oil Inspection Type," data sheet provided to USITC staff, Madrid, Spain, January 25, 2013.

<sup>61</sup> Of the noncompliant samples, 47.5 percent related to quality and purity, 32.7 percent related to labeling, 4 percent related to traceability, and 15.7 were related to other violations. Izquierdo, "Frauds in Olive Oil Sector in Spain," June 2013.

<sup>62</sup> Italian government official, interview by USITC staff, Rome, Italy, February 1, 2013.

<sup>63</sup> Industry representative, interview by USITC staff, Puglia, Italy, February 4, 2013.

<sup>64</sup> Sheridan, "Surveillance and Analysis of Olive Oil in Canada," 2007; Devarenne, "Olive Oil Analysis Discussed," May 7, 2012.

<sup>65</sup> Sheridan et al., "Olive Oil Authenticity: A Canadian Perspective," June 2013.

When a product is found to be adulterated, inspectors may expand the sampling to other olive oil brands and products carried by the same importer, or to products coming from the same broker or country of origin as the adulterated sample. Inspectors may also target products because they are new in the marketplace, they seem unreasonably inexpensive, the importer or producer has a history of noncompliance, or a drought or other environmental factor may have affected products from certain countries.<sup>66</sup> When a company is found to be selling or distributing a misrepresented product, appropriate enforcement action, up to and including prosecution, may be taken. Under the CFIA program for olive oil, \$250,000 in fines have been levied and more than \$500,000 worth of olive oil has been ordered disposed since 2007.<sup>67</sup>

Under the enforcement regimes in Spain and Italy, testing takes place at the point of bottling or export, while the Canadian regime involves testing retail bottles. Testing at bottling may guarantee that an oil qualifies for the extra virgin grade at that point, but does not ensure that the oil will remain extra virgin at the end of its shelf life. Bottlers question their role in ensuring the quality of the product once it has left their facilities. They prefer a scheme in which a bottle of olive oil found to be unsatisfactory by a customer is replaced by the manufacturer or its cost is refunded if proper proof of purchase is provided, a common practice for many grocery retailers.<sup>68</sup> A more consumer-oriented scheme, however, such as the official retail testing that occurs in Canada, involves testing oil from bottles on retail shelves. This type of testing scheme takes into account the perishability of olive oil and its vulnerability to deterioration while it is in storage, being distributed, and on retail shelves.

## **Efforts to Strengthen Standards and Enforcement in the U.S. Market**

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Mechanisms in the U.S. market to ensure olive oil quality are voluntary and not officially enforced. In the U.S. market, USDA standards define olive oil and olive pomace oil by delineating chemical and sensory parameters for each of the grades, but provide no mechanism for enforcement and no penalties for noncompliance. In addition, the USDA maintains a Quality Monitoring Program—a voluntary testing and quality seal program—for a variety of commodities, including olive oil (box 3.6). Since 1989, NAOOA has carried out random testing of olive oil authenticity and chemical compliance with the grade level after it became a party to the IOC's quality monitoring agreement.<sup>69</sup> Through this program, NAOOA tests olive oil it buys in U.S. supermarkets and contacts individual manufacturers and often U.S. authorities when anomalies are found, but the organization itself has no enforcement authority.<sup>70</sup>

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<sup>66</sup> Canadian government official, email to USITC staff, December 5, 2012.

<sup>67</sup> Sheridan et al., "Olive Oil Authenticity: A Canadian Perspective," June 2013.

<sup>68</sup> Industry representatives, interviews by USITC staff, Andalusia, Spain, January 23–24, 2013.

<sup>69</sup> The IOC quality monitoring agreement was established in 1989 for industry trade organizations to participate in IOC activities, such as quality monitoring, without formal country membership. Current signatories to the IOC quality monitoring agreement include, among others, industry trade organizations in the United States, Australia, and Brazil. Industry representative, telephone interview by USITC staff, August 5, 2013. NAOOA, "Quality" (accessed June 18, 2013).

<sup>70</sup> The NAOOA has tested 900 samples in the past five years, representing more than 700 companies and 800 brands. The NAOOA will often alert the FDA when anomalies are found. NAOOA, written submission to the USITC, December 5, 2012.

### **BOX 3.6** Quality Monitoring Program

The USDA Quality Monitoring Program (QMP), which evaluates a range of commodities including canned, frozen, and certain fresh fruits and vegetables, was expanded to include extra virgin and organic extra virgin olive oil in April 2012. The program is a voluntary, user-fee-based service that gives firms objective third-party assessments of product quality. The QMP for olive oil is overseen by the USDA's Agricultural Marketing Service (AMS) and verifies olive oil quality and purity on a monthly basis. For firms that join the QMP, the program uses criteria based on the U.S. grade standards and international standards for olive oil. The QMP assessment also includes unannounced plant visits to review production processes, quality assurance measures, and recordkeeping systems.<sup>a</sup> Once approved by the program, companies can market their products using an official USDA seal on product labels to indicate their participation.<sup>b</sup>

QMP verifies the quality and purity of olive oil through chemical and sensory testing of samples at a firm's bottling plant for the product lines the firm has designated for the program. Samples are sent to the AMS lab in Blakely, GA, with results available in 10 days to 2 weeks. While chemical and sensory (panel) testing is done on the samples, no referee panel is available to give a second opinion on sensory test results.<sup>c</sup> The program's costs of approximately \$5,000 per month are covered entirely by the firm and include the AMS inspection and lab fees. Chemical and sensory test costs range from \$2,000 to \$2,500 per lot for four samples, although a firm could see lab costs per unit decrease if it places larger volumes of oil in the program.<sup>d</sup> The remainder of the cost covers inspectors' time in and travel to the firm's facility. In addition, program checks are performance driven; the frequency of checks is reduced as samples are found to comply, which could decrease the cost of the program over time. Pompeian, Inc.—headquartered in Baltimore, Maryland—was the first manufacturer to participate in USDA's QMP for olive oil.<sup>e</sup>

<sup>a</sup> Parrott, "Quality Monitoring Program Expands to Olive Oil," April 3, 2012.

<sup>b</sup> USDA, AMS, "Grading, Certification and Verification," (accessed June 18, 2013).

<sup>c</sup> U.S. government official, interview by USITC staff, Washington, DC, November 8, 2012.

<sup>d</sup> U.S. government official, interview by USITC staff, Washington, DC, November 8, 2012. It is estimated that a full battery of 22 chemical and sensory tests might cost as much as \$7,000 per lot, and since this cost is prohibitive, the QMP does not do the full battery. NAOOA, written submission to the USITC, December 17, 2013, 57.

<sup>e</sup> Parrott, "Quality Monitoring Program Expands to Olive Oil," April 3, 2012; industry representative, interview by USITC staff, Maryland, December 20, 2012.

In recent years, efforts have been underway to strengthen olive oil standards in the United States and to address the lack of enforcement. The states of California, Oregon, New York, and Connecticut have legal standards in place defining "extra virgin" olive oil which match those of the IOC, but without formal mechanisms to enforce them.<sup>71</sup> U.S. olive oil producers and importers have pursued separate strategies to make olive oil standards enforcement a reality in the United States. Most notably, U.S. producers are considering a U.S. marketing order from the USDA for olive oil, while importers are proposing a U.S. Food and Drug Administration (FDA) standard of identity for olive oil, each with the potential for official U.S. government enforcement authority (see discussion below). Most recently, the NAOOA brought legal action against a firm it found to be noncompliant with standards for olive oil.<sup>72</sup>

### ***Potential U.S. Federal Marketing Order***

In recent years U.S. olive oil producers have expressed interest in initiating a federal marketing order for olive oil in order to ensure the integrity of olive oil labeled as extra

<sup>71</sup> Beck, "Governor Signs Senate Bill 634," October 1, 2008; Strom, "Trade Group Lawsuit Challenges Olive Oil Labeling," February 6, 2013.

<sup>72</sup> In February 2013, the NAOOA filed suit against Kangadis Food Inc., a New York-based firm operating under the name The Gourmet Factory, accusing the firm of falsely labeling its Capatriti brand as olive oil when it was actually olive pomace oil, a substance extracted from olive pits and skins using industrial solvents. Strom, "Trade Group Lawsuit Challenges Olive Oil Labeling," February 6, 2013.

virgin.<sup>73</sup> As of the time this report was prepared, however, no specific proposals for a marketing order had been submitted to USDA by the domestic industry. Marketing orders, if approved by growers in the industry and USDA after public hearings, can be used to establish, among other things, quality standards and financial assessments that can fund research, marketing promotion, and testing. The terms of a marketing order can vary. However, marketing orders can apply to imports only if the commodity is listed in section 7 U.S.C. 608e-1 (section 8e) of the Agricultural Marketing Agreement Act of 1937.<sup>74</sup> Olive oil is not currently listed, and adding olive oil to this statute would require U.S. legislation to that effect.<sup>75</sup>

Although a federal marketing order for olive oil has not formally been proposed, such a marketing order would ostensibly be focused on establishing the authority to monitor olive oil quality in the U.S. marketplace.<sup>76</sup> This would likely be done through a testing regime that would specify the rate, method, and timing of testing. Costs for such testing would be borne by individual firms. Quality standards may be specified in the marketing order which may or may not match current USDA or IOC standards.<sup>77</sup> NAOOA, representing large U.S. importers, claims that a marketing order would serve as a trade barrier if applied to imports because of significant additional compliance and testing costs and extensive delays in shipment of product. NAOOA asserts that this action would ultimately lead to higher prices for all olive oil in the U.S. market.<sup>78</sup> AOOPA, representing U.S. olive oil producers, states that all interested parties will be able to participate in the process of developing the grade standards for a marketing order and that the testing program would have to be prepared and approved by U.S. producers and importers. In addition, AOOPA notes that the EU currently has a mandatory olive oil inspection program in place.<sup>79</sup>

Estimates of costs for a testing regime associated with a USDA marketing order vary (box 3.7), but would likely be relatively low per liter of olive oil. However, current bottlenecks would significantly undercut the efficiency of any testing regime in the United States, at least initially. Depending on which tests are required, results can take from several hours to several days to be completed, resulting in delays for shippers. In addition, there is at present only one official USDA lab for olive oil testing, located in Blakely, GA. The availability of sensory testing is limited as well, as currently there are only a few olive oil sensory panels in the United States (only one of which had IOC accreditation in 2013). These include a panel associated with the USDA Blakely lab and three panels in California with several overlapping members.

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<sup>73</sup> Cord, “American Olive Oil Producers Draft Federal Marketing Order,” March 18, 2012.

<sup>74</sup> USDA, AMS, “International Marketing” (accessed June 18, 2013). Inspection of imports under section 7 U.S.C. 608e-1 “is required to ensure that the standards of quality of imported products are equal to the standards imposed on domestically produced products regulated under Federal Marketing Orders.” USDA, AMS, “8e Marketing Order Manual,” July 2012.

<sup>75</sup> U.S. government officials, interview by USITC staff, Washington, DC, October 24, 2012. The most recent U.S. House of Representatives version of the Farm Bill (H.R. 1947, the Federal Agriculture Reform and Risk Management (FARRM) Act of 2013) contained a provision (Section 10010) to add olive oil to 7 U.S.C. 608e-1 of the Agricultural Marketing Agreement Act of 1937. On June 20, 2013, this provision was struck from H.R. 1947. Later that same day, H.R.1947 failed to pass in the House by a 195-234 vote.

<sup>76</sup> Cord, “American Olive Oil Producers Draft Federal Marketing Order,” March 18, 2012.

<sup>77</sup> U.S. government officials, interview by USITC staff, Washington, DC, October 24, 2012.

<sup>78</sup> NAOOA, written submission to the USITC, December 17, 2013, 49.

<sup>79</sup> AOOPA, “U.S. Olive Oil Industry Response,” n.d.

### **BOX 3.7** Costs for hypothetical testing regime in the U.S. market

Although a federal marketing order for olive oil has not formally been proposed, any such proposal would likely involve mandatory testing of olive oil in the U.S. market.<sup>a</sup> A mandatory testing scheme would specify particular tests to be conducted, as well as the amount of testing—whether of every shipment or a random sampling. These tests would be applied to specific lots, defined by USDA as “any number of containers of the same size, type, and style located in the same warehouse or conveyance.”<sup>b</sup> U.S. importers report that 15,000–20,000 lots of olive oil enter the United States each year.

The American Olive Oil Producers Association (AOOPA) has advocated for a set of six core tests to be done for extra virgin olive oil at an estimated cost of \$300 per lot.<sup>c</sup> For refined olive oils and their blends, AOOPA proposes a slightly different set of six core tests at an estimated total cost of \$400 per lot.<sup>d</sup> According to AOOPA, mandatory testing of U.S. olive oil, at an average testing cost of \$350 per lot, would translate into an additional testing cost of \$0.02 per liter.<sup>e</sup> One EU exporter of bottled olive oil to the U.S. market estimated that testing costs could range from \$0.05 to \$0.08 per liter if every lot were required to be tested; this range covers a variable number of lots and variable container packaging (glass or plastic).<sup>f</sup>

Testing regimes performed in other countries are illustrative. The Canadian government tests 80–100 retail samples annually; it may target products subject to consumer or trade complaints of alleged mislabeling or adulteration. In the EU, current legislation regulates testing at 1 check per 1,000 mt of olive oil. The Australian Olive Association and the Australian Consumer and Competition Commission test approximately 100 retail samples annually out of a total of 40 million liters of retail sales per year and report that this testing is done at an annual cost of \$35,000 per year, or less than \$0.001 per liter.<sup>g</sup>

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<sup>a</sup> U.S. government official, interview by USITC staff, Washington, DC, October, 24, 2012.

<sup>b</sup> 75 Fed. Reg. 22363 (Apr. 28, 2010).

<sup>c</sup> U.S. producers suggest that tests of extra virgin olive oil include tests for free fatty acids (FFA), peroxide value (PV), UV coefficients (UV), panel (sensory) test (PAT), pyropheophytins (PPP), and diacylglycerols (DAGs). AOOPA, written submission to the USITC, February 12, 2013, 13.

<sup>d</sup> U.S. producers suggest that tests of refined olive oil include tests for free fatty acids, peroxide value, UV coefficients, fatty acid profile (FAP), sterols (STE), and erythrodiol and uvaol (E+U). AOOPA, written submission to the USITC, February 12, 2013, 15.

<sup>e</sup> AOOPA, written submission to the USITC, February 12, 2013, 16.

<sup>f</sup> Industry representative, interview by USITC staff, Tuscany, Italy, January 30, 2013.

<sup>g</sup> AOOPA, written submission to the USITC, December 12, 2013, 13.

## ***Potential FDA Standard of Identity***

Like U.S. producers, U.S. importers also view mandatory, enforceable standards, backed by a testing regime focused both on random samples and a targeted review of actors suspected of economic fraud, as necessary in the U.S. market.<sup>80</sup> For this reason, in June 2012, for the second time since 1990, the NAOOA proposed the creation of a federal standard of identity for olive oil, which would be mandatory and enforceable by the FDA.<sup>81</sup> The NAOOA favors a mandatory standard of identity over the voluntary USDA olive oil standards because it carries the weight of enforcement and legal sanctions.<sup>82</sup>

According to the FDA, once a standard of identity is in place, products are inspected for compliance with the standard typically only after a complaint is received from a consumer or industry. The discovery of products that do not meet the standard, considered “misbranded,” can lead to a warning letter, giving the shipper a time period to

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<sup>80</sup> NAOOA, written submission to the USITC, December 17, 2013, 58.

<sup>81</sup> The original olive oil petition of 1990 was never acted upon by FDA. Industry representative, telephone interview by USITC staff, August 5, 2013.

<sup>82</sup> NAOOA, written submission to the USITC, December 17, 2013, 4.

act to correct the problem, or the FDA can move to an injunction or seizure. In addition to compliance with the standard, FDA has the authority to act in cases of “economic adulteration,” which involves substituting an ingredient in order to defraud the consumer. Economic adulteration is cause for going straight to injunction or seizure, followed by prosecution.<sup>83</sup> While a standard of identity could potentially be a vehicle for standards enforcement for olive oil, based on the FDA’s inaction to date, U.S. producers do not believe that it is likely that one will be adopted soon.<sup>84</sup>

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<sup>83</sup> U.S. government official, interview by USITC staff, College Park, MD, March 14, 2013.

<sup>84</sup> AOOPA, written submission to the USITC, February 12, 2013.

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# CHAPTER 4

## The U.S. Market for Olive Oil

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### Overview

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Olive oil consumption is increasing in the United States, owing to rising interest in its health benefits and the decrease in its price over time—factors that are expected to fuel future domestic sales growth as well. At the same time, most U.S. consumers are generally unaware of the wide range of choices associated with olive oil, including grades, flavor attributes, and uses. Imports account for the vast majority of olive oil in the U.S. market; U.S.-produced olive oil supplied only 3 percent of U.S. consumption in 2012. About one-third of imported olive oil arrives in bulk to be bottled in U.S. bottling facilities, and two-thirds is imported in retail packaging. The U.S. market for olive oil is highly price competitive, and the nascent U.S. olive oil industry struggles to compete with large volumes of lower-priced imports.

Consumption and competition in the U.S. olive oil market are shaped by a number of factors, including consumer preferences, product differentiation, quality, costs, and pricing. The business strategies adopted by olive oil producers (both foreign and domestic) selling into the U.S. market tend to emphasize either cost leadership or product differentiation.<sup>1</sup> Cost-leadership firms focus on selling large volumes of lower-cost/lower-value olive oil at lower prices. Firms focused on product differentiation and quality focus on selling smaller volumes of higher-cost/higher-quality olive oil at higher prices. The two strategies target two distinct U.S. consumer groups: those that are knowledgeable about olive oil quality and are willing to pay a premium for it, and those that are less concerned with olive oil quality or are unable or unwilling to pay the premium. U.S. retail prices for extra virgin olive oil reflect these distinct pricing strategies. Generally, price remains one of the most important factors in U.S. consumer purchasing decisions for olive oil, in part due to a lack of consumer awareness of quality differences.

The first part of this chapter provides information on key characteristics of the market for olive oil in the United States, including the factors driving increased U.S. consumption, the sources of U.S. olive oil supply, and U.S. consumption patterns by market channel. This section compares consumption in the various market segments with regard to olive oil grades, flavors, uses, and prices. This is followed by a discussion of the competitive factors affecting consumption in the U.S. retail market. Several key factors include U.S. consumer awareness of and preferences for olive oil, as well as firms' marketing and pricing strategies. This section relates firms' pricing strategies to retail prices observed in the U.S. market, using retail sales data. Finally, the chapter concludes with an econometric analysis of demand for olive oil in the U.S. market.

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<sup>1</sup> Cost leadership strategies involve aggressively pursuing preferential access to low-cost inputs, seeking economies of scale, and minimizing costs. Product differentiation strategies involve creating an advantage in the market by offering a product perceived by purchasers as being special or unique. Porter, *Competitive Advantage*, 1985.

## U.S. Market Characteristics

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Olive oil has not yet become a mature product category in the U.S. market, but it is growing rapidly.<sup>2</sup> In 2009, olive oil accounted for nearly 8 percent of total edible oil sales and was the fourth most consumed oil in the United States, by volume.<sup>3</sup> Growth in the consumption of olive oil was double that of any other fat, oil, or spread product over the period 2004–08, with an average annual value growth rate approaching 13 percent.<sup>4</sup> This is especially noteworthy considering its high price in the United States compared to other vegetable oils. U.S. household penetration for olive oil was about 40 percent in 2011, and given the size of the U.S. market, even a small increase would have a significant impact on total U.S. consumption.<sup>5</sup>

Olive oil competes for sales in the U.S. market with other available fats and oils, including butter and spreads, shortening, and cooking oil. In the United States, olive oil is primarily used for cooking and in dressings and marinades and competes with an array of other available edible oils, such as canola, corn, soy, and vegetable oil blends. Currently, health is a key driver in U.S. consumers' decisions about fats and oils generally, and olive oil is seen as one of several healthy oil choices.<sup>6</sup> The regulation of trans fats in the United States in 2006, along with the promotion of “healthy fats,” helped to bring this notion to the forefront for many Americans.<sup>7</sup>

Overall, the U.S. olive oil market can be characterized by lack of consumer knowledge about the quality/price tradeoff and the uses of olive oil (e.g., for cooking versus finishing dishes).<sup>8</sup> Market segmentation by brand, country of origin, or flavor preferences is not clearly defined; the labels on U.S. retail olive oil products lack consistent, meaningful terms that designate country of origin or varietal. At the same time, price competition is intense in the U.S. market.

### *Factors Driving Increased U.S. Consumption*

From a relatively small base, U.S. olive oil consumption has grown rapidly in the last decade. U.S. consumers increasingly recognize the health benefits of olive oil, and the U.S. Food and Drug Administration authorized sellers of olive oil to make certain

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<sup>2</sup> Datamonitor, *Study on the Promotion of Olive Oil*, January 20, 2010, 49. In a product category life cycle, products can reach a stage of maturity after the successful introduction of a new product followed by a growth stage. While the growth stage is characterized by a period of rapid revenue growth, a mature product generally experiences a leveling off of revenue growth levels. Product Arts, “The Product Category Lifecycle” (accessed June 20, 2013).

<sup>3</sup> Datamonitor, *Study on the Promotion of Olive Oil*, January 20, 2010, 49. The three most consumed edible oils in the United States are soybean, canola, and corn oils.

<sup>4</sup> Datamonitor, *Study on the Promotion of Olive Oil*, January 20, 2010, 49.

<sup>5</sup> Bauer, “The U.S. Import Market,” 2011, 29.

<sup>6</sup> Datamonitor, *Study on the Promotion of Olive Oil*, January 20, 2010, 50. Healthy cooking oils are those that contain high levels of monounsaturated and polyunsaturated fats. CDC, “Monounsaturated and Polyunsaturated Fats” (accessed June 5, 2013).

<sup>7</sup> Since 2006, trans fat levels must be stated on food nutrition labels in the United States.

<sup>8</sup> Datamonitor, *Study on the Promotion of Olive Oil*, January 20, 2010; industry representatives, interviews by USITC staff, Tuscany, Italy, January 30, 2013; industry representatives, interviews by USITC staff, California, November 13–15, 2012.

qualified health claims on their products in 2004.<sup>9</sup> Olive oil is low in saturated fat and high in omega-3 fatty acids that reduce the risk of heart disease. While other vegetable oils, such as canola, also have low levels of saturated fat providing similar health benefits, olive oil has additional beneficial properties, such as antioxidants and polyphenols (anti-inflammatory compounds that promote healthy cardiovascular function). Virgin olive oils contain more polyphenols than other grades of olive oil, elevating their health benefits.<sup>10</sup> Consumer awareness of the health benefits associated with olive oil as part of the “Mediterranean diet” has particularly helped heighten consumer interest in olive oil. Other factors contributing to increased U.S. consumption are the decreasing U.S. market price of olive oil over time and a growing cooking and gourmet food culture in the United States.

## **Sources of Supply in the U.S. Market**

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Imports accounted for 97 percent of U.S. consumption of olive oil in 2012, by volume, with the remainder supplied by U.S.-produced olive oil.<sup>11</sup> In 2012, approximately 62 percent of U.S. olive oil imports were in consumer-ready bottles,<sup>12</sup> generally in sizes between 250 ml and 3 liters in glass or plastic (PET) bottles or metal tins. The remainder entered the United States in bulk, either in tankers, 20-ton flexitanks, 1,000-liter totes, or 200-kg steel drums. The United States is unique among countries that import significant quantities of olive oil in that there are large local bottlers of imported bulk oil. Imported bulk oil destined for retail sale is shipped to these U.S. bottling plants, which blend several imported olive oils, often from multiple source countries and olive varieties, to obtain preset flavor profiles. These firms then package the products for sale to retail businesses, under brand names or private labels (products sold under a store’s own brand label), or to the food service segment. Some imported bulk oil is also delivered directly in large tanker trucks to large food processors (figure 4.1).

## **Consumption Characteristics in the U.S. Market**

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### ***Consumption by Market Segment***

Olive oil is sold in three main market segments: retail outlets, food service, and the food processing industry. The food service segment includes full-service and quick-service restaurants, hotels, and institutions (e.g., hospitals, schools, cafeterias, and prisons), while the food processing industry uses olive oil as an ingredient in processed foods. Data representing the shares by value and volume of these segments are presented in table 4.1.

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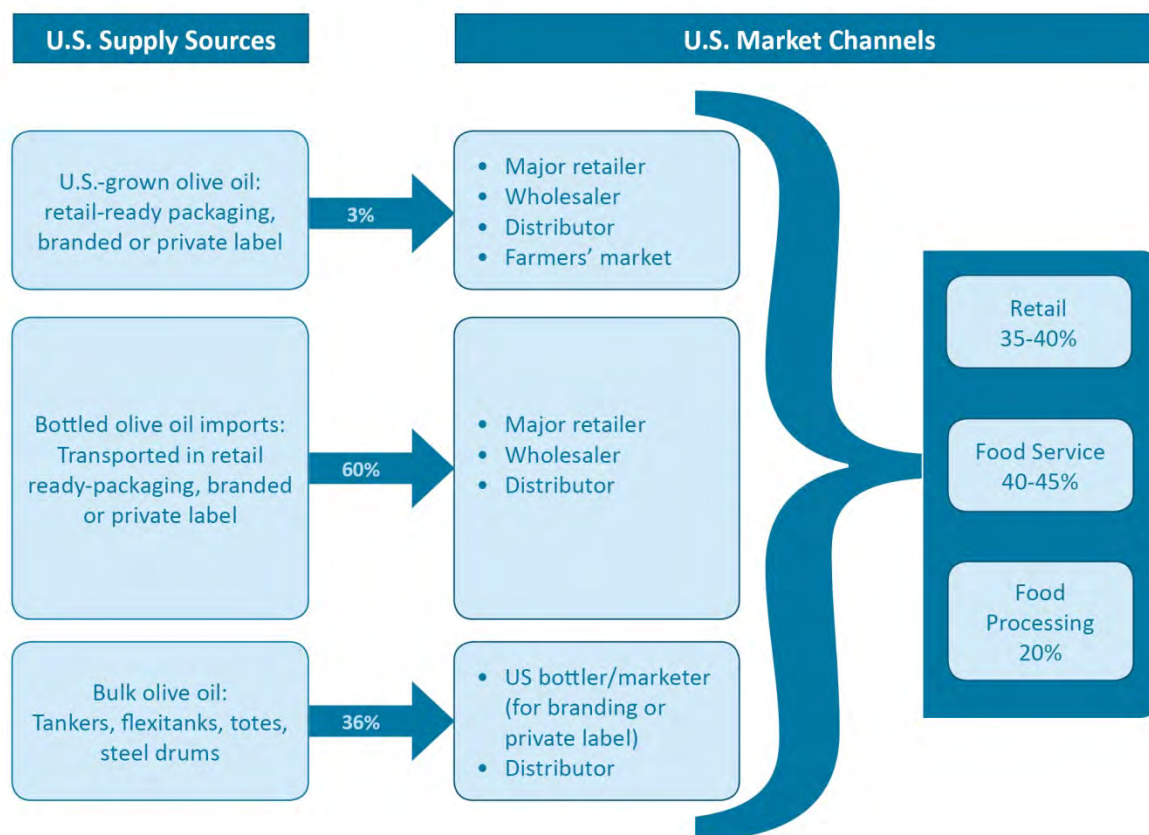
<sup>9</sup> Effective November 2004, the U.S. Food and Drug Administration (FDA) allowed olive oil products to carry the following claim: “Limited and not conclusive scientific evidence suggests that eating about 2 tablespoons (23 grams) of olive oil daily may reduce the risk of coronary heart disease due to the monounsaturated fat in olive oil. To achieve this possible benefit, olive oil is to replace a similar amount of saturated fat and not increase the total number of calories you eat in a day. One serving of this product contains [x] grams of olive oil.” FDA. “Summary of Qualified Health Claims,” (accessed August 2, 2013).

<sup>10</sup> Covas, “The Effects of Polyphenols in Olive Oil,” September 5, 2006.

<sup>11</sup> USITC DataWeb/USDOC (accessed May 14, 2013); California Olive Oil Council, data provided to USITC staff, June 20, 2013.

<sup>12</sup> USITC DataWeb/USDOC (accessed May 14, 2013).

**FIGURE 4.1** Sources of U.S. olive oil supply and market channels



Source: GTIS, Global Trade Access database (accessed June 19, 2013); Datamonitor, "Study on the promotion of olive oil," January 20, 2010; USITC estimates.

**TABLE 4.1** U.S. olive oil consumption, by market segment, selected years

	2004	2008	2009
Value (\$1,000)			
Retail	587,900	954,700	984,643
Food service and food processing	586,903	824,758	670,705
Volume (1,000 liters)			
Retail	78,600	91,900	98,333
Food service and food processing	173,640	187,872	191,630
Price per liter (\$)			
Retail	7.48	10.39	10.01
Food service and food processing	3.38	4.39	3.50
Consumption per capita (liters)			
Retail	0.268	0.302	0.320
Food service and food processing	0.593	0.618	0.624
Total	0.861	0.920	0.944

Source: Datamonitor, "Study on the Promotion of Olive Oil," January 20, 2010.

While 66 percent of the total volume of olive oil was sold into food service and food processing channels in 2009, these channels only accounted for 41 percent of the total sales value.<sup>13</sup>

The share of olive oil sold into the main market segments has been fairly consistent over the last three years. Based on industry estimates for 2012, roughly 35–40 percent (by volume) of olive oil in the United States was sold in the retail segment, 40–45 percent to food service, and 20 percent to the food processing segment.<sup>14</sup> In the United States, each of these market segments has different demands with regard to olive oil qualities, characteristics, and prices. While both U.S. olive oil and imported olive oil are sold to each segment, price sensitivity in the food service and food processing sectors limits the demand for (typically higher-priced) extra virgin olive oil, which accounts for the vast majority of U.S. olive oil production.

### **Food Service and Food Processing**

Primary food service markets include full- and quick-service restaurants and institutional customers. Olive oil is used mainly in full-service restaurants because of its high cost and general unsuitability as a multi-use deep-frying oil used in most American quick-service restaurants. In high-end restaurants, extra virgin olive oil may be used at the table for dipping, for pouring over plated food before serving (“finishing”), or in the kitchen for salad dressings, sautéing, and frying. Food processors use olive oil as an ingredient in a wide variety of foods, including tomato sauce, salad dressing, cooking spray, and frozen entrees.

Olive oil customers in the food service and food processing market segments tend to be price sensitive and purchase lower grades of olive oil and blends of olive oil with other edible oils. However, flavor also is a key consideration for many restaurant buyers.<sup>15</sup> Olive oil sold to restaurants tends to be in large packages, including “bag-in-a-box” (10 or 20 liters) or 3-liter tins, and extra virgin oil can range in price between \$3 and \$8 per liter, depending on quality.<sup>16</sup>

Although the restaurant and food processing segments of the market typically have lower price points than the retail segment, they offer certain cost and marketing advantages for olive oil producers. Pricing and profit margins in the retail segment tend to vary somewhat due to a variety of added costs that differ from year to year, such as shelf placement fees (discussed in more detail below) and promotional campaigns that most retailers require. In contrast, prices in the food processing segment are typically determined on a simple cost-plus-margin basis.<sup>17</sup> In addition, from a marketing standpoint, restaurant purchasers tend to be chefs, who are readily accessible to suppliers and familiar with the type and quality of olive oil they need.<sup>18</sup>

Most food processor consumers of olive oil are large, often multinational, food companies that use large volumes of consistently flavored oil as an ingredient in a variety of food products with national distribution. These types of olive oil consumers often

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<sup>13</sup> Datamonitor, *Study on the Promotion of Olive Oil*, January 20, 2010, 23.

<sup>14</sup> Commission estimates based on industry estimates. AOOPA, written submission to the USITC, December 12, 2012, 6; NAOOA, written submission to the USITC, December 17, 2012, 55.

<sup>15</sup> Industry representative, telephone interview by USITC staff, March 17, 2013.

<sup>16</sup> Ibid.

<sup>17</sup> Industry representative, interview by USITC staff, Washington, DC, April 9, 2013.

<sup>18</sup> Industry representative, telephone interview by USITC staff, March 17, 2013.

demand third-party audits and traceability from all their suppliers. These customers may rely on importers to store the olive oil themselves and provide just-in-time delivery to food processing plants. This type of olive oil customer typically purchases lower grades of olive oil, since it is merely one of many ingredients included in the final food product.<sup>19</sup>

## **Retail**

Retail market channels for olive oil include big box stores, supermarkets, boutique olive oil shops, farmers markets, online vendors, and roadside stands. Although the current volume of olive oil sold into the food service and food processing segments outstrips that for retail, future growth in U.S. olive oil consumption is likely to be in the retail segment.<sup>20</sup>

### ***Olive oil grades and flavor profiles***

Olive oil products available in the U.S. market range from high-grade extra virgin (usually higher-priced, with distinctive flavor characteristics) to lower-grade olive oil (usually lower-priced, lacking in distinctive flavor characteristics). In the U.S. retail market, consumers prefer products labeled as extra virgin olive oil; virgin olive oil is not widely marketed. During 2010–12, U.S. retail olive oil consumption was 66 percent extra virgin grade and 33 percent refined olive oil; less than 0.5 percent of sales were of virgin olive oil.<sup>21</sup> Generally U.S. consumers prefer a milder, buttery-flavored olive oil to strong, pungent and bitter oils, often because this is the flavor profile to which they have most commonly been exposed. However, consumption of fruity, flavorful, and bitter extra virgin olive oils is rising as more U.S. consumers try them.<sup>22</sup> Historically, U.S. imports consisted mainly of lower olive oil grades, such as “pure” olive oil (refined olive oil blended with a small amount of extra virgin), but over time demand for extra virgin has increased. “Light” or “sweet” flavor profiles characterize mass-marketed extra virgin oils in the United States. Such oils are typically on the low end of the extra virgin price range in the United States market, appealing to price-conscious U.S. retail consumers.<sup>23</sup>

Extra virgin olive oil is recognized by many U.S. consumers as the highest quality oil and, as a result, receives a price premium in the U.S. market. Based on national Nielsen retail sales data, extra virgin olive oil sold at retail enjoys a \$0.12 per ounce price premium over other olive oil grades, including refined olive oil and refined olive oil blended with virgin olive oils.<sup>24</sup> The average retail price of extra virgin olive oil during 2010–12 was \$0.47 per ounce compared to \$0.35 per ounce for all other olive oil grades. This price premium is due to a number of factors, including the additional costs associated with producing extra virgin olive oil, global wholesale price differences between refined and extra virgin oil, and consumer willingness to pay more for perceived higher quality.

Flavor profiles of extra virgin olive oils range from light, to medium, to intensely fruity, a term used to describe flavorful olive oils that often have a bitter, pungent aftertaste

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<sup>19</sup> Industry representative, interview by USITC staff, Washington, DC, April 9, 2013.

<sup>20</sup> Datamonitor, *Study on the Promotion of Olive Oil*, January 20, 2010.

<sup>21</sup> The remainder was flavored olive oil. Nielsen, U.S. Retail Market Data, 2013.

<sup>22</sup> Industry representative, interview by USITC staff, California, November 14, 2012.

<sup>23</sup> Industry representative, interview by USITC staff, Puglia, Italy, February 4, 2013.

<sup>24</sup> All price data in this section, unless otherwise indicated, is sourced from Nielsen, U.S. Retail Market Data, 2013.



resulting from high levels of polyphenols. However, specific descriptors are not typically found on current labeling, making purchasing decisions harder for consumers. Consumer palates in the United States are slowly changing, and in a small but growing market segment, demand for bolder profiles of extra virgin olive oil is increasing.<sup>25</sup> This niche market segment for flavorful olive oil includes consumers drawn to natural, organic, gourmet, and specialty foods, whose interest in food quality and sourcing has increased in recent years.

Consumers in this segment are willing to pay higher prices for premium extra virgin olive oil, typically characterized by bolder flavor profiles. Such premium oils can range in price from \$12 to \$20 per liter in the U.S. market, with specific regional or varietal extra virgin sold at wineries, gourmet stores, and stand-alone olive oil and vinegar shops for \$25 to \$60 per liter.<sup>26</sup> While data from many of these specialty sales outlets is not tracked, estimates are that olive oils priced at \$25 per liter or higher, whether domestic or imported, represent just 2 percent of total U.S. market sales.<sup>27</sup> Demand for organic olive oil is growing as well; it has experienced double-digit growth in recent years, ranging from 15 percent to 30 percent, depending on the channel of distribution. However, organic oil still represents an extremely small share—less than 2 percent—of total retail sales.<sup>28</sup>

### ***Retail consumption by region***

U.S. olive oil consumption is concentrated along the East Coast of the United States, particularly in the northeastern states. This reflects both historical Italian immigration patterns and high population density. Per capita consumption is highest in New England, at 25.1 ounces, followed by the Middle Atlantic states at 21.2 ounces (see figure 4.2). Per capita consumption rates drop dramatically in the center and west of the country, ranging between 7.5 and 10 ounces per capita.<sup>29</sup> While olive oil consumption is expanding and becoming more common even in the center of the country, more than half of the olive oil sold in U.S. retail food outlets is sold in the East Coast.<sup>30</sup>

U.S. retail prices for olive oil also vary by region. Average price per ounce of extra virgin olive oil ranged from \$0.46 in the New England and South Atlantic regions to \$0.56–0.58 in the Pacific and Mountain regions. The higher West Coast price may reflect the additional costs for transporting imported oil from U.S. bottling facilities on the East Coast. In addition, because the majority of U.S. consumption occurs in the northeastern states, retail turnover is higher and almost all major brands have a significant presence in the region, resulting in highly competitive pricing.

### ***Retail consumption by brand***

The domestic olive oil market is fragmented, with more than 500 brands sold in retail outlets around the country.<sup>31</sup> Nonetheless, the largest brands all have a national presence as well as market power in terms of pricing and distribution. There are distinct market

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<sup>25</sup> Industry representative, interview by USITC staff, Tuscany, Italy, January 31, 2013.

<sup>26</sup> NAOOA, written submission to the USITC, December 17, 2012, 63; Nielsen, U.S. Retail Market Data, 2013.

<sup>27</sup> NAOOA, written submission to the USITC, December 17, 2012, 63.

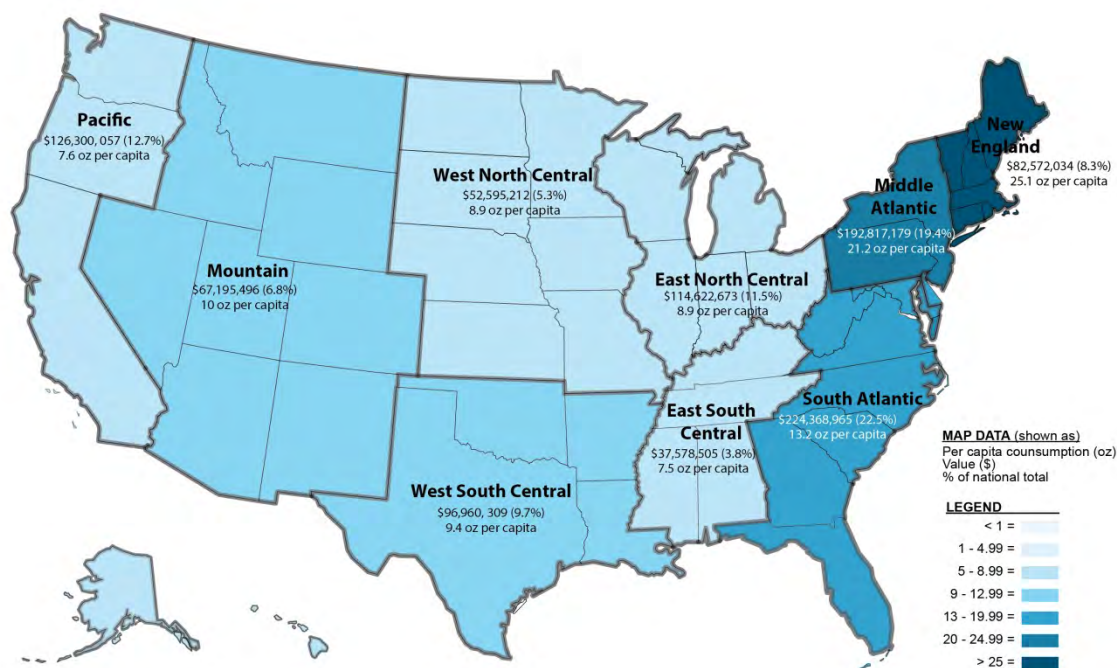
<sup>28</sup> Ibid., 62.

<sup>29</sup> Nielsen, U.S. Retail Market Data, 2013.

<sup>30</sup> Bauer, “The U.S. Import Market,” 2011, 29.

<sup>31</sup> Nielsen, U.S. Retail Market Data, 2013.

**FIGURE 4.2** Average annual U.S. per capita sales, by region, February 2010–February 2013



Sources: Compiled by USITC staff. Nielsen, U.S. Retail Market Data, 2013.

leaders in the retail segment, with the three largest national brands (Bertolli, Felipo Berio, and Pompeian) accounting for a combined 36 percent of total retail sales between 2010 and 2012.<sup>32</sup> During this same period, retail private label, non-branded oils made up 29 percent of national retail sales, a larger share than any individual brand in the olive oil category.<sup>33</sup> Considering that private label products are typically (but not always) marketed as lower in price relative to branded products, this seems to indicate that, despite the market power of the large brands, U.S. consumers are price-conscious and only moderately brand loyal when choosing olive oil, viewing low price as a more important factor in purchasing decisions.<sup>34</sup>

<sup>32</sup> Nielsen, U.S. Retail Market Data, 2013.

<sup>33</sup> Ibid.

<sup>34</sup> Industry representative, interview by USITC staff, Andalusia, Spain, January 24, 2013; Jiménez-Guerrero et al., "Consumer Preferences for Olive Oil Attributes," February 2012.

Despite the large volume of sales by the top few national brands, market shares for the top brands vary greatly by region. Certain brands have targeted their marketing and distribution efforts in certain regions of the country. Such targeted distribution contributes to relatively higher levels of retail private label sales in regions where fewer branded options are available. For example, during 2010–12, 43 percent of sales in the East South Central region were of private label product, versus 18 percent in the New England region.<sup>35</sup> In certain regions, the market leaders face stiff competition for market share from smaller firms that supply higher-quality domestic oils. For example, in the Pacific region, California Olive Ranch, a domestic producer, was tied for fifth place with Felippo Berio in 2012, with a 4 percent market share (versus 1.3 percent nationally). Yet Felippo Berio was the market leader in the large consuming regions of New England and the Middle Atlantic, with market shares of 38 and 23 percent, respectively, in 2012.<sup>36</sup>

## **Factors Affecting Consumption in the U.S. Retail Market**

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### *Overview*

Certain supply and demand factors have a particularly strong impact on consumption of olive oil in the U.S. market and the competition among supplying firms. Supply-side factors include firms' ability to differentiate their products in terms of quality and other favorable characteristics (e.g., country of origin and health benefits). Among the demand-side factors are U.S. consumers' perceptions of differentiated products and their willingness to pay price premiums for those differences.

While health claims for olive oil may boost demand for all types of olive oil, individual olive oil producers work to differentiate their products by level of quality, branding and marketing strategies, and price. At one level, product differentiation can be achieved by complying with internationally recognized grade standards (see chapter 3). But standards are useful as a means of product differentiation only to the extent that consumers both understand the relationship between standards and quality and embrace the value of different olive oil grades or quality levels. However, because current standards allow a wide range of olive oil qualities to be marketed as extra virgin, meeting the standards is not an effective means of product differentiation. Moreover, many U.S. consumers choose olive oil based only on price, giving an advantage to producers with low costs of production and large economies of scale.

This section discusses the competitive factors affecting U.S. olive oil consumption in light of the business strategies, or business models, of olive oil firms supplying the U.S. market. Domestic olive oil producers include both small artisanal firms and larger integrated mills. Both of these types of firms may also market imported olive oils. This activity, however, is dominated by large bottlers, headquartered mainly in Spain and Italy but also in the United States. These firms procure large volumes of raw-material olive oil globally from various sources, including cooperative mills and private millers. In regard to the competitive factors presented below, each of these business models has inherent competitive strengths and weaknesses that determine a firms' product mix and target market segment, its ability to conduct marketing and support a brand, and its pricing strategy.

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<sup>35</sup> Nielsen, U.S. Retail Market Data, 2013.

<sup>36</sup> Ibid.

## *Consumer Awareness and Flavor Preferences*

Broadly, two types of olive oil consumers exist in the U.S. market: (1) those with knowledge of the product and who generally prefer flavorful oils, and base purchases on product attributes, and (2) those who are less knowledgeable about the product, are accustomed to milder-flavored oil, and base purchases primarily on price. Currently, the second type of consumer comprises the domestic mass market for olive oil, due at least in part to a lack of exposure to flavorful extra virgin olive oil.

Research shows that most U.S. retail consumers do not distinguish among the various grades of olive oil,<sup>37</sup> let alone among extra virgin olive oils made from different varieties or from different countries or regions. Some olive oil marketers report that at product-tasting events hosted at U.S. retail outlets, many consumers were trying olive oil for the first time.<sup>38</sup> Other research has suggested that some U.S. consumers actually consider oil defects, such as rancidity and mustiness, to be positive taste attributes.<sup>39</sup> The lack of consumer awareness suggests that there is considerable room for consumption growth in the extra virgin category in the United States if more consumers were better educated about olive oil quality differences, its health benefits, and usage.<sup>40</sup> However, national promotional campaigns are costly, often prohibitively so for small olive oil producers, including those in the United States.

In the absence of consumer education and outreach efforts, U.S. consumers tend to gravitate toward less costly oils, since they are unable to distinguish quality differences at the point of purchase, benefitting large olive oil bottlers that focus on cost leadership.<sup>41</sup> This negatively affects U.S. producers, in particular, who almost exclusively sell premium extra virgin olive oil and struggle to market the unique attributes of their high quality product to consumers. Large-scale olive oil firms view their global sourcing strategies as a competitive strength for targeting price-conscious U.S. consumers. By blending different oil varieties, they report that they are able to match customer preferences in specific markets,<sup>42</sup> as well as supply consistently flavored olive oils, a key criterion for many customers, at low prices.<sup>43</sup> Large bottler/blenders report that the flavor profile and price they offer responds to the demands of most U.S. customers.<sup>44</sup> U.S. producers, in contrast, offer a bolder flavor profile more suited to the knowledgeable, quality-conscious consumer, a much smaller but growing segment.

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<sup>37</sup> Wang, Moscatello, and Flynn, "Survey: Consumer Attitudes on Olive Oil," May 2013, 1–2.

<sup>38</sup> Industry representatives, interview by USITC staff, California, November 13, 2012.

<sup>39</sup> Delgado and Guinard, "How Do Consumer," March 2011, 218; Industry representative, interview by USITC staff, California, November 14, 2012.

<sup>40</sup> U.S. industry representatives report that a growing segment of U.S. consumers, once exposed to fruity, flavorful extra virgin olive oil, actually prefer it to neutral-flavored extra virgin olive oil. U.S. industry representatives, interviews by USITC staff, California, November 14, 2012.

<sup>41</sup> A review of the empirical literature on the importance of particular product attributes that contribute to consumer preferences for extra virgin olive oil (such as price, origin, variety, color, or flavor) found that in all cases, price was the most important attribute. Jiménez-Guerrero et al., "Consumer Preferences for Olive Oil Attributes," February 2012.

<sup>42</sup> Industry representative, interview by USITC staff, Madrid, Spain, January 22–23, 2013.

<sup>43</sup> Industry representative, interview by USITC staff, Madrid, Spain, January 22–23, 2013; industry representative, interview by USITC staff, Maryland, December 20, 2012.

<sup>44</sup> Industry representatives, interviews by USITC staff, Andalusia, Spain, January 23, 2013; industry representatives, interviews by USITC staff, Tuscany, Italy, January 30, 2013.

## ***Branding and Marketing***

The U.S. olive oil market is home to long-standing brand names, some in existence for generations and often of Italian origin. Branding involves companies' efforts to associate their product with high quality or other attributes desirable to consumers (such as flavor profile, country origin, or organic production). In addition, some firms acquire certifications for their olive oil that attest to high quality or other attributes with corresponding seals on labels. California olive oil production has also benefited from the California-grown cachet that has developed around other products grown in the state. Locally grown products are also developing their own following in the U.S. food market.

Although branding can be an effective marketing strategy, not all olive oil producers choose to market branded olive oil in the United States. Several firms produce large volumes of olive oil of various grades for private label sales. These products are generally sold under the retailer's label and name (e.g., Safeway, Kroger, or Publix). These store brands are often positioned as bargain brands, although not exclusively so.<sup>45</sup> Focusing on the segment of the market that looks for bargain brands has been an effective strategy for some firms to gain market share in the price-competitive U.S. olive oil market.

### **Seals and Certifications**

Producers of olive oil use seals and certifications to promote certain oil characteristics to consumers and to differentiate their products based on quality. For a producer to qualify for certification and a seal, requirements specific to either methods of production, regions of production, and/or product characteristics must be met. The level of difficulty of meeting these requirements varies and, as a result, there is a wide disparity in how consumers perceive the quality of the oil associated with each seal and certification.

In the United States, in addition to the U.S. Department of Agriculture's (USDA) Quality Monitoring Program (QMP) (see text box 3.6), several other certifications are available to domestic olive oil producers. These programs do not provide a legal certification of the market grade of the oil, but rather a promotional evaluation for the oil for their target market. The California Olive Oil Council (COOC) has a quality seal program that grants members a "COOC Certified Extra Virgin" seal for California-produced olive oil. The Texas Olive Oil Council has also initiated a seal program that certifies Texas-grown extra virgin olive oil. The standards for these two state seals are more rigorous than the IOC chemical standards and are therefore meant to promote only premium-quality brands. In addition, the North American Olive Oil Association (NAOOA), whose members are importers of olive oil into the United States, has a quality seal program requiring imported products to meet IOC standards as determined by an IOC-accredited laboratory. Many of the leading extra virgin brands in the U.S. retail market, including Bertolli, Pompeian, Crisco, and 365 brands (the Whole Foods private label product), display the NAOOA seal on their bottles.

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<sup>45</sup> Consumers have variable perceptions of private label products in the U.S. market. For example, certain food retailers, such as Wegman's and Whole Foods, promote their private label products as "high end." The private label goods offered by many other retailers, such as ShopRite, are not marketed to or perceived by U.S. consumers that way. Industry representatives, interviews by USITC staff, Andalusia, Spain, January 24, 2013.

Some imported olive oil in the U.S. market has been certified through programs that exist in several other countries. The EU oversees a certification program that provides a seal for the labels of protected designation of origin products (PDOs), designating olive oil made from a particular olive variety or varieties, grown in a designated region, and harvested and milled using specific production techniques.<sup>46</sup> The Australian Olive Association (AOA) also has a quality seal for oils produced in Australia that requires that the producer sign a Code of Practices addressing olive oil quality, food safety, ethical marketing, environmental standards, and other issues.<sup>47</sup>

Each certification and seal has a varying degree of consumer recognition and value in the market. Some industry sources report that consumer recognition of quality seals is minimal,<sup>48</sup> while others report receiving a price premium—this is the case for PDOs in particular. In Italy, certain producers report they typically receive a 15 percent price premium for a PDO, but at the retail level the price disparity is even greater.<sup>49</sup> U.S. retail market data show that olive oil marketed under a PDO sells at a 50 percent per ounce premium.<sup>50</sup> These prices, however, also reflect higher costs associated with the production methods required by many PDO certifications. The large number and diversity of seals used on olive oil bottles in the U.S. retail market reduces the value of individual seals and certifications to consumers.

### **Italian Brand Cachet**

Some producers rely on the cachet of Italian olive oil, which is still perceived by many U.S. consumers of olive oil to denote authenticity and quality. U.S. consumer preferences for Italian olive oil can be traced to the late 1800s, when immigrants from Italy created demand for Italian olive oil, an important ingredient in Italian cuisine. Olive oil import businesses developed in the United States to meet this demand.<sup>51</sup> In olive oil marketing, Italian cachet is linked not only to the country of Italy, but to certain Italian regions identified with olive oil, such as Tuscany. Although the Tuscany region today has relatively little olive production, the global olive oil brands Bertolli, Carapelli, and Sasso were all originally located in this region, and large Italian bottling companies see their location there as valuable for marketing purposes.<sup>52</sup> The Carapelli brand, for example, is called “Carapelli Firenze”; it is the only Italian brand to include the city name of Florence, permanently linking it to the region.<sup>53</sup>

Some brands make use of Italian cachet by using Italian words or images in their marketing without actually having any connection to the country. Others highlight the fact that they were “packed in Italy” or are a “product of Italy” without revealing on the label that the majority of the oil supplied was imported from other countries, not made from olives actually grown in Italy. Because most consumers are largely unaware of the implications of the terminology used, these practices are often misleading.

Some in the global olive oil industry feel that among knowledgeable olive oil consumers, Italian brand cachet is diminishing, partly because high-quality olive oils are increasingly

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<sup>46</sup> More information on PDOs is in chapter 6.

<sup>47</sup> More information on the AOA quality seal is in chapter 8.

<sup>48</sup> Industry representative, interview by USITC staff, Rome, Italy, February 1, 2013.

<sup>49</sup> Industry representative, interview by USITC staff, Puglia, Italy, February 4, 2013.

<sup>50</sup> Nielsen, U.S. Retail Market Data, 2013.

<sup>51</sup> NAOOA, written submission to the USITC, December 17, 2012; USITC, hearing transcript, December 5, 2012, 175–76 (testimony of Eryn Balch, NAOOA).

<sup>52</sup> Industry representative, interview by USITC staff, Tuscany, Italy, January 2013.

<sup>53</sup> Ibid.

emerging from other, nontraditional producing countries.<sup>54</sup> Others report that Italian producers are losing their reputation for high-quality extra virgin olive oil because large bottlers that rely on “Italian” identity in their marketing have set a mediocre standard for extra virgin.<sup>55</sup>

## **California Brand**

The California brand cachet has been successful in promoting several other agricultural products, including almonds, pistachios, and pomegranates, and now is growing for olive oil. California olive oil has also benefited from the “locally grown” food movement in the United States. Some established international olive oil importers have recognized the marketing value of the Californian brand and have even begun sourcing California olive oil in order to develop a California product line and take advantage of consumer demand for California-produced products. There has also been some recent investment in agricultural land in California by foreign firms wishing to produce their own olive oil with California olives.<sup>56</sup>

## ***Pricing***

The U.S. retail price for olive oil is a function of the delivered cost of the packaged oil, which includes the cost of producing or procuring the oil, as well as costs for packaging, storage, transportation, distribution, marketing, and promotions. It is also a function of the firm’s pricing strategy, which takes into account consumer and retailer price demands and expectations. Pricing strategies also reflect a firm’s business model, size, and the characteristics of the product it wishes to market.

The U.S. mass market for olive oil is extremely price competitive. Olive oil firms, supplying one of hundreds of food items in the grocery store, vie for the attention of a generally price-sensitive U.S. food consumer with many food choices. U.S. grocery retailers, in turn, face intense competition with each other as well as with mass merchandisers, such as Walmart and Costco, which market food in addition to a wide range of consumer items.<sup>57</sup>

In this competitive environment, the pricing strategies of firms that supply U.S. grocery retailers are designed to retain their products’ grip on limited shelf space, as underperforming products can quickly be replaced by others. Several strategies that can be adopted by olive oil firms to compete in this environment are discussed below.

## **Cost leadership pricing**

Cost leadership pricing focuses on customers’ price sensitivity and aims to provide low cost products. Firms that focus on cost leadership require low-cost inputs and economies of scale to lower unit costs of bottling, transportation, and distribution.<sup>58</sup> Most of the olive oil sold in the United States is bottled and packed by large firms, based in the EU and the

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<sup>54</sup> Industry representative, interview by USITC staff, Meknes, Morocco, January 27, 2013.

<sup>55</sup> Industry representative, interview by USITC staff, Tuscany, Italy, January 31, 2013.

<sup>56</sup> Industry representative, interview by USITC staff, Maryland, December 20, 2012.

<sup>57</sup> U.S. grocery retailers have their own pricing strategies, such as everyday low prices or revolving promotional discounts.

<sup>58</sup> Porter, *Competitive Advantage*, 1985.

United States, that execute this type of pricing strategy.<sup>59</sup> These firms benefit from considerable economies of scale with virtually no vertical integration of growing, milling, and bottling. Most firms of this type source the vast majority of their raw material olive oil supplies from independent sources all over the world, in arms-length transactions, because their business model relies on extremely large volumes of oil of various grades, flavor profiles, and prices. This strategy enables them to produce consistent blends of various grades of olive oil, including neutral-flavored extra virgin, at low prices.<sup>60</sup> These firms report that they aim to provide a consistent, average-quality extra virgin olive oil to satisfy their customers with a balance between quality and price.<sup>61</sup> This pricing strategy is successful for these firms because most U.S. consumers purchase olive oil based primarily on price.

The cost leadership pricing strategy requires low-cost olive oil because the cost of olive oil represents such a large share of the final retail price. Worldwide, olive oil costs of production at the grower level vary somewhat (see table 2.2), with higher production costs per unit of oil typically associated with both higher-quality extra virgin olive oil and inefficient traditional growing methods. However, because large bottlers/blenders are typically not involved in producing the oil themselves, global wholesale prices, not growers' costs of production, are the bottlers/blenders' main consideration.<sup>62</sup> While global wholesale prices for olive oil fluctuate depending on global supply and demand conditions, there has typically been an oversupply of olive oil on the global market owing to the structure of the EU olive oil sector, including EU government support. This oversupply has contributed to low global wholesale prices for olive oil, to the benefit of large bottler/blenders.<sup>63</sup>

In addition to large supplies of wholesale olive oil, large olive oil bottler/blenders further benefit from considerable market power in procuring their oil. The concentration and large size of bottler/blenders and the fragmented supply chains in many olive-growing regions give them the ability to control price negotiations for olive oil supplies.<sup>64</sup> In addition, the bottler/blenders' large storage capacities, as well as the limited storage of many producers, allow bottler/blenders to maximize their purchases when prices are low. The ability to diversify input sources and reduce procurement costs leads to lower prices at the retail level for companies that follow this business model.

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<sup>59</sup> In 2012, 79 percent of U.S. retail sales were accounted for by the top eight brands, including private label products aggregated into one "brand." The brands included Bertolli, Felippo Berio, Pompeian, Colavita, Star, Boticelli, and Carapelli. Nielsen, U.S. Retail Market Data, 2013.

<sup>60</sup> Many large olive oil bottlers/blenders in the EU also operate refining facilities. Their refining operations have an important impact on their business model. Not only is an additional income stream created from refined oil sales, but high-value byproducts are separated out in the refining process, including two free fatty acids—squalene and its hydrogenized form, squalane—which are used in personal care products such as moisturizers. (In 2012, squalene sold for €20–€22/kg and squalane sold for €25–€26/kg. Industry representative, interview by USITC staff, Andalusia, Spain, January 23, 2013.) Refining operations can also involve other vegetable oils, such as sunflower oil, creating a diversity of income streams which can protect a producer from downturns in a given market.

<sup>61</sup> Industry representatives, interviews by USITC staff, Andalusia, Spain, January 23–24, 2013.

<sup>62</sup> Industry representative, interviews by USITC staff, Andalusia, Spain, January 23–24, 2013.

<sup>63</sup> International olive oil prices declined over the 2008–12 period owing to increased production (mainly in Spain), which outpaced consumption (see box 2.2). However, in MY 2012/13 global wholesale prices rose when a poor harvest drastically reduced production in Spain.

<sup>64</sup> EC, "Action Plan for the EU Olive Oil Sector," June 18, 2012, 5. See chapter 6 for further information.



## **Product-Differentiated Pricing**

Product-differentiated pricing involves pricing products to reflect their unique quality attributes. Firms using this strategy create brand loyalty among customers, who respond by being less sensitive to price.<sup>65</sup> A small fraction of olive oil sold in the U.S. market is produced by smaller, vertically integrated olive oil producers, including those in the United States. Such producers focus on selling premium extra virgin olive oil at prices generally above the industry average, prices which reflect the quality attributes of their product. These producers target U.S. consumers willing to pay more for higher-quality olive oil.

Higher production costs contribute to a higher delivered cost for these producers. U.S. producers' focus on producing almost exclusively high-quality extra virgin olive oil requires intensive use of inputs; early harvesting; costly, high-tech milling machinery; and, in many cases, mechanical harvesting. These producers are also generally vertically integrated in growing and milling, which can increase quality control but has typically been associated with smaller-scale production. The smaller operational scale translates into relatively high fixed production costs, higher delivered costs, and higher prices at the retail level.

## **Distribution and Retailing Costs**

Beyond the cost of olive oil production, the magnitude of other costs, such as transportation, marketing, and distribution, differ among firms competing in the U.S. market and affect their pricing strategies and the retail prices of various olive oil products. Economies of scale allow large blender/bottlers to gain volume discounts for transportation and distribution logistics. Conversely, the small scale of many U.S. olive oil producers translates into relatively high costs. In addition, small firms often find themselves at a disadvantage in entering large, national retail grocery chains. These outlets require large financial investments in retail shelf-placement fees (slotting fees) and an extremely large volume of product, particularly to support in-store promotions.

Moving from local to nationwide sales requires olive oil firms to make significant investments in retail distribution. Firms deliver olive oil to retailers using either their own transportation infrastructure or through national distribution companies. Distributing directly to national retailers requires building a logistics infrastructure that is sufficient to supply products throughout the country. Although some larger California producers have made significant annual investments to support this type of distribution infrastructure,<sup>66</sup> smaller firms currently lack the resources and sales volumes to make these types of investments feasible.<sup>67</sup> As a result, smaller firms are forced to use distribution companies, which is costly. Using national distributors can add an additional 30 percent to a producer's delivered cost to the retailer, making it difficult for small firms to compete on price.<sup>68</sup>

Supplying national food retailers with olive oil also involves considerable investments and volumes of olive oil. Shelf placement fees are payments a supplier makes to a retailer

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<sup>65</sup> Porter, *Competitive Advantage*, 1985.

<sup>66</sup> USITC, hearing transcript, December 5, 2012, 122–124 (testimony of Gregg Kelly, California Olive Ranch).

<sup>67</sup> USITC, hearing transcript, December 5, 2012, 64–66 (testimony of Gregg Kelly, California Olive Ranch).

<sup>68</sup> Industry representative, telephone interview by USITC staff, June 19, 2013.

as a condition for each placement of the supplier's product on the retailer's store shelves or warehouse space.<sup>69</sup> These required payments can be in the tens of thousands of dollars per item, although they do not guarantee sales or profitability for the paying supplier.<sup>70</sup> The high cost of these fees can be a barrier to entry for many smaller U.S. olive oil producers who want to move from farmers' market sales into the branded retail category. One U.S. producer has spent more than \$2.5 million buying shelf space over the last several years for only 50 percent market penetration in the U.S. retail segment.<sup>71</sup>

Because of the price sensitivity of U.S. olive oil consumers, retail grocery promotions play an important role in determining retail price points and sales of olive oil, and can account for more than 50 percent of retail olive oil sales.<sup>72</sup> Promotions are temporary price reductions on a particular brand that are advertised locally and are used by retailers to entice customers into the store and to boost sales. Typically, retailers require a supplier to have a minimum number of promotions on its product per year. Although the price reduction can be absorbed by both the retailer and the supplier in some instances, more typically the majority of the promotional discount is absorbed by the supplier, making promotions costly per unit even though they may move a considerable volume of product. In order to have a promotion, an olive oil supplier must have a large enough volume of product available to satisfy promotion-seeking customers.<sup>73</sup>

Firms selling U.S.-produced olive oil report that they have had considerable success with selling small volumes of high-quality extra virgin olive oil in niche markets. Now U.S. producers believe that they have developed a cost-effective way of producing very high quality olive oil on a large scale, which has not been done before in the United States. However, they have stated that they are currently finding it difficult to break into national retail sales, citing distribution costs and retail pricing practices as major obstacles to doing so.<sup>74</sup>

## **Retail Market Prices**

As noted, olive oil prices in the U.S. retail market vary by grade, region of the country, and business strategy of the producing company. U.S. retail market data for olive oil show a wide range of prices for extra virgin olive oil. According to Nielsen, U.S. extra virgin prices for major national imported brands ranged from \$0.17 per ounce to \$0.60 per ounce,<sup>75</sup> while U.S. retail prices for domestic extra virgin ranged from \$0.47 to \$1.89 per ounce.<sup>76</sup>

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<sup>69</sup> FTC, "Slotting Allowances," November 2003; USITC, hearing transcript, December 5, 2012, 122–24 (testimony of Gregg Kelly, California Olive Ranch).

<sup>70</sup> Industry representative, interview by USITC staff, Andalusia, Spain, January 24, 2013; industry representatives, interview by USITC staff, Madrid, Spain, January 22, 2013.

<sup>71</sup> USITC, hearing transcript, December 5, 2012, 122–24 (testimony of Gregg Kelly, California Olive Ranch). This U.S. producer sells to about one-half of the large grocery retailers in the country. Industry representative, telephone interview by USITC staff, June 19, 2013.

<sup>72</sup> Industry representative, telephone interview by USITC staff, June 11, 2013; industry representative, telephone interview by USITC staff, June 19, 2013.

<sup>73</sup> Ibid.

<sup>74</sup> USITC, hearing transcript, December 5, 2012, 122–25 (testimony of Gregg Kelly, California Olive Ranch).

<sup>75</sup> The top 10 major national brands (including private label sales as a "brand") during 2010–12 by market share included private label sales, Bertolli, Felippo Berio, Pompeian, Star, Colavita, Carapelli, Botticelli, Crisco, and Capatriti.

<sup>76</sup> Price data in this section are from Nielsen, U.S. Retail Market Data, 2013, unless otherwise noted.

Global olive oil prices have been declining in recent years, a result of oversupply following three consecutive bumper crops in Spain. U.S. market pricing data reflect the general decline in global wholesale prices. Retail prices of the top 10 national brands fell by 7 percent on average during 2010–12. The recent decline in prices may now be beginning to reverse, following a severe drought in Spain in MY 2012/13 that reduced global supplies by about 26 percent. Prices at the U.S. retail level were slow to respond to the dramatic increase in wholesale prices because of previously high inventory levels, but U.S. retail prices have risen recently as inventory levels continue to decline.<sup>77</sup>

As discussed above, firms' pricing strategies are influenced by their business model, which dictates their cost structure and target market. Average retail prices of extra virgin olive oil of selected firms are presented in table 4.2. U.S. producers and importers of single-source olive oil tend to follow product-differentiated pricing, emphasizing the premium quality and flavor of their product (reflected in its higher price), while the large blenders/bottlers tend to follow a cost leadership strategy, competing primarily on price.

**TABLE 4.2** Average extra virgin olive oil price per ounce by brand, February 2010–February 2013

Brand by type	Average price (\$ per ounce)
<b>Domestic</b>	
California Olive Ranch	0.47
Lodi Olive Oil Company	0.99
<b>Large blenders/bottlers</b>	
Capatriti	<sup>a</sup> 0.17
Felipo Berio	0.26
Bertolli	0.26
Star	0.35
Pompeian	0.37
<b>Single source</b>	
Colavita	0.60
Lucini	0.96

Source: Nielsen, U.S. Retail Market Data, 2013.

<sup>a</sup>Kangadis Food Inc., which operates under the name The Gourmet Factory and markets the brand Capatriti, was sued in February 2013 by the North American Olive Oil Association (NAOOA) in U.S. District Court for deceptively marketing products that included pomace oil and were not labeled as such. Kangadis admitted that its "100% Pure Olive Oil" product "contained only olive-pomace oil" prior to the suit. Reportedly, NAOOA pursued the case because of the price disparity between Capatriti and other competitive brands in the retail market. *North American Olive Oil Ass'n v. Kangadis Food Inc.*, (S.D.N.Y. April 25, 2013); Storm, "Trade Group Lawsuit," *New York Times*, February 6, 2013.

Prices of domestically produced extra virgin olive oil vary dramatically, depending on scale and the production method used. California Olive Ranch, the largest producer in the United States, is a vertically integrated operation that uses mechanical harvesting. This firm's relative scale and efficiency allowed it to market its olive oil at an average price of \$0.47 per ounce during this period. In contrast, the Lodi Olive Oil Company, also of California, hand-harvests its olives and markets smaller volumes of oil, which sold at an average retail price of \$0.99 per ounce. While California Olive Ranch is much more widely distributed in the U.S. market, both firms target consumers whose purchasing decisions are not entirely based on price, but also consider the flavor profile.<sup>78</sup>

<sup>77</sup> In response to the fall in Spanish production, between June 2012 and January 2013 producer prices in Italy and Greece rose by approximately 30 percent while prices in Spain increased by about 60 percent. Industry representative, interview by USITC staff, Washington DC, June 26, 2013; industry representative, interview by USITC staff, Andalusia, Spain, January 23, 2013.

<sup>78</sup> Industry representatives, interview by USITC staff, November 13–15, 2012.

Average retail prices per ounce of extra virgin olive oil supplied by large blenders/bottlers, which accounted for over 90 percent of extra virgin olive oil sales in the U.S. retail market during 2010–12, were much lower than those for U.S.-produced extra virgin olive oil during this period. These large blenders/bottlers generally market an extra virgin olive oil that is cheaper to produce than premium extra virgin. Likely because of their low production, transportation, and distribution costs, these firms offered the lowest prices for extra virgin olive oil in the U.S. retail market, ranging from between \$0.17 and \$0.37 per ounce during 2010–12.

Single-source imported extra virgin olive oils are often produced by premium and artisanal olive oil producers in other countries, as well as non-integrated companies that bottle and market oil from premium producers in a single foreign country. These premium products tend to have a higher cost structure and market price than many mild-flavored extra virgin products sold in the U.S. market. Both Lucini and Colavita market 100 percent Italian olive oil in the United States and source their oil from producers that primarily use higher-cost production methods, including hand harvesting and modern milling technology. Yet Colavita is much larger than Lucini, and Colavita's greater economies of scale likely contribute to lower costs per unit relative to Lucini, resulting in a lower average retail price during this period (\$0.60 per ounce versus \$0.96 per ounce). Lucini's target market is consumers with a knowledge of olive oil who prefer premium oils with fruity and bitter flavor characteristics.<sup>79</sup> For its part, Colavita's U.S. market approach targets consumers that enjoy a fruitier olive oil and are willing to pay a slight premium for 100 percent Italian oil, but are also slightly more cost conscious than premium customers.<sup>80</sup> Colavita's pricing strategy places its products at the price point below premium brands but above the low price of the large blender/bottlers.

## Econometric Analysis of Demand

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One important issue for the development of the U.S. industry is the effect that imported olive oils have on the consumption of U.S.-produced oil. This issue can be explored through an econometric estimation of demand for olive oil products available at the retail level. Although many factors could affect a consumer's decision to purchase domestically produced oil (including availability, the range of imported products being offered, and consumer perception of grades and quality), this approach measures the responsiveness of demand for any one category of oil to changes in its own price and the price of other oils. The olive oil categories for which demand relationships were estimated included (1) domestically produced branded extra virgin, (2) branded foreign extra virgin, (3) private label extra virgin, and (4) all other non-extra virgin grades of olive oil. These relationships were estimated using an "almost ideal demand system" (AIDS) applied to weekly U.S. regional retail sales data from February 2010 to February 2013.<sup>81</sup>

The results of this analysis provide some insights into consumption patterns in the U.S. market (table 4.3).<sup>82</sup> All own-price elasticities show that demand is inversely related to

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<sup>79</sup> Industry representative, telephone interview by USITC staff, December 13, 2012.

<sup>80</sup> Industry representatives, interview by USITC staff, April 9, 2013.

<sup>81</sup> See appendix E for further detail.

<sup>82</sup> The same analysis was conducted on disaggregated regional sales data for the Pacific region, since the availability of domestically produced olive oil there exceeded the national average. Estimated elasticities from this model showed similar statistical significance and were of the same direction and order of magnitude as the national results. For that reason, the results have been omitted here, but they can be found in appendix E.

**TABLE 4.3** Price elasticities for major olive oil categories<sup>a</sup>

Effect on	Change in price of			
	Foreign Branded EVOO	Private Label EVOO	Domestic Branded EVOO	Other Non-EVOO
Foreign Branded EVOO	<b>-1.792</b>	<b>0.235</b>	0.009	<b>0.528</b>
Private Label EVOO	<b>0.619</b>	<b>-2.058</b>	-0.025	<b>0.598</b>
Domestic Branded EVOO	0.495	-0.350	<b>-1.002</b>	0.226
Other Non-EVOO	<b>0.656</b>	<b>0.289</b>	0.003	<b>-2.008</b>

Source: Nielsen, U.S. Retail Market Data, 2013; USITC staff estimates.

Notes: EVOO is used here as an abbreviation for “extra virgin olive oil.” The bolded numbers can be distinguished statistically from zero at conventional significance levels. Please refer to appendix E for the specific standard errors. Elasticities are conditional on total expenditures in non-flavored olive oil. Elasticities were evaluated at mean values.

<sup>a</sup>Average of 9 U.S. Census geographic divisions.

price, as expected. The demand elasticity for domestic branded extra virgin is about 1 (in absolute value)—i.e., for every 1 percent increase in the price of domestic extra virgin olive oil at the retail level, there is an identical 1 percent decrease in consumer purchases. In contrast, own-price elasticities for all other categories are greater than 1 (i.e., more elastic)—a 1 percent increase in price for any of these categories results in a 1.8 to 2.1 percent decrease in purchases. These findings suggest that consumers of domestic branded extra virgin olive oil are less sensitive to changes in price than consumers of other extra virgin categories. They also suggest that if the price of all olive oil categories were to rise, possibly as a result of a reduction in global supplies or new mandatory testing costs for oil sold in the U.S. market, demand for domestically produced extra virgin olive oil would be less affected by the increase (i.e., would tend to drop less).<sup>83</sup>

Further information about consumer perceptions of olive oil category offerings and the positioning of domestic extra virgin olive oil in the U.S. retail market is provided by the cross-price elasticities of demand (i.e., how demand for one oil is affected by price changes in another). The model results provide little evidence that purchases of domestic branded extra virgin olive oil are affected by price changes for branded foreign extra virgin olive oil, private label extra virgin olive oil, or all other grades of olive oil.<sup>84</sup> The model results suggest that retail consumers largely consider domestic olive oil to still be a niche product, such that their purchases are less motivated by cross-price relationships than by some other intrinsic attributes of the product, such as the product’s domestic origin or its reputation for high quality. At the same time, all other categories are little affected by changes in the price of domestic branded extra virgin olive oil.<sup>85</sup> This finding may be explained by the fact that domestic olive oil is not yet available in all retail establishments, so a change in the price of domestic olive oil may not affect product offerings at a consumer’s local supermarket. This finding also suggests that although the retail sales volume of domestic olive oils is growing, domestic olive oils are being

<sup>83</sup> For example, if prices of all varieties rise by the same percentage, then the percentage decline in the quantity of domestic extra virgin olive oil purchased is less than the decline in other categories, and the difference is statistically significant at conventional levels.

<sup>84</sup> None of the cross-price elasticities in the domestic branded extra virgin olive oil row are statistically significantly different from zero.

<sup>85</sup> For example, a 1 percent rise in the price of domestic olive oil results in only a 0.009 percent increase in the quantity demanded of foreign branded extra virgin olive oil; further, none of the cross-price elasticities in this column are statistically significantly different from zero.

purchased by a particular type of consumer and have not yet achieved mainstream status.<sup>86</sup>

In contrast, consumers appear willing to switch between branded foreign extra virgin, private label extra virgin, and other grades of olive oil in response to a change in price of one of the other categories.<sup>87</sup> Foreign extra virgin olive oil (branded and private label) even appears quite substitutable with non-extra virgin olive oil.<sup>88</sup> These patterns of substitutability may imply that American consumers are unaware of the differences between olive oil grades or that consumers are aware of the differences between grades, but it is not a significant factor in their purchasing decisions.

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<sup>86</sup> The largest domestic extra virgin brand has only a 1 percent retail market share and is still not yet available nationally.

<sup>87</sup> All cross-price elasticities between these three categories are highly significant and positive.

<sup>88</sup> For example, a 1 percent rise in the price of non-extra virgin oil results in a 0.528 percent increase in the quantity demanded of foreign branded extra virgin olive oil.

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# CHAPTER 5

## U.S. Olive Oil Production

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### Overview

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While olive oil production in California dates back to the 1700s, the recent growth of the industry has been driven by the adoption of the modern super-high-density (SHD), mechanically harvested production system in California. The new system substantially altered cost structures and drove investment in the sector at a time when domestic demand for olive oil was growing and farmers were looking to diversify into crops that both had low water needs and could be mechanically harvested. Despite its growing investment, the United States is still a small global producer of olive oil.

From the olive-growing phase to the final consumer, two separate value chains are generally used by U.S. olive oil firms.<sup>1</sup> The first value chain is made up of small-scale growers using traditional production systems that either run their own small mills or employ contract milling services. Their niche products are typically more expensive and sold at farmer's markets, high-end boutique stores, and over the Internet. The second value chain is composed of a small number of medium and large mills that both produce their own olives using SHD production systems and/or contract for olives from growers who use the SHD method. This production segment accounts for the bulk of olive oil produced in the United States—around 80 percent. This product is often marketed to retail establishments but can enter niche markets as well.

U.S. growers are efficiently producing a high-quality olive oil, but certain competitive factors, both positive and negative, affect their ability to compete with the world's largest olive oil-producing nations. These factors include product differentiation, government policies or support mechanisms, cost structure at the farm level, industry size, and competition from alternative crops.

This chapter reviews U.S. olive oil production and the factors affecting the competitiveness of firms that produce oil in the United States. The chapter describes the two distinct value chains and business models that U.S. producers employ, including differences in production practices, scale, and marketing outlets. For information regarding olive oil consumption patterns and the factors affecting olive oil demand in the U.S. market, see chapter 4.

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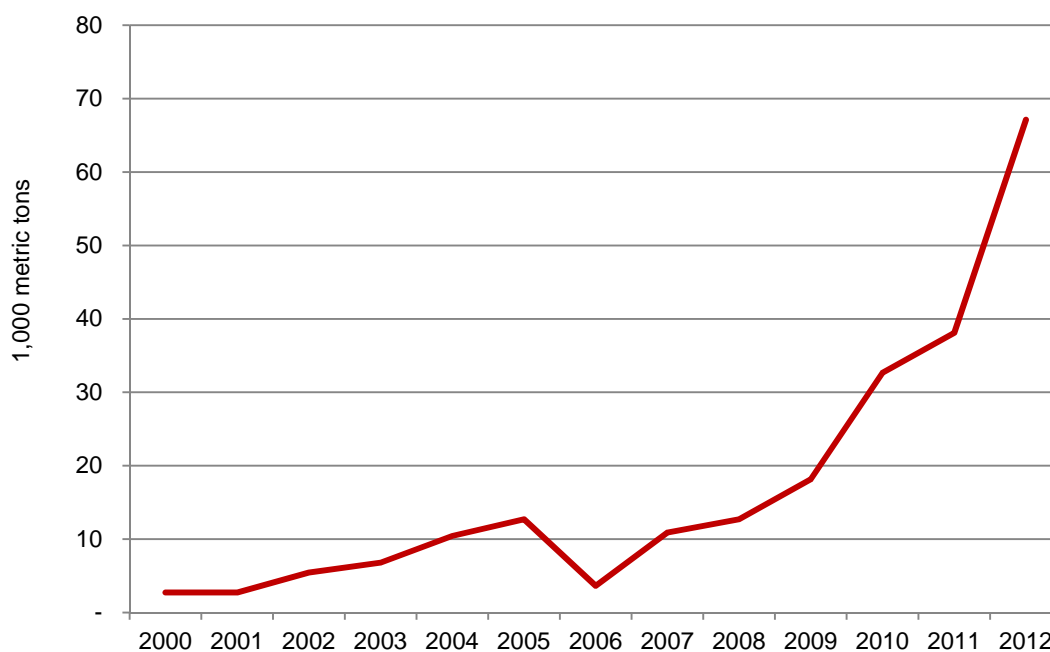
<sup>1</sup> U.S. olive oil-producing firms employ a wide range of business strategies and have their own individual characteristics. However, most producers and processors fall into one of the two value chains outlined here.

# Production Profile

## Production Overview

Olive oil production has grown substantially in the United States over the past decade, and total olive plantings have risen as well, driven by new SHD groves intended for production of olive oil. The total olive-bearing acreage, for both table olives and oil olives, reached an estimated 44,000 acres or 17,806 hectares (ha) in 2012, the highest level on record.<sup>2</sup> Although the acreage data are not subdivided by usage, industry experts estimate that about 30,000 acres (12,141 ha) were devoted to olive oil production in 2012.<sup>3</sup> This growth in oil olive acreage also can be illustrated by the rise in the quantity of olives diverted to oil usage (figure 5.1). In 2012, approximately 46 percent of California's olive production was projected to be crushed for oil, up from an average share of 4 percent in the 1990s.<sup>4</sup> Increased plantings of oil olives led U.S. oil production to grow from 400 metric tons (mt) in marketing year (MY) 2000/01 to the more than 8,000 mt projected for MY 2012/13 (table 5.1).<sup>5</sup>

**FIGURE 5.1** U.S. olive fruit crushed for oil, 2000-2012



Source: Staff calculation based on USDA, NASS, *Fruit and Tree Nut Annual*, 2000-2012.

<sup>2</sup> Official records for olives date back to 1920. At present, California is the only state included in the annual USDA NASS statistical surveys for olives. More details on acreage and production in other states is included in box 5.2 below. USDA, NASS, *Noncitrus Fruits and Nuts 2012*, January 25, 2013, 26; USDA, NASS, "California Olives, 1920–2010," February 2011, 1–2.

<sup>3</sup> Industry representative, interview by USITC staff, California, November 14, 2012.

<sup>4</sup> USDA, NASS, *Noncitrus Fruits and Nuts 2012*, January 2013, 30.

<sup>5</sup> Industry representative, email to USITC staff, June 11, 2013.

**TABLE 5.1** United States: Olive oil supply, consumption, and trade, 2000/01, 2007/08–12/13 (1,000 mt)

	2000/01	2007/08	2008/09	2009/10	2010/11	<sup>a</sup> 2011/12	<sup>b</sup> 2012/13
Production	0.4	1.4	1.8	2.9	4.1	4.5	8.3
Imports	205.0	245.2	255.3	258.4	274.9	300.4	305.7
Consumption	201.7	240.4	251.6	255.8	272.1	296.2	302.2
Exports	3.7	6.2	5.5	5.5	6.9	8.8	11.7

Source: California Olive Oil Council representative, email to USITC staff, June 11, 2013; GTIS, Global Trade Atlas database (accessed June 19, 2013); USITC staff calculation based on industry representatives, email to USITC staff, June 11, 2013.

Note: A marketing year spans October 1 to September 30 the following year.

<sup>a</sup>Provisional.

<sup>b</sup>Imports and exports projected based on annualized pace-to-date through April 2013.

As noted, the United States remains a minor global producer, accounting for just 0.2 percent of global olive acreage and 0.3 percent of production.<sup>6</sup> Even within the United States, domestic production of olive oil accounts for only around 3 percent of domestic consumption.<sup>7</sup>

### *Olive-Growing Sector*

Olive trees can be grown in only the warmer parts of the United States, and an estimated 99 percent of total U.S. olive oil production presently comes from California, mostly the state's Central Valley.<sup>8</sup> Olives have been grown in California for centuries, but the large-scale production of olive oil began only in the last decade with the adoption of SHD olive farming using mechanical harvesters (box 5.1).

Olives are grown in six main production regions in California: North Coast, Central Coast, South Coast, Sacramento Valley, San Joaquin Valley, and Sierra Foothills (figure 5.2).<sup>9</sup> Acreage is highly concentrated in the Sacramento and San Joaquin Valleys, accounting for 46 and 48 percent, respectively, of the state's total harvested olive acreage in 2011.<sup>10</sup>

In 2012, industry experts estimated that there were about 700 growers specifically dedicated to oil olives in California.<sup>11</sup> Although the California industry encompasses a

<sup>6</sup> USITC calculation based on data from IOC, "40th Meeting," 14–15 November, 2012, 3; USITC calculation based on data from industry representative, email to USITC staff, June 11, 2013 and IOC, "Table 1: [World] Production," November 2012.

<sup>7</sup> USITC calculation based on the ratio of MY 2012/13 production (which will be marketed mostly in 2013) to U.S. imports in 2011/12.

<sup>8</sup> USITC calculation based on production estimates for 2012 from the various olive-growing states. Industry representative, telephone interview by USITC staff, March 15, 2013; industry representatives, emails to USITC staff, March 27, 2013; April 4, 2013; and April 19, 2013.

<sup>9</sup> SAGE Center, "2010 California Olive Oil," August 2010, 3. The Sacramento and San Joaquin Valleys together make up California's Central Valley.

<sup>10</sup> USITC calculation based on data from CDFA, "California County," December 17, 2012, 57; SAGE Center, "2010 California Olive Oil," August 2010, 3. This estimate is derived by assigning all of San Joaquin County's acreage to the San Joaquin Valley region, although the county falls into both the San Joaquin Valley and Sacramento Valley production regions as shown in figure 5.2.

<sup>11</sup> Industry representative, interview by USITC staff, California, November 14, 2012. USDA's last *Census of Agriculture* (2007) identified 1,696 olive-growing operations in the United States, with both bearing and nonbearing acreage for oil and canning olives combined. Of these, 1,660 were located in California, 23 in Texas, 8 in Oregon, and 5 in Arizona. USDA, NASS, *Census of Agriculture: 2007, 2009*, 549.

#### **BOX 5.1** Development of the olive oil industry in California

Olives were first brought to California by Spanish missionaries in 1769.<sup>a</sup> While most olives were initially destined for oil use, in the early 1900s the focus shifted to canning olives for table use due to the advent of new canning technologies and more attractive returns for growers.<sup>b</sup> Olive oil production became a secondary operation in the production of olives for table use—the culls from canned fruit production were pressed to produce low-quality oil.<sup>c</sup> In the 1980s, an increasing number of growers began to emerge as producers of small-quantity, high-quality olive oils designed for the niche gourmet food market.<sup>d</sup> In the late 1990s Spanish investors introduced modern SHD olive farming to the state. This production system is characterized by closer tree spacing and significant tree pruning and maintenance, such that olives can be harvested mechanically by an over-the-row mechanical harvester. The adoption of this production system in California makes olives a much more attractive cropping option because it does not rely on manual labor for harvest, can be grown on marginal land, requires less water than most other cropping alternatives, faces few pests, and enjoys rapidly rising domestic consumer demand. Olive plantings in California increased rapidly over the last decade, and most of this growth was in SHD farms.<sup>e</sup> Some of the first developers of SHD groves were not professional farmers, but were investors interested in a new industry that offered the potential of high returns.<sup>f</sup> Most SHD farmers today run diversified operations producing a wide array of other crops, including almonds, tomatoes for canning, pistachios, and wine grapes. More recently, many U.S. firms that bottle imported olive oil have started their own California groves or have contracted with producers in the state so that they can begin to bottle their own “California-grown” line and capitalize on the state’s reputation for producing high-quality oils.<sup>g</sup>

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<sup>a</sup> Warnert, “New Methods,” January–March 2011, 6.

<sup>b</sup> Senise Barrio and Carman, “Olive Oil,” May/June 2005, 1.

<sup>c</sup> Vossen and Kicenik Devarenne, “UC Cooperative Extension,” January–March 2011, 9.

<sup>d</sup> Ibid.

<sup>e</sup> Industry representatives, interviews by USITC staff, California, November 14, 2012; Tous et al., “Mediterranean Clonal Selections,” January–March 2011, 35.

<sup>f</sup> Industry representative, interview by USITC staff, California, November 15, 2012.

<sup>g</sup> Industry representative, interview by USITC staff, Maryland, December 20, 2012; industry representative, interview by USITC staff, Rome, Italy, February 4, 2013.

Source: SAGE Center, "2010 California Olive Oil," August 2010, 3–4.



range of farm sizes and structures, it can be divided broadly into two segments based on farm size. The first segment is made up of small or medium-density operations (typically less than 20 acres, or 8 ha) that rely mostly on manual labor for harvest.<sup>12</sup> This artisanal segment accounts for nearly 90 percent of the state's oil olive farms but only 20 percent of total production. The second segment consists of large, SHD farms that account for 80 percent of production.

Outside California, certain Southern states, including Arizona, Florida, Georgia, and Texas, are currently producing olives for olive oil. Although industry leaders express enthusiasm about the growth potential for olive oil production in their respective states, at present it is mostly produced as a high-value niche product (see box 5.2).<sup>13</sup> Because U.S. production is centered in California, this chapter focuses on production in that state.

### **Small-Scale Medium-density and Artisanal Segments**

There are about 620 small-scale oil olive growers in California practicing low- to medium-density production on about 8,000 acres (3,237 ha).<sup>14</sup> Most of these operations grow 0.5 to 5 acres of olives (or 0.2 ha to 2 ha), although a few harvest as many as 40 acres (16 ha).<sup>15</sup> Most small-scale groves are planted using more traditional production methods at an average density of 100 to 150 trees per acre (247 to 371 trees per ha), although planting densities in some more intensive groves can reach as many as 270 trees per acre (667 trees per ha).<sup>16</sup> Because these types of farms rely mostly upon manual labor, groves can be planted on steeper grades.

Olives grown in this system cannot be harvested until at least the fourth year after planting, and plants typically reach their maximum yield potential after 6 to 10 years, depending on tree variety and management practices.<sup>17</sup> Owing mostly to lower planting densities, yields for these operations range between 2.5 and 3.0 short tons of fruit per acre (5.6-6.7 mt/ha), much lower than yields under SHD systems.<sup>18</sup> Also, alternate bearing production cycles can substantially affect annual production levels for growers of this size because the trees are not as intensively managed as in SHD systems.<sup>19</sup>

One advantage of lower-density production systems is that several varieties can be grown, compared with only three varieties (Arbequina, Arbosana, and Koroneiki) available to SHD growers. More than 150 varieties of olives are grown by small producers in California, including Arbequina, Arbosana, Ascolano, Coratina, Frantoio, Koroneiki, Leccino, Manzanillo, Maurino, Mission, Pendolino, Sevillano, and Taggiasca.<sup>20</sup> This wide array of varieties allows small growers to produce more specialty, niche oils than SHD growers.

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<sup>12</sup> Vossen and Kicenik Devarenne, "UC Cooperative Extension," January–March 2011, 8.

<sup>13</sup> Industry representatives, emails to USITC staff, May 7, 2013; May 8, 2013; and May 9, 2013.

<sup>14</sup> Industry representative, interview by USITC staff, California, November 14, 2012.

<sup>15</sup> Ibid.

<sup>16</sup> SAGE Center, "2010 California Olive Oil," August 2010, 4; UCCE, *Sample Costs to Establish a Medium-Density*, 2011, 3.

<sup>17</sup> UCCE, "Sample Costs," 2001, 6; UCCE, *Sample Costs to Establish a Medium-Density*, 2011, 6.

<sup>18</sup> Ibid.

<sup>19</sup> Alternate bearing is a phenomenon that affects olive trees and other fruit and nut crops, whereby fruit production alternates between large crops during an "on" year and smaller crops during an "off" year. These production swings can be somewhat mitigated through more intensive management techniques. See Fichtner, Wilson, and Lovatt, "Understanding Alternate Bearing in Olive," May/June 2012, 6.

<sup>20</sup> SAGE Center, "2010 California Olive Oil," August 2010, 5.

## **BOX 5.2** The U.S. olive oil industry outside of California

Although California presently accounts for most U.S. olive oil production, there is increasing interest in olive oil production outside of the state. New investment in both olive groves and processing facilities in Florida, Georgia, and Texas, among others, suggests that these states may increase their share of U.S. olive oil production in the future.

The largest olive oil-producing state outside of California is Texas. In 2012, the state produced nearly 14,400 gallons of olive oil from 50 growers on 920 acres.<sup>a</sup> As in California, most groves at present (around 80 percent) are small and use traditional production methods. However, area planted to olives in Texas is projected to grow to 5,000 acres by 2014, with nearly all this growth in SHD groves.<sup>b</sup> Industry experts in the state feel that Texas has great potential for the growth of this industry due to its suitable land in various microclimates, ample agricultural water supply, and favorable regulatory environment.<sup>c</sup> On the processing and marketing side, the state currently has four small mills—the largest of which has a 1.5 ton per hour capacity—and a new larger mill is planned for 2014. The majority of the state's production is sold at farmers' markets and specialty stores, but industry experts estimate that 10–15 percent of Texas olive oil is currently being marketed at the retail level—specifically at Whole Foods, which is headquartered in Texas, and the regional supermarket chain HEB.<sup>d</sup> The Texas Olive Oil Council is active in promoting the industry and will be underwriting research on best management practices funded by the U.S. Department of Agriculture's Specialty Crop Block Grant Program beginning late in 2013.

In contrast to Texas, growers in the state of Georgia are putting in olive groves entirely under the SHD system, and the 2012/13 harvest was the first year that the oldest groves reached full production. The 2012 harvest yielded about 600 gallons of oil from 11 farms on 180 acres (not all of the trees on these farms have reached bearing age).<sup>e</sup> Industry leaders report widespread interest in the new crop and project that olive area will climb to 500 acres.<sup>f</sup> Georgia's groves are located in the extreme southern part of the state, and growers report that this is a production advantage since their harvest occurs prior to any threat of early frost, which means that the fruit has a better chance of reaching optimal ripeness before being damaged by freeze. Additionally, Georgia's East Coast location makes the state ideally positioned to access the largest U.S. olive oil consumer markets.<sup>g</sup> The state currently has one 300 pound-per-hour capacity mill, but an additional mill will be installed in time for the 2013 harvest. About 90 percent of Georgia olive oil is currently marketed in specialty stores, restaurants, and farmers' markets, with the remainder sold in retail grocery chains. The University of Georgia Extension Service, Georgia Department of Agriculture, and Georgia Agribusiness Innovation Center have been supportive of the new industry, and the state is also the site of the USDA laboratory at Blakely.

Olive production is also set to rise in Florida, where industry experts feel that olives could be a promising replacement for citrus groves ravaged by citrus greening disease.<sup>h</sup> Industry experts report that there are currently three SHD groves in the state and several smaller traditional groves, with 2012 production estimated at around 300 gallons of oil.<sup>i</sup> At the current rate of planting, the Florida Olive Council estimates that an additional 500–1,000 acres will be under cultivation by 2015.<sup>j</sup> Florida growers currently haul their olives to the Georgia mill for processing, but a small mill is planned to be installed in North Florida in 2014. As in Georgia, most Florida production is currently marketed in specialty outlets. With an eye to the future of this industry in the state, the University of Florida Institute of Food and Agricultural Sciences has several olive research plots underway, and industry leaders report cooperation with out-of-state research institutions as well.

Besides these states, production of olives for oil has been documented in Arizona and Oregon. In addition, industry experts have noted that parts of South Carolina, Alabama, Mississippi, and Louisiana also have adequate olive-growing conditions in certain areas, dubbing these states (along with Florida, Georgia, and Texas) “the Southern Olive Belt” due to their potential.<sup>k</sup>

<sup>a</sup> Industry representative, email to USITC staff, March 27, 2013.

<sup>b</sup> Ibid.

<sup>c</sup> Industry representative, email to USITC staff, March 27, 2013; USITC, hearing transcript, December 5, 2012, 274 (testimony of Abigail Rutledge, Next Door Pantry LLC).

<sup>d</sup> Industry representative, email to USITC staff, May 7, 2013.

<sup>e</sup> Industry representative, email to USITC staff, April 4, 2013.

<sup>f</sup> USITC, hearing transcript, December 5, 2012, 245 (testimony of Sydne Smith, Georgia Department of Agriculture).

<sup>g</sup> Industry representative, email to USITC staff, April 4, 2013.

<sup>h</sup> USITC, hearing transcript, December 5, 2012, 262 (testimony of Michael O'Hara Garcia, Florida Olive Council).

<sup>i</sup> Industry representative, email to USITC staff, April 19, 2013.

<sup>j</sup> Ibid.

<sup>k</sup> USITC, hearing transcript, December 5, 2012, 272 (testimony of Jason Shaw, Georgia Olive Farms).

## Super-high-density Segment

The SHD olive production segment expanded rapidly over the past decade, as Californian farmers recognized a market opportunity in a new crop production method that has many appealing attributes (see box 5.1). Introduced to California in 1999, operations of this type have been the source of most recent growth in U.S. olive oil production.<sup>21</sup> Today, nearly three-quarters of oil olive acreage in California is estimated to be under SHD.<sup>22</sup>

Only 4 years after planting, olive production per acre under SHD typically ranges between 4 and 5 short tons per acre (9.0-11.2 mt/ha)—an amount that can be processed into between 40 and 45 gallons of olive oil per short ton based on olive varietal, harvest maturity, and other factors. This output is equivalent to a 15 to 17 percent oil yield.<sup>23</sup> One of the advantages of SHD systems is that annual olive yield variations (because of the alternate bearing nature of the tree) can be reduced by aggressive mechanical pruning that takes fruit off the trees to prevent them from becoming overstressed.<sup>24</sup> This helps mills more accurately forecast their production levels and storage needs. SHD producers estimate that their yields may fluctuate 15 percent from one year to the next, while for traditional groves in parts of the Mediterranean the fluctuation can be as high as 60 percent.<sup>25</sup>

One of the disadvantages of SHD production is that only a limited number of cultivars have been adapted for mechanical harvesting, preventing operations from producing a wide variety of niche products. However, development of additional varieties suited to the system is underway.<sup>26</sup>

## Growth Projections for U.S. Oil Olive Production

Despite the sharp rise in SHD olive acreage over the past decade, the long-term production trend is unclear, since oil olive plantings compete for acreage with other crops. The vast majority of California farmers growing olives for oil production operate diversified farms, so if olive returns become less attractive than returns for competing crops, farmers may stop planting additional olive acreage or remove their olive groves altogether. California farmers adjust their crop mixes frequently according to market conditions.<sup>27</sup> For this reason, future growth in the domestic olive oil sector depends on how the price of olive oil compares with prices of other commodities that could be grown on the same land.

The sharp drop in global olive oil prices after two large Spanish crops were harvested in 2010 and 2011 resulted in a dramatic decline in new plantings of olives for oil.<sup>28</sup> Farm prices for many growers in 2011 were between \$12 and \$13 per gallon (\$3.17–\$3.43 per liter), whereas growers estimate that farm prices for olive oil would need to rise to at least \$14 per gallon (approximately \$3.70 per liter) to drive further expansion of olive groves

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<sup>21</sup> UC Davis Olive Center, “Survey: Super-High-Density,” November 2009, 2–3.

<sup>22</sup> Industry representative, interview by USITC staff, California, November 14, 2012.

<sup>23</sup> UCCE, *Sample Costs: Sacramento Valley*, 2007, 6–7; UCCE, *Sample Costs: San Joaquin Valley*, 2007, 7; industry representatives, interviews by USITC staff, California, November 13–15, 2012.

<sup>24</sup> Intensive nutrient regulation also contributes to higher olive yields, but to a much lesser extent than pruning. Industry representative, interview by USITC staff, California, November 15, 2012.

<sup>25</sup> Industry representative, interview by USITC staff, California, November 15, 2012.

<sup>26</sup> Ibid.

<sup>27</sup> Industry representatives, interviews by USITC staff, California, November 12–15, 2012.

<sup>28</sup> Industry representative, interview by USITC staff, California, November 15, 2012.



in California.<sup>29</sup> More land suitable for olive growing in California could be brought into production if prices improve. In 2010, industry experts forecast that over the next decade plantings could increase by 4,500 acres (1,821 ha) annually, leading to production growth of 15 million gallons (nearly 57 million liters).<sup>30</sup> Because olives require much less water than other crops grown in the Central Valley (such as almonds, walnuts, and tree fruit), higher prices for olives could, by one estimate, increase oil olive plantings by an additional 200,000 acres (80,937 ha).<sup>31</sup>

Outside of California, plantings in Texas are projected to rise to 5,000 acres by 2014, plantings in Florida are projected to increase to 500 to 1,000 acres by 2015, and plantings in Georgia are projected to rise to 500 acres in the next five years, resulting in nearly 5,000 total projected new acres outside of California, nearly all in SHD.<sup>32</sup>

## ***Olive Oil-Processing Sector***

California's roughly 40 olive oil mills are concentrated in the main growing regions of the Sacramento and San Joaquin Valleys.<sup>33</sup> The proximity of mills to growers is important in maintaining the quality of the oil produced. Nearly all olives are milled within 24 hours of harvest, helping to minimize olive degradation and average free fatty acid levels.<sup>34</sup> Additionally, olives are typically harvested and delivered to the mill at a ripeness level that delivers more of the compounds that provide desirable oil attributes (such as fruitiness and bitterness), even though the olives have a lower oil content.<sup>35</sup> For this reason, Californian mills must process more olives to produce the same amount of oil as their Mediterranean counterparts, who harvest later in order to maximize oil output.

Like the olive groves, California's olive oil mills vary greatly in terms of size and capacity, with processing rates ranging from 250 pounds per hour up to 80 short tons (160,000 pounds) per hour exclusively for first extraction.<sup>36</sup> The overall olive milling process is similar regardless of the scale of the mill (for more information on olive processing, see chapter 1). However, small and large mills differ in their sourcing strategies and quality control initiatives. For this reason the two are addressed separately.

## **Milling**

### ***Small and medium-scale mills***

Almost all California olive mills are small and medium-sized operations, most using two-stage processing systems, with processing capacities up to around 10 short tons per

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<sup>29</sup> Industry representatives, interviews by USITC staff, California, November 15, 2012.

<sup>30</sup> SAGE Center, "2010 California Olive Oil Industry," August 2010, 8.

<sup>31</sup> Industry representative, interview by USITC staff, California, November 14, 2012.

<sup>32</sup> Industry representatives, emails to USITC staff, March 27, 2013, and April 19, 2013; USITC, hearing transcript, December 5, 2012, 245 (testimony of Sydne Smith, Georgia Department of Agriculture).

<sup>33</sup> SAGE Center, "2010 California Olive Oil Industry," August 2010, 5.

<sup>34</sup> As soon as olives are harvested, they begin to degrade. Olive oils milled from oxidized or fermented olives can have flavor defects like fustiness and rancidity. See USITC, hearing transcript, December 5, 2012, 28 (testimony of Bruce Golino, Santa Cruz Olive Tree Nursery); Frankel et al., "Evaluation of Extra Virgin," April 2011, 5.

<sup>35</sup> Industry representative, interview by USITC staff, California, November 13, 2012.

<sup>36</sup> Many mills in other countries include processing of pomace oils in their capacity estimates, while these numbers reflect the fact that California mills only process whole fruit in a single oil extraction. Industry representatives, emails to USITC staff, April 23, 2013, and May 15, 2013.

hour.<sup>37</sup> Milling costs range between \$300 and \$500 per short ton for these mills.<sup>38</sup> Small mills acquire their olives through several sourcing strategies, including exclusively processing their own olives, contracting with other area growers for part or all of their supply, and custom-milling olives for small growers and then returning the oil to the grower to market independently.<sup>39</sup>

Small and medium-sized mills use a range of approaches to quality control. For example, many small mills are not HACCP (Hazard Analysis and Critical Control Points) certified, although most are interested in acquiring the certification in the near future.<sup>40</sup> Some mills have on-site labs, testing every lot of oil run through their operations for traits such as free fatty acid levels and peroxide values.<sup>41</sup> In addition to a mill's own internal quality control practices, reportedly about half of small mills send oil samples to the California Olive Oil Council (COOC) for quality testing.<sup>42</sup> Further, many operators of small mills state that because they produce in small batches and personally monitor their oils from the field to the bottle, they have a deep understanding of their oil quality. The success of several small brands at international olive oil competitions suggests that this may be the case for some. However, the large number of growers and the range of producer expertise (among several factors) mean that a wide array of qualities is produced in this segment.

### *Large-scale mills*

While there are relatively few large-scale mills in California, they process most of the state's olive oil production, with milling capacities in excess of 25 short tons per hour.<sup>43</sup> California's large mills acquire olives from their own groves as well as from independent growers under contract arrangements. Contract periods vary, but a 6- or 12-year contract is typical.<sup>44</sup> Production contracts often contain quality specifications for the olives delivered to the mill, and growers are almost always paid on a price per gallon basis.<sup>45</sup>

Quality and traceability throughout the production chain is a priority for large mills. Staff from the mills make field visits to contract growers, offering recommendations on irrigation, fertilizer, and crop protection and suggesting harvest dates.<sup>46</sup> Also, the oil and moisture content of the olives are measured every 1–2 weeks so that crop progress is tracked and harvest dates for each grove are estimated in advance. Although, as noted above, olives grown under contract must meet certain quality standards, these are almost always met because of constant mill involvement throughout the entire growing phase.

Once olives arrive at the mill, samples are drawn and tested to decide which storage tank the milled oil should be diverted to. Additionally, the miller tests the oil from each load as it is processed to ensure that the oil is directed to the proper tank based on its varietal

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<sup>37</sup> Industry representative, email to USITC staff, April 23, 2012.

<sup>38</sup> Industry representative, interview by USITC staff, California, November 13, 2012.

<sup>39</sup> Industry representative, telephone interview by USITC staff, March 15, 2013.

<sup>40</sup> Industry representative, telephone interview by USITC staff, March 15, 2013. The FDA defines HACCP as "a management system in which food safety is addressed through the analysis and control of biological, chemical, and physical hazards from raw material production, procurement and handling, to manufacturing, distribution, and consumption of the finished product." FDA, "HACCP Principles and Application Guidelines," August 14, 1997.

<sup>41</sup> Industry representative, interview by USITC staff, California, November 13, 2012.

<sup>42</sup> Industry representative, telephone interview by USITC staff, March 15, 2013.

<sup>43</sup> As in footnote 37, the rate reported here is for first extraction. Industry representatives, interview by USITC staff, California, November 14, 2012; emails to USITC staff, April 23, 2013 and May 15, 2013.

<sup>44</sup> Industry representative, interview by USITC staff, California, November 15, 2012.

<sup>45</sup> Ibid.

<sup>46</sup> Ibid.

and taste profile.<sup>47</sup> Retained samples are then regularly drawn from the storage tanks to constantly monitor various chemical parameters of the oil. All of the largest mills have in-house labs where they test samples to ensure the oil falls within their own accepted quality parameters.<sup>48</sup> Typically the largest mills are HACCP certified.<sup>49</sup>

Each load is tracked from the field to the final storage tank, and bottling lot numbers can be traced back to the tank. Capacity in storage tanks ranges between 35,000 and 175,000 gallons, while one load of fruit can yield 900–1,300 gallons.<sup>50</sup> For this reason, if a problem were to be identified in a tank of oil, the traceback system would make it easier to pinpoint where in the production process the problem occurred and to prevent it from happening again. Finally, oil is sampled and tested again at the bottling phase.

Almost all the oil produced at large-scale mills meets the extra virgin grade because the olives are harvested at the point when their chemical makeup is optimal and within hours are sent to the mills for processing. Most large mills aim to process all olives within 12 hours of harvest, and nearly all loads are milled within 24 hours of coming off the tree.<sup>51</sup>

## **Bottling and Marketing**

Bottling and marketing of olive oil is a large domestic industry involving several U.S. firms. However, the majority of these firms bottle and market imported oil, which is not marketed as a U.S. product as covered in this chapter (for more information on this segment of the industry, see chapter 4). This section focuses on the bottling and marketing of only U.S.-produced oil.

### ***Bottling***

As in growing and milling, bottling and marketing of domestically grown oil takes place in two mostly separate value chains. Many small growers use custom milling services but carry out their own bottling and marketing.<sup>52</sup> Small growers who do their own bottling report that their bottling costs per unit are higher than those of larger mills because they are more likely to use unique (and more expensive) containers in order to differentiate their product.<sup>53</sup>

Outside of custom operations, U.S. olive mills do their own bottling (regardless of mill size). However, these bottling operations vary in capacity and degree of automation. Small and medium-sized mills may bottle their product entirely by hand, while the largest mills have fully automated bottling lines.

### ***Marketing***

Olive oil produced from U.S.-grown olives is sold primarily into three market segments: boutique sales, supermarket retail, and food service. Because of the high per unit production costs of small mills, their sales are mostly made through specialized or high-

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<sup>47</sup> Industry representative, interview by USITC staff, California, November 14, 2012.

<sup>48</sup> Industry representatives, interviews by USITC staff, California, November 14, 2012.

<sup>49</sup> Industry representative, interview by USITC staff, California, November 14, 2012.

<sup>50</sup> Ibid.

<sup>51</sup> Industry representatives, interviews by USITC staff, California, November 12–13, 2012.

<sup>52</sup> Industry representative, email to USITC staff, April 23, 2013.

<sup>53</sup> Industry representative, interview by USITC staff, California, November 14, 2012.

end marketing outlets, such as farmers' markets, roadside stands, specialty retail outlets that focus on gourmet food products, tasting room sales, and direct Internet sales. Firms expend a lot of effort in finding the right market outlet to target their sales efforts.<sup>54</sup> Few small mills sell beyond the West Coast because transportation costs are high compared to the small volumes shipped.<sup>55</sup> Even considering the higher prices boutique oils command, some growers stated that they need additional income sources to keep their firms profitable. An estimated 20 percent of boutique olive oil operations pair their oil production with either a tasting room or an agritourism venture.<sup>56</sup>

The decision whether to pursue boutique or supermarket retail sales largely depends on the amount of oil a mill produces. Boutique sales outlets and niche high-end markets purchase only small volumes from mills, and the number of such outlets is limited. Once mills produce enough volume to exhaust these niche marketing chains, they typically use retail supermarket outlets to sell their oil.<sup>57</sup> However, moving to mass retail requires a large production volume in order to provide the quantities demanded by national grocery chains.<sup>58</sup> It also requires a firm to pay for a national marketing presence, which includes not only the development of distribution networks, but also the shelf placement fees (slotting fees) and promotion packages commonly required by large retailers.<sup>59</sup> Today, while the majority of olive oil produced in the United States is sold at the supermarket retail level, only a few firms have achieved the size needed to jump from niche to national distribution.<sup>60</sup>

Another marketing option for a few of the larger U.S. olive oil firms is the restaurant food service market. This market is highly price driven, and only the largest companies have the economies of scale to supply the product at a competitive cost.<sup>61</sup> Even so, Californian firms marketing to the restaurant food service market sell almost exclusively to "white tablecloth" restaurants, and this market segment is willing to purchase olive oil at the upper end of the price distribution (for more information on this marketing segment, see chapter 4).

While the focus of California-grown olive oil is on the domestic market, there is interest in exporting oil to higher-value Northeast Asian markets, such as Japan. Some California growers also sell to Canada, where there is a well-established market for olive oil and a legally enforced standard for extra virgin olive oil.<sup>62</sup>

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<sup>54</sup> Industry representative, interview by USITC staff, California, November 13, 2012.

<sup>55</sup> Ibid.

<sup>56</sup> Ibid.

<sup>57</sup> Because olives begin degrading as soon as they are picked, and olive oil is a fresh product, it cannot be stored like wine and then sold in a subsequent season. This complicates the marketing process, as timing becomes an issue. See USITC, hearing transcript, December 5, 2012, 63 (testimony of Kyle Sawatzky, Bari Olive Oil Company).

<sup>58</sup> USITC, hearing transcript, December 5, 2012, 65–66 (testimony of Gregg Kelley, California Olive Ranch).

<sup>59</sup> Industry representatives, interview by USITC staff, California, November 14, 2012.

<sup>60</sup> USITC, hearing transcript, December 5, 2012, 122–23 (testimony of Gregg Kelley, California Olive Ranch).

<sup>61</sup> Industry representative, interview by USITC staff, California, November 14, 2012.

<sup>62</sup> Industry representative, interview by USITC staff, California, November 15, 2012.

## Factors Affecting Competitiveness

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As outlined above, the California industry is composed of two largely discrete groups of producers with different cost structures and mostly separate value chains. Large producers (whose products most frequently appear on retail shelves) compete directly with imports, while the second group, consisting largely of small producers, sells mostly in boutique sales channels and suffers less from the price-dampening effect of cheaper imported oils.<sup>63</sup> Several factors influence the competitive landscape of the global olive oil market from the perspective of U.S. growers. Prominent among these are: (1) the extent to which U.S. producers are able to differentiate their products; (2) the lack of government involvement in the olive oil sector, with no mandatory U.S. government regulation of olive oil grades and standards and little government financial support to the sector; (3) comparative farm gate cost structures; (4) industry scale; and (5) the viability of alternative crops in the areas currently devoted to olive production.

### *Product Differentiation*

U.S. olive oil production has grown substantially over the past decade, largely due to the industry's success at differentiating their product from less expensive oils with a certain segment of consumers, and thus creating higher demand. This product differentiation has taken place on various levels. First, the U.S. industry has been able to distinguish its product simply on the basis of quality—most firms are producing high-quality extra virgin oils. The industry has also had success with some consumers because of its product's specialty-item appeal as both a gourmet item and a “local” food. Nevertheless, the industry has struggled to disseminate its message about the unique attributes of its product to the broader U.S. consumer base, which tends to be more price sensitive than quality conscious.

### **Quality of the Product**

As described above, intensive management of SHD groves and quality control practices throughout the production process mean that most Californian olive oil meets the extra virgin grade. For example, quality control contributes to lower average fatty acid levels for Californian oils—virtually all producers report producing oils with less than 0.225 percent free fatty acid (FFA) levels, well below the USDA standard of 0.8 percent for the extra virgin grade.<sup>64</sup> Rigorous quality control regimes are put in place by U.S. producers to target the high quality segment of the extra virgin olive oil market,<sup>65</sup> and U.S. oils are now winning recognition for quality from a wide range of sources. For example, of the 23 products sampled by *Consumer Reports* in 2012, the top two oils (and the only ones to receive “Excellent” ratings) were products of California.<sup>66</sup>

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<sup>63</sup> Econometric evidence presented in chapter 4 suggests that at present in the aggregate U.S. market, this effect is small.

<sup>64</sup> Industry representative, interview by USITC staff, California, November 13, 2012.

<sup>65</sup> Industry representatives, interviews by USITC staff, California, November 13–15, 2012.

<sup>66</sup> Additionally, half of the oils that received “Very Good” ratings were of Californian origin. See *Consumer Reports*, “How to Find the Best Extra-Virgin Olive Oil,” September 2012.

## Value as a Specialty Item

Even before the rise of SHD production, small boutique Californian olive oil producers were successful at marketing to a consumer segment seeking gourmet, high-value food products. While this remains an important market for the majority of California's producers, both growers and retailers report that the high-value niche segment is crowded, which decreases profitability as producers compete among themselves and with high-value imports for shelf space and consumer dollars.<sup>67</sup>

Some U.S. consumers are responding increasingly to products that are marketed as a "local food," even without knowing anything about a product's comparative quality attributes. Producers in California, Texas, Georgia, and Florida all report consumer satisfaction over buying olive oil sourced from their local area.<sup>68</sup> In response to the rising reputation of Californian oils, many large imported oil bottlers are investing in the state to capture some of the value in the "California brand" in their own product lines.<sup>69</sup> For typical consumers, however, the "California is local" campaign may not be effective because many still have the mindset that olive oil should be Italian.<sup>70</sup>

## Consumer Awareness

U.S. consumers represent both an opportunity and a challenge for domestic olive oil producers. While U.S. producers have ready access to the domestic olive oil market, one of the world's largest,<sup>71</sup> most consumers are not knowledgeable about the product and, as noted earlier, tend to base their purchasing decisions on price.<sup>72</sup> This creates a particular challenge for Californian producers, with their higher-cost, high-quality offerings.<sup>73</sup> U.S. producers and bottlers of imported oil have tried to educate consumers through a variety of initiatives, including holding open-house tastings at mills, offering product tastings at retail stores, publicizing chef endorsements in gourmet magazines, and even issuing nationally circulated product coupons.<sup>74</sup> But large-scale consumer education and marketing campaigns are expensive and therefore not affordable for most U.S. firms operating on small margins.<sup>75</sup> However, many Californian producers report that whatever the outreach mechanism, once consumers are introduced to their olive oil products, they are highly likely to become repeat customers.<sup>76</sup>

## *Government Policies and Support Mechanisms*

In contrast to many Mediterranean countries where the government takes an active role in regulating the olive oil industry, the U.S. government has a comparatively hands-off

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<sup>67</sup> Industry representative, interview by USITC staff, California, November 15, 2012.

<sup>68</sup> USITC, hearing transcript, December 5, 2012, 247 (testimony of Sydne Smith, Georgia Department of Agriculture), 252 (testimony of Abby Rutledge, Next Door Pantry), 269 (testimony of Jason Shaw, Georgia Olive Farms).

<sup>69</sup> Industry representative, interview by USITC staff, Maryland, December 20, 2012; industry representative, interview by USITC staff, Rome, Italy, February 4, 2013.

<sup>70</sup> Industry representative, interview by USITC staff, California, November 14, 2012.

<sup>71</sup> IOC, "Table 4: [World] Consumption," November 2012.

<sup>72</sup> Industry representatives, interviews by USITC staff, California, November 15, 2012.

<sup>73</sup> Industry representatives, interviews by USITC staff, California, November 13, 2012.

<sup>74</sup> Industry representatives, interviews by USITC staff, California, November 13 and 15, 2012; USITC, hearing transcript, December 5, 2012, 252–53 (testimony of Abigail Rutledge, Next Door Pantry), 258 (testimony of Jim Henry, Texas Olive Ranch).

<sup>75</sup> Industry representative, interview by USITC staff, California, November 14, 2012.

<sup>76</sup> Industry representatives, interviews by USITC staff, California, November 13–15, 2012.

approach in the domestic sector. The U.S. government has no mandatory olive oil testing regime, and although legal grading standards have recently been updated, there is no official enforcement mechanism. The U.S. industry contends that the lack of enforced grading standards allows oils that do not meet extra virgin standards to be marketed as such without any negative ramifications, thereby misleading U.S. consumers.<sup>77</sup> U.S. producers have begun to explore all avenues that can be used to provide any enforcement of standards or to make them more stringent, including the possible future institution of a U.S. Department of Agriculture (USDA) federal marketing order. Lastly, as is the case for most specialty crops, the U.S. government provides no direct monetary support to the sector. This puts U.S. growers at a delivered cost disadvantage compared to producers abroad who receive government support through direct payments. The industry does, however, benefit indirectly from a variety of publicly funded research and extension efforts. All of these issues are discussed in more detail below.

## **Grading and Marketing Standards**

Because there is no regulatory enforcement of grading standards in the U.S. market, there is a financial incentive for some firms to misrepresent lower-priced, lower-grade olive oils as extra virgin.<sup>78</sup> Official USDA olive oil standards exist but are merely definitions of grades; currently, there is no mechanism to enforce these grades, no government agency that collects and tests random samples of oils, and no penalty for noncompliance with the standards.<sup>79</sup> As a result, studies have found that oils purchased by U.S. consumers that are labeled as extra virgin often do not meet extra virgin criteria as established by the USDA and IOC.<sup>80</sup>

Observers contend that widespread misrepresentation of lower-grade oils as extra virgin depresses retail prices for all true extra virgin oils.<sup>81</sup> Because most domestic growers produce extra virgin grade oil, such misrepresentation puts U.S. olive oils (as well as high-quality imported varieties) at a disadvantage. Lower retail prices translate into lower grower income, which, in the long run, could result in less U.S. production.

## **Prospective Federal Marketing Order**

U.S. producers of high-quality olive oils maintain that the misrepresentation described in the previous section hinders their ability to compete in the U.S. market. For this reason, these producers, represented by the American Olive Oil Producers Association (AOOPA), are seeking mandatory standards that would be enforced by a government

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<sup>77</sup> Industry representatives, interviews by USITC staff, California, November 13–15, 2012; USITC hearing transcript, December 5, 2012, 41 (testimony of Adam Englehardt, California Olive Ranch). USITC hearing transcript, December 5, 2012, 41 (testimony of Alex Ott, American Olive Oil Producers Association).

<sup>78</sup> This misrepresentation is common in products where consumers are unable to distinguish the quality of the product by looks alone. There is ample economic literature detailing this phenomenon, which is based on George Akerlof's work on the market for "lemons" in the automobile market. This principle is applied to the olive oil market in Gustafson and Lybbert, "What's Extra Virgin?" January/February 2009.

<sup>79</sup> Several private companies and nonprofit organizations conduct olive oil quality testing, however, as noted in chapter 3. U.S. government officials, meetings with USITC staff, Washington, DC, October 24, 2012, and March 4, 2013.

<sup>80</sup> For example, as noted in chapter 3, a 2011 UC Davis study found that 73 percent of samples failed IOC sensory standards, while 28 percent of samples failed at least one IOC chemical test as well. A higher percentage of samples failed tests that are included in the German and Australian olive oil standards. UC Davis has since conducted additional studies that came to similar conclusions, and an evaluation conducted by *Consumer Reports* also found that many national brands had some organoleptic flaws. See Frankel et al, "Evaluation of Extra-Virgin," April 2011, 2, 6; "How to Find the Best," *Consumer Reports*, September 2012.

<sup>81</sup> Gustafson and Lybbert, "What's Extra Virgin?" January/February 2009.

agency. One option under consideration by U.S. producers is the institution of a USDA federal marketing order that would include mandatory quality standards for all U.S.-produced oil and possibly imports (for more information on a potential USDA marketing order, see chapter 3).

To date, the U.S. industry has not submitted a marketing order proposal to the USDA.<sup>82</sup> However, industry representatives expect that mandatory quality enforcement would bring some quality transparency to the market and ensure that U.S. production is competing with true extra virgin olive oil. While Californian producers have difficulty competing with Mediterranean imports on the basis of cost alone, they believe that competing on the basis of both cost and quality will improve their position in the domestic market.<sup>83</sup>

## **Government Support Programs**

According to U.S. producers, the lack of direct payment support puts them at a significant disadvantage vis-à-vis their EU counterparts that receive significant government support (for more information on EU support programs, see chapter 6). While the U.S. industry receives no direct support payments, several other government programs (although small in scale) directly and indirectly provide assistance to the sector.

### ***Crop insurance***

The USDA's Risk Management Agency offers subsidized crop insurance coverage through the Federal Crop Insurance Corporation (FCIC) for olives produced in 13 California counties for both table olive and olive oil end uses.<sup>84</sup> In 2012, approximately 22,500 acres (9,105 ha) of California olives were covered by the FCIC, but the end use of the olives covered by the program is not known.<sup>85</sup> Producers growing olives for oil reported that the program is more appropriate for table olives and is not a cost-effective risk management tool for oil olive operations.<sup>86</sup>

### ***Research grants, education, and extension service***

The U.S. olive oil industry has received some competitive grants awarded under the USDA's Specialty Crop Block Grant Program (SCBGP).<sup>87</sup> In fiscal year (FY) 2012, six grants totaling \$1.2 million were directed toward the olive and olive oil sectors in

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<sup>82</sup> U.S. government official, telephone interview by USITC staff, Washington, DC, June 7, 2013.

<sup>83</sup> Industry representatives, interviews by USITC staff, California, November 13–15, 2012.

<sup>84</sup> Under this program, the government covers about 65 percent of the total policy premium.

Government official, email to USITC staff, November 15, 2012. See also USDA, RMA, "Olive Pilot Crop Insurance," December 6, 2012; USDA, FCIC, "Olive Crop Provisions," n.d. (accessed November 1, 2012).

<sup>85</sup> USDA-FCIC, "Summary of Business," n.d. (accessed May 7, 2013).

<sup>86</sup> The current olive insurance program contains large annual yield adjustment factors due to alternate bearing, which is mostly mitigated by the SHD production system under which most oil olives are grown. Industry representative, interview by USITC staff, California, November 15, 2012.

<sup>87</sup> These competitive block grants, awarded directly to state departments of agriculture (often in conjunction with another entity) are designed solely to enhance the competitiveness of specialty crops. They can be targeted toward a multitude of project types, including food safety, marketing and promotion, education, research, and pest and plant health. For more information, see USDA, AMS, "Specialty Crop Block Grant Program," October 2012.



California, and Texas received two olive-related grants totaling \$174,000.<sup>88</sup> These grants were targeted toward specific objectives, and it is not yet clear what total economic benefit they provided to the domestic industry. Funding for the SCBGP was provided for through FY 2012 under the 2008 Farm Bill, and without a new farm bill, the future of this program is uncertain.

Various California universities provide research and extension services to the olive oil industry in California.<sup>89</sup> The most prominent provider is the Olive Center, located within the Robert Mondavi Institute for Wine and Food Science at UC Davis.<sup>90</sup> Established in 2008, the Olive Center has published several widely disseminated studies analyzing the quality of olive oil sold at retail establishments in California; provided technical assistance when the COOC was developing mandatory California olive oil grade standards and labeling requirements; established a sensory laboratory; and provided educational workshops and events for the industry.<sup>91</sup>

### ***Cost Structure at the Farm Level***

Operating costs for U.S. producers and for producers in Spain (the world's largest producer) appear to overlap.<sup>92</sup> However, U.S. producers tend to have higher fixed costs reflecting the recent origin of the U.S. industry and the fact that the majority of growers are still paying debt service on their fixed-cost investments. Most competitor producers in Mediterranean countries have no comparable costs because they are producing olive oil from long-established groves. Hence on a variable-cost basis at the farm level, U.S. olive oil producers are cost competitive with producers in other countries, but their total costs may exceed those of Mediterranean producers in the years that they are paying off their initial investments in items such as land, mechanical harvesters, planting costs, and trellis systems for SHD groves.

### **Operating Costs**

Operating costs for oil olive production include various expenses associated with growing the crop, such as fertilizer and labor for pruning, plus harvest and post-harvest costs. These costs can vary widely by production area conditions, production system, and even olive varietal. Although recent U.S. and Spanish studies have found that operating costs per unit of output at the grower level overlap, these studies should be compared cautiously, with the caveat that they were based on different data series, are from slightly

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<sup>88</sup> Grants were awarded to fund research on the olive psylla, on olive knot-resistant cultivars, and on best management practices for wastewater from olive processing, as well as on a targeted marketing program for California-produced olive oil, a campaign to improve consumer and grower awareness for olives as a Texas specialty crop, and improvements in management practices for olive oil production in Texas. For more information, see USDA-AMS, "Fiscal Year 2012 SCBGP-FB Awards," October 1, 2012; CDFA, "Research—Environmental Concerns," n.d. (accessed May 13, 2013); CDFA, "Marketing—International Trade/Market Enhancement," n.d. (accessed May 13, 2013); CDFA, "Research—Plant Health," n.d. (accessed May 13, 2013); TDA, "2012 Specialty Crop Block Grant," March 28, 2013.

<sup>89</sup> Various California universities are conducting olive oil-related research, including the University of California (UC), Davis; California State University (CSU), Fresno; CSU Chico; UC Riverside; California Polytechnic at San Luis Obispo; and Sonoma State University.

<sup>90</sup> The Olive Center is a self-funded coalition of university and industry experts whose goal is to "do for olives what UC Davis did for wine"—essentially, to centralize research efforts for the crop, with an aim toward increasing the quality of California olive oil and helping it succeed in the market. For more information, see UC Davis Olive Center, "What We Do," n.d. (accessed March 26, 2013).

<sup>91</sup> UC Davis Olive Center, "What We Do," n.d. (accessed March 26, 2013).

<sup>92</sup> UCCE, *Sample Costs: Sacramento Valley*, 2007, 19; AEMO, "Aproximación a los Costes del Cultivo del Olivo" [Approximating the costs of olive growing], June 2010, 42.

different time periods, and they are based on the work and methodologies of different organizations. A 2007 UC Davis study estimated SHD production costs in the Sacramento Valley at between \$6.38 and \$8.92 per gallon (€1.43 to €2.00 per kilogram (kg)), assuming yields of 147.9–210.0 gallons per acre.<sup>93</sup> Industry estimates gathered in 2012 support these estimates, with reported production cost ranges of \$7.50 to \$9.00 per gallon (€1.69 to €2.02 per kg).<sup>94</sup> In comparison, a 2010 study by the Spanish Association of Olive Municipalities (AEMO) estimated Spanish production costs at between €1.29 (\$1.66) and €3.06 (\$3.95) per kg, depending upon the production system used.<sup>95</sup> Thus while the costs of individual production components (like labor or mechanical pruning) may vary substantially from one country to another, bottom-line farm gate operating cost ranges are similar.

In addition to overlapping, these cost ranges also illustrate the diversity of production costs that can coexist within a country due to production system, input needs, and degree of technological advancement. At the same time, cost comparisons such as these fail to take into account differences in oil quality among producers. Such differences may be rewarded with a higher price in some markets and not in others, leading to different producer returns.

### Debt Service on Grove Establishment Costs

As mentioned earlier, most of the world's olive production comes from long-established groves, so grower production expenses are mostly operating costs. In contrast, the majority of U.S. oil olive groves were planted in the past 15 years. Total grove establishment costs would be in excess of half a million dollars in California for a SHD grove of 100 acres (40 ha), based on establishment costs of between \$5,680 and \$6,726 per acre.<sup>96</sup> Establishment costs can be even higher depending on land costs and scale. Land prices fluctuate significantly depending on the quality of soil and location, so establishment costs can be closer to \$10,000 per acre for smaller operations and in certain areas where land is more expensive.<sup>97</sup> The majority of U.S. growers finance all or part of this investment.<sup>98</sup> Based on financing terms available at the time many groves were established, the Californian oil olive farmer typically pays about \$3.50 in debt service for every gallon of oil produced (\$0.92 per liter), equivalent to more than one-quarter of the average per gallon value of virgin olive oil imported into the United States.<sup>99</sup> At MY 2011/2012 price levels, for many growers, nearly all revenue after operating costs went to debt service.<sup>100</sup> Moreover, given that standard loan terms are for 25 years, U.S. growers will continue to incur debt service costs for at least another decade, while most of their “Old World” counterparts have no comparable expense.<sup>101</sup>

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<sup>93</sup> Although the cost estimates for California are from 2007, industry experts estimate that operating costs have not changed significantly since that time. There is one exception: labor rates have increased, but not enough to significantly affect the average cost estimates. Industry representative, telephone interview by USITC staff, May 6, 2013; industry representative, interview by USITC staff, California, November 15, 2012; UCCE, *Sample Costs: Sacramento Valley*, 2007, 19.

<sup>94</sup> Industry representative, interview by USITC staff, California, November 15, 2012.

<sup>95</sup> It is important to note that these estimates do not include producer subsidies. AEMO, “Aproximación a los Costes del Cultivo del Olivo” [Approximating the costs of olive growing], June 2010, 42.

<sup>96</sup> UCCE, *Sample Costs: Sacramento Valley*, 2007, 5; UCCE, *Sample Costs: San Joaquin Valley*, 2007, 5.

<sup>97</sup> Industry representative, interview by USITC staff, California, November 13, 2012.

<sup>98</sup> Industry representative, email to USITC staff, May 2, 2013.

<sup>99</sup> Industry representative, interview by USITC staff, California, November 15, 2012; GTIS, Global Trade Atlas database (accessed June 19, 2013).

<sup>100</sup> Industry representative, interview by USITC staff, California, November 15, 2012.

<sup>101</sup> Ibid.

## *Industry Size*

U.S. olive oil production is negligible compared with major producing countries like Spain and Italy, accounting for just 0.3 percent of global production.<sup>102</sup> Moreover, although U.S. growers sell almost exclusively to the U.S. market, U.S. production currently accounts for only around 3 percent of domestic consumption.<sup>103</sup> The size of the industry puts U.S. growers at a disadvantage relative to many “Old World” suppliers because they are less able to benefit from economies of scale.

The large-scale olive oil production and marketing carried out by producers in many competitor countries allow them to capture cost advantages through economies of scale, particularly in storage and bottling.<sup>104</sup> The scale of European bottling firms, which source oils from around the world, enables them to blend a number of different varieties to create a consistent flavor profile and to blend lower-quality with better-quality oils to produce an oil of average quality at a lower unit cost. Because U.S. olive production is primarily higher-quality extra virgin oil from three main olive varieties, U.S. processors cannot lower their unit costs this way, given their current business model. Scale is also important at the retail level. For example, U.S.-grown brands pay shelf placement fees (slotting fees) typically charged on a “per SKU” basis,<sup>105</sup> as do companies with many times their sales volume.<sup>106</sup> As a result, small domestic brands tend to pay higher per unit placement costs than the largest retail brands, which sell mostly imported oils.<sup>107</sup>

The largest retail brands in the United States (most bottling imported oil) have well-developed, nationwide marketing channels. Even the largest U.S.-grown brand does not have nationwide coverage. Therefore, domestic producers must also devote resources to developing marketing networks and passing through the “no man’s land” between being a small niche producer and a national brand.<sup>108</sup>

## *Cropping Alternatives and Long-Term Availability of Supply*

Although California olive groves are often planted on the state’s less productive land, in almost all areas currently under SHD production, another cropping option is viable. For this reason, most growers weigh comparative returns of olives against other crops in their production decisions. At the grower level, this cropping diversity is positive, but for the industry in the aggregate, it could mean uncertain long-term survival of the U.S. olive oil industry if alternative crops offer comparatively better returns.

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<sup>102</sup> USITC calculation based on data from industry representative, email to USITC staff, June 11, 2013 and IOC, “Table 1: [World] Production,” November 2012.

<sup>103</sup> USITC calculation assuming MY 2012/13 domestic production of 2.7 million gallons and U.S. 2012 imports of 307 million kg. Industry representative, telephone interview by USITC staff, March 15, 2013; GTIS, Global Trade Atlas database (accessed June 19, 2013).

<sup>104</sup> As an example, a single Spanish firm was reported to have a stock of 30 million kg of oil equivalent to more than three times California’s entire production. Industry representative, interview by USITC staff, Spain, January 23, 2013.

<sup>105</sup> SKU stands for “stock-keeping unit,” and refers to each unique product offered for sale, taking into account attributes such as brand, size, and packaging. Each SKU is assigned a unique identifier number, and this number is also sometimes referred to as a SKU.

<sup>106</sup> Industry representative, email to USITC staff, June 7, 2013.

<sup>107</sup> Ibid.

<sup>108</sup> USITC, hearing transcript, December 5, 2012, 66 (testimony of Gregg Kelley, California Olive Ranch).

Most California growers of SHD olives are professional farmers, accustomed to readjusting their tree crop mixes depending on market conditions and evaluating projected comparative returns before investing in a new crop.<sup>109</sup> In the Sacramento and San Joaquin Valleys, where SHD production predominates, olives currently compete for acreage against almonds, walnuts, wine grapes, and more than a dozen other options. Farmers there have the flexibility to switch out of olive production if the returns from alternative crops are expected to be higher. At present, returns for oil olives are comparatively lower, and some growers have already removed olive acreage in order to plant more profitable alternative crops.<sup>110</sup> Given this production dynamic, the long-term forecast for oil olive production is uncertain. This long-term availability of olives is a concern for mills that produce oil using grower contracts. Many mills operate under 6–12 year contracts, but beyond that time frame, contracted growers are under no obligation to continue raising olives. This leaves mills the problem of ensuring sufficient supplies in planning for the future unless they increase production on their own olive holdings.

In contrast, in most countries around the Mediterranean, land in olive oil production is not suitable for growing alternative crops. In some areas, the marginal quality of the land and/or the lack of irrigation infrastructure make olives the only viable planting option, while in others the only available cropping alternative has less favorable returns than olives.<sup>111</sup> Italian farmers are legally prohibited from removing olive trees, so are unable to grow alternative crops even if they wished to do so.<sup>112</sup> For this reason, European mills and bottlers have little doubt regarding their long-term availability of supply.

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<sup>109</sup> Industry representative, interview by USITC staff, California, November 15, 2012.

<sup>110</sup> Golden Olive Ranch, written submission to the USITC, February 11, 2013, 1.

<sup>111</sup> Industry representative, interview by USITC staff, Madrid, Spain, January 22, 2013.

<sup>112</sup> Italian government official, interview by USITC staff, Rome, Italy, February 1, 2013.

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# CHAPTER 6

## European Union

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### Overview

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The European Union (EU) is the global nexus for the production, consumption, and trading of olive oil. Countries in the EU<sup>1</sup> produce approximately 70 percent of the world's supply of olive oil, with over 2.4 million metric tons (mt) produced in marketing year (MY) 2011/12 (table 6.1). Production is concentrated in three countries, with Spain accounting for 66 percent of the EU total in MY 2011/12, Italy for 18 percent, and Greece for 12 percent. A few other countries, most notably Portugal, account for much smaller shares.

**TABLE 6.1** EU: Olive oil supply, consumption, and trade, 2000/01, 2007/08–12/13 (1,000 mt)

	2000/01	2007/08	2008/09	2009/10	2010/11	<sup>a</sup> 2011/12	<sup>b</sup> 2012/13
Production	1,940.5	2,118.5	1,939.0	2,224.5	2,209.0	2,444.0	<sup>c</sup> 1,739.0
Extra-EU imports	126.8	160.8	94.9	75.9	79.0	85.6	90.9
Consumption	1,835.1	1,865.9	1,856.0	1,846.0	1,866.5	1,916.9	1856.9
Extra-EU exports	291.0	357.0	37.2	440.4	481.3	509.1	542.3

Source: IOC, "Tables 1–4: [EU] Production, Imports, Exports, Consumption," November 2012.

Note: A marketing year spans October 1 to September 30 the following year.

<sup>a</sup>Provisional.

<sup>b</sup>Projected.

<sup>c</sup>This MY 2012/13 projection for EU production from the IOC does not include the most up to date data from the Spanish Olive Oil Agency. According to the Spanish Olive Oil Agency, MY 2012/13 production in Spain was 614,100 mt, down from the 820,000 mt projection used by the IOC in the calculation in this table.

This chapter reviews region-wide production and consumption trends before describing the EU agricultural and regulatory policies that affect the olive oil industry's operations in European countries and, by extension, worldwide. Following the policy description, individual country profiles are provided for Spain, Italy, and Greece, the three largest producing countries. The country sections examine the olive oil industries in each of these countries and consider the factors affecting their competitiveness.

Each of the three major producing countries in the EU has different competitive strengths and plays a different role in the global supply chain (table 6.2). Spain produces the greatest volume of oil by far, is the lowest-cost producer, and enjoys greater economies of scale throughout the sector. Italy's growers and millers rely more heavily on traditional production methods than their Spanish counterparts, but Italy also plays an important role in the global olive oil supply chain as a blender and bottler. Greece is known for producing high-quality oil, but relies on expensive traditional production methods. Both Spain and Greece have less capability to bottle and market than Italy. Significant volumes of oil produced in Spain and Greece (as well as North Africa) are sent to Italy for blending and bottling. Bottlers believe consumers in export markets place a premium on olive oil imported from Italy, and Italians have historical experience and skill in blending oil.

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<sup>1</sup> "European Union" and "EU" refer to the EU-27.

**TABLE 6.2** Comparison of key production and consumption characteristics in Spain, Italy, and Greece

	Spain	Italy	Greece
Total production (MY 2011/12)	1,613,400 mt	450,000 mt	295,000 mt
Total oil olive acreage	2.0 million ha (4.9 million acres)	1.1 million ha (2.7 million acres)	621,000 ha (1.5 million acres)
Average olive farm size	5.3 ha (13.1 acres)	1.3 ha (3.2 acres)	1.6 ha (4.0 acres)
Olive yield	2,980 kg/ha	2,760 kg/ha	2,100 kg/ha
Total number of mills	1,740	5,000	2,200
Production characteristics	<ul style="list-style-type: none"> <li>- Widespread involvement of grower cooperatives</li> <li>- Comparatively intensive and large scale, but still many traditional growers</li> </ul>	<ul style="list-style-type: none"> <li>- Mostly groves with traditional planting densities</li> <li>- Small, local mills</li> <li>- Global hub for large bottlers</li> </ul>	<ul style="list-style-type: none"> <li>- Many groves with traditional planting densities on difficult terrain</li> <li>- Very little bottling in-country</li> </ul>
Total consumption (MY 2011/12)	582,100 mt	724,500 mt	213,000 mt
Consumption per capita	14 liters	13 liters	20 liters

Source: IOC, "Table 1 and 4: [EU] Production and Consumption," November 2012; EC, "Economic Analysis of the Olive Sector," July 2012; EU, Eurostat database (accessed March 8, 2013).

EU consumption and extra-EU exports are both important sales channels for the region's producers. EU countries consumed about 60 percent of the world's olive oil in MY 2011/12. While producing countries lead consumption, with Italy, Spain, and Greece being the world's first, second, and fourth leading consumers respectively, growth in olive oil consumption in nonproducing EU countries is an important source of sales for producers. Nonproducing countries increased their share of EU consumption from 6 percent in MY 2000/01 to 11 percent in MY 2011/12.<sup>2</sup> Exports to countries outside the EU are also important, with the United States the world's third-largest consumer of olive oil and sales growing rapidly in many developing countries.

EU policies heavily affect olive oil production and marketing in member countries. Most significantly, the EU provides assistance to olive oil producers through the Common Agricultural Policy (CAP). In each EU olive-growing country, there are significant numbers of small growers who rely on costly traditional methods of production, and therefore have costs that are at or above global prices before direct payments from the CAP are included in their income. Because some of these producers would likely cease production in the absence of income support from the EU, the CAP has the indirect effect of increasing total global olive oil supply, although it is unclear by how much.<sup>3</sup> EU policies also govern the marketing and labeling of olive oil in member countries and, in conjunction with the International Olive Council (IOC), set uniform chemical standards for the region (see chapter 3). Since EU policies govern trade in olive oil and the EU is the world's largest supplier, these policies influence olive oil bottlers' practices worldwide.

<sup>2</sup> IOC, "Table 4: [EU] Consumption," November 2012.

<sup>3</sup> The EU notified the WTO that CAP payments provided through the Single Payment Scheme are "green box payments" (no more than minimally trade- or production-distorting) under the WTO Agreement on Agriculture. WTO, Agriculture Information Management System (accessed May 13, 2013).

## *Production and Consumption Trends*

Production of olive oil in the EU encompasses both intensive and traditional methods, with stark differences in production costs and profitability between the two. These differences are described throughout the chapter. Italy and Greece rely more heavily on traditional methods than Spain, although even in Spain, the traditional segment still accounts for the majority of olive farms.<sup>4</sup> Because about 60 percent of olive growing land in Europe is on heavily sloped terrain,<sup>5</sup> conversion from traditional to modern or intensive methods of production is not always possible. Approximately one-third of plantings are in intensive, irrigated groves.<sup>6</sup> These groves tend to have been planted more recently and are on relatively flat land, which is required for the mechanized harvesting and efficient water management practices that are associated with higher-density plantings. The remaining two-thirds of plantings that are in traditional groves tend to be on steeper terrain. Harvesting on this terrain is done either by hand or with partial mechanization. Many of these groves are not irrigated. The steepness of the terrain and low soil quality makes the land unsuitable for most other crops.

A wide range of olive mill types operate in the EU, with modern, two-phase mills most common in Spain, and older three-phase mills and traditional presses most common in Italy and Greece.<sup>7</sup> Mills in Spain tend to be larger, while in Italy and Greece there are a greater number of smaller, local mills. Most mills are not owned by bottling companies, as bottlers tend to focus on blending, packaging, and marketing oil, with limited vertical integration into olive oil production.

Once olives are grown and milled, the oil moves to the next step in the value chain—bottling—which is far more concentrated than earlier steps. A few large firms account for the majority of the oil that is packaged for commercial sale. Although much of EU bottling takes place in Italy, both Spain and Greece aim to increase their competitiveness by exporting oil bottled in their countries rather than sending it in bulk to Italy. The major firms that perform most of the world’s blending and bottling are headquartered in Spain, Italy, and Portugal. These relatively few large bottling firms make use of global distribution chains. Growers and millers claim that as a result, these bottlers are able to drive down prices for oil; accordingly, producers report that they are seeking ways to capture more of the value of their oil by bottling it themselves for sale to retail markets.

EU countries are the largest consumers of olive oil, with 1.9 million mt consumed in MY 2011/12, representing almost 80 percent of EU production.<sup>8</sup> Italy is the world’s largest consumer, followed closely by Spain. Total annual consumption for Italy and Spain is two to three times higher than in the United States, which is the world’s third-largest consumer. Greece is a close fourth behind the United States.<sup>9</sup> However, on a per capita basis, EU consumption of olive oil is much higher—20 liters per capita in Greece, 14 in Spain, and 13 in Italy, compared with approximately 1 in the United States in MY 2011/12—due to the significantly smaller populations in these countries than the

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<sup>4</sup> AEMO, “Aproximación a los Costes del Cultivo del Olivo” [Approximation of the costs of olive cultivation], June 2010.

<sup>5</sup> De Graaff, Kessler, and Duarte, “Financial Consequences of Cross-Compliance and Flat-rate-per-ha Subsidies,” 2011, 389.

<sup>6</sup> EU official, interview by USITC staff, Washington, DC, December 11, 2012.

<sup>7</sup> See box 1.1 in chapter 1 for a further description of mill types.

<sup>8</sup> IOC, “Table 4: [EU] Consumption,” November 2012.

<sup>9</sup> Ibid.

United States. This is largely due to the role of olive oil as a traditional staple in the diet and cuisine of Mediterranean countries.

Despite high domestic consumption levels, the volume of production in the EU makes the region the world's largest olive oil exporter. Excluding intra-EU trade, the EU accounted for well over 80 percent of world olive oil exports (by value) in 2012.<sup>10</sup> Intra-EU exports, however, are even larger than EU exports to countries outside the region.

## ***European Union Policy***

### **Agricultural Policy**

The European Commission (EC) provides support to the olive oil industry via the CAP. This support includes direct payments to farmers (called "Pillar 1"), rural development programs (called "Pillar 2"), storage aid when olive oil prices fall below a certain threshold, and funding for quality improvement initiatives. CAP funds are provided to member governments, and these governments are responsible for distributing them to producers in accordance with EU regulations.

#### ***Direct support payments***

Direct support payments to farmers are governed by the Single Payment Scheme (SPS), which decouples payment amounts from annual production levels. Direct payments generally comprise between 25 and 50 percent of olive farm income, depending on the year and the type of farm in question.<sup>11</sup> Before 2004, most EU farmers, including olive farmers, received payments based on the volume they produced of a specific crop. Reforms enacted in 2003 and 2004 changed the payment scheme for most agricultural products, so that farmers receive a fixed annual amount based either on historical production levels or on a flat regional payment-per-hectare formula.<sup>12</sup> Under the historical production model—used in the major olive oil-producing countries—farms receive a fixed payment amount based on what they received during the 2000–2002 reference period, a period in which payments were coupled with production levels.<sup>13</sup> Accordingly, payments to olive oil producers are no longer linked to production, and may in fact be based on payments originally coupled to production of another crop grown on the land during the reference period.<sup>14</sup> Further reforms to the direct payment system are being contemplated for 2013–14 (box 6.1).

In the olive oil sector, member states were given the option to keep up to 40 percent of payments linked to production until 2010. During this transitional period, Italy and

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<sup>10</sup> GTIS, Global Trade Atlas database (accessed June 19, 2013).

<sup>11</sup> EC, "Economic Analysis of the Olive Sector," July 2012, 10. Various countries, including Mexico and Argentina, have enacted countervailing duties on imports of olive oil from the EU. In 2006, the EU filed a trade dispute at the WTO concerning Mexican countervailing duties. In 2008, the WTO dispute panel ruled against Mexico by finding that the countervailing measures were inconsistent with certain requirements of the Agreement on Subsidies and Countervailing Measures. WTO, "Mexico—Definitive Countervailing Measures on Olive Oil," September 4, 2008.

<sup>12</sup> European Parliament, *The Single Payment Scheme after 2013*, 2010, 17. Support payments are conditional upon compliance with environmental and agricultural regulations. For olive oil, "this mechanism can help minimize damaging practices such as excessive use of herbicides, intensive soil tillage, and illegal water extraction." EC, *LIFE among the Olives*, 2010, 6.

<sup>13</sup> EC official, interview by USITC staff, Brussels, Belgium, February 26, 2013.

<sup>14</sup> Ibid.

**BOX 6.1 CAP reforms for 2013–14**

CAP reforms for 2013–14 are currently being discussed among EU policymakers. One proposal is to move away from support payments based on historical production levels and towards a flat regional payment-per-hectare system. All three of the major olive oil-producing countries oppose this change.<sup>a</sup> One study of the olive oil industry in Italy found that a move to this system would result in reduced farm income for olive growers in Puglia, one of Italy's main growing regions.<sup>b</sup> Another study found, however, that the change would result in a more equitable distribution of payments between traditional and intensive producers. Because of the link to historical production levels, semi-intensive and intensive producers tend to receive a greater share of total payments to olive producers than traditional producers at present. Under a flat regional payment system, traditional producers would receive up to 30 percent of total payments, compared with 15 percent under the current system.<sup>c</sup>

<sup>a</sup> European Parliament, *The Single Payment Scheme after 2013*, 2010.

<sup>b</sup> Roselli et al., "The Effects of the Health Check," 2009.

<sup>c</sup> De Graaff, Kessler, and Duarte, "Financial Consequences of Cross-Compliance and Flat-rate-per-ha Subsidies," 2011, 392.

Greece moved to the SPS immediately, while Spain elected to preserve some coupled support.<sup>15</sup> Spain's coupled support for olive groves during this period typically amounted to around €100 million annually.<sup>16</sup>

Starting in 2010, all payments to olive oil growers in the EU were integrated into the decoupled SPS, with one exception. Under Article 68 of Regulation 73/2009 (the so-called Health Check), countries are permitted to reallocate up to 10 percent of payments in order to improve the quality of agricultural products, support economically or environmentally vulnerable farming activities, or prevent land abandonment.<sup>17</sup> A share of these reallocated funds can take the form of payments linked to production (i.e., coupled support). In the olive oil sector, Italy and Greece elected to reallocate small amounts from their total payments to provide coupled support for olive oil quality improvement. The annual amounts for Italy and Greece are €9 million and €10 million, respectively, and are fixed for a three-year period (table 6.3).<sup>18</sup>

Because support payments are independent of current production under the SPS scheme, farmers are free to produce any crop using any production method. This means that traditional olive growers may convert their land to intensive or super-high-density (SHD) groves or grow another crop altogether and still receive a payment. But in practice, many of the olive groves receiving payments are located on land that is too steep for conversion to other uses, including SHD production of olives.<sup>19</sup> The link between payments and historical production also means that groves that have been planted on new acreage may not be eligible for payments, since the land may not have been in agricultural use during the reference period.<sup>20</sup> Furthermore, Italy has a law banning the removal of olive trees under most circumstances.<sup>21</sup> Thus it is unlikely that most traditional olive growers can convert their land to SHD groves or other crops.

<sup>15</sup> Roselli et al., "The Effects of the Health Check," 2009, 5; EC, *LIFE among the Olives*, 2010, 6.

<sup>16</sup> EU, "Section III: Commission," February 29, 2012, 255.

<sup>17</sup> European Parliament, *The Single Payment Scheme after 2013*, 2010, 20.

<sup>18</sup> EC official, interview by USITC staff, Brussels, Belgium, February 25, 2013. In addition, Portugal has elected to use Article 68 for decoupled support to the olive oil industry in the amount of €6.7 million annually.

<sup>19</sup> Spanish government official, interview by USITC staff, Andalusia, Spain, January 24, 2013.

<sup>20</sup> EU official, interview by USITC staff, Washington, DC, December 11, 2012.

<sup>21</sup> Roselli et al., "The Effects of the Health Check," 2009, 4.

**TABLE 6.3** 2012 EU CAP Funding (million €)**CAP Funding for Programs for All Agricultural Producers**

	Spain	Italy	Greece
Single Payment Scheme	4,913	4,202	2,225
Rural development programs	1,051	1,267	626

**CAP Funding for Programs Specific to Olive Oil**

Private storage aid (total sum for all producing countries)	23		
	Spain	Italy	Greece
Quality improvement measures	0	36	11
Article 68 coupled direct aid	0	9	10

*Source:* Commission Implementing Regulation (EU) No 564/2012 of 27 June 2012 establishing budgetary ceilings for 2012; Commission Decision 2007/383/EC of 1 June 2007 amending Decision 2006/636/EC; European Union, Statement of Revenue and Expenditure by Section, "Section III: Commission," Official Journal of the European Union, February 29, 2012, 255; EC officials, interviews by USITC staff, Brussels, Belgium, February 26, 2013.

The lack of crop alternatives in the olive-growing sector causes the direct payments, even though they are decoupled from production, to have a greater impact on production than payments given to farmers on land suitable for multiple crops. Typically, farmers base their production decisions on the relative profitability of existing crops compared with available alternatives. But if farmers have no alternatives and are tied to a single crop, they are likely to produce it even when market conditions are difficult. In the case of EU olive farmers, many continue to harvest olives despite costs that are at or above market prices (before support payments are included in their income) because they have no flexibility to move to alternative crops.<sup>22</sup>

***Rural development plans***

In addition to producer payments, the CAP provides funding for rural development plans in each member state.<sup>23</sup> These measures are known as "Pillar 2" of the CAP, to distinguish them from the direct support payments that fall under Pillar 1. Rural development plans are not sector-specific; rather, olive oil producers are among the many beneficiaries throughout the agricultural sector in each country. EC funding levels for rural development plans in Spain, Italy, and Greece are in table 6.3.

The plans are proposed by an individual member state and, if approved, co-funded by the EC and contributions from the member state. Upon submission to the EC, the plans are reviewed to ensure that the funds are entirely decoupled from production and that they contribute to the EU's broad strategic objectives for rural development (such as protection of the environment and diversification of economic activity in rural areas).<sup>24</sup> Areas of focus may include, for example, funding for specific marketing initiatives or support for organic production. Once the plan is approved and funds are provided to the member state, it is up to national or regional authorities to evaluate project proposals

<sup>22</sup> Particularly where agricultural products are grown on marginal land, such as the steep slopes of many EU olive groves, economic analysis has found that the removal of support payments would likely lead to land abandonment. Acs et al., "The Effect of Decoupling on Marginal Agricultural Systems," 2010.

<sup>23</sup> The broad themes of the rural development program are "improving the competitiveness of the agricultural and forestry sector; Improving the environment and the countryside; and improving the quality of life in rural areas and encouraging diversification of the rural economy." EC, "Rural Development Policy 2007–2013" (accessed May 8, 2013).

<sup>24</sup> EC official, interview by USITC staff, Brussels, Belgium, February 27, 2013.

from farmers, villages, agricultural product processors, nongovernmental organizations, and other potential beneficiaries, and to grant funds for specific projects. Olive oil producers, like their counterparts in other agricultural industries, may apply for funding for any initiative that meets the criteria. The EU requires national government contributions ranging from 15 to 50 percent, depending on the country's level of development and whether the project falls in an EU policy priority area. Member states may choose to implement plans at the national or regional level. Spain and Italy implement plans on a regional basis, while Greece implements its plan nationally.<sup>25</sup> Additional detail on Spain, Italy, and Greece's rural development plans is provided in the respective country sections below.

### *Private storage aid*

The CAP also has provisions for private storage aid (PSA) for olive oil.<sup>26</sup> The impact of the PSA program has been both debated within the EU and criticized by producers outside the region. For example, Spanish officials have voiced concerns that PSA could have an "anticompetitive" effect by driving up prices, and U.S. producers have questioned the effects of storage on olive oil quality.<sup>27</sup>

The EC may elect to provide funding for EU olive oil producers to place certain amounts of olive oil in private storage when the market price drops below set thresholds, called trigger prices. The trigger prices are €1.77/kg for extra virgin, €1.71/kg for virgin, and €1.52/kg for lampante olive oils, and these prices have not been modified since the PSA system was established in 1998.<sup>28</sup> The EC compares these trigger prices with the various market prices in Spain (Jaén), Italy (Bari), and Greece (Crete), although when PSA is offered it is typically extended to all producing member states. EC officials report that they consider PSA to be a last resort and that, in addition to price, they consider other factors, including how soon prices are likely to improve (e.g., the forecast for the next marketing year), climatic conditions (e.g., rainfall and temperatures), and the availability of credit to producers and their organizations.<sup>29</sup>

PSA operates as a solicitation for bids from private storage providers. The EC receives the bids and accepts the lowest price offered. Olive oil producers are then free to enter into contracts with storage providers at any time during the PSA window. Storage periods are therefore staggered and do not all begin and end on the same date. PSA is fixed at a flat rate based on the bids received and does not always cover the entire cost of storage. In the most recent round of PSA in May 2012, the amount of aid provided was €0.65 per mt of olive oil stored, per day.<sup>30</sup> According to EC representatives, the share covered by the EC varies based on the producer's arrangement with the storage provider. Cooperatives, for example, may have their own storage facilities and therefore be able to store oil for their producers at a more competitive rate than a third-party provider.<sup>31</sup>

PSA has been granted five times since its inception in 1998. It was first granted in MY 2000/01 and again in MY 2009/10. More recently, it was granted three times—in

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<sup>25</sup> Ibid.

<sup>26</sup> Commission Regulation (EC) No. 826/2008.

<sup>27</sup> Butler, "Spanish Watchdog Says Private Storage Aid Potentially Anti-Competitive," April 17, 2011; USITC, hearing transcript, December 5, 2012, 110 (testimony of Gregg Kelley, California Olive Ranch).

<sup>28</sup> There is a proposal pending in the European Parliament to raise the trigger prices. Butler, "EU Likely to Increase Private Storage Aid Trigger Prices," January 7, 2013.

<sup>29</sup> EC official, interview by USITC staff, Brussels, Belgium, February 26, 2013.

<sup>30</sup> Spanish government officials, interview by USITC staff, Madrid, Spain, January 21, 2013.

<sup>31</sup> EC official, interview by USITC staff, Brussels, Belgium, February 26, 2013.

October 2011 (for up to 100,000 mt of virgin olive oil to be stored for up to six months), February 2012 (for up to 100,000 mt of extra virgin and virgin olive oil to be stored for up to four months), and May 2012 (for up to 100,000 mt of extra virgin and virgin olive oil to be stored for up to six months). The actual amounts stored are usually less than the maximums. For example, in the October 2011 PSA round, 44,338 mt were stored out of a maximum of 100,000 mt.<sup>32</sup> In the May 2012 round, producers used the program more heavily, storing 86,000 mt.<sup>33</sup> According to EC officials, PSA was provided three times recently over a relatively short period due to historically high production levels and the resulting low market prices.<sup>34</sup>

### ***Other measures***

Additional support for the EU olive oil sector is provided through funding for quality improvement measures under the “interventions in agricultural markets” section of the EC budget. (This is separate from Article 68 coupled support for quality improvement programs mentioned above.) Under this program, member states may reallocate funds from the SPS in order to finance operator organizations’ efforts to improve the quality of olive oil.<sup>35</sup> Member states receive and evaluate proposals from eligible operator organizations and provide additional financing (up to 50 percent) for the programs they approve. In 2012, Italy reallocated €36 million to this program and Greece reallocated €1 million. Spain does not reallocate funds under this program.

### **Olive Oil Action Plan**

In 2012, the EC issued its draft “Action Plan for the EU Olive Oil Sector.” The impetus for the plan was the growth in production and consumption of olive oil worldwide and a desire to “preserve and promote the image of olive [oil] and improve the quality” of EU products.<sup>36</sup> The plan also highlights structural challenges in the olive oil industry in the EU, namely that “Spain currently overproduces olive oil” and that “this structural surplus deepens imbalances in bargaining power in the production chain” by making it more difficult for farmers to influence prices.<sup>37</sup> This imbalance of power in the production chain is a defining feature of the olive oil industries in each of the major producing countries of the EU, as described for Spain, Italy, and Greece below.

The plan focuses on six priorities,<sup>38</sup> although so far most of the work on the Action Plan relates to the section titled “quality and control.” To this end, the EU adopted legislation in March 2013 to standardize the number of quality checks that members must perform on olive oil, and to require that results of these checks be transmitted to the EC. The regulation will enter into force in January 2014.<sup>39</sup> Before this legislation, member states were responsible for implementing quality checks and the EC had no record of the

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<sup>32</sup> Butler, “EU Offers Olive Oil Storage Aid,” February 8, 2012.

<sup>33</sup> Spanish government officials, interview by USITC staff, Madrid, Spain, January 21, 2013.

<sup>34</sup> EC official, interview by USITC staff, Brussels, Belgium, February 26, 2013.

<sup>35</sup> This program was established by Article 103 of Council Regulation (EC) No. 1234/2007 and is governed by Commission Regulation (EC) No. 867/2008.

<sup>36</sup> EC official, email to USITC staff, April 26, 2013.

<sup>37</sup> EC, “Action Plan for the EU Olive Oil Sector,” June 18, 2012, 5.

<sup>38</sup> The six areas are quality and control; restructuring the sector; structure of the industry; promotion; working with the IOC; and competition with third countries. The areas of the Action Plan related to promotion and restructuring the sector are subject to CAP funding and are therefore considered longer-term priorities by EC officials. EC, “Action Plan for the EU Olive Oil Sector,” June 18, 2012, 2; EC official, interview by USITC staff, Brussels, Belgium, February 26, 2013.

<sup>39</sup> EC official, interview by USITC staff, Brussels, Belgium, February 26, 2013.



frequency of testing being carried out at the national levels. The new regulation requires at least one chemical check per 1,000 mts of oil marketed in the member state, with more frequent checks for producers deemed to be a higher risk. These checks will be performed at the bottling stage. The Action Plan also calls for work with the IOC to speed up research on testing methods, and this work is in progress.<sup>40</sup>

The Action Plan recommendations are also being implemented on marketing and labeling standards to improve clarity for consumers, with draft legislation proposed. So far, the EC has made recommendations that bottlers put storage suggestions on the label, improve legibility and readability (e.g., font size), and put all mandatory labels in the same field of vision.<sup>41</sup> These new labeling recommendations are not yet binding. The Action Plan also proposes to prohibit the reuse of olive oil packages in restaurants and the foodservice sector,<sup>42</sup> although the EC put its attempt to implement this recommendation on hold in May 2013 after it was criticized by representatives of the foodservice sector in northern Europe because of the additional costs the proposal would require.<sup>43</sup>

## **Regulatory Policy**

EU regulatory policy for olive oil mainly relates to two areas: chemical standards and marketing requirements. The EU's policies on chemical standards and marketing for olive oil are influential because they govern the sale of olive oil in most of the world's largest consuming markets. Because the EU market accounts for such a large share of the major bottlers' sales, the requirements they face in the EU impact their operations and the products they sell worldwide. EU regulatory policies for olive oil are heavily influenced by the large producing countries, although their perspectives must be balanced with the perspectives of the other olive oil-consuming countries that make up the majority of EU members.<sup>44</sup>

With respect to chemical standards, the EU adopts IOC decisions. In fact, the EU regulation that sets these standards, Commission Regulation (EEC) No. 2568/91, "transposes IOC norms" into EU law,<sup>45</sup> and the EU regulation is amended whenever IOC standards change. There may be more stringent standards that exist on a voluntary basis (that is, within the private sector) in member states, but EU member states may not impose any additional mandatory chemical standards.<sup>46</sup> Chapter 3 provides more information on IOC chemical standards.

Marketing standards for olive oil in the EU are set by Commission Implementing Regulation (EU) No. 29/2012. The regulation prescribes the information required on olive oil labels, including the category of olive oil (extra virgin olive oil, virgin olive oil,

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<sup>40</sup> As part of its continuing efforts in this regard, an international olive oil seminar jointly organized by the European Commission's Directorate-General for Agriculture and the Joint Research Centre (located in Geel, Belgium) with the IOC was held in June 2013. The seminar focused on "the evaluation of the quality parameters of edible olive oils as well as their traceability and authentication" and resulted in the creation of "terms of reference" for an international research project, open to EU Member States and any international cooperation, on olive oil authentication to be launched by early 2014. EC, "Scientific Workshop on Olive Oil Authentication (Madrid, 10-11 June 2013)," n.d (accessed July 25, 2013); EC official, email to USITC staff, April 17, 2013; EC official, interview by USITC staff, Brussels, Belgium, February 26, 2013.

<sup>41</sup> See the section below on regulatory policy for more information on mandatory labels.

<sup>42</sup> EC official, interview by USITC staff, Brussels, Belgium, February 26, 2013.

<sup>43</sup> Bremner, "EU Gives In to North's Mockery," May 24, 2013.

<sup>44</sup> EC official, interview by USITC staff, Brussels, Belgium, February 26, 2013; industry representatives, interview by USITC staff, Tuscany, Italy, January 30, 2013.

<sup>45</sup> EC official, interview by USITC staff, Brussels, Belgium, February 26, 2013.

<sup>46</sup> Ibid.

olive oil, and olive pomace oil are the recognized categories for human consumption) and the designation of origin (based on both the harvest location and the milling location). The regulation also governs the use of optional labels such as “first cold pressing,” references to sensory characteristics, and the acidity level. A “best before” date is required on all food products in the EU, but because there is no rule for what that timeframe should be for olive oil, the bottlers decide. EC officials stated that they would like to have a reliable method for determining a “best before” date in relation to the harvest or bottling date, but in lieu of that, they recommend that bottlers label oil with the harvest date.<sup>47</sup> Member states are responsible for uncovering labeling irregularities and reporting them to the EC, along with an account of what penalties were imposed.

## Spain

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### *Overview*

Spain is the world’s largest producer of olive oil and, outside of Italy, grows more olive varieties than any other olive oil-producing country.<sup>48</sup> As a Mediterranean country with a long tradition of olive growing and consumption, Spain has built on its history by becoming home to the world’s major olive oil bottlers. It also has the world’s largest olive-growing area. Its production volume and relatively low production costs make Spain the price setter in global olive oil markets. The size of the Spanish olive oil sector gives it an important place in the country’s agricultural sector, and EU, national, and regional government policies play a major role in its operation, from support payments to farmers through inspection of exports.

The Spanish olive oil industry is concentrated compared to other producing countries. The growing sector includes a wide variety of farm types and production methods, from small family farms to large, highly mechanized operations, but olive farms are generally larger than in other European countries. Spanish-owned bottling companies account for most of the world’s olive oil sales and specialize in blending, marketing, and distribution; much of the bottling itself takes place in Italy. Most of these bottlers are not vertically integrated and source oil from mills around the world, seeking the lowest price. While Spanish bottlers hold considerable market power to influence global purchase prices for bulk olive oil, local olive growers in Spain are making efforts to become more competitive by bottling and marketing more of their own oil, especially through “second-order” cooperatives—organizations made up of multiple grower cooperatives designed to increase economies of scale.

The first half of this section provides a descriptive profile of Spanish production and processing, and discusses trends in both domestic consumption and Spain’s role in global trade. The second half focuses on the major factors affecting Spain’s competitiveness in the global market, including large scale production, low costs of production, and supportive government programs. The impact of Spanish cooperatives on competitiveness is also discussed.

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<sup>47</sup> Ibid.

<sup>48</sup> Spain grows 262 varieties of olives, with 24 of them commonly grown. The most important of these are Picual, Hojiblanca, Cornicabra, and Arbequina. Royal Spanish Academy of Gastronomy, “Olive Oils in 21st Century Gastronomy,” 2010, 75.

## Production Profile

### Production Overview

Spain produced a record high 1.6 million mt of olive oil in MY 2011/12 (table 6.4), which was 47 percent of world production and more than three times as much as the second-largest producer, Italy. Because of its size, fluctuations in Spain's production significantly impact global prices and export markets for olive oil. Three consecutive bumper crops in Spain between MY 2009/10 and MY 2011/12 depressed global olive oil prices. However, a recent drought in Spain reduced production to only 614,100 mts in MY 2012/2013, a decline of more than 60 percent.<sup>49</sup> This drop in production from the world's largest producer has driven up olive oil prices worldwide. Spain accounts for 50 percent of the EU's olive acreage, but over 60 percent of its olive oil production, due to slightly higher olive yields and its focus on harvesting olives with high oil content. In large measure because of the quest for high oil content, only about one-third of Spanish olive oil production is extra virgin (compared with 60 percent in Italy and 65–80 percent in Greece). The majority of Spain's extra virgin production is for the export market.

**TABLE 6.4** Spain: Olive oil supply, consumption, and trade, 2000/01, 2007/08–12/13 (1,000 mt)

	2000/01	2007/08	2008/09	2009/10	2010/11	<sup>a</sup> 2011/12	<sup>b</sup> 2012/13
Production	973.7	1,236.1	1,030.0	1,401.5	1,391.9	1,613.4	<sup>c</sup> 820.0
Extra-EU imports	15.8	40.3	10.8	13.7	14.7	21.2	25.5
Consumption	580.8	546.3	533.6	539.4	554.2	582.1	550.0
Extra-EU exports	88.3	133.9	153.4	196.5	196.2	205.9	240.0

Source: IOC, "Tables 1–4: [EU] Production, Imports, Exports, Consumption," November 2012.

Note: A marketing year spans October 1 to September 30 the following year.

<sup>a</sup>Provisional.

<sup>b</sup>Projected.

<sup>c</sup>These projections for Spanish MY 2012/13 production and consumption do not include the most up-to-date data from the Spanish Olive Oil Agency, which show significantly lower production. According the Spanish Olive Oil Agency, MY 2012/13 production was 614,100 mts.

### Olive-Growing Sector

Spanish olives for oil are grown on 413,000 holdings<sup>50</sup> totaling 2.4 million ha<sup>51</sup> (about 5.9 million acres), second in land area only to that for cereals in Spain.<sup>52</sup> Olive growing in Spain comprises larger, more commercial farms than elsewhere in the EU. Spanish olive farms, at 5.3 ha (13.1 acres) on average, are 3 to 4 times larger than Italian and Greek olive farms, thereby providing a cost advantage through economies of scale. In Andalusia, the southern region of Spain that accounts for over 60 percent of Spanish acreage, the average farm size is 8 ha (19.7 acres) (figure 6.1).

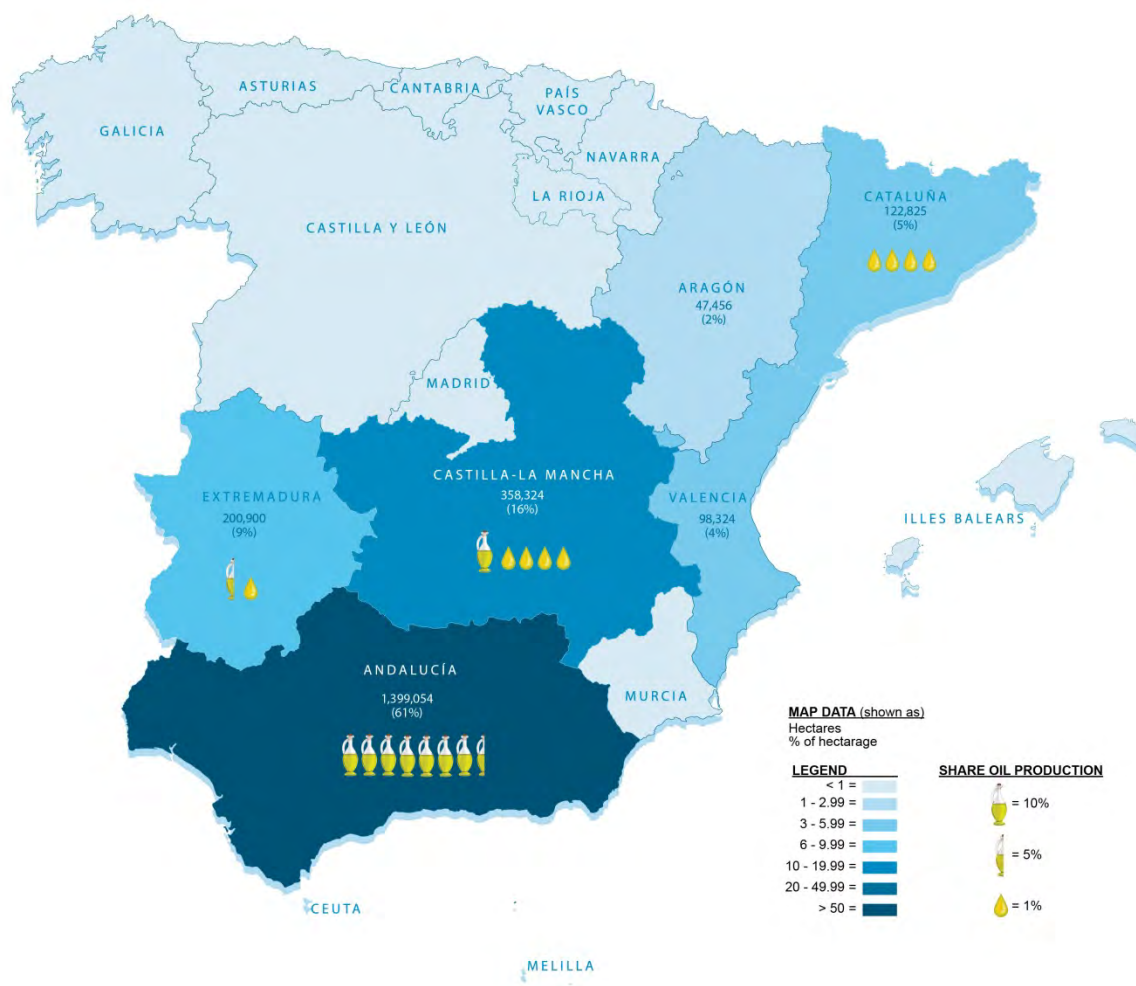
<sup>49</sup> Government of Spain, Olive Oil Agency, "Aceite de Oliva: Producción" [Olive oil: Production] (accessed May 9, 2013).

<sup>50</sup> EC, "Economic Analysis of the Olive Sector," July 2012, 2.

<sup>51</sup> EU, Eurostat database (accessed March 8, 2013).

<sup>52</sup> EC, *LIFE among the Olives*, 2010, 1; MARM, "The Value Chain and Price Formation," January 2010, 13.

**FIGURE 6.1** Spain: Share of olive hectareage and production by region



Source: Government of Spain, Ministry of Agriculture, Food and the Environment, Olive Oil Agency website, [http://aplicaciones.magrama.es/pwAgenciaAO/OliverEspanol.aao?opcion\\_seleccionada=2100&idioma=ING&numPagina=2101](http://aplicaciones.magrama.es/pwAgenciaAO/OliverEspanol.aao?opcion_seleccionada=2100&idioma=ING&numPagina=2101) (accessed April 24, 2013).

Note: Percentages may not sum to 100 percent because regions not highlighted account for a combined 3 percent of acreage and less than 1 percent of oil production.

While olive farms in Spain are larger than elsewhere in the EU, the most common method of production in Spain remains a traditional olive grove (80 to 100 trees per ha) with mechanized or semi-mechanized harvesting. This type of cultivation accounts for about 50 percent of holdings (1.3 million ha), but for a smaller share of production, since olive yields are lower on these farms than on those using intensive planting methods. The remaining 50 percent is split roughly evenly between hand-harvested traditional groves (575,000 ha) and intensive groves, which are always harvested mechanically (550,000 ha). Farm size determines whether a grove relies solely on family labor or hires workers.<sup>53</sup> Another factor determining harvesting methods is the steepness of the land. Many Spanish olive groves are situated on steep land, including about half of those in

<sup>53</sup> According to one industry source, farms over about 20 ha tend to rely on outside labor.

Andalusia, limiting the ability of producers to mechanize, irrigate, or grow other crops.<sup>54</sup> As a result of groves commonly being located on steep slopes and the reliance on traditional growing methods, most Spanish olive production remains non-irrigated.<sup>55</sup>

Production of olives for oil on SHD holdings, the most common method in California, accounts for only 2 percent of Spanish holdings (45,000 ha). Most of Spain's investment in SHD occurred between 1995 and 2005. Since the global financial crisis that began in 2007, investment in SHD has been limited by a lack of access to capital and high interest rates. New investment in SHD is also constrained by the lack of additional flat land and water scarcity.<sup>56</sup> In addition, some earlier investment in SHD groves occurred at a time when cereal prices were low and producers were looking to diversify into more profitable enterprises.<sup>57</sup> Cereal prices have since recovered, and significant new investments in SHD are not expected in the near future.<sup>58</sup> However, there have been investments in other intensive plantings in areas that have a high concentration of large-scale producers, especially near Jaén, Córdoba, Seville, Ciudad Real, Toledo, and Badajoz.<sup>59</sup>

Cooperatives are an important part of the olive production system in Spain. Cooperatives are grower-owned and -operated associations that produce oil from the olives they grow and then sell it. Thus, the cooperative structure provides greater selling power for smaller growers. The cooperatives, however, tend to lack marketing expertise and rely on bulk sales to bottlers. There are approximately 900 cooperatives in Spain, ranging in size from 100 growers to 55,000 growers in the case of Hojiblanca, which is Spain's largest cooperative and accounts for 15 percent of Spanish production.<sup>60</sup> Many of the largest cooperatives, including Hojiblanca, are second-order cooperatives.<sup>61</sup> About 70 percent of Spanish olive oil producers belong to cooperatives, the highest share in the EU.<sup>62</sup>

With a few exceptions, the formulas cooperatives use to pay farmers encourage larger production volumes rather than incentivizing higher-quality oil beyond minimum standards. In fact, Spanish olive production systems in general tend to minimize costs by rewarding high oil yields over quality. Spanish oil producers primarily pay growers on the basis of the oil content of their olives, versus providing additional compensation for higher-quality olives. Riper olives yield more oil, but the quality is lower than for olives picked earlier in the season because the olives lose fruitiness and polyphenols as they ripen.<sup>63</sup> The difference in the average olive and olive oil yields per hectare between Spain and Italy are illustrative. The average yield in Spain of olives for oil was 2.98 mt/ha in 2011, just 8 percent higher than the 2.76 mt/ha in Italy.<sup>64</sup> However, yields diverge more

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<sup>54</sup> Spanish government official, interview by USITC staff, Andalusia, Spain, January, 25, 2013.

<sup>55</sup> Estimates of the share of Spanish olive groves that are irrigated range from between 18 percent to around one-third. The discrepancy in estimates may be because there are a number of farms that are minimally or inconsistently irrigated. Industry representatives, interviews by USITC staff, Madrid, Spain, January 22, 2013.

<sup>56</sup> Industry representatives, interviews by USITC staff, Madrid, Spain, January 22, 2013.

<sup>57</sup> Ibid.

<sup>58</sup> Industry representatives, interviews by USITC staff, Madrid, Spain, January 22, 2013; industry representatives, interviews by USITC staff, Andalusia, Spain, January 23–24, 2013.

<sup>59</sup> EC, *LIFE among the Olives*, 2010, 10. Three of these cities are within Andalusia, two in Castile-La Mancha, and one in Extremadura.

<sup>60</sup> Industry representative, interview by USITC staff, Andalusia, Spain, January 23, 2013.

<sup>61</sup> Second-order cooperatives are organizations made up of multiple grower cooperatives designed to further increase economies of scale.

<sup>62</sup> In all, Spanish cooperatives account for over two-thirds of Spanish olive oil production. Industry representative, interview by USITC staff, Madrid, Spain, January 22, 2013.

<sup>63</sup> Industry representatives, interviews by USITC staff, Andalusia, Spain, January 23, 2013; industry representatives, interviews by USITC staff, Puglia, Italy, February 4, 2013.

<sup>64</sup> EU, Eurostat database (accessed March 8, 2013).

sharply for oil. The average olive oil yield in Spain in 2010 was 0.56 mt/ha of olives planted, 27 percent higher than the yield of 0.44 mt/ha in Italy.<sup>65</sup> Many olives in Spain are harvested as late as February or March, when oil content can approach 22 percent or higher, while many premium producers in Spain, Italy, and California harvest their olives in November, often with oil contents between 10 and 15 percent.<sup>66</sup>

## **Olive Oil Processing Sector**

### ***Milling***

With fewer but larger mills, the milling segment of the Spanish olive oil supply chain is more concentrated than in other major producing countries, such as Italy and Greece. Spanish olive oil is processed in 1,740 mills (compared to about 5,000 mills in Italy which produce far less volume). Spanish mills focus mostly on sales to commercial buyers and are less likely to sell in the traditional way—directly to local consumers—than their Italian and Greek counterparts; in Spain, most consumers buy their olive oil from supermarkets.

With a larger average mill size than most producing countries, Spanish mills are efficient and tend to have lower costs per unit of oil processed; most use 2-phase milling. These mills process an average of 8,000 mt of olives per year, although there is a wide range in size and some mills are significantly smaller than this. The largest mill in Spain processes about 90,000 mt of olives per year,<sup>67</sup> which is more than seven times total production in California. Nonetheless, when crops are large, there can be a wait during the peak of harvest to have olives processed due to lack of local milling capacity, and capacity needs to be increased to maintain quality.<sup>68</sup>

Integration between milling and bottling is limited. About 55 percent of Spanish mills are owned by cooperatives, and they account for 70 percent of oil produced. Mills owned by either sole proprietors or corporate entities account for the remaining output.<sup>69</sup> Many Spanish cooperatives, however, lack the marketing expertise to promote their own brands at the retail level, and large Spanish companies, such as Deoleo, are able to exert significant control over bottling and distribution to retail outlets owing to their market share. However, some mills integrate their own bottling lines into their operations, especially those producing premium-quality oil. But many mills with a bottling line still sell a portion of their olive oil in bulk to other bottlers.<sup>70</sup>

### ***Refining and bottling***

Spanish bottling and refining operations are highly concentrated. There are 1,471 bottling plants, although the few largest firms account for the majority of output. The top five bottling plants in most years account for 35 percent of oil packed in Spain, and the top 20

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<sup>65</sup> EC, “Economic Analysis of the Olive Sector,” July 2012, 3.

<sup>66</sup> Industry representatives, interviews by USITC staff, California, November 14, 2012; industry representatives, interviews by USITC staff, Madrid and Andalusia, Spain, January 21–22, 2013, industry representative, interview by USITC staff, Tuscany, Italy, January 31, 2013.

<sup>67</sup> Industry representative, interview by USITC staff, Madrid, Spain, January 22, 2013.

<sup>68</sup> Industry representative, interview by USITC staff, Madrid, Spain, January 22, 2013; industry representatives, interview by USITC staff, Tuscany, Italy, January 31, 2013.

<sup>69</sup> MARM, “The Value Chain and Price Formation,” January 2010, 26.

<sup>70</sup> Industry representative, interview by USITC staff, Andalusia, Spain, January 24, 2013.

plants accounted for 65 percent of packed oil. Of the 15 olive oil refineries in Spain, nine are located in Andalusia. Ten of the 15 refineries are owned by bottling companies.<sup>71</sup>

Spanish bottling companies are major players in global olive oil markets. For example, Deoleo (formerly Grupo SOS) is the world's largest distributor of olive oil and markets the brands Bertolli and Carapelli in the United States. The company also owns the brand Carbonell, which is the world's most widely sold olive oil. Most large Spanish bottlers specialize in bottling and distribution and are not vertically integrated in growing and milling.<sup>72</sup> While these Spanish companies own the brands and account for a large share of the blending and bottling of oils (allowing Spanish producers to benefit from these companies' large global sales), much of the bottling takes place in Italy. This is reportedly due to the strong brand recognition of Italian labels in the United States and other large olive oil-consuming markets, as well as Italy's historical expertise in blending olive oils.<sup>73</sup> Still, while major Spanish bottlers continue to do much of their bottling for export in Italy, bottling in Spain has become increasingly important as the Spanish industry has sought to increase the share of its exports that are bottled.

Both mills and bottlers are subject to inspection by Spanish regional and national government agencies. Regional governments have authority to test for fraud and assess fines. The national Olive Oil Agency also collects samples, sends them to government labs for testing, and notifies regional authorities when fraud is found, so that fines may be assessed at the regional level.<sup>74</sup> This number of samples is relatively small in comparison to the scale of Spanish production. For example, the number of samples tested from mills averages to less than one sample annually for every two mills in operation, and at the bottling level, just over one sample annually for every two bottling plants in operation.<sup>75</sup>

## ***Consumption***

Olive oil is an important staple item in the Spanish diet, accounting for about 70 percent of annual edible oil consumption.<sup>76</sup> Extra virgin oil accounts for just 36 percent of consumption in Spain,<sup>77</sup> while the IOC category "olive oil" (a blend of refined and virgin olive oils) accounts for the majority of the market, and virgin olive oil (that is not extra virgin) accounts for a very small share. Olive oil consumption in Spain was relatively stable between MY 2007/08 and MY 2010/11 and experienced a modest increase (of 5 percent) in MY 2011/12, to 582,000 mt (table 6.4).

Spanish consumers' reliable demand for olive oil and their preference for refined grades give producers a valuable market for oils that are in lower demand in export markets, such as United States, many of which are dominated by extra virgin oils. Even though virgin olive oil is not a widely consumed product on its own, it is still an important product in Spain because it is often blended with refined olive oil and called simply

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<sup>71</sup> MARM, "The Value Chain and Price Formation," January 2010, 27.

<sup>72</sup> Among the large companies interviewed in Spain by USITC staff, only one sources a significant share of olive oil from its own groves. Industry representative, interview by USITC staff, Andalusia, Spain, January 24, 2013.

<sup>73</sup> USITC, hearing transcript, December 5, 2012, 80 (testimony of Tom Mueller); industry representative, interview by USITC staff, Maryland, December 20, 2012.

<sup>74</sup> In 2012, the Olive Oil Agency collected 840 samples from olive oil mills, 740 from bottlers, and 60 from refineries. This does not include sampling done by regional government authorities directly. Spanish government official, interview by USITC staff, Madrid, Spain, January 21, 2013.

<sup>75</sup> See chapter 3 for additional information on official olive oil testing in Spain.

<sup>76</sup> Spanish government official, interview by USITC staff, Madrid, Spain, January 21, 2013.

<sup>77</sup> Ibid.

“olive oil.”<sup>78</sup> While the Spanish olive oil market remains a market with many price conscious consumers who view olive oil as a commodity instead of a premium food product, extra virgin’s share of the market is rising. Consumption of virgin oils (mostly extra virgin) grew 23 percent between 2004 and 2008, a result of low prices relative to other grades and educational campaigns on the benefits of extra virgin oil.<sup>79</sup>

## Trade

In 2012, Spain was the world’s largest exporter of olive oil, exporting approximately 827,000 mt worth \$2.4 billion (table 6.5). About 41 percent of the total volume consisted of exports to Italy, most of which were blended, bottled, and exported to third countries. Other leading direct export markets were Portugal, France, the United States, and the United Kingdom. In addition, Spanish olive oil exports to China grew more than 10-fold between 2006 and 2012, and China is now Spain’s fifth-largest export destination. The growth of the olive oil market in China is due to rising incomes, which allow more Chinese consumers to purchase olive oil in place of other, less expensive cooking oils; growing awareness of the health benefits of olive oil; and marketing efforts, including recent IOC and Spanish promotional campaigns.<sup>80</sup> Given the volume of domestic production, Spain imports very little olive oil—around 73,000 mt in 2012, most of which was virgin or extra virgin oil.

**TABLE 6.5** Spain: Exports of olive oil (HS 1509), 2008–12

Country	2008	2009	2010	2011	2012
Value (million \$)					
Italy	1,145	876	1,087	1,104	845
Portugal	287	200	206	211	234
France	318	232	204	220	216
United States	175	151	199	190	204
China	19	26	44	92	114
United Kingdom	113	98	99	105	98
All other	647	575	637	666	664
Total	2,704	2,157	2,477	2,589	2,374
EU 27	2,021	1,541	1,737	1,781	1,523
Quantity (metric tons)					
Italy	311,275	303,501	422,768	412,806	339,834
Portugal	71,975	70,976	74,938	82,478	90,188
France	74,852	69,098	84,388	72,043	73,851
United States	38,838	40,008	56,941	56,848	70,741
China	3,834	6,052	11,316	18,773	30,120
United Kingdom	27,223	29,201	32,692	35,167	36,614
All other	126,526	142,736	168,683	172,617	185,518
Total	654,523	661,572	851,726	850,732	826,866
EU 27	520,112	508,632	656,336	642,474	581,616

Source: GTIS, Global Trade Atlas database (accessed June 19, 2013).

The composition of Spain’s exports underscores the importance of extra virgin olive oil in its export markets, more so than in its domestic market. This is reflected in the fact that 35 percent of Spanish production is extra virgin oil, but about 55 percent of its extra-EU exports are extra virgin.<sup>81</sup> Spanish producers are simultaneously serving a domestic

<sup>78</sup> Industry representative, interview by USITC staff, Andalusia, Spain, January 23, 2013.

<sup>79</sup> MARM, “The Value Chain and Price Formation,” January 2010, 17.

<sup>80</sup> Butler, “Adulteration Risk As Olive Oil Gains Ground,” May 14, 2012; Baker, “Spain Pulls Ahead in Olive Oil Sales,” March 22, 2011.

<sup>81</sup> Spanish government, data provided to USITC staff, Madrid, Spain, January 21, 2013.



market, in which refined blends are in demand, and export markets, dominated by sales of extra virgin.

Some Spanish companies reportedly are seeking to increase the share of their bottled exports at the expense of bulk, because bottled oils have a higher value added and sell for higher prices.<sup>82</sup> It is difficult to assess the degree to which they have been successful in doing so, as export statistics broken out by bottled and bulk are available only for shipments to the United States. Between 2008 and 2011, the share of exports of olive oil to the United States that was bottled fluctuated between 41 and 52 percent.<sup>83</sup>

The Spanish government employs a risk-based system of testing on olive oil exports, through an agency called SOIVRE.<sup>84</sup> The oil is checked for adulteration and adherence to quality standards. Failure results in 100 percent inspection of future shipments, but not in sanctions. In 2012, SOIVRE chemically tested about 11 percent of olive oil exports.<sup>85</sup>

## ***Factors Affecting Competitiveness***

### **Market Power and Scale of Production**

The scale of Spain's production gives its bottlers a cost advantage that allows them to undercut other producers on price. As the source of over 40 percent of the world's olive oil, supplied at a relatively low cost, Spanish production drives the global market. Because consumers in most markets are sensitive to the price of olive oil, Spain's ability to offer a consistent supply at low prices means that its olive oil is a mainstay in most export markets, whether imported directly from Spain or as a major component of blended bottled imports from Italy. Spain's high production levels in MY 2009/10 and 2010/11, and the record MY 2011/12 crop, only increased the supply available to bottlers and Spain's ability to undercut competing countries on price.

Spain's large production volumes and ability to sell for a low price appears to benefit bottlers while reducing the bargaining power of upstream growers and millers who have large quantities to sell to a concentrated number of large buyers. According to the EU Action Plan for olive oil:

Spain currently overproduces olive oil. This structural surplus deepens imbalances in bargaining power in the production chain, due mainly to the difference in economic size between the producers/primary processors and downstream operators. The economic crisis has worsened this imbalance and led to producers/primary processors, deprived of access to credit, precipitating falling prices by selling off their production at reduced prices to clear stocks.<sup>86</sup>

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<sup>82</sup> Spanish government official, interview by USITC staff, Madrid, Spain, January 21, 2013.

<sup>83</sup> In 2012, however, the share of bottled dropped to 24 percent, perhaps due to the effects of the record harvest and oversupply in Spain. The oversupply resulted in more oil sold in bulk because of increased pressure on producers to find buyers and sell their oil as quickly as possible, even if it meant accepting the lower margin that bulk sales offer. Spanish government, data provided to USITC staff, Madrid, Spain, January 21, 2013.

<sup>84</sup> SOIVRE stands for the Servio Oficial de Inspección, Vigilancia y Regulación de las Exportaciones (Spanish office of export surveillance, certification, and regulation).

<sup>85</sup> Spanish government official, interview by USITC staff, January 21, 2013.

<sup>86</sup> EC, "Action Plan for the EU Olive Oil Sector," June 18, 2012, 5.

The Action Plan also points out that while Spain's overproduction creates a situation where its producers must sell for a low price, consumers benefit from these lower prices.

## **Low Cost of Production**

Olives account for the majority of the cost of producing olive oil. An analysis of the Spanish extra virgin olive oil supply chain found that olive production accounted for 72 percent of the cost of olive oil, milling for 6 percent, bottling for 18 percent, and distribution for less than 4 percent.<sup>87</sup> This is reflected in the fact that the cost of procuring oil accounts for 75 percent to 80 percent of bottlers' total cost.<sup>88</sup> Final costs per kilogram of olive oil have increased in recent years, but only slightly, and in MY 2012/13 they ranged from less than €2.00 to around €3.00.<sup>89</sup>

Spain is generally one of the world's lowest cost producers of olives for oil production, due in part to harvesting practices that maximize oil yields and to the prevalence of large farms benefiting from economies of scale. Costs, however, vary widely depending on production methods. While there are three distinct production systems (traditional, intensive, and SHD), between 2006 and 2009 the average cost across all systems was €287 per mt of olives in Spain (compared with €334 in Italy).<sup>90</sup>

Harvesting practices are important in lowering the average cost of production in Spain. As noted earlier, olives tend to be harvested later in the season, when they yield higher oil content. There is also a substantial segment of premium olive oil producers in Spain who, like premium producers worldwide, tend to harvest early in order to preserve the flavor and polyphenol content of the oil. But in general, as was pointed out above, the Spanish production system across all growing methods tends to incentivize higher oil yield over quality to lower costs. To illustrate the difference between early and late harvest and its impact on costs, one industry source stated that this difference translates into needing 8 kg of olives to produce one liter of oil if they are harvested early (at 12 percent oil content), as compared with needing only 5 kg of olives per liter of oil if they are harvested later (at 20 percent oil content).<sup>91</sup>

The cost of producing oil from Spanish olive groves is also highly dependent on the production model used. Olives are grown under a wide range of conditions, from traditional, hand-harvested groves to SHD production. Traditional producers who have been on their land for generations, harvest their groves by hand, do not irrigate, and have few costs other than family labor. This cost structure is much different from operations that largely harvest mechanically, and have costs associated with land, machinery, and irrigation.

Underscoring the wide range of costs depending on the production method, according to the Spanish Association of Olive Municipalities, the cost of producing a kilogram of olive oil in an intensive grove (non-SHD) in Spain was €1.29 on average in 2009,

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<sup>87</sup> MARM, "The Value Chain and Price Formation," January 2010, 39. For refined olive oil, the combined refining and bottling costs were lower than the bottling costs for extra virgin olive oil, which is reflected in the lower total cost and lower selling price for refined olive oil.

<sup>88</sup> Industry representatives, interview by USITC staff, Madrid, Spain, January 22, 2013; industry representatives, interviews by USITC staff, Andalusia, Spain, January 23, 2013.

<sup>89</sup> Industry representatives, interviews by USITC staff, Madrid, Spain, January 22, 2013; industry representatives, interviews by USITC staff, Andalusia, Spain, January 23, 2013.

<sup>90</sup> These costs do not include the value of family labor. EC, "Olive Oil Farms Report," February 2012, 8.

<sup>91</sup> Industry representative, interview by USITC staff, Madrid, Spain, January 21, 2013.

compared with €1.97 in a traditional, irrigated grove and €3.06 in a traditional, non-irrigated grove (table 6.6).<sup>92</sup> According to industry sources, overall costs have remained relatively stable since 2009.<sup>93</sup>

**TABLE 6.6** Constructed comparative costs by production method in Spain

	Traditional, hand-harvested	Traditional, semi- mechanized/ mechanized	Intensive	SHD
Share of Spanish acreage	Appx. 25%	Appx. 50%	Appx. 25%	<2%
Irrigated?	No	Sometimes	Sometimes	Yes
Average yields (kg olives/ha)	1,750	3,500 (non-irrigated) 6,000 (irrigated)	5,000 (non-irrigated) 10,000 (irrigated)	10,000
Common harvest method	Hand harvested, sometimes assisted by the use of branch shakers	Branch shakers with mechanized collection	Trunk shaker with inverted umbrella	Over-row harvester
Total costs per hectare (€)	1,023	1,448 (non-irrigated) 2,197 (irrigated)	1,528 (non-irrigated) 2,305 (irrigated)	2,366
Total costs per kg of olive oil (€)	3.06	2.20 (non-irrigated) 1.97 (irrigated)	1.66 (non-irrigated) 1.29 (irrigated)	1.32

Source: AEMO, “Aproximación a los Costes del Cultivo del Olivo” [Approximation of the costs of olive cultivation], June 2010.

The costs in table 6.6 are constructed cost averages based on the typical per hectare costs in Spain, not actual producer costs. One of the main drivers of low production costs in Spain is that growers typically have low or nonexistent land costs. Many Spanish farms do not have rent expenses because the land has been owned by the grower’s family for generations. Consequently, rent is not included in the cost estimates. On the other hand, farms planted more recently do have land costs, so the omission of these costs may result in averages that are slightly lower than actual costs for certain growers. Finally, the analysis assumes a fixed oil yield of 18 to 19 percent. Even with these caveats, the data are useful for comparing methods of production. Because 75 percent of Spanish olive-growing area uses higher-cost (per unit of olive oil) traditional cultivation methods (and, in many cases, cannot be converted to intensive production due to the steeply sloped landscape), total Spanish costs of production are higher than they would be if Spain had a greater share of production in intensive or SHD groves.

After establishment costs have been paid and the grove has matured, labor-intensive practices drive costs of production in Spain. Harvesting costs, which are driven by labor in all production methods except SHD, accounted for the largest share of total cost (between 34 and 41 percent) in the constructed cost analysis. The second-largest share of costs for non-irrigated farms was in labor-intensive land maintenance and pruning.<sup>94</sup> The cost of on-farm labor for Spanish olive farms in MY 2012/13 was between €8 and €10 per hour, which includes social security payments.<sup>95</sup> The costs of fertilizer and pest

<sup>92</sup> AEMO, “Aproximación a los Costes del Cultivo del Olivo” [Approximation of the costs of olive cultivation], June 2010, 42.

<sup>93</sup> Industry representatives estimated that the costs per kilogram of olive oil in MY 2012/13 ranged from just less than €2.00 to around €3.00. Industry representatives, interviews by USITC staff, Madrid, Spain, January 22, 2013; industry representatives, interviews by USITC staff, Andalusia, Spain, January 23, 2013.

<sup>94</sup> The combined cost of land maintenance and pruning was estimated to be between €452 and €653 per hectare. “Land maintenance” includes such activities as soil preparation and weed management.

<sup>95</sup> Industry representatives, interview by USITC staff, Andalusia, Spain, January 23, 2013.

and disease management measures were generally the lowest shares of total costs, partially because many groves in Spain do not use these inputs.<sup>96</sup>

Irrigation and mechanization raise the per hectare cost of producing olives, but lower the unit costs of producing olive oil. This is demonstrated by the fact that the lowest costs per kilogram of olive oil produced are found in intensive, irrigated groves, followed closely by SHD groves. The use of irrigation lowers the cost of producing olive oil by dramatically increasing olive yields. Irrigation improved yields by about 70 percent in traditional, semi-mechanized groves and doubled yields in intensive groves (table 6.6). Meanwhile, mechanization reduces labor costs, especially for hand harvesting. This is important because relative labor costs affect Spain's global competitiveness—the hourly cost of labor in Spain is often more than a full day's wage in North Africa (see chapter 7).<sup>97</sup>

According to the Spanish Association of Olive Municipalities (AEMO) analysis, only intensive and SHD producers had costs of production below the market price of olive oil.<sup>98</sup> Traditional producers that were mechanized or semi-mechanized had income equal to or greater than their costs of production only after EU CAP direct payments were included.

### **Supportive Government Programs**

Government support to the Spanish olive oil industry, mostly through the CAP, is an important source of income in the sector. CAP funding for the industry in Spain comes in the form of direct payments to farmers and through Spain's rural development plan. According to the Spanish Minister of Agriculture, the EU's CAP payments to Spanish olive oil producers are approximately €1.03 billion (\$1.38 billion) per year.<sup>99</sup> However, under the SPS, payments are significantly lower than before 2004 (when payments were coupled to production).<sup>100</sup> Estimates of direct payments as a share of farm income for olive growers in Spain are between 22 and 40 percent on average, depending on the year and the type of farm. Typical payments to olive growers vary significantly, ranging from no payments at all to more than €500 (\$670) per ha.<sup>101</sup> Payments may be as high as €690 (\$924) per ha in certain olive-intensive regions, although this rate is region-wide and not specific to olive farms.<sup>102</sup> The range of per hectare payments is wide due to the historical formula for determining payments, as described above. About 85 percent of Spanish olive area receives direct payments.<sup>103</sup>

The income received from CAP payments enables producers to operate at margins that would be unsustainable without this source of support. One EU-wide survey of olive groves concluded that only producers using intensive methods would be “financially viable without subsidies” but that many traditional growers “show negative financial

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<sup>96</sup> Industry representatives, interviews by USITC Staff, Andalusia, Spain, January 23, 2013.

<sup>97</sup> Industry representatives, interview by USITC staff, Andalusia, Spain, January 23, 2013.

<sup>98</sup> AEMO, “Aproximación a los Costes del Cultivo del Olivo” [Approximation of the costs of olive cultivation], June 2010, 42.

<sup>99</sup> Government of Spain, Ministry of Agriculture, “Arias Cañete subraya,” February 22, 2012; Butler, “Olive Regions Work on Joint Strategy to Maintain EU Subsidies,” April 2, 2012.

<sup>100</sup> EC, “Olive Oil Farms Report,” February 2012, 11.

<sup>101</sup> Industry representatives, interviews by USITC staff, Andalusia, Spain, January 24, 2013.

<sup>102</sup> Butler, “European Parliament Provides Some Comfort for Spanish Olive Oil” March 18, 2013.

<sup>103</sup> Spanish government official, interview by USITC staff, Madrid, Spain, January 21, 2013.

results even with subsidies.”<sup>104</sup> For Spain, these results are supported by the AEMO cost analysis of Spanish groves detailed above, which found that only intensive and SHD groves have costs below market prices without direct payments, while mechanized and semi-mechanized traditional producers break even only after direct payments are included, and hand-harvested traditional producers often have costs that exceed the selling price even after direct payments are included.<sup>105</sup> In the absence of direct payments supporting their income, some of the producers with negative margins would likely cease production over time. Consequently, government payments, although decoupled from production, likely keep supplies higher than they would otherwise be each year. Because each Spanish olive farm has a unique cost structure, it remains unclear how much Spanish olive production would decline in the absence of government payments.

Assistance from the EU is also provided through Spain’s rural development plan, although the impact of these programs has waned in the current difficult fiscal environment. The plan presently in effect runs from 2007 through 2013 and is implemented through tailored programs at the regional level. This regional focus means that areas with significant olive oil production, such as Andalusia, are likely to have regional development plans that benefit the olive oil sector, however indirectly because rural development programs are not sector-specific. Available funding to modernize agricultural holdings and to increase the value of Spanish agricultural products is particularly likely to assist the local olive oil industry.<sup>106</sup> For example, with the goal of increasing the value of agricultural products, Andalusia’s regional rural development plan states that it will fund investments in quality assurance, evaluation, and certification programs for enterprises involved in agricultural processing and marketing.<sup>107</sup> In addition, Spain’s rural development plans provide payments to compensate for additional difficulties faced by farms in mountainous areas, a criterion that applies to many olive growers. Through their focus on agri-environmental initiatives, the plans also provide funding for olive oil growers converting to integrated production models or organic production.<sup>108</sup>

Limiting the impact of EU rural development programs is the requirement that national or subnational governments co-fund these initiatives. Co-financing contributions by member states range between 15 and 50 percent of the total cost, with Spain generally contributing 50 percent. According to industry and government officials in Spain, the availability of co-financing has declined in the current financial environment, including from local and regional governments; thus, not all available EU rural development funding for Spain is being used. One source estimated that up to 40 percent of available EU funds have recently gone unused due to lack of available matching funds.<sup>109</sup>

## **Reliance on Bulk Market**

The advantage of the Spanish production system is that it is structured to provide a reliable supply of oil to the major bottlers at relatively low prices, but this also creates difficulties for producers seeking to serve alternative market segments. Bottlers’ control

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<sup>104</sup> De Graaff, Kessler, and Duarte, “Financial Consequences of Cross-Compliance and Flat-rate-per-ha Subsidies,” 2011, 390.

<sup>105</sup> AEMO, “Aproximación a los Costes del Cultivo del Olivo” [Approximation of the costs of olive cultivation], June 2010, 42.

<sup>106</sup> EC official, interview by USITC staff, Brussels, Belgium, February 27, 2013.

<sup>107</sup> Government of Spain, Junta de Andalucía, *Programa de Desarrollo Rural de Andalucía* [Andalusia rural development program], n.d., 168–74.

<sup>108</sup> EC official, interview by USITC staff, Brussels, Belgium, February 27, 2013.

<sup>109</sup> Industry representative, interview by USITC staff, Madrid, Spain, January 22, 2013.

over distribution channels leads to the perception among many Spanish growers that they are forced to accept the prices these firms set.<sup>110</sup> Though many olive oil producers are working on ways to differentiate their product by improving quality and looking to new export markets, the relatively low-quality of Spanish oil, coupled with the lack of marketing experience found in cooperatives, perpetuates Spain's reliance on exporting bulk product to Italy.

### *Quality*

Most Spanish olive oil is produced by mill cooperatives. The impetus for forming cooperatives is to gain economies of scale by centralizing milling, thereby offering consistent availability of oil to buyers. As already noted, the cooperative system in many cases does not incentivize growers to harvest their olives early and produce quality oil because the formula used to determine payments to the member farmer emphasizes oil quantity over quality—oil yield increases, but quality degrades, as the olive is left unpicked and becomes overripe.<sup>111</sup> The equation used to determine a grower's payment is typically a function of the total annual sales revenue for the cooperative and differences in grower pay are primarily based on oil volumes. Farmers may receive a slight premium for olives delivered earlier in the season (since these olives should be fresher and more flavorful), but there is often little or no testing done to determine a farmer's actual quality level and one grower's oil is rarely differentiated from another before the olives are milled or when the final product is sold.<sup>112</sup>

Because consumers expect branded olive oil to have a consistent quality and flavor profile, a producer is unlikely to be able to support its own brand if its oil is unable to reliably meet those quality standards. Like fully integrated premium producers around the world and unlike larger bottlers that buy oil from many different sources, most Spanish cooperatives cannot overcome quality variation by blending a range of oils to make a consistent product.<sup>113</sup> A few of the largest cooperatives have sufficient supply to be able to blend oils and produce a consistent flavor, but most do not. Therefore, many cooperatives must instead rely on sales in bulk to major bottlers, who purchase oils of varying quality levels.

Outside of the cooperative system, premium olive oil producers in Spain are also engaged in efforts to differentiate their products, serve market segments that recognize differences in quality, and counter the influence of large bottlers in the market. One notable result of this effort is the Extra Virgin Alliance, a group of premium producers from several countries working together to create a new product category that would distinguish very high quality extra virgin oils far exceeding IOC standards from extra virgin oils that barely meet those standards.<sup>114</sup> In general, premium producers, including those in Spain, tend to support additional testing requirements or stricter standards as a way of helping them distinguish their product.

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<sup>110</sup> Industry representative, interview by USITC staff, Andalusia, Spain, January 24, 2013.

<sup>111</sup> Industry representatives, interviews by USITC staff, Madrid, Spain, January 21, 2013.

<sup>112</sup> Industry representative, interview by USITC staff, Andalusia, Spain, January 23, 2013.

<sup>113</sup> Industry representative, interview by USITC staff, Madrid, Spain, January 22, 2013.

<sup>114</sup> Industry representative, interview by USITC staff, Madrid, Spain, January 21, 2013.

## *Marketing*

Spanish producer cooperatives, especially the smaller ones, usually lack professional management and marketing staff, instead relying on member growers to manage their operations.<sup>115</sup> The lack of marketing perspective within cooperatives has historically limited their ability to carve out a greater role for their producers in bottling and distribution.<sup>116</sup> As a result of both quality and marketing limitations, a typical cooperative may sell more than 80 percent of its oil in bulk, but even among larger, more professional cooperatives, 50 to 75 percent is sold in bulk.<sup>117</sup>

Highlighting the fact that both quality and marketing expertise are essential to a cooperative's success in differentiating its product is the fact that even those cooperatives that incentivize quality still sell much of their oil in bulk. For example, one mid-sized cooperative reported that they conduct numerous chemical tests on olives brought to the mill by growers, assign the olives a score, and pay growers accordingly. As a producer of only high-quality extra virgin oil, the cooperative imposes price penalties on olives that result in oil with greater than 0.5 percent free fatty acids (a sign of low quality), and prefers to buy those that result in oil with less than 0.2 percent acidity. The result is that the prices paid for the lowest- and highest-quality olives can differ by as much as €600 per mt of oil. Yet, while this cooperative has been successful in export markets, a large share of its sales are still in bulk and, like other cooperatives, they are still working to increase the share of their production sold in bottles.<sup>118</sup> This example demonstrates the marketing challenges that even Spanish producers of premium oil face, in part due to the major role that large bottlers play in global distribution channels.

# Italy

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## *Overview*

Italy is the world's largest consumer and second-largest producer of olive oil after Spain. But Italy's size as a producer and consumer is only part of the reason the country plays a pivotal role in the global production chain for olive oil. Traditionally, olive oil has been considered primarily an Italian product by consumers in the U.S. and European markets, and the association of Italy with olive oil is still prevalent today. Consequently, Italy is home to large blending and bottling operations owned by multinational companies. These companies import large quantities of olive oil from foreign producers, primarily in the Mediterranean region, which is then blended for consistent taste profiles. Most of the olive oil is sourced from Spain, Greece, and Tunisia. Once blended and bottled, the olive oil is exported from Italy to consumers all over the world. The large bottlers tend to exert a substantial degree of control over distribution chains, making it difficult for smaller producers of Italian olives and olive oil to commercialize for export.

Given the challenges facing domestic producers and the historical importance of the sector in Italy, olive oil is a perennial focus for policymakers in agriculture. Initiatives

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<sup>115</sup> Montegut, Cristóbal, and Marimon, "The Singularity of Agrarian Cooperatives Management," November 2010, 17; industry representative, interview by USITC staff, Madrid, Spain, January 21, 2013.

<sup>116</sup> Industry representative, interview by USITC staff, Madrid, Spain, January 21, 2013.

<sup>117</sup> Industry representative, interview by USITC staff, Andalusia, Spain, January 23, 2013.

<sup>118</sup> Industry representative, interview by USITC staff, Andalusia, Spain, January 24, 2013.

related to marketing, standards enforcement, and support for producers are frequently promoted at all levels of government.

The first half of this section will provide a descriptive profile of Italian production and processing methodologies, as well as discuss trends in both domestic consumption and Italy's role in global trade. The second half will focus on the major factors affecting Italy's competitiveness in the global market. Chief among these are the tradeoff between cost and quality. In addition, Italy's olive oil industry benefits from supportive government programs, the reputation of the "Italian brand" in international markets, and the slight price premium that Italian oils command. However, the tension between growers and bottlers in Italy over the fact that most of the oil bottled in Italy is not of Italian origin is also discussed.

## ***Production Profile***

### **Production Overview**

Italy produced 450,000 mt of olive oil in MY 2011/12, a typical harvest compared with that of MY 2008/09, when Italy produced a bumper crop of 540,000 mt (table 6.7). Italy accounts for about one-quarter of the EU's olive acreage and 20 percent of its olive oil production, with producers generally focused on producing higher-quality, extra virgin oil.

**TABLE 6.7** Italy: Olive oil supply, consumption, and trade, 2000/01, 2007/08 –12/13 (1,000 mt)

	2000/01	2007/08	2008/09	2009/10	2010/11	<sup>a</sup> 2011/12	<sup>b</sup> 2012/13
Production	509.0	510.0	540.0	430.0	440.0	450.0	490.0
Extra-EU imports	110.8	116.6	79.5	56.3	58.0	58.2	58.2
Consumption	729.0	705.0	710.0	675.7	660.0	724.5	695.0
Extra-EU exports	173.0	180.2	176.9	195.1	223.5	232.1	232.1

Source: IOC, "Tables 1–4: [EU] Production, Imports, Exports, Consumption," November 2012.

Note: A marketing year spans October 1 to September 30 the following year.

<sup>a</sup>Provisional.

<sup>b</sup>Projected.

## **Olive-Growing Sector**

Average farm size in Italy is only 1.3 ha, much smaller than in Spain and slightly smaller than in Greece. Over three-quarters of Italian olive groves have 250 trees or fewer.<sup>119</sup> Small farm size is partly the result of land fragmentation, as farms are split up among family members when they are handed down. Industry sources state that many of the olive groves were originally 10 to 12 ha.<sup>120</sup> Owing partially to the small average size of each holding, Italy has 776,000 olive holdings, the highest number of all EU member states.<sup>121</sup>

<sup>119</sup> Government of Italy, Ministry of Agriculture, "Piano Olivicolo-Oleario" [Olive and olive oil plan], April 2010, 6.

<sup>120</sup> Industry representative, interview by USITC staff, Puglia, Italy, February 4, 2013.

<sup>121</sup> EC, "Economic Analysis of the Olive Sector," July 2012, 2.



The majority of Italian olive oil production is in the southern regions of Puglia, Calabria, and Sicily, which together account for about three-quarters of Italy's production.<sup>122</sup> Puglia and Calabria, in particular, have relatively high yields and a smaller share of family farms, making them the most profitable growing regions in the country.<sup>123</sup> Certain regions further north, such as Tuscany, are also important producers, but their importance is primarily due to their reputation for producing premium quality oils rather than their scale of production (figure 6.2).

Although about 40 percent of Italian olive groves are irrigated, slightly more than in any other EU country, the Italian government considers this percentage too low and is focused on increasing irrigation rates. Government support for investment in installing irrigation is available, although these funds may not cover the full cost in all cases. This is especially true when the terrain requires that wells be over 1,000 meters deep in some areas, making installation very costly.<sup>124</sup> In Puglia, where olive growing tends to be more modernized, the irrigation rate is slightly higher, at 50 percent.<sup>125</sup>

Italian olive growing is generally focused on producing olives that yield high-quality oil. The use of growing methods that emphasize quality is driven by several factors, including Italian consumer preference for extra virgin oil and the long-standing tradition of extra virgin production among Italy's many smaller producers. As a result, about 60 percent of Italian production is extra virgin olive oil, a much higher share than in Spain.<sup>126</sup> In addition, approximately 15 percent of Italian olive-growing areas have organic certification, a higher percentage than other global producers and an indication of the emphasis Italian olive growers place on quality and marketing.<sup>127</sup>

Italy grows a wider range of olive varieties than any other country.<sup>128</sup> Several hundred varieties are cultivated, but among the more common are Coratina, Frantoio, Leccino, and Taggiasca. Coratina, which is widely grown in Puglia, is known for a somewhat bitter flavor and is often used in blends rather than alone.<sup>129</sup>

## Olive Oil Processing Sector

### *Milling*

Milling in Italy involves a large number of mills—about 5,000—many of which are small and use traditional processes. Approximately 20 percent of Italian mills are very small, operating only on a local scale. Of mills with substantial operations (those large enough to be tracked by the Italian government), 70 percent are located in southern Italy. About 14 percent of Italian mills are run by cooperatives. Three-phase milling, which is an older process than two-phase milling, is much more common in Italy than in other olive oil-producing countries.<sup>130</sup> About 15 percent of mills have bottling operations. Integration between milling and bottling is more common among small and medium-sized

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<sup>122</sup> Government of Italy, Ministry of Agriculture, "Piano Olivicolo-Oleario" [Olive and olive oil plan], April 2010, 7.

<sup>123</sup> EC, "Olive Oil Farms Report," February 2012, 23.

<sup>124</sup> Industry representative, interview by USITC staff, Rome, Italy, February 1, 2013.

<sup>125</sup> Industry representative, interview by USITC staff, Puglia, Italy, February 5, 2013.

<sup>126</sup> USDA, FAS, *Italy: Olive Oil Update*, July 6, 2010, 1.

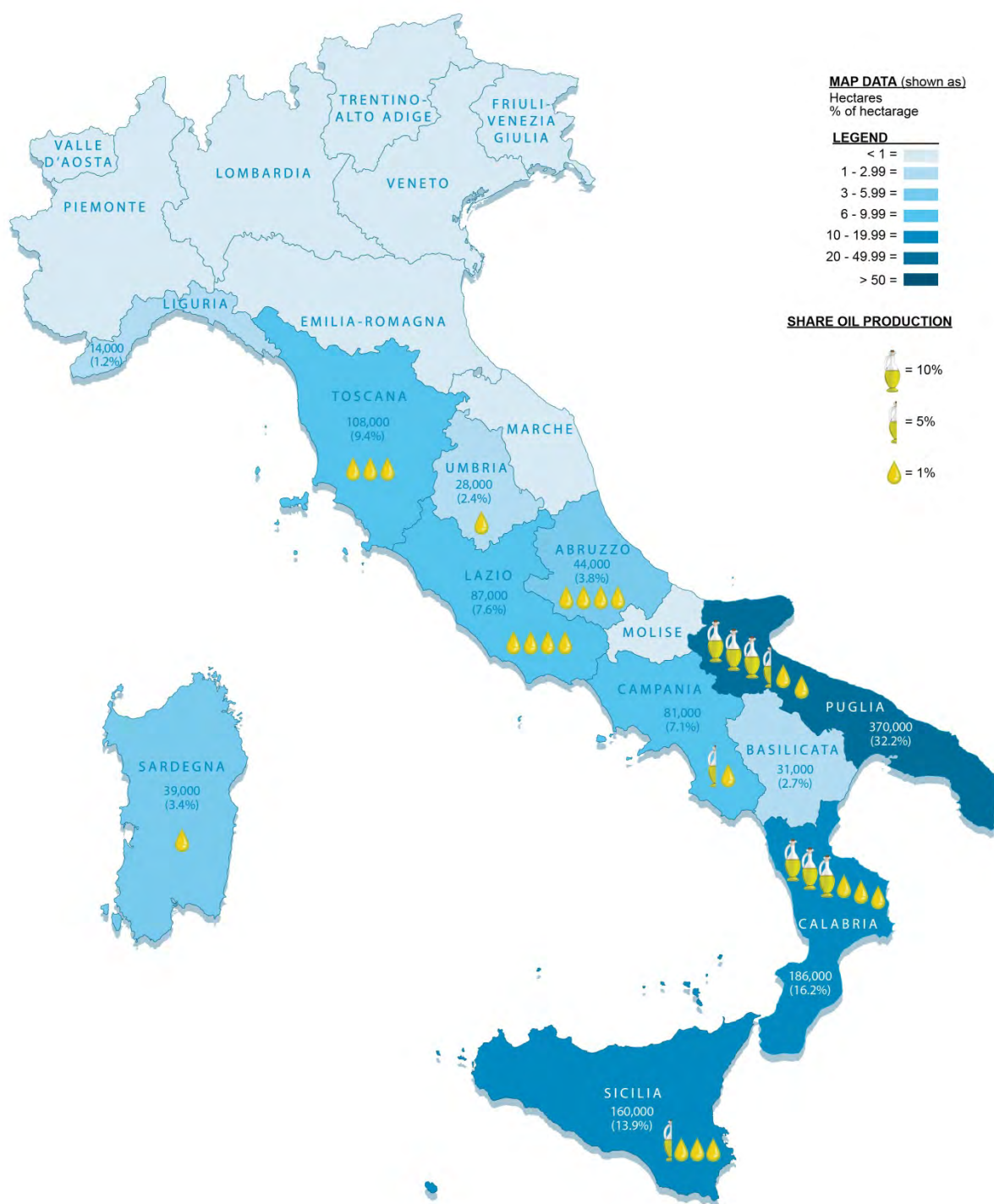
<sup>127</sup> EC, *LIFE among the Olives*, 2010, 11.

<sup>128</sup> FAO, "Importance of Olive Oil Production in Italy," 17.

<sup>129</sup> Industry representative, interview by USITC staff, Tuscany, Italy, January 30, 2013.

<sup>130</sup> Three-phase milling is described in chapter 1.

**FIGURE 6.2** Italy: Share of olive hectareage and production by region



Source: Fontanazza, "Importance of Olive Oil Production in Italy," 2005, 14.

Note: Percentages may not sum to 100 percent because regions not highlighted account for a combined 3 percent of acreage and 4 percent of oil production.

operations, since the larger bottlers tend to focus solely on sourcing, blending, and bottling oil rather than producing it.<sup>131</sup>

The structure of the milling sector in Italy helps differentiate the Italian product by contributing to quality, but raises costs. Mills tend to be smaller operations in Italy than in Spain, and there are far greater numbers of them. Tuscany, for example, accounts for just 3 percent of Italian olive oil production, but that 3 percent is processed in 363 mills,<sup>132</sup> which is more than one-fifth of the total number of mills in all of Spain. Given the small scale of many mills, most growers have verbal agreements with mills rather than formal contracts.<sup>133</sup> These arrangements are possible because, with a large number of mills, growers tend to use mills that are very close to their farm and where they may have long-standing relationships. The Italian Ministry of Agriculture considers this both a strength of the olive oil sector and a weakness, according to its analysis of its competitiveness. It is a strength because it ensures that the olives are milled when they are fresher, since they do not have to be transported long distances to a mill and are processed in a timely fashion.<sup>134</sup> However, it also raises costs by limiting economies of scale. Very small mills have costs that are up to 2.5 times higher than industrial mills.<sup>135</sup>

### ***Refining and bottling***

The bottling sector includes companies of all sizes, from village millers that have installed small bottling lines to the largest olive oil companies in the world. Italy plays a major role as bottler of oil for export to global markets. Bottling is often integrated with refining, which was conducted by just 12 companies in Italy as of 2007.<sup>136</sup> Italian-owned brands with a substantial market share in the United States include Colavita, DeCecco, and Filippo Berio. Some of the large bottlers operating in Italy are subsidiaries of Spanish companies, as formerly Italian-owned brands have been bought by Spanish firms (for instance, the Carapelli and Bertolli brands are owned by Deoleo). While some of these bottlers, such as Colavita, specialize in 100 percent Italian oil, most of the oil bottled in Italy by the large companies is a blend of oils from a number of countries.

The primary concern of the major blenders and bottlers is maintaining a consistent flavor profile that appeals to consumers in export markets. This means that the mix of oils used in the blends changes depending on the particular characteristics of olive oil from various regions at any particular time. Bottling industry representatives noted that 100 percent Italian oil is often more difficult to market because certain olive varieties widely grown in Italy tend to be more bitter than consumers prefer.<sup>137</sup>

Bottling takes place in Italy, then, not because of the importance of its domestic olive oil production, but because oil bottled and then sold as an Italian product is highly marketable to consumers, particularly U.S. consumers. A secondary reason to bottle oil in

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<sup>131</sup> Government of Italy, Ministry of Agriculture, “Piano Olivicolo-Oleario” [Olive and olive oil plan], April 2010, 7–8.

<sup>132</sup> Industry representative, interview by USITC staff, Tuscany, Italy, January 31, 2013.

<sup>133</sup> Government of Italy, Ministry of Agriculture, “Piano Olivicolo-Oleario” [Olive and olive oil plan], April 2010, 8.

<sup>134</sup> Italian government official, interview by USITC staff, Rome, Italy, February 1, 2013.

<sup>135</sup> Government of Italy, Ministry of Agriculture, “Piano Olivicolo-Oleario” [Olive and olive oil plan], April 2010, 19.

<sup>136</sup> Government of Italy, Ministry of Agriculture, “Piano Olivicolo-Oleario” [Olive and olive oil plan], April 2010, 8–9.

<sup>137</sup> Industry representatives, interviews by USITC staff, Tuscany, Italy, January 30, 2013.

Italy is that Italy has a long history of and expertise in blending.<sup>138</sup> Thus, an additional advantage for firms locating in Italy is the availability of experts skilled in creating olive oil blends to match bottlers' specifications.

Large bottlers that import and blend oil from many sources tend to be located in central and northern Italy.<sup>139</sup> Specifically, several of the major bottlers operate in Tuscany, either for historical reasons or because they believe consumers have positive associations with the region. The bottlers are not located there for its importance in production—in fact, little to no Tuscan oil is used by the major bottlers, who bring about nine times more oil into Tuscany to blend and bottle there than the region itself produces.<sup>140</sup>

## *Consumption*

Italy is the world's largest consumer of olive oil. In MY 2011/12, Italian consumption reached a record 725,000 mt of olive oil, although the IOC projects it to fall in MY 2012/13 to 695,000 mt (table 6.7). Household penetration of olive oil is around 90 percent,<sup>141</sup> compared with only 40 percent in the United States. Traditional distribution channels, where consumers purchase olive oil directly from producers, account for about one-fifth of Italian production.<sup>142</sup> Given the wide range of olives grown for oil in Italy and the continued importance of local distribution, Italian consumers tend to prefer oils with flavor profiles similar to those produced locally.<sup>143</sup>

Italian consumers generally focus on perceived quality rather than price in making their purchasing decisions. Over 80 percent of consumption is extra virgin, and almost all sales are in tinted glass bottles rather than PET.<sup>144</sup> Some consumers still prefer traditional tins, even though the shelf life of oil in tins is much shorter.<sup>145</sup> An Italian association of olive farmers reports that product differentiation is important in the Italian market, with customers increasingly interested in products that have protected designations of origin (PDOs), protected geographical indicators (PGIs), are certified organic, or are 100 percent Italian.<sup>146</sup> Industry sources also report that Italian consumers are less responsive to price changes compared with consumers in the United States. Because olive oil is considered a staple in the Italian diet, consumers are unlikely to substitute it with other oil unless the cost savings is very large.<sup>147</sup>

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<sup>138</sup> Industry representative, interview by USITC staff, Maryland, December 20, 2012.

<sup>139</sup> Government of Italy, Ministry of Agriculture, "Piano Olivicolo-Oleario" [Olive and olive oil plan], April 2010, 7–8.

<sup>140</sup> Industry representatives, interviews by USITC staff, Tuscany, Italy, January 30–31, 2013.

<sup>141</sup> Government of Italy, Ministry of Agriculture, "Piano Olivicolo-Oleario" [Olive and olive oil plan], April 2010, 14.

<sup>142</sup> USDA, FAS, *Italy: Olive Oil Update*, July 6, 2010, 2.

<sup>143</sup> Industry representative, interview by USITC staff, Tuscany, Italy, January 31, 2013.

<sup>144</sup> Government of Italy, Ministry of Agriculture, "Piano Olivicolo-Oleario" [Olive and olive oil plan], April 2010, 15; industry representative, interview by USITC staff, Tuscany, Italy, January 30, 2013.

<sup>145</sup> Industry representative, interview by USITC staff, Tuscany, Italy, January 31, 2013.

<sup>146</sup> Italian National Olive Farmers' Consortium (CNO or Consorzio Nazionale degli Olivicultori), document provided to USITC staff, 6.

<sup>147</sup> Industry representative, interview by USITC staff, Tuscany, Italy, January 30, 2013.

## Trade

### Imports

Italy imported approximately 559,000 mt of olive oil valued at \$1.4 billion in 2012, making it the world's leading importer (table 6.8). A significant share of the imported oil is blended and bottled in Italy for export, although some is also imported for domestic consumption; unlike Spain and Greece, Italy relies on imports to help meet domestic demand. Italy imports olive oil primarily from Spain, Greece, Tunisia, and Portugal. Spain solidified its importance as an import source between 2008 and 2012, while imports from Tunisia fell. Most of Italy's imports are duty free, either because they are intra-EU trade or because they are covered by preferential trade agreements.<sup>148</sup>

**TABLE 6.8** Italy: Imports of olive oil (HS 1509), 2008–12

Country	2008	2009	2010	2011	2012
Value (million \$)					
Spain	1,157	880	1,128	1,177	927
Greece	262	251	229	268	285
Tunisia	377	197	146	112	178
Portugal	6	7	9	20	26
Chile	0	1	3	4	5
France	16	8	5	2	4
All other	44	25	21	37	5
Total	1,862	1,370	1,542	1,622	1,430
EU 27	1,443	1,150	1,375	1,475	1,244
Quantity (metric tons)					
Spain	309,112	304,433	426,577	429,868	369,533
Greece	67,896	80,917	76,593	90,593	100,196
Tunisia	98,232	71,302	52,125	40,974	76,043
Portugal	1,798	1,955	3,144	6,502	8,647
Chile	22	419	840	1,339	1,823
France	3,916	2,942	1,856	886	1,568
All other	11,837	8,061	7,910	13,989	1,598
Total	492,813	470,029	569,045	584,151	559,408
EU 27	383,792	391,307	508,969	529,873	480,496

Source: GTIS, Global Trade Atlas database (accessed June 19, 2013).

Because the large bottlers operating in Italy seek to create a consistent flavor at the lowest price by blending oils from various countries, import sources fluctuate based on production levels, specific flavor characteristics, and price levels in other major producing countries. For instance, Tunisian oil is known for being mild and buttery, while Greek oil is known for stronger flavors and is also used to raise the overall quality of a blend.<sup>149</sup> As a result, the specific needs of the blending and bottling companies to create consistent flavor profiles while minimizing costs are an important factor in determining the composition of Italian imports.

### Exports

In 2012, Italy exported approximately 378,000 mt of olive oil worth \$1.5 billion (table 6.9). Leading destinations for Italian exports, mostly bottled, were the United

<sup>148</sup> See chapter 2 box 2.3.

<sup>149</sup> Industry representatives, interviews by USITC staff, Tuscany, Italy, January 30, 2013.

**TABLE 6.9** Italy: Exports of olive oil (HS 1509), 2008–12

Country	2008	2009	2010	2011	2012
Value (million \$)					
United States	580	443	466	520	504
Germany	207	180	183	211	201
France	115	108	120	144	112
Japan	87	83	91	97	107
Canada	88	72	95	97	90
United Kingdom	107	82	82	80	70
All other	447	374	428	484	462
Total	1,631	1,342	1,466	1,633	1,546
EU 27	638	541	567	628	569
Quantity (metric tons)					
United States	113,107	100,315	109,226	118,401	126,216
Germany	35,560	36,732	40,083	43,751	46,699
France	22,673	24,663	28,833	32,455	28,495
Japan	14,699	15,438	18,596	18,398	22,754
Canada	16,933	16,871	24,315	23,094	23,314
United Kingdom	21,000	18,738	20,246	18,833	17,719
All other	82,298	81,665	102,027	108,445	112,849
Total	306,270	294,422	343,326	363,377	378,046
EU 27	119,480	119,188	136,384	140,158	140,820

Source: GTIS, Global Trade Atlas database (accessed June 19, 2013).

States, Germany, France, Canada, Japan, and the United Kingdom. Exports to these established markets have generally been stable, showing little growth between 2008 and 2012. The only significant growth among Italy's top 10 export markets was to China. The quantity of oil exported to China more than doubled in just one year, between 2009 and 2010, and was almost four times greater in 2012 than in 2008 (2,585 mt in 2008 and 9,737 mt in 2012).

The unit value of Italian exports is nearly 50 percent higher than the unit value of Spanish exports. This reflects both the price premium for Italian oil and the fact that a greater share of Spanish oil is exported in bulk (much of it to be bottled in Italy) rather than in bottles. Unit values of exports are higher than unit values of imports, again reflecting Italy's position as an importer of bulk and exporter of bottled olive oil.

## ***Factors Affecting Competitiveness***

### **Cost/Quality Tradeoff**

Owing to the reliance on traditional, labor-intensive methods of production, some of which Italian producers believe ensure high-quality oil, Italy is not a low-cost olive oil producer.<sup>150</sup> Cost structures differ depending on the production methods used, however. Average costs of production are lower in the southern region (i.e., Puglia and Calabria), where commercialized, intensive olive groves with mechanization are widespread. These large farms are relatively few in number, but important to Italian production. For instance, groves with over 1,000 olive trees account for about 1 percent of Italian groves,

<sup>150</sup> Industry representatives, interviews by USITC staff, Tuscany, Italy, January 31, 2013; industry representatives, interviews by USITC staff, Puglia, Italy, February 4, 2013.

but 25 percent of production.<sup>151</sup> Costs of production average €3.53 and €3.64 per kilogram of olive oil in Puglia and Calabria, respectively. In comparison, in central and northern Italy, where a greater share of small farms use traditional methods of production and focus on quality, costs are much higher at €5.80 per kilogram.<sup>152</sup> In its analysis of the olive sector, the Italian government identified the prevailing presence of traditional growing systems and the limited spread of mechanization and irrigation as a weakness.<sup>153</sup> At the mill level, as mentioned above, Italy relies on a large number of small-capacity mills, so average milling costs are also higher due to this fragmentation.

Like other countries, in Italy the cost of olive production accounts for a large share (about 70 percent) of the final cost of olive oil. Between 2006 and 2009, Italian production costs were roughly 16 percent higher than in Spain and 17 percent higher than in Greece, according to the EC's annual farm accounting survey.<sup>154</sup> The farm accounting survey also provides typical costs for Italian olive producers, which totaled between €334 and €412 per mt of olives during the 2006-09 period, not including the value of family labor. One of the largest costs was wages, which accounted for between one-fourth and one-third of total costs, and the share is slightly greater if "contract work" is included in labor costs. Taken together, the importance of family labor and the share of costs spent on wages and contract work demonstrate that olive growing is a very labor-intensive activity in Italy.

Many Italian producers believe that higher costs associated with certain production methods (including early harvesting, hand harvesting, and pruning) and traditional milling methods provide a payoff in terms of quality, even though they raise costs. Thus, a significant share of Italian producers has consciously chosen to use traditional production methods rather than modern ones. Unlike in Spain, where the majority of harvesting is at least semi-mechanized, much of the harvesting in Italy is done by hand. To some extent, this is driven by the number of groves located on steep slopes, but it is also done to ensure higher quality.<sup>155</sup> Many premium producers use the same harvesting and pruning crews every year and consider pruning to be skilled labor because it is important to the health of the trees. Pruners are paid about €140 per day (including insurance) and harvesters receive €70–€80 per day. While hand harvesting does improve quality, it is much slower than semi-mechanized methods. One person can hand-harvest 200 kgs of olives per day, but with a shaker, one worker can harvest up to 800–900 kgs per day.<sup>156</sup> As a result, during MY 2012/13, labor for harvesting, maintenance, and pruning accounted for almost 70 percent of the production costs for some Tuscan growers focusing on high-quality production.<sup>157</sup> Similarly, a substantial segment of Italian millers prefer traditional pressing systems over modern centrifuge systems. This preference also contributes to the higher overall cost of production in Italy because traditional mills have lower throughput than modern mills.

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<sup>151</sup> Government of Italy, Ministry of Agriculture, "Piano Olivicolo-Oleario" [Olive and olive oil plan], April 2010, 6.

<sup>152</sup> Bungaro, "Olio: le novità introdotte dalla nuova legge anti contraffazione" [Oil: new law combating counterfeiting], n.d. (accessed May 9, 2013).

<sup>153</sup> Government of Italy, Ministry of Agriculture, "Piano Olivicolo-Oleario" [Olive and olive oil plan], April 2010, 19.

<sup>154</sup> These cost comparisons do not include the value of family labor, which is particularly important in Italy and may be as high as 56 percent of total costs if included. EC, "Olive Oil Farms Report," February 2012, 8.

<sup>155</sup> Italian government official, interview by USITC staff, Rome, Italy, February 1, 2013; industry representative, interview by USITC staff, Puglia, Italy, February 4, 2013.

<sup>156</sup> Industry representative, interview by USITC staff, Puglia, Italy, February 5, 2013.

<sup>157</sup> Industry representatives, interviews by USITC staff, Tuscany, Italy, January 31, 2013.

## Price Premium

Italy's reputation for high-quality extra virgin oil means that Italian products command a price premium in the market,<sup>158</sup> with prices paid to Italian producers typically the highest among EU producing countries.<sup>159</sup> While higher costs and quality differences are the main driver of this price difference, the higher prices in Italy also reflect domestic demand that exceeds production, unlike in Spain and Greece. Moreover, the recent drought in Spain has cut total European supply and increased demand for Italian oil. This has pushed up Italian prices even further.<sup>160</sup>

The Italian price premium translates into higher average margins for Italian producers, which are among the highest in the EU. Even so, while the higher Italian prices provide an advantage for Italian producers in general, for many—especially those facing the most difficult growing conditions—margins are very low. As a result, land abandonment by the most disadvantaged farmers is a concern of the Italian government.<sup>161</sup>

## Preservation of the “Italian Brand”

Because the interests of the bottlers and the growers diverge sharply in Italy, there is tension between the two segments. Italian producers are concerned that some low-quality blends marketed as an Italian product damage the reputation of Italian oils.<sup>162</sup> The ability to market olive oil as “Italian” is an important brand advantage that benefits both the producers of 100 percent Italian oil and the blending and bottling firms. The Italian brand cachet originates from the idea among consumers that Italy is historically “the cradle of olive oil quality,” and from the fact that, especially “over the last 50 years...the marketing appeal of Italian food, in general, and Italian olive oil, as a central part of that Italian food, has simply grown in the American [and other countries'] consciousness.”<sup>163</sup> Large bottling firms locate in Italy because they view olive oil perceived as Italian as highly marketable in key export countries. The Italian cachet also provides an advantage for smaller Italian producers seeking to export, as compared to their counterparts in other producing countries. Helped by the Italian cachet, some smaller producers interviewed in Italy have succeeded in differentiating and selling their products to quality-conscious buyers in markets such as China, Russia, Japan, Australia, the United States, and other EU countries. Still, this advantage should not be overstated. Most of these producers qualified their success by noting that it is difficult to break into export markets because larger bottlers dominate the distribution chain.<sup>164</sup>

There is concern throughout the Italian industry that the national brand reputation is at risk of being damaged by low-quality blends that contain very little Italian oil, but are marketed as Italian products. Italian exporters, both large and small, of 100 percent Italian oils stated that the Italian image suffers when there is a lack of differentiation

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<sup>158</sup> Industry representative, interview by USITC staff, Rome, Italy, February 4, 2013.

<sup>159</sup> See chapter 2 for global price comparisons. Compared to prices of U.S. olive oil, one Italian industry official reported that the margin for a large U.S. brand is 10 percent above Italian prices, down from 30 percent previously, and that the U.S. margin is decreasing due to higher U.S. production. Industry representative, interview by USITC staff, Rome, Italy, February 4, 2013.

<sup>160</sup> Industry representative, interview by USITC staff, Puglia, Italy, February 4, 2013.

<sup>161</sup> Government of Italy, Ministry of Agriculture, “Piano Olivicolo-Oleario” [Olive and olive oil plan], April 2010, 18.

<sup>162</sup> Industry representative, interview by USITC staff, Tuscany, Italy, January 31, 2013.

<sup>163</sup> USITC, hearing transcript, December 5, 2012, 80 (testimony of Tom Mueller).

<sup>164</sup> Many Italian producers stated that the United States was a particularly difficult export market to break into, as they perceived the distribution channels and buyers as focused more on price than on quality.



between their oils and the lower-quality oils being bottled in Italy.<sup>165</sup> To preserve the Italian brand, some producers are seeking to change policy and regulation relating to quality, testing, and labeling.

Responding to concerns primarily from growers and bottlers of 100 percent Italian olive oil, the Italian government promulgated a number of additional domestic regulations and enforcement measures that go beyond EU regulations. The focus of these regulations is “traceability,” i.e., ensuring that the origin of 100 percent Italian oils can be verified (mostly through records checks) as they move through the supply chain.<sup>166</sup> The Italian government is creating a database to assist in this effort. The Italian olive growers’ association (UNAPROL) reports that 600 oil producers, representing 7,000 farms, are participating in traceability certification programs.<sup>167</sup>

Regulations also focus on uncovering fraud. The fraud investigation unit of the Italian national police force (the Carabinieri) dispatches inspectors to conduct chemical inspections and audit companies’ records, at the milling, bottling, and retail levels.<sup>168</sup> Penalties for fraud usually include fines. In October 2012, Italy passed a law, the “Legge Mongiello,” which aims to improve the “quality and transparency of the supply chain for virgin olive oils.”<sup>169</sup> Most notably, the law increases penalties and fines for producers convicted of adulteration and counterfeiting, encourages the use of alkyl esters testing and the publication of the test results, mandates a “best before” date of 18 months from harvest, and bans the use of refillable unlabeled olive oil containers in restaurants.<sup>170</sup> Reflecting the divergent views between bottlers and growers in Italy, a representative from the large Italian bottling industry expressed the view that the Italian government’s focus on inspection, enforcement, and origin labeling is mostly in response to pressure from farmers to protect the domestic industry.<sup>171</sup>

## Government Support

According to the EC’s annual farm accounting survey, between 22 and 50 percent of Italian olive grower income comes from CAP payments, depending on the year and the type of farm.<sup>172</sup> Because of low production margins, many Italian producers might not be able to operate without this additional source of income. According to industry sources and government officials, direct payments amount to €500 to €800 per ha on average in Italy,<sup>173</sup> slightly higher than the average payment in Spain (as reported by industry sources there).

Support for Italian growers and others in the olive oil industry is also provided through rural development programs, which are implemented at the regional level. Rural

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<sup>165</sup> Industry representatives, interviews by USITC staff, Rome and Tuscany, Italy, January 31 and February 4, 2013.

<sup>166</sup> Italian government officials, interview by USITC staff, Rome, Italy, February 1, 2013; industry representative, interview by USITC staff, Rome, Italy, February 1, 2013.

<sup>167</sup> UNAPROL, document provided to USITC staff, February 2010.

<sup>168</sup> Italian government officials, interviews by USITC staff, Rome, Italy, February 1, 2013.

<sup>169</sup> Legislative Proposal Approved by the 9th Permanent Commission (Agriculture and Agri-food Production) of the Italian Senate, Senate printed version no. 3211, “Standards on the Quality and Transparency of the Supply Chain for Virgin Olive Oils” (October 30, 2012).

<sup>170</sup> Bungaro, “Olio: le novità introdotte dalla nuova legge anti contraffazione” [Oil: new law combating counterfeiting], n.d. (accessed May 9, 2013).

<sup>171</sup> Industry representative, interview by USITC staff, Rome, Italy, February 1, 2013.

<sup>172</sup> EC, “Olive Oil Farms Report,” July 2012, 10.

<sup>173</sup> Industry representatives, interviews by USITC staff, Puglia, Italy, February 4–5, 2013; Italian government official, interview by USITC staff, Rome, Italy, February 1, 2013.

development programs are better funded in Italy than in other EU countries because of the commitment of the Italian government to co-finance the initiatives more than one-to-one. (Italy is only required by the EU to contribute 50 percent towards approved projects, but has chosen to contribute more in many cases.) For example, in the area of farm modernization (a major focus in Italy), the Italian government contributes approximately €2 for every €1 received from the EU (table 6.10). As applied to the olive oil sector, farm modernization includes support for installing irrigation, new SHD plantings, and the purchase of mechanical harvesters and pruning machines.<sup>174</sup> Farm modernization is the second-largest funding priority in Italy's rural development plan, after the promotion of organic agriculture. Table 6.10 gives 2007–13 budget totals (Italian government and EU funding) for major rural development priorities both at the national level as well as in Puglia and Calabria, the two largest olive producing regions of Italy. The figures in the table represent total funding over the eight-year period, and the table includes only funding for those objectives the Italian government identified as most significant.

**TABLE 6.10** Italian government and EU rural development funds, 2007–13 totals, major olive growing regions and national totals (€, millions)

Objective	Funding source	Puglia	Calabria	Italy (total for all regions)
Setting up young farmers	Italian government	75	33	700
	EU	43	20	330
Advisory services for farm and forest holders	Italian government	19	5	116
	EU	11	3	56
Modernization of agricultural holdings	Italian government	306	174	3,055
	EU	178	105	1,494
Adding value to agricultural and forestry products	Italian government	146	87	1,280
	EU	84	52	623
Support for food quality schemes	Italian government	2	2	63
	EU	1	1	29
Support for producer groups' information/promotional campaigns	Italian government	4	12	148
	EU	2	7	69
Support for organic agriculture	Italian government	350	250	3,771
	EU	205	149	1,983

Source: Italian government officials, email correspondence with USITC staff, April 17, 2013.

## Greece

### Overview

Greece plays an important role in global olive oil production, but little of its oil enters world markets as a Greek product. Rather, most Greek olive oil is consumed domestically (mostly through direct sales to consumers), as Greece has the highest per capita olive oil consumption in the world. Most of the remainder is exported to major bottlers in Italy for blending with extra virgin olive oils from various sources. Greek extra virgin oil is known among blenders and bottlers as a component that raises the overall quality and flavor profile of a blend. Recent industry and government initiatives seek to reduce the

<sup>174</sup> Italian government official, email to USITC staff, April 18, 2013; industry representatives, interview by USITC staff, Puglia, Italy, February 4, 2013.

sector's dependence on bulk exports to Italy and to increase competitiveness by focusing more on selling differentiated Greek product.

The first half of this section will provide a descriptive profile of Greek production and processing methodologies, as well as discuss trends in both domestic consumption and Greece's role in global trade. The second half will focus on the major factors affecting Greece's competitiveness in the global market. Specifically, the main advantage of the Greek olive oil industry is the widely recognized quality of Greek olive oil, which creates consistent demand for it. The industry also benefits from substantial government support. The section also discusses two major disadvantages of the Greek production system: high costs of production due to a lack of economies of scale; and an absence of product differentiation, which results in continuing overreliance on bulk exports.

## ***Production Profile***

### **Production Overview**

Greece is the world's third-largest olive oil producer, after Spain and Italy. Greece produced 295,000 mt of olive oil in MY 2011/12, down from 327,000 mt in MY 2007/08 (table 6.11). Production declined in MY 2010/11 and 2011/2012 owing to unusually cool weather conditions,<sup>175</sup> but is forecast to recover to 350,000 mt in MY 2012/13. Until recently, Greek production levels were subject to the alternate bearing cycle of the olive tree, but the variation between crop years is now lower, likely due to the increased use of irrigation and pruning techniques that reduce the effects of this cycle.

**TABLE 6.11** Greece: Olive oil supply, consumption, and trade, 2000/01, 2007/08–12/13 (1,000 mt)

	2000/01	2007/08	2008/09	2009/10	2010/11	<sup>a</sup> 2011/12	<sup>b</sup> 2012/13
Production	430.0	327.2	305.0	320.0	301.0	295.0	350.0
Extra-EU imports	0	0	0	0	0	0	0
Consumption	270.0	264.0	229.0	228.5	227.5	212.5	208.0
Extra-EU exports	10.0	9.8	11.0	12.0	13.0	15.0	16.0

Source: IOC, "Tables 1–4: [EU] Production, Imports, Exports, Consumption," November 2012.

Note: A marketing year spans October 1 to September 30 the following year.

<sup>a</sup>Provisional.

<sup>b</sup>Projected.

### **Olive-Growing Sector**

Olive production is among the most important agricultural sectors in Greece, accounting for 20 percent of agricultural land and 60 percent of the total number of holdings.<sup>176</sup> Olive holdings, the majority of which are small, total approximately 531,000.<sup>177</sup> Most of the olive groves are dedicated to the production of olives for oil, although the table olive sector is also important in Greece. Some Greek olive varieties, such as Kalamata, are used for both oil production and table use, so it is difficult to separate total olive-growing area based on its use. In general, however, Greece harvests at least 10 tons of oil olives for every ton of table olives each year.<sup>178</sup>

<sup>175</sup> USDA, FAS, *Greece Olive Oil 2012*, May 10, 2012, 2.

<sup>176</sup> EC, *LIFE among the Olives*, 2010, 1.

<sup>177</sup> EC, "Economic Analysis of the Olive Sector," July 2012, 2.

<sup>178</sup> EU, Eurostat database (accessed March 8, 2013); IOC, "Table 1: [EU] Production," November 2012.

In general, Greece's climate and soil are very well suited to olive growing, and olive oil is produced throughout the country. Greece produces a high share of extra virgin oil, much of it high quality, owing to its favorable climate and soil, reliance on olive varieties that tend to yield high-quality extra virgin oil, and timely harvesting and milling of olives.<sup>179</sup> The regions of Crete and the Peloponnese are the most concentrated growing areas, accounting for 65 percent of olive oil output.<sup>180</sup> Most of the newer, intensive farms are located in these regions.

Greece relies more heavily on a single olive variety than Spain or Italy, with the Koroneiki olive accounting for about 80 percent of production. The Koroneiki variety produces high-quality oil for which there is strong demand. Other common varieties are Manaki and Athinolia, grown primarily in the Peloponnese.<sup>181</sup>

The average farm size in Greece is only 1.6 ha, just slightly larger than in Italy.<sup>182</sup> About 70 percent of Greece's olive-growing land is considered "disadvantaged" by the EU, meaning that it is either steeply sloped or has other geographic features that make it difficult to farm. Often olive trees are the only crop that can be grown on the land.<sup>183</sup> Because many farms are small and located on difficult terrain, most olives are hand harvested,<sup>184</sup> and fewer Greek farmers employ modern production methods than either Spain or Italy. The sector's low efficiency is reflected in the fact that Greece accounts for 22 percent of EU oil olive acreage, but just 14 percent of its olive oil production.<sup>185</sup>

The number of small olive farms in Greece is decreasing due to land abandonment and competing land use priorities. Small, traditional olive farms, many of which are located on the Greek islands, face "competition from real estate development and tourism. . . . Alternative and more lucrative employment activities have led many owners of olive groves to abandon them. This trend has strengthened in the wake of the last CAP reform due to the complete decoupling of subsidies from production."<sup>186</sup> Many of these smallest olive farms do not make a profit even after support payments are received, so alternatives to olive growing are attractive.<sup>187</sup>

Despite Greece's continued reliance on traditional growing methods on most of its olive farms, intensive plantings have increased in recent years.<sup>188</sup> These new plantings are largely in Crete and the Peloponnese and are mostly Koroneiki olive trees, a variety that is well suited to intensive production where it can be employed.<sup>189</sup> While intensive plantings increased over the last five years, this is not expected to continue, as most of the land suitable for intensive production has already been converted.<sup>190</sup>

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<sup>179</sup> Industry representative, telephone interview by USITC staff, April 19, 2013.

<sup>180</sup> USDA, FAS, *Greece Olive Oil 2012*, May 10, 2012, 2.

<sup>181</sup> Industry representative, telephone interview by USITC staff, April 19, 2013.

<sup>182</sup> EC, "Economic Analysis of the Olive Sector," July 2012, 2.

<sup>183</sup> *Ibid.*, 3.

<sup>184</sup> USDA, FAS, *Greece Olive Oil 2012*, May 10, 2012, 2.

<sup>185</sup> EC, "Economic Analysis of the Olive Sector," July 2012, 2.

<sup>186</sup> Vrontzos and Duquenne, "Greek Olive Oil," 2008, 44.

<sup>187</sup> *Ibid.*

<sup>188</sup> EC, *LIFE among the Olives*, 2010, 10.

<sup>189</sup> *Ibid.*

<sup>190</sup> Industry representative, telephone interview by USITC staff, April 19, 2013.

## Olive Oil Processing Sector

### *Milling*

Greece has 2,200 mills in operation, a large number relative to its level of production,<sup>191</sup> with a prevalence of small, local mills. Even in remote areas, olives are typically processed the day they are picked. Because it is processed soon after harvest, Greek oil is generally of high quality,<sup>192</sup> but also high cost because many of the mills do not use the most efficient technology and cannot benefit from economies of scale. Many of the small mills serve traditional sales channels, with consumers buying olive oil directly from the mill. About 80 percent of mills in Greece use the three-phase milling process. There are also some traditional presses, and very few of the more modern two-phase mills.<sup>193</sup>

Farmers may sell their olives to mills either through cooperatives or through relationships with Greek bottlers, with the latter generally offering a better opportunity for farmers to sell into higher-value production chains. About 60 percent of Greek olive growers belong to cooperatives, which often focus on bulk sales rather than seeking higher-value market outlets. About 20 percent of Greek mills are owned by cooperatives; they dominate production only in the region of Crete.<sup>194</sup> In order to sell their olives into higher-value production chains, some farmers enter into agreements with mills that also bottle and market Greek oil. For example, the largest olive oil producer in Crete sources 25 percent of its oil from its own groves, and relies on 800 local farmers for the remaining 75 percent of its oil. The company aims to produce only high-quality extra virgin oil, so farmers are paid based on the quality of the olives, following testing performed at delivery.<sup>195</sup> This generally results in a higher price for those farmers that meet the quality standard.

Greek olive oil has a reputation for being of high quality, and extra virgin grade dominates production. Between 65 and 80 percent of production is extra virgin depending on the year's crop,<sup>196</sup> a share higher than in any other Mediterranean country. This is the result of excellent climate, olive varieties that yield particularly good oil, and the short time from harvest to milling.<sup>197</sup> Within the extra virgin grade, Greek oil is known by bottlers and importers as high quality and very flavorful, and it is often used to raise the quality and flavor profile of blends.

### *Bottling*

Despite industry fragmentation at the mill level, production downstream is highly concentrated; there are few firms marketing Greek oil for export and even fewer large bottling operations. Oil for export is rarely bottled in Greece, being mostly sold in bulk to the major global bottlers in Italy for use in their blends. Only about 20 percent of Greek production is bottled in Greece, while the rest is either exported in bulk or sold directly to consumers through local sales.<sup>198</sup> There are about 350 firms that are licensed by the

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<sup>191</sup> EC, "Economic Analysis of the Olive Sector," July 2012, 5.

<sup>192</sup> USDA, FAS, *Greece Olive Oil 2012*, May 10, 2012, 2.

<sup>193</sup> National Bank of Greece, "Olive Oil," September 2011.

<sup>194</sup> Industry representative, telephone interview by USITC staff, April 19, 2013.

<sup>195</sup> Butler, "How Terra Creta Makes and Markets Olive Oil," October 22, 2012.

<sup>196</sup> USDA, FAS, *Greece Olive Oil 2012*, May 10, 2012, 3.

<sup>197</sup> Industry representative, telephone interview by USITC staff, April 19, 2013.

<sup>198</sup> National Bank of Greece, "Olive Oil," September 2011.

Greek government to pack olive oil for retail use; most of these are mills that have a small bottling line for local sales only.<sup>199</sup>

## ***Consumption***

Greece consumed 212,500 mt of olive oil in MY 2011/12 (table 6.11). Consumption has been fairly stable since MY 2008/09 at just under 230,000 mt annually, but fell in MY 2011/12 and is forecast to fall even lower in MY 2012/13. The drop is likely due to both lower domestic production and the fall in consumer spending following the recent financial crisis in Greece. Decreasing purchasing power has led some consumers to substitute olive oil with lower-priced sunflower or soybean oil.<sup>200</sup> Normally, however, because olive oil is a major staple in the Greek diet with historic and cultural significance, consumption is relatively insensitive to price and income changes.<sup>201</sup>

Almost all consumption is domestically produced, and direct sales from producers to consumers remain an important source of olive oil for many Greek households. About 70 percent of olive oil is consumed on the farm or sold in non-branded, bulk packages to customers in the local community, while the remaining 30 percent is sold in retail packages.<sup>202</sup> Some Greek consumers view oil purchased from local producers as assuring higher quality, but tests show these oils are often lower quality than those found on retail shelves.<sup>203</sup> Producers report that they often sell olive oil to local customers in bulk packages as large as 17 liters.<sup>204</sup> An advantage of these bulk sales is that they allow producers to avoid paying value-added tax (VAT). One study found that charging VAT on these olive oil sales would provide €65 million in additional revenue to the government.<sup>205</sup>

## ***Trade***

Greece's export pattern reveals both its dependence on bulk exports to Italy and its efforts to diversify away from reliance on this single export channel. Greece exported about 128,000 mt of olive oil worth \$416 million in 2012 (table 6.12). Italy was the major destination for Greek olive oil, accounting for 73 percent of the volume and 64 percent of the value that year. More than 80 percent of Greek olive oil exports are intra-EU, while major non-EU markets include the United States, China, Canada, and Russia.

Although statistics for Greek olive oil exports do not separate bulk from bottled, unit values provide an indicator of the trade in each type. For example, between 2008 and 2012, unit values for Greek exports to Italy were about \$3,200 per mt on average, by far the lowest of all major destinations, and well below exports to non-EU countries, for which unit values were about \$5,300 per mt. This suggests that exports to Italy are mostly shipped in bulk to be blended and bottled, while exports to non-EU destinations are likely in bottles.

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<sup>199</sup> Industry representative, telephone interview by USITC staff, April 19, 2013.

<sup>200</sup> Vasilopoulos, "Production Up, Consumption Down in Greece," December 1, 2012.

<sup>201</sup> USDA, FAS, *Greece Olive Oil 2012*, May 10, 2012, 3.

<sup>202</sup> Industry representative, telephone interview by USITC staff, April 19, 2013.

<sup>203</sup> National Bank of Greece, "Olive Oil," September 2011.

<sup>204</sup> Tejada, "Greece's Backroad 'Bulk' Olive Oil Trade," April 23, 2012.

<sup>205</sup> National Bank of Greece, "Olive Oil," September 2011.

**TABLE 6.12** Greece: Exports of olive oil (HS 1509), 2008–12

Country	2008	2009	2010	2011	2012
	Value (million \$)				
Italy	245	200	160	232	268
Germany	30	24	28	37	37
United States	18	16	16	16	16
China	2	4	4	9	12
Canada	13	11	11	13	11
Russia	2	3	6	9	8
All other	75	68	57	63	65
Total	385	325	283	379	416
EU 27	326	267	219	303	338
	Quantity (metric tons)				
Italy	61,187	64,126	53,898	75,952	93,578
Germany	5,751	4,500	5,712	12,921	8,653
United States	3,114	3,230	3,267	3,295	3,701
China	338	756	937	1,821	2,497
Canada	2,256	2,249	2,458	2,872	2,518
Russia	286	459	1,090	1,472	1,475
All other	13,881	16,660	12,375	13,789	16,005
Total	86,813	91,980	79,737	112,123	128,427
EU 27	76,918	80,459	66,628	97,190	112,057

Source: GTIS, Global Trade Atlas database (accessed June 19, 2013).

The overall share of Greek olive oil production being exported to Italy has remained relatively stable on a volume basis at around 70 percent in most years.<sup>206</sup> On a value basis, however, the share of Greek exports sent to Italy has declined in recent years. In the early and mid-2000s, this share was generally above 70 percent. Between 2008 and 2012, however, this share declined to between 57 and 64 percent annually, suggesting that higher-value, most likely bottled, exports to other markets are becoming more important. For historical context, Greece's number of export markets has more than doubled since the 1990s, and the share of bottled exports has grown from just under 10 percent to over 20 percent.<sup>207</sup> Taken together, the data suggest that while sales of oil in bulk to Italy have remained a consistently important outlet for Greek olive oil, Greece is making some progress in exporting higher-value product to other markets. For example, there are a few companies successfully bottling and marketing 100 percent Greek oil in export markets. Trader Joe's and Colavita are among the major brands offering 100 percent Greek oil in the U.S. market. Additionally, JCS Tradecom, Inc., reports success with its Zoe Diva Select Koroneiki Extra Virgin Olive Oil, which is 100 percent Koroneiki olive oil from Greece and won the 2008 Sofi Silver for outstanding shelf stable food service product from the Specialty Food Association.<sup>208</sup>

Greece does not import substantial volumes of olive oil. Imports in 2012 were 1,318 mt, almost all from Italy and Spain. This small volume of imports is equal to less than 1 percent of consumption. As noted above, demand is met almost exclusively through domestic production.

<sup>206</sup> Viontzos and Duquenne, "Greek Olive Oil," 2008, 36; GTIS, Global Trade Atlas database (accessed June 19, 2013).

<sup>207</sup> National Bank of Greece, "Olive Oil," September 2011; industry representative, telephone interview by USITC staff, April 19, 2013.

<sup>208</sup> USITC, hearing transcript, December 5, 2012, 132 (testimony of John Sessler, JCS Tradecom, Inc.).

## ***Factors Affecting Competitiveness***

### **High Cost of Production**

Greece has high costs of olive oil production, largely owing to its reliance on traditional, small-scale growing and milling methods. Several factors contribute to the high cost of producing olives. Greece has a prevalence of old groves with declining tree productivity and yields, resulting in high per-unit costs of production.<sup>209</sup> Low yields are also attributed to a lack of irrigation in most of the country's olive groves.<sup>210</sup> Further, wage rates are high and rising even as rates of labor productivity remain low. Labor costs were identified by a Greek bank as a major limitation on Greece's competitiveness in the olive oil industry.<sup>211</sup> Also, only about half of olive growers are considered professional farmers,<sup>212</sup> and many operators rely on activities besides olive growing to supplement their income. Some only produce for personal consumption.<sup>213</sup> Costs are also high in the milling sector, which, as noted earlier, is dominated by smaller mills using older technology, unable to benefit from economies of scale.

### **High Quality**

Although production costs are high, Greece also enjoys a reputation for producing high-quality olive oil. In a good year, as much as 80 percent of Greek olive oil meets the standard for extra virgin grade, the highest share in the Mediterranean.<sup>214</sup> Even within the extra virgin category, Greek oils can be differentiated from others because they have desirable flavor profiles and score well on chemical tests measuring quality.<sup>215</sup> This is partially because oil milled from Koroneiki olives tends to be the highest in polyphenol content and low in FFA among all olive oils.<sup>216</sup> Greek oils are also considered among the fruitiest and most robust. As a result, they are in high demand by bottlers for blending with other extra virgin oils to raise the overall quality and increase the flavor of the final product.<sup>217</sup> As California growers who have planted Koroneiki explain, "Blending Koroneiki into our other EVOOs [extra virgin olive oils] 'kicks up' an oil's flavor and fruitiness, giving the oil a better and more complex taste."<sup>218</sup>

### **Lack of Marketing and Reliance on Bulk Exports to Italy**

Despite producing mostly high-quality extra virgin oil, most Greek oil is exported in bulk for blending, rather than as single-source branded products.<sup>219</sup> The Greek association of

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<sup>209</sup> Since the early 2000s, olive oil yields have declined slightly unlike in most other producing countries, where yields have increased. EC, "Olive Oil Farms Report," February 2012, 74.

<sup>210</sup> Vlontzos and Duquenne, "Greek Olive Oil," 2008, 42.

<sup>211</sup> National Bank of Greece, "Olive Oil," September 2011.

<sup>212</sup> USDA, FAS, *Greece Olive Oil 2012*, May 10, 2012, 2.

<sup>213</sup> EC, "Economic Analysis of the Olive Sector," July 2012, 2.

<sup>214</sup> USDA, FAS, *Greece Olive Oil 2012*, May 10, 2012, 3.

<sup>215</sup> Vlontzos and Duquenne, "Greek Olive Oil," 2008, 33.

<sup>216</sup> Militsa Olive Oil website, <http://www.militsaoliveoil.com/koroneiki.html> (accessed April 22, 2013).

<sup>217</sup> Industry representative, interview by USITC staff, Washington, DC, April 9, 2013.

<sup>218</sup> California Olive Ranch Web site, <http://consumers.californiaoliveranch.com/2010/07/23/olive-oil-primer-a-look-at-the-koroneiki-olive/> (accessed April 22, 2013).

<sup>219</sup> In addition, unit values of Greek olive oil exports are typically 15 to 25 percent higher than Spain's, but about 20 percent lower than Italy's. This reinforces the observation that Greek olive oil tends to be of higher grade and quality than Spanish oil, but also tends to be exported at bulk prices, unlike the mostly bottled Italian exports.



olive oil manufacturers attributes reliance on bulk sales to a lack of consumer awareness of the quality of Greek oil in overseas markets, owing to insufficient focus on consumer education and marketing on the part of Greek producers.<sup>220</sup> As a result, at least 80 percent of exports are in bulk in a typical year.<sup>221</sup>

Most bulk exports are to Italy and used in blends by bottlers, and as much as 20 percent of the content of oil blended and bottled in Italy may be of Greek origin.<sup>222</sup> This sales channel dates back many years and is firmly entrenched. Because producers have few alternative marketing outlets, Italian buyers often procure Greek oil at prices below market value with cash. Longer-term contracts are rare, a source of frustration for one U.S. blender who had experience purchasing Greek oil.<sup>223</sup> While farmer cooperatives in Greece have attempted to increase the market power of the farmers, they generally “perform poorly, leaving room for private buyers to pay lower prices to producers.”<sup>224</sup> An analysis of the strengths and weaknesses of the sector in Greece concluded, “A progressive reduction in the dependence of Greek olive oil on bulk exports to Italy is the key to significant improvement in its international success and the basis for a differentiation strategy that will increase the export price that can be garnered for the product.”<sup>225</sup> Though Greece has made some progress in reducing the share of its exports flowing through the established Italian channel, product differentiation remains a major challenge for the Greek industry.

## Government Programs

The substantial share of farm income coming from CAP payments enables producers to operate at margins that may not be sustainable otherwise. According to the EC’s annual farm accounting survey,<sup>226</sup> direct payments account for almost half of Greek olive oil producers’ income, depending on the year and the type of farm. This is slightly higher on average than in Spain and Italy. Many smaller producers have costs that are above average prices before support payments are included.<sup>227</sup> If CAP payments were eliminated, it is possible that land abandonment on Greek olive farms would become even more widespread.

In addition, the Greek Ministry of Agriculture reportedly has historically implemented CAP programs to maximize the total level of support. Specifically, “the ministry gave priority to the expansion of arable crops based on readily available CAP subsidies. Olive trees were, as a result, planted in non-irrigated areas where sustainable production is problematic.”<sup>228</sup> If government support is reduced or eliminated, olive growing may no longer be attractive in these marginal areas.

Low olive farm incomes in Greece increase growers’ reliance on direct payments. Average olive farm income in Greece is \$8,600 (compared with \$15,000 in Spain and Italy) and has fallen since 2005.<sup>229</sup> About 30 percent of Greek olive farms—generally

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<sup>220</sup> Tejada Benekos, “Panagiotis Karantonis: Greek Olive Oil Must Build on Quality,” January 30, 2011.

<sup>221</sup> USDA, FAS, *Greece Olive Oil 2012*, May 10, 2012, 3.

<sup>222</sup> Kouparanis, “No Greek Olive Oil in German Supermarkets,” November 13, 2012.

<sup>223</sup> Industry representative, interview by USITC staff, Washington, DC, April 9, 2013; Kouparanis, “No Greek Olive Oil in German Supermarkets,” November 13, 2012.

<sup>224</sup> Vlontzos and Duquenne, “Greek Olive Oil,” 2008, 42.

<sup>225</sup> *Ibid.*, 44.

<sup>226</sup> EC, “Olive Oil Farms Report,” February 2012, 8.

<sup>227</sup> *Ibid.*, 35.

<sup>228</sup> Vlontzos and Duquenne, “Greek Olive Oil,” 2008, 34.

<sup>229</sup> EC, “Olive Oil Farms Report,” February 2012, 8.

those that are very small—are not profitable even with support from direct payments. An additional 50 percent are profitable when direct payments are included, leaving just 20 percent of Greek olive farms profitable without assistance from government programs.<sup>230</sup>

Greece's rural development plan is also an important source of funding for the olive oil sector. As described above, rural development plans are proposed and co-funded by the member states. Unlike Spain and Italy, which contribute at least 50 percent of the funding for their plans, Greece is only expected to contribute 15 percent (and for some Greek proposals, as little as 5 percent, due to an exemption that was granted in the wake of Greece's financial crisis).<sup>231</sup> While the programs are open to any agricultural industry, olive oil is a key beneficiary due to its importance in the Greek economy. In the 2007–2013 rural development plan for Greece, the measures most relevant to olive oil include those to improve quality and to promote organic products. The quality improvement measures provide funding for organic production, and promotion measures fund television, radio, Internet, and print campaigns, as well as product exhibitions, for marketing organic Greek olive oil within the EU.<sup>232</sup>

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<sup>230</sup> National Bank of Greece, "Olive Oil," September 2011.

<sup>231</sup> EC, "Commission Welcomes the Top Up of Co-financing Rates," December 1, 2011.

<sup>232</sup> EC official, interview by USITC staff, Brussels, Belgium, February 27, 2013.

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# CHAPTER 7

## North Africa

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### Overview

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North Africa is the world's largest olive oil-producing region outside the European Union (EU). Within the region, Tunisia and Morocco are by far the most important, ranking sixth and seventh among leading global producers in marketing year (MY) 2011/12.<sup>1</sup> Together they accounted for almost 10 percent of global production and a quarter of global exports over the last five years.<sup>2</sup> Algeria, Egypt, and Libya also produce and export olive oil, but on a minor scale; during MY 2006/07–2011/12, together these three countries accounted for 2 percent of global production and less than 0.3 percent of exports.

Both the proximity of North Africa to southern Europe and minimal trade barriers in the EU for North African exports have resulted in close market integration between olive producers in Tunisia and Morocco and large bottlers in Italy and Spain. However, because of differences in olive oil consumption patterns, Tunisia and Morocco pursue different approaches to supplying retail customers in Europe and the United States. In Tunisia, only about 20 percent of production is consumed domestically, freeing up large export volumes that are mostly blended with other olive oil by Italian bottlers and sold under Italian brand names in the United States or Italy. In contrast, much of the olive oil produced in Morocco is consumed domestically, leaving relatively little for export. Moroccan olive oil exports are mostly shipped either to the United States under a free trade arrangement or to bottlers in Spain and Italy.

Tunisia and Morocco produce most of their olive oil using traditional methods of olive growing and milling.<sup>3</sup> However, the adoption of newer production and processing technology is on the rise, especially in Tunisia, and an increasing share of the olive oil output from both these countries is produced by modern mills. Olive oil from modern mills is more likely to enter the export market, while oil produced by traditional mills is consumed domestically. In both Tunisia and Morocco, some modern mills are vertically integrated with olive growers using super-high-density (SHD) plantings.

Tunisia and Morocco have different competitive strengths and weaknesses. While both struggle somewhat in attempting to differentiate their product, Morocco has seen more success in diversifying its export markets than Tunisia, which relies heavily on the EU. The two countries differ greatly on the grade and quality of their oil. Only 35 percent of

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<sup>1</sup> Countries with more production that year were Spain, Italy, Greece, Syria, and Turkey. IOC, "Table 1 [World] Production," November 2012.

<sup>2</sup> IOC, "Table 3: [World] Exports," November 2012. Data do not include intra-EU trade.

<sup>3</sup> Many traditional mills (called maasras in Morocco) are patterned after those introduced by the Romans. Millers use large millstones to grind olives into paste, which is then spread on fiber disks. The disks are stacked on top of one another and then pressed. Oil is forced out along with water. Water may be added in order to speed the extraction of the oil. After pressing, the water is separated by decantation, skimming the oil, which is less dense, off the water.

Morocco's oil meets the standards for extra virgin, versus about 65 percent of Tunisia's oil. However, of the extra virgin oil each country produces, Morocco's tends to be more flavorful and generally of a higher quality. Tunisia's extra virgin oil is usually considered more neutral-flavored and ideal for blending. In addition to the grade and quality differences, Tunisia is a lower-cost producer because of its low input and labor costs.

## Tunisia

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### *Overview*

Olive oil is an important sector in Tunisia's agricultural economy. Growing and processing olives and olive oil employs approximately 1 million people, over half of all farm employment.<sup>4</sup> Olives and olive oil production account for about 15 percent of the value of total agricultural production and half the value of agricultural exports.<sup>5</sup> Olive oil is the country's largest agricultural source of foreign currency and the fifth largest for the economy as a whole.<sup>6</sup> Tunisia's olive oil sector accounts for 20 percent of the world's total land area planted with olive trees, though it supplies only 6 percent of global oil production.<sup>7</sup>

Tunisia's olive oil sector is diverse, encompassing a range of farm sizes and milling technologies. There are several thousand growers, a large numbers of millers, relatively few bottlers, and a growing number of exporters.<sup>8</sup> There is little vertical integration along the supply chain, although a few bottling firms also own mills and groves.<sup>9</sup>

Tunisia produces mostly neutrally flavored extra virgin olive oil and exports oil mostly in bulk for blending in the EU. The production of lower-quality oil is a result of cultivation practices and insufficient quality control along a fragmented supply chain. While Tunisian olive oil quality is improving because of increasing efficiency throughout the supply chain, the majority of oil is considered to be lower-quality and neutrally flavored, even when the oil has chemical traits that test within the bounds of the extra virgin grade. And although the close commercial ties to the EU benefit Tunisia because they provide a readily available market to absorb its large supply, the continually open market means that Tunisian producers have less incentive to improve quality. It also means that the producers are missing out on potentially more profitable marketing outlet opportunities by not bottling and branding their own high-quality oil.

The first half of this section will provide a profile of Tunisia's olive growing and processing industry, as well as discuss trends in both domestic consumption and Tunisia's role in global trade. The second half will focus on the major factors affecting Tunisia's global competitiveness and position in the world market. The main factors that diminish Tunisia's competitiveness include its reliance on the bulk market, lower-quality extra virgin oil as a result of cultivation practices and a fragmented supply chain, a lack

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<sup>4</sup> Tunisian Olive Oil, "Olive Growing in Tunisia" (accessed January 9, 2013).

<sup>5</sup> Ibid.

<sup>6</sup> Ibid.

<sup>7</sup> IOC, *Tunisia 2012*, n.d., 1–10 (accessed May 6, 2013).

<sup>8</sup> As of 2012, there were over 300,000 growers, 1,700 mills, 25 operational packaging plants, and over 150 exporters. Tunisian Olive Oil, "Olive Growing in Tunisia" (accessed January 9, 2013).

<sup>9</sup> Industry representative, telephone interview by USITC staff, March 1, 2013.



of product differentiation, and a lack of access to credit. The factors increasing Tunisia's competitiveness include proximity to the EU, supportive government programs, and a low cost of production.

## ***Production Profile***

### **Production Overview**

Tunisia is the world's sixth-largest olive oil-producing country and the third largest outside the EU. Between MY 2007/08 and MY 2010/11, production steadily trended down from 170,000 metric tons (mt) to 120,000 mt, although it rebounded in MY 2011/12 and is projected to reach a record high of 220,000 tons in MY 2012/13 (table 7.1).<sup>10</sup> Production varies significantly from year to year owing to both the alternate annual fruit-bearing pattern of olive trees and weather fluctuations. Although production averages have slightly declined over the period, Tunisia remains one of the largest olive oil-producing countries in the world.

**TABLE 7.1** Tunisia: Olive oil supply, consumption, and trade, 2000/01, 2007/08–12/13 (1,000 mt)

	2000/01	2007/08	2008/09	2009/10	2010/11	<sup>a</sup> 2011/12	<sup>b</sup> 2012/13
Production	130.0	170.0	160.0	150.0	120.0	180.0	220.0
Imports	0	0	0	0	0	0	0
Consumption	58.0	50.0	21.0	30.0	30.0	40.0	40.0
Exports	85.0	130.0	142.0	97.0	108.0	140.0	60.0

Source: IOC, "Tables 1–4: [World] Production, Imports, Exports, Consumption," November 2012.

Note: A marketing year spans October 1 to September 30 the following year.

<sup>a</sup>Provisional.

<sup>b</sup>Projected.

Although olive production varies from year to year, planted area has increased steadily in recent years. Planted area, which was 1.63 million hectares (ha) in 2003, is projected to reach 1.85 million ha by 2014, equal to a third of all arable land in Tunisia.<sup>11</sup> Yields vary significantly by region, planting density, and year, but typically range between about 500 and 900 kilograms (kg) of olives per ha on traditional, low-density groves.<sup>12</sup> Annual fluctuations in yield and production weaken Tunisia's ability to supply a consistent amount of oil to Europe and other markets. Despite this, Tunisia is an important link in the European supply chain, delivering largely mild-flavored, lower-priced, lower-quality extra virgin oil to Italian bottling operations for blending with higher-quality, fuller-flavored olive oils.

### **Olive-Growing Sector**

Tunisia's olive-growing sector is characterized by large numbers of small, older groves. In 2013, there were over 300,000 farms with olive groves, of which about 85 percent had

<sup>10</sup> IOC, *Tunisia 2012*, n.d., 2–10 (accessed May 6, 2013).

<sup>11</sup> Government of Tunisia, "Tunisian Olive Oil," data sheet provided to USITC staff, January 17, 2013.

<sup>12</sup> Table olives can see yields of 1,400 kg per hectare in Tunisia. Tunisian Olive Oil, "Olive Growing in Tunisia" (accessed January 9, 2013).

less than 5 ha.<sup>13</sup> On average, the cropping density in Tunisia is about 60 trees planted per ha, although in areas with ready access to consistent water supplies, densities range between 100 and 150 trees per ha.<sup>14</sup> However, only around 4 percent of all olive groves are irrigated.<sup>15</sup> Some of the newer groves are planted more intensively, and there were over 2,000 ha of SHD plantings in Tunisia in 2005. While SHD plantings have increased since 2005, total SHD area is still only around 3,500 ha, or under 5 percent of all olive groves.<sup>16</sup>

Olive groves are widespread throughout all regions of Tunisia, with about 46 percent located in the center, 32 percent in the north, and 22 percent in the south.<sup>17</sup> Typically, olive trees in the north and center are often mixed with other agricultural activities on the same farm, while in the south they tend to be the only crop planted because the arid climate and lack of irrigation are not conducive to growing other products. Planting density is positively correlated with regional rainfall. In the North, which receives the most rain, planting densities average about 100 trees per ha, while in the South, the country's driest region, densities are only 17–20 trees per ha. Planting densities in the Center are around 50–60 trees per ha.<sup>18</sup>

While many olive varieties are grown in Tunisia, two varieties predominate. The Chemlali de Sfax variety accounts for the vast majority of olive area.<sup>19</sup> This variety is preferred because it requires little water and matures later than other varieties, so it can be harvested as late as early spring. Chemlali de Sfax has medium to high oil content and is used in the production of table olives as well as for processing into oil.<sup>20</sup> To produce table olives, groves must have adequate access to water, and input costs are higher than for groves producing olives for oil. As a result, there is little integration between the olive oil and table olive sectors and limited direct competition between them. The Chemlali variety generally has a mild taste, lacking pungency and bitterness<sup>21</sup> and therefore desirable for blending with the stronger-flavored oils found in many other producing countries.<sup>22</sup> The other main olive variety is Chetoui, commonly planted in the North-Coastal area and accounting for about 15 percent of Tunisia's olive groves.<sup>23</sup>

Tunisia's warm climate allows harvesting to take place from late fall to early spring, a much longer window than in most EU countries. However, most harvesting occurs late in the season, even into March. Because farmers are paid based on oil quantity, rather than

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<sup>13</sup> Tunisian Olive Oil, "Olive Growing in Tunisia" (accessed January 9, 2013).

<sup>14</sup> IOC, *Tunisia 2012*, n.d., 5–10 (accessed May 6, 2013).

<sup>15</sup> Tunisian government official, email to USITC staff, August 1, 2013.

<sup>16</sup> Tunisian government official, email to USITC staff, August 1, 2013; industry representative, telephone interview by USITC staff, April 29, 2013.

<sup>17</sup> IOC, *Tunisia 2012*, n.d., 5–10 (accessed May 6, 2013).

<sup>18</sup> Ibid.

<sup>19</sup> Estimates of the prevalence of the Chemlali variety vary among sources, but are generally reported to represent between 60 and 85 percent of olive area, and around 80 percent of domestic olive oil production. While the flavor characteristics of all varieties change dependent on soil and climate conditions, the IOC reports that Chemlali olives are generally not bitter or pungent. IOC, *Tunisia 2012*, n.d., 6–10 (accessed May 6, 2013).

<sup>20</sup> IOC, *Tunisia 2012*, n.d., 6–10 (accessed May 6, 2013).

<sup>21</sup> Ibid.

<sup>22</sup> Industry representative, telephone interview by USITC staff, March 21, 2013; industry representatives, interview by USITC staff, Tuscany, Italy, January 30, 2013.

<sup>23</sup> IOC, *Tunisia 2012*, n.d., 6–10 (accessed May 6, 2013). The Chetoui variety is used mainly for processing into oil, although it has relatively low oil content and requires more water. Chetoui olives are known for their high phenolic compound content and presence of other antioxidants. IOC, "Tunisia Indicators," n.d., 3 (accessed May 6, 2013).

quality, and because the oil content of the fruit increases the longer it is left on the tree, there is an incentive to harvest late in the season. As an illustration of this, Tunisian olives yield an average of 20 percent oil when milled, while averages span from 14–16 percent in premium SHD producing areas of California.<sup>24</sup> Also, olives that are harvested in late winter and early spring produce a neutrally flavored oil desired by the major European buyers of Tunisian olive oil because it is good for blending with other olive oils.

## Olive Oil Processing Sector

In addition to a small number of bottlers, Tunisia's processing sector consists of a large number of mills differing by level of vertical integration, scale, and efficiency.<sup>25</sup> In 2012, over 1,700 olive oil mills were in operation, with a crushing capacity of 43,680 mt of olives per day. Of these, about 1,000 were traditional or press mills,<sup>26</sup> while 757 were more modern continuous-process mills.<sup>27</sup> A traditional crushing facility in Tunisia can typically mill between 15 and 20 mt of olives per day, compared with 40 to over 100 mt at modern mills.<sup>28</sup> While mills still using traditional practices slightly outnumber those using newer technology, both the number and milling share of modern operations is growing over time.<sup>29</sup> Larger-capacity, modern mills account for less half of all mills, but are responsible for about 80 percent of production.<sup>30</sup> Because of the larger capacity and faster milling times, the modernization of the milling sector allows Tunisia to produce a growing volume of higher-quality oil.<sup>31</sup>

Olive oil processing is dispersed widely throughout the country, although Sfax in the Center operates as a general hub. Several mills and most exporters are in Sfax, which is also the site of one of the country's largest ports. Approximately 33 percent of mills are located in Sfax, 28 percent in the Sahel region,<sup>32</sup> 18 percent in the North,<sup>33</sup> 15 percent in the Center and Southwest,<sup>34</sup> and 6 percent in the Southeast (figure 7.1).<sup>35</sup> Many of the olives produced in the North and South are transported to the Center for processing, and time in transit can lead to fruit degradation, potentially diminishing quality along the way.

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<sup>24</sup> UCCE, *Sample Costs: Sacramento Valley*, 2007, 6–7; UCCE, *Sample Costs: San Joaquin Valley*, 2007, 7; industry representatives, interviews by USITC staff, California, November 13–15, 2013.

<sup>25</sup> As of 2012, Tunisia had only a dozen bottling plants that specialize only in olive oil packing. In addition, there were 10 pomace extraction facilities. ONH, "Production," (Accessed March 27, 2013).

<sup>26</sup> While the definition of traditional milling varies, generally it means that instead of employing a press or a decanter centrifuge, the miller uses a large stone to crush the olives and then uses water to extract the oil.

<sup>27</sup> IOC, *Tunisia 2012*, n.d., 7–10 (accessed May 6, 2013). While it appears that the number of traditional mills is larger, many of these have halted milling and are no longer operational. Industry representative, telephone interview by USITC staff, April 29, 2013.

<sup>28</sup> Industry representative, telephone interview by USITC staff, March 21, 2013.

<sup>29</sup> Ibid.

<sup>30</sup> Industry representative, telephone interview by USITC staff, April 29, 2013.

<sup>31</sup> Tunisian government official, email to USITC staff, August 1, 2013.

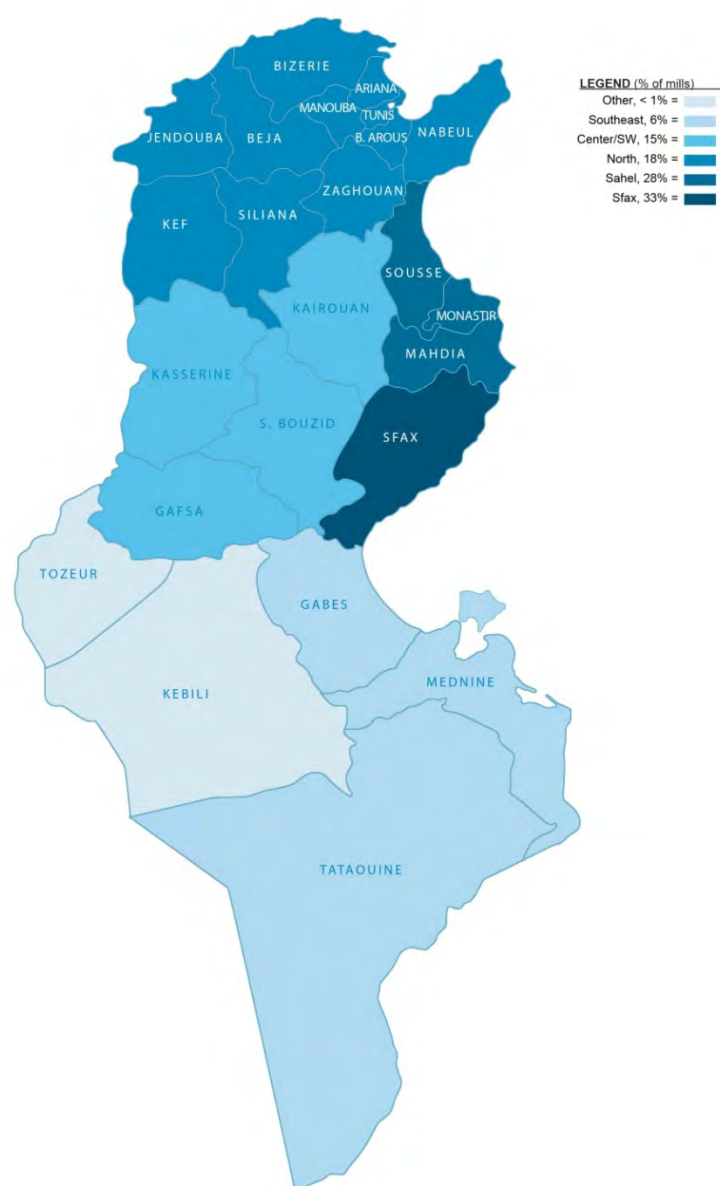
<sup>32</sup> The Sahel region includes Sousse, Monastir, and Mahdia.

<sup>33</sup> The North includes Tunis, Manouba, Ariana, Ben Arous, Bizerte, Beja, Jendouba, Le Kef, Siliana, Zaghuan, and Nabeul.

<sup>34</sup> The Center and Southwest includes Kairouan, Kasserine, Gafsa, and Sidi Bouzid.

<sup>35</sup> The Southeast includes Mednime, Gabès, and Tatouine.

**FIGURE 7.1** Tunisia: Share of olive oil milling by region



Source: Compiled by USITC staff, using data from the International Olive Council.

Olive oil processing in Tunisia occurs in two distinct supply chains, though both use traditional as well as modern milling techniques. The first supply chain is fragmented: it consists of smaller, more traditional mills that buy olives from local farms, process them into oil, and sell the resulting product to either domestic bottling facilities or directly to an exporter. The majority of Tunisian producers and mills operate in this disjointed supply chain, with little vertical integration between production and processing.<sup>36</sup> This has led to the emergence of middlemen, who travel from farm to farm collecting harvested olives and bringing them swiftly to mills to limit degradation time. Although the middlemen's activity creates employment for Tunisians and reduces the time

<sup>36</sup> Industry representative, telephone interview by USITC staff, March 1, 2013.

harvested olives sit before transit to mills, it increases costs and lowers profit margins for both growers and millers.<sup>37</sup>

The second supply chain comprises between 5 and 10 larger, vertically integrated companies that own groves, mills, and occasionally bottling operations. These operations also supplement their own supply by contracting both olives and olive oil from independent farms and mills. These integrated firms typically brand their products and export directly to buyers overseas. While many of these companies own modern mills, some employ historical techniques, such as crushing stones, and use their traditional practices as a marketing tool. With the adoption of better production methods and processing techniques in both supply chains, the quality of Tunisian olive oil has improved, and production of extra virgin oil has risen. According to an International Olive Council (IOC) survey, an average of 65 percent of Tunisian production is classified as extra virgin, while 15 percent is virgin and 20 percent is lampante.<sup>38</sup>

## *Consumption*

Tunisian domestic consumption of olive oil is low in comparison with its production. Tunisia's small population and reliance on other edible oils explain its low domestic consumption. Per capita consumption is about 4 to 5 liters annually (significantly below most European countries, though well above the United States), and therefore domestic consumption typically absorbs only 20 to 30 percent of annual production.<sup>39</sup> This is partly due to the fact that the primary distribution outlets for Tunisian producers are export markets, leaving smaller volumes available for domestic consumption.<sup>40</sup> Tunisian domestic olive oil consumption varied significantly from year to year between MY 2007/08 and MY 2011/12, ranging between 21,000 mt and 50,000 mt (table 7.1).<sup>41</sup> While global prices are important, this variability is driven mostly by changes in production, with consumption determined by what remains in the domestic market after export demand has been met. Many consumers purchase their oil directly from mills, carrying empty jugs to fill straight off the production line,<sup>42</sup> and, like most food purchases in Tunisia, only a small share of domestic consumption passes through retail grocery outlets.<sup>43</sup>

Tunisia's edible oil consumption mainly consists of refined oils, such as corn and soybean oil; only one-third of total edible oil consumed is olive oil.<sup>44</sup> This is partly because of a history of government policies aimed at suppressing olive oil consumption. For example, until 1993, the government set family quotas on purchases of olive oil, in accordance with its strategy of importing large amounts of cheaper edible oils to supply domestic consumption, while exporting higher-valued olive oil to gain foreign currency. This approach created a legacy of low demand for olive oil compared with other edible oils.<sup>45</sup>

Domestic olive oil consumption is not expected to rise in the future because of two important constraints. The first constraint is the legacy of historical Tunisian culinary

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<sup>37</sup> Industry representative, telephone interview by USITC staff, March 21, 2013.

<sup>38</sup> IOC, *Tunisia 2012*, n.d., 7–10 (accessed May 6, 2013).

<sup>39</sup> Consumption data were sourced from IOC, "Table 4: [World] and [EU] Consumption," November 2012; population data were sourced from the Food and Agriculture Organization database.

<sup>40</sup> IOC, "Table 1 and 3: [World] Production and Exports," November 2012.

<sup>41</sup> IOC, "Table 4: [World] Consumption," November 2012.

<sup>42</sup> Industry representative, telephone interview by USITC staff, February 5, 2013.

<sup>43</sup> USDA, FAS, *Tunisia: Retail Foods*, December 19, 2012, 2.

<sup>44</sup> USDA, FAS, *Tunisia: Oilseeds and Products Annual*, March 1, 2013, 5.

<sup>45</sup> McEvoy and Gomez, *The Olive Industry*, August 1999, 21.

habits: olive oil is unlikely to become a mainstay of the national diet as is the case in some European countries, and instead Tunisians likely will continue to consume a significant amount of other seed oils, such as soybean oil.<sup>46</sup> Second, continued low per capita income and high relative prices mean that high-quality olive oil likely will remain unaffordable for many.

## *Trade*

Tunisia's global exports, and especially exports to the EU, fell during 2008–11 (table 7.2). This contraction followed a drop in Tunisian production, coupled with weaker export demand. Spain and Tunisia compete to supply bulk oil to Italy, and the Spanish bumper olive crops in 2010 and 2011 flooded the market with Spanish oil at historically low prices, making Spain a more attractive source of supply than Tunisia.<sup>47</sup> The situation has reversed as Tunisian production increased in MY 2011/12 and MY 2012/13 and as drought struck Spain in 2012, resulting in renewed demand from Italy, Spain, and the United States.

The EU is the largest market for mostly bulk Tunisian olive oil, taking about two-thirds of Tunisia's exports during 2008–12. Italy is consistently Tunisia's largest overseas market and in 2012 accounted for 54 percent of its exports (76,000 mt). Other major EU destinations are Spain (9 percent, 13,000 mt) and France (4 percent, 6,000 mt).<sup>48</sup> Between 2008 and 2012, on average, Tunisia supplied 88 percent of Italy's extra-EU olive oil imports (by value), 72 percent of Spain's, and 94 percent of France's.<sup>49</sup> In addition to geographic proximity, Tunisia benefits from duty-free access to the EU market under a tariff-rate quota (more details appear later in this chapter).

Tunisia has expanded its exports into non-EU markets in recent years, including to the United States, China, and some Middle Eastern countries. Since 2000, U.S. imports of Tunisian olive oil have increased almost 10-fold, from 4,656 mt (less than \$10 million) in 2000 to almost 40,000 mt (\$100 million) in 2012.<sup>50</sup> Of these imports, 80–90 percent were shipped in bulk and 10–20 percent in bottles.<sup>51</sup> The United States accounts for about one-quarter of Tunisia's olive oil exports, while Tunisia is responsible for approximately 13 percent of U.S. olive oil imports by volume.<sup>52</sup> Due to its proximity, Tunisia also exports olive oil to other North African and Middle Eastern countries. For example, as Moroccan domestic consumption is larger than Tunisian consumption, Tunisia exports olive oil to Morocco when Moroccan production cannot fully supply demand, such as in 2009. China, with rising incomes and greater awareness of the health benefits of olive oil, has also increased its purchases of Tunisian oil in recent years.<sup>53</sup>

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<sup>46</sup> USDA, PSD Online (accessed March 29, 2013).

<sup>47</sup> Williams, "In Italy, Spanish Olive Oil Prices Too Good," n.d. (accessed May 3, 2013).

<sup>48</sup> European Commission, Eurostat database (accessed April 26, 2013).

<sup>49</sup> GTIS, Global Trade Atlas database (accessed June 19, 2013).

<sup>50</sup> Ibid.

<sup>51</sup> GTIS, Global Trade Atlas database (accessed June 19, 2013). Tunisian olive oil is eligible to be imported into the United States duty free under the Generalized System of Preferences (GSP).

<sup>52</sup> GTIS, Global Trade Atlas database (accessed June 19, 2013).

<sup>53</sup> Ibid.

**TABLE 7.2** Tunisia: Exports of olive oil (HS 1509), 2008–12<sup>a</sup>

Country	2008	2009	2010	2011	2012
Value (million \$)					
Italy	377	197	146	112	178
USA	97	97	81	74	101
Spain	123	25	24	27	29
France	17	15	17	20	18
Canada	5	7	8	9	6
China	0	0	1	2	4
Russia	4	3	2	4	2
Lebanon	1	4	3	2	1
Switzerland	0	0	0	0	1
Morocco	14	28	0	4	1
Belgium	0	1	3	3	1
Japan	0	0	0	0	0
All other	9	22	21	14	2
Total	645	398	307	270	344
EU-27	517	239	193	162	225
Quantity (metric tons)					
Italy	98,232	71,302	52,125	40,974	76,043
USA	25,436	34,769	26,484	24,116	39,630
Spain	33,472	8,930	8,547	9,676	12,640
France	4,073	4,336	5,370	5,866	5,963
Canada	1,253	1,933	2,223	2,870	1,967
China	44	81	384	455	1,396
Russia	1,035	1,069	937	1,608	939
Lebanon	0	1,311	954	566	548
Switzerland	0	37	25	113	220
Morocco	3,635	10,351	15	1,946	252
Belgium	19	347	1,054	1,012	146
Japan	2	6	8	22	53
All other	232	6,074	6,116	4,154	668
Total	169,433	140,546	104,242	93,378	140,465
EU-27	135,859	85,192	68,192	57,578	94,927

Source: GTIS, Global Trade Atlas database (accessed June 19, 2013).

<sup>a</sup>Mirror data.

Much of Tunisia's olive oil exports are shipped in bulk rather than in bottles. While the share of bulk exports is falling over time with development of a bottling sector in Tunisia, they still accounted for 90 percent of exports by volume and 86 percent by value in MY 2011/12, compared with 99 percent (both volume and value) in MY 2007/08.<sup>54</sup> Over the last decade, efforts have been made to develop a modern bottling sector and brands in order to market the country's increasing volume of high-quality oil. The Tunisian government hopes to increase its share of bottled exports to 20 percent in the next few years.<sup>55</sup>

### *Factors Affecting Competitiveness*

As noted earlier, Tunisia's olive oil sector currently focuses chiefly on supplying lower-quality, low-cost extra virgin oil in bulk shipments for bottling in the EU. Tunisian oil is then blended with olive oil sourced from other countries and resold in third-country markets. Its competitiveness in this market is driven by its low costs of production, cultivation practices that emphasize high volume, lower-quality olive production, and

<sup>54</sup> Government of Tunisia, "Tunisian Olive Oil," data sheet provided to USITC staff, January 17, 2013.

<sup>55</sup> Industry representative, telephone interview by USITC staff, March 1, 2013.

historic relationships with Italy. In order to derive more added value from the sector, the Tunisian government instituted several programs to encourage exports of branded and bottled olive oil, and has had some success.

## Quality

Although almost two-thirds Tunisian olive oil meets the standard for extra virgin, it is neutrally flavored and its chemical compound levels mirror the current extra virgin thresholds, meaning its quality generally falls at the low end of this grade. For this reason Tunisian olive oil is viewed as a lower-quality product compared with the olive oil of some other global suppliers.<sup>56</sup> Several factors tend to diminish quality, including historical cultivation practices and the fragmentation of the supply chain. Recently, as noted above, Tunisia has seen an emergence of middlemen and more modern, high-capacity mills, both of which have reduced processing times and increased the prevalence of higher-quality extra virgin oil.<sup>57</sup>

Upon export, the Office National de l'Huile (National Olive Board, or ONH) extracts samples and tests the quality of the product to assign it a grade. Samples of olive oil are shipped to an ONH lab that has been certified by the IOC.<sup>58</sup> While this serves as certification that exported oil was properly tested and graded, many private importers and bottling companies prefer to run their own internal tests to verify specific chemical parameters.<sup>59</sup>

## *Cultivation practices*

Many Tunisian growers employ cultivation techniques that lower the quality of their oil. Although olive tree yields naturally fluctuate in alternating years, Tunisia's hot climate and sporadic rainfall exacerbate this phenomenon.<sup>60</sup> Irrigation would provide the olive trees with a more consistent supply of water, but less than 5 percent of olive groves are irrigated.<sup>61</sup> In addition, more grove maintenance, such as pruning the trees, would smooth out production over time, lessening the high variance in annual production.

Harvesting methods and timing also play an important role in determining the quality of Tunisian oil. Many growers harvest late in order to extract more oil from the olive, but this practice can lead to overripening of the fruit and defects in the taste of the resulting oil, even if the olives are processed quickly.<sup>62</sup> It also results in blander oils, preferred for blending rather than for direct consumption. Because mills pay growers based on oil volumes as opposed to quality, farmers have an incentive to harvest late and to sacrifice high quality for volume. The lower quality of Tunisian oil is also a result of harvesting techniques. Most olive harvesting is still done by hand, with workers shaking the olive tree with hand-held tools and letting the olives fall to the ground. This method can damage the fruit as it falls from tree branches. Also, after harvest, growers transport their olives to mills in containers which allow heat and light to degrade the fruit, resulting in lower-quality oil.

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<sup>56</sup> Industry representatives, interview by USITC staff, Washington, DC, April 9, 2013.

<sup>57</sup> Tunisian government official, email to USITC staff, August 1, 2013.

<sup>58</sup> Government of Tunisia, "Tunisian Olive Oil," data sheet compiled for and provided to USITC staff, January 17, 2013.

<sup>59</sup> Industry representatives, interview by USITC staff, Washington, DC, April 9, 2013.

<sup>60</sup> Karray, *Olive Oil World Market Dynamics and Policy Reforms*, 2006, 6; Tunisian government official, email to USITC staff, August 1, 2013.

<sup>61</sup> Industry representative, telephone interview by USITC staff, April 29, 2013.

<sup>62</sup> Industry representative, telephone interview by USITC staff, February 5, 2013.



### ***Fragmentation in supply chain***

Tunisia's supply chain for olive oil is fragmented among many thousands of growers and large numbers of mills.<sup>63</sup> This market structure makes quality control challenging because it is difficult for each mill to test each individual batch of olives that arrives from hundreds of small growers.<sup>64</sup> Exacerbating the challenges of a fragmented supply chain is poor transportation and milling infrastructure. Olives often become degraded because of lengthy transit time between groves and mills.<sup>65</sup> Moreover, it is expensive to move fruit on unpaved roads over long distances, and some growers in remote areas wait until neighboring farmers harvest enough olives to make a trip to the mill cost-effective. In addition, some traditional mills have such low capacity that olives sit in containers, degrading in quality while waiting to be milled.<sup>66</sup>

An emphasis on increasing efficiency along the supply chain is improving the quality of Tunisian oil. For example, as recently as the mid-1990s, about half of Tunisian olive oil production was lampante grade; this figure had gone down to 20 percent in 2012.<sup>67</sup> Whereas olives used to sit on the farm waiting to be transported to a mill, middlemen have begun to collect harvests from multiple farms to bring to mills, ensuring that olive degradation is minimized.<sup>68</sup> In addition, modern mills with higher capacities have been built, and now mill 80 percent of Tunisian oil production. In this case, olives can be milled immediately after their arrival to a facility.<sup>69</sup> While the supply chain has not consolidated and reduced the number of steps from grove to export, these advances have helped improve both the grade and quality of Tunisian oil.

### **Lack of Product Differentiation**

The mild flavor of the majority of Tunisian olive oil makes it difficult for companies to highlight unique traits that can be used to differentiate their products. While some countries enjoy a branding cachet that results in price premiums, Tunisia has not established itself as a quality producer and is therefore at a disadvantage when trying to break into new markets and gain consumer attention. In addition, as previously mentioned, until the mid-2000s, almost 100 percent of Tunisia's olive oil exports were shipped in bulk instead of bottled.<sup>70</sup> This was due to both the role of ONH and Tunisia's proximity to the European market. EU demand for oil for blending incentivizes Tunisia to continue producing bulk, neutrally flavored oil. This historical focus on bulk production means that Tunisian companies have little experience in creating brands and differentiating their oils.

For many years, another barrier to developing a unique identity for Tunisian olive oils was government control of the sector. Exports used to be controlled solely through the government via ONH, which exported mostly bulk olive oil to the EU, until the sector was liberalized in 1994. After the liberalization, there was no state-run enterprise selling olive oil. The absence of such an enterprise made it difficult for firms to establish a clear

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<sup>63</sup> Tunisian government official, email to USITC staff, August 1, 2013.

<sup>64</sup> While this fragmented supply chain is the most common, there are a small number of integrated companies that operate through the entire chain, from grove to export, and where strict quality control measures are in place.

<sup>65</sup> Industry representative, telephone interview by USITC staff, February 5, 2013.

<sup>66</sup> Ibid.

<sup>67</sup> Industry representative, telephone interview by USITC staff, April 29, 2013.

<sup>68</sup> Ibid.

<sup>69</sup> Ibid.

<sup>70</sup> Government of Tunisia, "Tunisian Olive Oil," data sheet compiled for and provided to USITC staff, January 17, 2013.

channel for export of olive oils, especially to non-EU countries, and limited opportunities for individual producers to market their unique product.<sup>71</sup> However, starting in the mid-2000s some Tunisian producers, with support from the government, began bottling, branding, and directly marketing their domestic oil.<sup>72</sup> Even so, differentiated and branded Tunisian olive oil continues to account for a small share of exports.

One area of success in differentiating Tunisian product is organic olive oil. As Tunisians noted the growth in global demand for organic products, including in the United States, some brands capitalized on their traditional production methods by having them certified organic by bodies such as the EU and the U.S. Department of Agriculture (USDA).<sup>73</sup> As of 2009, approximately 75,000 ha of Tunisian olive groves were considered organic.<sup>74</sup> This marketing strategy has had some success, as evidenced by restaurant chain Le Pain Quotidien, which sources only organic 100 percent Tunisian olive oil. The production of organic olive oil increased from 12,000 mt in 2006 to 25,000 mt in 2009, making Tunisia the largest global producer of this product.<sup>75</sup>

## EU Proximity and Trade Preferences

Geographic and geopolitical factors offer Tunisian olive oils several competitive advantages over other potential suppliers. Tunisia benefits from its nearness to the EU market, inclusion in EU trade preference programs, a long history of European investment, and access to the world's largest importing country, Italy.<sup>76</sup> Tunisia's historical tradition in olive production has helped it become a large global producer and ingrained a trade relationship with Europe.

Tunisia and the EU are geographically close: the port of Sfax in Tunisia is one of the closest ports to Genoa in Italy, a major location for olive oil trade.<sup>77</sup> Because olive oil is a perishable product, transit times of only a few days favor Tunisia. Short travel distances to the EU also mean lower transportation and delivery costs, and allow Tunisian exporters to offer their EU customers "just in time" deliveries. Though these factors permit Tunisia to be a link in the European supply chain, Tunisian industry representatives claim that the historical relationship and geographic proximity has made Tunisia too reliant on the EU market as a buyer, perpetuating the demand for less flavorful oils for blending and restricting Tunisia's presence on the global market.<sup>78</sup>

Tunisian olive oil also benefits from favorable access to the EU market.<sup>79</sup> For example, as a result of the EU-Tunisia component of the Euro-Mediterranean Association Agreements, the EU grants Tunisia a preferential annual import quota of 56,700 mt of oil.<sup>80</sup> Tunisia also benefits from the EU's inward processing arrangement, under which

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<sup>71</sup> Karray, *Olive Oil World Market Dynamics and Policy Reforms*, 2006, 5.

<sup>72</sup> Government of Tunisia, "Tunisian Olive Oil," data sheet provided to USITC staff, January 17, 2013.

<sup>73</sup> Industry representative, telephone interview by USITC staff, April 29, 2013.

<sup>74</sup> IOC, "Tunisia Indicators," n.d., 3 (accessed May 6, 2013).

<sup>75</sup> ONH, "Organic Olive Oil" (accessed March 27, 2013).

<sup>76</sup> Dating back to the Roman Empire, Carthaginians, Greeks, and Italians planted olive trees in Tunisia and encouraged expansion of olive groves. IOC, Tunisia 2012, n.d., 5–10 (accessed May 6, 2013).

<sup>77</sup> Industry representative, interview by USITC staff, Tuscany, Italy, January 30, 2013.

<sup>78</sup> Industry representative, telephone interview by USITC staff, April 29, 2013.

<sup>79</sup> See chapter 2, box 2.3, for more information on the EU's preferential tariffs and inward processing arrangements.

<sup>80</sup> It is important to note that the EU limits quantities allowable under this duty-free quota during the highest-producing months of January and February, meaning olives must be milled later, oil must be stored longer, or duties must be paid on oil exported from Tunisia to the EU unless it is brought in under the inward processing structure. Government of the United Kingdom, RPA, "Leaflet ET4," (accessed March 26, 2013), 13.

oil imports receive duty-free treatment provided an equivalent amount of oil is re-exported.<sup>81</sup> Because most olive oil exported from Tunisia to the EU is blended with other oils, bottled, and exported, the majority of Tunisian-sourced olive oil is eligible for duty-free treatment under the inward processing scheme.<sup>82</sup>

### **Limited Access to Credit**

The Tunisian banking sector is highly regulated, with state ownership of three of the largest state-run banks accounting for 37 percent of banking assets.<sup>83</sup> The private banking sector is also highly regulated by the government. According to Tunisian sources, access to credit in the economy is poor. Loans are preferentially awarded to borrowers well connected with lenders, and collateral requirements are restrictive.<sup>84</sup> For the olive oil sector, the lack of credit availability means that growers and millers without ready cash have difficulty acquiring short-term operating loans and investing in their businesses. The effects of this credit gap are twofold: millers lack the working capital to run a mill throughout the entire harvest season, and also face a restricted ability to invest in increased storage.<sup>85</sup>

Industry experts have observed that Italian buying agents take advantage of the lack of credit by traveling to Tunisia during harvest and processing season and offering to buy oil in cash at a price below market value. Because mills are often short on storage availability and working capital due to limited access to bank loans, Tunisian producers often accept the low prices in order to acquire the cash they need to sustain them during the processing season.<sup>86</sup> Difficulty in obtaining capital to invest in increased storage perpetuates this relationship.

### **Low Cost of Production**

Tunisia's low cost of production has allowed it to export to the EU in bulk at a very low price and to maintain its share of the global market. It enjoys a cost of production advantage over its competitors in the EU, mainly because of its lower wages and lack of mechanization.<sup>87</sup> In Tunisia, most olive harvesting is done by hand, and there has been little investment in mechanized harvesting. Although the minimum wage for a 40-hour workweek in Tunisia was 246 dinars (\$178)<sup>88</sup> in 2011, agricultural labor rates are reportedly much lower.<sup>89</sup> The Tunisian government estimates wage rates for olive oil workers at around 15 to 20 dinars (\$8.50–\$11.50) per day.<sup>90</sup> The labor costs for pruning and harvesting in Tunisia are considerably lower than those in Spain and Italy.<sup>91</sup> In addition, the practice of harvesting olives relatively late in the season, when the oil

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<sup>81</sup> European Commission Taxation and Customs website, [http://ec.europa.eu/taxation\\_customs/customs/procedural\\_aspects/imports/inward\\_processing/index\\_en.htm](http://ec.europa.eu/taxation_customs/customs/procedural_aspects/imports/inward_processing/index_en.htm) (accessed May 3, 2013).

<sup>82</sup> Industry representative, interview by USITC staff, Rome, Italy, February 1, 2013.

<sup>83</sup> IMF, "Tunisia: Financial System Stability Assessment," July 6, 2012, 13.

<sup>84</sup> Ibid., 4.

<sup>85</sup> Tunisia has about 350,000 mt of storage capacity, but only approximately 55 percent is privately owned. ONH, "Production" (accessed March 27, 2013).

<sup>86</sup> Industry representative, telephone interview by USITC staff, March 21, 2013.

<sup>87</sup> Karray, *Olive Oil World Market Dynamics and Policy Reforms*, 2006, 5.

<sup>88</sup> This equates to approximately \$35 per day, based on a five-day work week.

<sup>89</sup> Encyclopedia of the Earth, "Tunisia" (accessed April 4, 2013).

<sup>90</sup> Tunisian government official, email to USITC staff, August 1, 2013.

<sup>91</sup> In Spain, harvesters are typically paid up to \$80.00 per day, while pruners in some regions of Italy might earn up to €140 (\$181.00). Industry representatives, interview by USITC staff, Andalusia, Spain, January 23, 2013; industry representatives, interview by USITC staff, Puglia, Italy, February 5, 2013.

content of the fruit is high, translates into lower cost per unit of oil produced. Overall, the cost to harvest and mill olive oil in Tunisia is approximately 3.5 dinars (\$2.00) per kg.<sup>92</sup> When the cost of bottling is included, the total cost of production of olive oil in Tunisia is around 5 dinars (\$2.85) per kg.<sup>93</sup>

## Supportive Government Policy

Historically, the government has played an important role in overseeing the country's olive sector through the ONH, the state trading enterprise. The ONH enjoyed a monopoly in the exportation of olive oil until 1994.<sup>94</sup> After the 1994 liberalization of the olive oil industry, the influence of ONH diminished, although it continues to be active in the sector in several areas. ONH works with the Ministry of Agriculture to create action plans for the sector, to coordinate campaigns for the preservation and treatment of olive trees, and to promote the quality of Tunisian olive oil globally.<sup>95</sup> It also provides technical assistance to olive farmers and continues to purchase, store, and export some oil, although its share of the export market decreased to only 6 percent during 2008–12.<sup>96</sup>

In addition to ONH, there are several programs supported by the Tunisian government to encourage both production and exports of olive oil, and to improve quality standards. The Agriculture Investments Promotion Agency (APIA) provides incentives to invest in new groves and rejuvenate existing ones. The Special Fund for the Development of Olive Growing (FSDO) promotes the production of olives and olive oil: in 2012, the fund was allocated a budget of 789,000 dinars (around \$480,000). The Tunisian government also promotes olive oil exports through a variety of programs. The largest is a program that is paid for by the industry itself through a tax of 0.5 percent of the customs value of exports, with revenues used for promotional activities in export markets.<sup>97</sup> Other government programs include the Export Market Access Fund (FAMEX), which promotes packaged olive oil to growth markets; the Export Promotion Fund (FOPRODEX), which helps exporters gain access to the international market by offering up to 50 percent of transportation costs;<sup>98</sup> and the Fund for the Promotion of Bottled Olive Oil (FOPROHOC), which, from its inception in 2006 to mid-2010, granted \$8.5 million to fund the establishment of distribution channels for exporting firms and the exploration of new potential markets.<sup>99</sup> Most Tunisian government programs typically do not subsidize the cost of olive production, but focus on marketing olive oil and raising the quality of Tunisian oil. In addition, they promote olive oil exports over domestic consumption and, to a limited extent, encourage the production of higher-quality branded and bottled Tunisian olive oil in premium export markets.

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<sup>92</sup> Tunisian government official, email to USITC staff, August 1, 2013.

<sup>93</sup> Ibid.

<sup>94</sup> ONH website, <http://www.onh.com.tn/index.php/en/evolution-de-l-activite> (accessed March 27, 2013).

<sup>95</sup> ONH website, <http://www.onh.com.tn/index.php/en/l-onh> (accessed March 27, 2013).

<sup>96</sup> Government of Tunisia, "Tunisian Olive Oil," data sheet provided to USITC staff, January 17, 2013.

<sup>97</sup> Promotion activities include participating in food shows and fairs, developing quality branded labels, obtaining trademarks, and marketing packed product to supermarkets abroad. Government of Tunisia, "Tunisian Olive Oil," data sheet provided to USITC staff, January 17, 2013.

<sup>98</sup> For conventional bulk olive oil, excluding organic, support is provided to all markets except France, Italy, and Spain. For organic olive oil (bulk and packaged) and for bottled olive oil, support is granted to export operations to all destinations. The support rate for transport is 33 percent for maritime transport and combined transport, and 50 percent for air transport.

<sup>99</sup> Government of Tunisia, Ministry of Industry and Technology, Tunisian Olive Oil, "FOPROHOC Key Figures" (August 2010).

# Morocco

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## *Overview*

As in Tunisia, the olive oil industry plays an important role in the Moroccan economy. Olives are grown on about 800,000 ha on 450,000 holdings,<sup>100</sup> and the industry generates about 125,000 full-time jobs.<sup>101</sup> Olives are grown throughout the country, except for the Atlantic coastal areas.<sup>102</sup> Approximately 75 percent of olives grown in Morocco are pressed for oil, while the rest are table olives. The Meknes region accounts for nearly half of all olive oil produced in Morocco, the majority of the country's extra virgin olive oil production, and most of its exports.<sup>103</sup> Most of the olive oil produced is consumed domestically, so Morocco is not a major exporting country.

The first half of this section will provide a descriptive profile of Morocco's production and processing, and discuss trends in domestic consumption and Morocco's role in global trade. The second half will focus on the major factors affecting Morocco's competitiveness in the global market. Factors that increase the competitiveness of Morocco's olive oil industry include its proximity and close ties with the EU, business relationships that some Moroccan producers have established with U.S. bottlers, the generally high quality of its olive oil exports, and programs established by the government of Morocco and certain international aid organizations that are designed to promote the olive oil industry. Besides boosting production, these programs promote higher-quality olive oil and encourage producers to meet international standards for export. The competitiveness of Morocco's olive oil sector is weakened by high production costs, limited supplies available for export, and poor quality in certain segments of the industry.

## *Production Profile*

### **Production Overview**

Morocco is the world's seventh-largest olive oil-producing country, accounting for about 3.5 percent of global production in MY 2011/12.<sup>104</sup> During the 2000s production rose significantly, increasing from 35,000 mt in 2000/01 to a record 140,000 mt in 2009/10 (table 7.3). Since then, production has steadily fallen and is projected at 100,000 mt in 2012/13, largely because of unfavorable weather. The majority of olive groves in Morocco are not irrigated, and production levels fluctuate dramatically because yields depend on adequate rainfall. For example, in MY 2009/10 and MY 2010/11, Morocco received adequate and well-timed seasonal rainfall resulting in yields of 2.5 and 2.1 mt

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<sup>100</sup> Government of Morocco, "Olive Sector Data," data sheet provided to USITC staff, Rabat, Morocco, January 29, 2013.

<sup>101</sup> IOC, "Policies: Morocco," 2012. The FAO reported in 2010 that 50 million olive trees were planted on approximately 580,000 ha in Morocco. FAO, *Olive GAP Manual*, 2010, 36; Government of Morocco, "Olive Sector Data," data sheet compiled for and provided to USITC staff, Rabat, Morocco, January 29, 2013.

<sup>102</sup> IOC, "Policies: Morocco," 2012.

<sup>103</sup> Industry representative, interview by USITC staff, Meknes, Morocco, January 27, 2013. Some of the olive oil produced in the Meknes region is made from olives grown outside the region.

<sup>104</sup> IOC, "Table 1: [World] Production," November 2012.

**TABLE 7.3** Morocco: Olive oil supply, consumption, and trade, 2000/01, and 2007/08–2012/13 (1,000 mt)

	2000/01	2007/08	2008/09	2009/10	2010/11	<sup>a</sup> 2011/12	<sup>b</sup> 2012/13
Production	35.0	85.0	85.0	140.0	130.0	120.0	100.0
Imports	4.5	5.0	15.0	0	4.0	0	0
Consumption	45.0	65.0	70.0	90.0	100.0	90.0	85.0
Exports	0	2.0	3.0	21.0	30.5	11.0	30.0

Source: IOC, "Tables 1–4: [World] Production, Imports, Exports, Consumption," November 2012.

Note: A marketing year spans October 1 to September 30 the following year.

<sup>a</sup>Provisional.

<sup>b</sup>Projected.

per ha, respectively, while during MY 2012/13, the summer months were unusually hot and dry so that yields fell to about 1.4 mt per ha.<sup>105</sup>

In addition to the weather variability, output may be affected by a traditional method of harvesting known as "gaulage"—the practice of harvesting olives by beating the branches with a stick. This can damage the tree and exacerbate the problem of the alternate annual fruit-bearing cycle of the trees, as well as damage the fruit as it falls to the ground.

### Olive-Growing Sector

Like Tunisia, the structure of the olive-growing industry in Morocco consists of many small-scale growers using traditional plantings and hand harvesting, and a few large growers using high-density or SHD plantings and mechanical harvesting. Nearly 60 percent of olive plots are under 5 ha.<sup>106</sup> Approximately 90 percent of the olive-growing area is in traditional plantings, with about 100 trees per ha or fewer and low yields of about 1.0–1.5 mt of olives per ha.<sup>107</sup> In mountainous areas with poor soil, yields are typically even less at 500–700 kg per ha, running as low as 100 kg per ha in especially marginal areas.<sup>108</sup> Only about 2 percent of Morocco's olive-growing area (about 15,000 ha) is planted in high-density or SHD groves, primarily because of a lack of water.<sup>109</sup> Average yields for SHD plantings (150–400 trees per ha) that are irrigated are between 2–4 mt per ha.<sup>110</sup>

The total area planted to olives has increased from about 750,000 ha in MY 2008/09 to nearly 1 million ha in 2011/12. Of this area, about 800,000 ha are currently in production because newly planted groves do not begin producing for several years.

<sup>105</sup> Industry representatives, interviews by USITC staff, Meknes, Morocco, January 27–28, 2013; Government of Morocco, "Olive Sector Data," data sheet compiled for and provided to USITC staff, Rabat, Morocco, January 29, 2013.

<sup>106</sup> IOC, "Policies: Morocco," 2012; Government of Morocco, "Olive Sector Data," data sheet provided to USITC staff, Rabat, Morocco, January 29, 2013.

<sup>107</sup> Industry representative, interview by USITC staff, Meknes, Morocco, January 27, 2013.

<sup>108</sup> FAO, *Olive GAP Manual*, 2010, 36, 186; industry representatives, interviews by USITC staff, Meknes, Morocco, January 27–28, 2013; Government of Morocco, "Olive Sector Data," data sheet compiled for and provided to USITC staff, Rabat, Morocco, January 29, 2013.

<sup>109</sup> Industry representative, interviews by USITC staff, January 27 and January 28, 2013. High-density and SHD groves in Morocco typically have about 400 to 1,000 trees per hectare.

<sup>110</sup> Government of Morocco, "Olive Sector Data," data sheet compiled for and provided to USITC staff, Rabat, Morocco, January 29, 2013.

According to the United Nations Food and Agriculture Organization (FAO), approximately 38 percent of Morocco's olive plantings are irrigated.<sup>111</sup> Irrigation not only increases yields but also decreases the time needed for a grove to begin production. A grove with 300 trees per ha with irrigation can begin production in 4 years instead of 8–10, and can produce 4–5 tons per ha in 8–10 years, compared with the average production of 1.0–1.5 tons per ha for traditional, rain-fed groves. After 25 years, irrigated groves without intensive plantings typically reach 8–9 mt per ha with proper farm management.<sup>112</sup> Olives are harvested in Morocco between November and February.

Unlike Tunisia, olive oil production in Morocco is largely from a single variety. Over 90 percent of olive oil produced in Morocco is from the native Picholine olive variety.<sup>113</sup> Picholine olives are not well adapted to SHD cultivation, but flourish in dry climates with little or no irrigation.<sup>114</sup> This variety is also grown for table olives, leading to competition for olives between the table olive and oil segments of the industry. The table olive market is reportedly very stable, with prices for olives for canning higher than olives for production of oil.<sup>115</sup> Despite a 20 to 30 percent price premium for table olives in Morocco, most traditional growers are not able to sell into the segment because table olive production requires irrigation and intensive farm management practices.<sup>116</sup> Nonetheless, the table olive market limits the supply of olives available to produce olive oil, particularly in years with poor yields.<sup>117</sup> However, the majority of table olives are produced for export, and only modern intensive growers have the ability to sell into this segment.<sup>118</sup>

## Olive Oil Processing Sector

The Moroccan olive oil processing sector consists of a large number of small mills, called “maasras,” that use traditional milling techniques, and several modern processing facilities, many of which are vertically integrated to include groves and bottling operations. The maasras produce approximately 30 percent of Moroccan olive oil, down from 60 percent a decade ago.<sup>119</sup> Both maasras and Morocco's other small producers, perhaps best described as “semi-modern,” have adopted modern crushing methods for the millstones or are separating water from the oil using a centrifuge.<sup>120</sup> However, poor storage conditions and delays between harvest and processing lead to degraded fruit and lower-quality oil for most of these producers. The majority of olive oil produced by

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<sup>111</sup> FAO, *Olive GAP Manual*, 2010, 36.

<sup>112</sup> Industry representative, interview by USITC staff, Meknes, Morocco, January 27, 2013. In comparison, yields from SHD plantings are typically 12–13 tons per hectare.

<sup>113</sup> MCC, Morocco Ministry of Agriculture and Marine Fisheries, and Morocco Agency of Partnership for Progress, “Invest in Morocco,” 2010, 4.

<sup>114</sup> Industry representatives, interviews by USITC staff, Washington, DC, December 20, 2012.

<sup>115</sup> Industry representative, interview by USITC staff, Meknes, Morocco, January 28, 2013.

<sup>116</sup> Industry representatives, interviews by USITC staff, Meknes, Morocco, January 28, 2013.

<sup>117</sup> Morocco's production of table olives shows much less variation than its production of olive oil. Over the 2007/08–2011/12 period, production of table olives has been 90,000 to 110,000 tons per year, while production of olive oil has varied between 85,000 and 140,000 tons per year (IOC).

<sup>118</sup> Morocco is the world's second-largest exporter of olives, after Spain. In 2011, Morocco exported 76,744 mt of preserved olives valued at over \$145 million. Spain is by far the largest exporter of preserved olives—over 234,000 mt in 2011. GTIS, Global Trade Atlas database (accessed June 19, 2012).

<sup>119</sup> MCC, Morocco Ministry of Agriculture and Marine Fisheries, and Morocco Agency of Partnership for Progress, “Invest in Morocco,” 2010, 9; Hibler, “Improving Morocco's Olive Industry,” 2003. A maasra is a traditional oil mill of the style introduced by the Romans. Traditional practices result in olive oil with a high level of acid. Humpal and Jacques, “Draft Report on Bumpers and Import Sensitivity Analysis,” 2003, 3.

<sup>120</sup> Olive Oil Emporium. “Olive Oil Process.” n.d.

maasras and other small producers is “lampante” grade oil and would not meet IOC standards for virgin or extra virgin olive oil if tested.<sup>121</sup>

As most olive oil in Morocco is produced in maasras and other small traditional mills, only a small percentage of olive oil is produced using more modern practices. In 2008, there were 128 modern olive oil processing units in Morocco, with combined annual capacity of about 19,100 mt, roughly 20 percent of the total 90,000 mt of olive oil produced that year.<sup>122</sup> Many of the modern mills are vertically integrated with growing, milling, and bottling operations, producing much higher-quality olive oil than traditional mills, partly because their higher milling capacity allows them to process the olives sooner after harvest. Firms producing for the export market where quality control is required are more likely to be vertically integrated.

## *Consumption*

Per capita consumption of olive oil in Morocco is roughly 3 kilograms (kg) annually, quite low in comparison to other large producers, although it is projected to reach 5 kg by 2020.<sup>123</sup> The population of Morocco is slightly over 30 million, roughly three times that of Tunisia. Although most olive oil produced in Morocco is consumed domestically, olive oil accounts for only a small share of Morocco’s overall consumption of edible oils. The majority of edible oil consumed in Morocco is imported. In 2012, Morocco imported 490,000 mt of edible oils (Harmonized System chapter 15) and exported 59,000 mt.<sup>124</sup> The United States is the largest import supplier of edible oils to Morocco, at 136,000 mt in 2012 (predominately soybean oil). Reportedly, one goal of government support for olive oil production is to encourage domestic consumption of olive oil as a substitute for imported edible oils.<sup>125</sup>

According to IOC data, Morocco’s annual domestic consumption of olive oil increased substantially between MY 2007/08 and MY 2010/11, from 65,000 mt to 100,000 mt, before declining to 90,000 mt in MY 2011/12. It is projected to drop further to 85,000 mt in MY 2012/13, as production is predicted to decline (table 7.3).<sup>126</sup> About 18 percent of the olive oil consumed in Morocco is used by producing households, and 39 percent is bought directly from producing mills. Most of the rest is bought from local shops and grocery stores. Only 7.5 percent is purchased in supermarkets.<sup>127</sup>

Although it accounts for a relatively small part of domestic edible oil consumption, domestic demand for olive oil is strong, with prices that compare favorably with exports.<sup>128</sup> In January 2013, the retail price for olive oil purchased from a maasra in rural

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<sup>121</sup> MCC representative, interview by USITC staff, Washington, DC, December 18, 2012; Azzouzi, Laytimi, and Abidar reported in 2006 that approximately 85 percent of olive oil produced in Morocco would not have met IOC quality standards, if tested. “Effect of Incentive Policy on Performance and International Competitiveness of Fruits, Vegetables, and Olive Oil in Morocco,” 2006, 6.

<sup>122</sup> MCC, Morocco Ministry of Agriculture and Marine Fisheries, and Morocco Agency of Partnership for Progress, “Invest in Morocco,” 2010, 9.

<sup>123</sup> Moroccan government official, interview by USITC staff, Rabat, Morocco, January 29, 2013.

<sup>124</sup> GTIS, Global Trade Atlas database (accessed June 19, 2013). In addition to exports of olive oil, Morocco also exports fish oil and some soybean oil.

<sup>125</sup> Industry representative, interview by USITC staff, Meknes, Morocco, January 27, 2013.

<sup>126</sup> IOC, “Table 4: Consumption,” November 2012. Marketing year, for producers in the Northern Hemisphere, is October 1 through September 30.

<sup>127</sup> Bennani, “Huile d’olive et olives de table” [Olive oil and table olives], October 2011. Only about 20 percent of retail food sales in Morocco are in modern food distribution channels. There are approximately 125 supermarkets with three or more registers, 200 self-service grocery stores with one or two registers, and thousands of small “mom-and-pop” stores. USDA, FAS, *Morocco: Retail Foods*, December 12, 2012, 5.

<sup>128</sup> Industry representative, interview by USITC staff, Meknes, Morocco, January 27, 2013.



Morocco was approximately 40 dirhams per liter (\$4.63 per liter).<sup>129</sup> Average retail prices for a one-liter bottle range from 40 to 60 dirhams per liter (\$4.63 to \$6.94).<sup>130</sup> Additionally, many Moroccan brands have established strong brand recognition in the home market, relative to export markets.<sup>131</sup>

## *Trade*

Moroccan exports of olive oil vary significantly from year to year (table 7.4), although they generally follow the pattern of domestic production. Most of the increased production volume over the past five years has gone to domestic consumption. In contrast to Tunisia, Moroccan producers generally supply the domestic market first and export the olive oil that is not consumed domestically.<sup>132</sup> Morocco is not a major importer of olive oil, although a small volume is imported annually, mostly from the EU and Tunisia.

The EU has traditionally been Morocco's largest export market for olive oil. However, exports to the United States increased more than fivefold between 2007 and 2011, and in 2011 the United States was Morocco's largest export market by far.<sup>133</sup> Morocco was the fourth-largest import supplier of olive oil to the U.S. market, and imports in 2011 more than doubled over 2010.<sup>134</sup> Reasons for the shift toward the U.S. market and away from the EU include an affiliation between a Moroccan producer and a U.S. bottler and declining prices for olive oil in Spain.

Additionally, U.S. imports of olive oil from Morocco are duty free under a free trade agreement.<sup>135</sup> In 2012, however, U.S. imports of olive oil from Morocco declined substantially, in line with the drop in domestic production. Morocco's olive oil exports to the EU, specifically to Spain and Italy, increased in 2012 over 2011, as Spain's olive oil production declined.

## *Factors Affecting Competitiveness*

Most of Morocco's olive oil production is by suppliers who use traditional growing and milling methods and who are focused on supplying the domestic market. Morocco also has some modern producers who can supply both the domestic olive oil market and the export olive oil market.<sup>136</sup> In years when there is adequate and timely rainfall, Moroccan producers export a significant share of the olive oil produced, generally in bulk. Morocco is not a low-cost supplier of olive oil, but benefits from its proximity to and trade preferences with the EU. As noted above, some Moroccan producers also have established business relationships with bottlers in the United States.

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<sup>129</sup> Industry representatives, interviews by USITC staff, Meknes, Morocco, January 28, 2013, and email, February 6, 2013.

<sup>130</sup> In comparison, the average unit value of U.S. olive oil imports from Morocco in 2012 (largely in bulk) was \$2.66 per kg (\$2.93 per liter). GTIS, Global Trade Atlas database (accessed June 19, 2013).

<sup>131</sup> Industry representative, interview by USITC staff, Meknes, Morocco, January 28, 2013.

<sup>132</sup> Industry representative, interview by USITC staff, Meknes, Morocco, January 26, 2013.

<sup>133</sup> Industry representative, interview by USITC staff, Meknes, Morocco, January 27, 2013.

<sup>134</sup> GTIS, Global Trade Atlas database (accessed June 19, 2013). According to data from the IOC, which reports on a MY basis, Morocco became the third-largest import supplier of olive oil to the U.S. market in 2011 (IOC, "U.S. Import Trends," February 2012), overtaking Tunisia, but this is not supported by calendar year data from GTIS. U.S. imports from Morocco declined in 2012.

<sup>135</sup> According to Moroccan officials, U.S. import duties on olive oil from all sources are low (about 1 percent ad valorem equivalent), and the duty-free treatment given under the U.S.-Morocco free trade agreement in itself is unlikely to have had a significant impact on olive oil trade. Industry representative, interview by USITC staff, Meknes, Morocco, January 27, 2013.

<sup>136</sup> Some of these producers also supply the table olive market.

**TABLE 7.4** Morocco: Exports of olive oil (HS1509), 2008–12

Country	2008	2009	2010	2011	2012
	Value (thousand \$)				
United States	3,533	1,676	27,967	46,424	13,282
Spain	1,261	742	10,278	9,368	12,339
Portugal	0	0	0	0	1,328
Canada	454	891	655	821	915
Belgium	172	251	7	942	861
France	34	128	748	766	562
China	758	0	34	1	309
United Kingdom	0	7	16	176	164
Italy	0	4,445	12,900	14,248	118
Netherlands	1,516	1,657	1,776	1,282	106
Equatorial Guinea	0	30	6	429	63
United Arab Emirates	22	7	16	35	62
All other	42	164	604	472	231
Total	7,791	9,998	55,006	74,964	30,341
EU-27	2,983	7,247	25,732	26,785	15,478
	Quantity (metric tons)				
United States	890	466	9,706	18,221	5,296
Spain	441	391	4,273	4,271	4,888
Portugal	0	0	0	0	480
Canada	99	198	170	220	272
Belgium	35	62	2	291	245
France	7	29	213	239	151
China	249	0	4	0	77
United Kingdom	0	1	2	53	47
Italy	0	1,509	5,703	6,542	44
Netherlands	302	387	541	376	27
Equatorial Guinea	5	1	4	10	19
United Arab Emirates	0	7	2	148	15
All other	6	29	213	111	74
Total	2,034	3,080	20,833	30,482	11,635
EU-27	785	2,379	10,735	11,774	5,882

Source: GTIS, Global Trade Atlas database (accessed June 19, 2013).

## EU Proximity and Trade Preferences

As is the case for Tunisia, Morocco benefits from its proximity to the EU, the largest olive oil market. Morocco is separated from Spain only by the Strait of Gibraltar. Additionally, in March 2000, as part of the Euro-Mediterranean Agreements, EU members and the Kingdom of Morocco began a process of gradual trade liberalization that, in 2012, culminated in the eventual elimination of duties on most EU imports of agricultural products from Morocco, including all imports of olive oil.<sup>137</sup> This is significant in that the EU most-favored-nation (MFN) duty rate of €1,250 per mt was equivalent to over half the producer price for Spanish extra virgin olive oil during 2010–12.<sup>138</sup> However, prior to 2012, almost all Moroccan olive oil entered the EU either under a duty-free tariff-rate quota (TRQ) or subject to an inward processing regime.<sup>139</sup>

<sup>137</sup> Title II of the Euro-Mediterranean Agreement called for the establishment of a free trade area over a time period not to exceed 12 years. The agreement will also allow duty-free imports into Morocco of up to 2,000 mt of olive oil from the EU (1,500 mt of extra virgin olive oil and 500 mt of virgin olive oil).

<sup>138</sup> Between 2010 and 2012, the average price for extra virgin olive oil for in Jaén, Spain, was €2,004 per mt.

<sup>139</sup> In 2011, EU imports of olive oil from Morocco totaled 12,936 mt: 3,920 mt within the quota, 8,925 mt under the inward processing regime, and 91 mt that were apparently subject to MFN tariffs. See chapter 6 for a description of the EU inward processing regime.

The prospect of eliminating even these modest import duties on Moroccan olive oil led some Spanish producers to call the Euro-Mediterranean Agreement a “disaster.” However, producers in Morocco reportedly are focusing on the U.S. market, rather than the EU.<sup>140</sup>

## Product Differentiation

Most of Morocco’s olive oil exports are in bulk, either to the United States or to the EU under an inward processing regime. However, some Moroccan producers have established a reputation for quality, and a couple of these producers have successfully moved to bottling. In 2012, although U.S. imports of bulk olive oil from Morocco declined 50 percent from 2011, U.S. imports of bottled Moroccan olive oil increased 70 percent, to the highest level since 2006.

One way to distinguish a brand of olive oil is to register its name as a protected designation of origin (PDO). PDOs are issued by the European Commission’s Directorate-General for Agriculture and Rural Development in order to protect product names from misuse and imitation, and to provide a way for producers to differentiate their products.<sup>141</sup> A PDO requires that the product be entirely produced and processed within the specified region, using traditional methods. Morocco has established a PDO for olive oil from the Meknes region, and has the potential to designate up to 11 additional protected geographical indicators for olive oil from specific regions.<sup>142</sup> PDO and protected geographical indication (PGI), offer producers not only a means of differentiation but also potentially higher returns. For example, during 2004–07, the prices of four Italian extra virgin olive oils produced under either a PDO or a PGI ranged from slightly higher to roughly twice as high compared with the prices of “other” extra virgin olive oil also produced in Italy.<sup>143</sup>

## Low Quality

Much of the oil produced by traditional methods in Morocco is of poor quality and does not meet quality standards for export. Small-scale farmers have limited access to crushing equipment, and olives are often stored for long periods in poor conditions before processing. Much of the oil produced in Morocco by traditional methods for domestic consumption is not tested at all.<sup>144</sup> Data collected by the IOC indicates that in MY 2009/10, roughly 60 percent of Moroccan olive oil was lampante grade, and only 5 percent was extra virgin grade.<sup>145</sup> Therefore, most of the olive oil produced in Morocco is of too low a quality for export.

In contrast to the traditional sector, modern mills employ quality control and testing procedures, and focus on producing extra virgin olive oil. Also, many modern mills are vertically integrated and better able to control storage conditions for olives and olive oil. As more of Morocco’s olive producers have moved into the export market and the formal domestic market, quality has improved. Oil destined for export is tested by a government

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<sup>140</sup> Butler, *Olive Oil Times*, “Spanish Producers Call,” February 29, 2012.

<sup>141</sup> European Commission official, interview by USITC staff, Brussels, Belgium, February 27, 2013; Regulation (EU) No. 1151/2012 of the European Parliament and of the Council of 21 November 2012.

<sup>142</sup> Thual and Lossy, *Presentation of the Findings*, October 21, 2010.

<sup>143</sup> Dimitriou, “GIs from the Point of View of EU,” n.d., 18.

<sup>144</sup> U.S. government officials, interviews by USITC staff, Washington, DC, December 18, 2012.

<sup>145</sup> IOC, *Morocco 2012*, 8 (accessed May 6, 2013). Oil that would be graded lampante if tested is consumed domestically, much of it by producers’ households.

entity (Maroc Export) to ensure compliance with IOC standards.<sup>146</sup> Government programs and international aid (discussed below) also seek to improve the quality of olive oil produced by traditional methods, through improvements in management practices and storage conditions.

Efforts to improve quality have met with some success, and Moroccan olive oils increasingly compete in international competitions. Moroccan olive oils have won numerous awards for quality, including “Best of Class, Gold Medal” in the “robust” category at the 2012 Los Angeles International Northern Hemisphere Extra Virgin Olive Oil Competition.<sup>147</sup>

## Costs of Production

Average production costs in Morocco are generally high compared to those of other major producing countries. This makes it difficult for Moroccan exports to compete on price. Average production cost per mt of olive oil was estimated at \$3,287 in 2010, of which olive purchases account for nearly two-thirds (61 percent) and bottling/packaging for over one-quarter (28 percent).<sup>148</sup> Olive oil prices at the mill during the MY 2009/10 were reported to be 18–25 Moroccan dirhams per kg (\$2.08 to \$2.89).<sup>149</sup> For comparison, the average unit customs value of bulk U.S. imports of virgin olive oil from Morocco in 2012 was \$2.59 per kg.<sup>150</sup> Industry representatives reported that, because of high production costs, the price of Moroccan quality extra virgin oil from olives produced on SHD groves was over \$4,000 per mt in late January 2013, with Spanish Arbequina and Greek Koroneiki oils selling at prices between 25 and 35 percent lower.<sup>151</sup>

Olive production in Morocco is constrained by the terrain, the limited water supply, and the high cost of irrigation. The cost of land for a traditional olive grove in Morocco (on a hillside, with limited access to water and roads) is about 1,200 dirhams (\$140) per ha, giving average yields of 1,000–1,500 kg of olives per ha. Labor costs are approximately 1 dirham (\$0.116) per kg of olives.<sup>152</sup> Yields are much higher in irrigated groves (up to 9 mt per ha) and labor costs lower per unit. However, most land does not have access to water, and installing a drip irrigation system costs 30,000–40,000 dirhams per ha (\$3,470–\$4,630). Consequently, only about 15 percent of cultivated land in Morocco is irrigated.<sup>153</sup>

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<sup>146</sup> There have been some problems reported with certification of olive oil from olives grown under severe conditions of drought and high temperatures. Reportedly, olive oil from olives grown under severe conditions may fail a test (the “C183” test for linoleic acid) designed to test for adulteration with seed oil, such as canola oil. Industry representative and Moroccan government official, interviews by USITC staff, Meknes, Morocco, January 27–28, 2013.

<sup>147</sup> Olive Oil Times, “Los Angeles Extra Virgin Olive Oil Awards by Medal,” <http://static.oliveoiltimes.com/library/2012-LA-winners.pdf> (accessed May 22, 2013).

<sup>148</sup> MCC, Morocco Ministry of Agriculture and Marine Fisheries, and Morocco Agency of Partnership for Progress, “Invest in Morocco,” 2010, 16. Cost estimate by the Moroccan Ministry of Agriculture and Marine Fisheries.

<sup>149</sup> IOC, *Morocco 2012* (accessed May 6, 2013), 8. The 2012 annual average exchange rate of 8.645 dirhams per U.S. dollar is used throughout this section. In 2000, the domestic price for extra virgin olive oil sold in Morocco averaged 95 percent of the export price, and input costs averaged 93 percent of the production value. Azzouzi, Laytimi, and Abidar, “Effect of Incentive Policy on Performance,” 2006.

<sup>150</sup> GTIS, Global Trade Atlas database (accessed June 19, 2013).

<sup>151</sup> Industry representatives, interviews by USITC staff, Meknes, Morocco, January 27, 2013.

<sup>152</sup> Industry representatives, interviews by USITC staff, Meknes, Morocco, January 27, 2013. Harvesting costs account for the largest share of labor costs—approximately 75 dirhams per 100 kg.

<sup>153</sup> Morocco Ministry of Agriculture and Maritime Fisheries, “L’irrigation au Maroc” [Irrigation in Morocco] (accessed February 11, 2013).

## Supportive Government Policies

The government of Morocco has three primary programs designed to promote olive oil production: the Plan Maroc Vert (the Green Plan for Agriculture), the Plan Emergence, and Maroc Export. These plans are in addition to the poverty-reduction project funded by the Millennium Challenge Corporation (MCC), which also aims to increase cultivation of olives and production of olive oil.

In 2008, the government of Morocco instituted its Green Plan for Agriculture. Because olive trees are less susceptible to variations in rainfall than cereal crops and because sales of both olives and olive oil provide cash income to farmers, the government offers incentives to farmers to diversify into the production of olives and other value-added products, and trains farmers in modern olive production methods. The primary goals of the Green Plan are to improve the efficiency of agriculture and to combat poverty among small farmers. The Green Plan provides incentives for farmers to shift their production to high-value crops, predominately olives (77 percent), and consists of two “pillars.” Pillar 1 focuses on aggregating agricultural production where possible, allowing farmers to take advantage of economies of scale and vertical linkages. Support is given to groups of farmers to upgrade existing irrigation systems and construct new irrigation projects in suitable areas, and extension services provide information on good production practices and assistance with marketing. Pillar 2 focuses on developing higher-value agricultural production in zones that are not irrigated, receive little rainfall, and in mountainous areas. The plan aims to foster the shift of 400,000 ha on 200,000 farms to olive plantings and other high-value crops by 2020.<sup>154</sup>

Under the Green Plan, specific regional plans are designed to foster the goals of these two pillars. In regions with large volumes of olive production, these include incentives to extend and intensify the cultivation of olives. A number of support programs are available to farmers under the Green Plan, including payments of 20 to 30 percent of the cost of installing irrigation systems.

“Maroc Export,” the Moroccan Center for Export Promotion, is designed to promote exports of products that receive support from Moroccan government projects. Maroc Export has increased its advertising expenditures for the marketing of Moroccan olive oil in the EU and the United States.<sup>155</sup>

## International Assistance

### *United Nations Industrial Development Organization*

The United Nations Industrial Development Organization (UNIDO) has carried out several programs in Morocco to improve production methods and marketing among small-scale producers. Programs undertaken with UNIDO support have included a project to improve the productive capacity of women entrepreneurs who trained members of seven associations/cooperatives in more efficient olive oil production and included provision of a mobile olive oil production unit (2001–2003).<sup>156</sup> Other UNIDO efforts included a joint project with the Morocco Ministry of Industry, Trade, and Mines and Spain’s Agency for International Cooperation to develop manuals describing good

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<sup>154</sup> Government of Morocco, ADA, “Green Morocco Plan” (accessed November 21, 2012).

<sup>155</sup> SpecialtyFood.com, “Category Spotlight: Emerging Olive Oils,” January 1, 2012.

<sup>156</sup> UNIDO, “Moroccan Women’s Entrepreneurship Enhanced,” n.d (accessed March 1, 2013).

agricultural practices for Morocco's rural olive oil producers;<sup>157</sup> a pilot project to fund two food-processing centers dealing with olive oil in Chefchaouen, in 2002 and 2003;<sup>158</sup> and an ongoing project in the Meknes-Tafilet region to market a regional branded olive oil.<sup>159</sup>

### *Millennium Challenge Corporation*

The Millennium Challenge Account (MCA) implements the development programs of the Millennium Challenge Compact. The compact between the United States and Morocco was signed on August 13, 2007, and ran for five years. A large share of the funds (\$328.7 million of the \$697.5 million total) was for the Fruit Tree Productivity Project.<sup>160</sup> Goals of the MCA project were to both improve irrigation in existing irrigated olive groves and increase plantings in rain-fed olive groves. The original plan called for planting 80,000 ha of new olive groves in areas without irrigation, although the project was scaled back to 62,000 ha. New groves are anticipated to begin producing 1–2 kg per tree within 5 years, and reach full production after 8–10 years.<sup>161</sup> Seedlings are supplied by local nurseries that also provide technical assistance to the farmers for the first two years after planting. After two years, the Ministry of Agriculture provides technical assistance to growers.<sup>162</sup> In addition to the aid provided for olive cultivation, funds have been approved to finance four producer-owned olive-processing plants.<sup>163</sup> Although this MCC assistance has been a concern of the U.S. olive oil industry, these plantings have not yet impacted Morocco's production levels and, when they come into production, almost all of the olive oil produced by these projects will be destined for domestic consumption.<sup>164</sup>

### *Bumpers Amendment*

A provision in U.S. law, widely known as the Bumpers Amendment, prohibits U.S. government support for agricultural production in a foreign country if said production would compete with U.S. agricultural exports to third-country markets. However, the Bumpers Amendment does not apply to support for foreign agricultural production that may compete with U.S. producers in the U.S. domestic market. A 2003 report prepared for the U.S. Agency for International Development found that the only markets with imports of both U.S. and Moroccan olive oil were Canada, France, and the United Kingdom. The report found that imports of olive oil from Morocco had no impact on olive oil prices in France or the United Kingdom, and that "Moroccan olive oil exports should have no negative impact on U.S. exporters."<sup>165</sup> The MCC assistance is not expected to have a significant impact on competition between U.S. and Moroccan olive oil exports to third-country markets, and therefore the Bumpers Amendment does not apply.

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<sup>157</sup> UNIDO, "Industrious Africa," September 2008, 2007, 22. Phase 2 of the project began in 2008, aimed at disseminating the information to additional rural processors.

<sup>158</sup> UNIDO, "Food Processing Pilot Centres," 9 (accessed March 1, 2013).

<sup>159</sup> UNIDO representative, email to USITC staff, March 11, 2013.

<sup>160</sup> MCC, "Morocco Compact Quarterly Status Report," September 2012.

<sup>161</sup> MCC representative, interview by USITC staff, Meknes, Morocco, January 28, 2013.

<sup>162</sup> Ibid.

<sup>163</sup> MCC, "Morocco Compact Quarterly Status Report," September 2012.

<sup>164</sup> Industry representatives, interviews by USITC staff, California, November 13–14, 2012; MCC representative, interview by USITC staff, Meknes, Morocco, January 28, 2013; industry representative, interview by USITC staff, Meknes, Morocco, January 28, 2013.

<sup>165</sup> Humpal and Jacques, Draft Report on Bumpers and Import Sensitivity, November 2003, 6–8.

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# CHAPTER 8

## New World and Middle East

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### Overview

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Several countries outside the European Union (EU) and North Africa are also important global producers of olive oil. These producers can be split into two groups. The first consists of Chile, Australia, and Argentina, located in the Southern Hemisphere and producing relatively small, but increasing, quantities of olive oil with mostly modern and intensive production techniques. Due to their recent emergence, these countries are commonly referred to as New World producers.<sup>1</sup> The second group consists of two Middle Eastern countries, Turkey and Syria, that have been growing and milling olives for millennia.<sup>2</sup> Both Syria and Turkey produce large volumes of olive oil, generally relying on traditional production methods and lacking modern equipment. As a result, the volumes and quality of oil they produce are inconsistent.

This chapter will provide a production profile of each of the New World producers as well as a description of the distribution outlets and the factors affecting the competitiveness of producers in each New World country. The chapter will then provide an overview of the industries in both Turkey and Syria.

Taken together, New World and Middle Eastern countries have historically accounted for about 15 percent of global production annually.<sup>3</sup> However, they are not major players in the global market, accounting for less than 5 percent of global exports annually between 2008 and 2012.<sup>4</sup> While production in New World countries has been increasing rapidly, it is still small compared to production in the Mediterranean, and their exports tend to be concentrated in regional markets. Similarly, despite larger production volumes than the New World countries, Syria and Turkey export mostly within the Middle East.

### New World Producers

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#### *Overview*

Only in recent years have Chile, Australia, and Argentina emerged as actors in the global olive oil market. These countries mainly use modern growing and milling techniques and produce mostly high-quality extra virgin olive oil. While domestic consumption in Chile and Argentina is rising, these countries have excess supplies available for export. Australian exports have fluctuated depending on weather and the resulting harvest, but exports have been rising during good crop years. Located in the Southern Hemisphere, these countries can supply export markets with fresh olive oil with a unique flavor profile

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<sup>1</sup> The United States, covered in chapter 5, is also considered a New World producer.

<sup>2</sup> There are other olive oil-producing countries in the Middle East, such as Lebanon, Jordan, and Israel, but are not considered significant global producers.

<sup>3</sup> IOC, "Table 1: [World] Production," November 2012.

<sup>4</sup> GTIS, Global Trade Atlas database (accessed June 19, 2013).

during the months when producers around the Mediterranean have limited supplies and are using olive oil that has been stored since the previous harvest. The New World producers are also major exporters of wine. This provides marketing expertise and existing distribution networks through which to establish themselves as suppliers of high-quality oil to the world.

Despite their recent production and export growth, New World producers must overcome several challenges if they are to expand further. First, they must compete with established European producers that benefit from scale, government support, and low costs of production. In addition, studies have found that some of the olive varieties grown in New World countries contain naturally occurring chemical traits that prevent their oil from meeting current International Olive Council (IOC) standards for extra virgin. This could restrict demand for their oils in IOC member countries. Another challenge for New World producers, like many producers in the United States, is differentiating their products based on quality. As discussed in chapter 3, some view the IOC standards as weak and lacking international enforcement, allowing large volumes of lower-quality oils to be labeled as extra virgin.

## ***Chile***

Chile has garnered global attention because of the high quality of the oils produced in the country and the rapid growth of its olive oil sector. Furthermore, as noted above, the country's Southern Hemisphere location means that the oils produced there have a different freshness profile than their Northern Hemisphere competitors, which is an advantage both for the country's bulk olive oil exports and for branded consumer products. Chilean firms have been able to use their marketing experience and networks from the country's wine and other horticultural industries to break into the global market for the highest-quality olive oil.

## **Production Profile**

### ***Production overview***

Historically, olives have been grown on a small scale in Chile since they were brought to the country by the Spanish in the 16th century. But it was not until the 1990s that significant investment in the industry began. Area planted to olives grew substantially over the past decade, rising from an estimated 4,158 hectares (ha) (about 10,270 acres) in 1999 to 24,000 ha (almost 60,000 acres) in 2010.<sup>5</sup> This expansion in area triggered a 75-fold increase in olive oil production, from 288 metric tons (mt) in 1999 to an estimated 21,500 mt in marketing year (MY) 2011/12 (table 8.1).<sup>6</sup> Furthermore, the Chilean Association of Olive Oil Producers (ChileOliva) projects that olive-growing area may expand by an additional 9,000 ha (22,200 acres) by 2020, with total oil production volume estimated to reach 46,000 mt.<sup>7</sup> Such an increase would make

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<sup>5</sup> The Chilean Ministry of Agriculture's Office of Research and Agricultural Policy (ODEPA) estimates that 80 percent of this acreage is destined for olive oil use, with the remaining 20 percent producing table olives. See Sudy Bustamante and Cortés Tirado, *Aceite de oliva* [Olive oil], January 2012, 11, 12.

<sup>6</sup> Sudy Bustamante and Cortés Tirado, *Aceite de oliva* [Olive oil], January 2012, 14; IOC, "Table 1: [World] Production," November 2012.

<sup>7</sup> This expansion would be equivalent to a 38 percent increase in area from 2010 and a 114 percent increase in production volume since 2011/12. See Sudy Bustamante and Cortés Tirado, *Aceite de oliva* [Olive oil], January 2012, 12. Industry representative, email to USITC staff, February 13, 2013.

**TABLE 8.1** Chile: Olive oil supply, consumption, and trade, 2000/01, and 2007/08–2012/13 (1,000 mt)

	2000/01	2007/08	2008/09	2009/10	2010/11	<sup>a</sup> 2011/12	<sup>b</sup> 2012/13
Production	( <sup>c</sup> )	6.5	8.5	12.0	16.0	21.5	21.5
Imports	( <sup>c</sup> )	0.5	1.0	0.5	0.5	0.5	0.5
Consumption	( <sup>c</sup> )	5.5	7.5	9.0	10.0	10.0	10.0
Exports	( <sup>c</sup> )	1.5	2.0	3.0	6.5	11.5	11.5

Source: IOC, "Tables 1–4: [World] Production, Imports, Exports, Consumption," November 2012.

Note: A marketing year spans October 1 to September 30 the following year.

<sup>a</sup>Provisional.

<sup>b</sup>Projected.

<sup>c</sup>Not available.

Chile the world's seventh-largest olive oil producer, up from virtually no production at the beginning of the 2000s.<sup>8</sup>

### *Olive-growing sector*

As in the United States, most Chilean olive growers are small enterprises, but the bulk of the oil produced comes from a few large farms. In 2011, an estimated 10 firms accounted for approximately one-third of the country's total harvested area.<sup>9</sup> While there has not been an official census of the total number of olive growers in Chile, ChileOliva has 39 members, which account for about 85 percent of the country's total production volume.<sup>10</sup> An estimated 60 percent of the total planted area is cultivated by producers with 500–1500 ha (1,235–3,700 acres), while around 20 percent of planted area belongs to growers with 200–500 ha (500–1,235 acres), with small producers representing the remainder.<sup>11</sup>

Because the majority of olive groves were planted over the last decade, growers were able to use state-of-the-art production technology innovations. All acreage is irrigated, and even small producers are increasingly using mechanical harvesting to reduce their labor costs; around 80 percent of commercial groves are harvested mechanically.<sup>12</sup> Many new plantings are using the super-high-density (SHD) production system, estimated to represent around 70 percent of planted area.<sup>13</sup> The prevalence of the SHD system means that most olives grown in Chile are of varieties adapted to SHD production.<sup>14</sup>

### *Olive oil processing sector*

In a 2012 inventory of the country's horticultural food processors, the government of Chile identified 36 plants processing olives for olive oil.<sup>15</sup> Most of these plants were

<sup>8</sup> This counts the EU as one country, so that the EU, Tunisia, Syria, Turkey, Morocco, and Algeria would be the only countries producing more olive oil than Chile, were the forecast to be realized.

<sup>9</sup> *Portal Olivícola*, "Chile: desafíos" [Chile: challenges], September 22, 2011.

<sup>10</sup> Industry representative, email to USITC staff, February 13, 2013.

<sup>11</sup> Ibid.

<sup>12</sup> Orellana, "Industria olivícola" [Olive industry], August 29, 2012; industry representative, email to USITC staff, February 13, 2013.

<sup>13</sup> Industry representative, email to USITC staff, February 13, 2013.

<sup>14</sup> Just less than 50 percent of production is of the Arbequina variety, followed by Frantoio (18 percent), Arbosana (8 percent), Picual (8 percent), and Leccino (5 percent). ChileOliva, "Extra Virgin Journey," n.d. (accessed March 18, 2013).

<sup>15</sup> Ideaconsultora, *Actualización del Catastro* [Updating the registry], March 2012, 82.

located in the O'Higgins, Maule, Valparaíso, and Coquimbo regions, with the O'Higgins and Maule regions accounting for the majority of Chile's production in MY 2010/11.<sup>16</sup>

The olive oil processing industry grew up alongside the olive-growing industry. For this reason, nearly all olive oil processing facilities were constructed after the year 2000; as a result, Chilean mills are equipped with the latest technology.<sup>17</sup> The country's total milling capacity is estimated at 159 mt per hour, with the greatest capacity in Coquimbo (52 mt per hour) followed by Maule (46 mt per hour).<sup>18</sup> Even in the busiest milling months just after harvest, total plant utilization is estimated at just 70 percent of installed capacity, suggesting that there is room for future growth in production.<sup>19</sup> In fact, most plants are either undergoing expansion or have new investments planned in anticipation of further growth in the sector.<sup>20</sup>

Vertical integration is more common in the Chilean olive oil sector than in most competitor countries. Slightly more than 55 percent of mills exclusively process olives that come from the company's own olive-growing holdings.<sup>21</sup> Additionally, 22 percent of mills derive a majority of their production from their own olives, but also source from intermediaries or contract with outside growers. This level of vertical integration means that most firms have complete oversight over their entire supply chain.

## **Distribution Outlets**

### ***Domestic consumption***

In MY 2012/13, about 47 percent of Chilean olive oil production is expected to be sold into the domestic market. In 2011, 84 percent of domestic shipments were packaged for direct consumption and 16 percent was sold in bulk.<sup>22</sup> Increased production has allowed Chile to substantially reduce imports, which now account for about 5 percent of domestic supplies.<sup>23</sup> Although this small import share is largely a function of the country's low consumption, this level of import penetration is drastically lower than that of many other New World producers.<sup>24</sup>

Per capita olive oil consumption in Chile was estimated at 0.63 liters in MY 2011/12—lower than in the United States, but greater than in neighboring Brazil and Argentina.<sup>25</sup> At the same time, consumption is growing, with a 75 percent increase in per capita consumption from MY 2007/08 to MY 2010/11.<sup>26</sup> This domestic consumption growth was driven by greater consumer awareness of olive oil's health benefits.<sup>27</sup> At the same time, olive oil is viewed as a gourmet product because of its price relative to other

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<sup>16</sup> Ibid., 8–84, 95.

<sup>17</sup> Ibid., 83, 88.

<sup>18</sup> Ibid., 86.

<sup>19</sup> Ibid., 90.

<sup>20</sup> Ibid., 91.

<sup>21</sup> Ibid.

<sup>22</sup> Ibid., 4.

<sup>23</sup> Sudy Bustamante and Cortés Tirado, *Aceite de oliva* [Olive oil], January 2012, 14, 18.

<sup>24</sup> Australia and the United States import about 73 percent and 97 percent, respectively, of their domestic consumption; IOC, "Tables 1–4: [World] Production, Imports, Consumption, Exports," November 2012.

<sup>25</sup> IOC, "Table 4: [World] Consumption," November 2012; FAO, FAOSTAT database (accessed April 15, 2013).

<sup>26</sup> IOC, "Table 4: [World] Consumption," November 2012.

<sup>27</sup> Industry representative, email to USITC staff, February 13, 2013.

cooking oil choices, and one of the challenges that the domestic industry faces is positioning itself as both high-quality and accessible to consumers of various income levels.<sup>28</sup>

### ***Exports***

During MY 2012/13, about 53 percent of production is expected to be exported.<sup>29</sup> An estimated 33 percent of exports by volume in 2012 were bottled for direct consumption, and 67 percent were shipped in bulk.<sup>30</sup> Exports of virgin or extra virgin olive oil accounted for 94 percent of total Chilean exports between 2008 and 2012.<sup>31</sup> Like the majority of the country's production, most exports are reportedly extra virgin.

In 2012, Chilean olive oil exports reached 10,200 mt, valued at \$36 million, making Chile the fifth-largest exporter in the world by value.<sup>32</sup> Chile's primary export markets are the United States, Italy, Spain, and Brazil. Despite Chile's focus on those markets, their market share in each of those countries is limited—Chilean olive oils account for 2 percent of U.S. imports, 1 percent of Brazil's imports, and less than that for Italy and Spain.<sup>33</sup> But Chile's strategy is not one of dominating markets on a volume basis. Rather, the industry is concentrated on strengthening the high quality reputation of its oils. For this reason, the industry has focused its marketing efforts on the high-value food sectors both in high-income countries, like the United States and Japan, as well as in certain rapidly developing countries, like Brazil and China.<sup>34</sup>

### **Factors Affecting Competitiveness**

Chile has emerged as a small, but notable producer of olive oil over the past decade. It has been able to rapidly expand production because its costs are competitive with other origins. Chilean producers also have a small marketing advantage as a Southern Hemisphere producer with a different harvesting window than most large olive oil-producing countries. Moreover, Chile has an established reputation as a producer of high-quality horticultural products, and olive oil producers have been able to take advantage of these previously established distribution channels. Chilean producers have made strides at marketing themselves as a high-quality olive oil source, but the rapid growth of their olive-growing sector may present challenges in finding sufficient marketing outlets for their products. Since their domestic market is small, Chilean producers must move their product into the global market, in contrast with other New World producers who may have more sales opportunities in their own domestic market.

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<sup>28</sup> Industry representative, email to USITC staff, February 13, 2013; *Portal Olivícola*. "Arturo Leiva," January 19, 2012.

<sup>29</sup> IOC, "Table 1 and 3: [World] Production and Exports," November 2012; FAO, FAOSTAT database (accessed April 15, 2013).

<sup>30</sup> In this instance, bottled for direct consumption is used to convey that the product was shipped in containers of 5 liters or less, with bulk shipments denoting product shipped in containers of greater than 5 liters. See Servicio Nacional de Aduanas Chile, *Arancel aduanero vigente* [Current customs duties], August 10, 2011; GTIS, Global Trade Atlas database (accessed June 19, 2013).

<sup>31</sup> GTIS, Global Trade Atlas database (accessed June 19, 2013).

<sup>32</sup> This figure counts the EU as one country, making the top four exporters the EU, Tunisia, Turkey, and Argentina. GTIS, Global Trade Atlas database (accessed June 19, 2013).

<sup>33</sup> GTIS, Global Trade Atlas database (accessed June 19, 2013).

<sup>34</sup> Industry representative, email to USITC staff, February 13, 2013.

### ***Production costs***

On both a per hectare and a per kilogram (kg) of oil produced basis, Chile is a cost-competitive producer of high-quality olive oil. Chilean planting costs for SHD olive groves are similar to those found in the United States.<sup>35</sup> Operating costs for SHD growers in Chile were estimated at \$1.04–\$1.18 per kg in 2010, or approximately \$2,492 per ha, which are competitive with even the lowest-cost European producer.<sup>36</sup> Chile's competitive cost structure is due to several factors. First, the high percentage of SHD producers means that average labor costs are low because of the prevalence of mechanized harvesting. Chile's geographic isolation (surrounded by desert, mountains, and ocean) also reduces agrichemical costs because these natural barriers form boundaries against pests and diseases.<sup>37</sup> The country also offers good access to financing at low rates, which helps new producers get started and aids established producers in upgrading their operations.<sup>38</sup>

### ***Southern Hemisphere location***

Owing to its location in the Southern Hemisphere, Chile harvests its olives between mid-May and mid-July, whereas the Northern Hemisphere harvest occurs from October through February.<sup>39</sup> For this reason, Chilean oil has a different freshness window than oils from Europe, North Africa, and the United States. This is an advantage for both single-origin niche oils whose “best before” dates fall into a different window, and also for bulk oil that may be purchased by North American or European blenders looking for a certain freshness and taste profile.<sup>40</sup> When Southern Hemisphere oils become available, blenders combine them with older Northern Hemisphere oils for balance and to achieve their desired chemical and taste profiles.

### ***Reputation for high quality***

The Chilean olive oil sector has always focused on producing a high-quality olive oil, partly because the industry felt that it would be a struggle to compete on the basis of quantity while trying to remain profitable.<sup>41</sup> Chile has a reputation as a high-quality producer of food products (including wine, berries, and other fruit) and growers in the country were able to use both their reputation and their previously established marketing channels to get their products into high-value gourmet food markets.<sup>42</sup>

Chilean-produced olive oil is able to maintain its position or expand further into these markets because it is a high-quality product. An estimated 90 percent of Chilean olive oils are extra virgin, and they have some of the lowest acidity levels in the world, which

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<sup>35</sup> SHD planting costs in Maule, Chile, were estimated at \$9,590 per ha (about \$3,880 per acre) in 2010. This estimate includes agricultural investments (trees, irrigation systems, trellising, labor for planting the orchard, etc.), which are similar to the U.S. costs outlined in UCCE, “Sample Costs to Establish: Sacramento Valley,” 2007. See Navarette Bustamante et al., “Informe Centro de Competitividad del Maule” [Maule Competitiveness Center report], August 2010, 54–55.

<sup>36</sup> USITC staff calculation based on Navarette Bustamante et al., “Informe Centro de Competitividad del Maule” [Maule Competitiveness Center report], August 2010, 56–57; AEMO, “Aproximación a los Costes del Cultivo del Olivo” [Approximation of the costs of olive growing], June 2010.

<sup>37</sup> Sudy Bustamante and Cortés Tirado, *Aceite de oliva* [Olive oil], January 2012, 11.

<sup>38</sup> Industry representative, email to USITC staff, February 13, 2013.

<sup>39</sup> *Ediciones Especiales*, “Calidad que conquista” [Quality that is conquering], April 26, 2012, 2.

<sup>40</sup> Industry representative, interview by USITC staff, Maryland, December 20, 2012.

<sup>41</sup> Industry representative, email to USITC staff, February 13, 2013.

<sup>42</sup> Olint, “2001: Chile, an Opportunity,” n.d. (accessed October 15, 2012); industry representative, email to USITC staff, February 13, 2013.



is one indicator of oil quality and freshness.<sup>43</sup> Also, Chilean oils have captured international notice in recent years by placing well at some highly visible olive oil competitions.<sup>44</sup>

### *Opening sufficient marketing channels to keep pace with production*

Since Chile is not a traditional producer of olive oil, many foreign consumers do not yet recognize the country as a source of olive oil of any kind, let alone one of quality.<sup>45</sup> At the same time, production is rapidly growing, and finding enough marketing outlets for increased supply will be one of Chile's main challenges.<sup>46</sup> This will require both opening new markets and increasing consumer awareness of Chilean oils in established ones, and Chilean producers are focusing on both strategies.<sup>47</sup> Regarding the first goal, ChileOliva plans to increase Chilean olive oil's presence in certain developing-country markets (such as Brazil, China, and Russia) by participating in food shows and hosting promotional events for potential buyers.<sup>48</sup> Like producers in the United States, Chilean producers are concerned about being crowded out of domestic and international markets by lower-quality producers.<sup>49</sup>

In an effort to strengthen its U.S. market position, ChileOliva has undertaken a new U.S.-focused marketing campaign targeting specific high-income cities where consumers are already purchasing olive oil: New York, Miami, and Boston.<sup>50</sup> The campaign, consisting of tastings, a social media presence, and prominent advertisement buys, is designed to attract consumers looking for gourmet, high-quality products and who are less price sensitive than typical consumers.<sup>51</sup>

### *Australia*

Australia started producing olive oil in significant quantities only over the last decade. However, in a relatively short time, the oil olive industry has developed rapidly, employing intensive layouts of olive groves, modern irrigation and farm management practices, mechanized harvesting, and advanced milling technologies. Australia's olive oil producers benefit not only from an established base of domestic consumers, but also from ready access to export markets in the rapidly growing Asian economies.<sup>52</sup> But the Australian olive oil sector faces several challenges, including severe weather that has harmed yields in recent years and imports that capture a large share of domestic consumption while offering lower prices than domestically produced oils.

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<sup>43</sup> *Portal Olivícola*, "Chile lanza campaña" [Chile launches a campaign], April 16, 2012.

<sup>44</sup> In March 2012, a Chilean oil took first prize at the Sol de Oro competition in Verona, Italy. Similarly, at the 2012 Los Angeles International Extra Virgin Olive Oil Competition, two Chilean oils won "Best of Class" Gold Medal designations. See Higgins, "Chile's TerraMater," March 7, 2012; Los Angeles, "Awards by Country," n.d. (accessed December 19, 2012).

<sup>45</sup> *Portal Olivícola*, "Chile: desafíos" [Chile: challenges], September 22, 2011.

<sup>46</sup> Tapia Mayer, "La sorprendente campaña" [The surprising campaign], November 19, 2012, 4; Moraga Vásquez, "El Ambicioso Plan" [The ambitious plan], August 1, 2011, 1.

<sup>47</sup> *Portal Olivícola*, "Arturo Leiva," January 19, 2012.

<sup>48</sup> Tapia Mayer, "La Sorprendente Campaña" [The surprising campaign], November 19, 2012, 4; ProChile, "Alimentos chilenos" [Chilean foods], May 9, 2012; ProChile, "Empresarios chilenos" [Chilean entrepreneurs], September 13, 2012; industry representative, email to USITC staff, February 13, 2013.

<sup>49</sup> Moraga Vásquez, "El Ambicioso Plan" [The ambitious plan], August 1, 2011, 3.

<sup>50</sup> *Portal Olivícola*, "Chile lanza campaña" [Chile launches a campaign], April 16, 2012.

<sup>51</sup> Tapia Mayer, "La sorprendente campaña" [The surprising campaign], November 19, 2012, 1–2.

<sup>52</sup> Government of Australia, *Australia Olive Oil Industry Research*, August 2010, 6.

Australia and the United States share many similarities as producers and consumers of olive oil. Both countries have modern industries that produce high-quality olive oil, yet account for only a small portion of domestic consumption.<sup>53</sup> And, as in the United States, there is concern among both consumers and producers that many imported extra virgin olive oils sold in Australia do not meet international standards for extra virgin. Reportedly, Australian consumer confidence in olive oil has declined in no small part because current international standards for olive oil are viewed as weak and often not enforced.<sup>54</sup> As a result, Australian producers advocate the use of various new testing methods to measure the quality of olive oil, similar to the position of producers in California. The two industries commonly work together on research to develop and measure the effectiveness of new chemical tests for defining the extra virgin grade.<sup>55</sup>

## **Production Profile**

Australia is a relatively new producer in the global olive oil market. Rapid expansion of olive grove plantings in the 1990s allowed rapid increases of olive oil production in the first decade of the 2000s.<sup>56</sup> Starting around MY 2003/04, Australian olive oil producers began to increase their share in the domestic market at the expense of imports, while at the same time establishing an export distribution chain. Because of the late development of the olive oil industry compared with traditional Mediterranean suppliers, Australia employed modern production technologies in establishing its olive groves.<sup>57</sup> Australia's olive oil production is very concentrated—one company produces half of the country's olive oil—and growers are typically vertically integrated with mills and bottlers using their own marketing labels.

### ***Production overview***

Australia is projected to produce 19,000 mt of olive oil in MY 2012/13, a 27 percent increase from MY 2008/09<sup>58</sup> and part of a decade-long growth trend (table 8.2). Strong olive oil production growth occurred in spite of severe droughts and extreme temperatures during 2006–09 that constrained olive grove yields and output.<sup>59</sup> According to industry representatives, extreme weather conditions also exacerbated normal interyear fluctuations in production in certain regions of Australia.<sup>60</sup>

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<sup>53</sup> USITC, hearing transcript, December 5, 2012, 148–49 (testimony of Leandro Ravetti, Boundary Bend Limited).

<sup>54</sup> Ibid.

<sup>55</sup> Both countries jointly strive to improve the current international standards for extra virgin olive oil by incorporating what they view as the most modern chemical tests, such as those that use pyropheophytins (PPPs) and 1,2-diacylglycerol (DAGs).

<sup>56</sup> Industry representative, email to USITC staff, February 4, 2013.

<sup>57</sup> Rabobank, *New World versus Old World Olive Oil*, August 2012, 5.

<sup>58</sup> IOC, "Table 1: [World] Production," November 2012.

<sup>59</sup> Industry representative, email to USITC staff, February 4, 2013.

<sup>60</sup> The members of the Australian Olive Association (AOA) represent about 85 percent of national production. In constructing its 2013 projections, the AOA has incorporated production estimates starting with 2009 that vary dramatically from year to year. The variation is caused by the after effects of the droughts and relatively low water supplies affecting Australia, which causes more prominent fluctuations in yields during alternating years. The AOA production figures are based on their marketing calendar, which differs from the IOC marketing year. Harvests in Australia begin in April and run through July. Marketing typically begins in June for the year's harvest. There are additional disparities between IOC production levels and trends and the AOA's estimates. Industry representative, emails to USITC staff, February 4, 2013, and March 10, 2013.

**TABLE 8.2** Australia: Olive oil supply, consumption, and trade, 2000/01, 2007/08–12/13 (1,000 mt)

	2000/01	2007/08	2008/09	2009/10	2010/11	<sup>a</sup> 2011/12	<sup>b</sup> 2012/13
Production	1.0	12.0	15.0	18.0	18.0	19.0	19.0
Imports	30.0	27.0	28.5	35.0	32.0	31.5	31.0
Consumption	31.0	35.0	37.0	44.0	44.0	44.5	42.5
Exports	<sup>c</sup>	4.0	6.5	8.0	6.0	7.0	8.0

Source: IOC, "Tables 1–4: [World] Production, Imports, Exports, Consumption," November 2012.

Note: A marketing year spans October 1 to September 30 the following year.

<sup>a</sup>Provisional.

<sup>b</sup>Projected.

<sup>c</sup>Not available.

### *Olive growing sector*

In Australia, there are about 16,200 commercial hectares (approximately 40,000 acres) of olive trees for oil production.<sup>61</sup> Most Australian commercial groves use intensive production methods, although only about 3 percent are the SHD groves typically found in the United States.<sup>62</sup> Yields in Australia fluctuate depending on location, olive varieties, weather, and production method. For intensive groves, yields range from 8 mt to 14 mt per ha (3.25 to 4.25 mt of olives per acre),<sup>63</sup> rates that typically exceed those in Europe (including intensive European groves) and are similar to those of the intensive and SHD operations in the United States and Chile.<sup>64</sup> Oil yields vary between 12 and 20 percent, slightly higher than in California but lower than in Spain.<sup>65</sup>

The olive-growing industry structure is very concentrated, with an estimated 85 percent of production controlled by about 40 large-scale producers.<sup>66</sup> One company, Boundary Bend Limited, accounts for about half of Australia's production. In addition, there are about 1,500 smaller olive growers, with groves typically ranging from 2 to 4 ha (5 to 10 acres). Maintaining the profitability of these smaller producers is a challenge for the industry because of high input costs and downward pressure on prices from imported oil.<sup>67</sup>

### *Olive oil processing sector*

Like the olive growing sector, the olive oil processing sector in Australia is highly concentrated. There are about 230 mills in Australia, most using modern, continuous two-phase extraction systems. Much of the industry is vertically integrated: many of the larger growers own their own mills and bottling plants and market their own commercial brands of bottled oil.<sup>68</sup> When mills source olives off-site they tend to reward suppliers who meet

<sup>61</sup> Initial plantings during the period of expansion are estimated to be about 74,000 to 82,000 acres based on sales of trees from nurseries in 2002, from which most current production is believed to be derived. However, many groves went out of production due to harsh weather or unsuitable terrain or are maintained as noncommercial hobby farms. Government of Australia, *Australia Olive Oil Industry Research*, August 2010, 4; industry representative, email to USITC staff, February 4, 2013.

<sup>62</sup> Industry representative, email to USITC staff, February 4, 2013.

<sup>63</sup> Ibid.

<sup>64</sup> Rabobank, *New World versus Old World Olive Oil*, August 2012, 6.

<sup>65</sup> Industry representatives, email to USITC staff, March 10, 2013.

<sup>66</sup> Industry representative, email to USITC staff, February 4, 2013.

<sup>67</sup> Government of Australia, *Australia Olive Oil Industry Research*, August 2010, 11.

<sup>68</sup> Industry representative, email to USITC staff, March 14, 2013.

their unique quality specifications by paying premiums of up to 50 percent above international prices. Premiums are based on the results of extensive testing. Testing takes place on the olives' arrival and later on the oil, which is tested independently before being blended with oil from other sources.

## **Distribution Outlets**

### ***Domestic consumption***

Australian olive oil consumption has grown dramatically since MY 2000/01. In the four years between MY 2007/08 and MY 2011/12, consumption rose from 35,000 mt to 44,500 mt, an increase of 27 percent (table 8.2).<sup>69</sup> While the United States and Brazil report higher overall consumption levels, the only two non-Mediterranean countries to do so, Australians actually consumed between 1.8 and 2.2 liters per capita annually during MY 2007/08–MY 2011/12, about twice as much as per capita consumption in the United States.<sup>70</sup> Although domestic production is increasingly displacing imported olive oil, imports still account for about 70 to 80 percent of annual consumption. Nearly three-quarters of olive oil is purchased through grocery stores, with the remainder marketed through food service, manufacturing, and boutique stores.<sup>71</sup>

### ***Exports***

Australia exported approximately 3,300 mt of olive oil worth \$15 million in 2012, primarily of higher grades of olive oil.<sup>72</sup> Between 90 and 95 percent of the value of Australian exports is virgin or extra virgin olive oil.<sup>73</sup> Major markets for Australian olive oil are China, the United States, and Italy. Historically, the United States was Australia's largest overseas market, taking, on average, 38 percent of its exports (both volume and value) between 2008 and 2012. However, in 2012 China surpassed the United States as Australia's top market by value,<sup>74</sup> as Chinese consumers have continued to develop an interest in the product and as Australian producers take advantage of their geographical location vis-à-vis their Mediterranean competitors.<sup>75</sup>

## **Factors Affecting Competitiveness**

Australia is an efficient producer of high-quality olive oil and is geographically well situated to service several rapidly growing markets in Asia. The industry is also focused on developing domestic demand by educating consumers and by differentiating its product from lower-priced imports through certifications designed to capture value in premium olive oil markets.

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<sup>69</sup> IOC, "Table 4: [World] Consumption," November 2012.

<sup>70</sup> IOC, "Table 4: [World] Consumption," November 2012.

<sup>71</sup> Industry representative, email to USITC staff, February 4, 2013.

<sup>72</sup> GTIS, Global Trade Atlas database (accessed June 19, 2013). Trade data described here differ from the data presented in table 8.2 due to the difference in sources and because the data in table 8.2 are presented on a marketing year basis instead of a calendar year basis.

<sup>73</sup> GTIS, Global Trade Atlas database (accessed June 19, 2013).

<sup>74</sup> GTIS, Global Trade Atlas database (accessed June 19, 2013).

<sup>75</sup> Rabobank, *New World versus Old World Olive Oil*, August 2012, 6.

### ***Production volumes***

Over the past 10 years, Australia quickly developed its olive oil industry using modern, efficient production practices.<sup>76</sup> However, going forward, production growth is likely to level off, as new plantings have declined and yields continue to be lowered by the aftereffects of extreme weather. Rapidly changing weather conditions have been a challenge in recent years, as olive producers have alternately contended with too much rain after years of too little. Australia's current production capacity is likely to stabilize at 25,000 to 30,000 mt annually over the next few years.<sup>77</sup>

### ***Location***

Australia is geographically well situated to take advantage of increasing demand in emerging markets, such as China and India.<sup>78</sup> China has already become Australia's most important export market, and recent steps by India to reduce its olive oil tariffs offer additional market access opportunities for Australian producers.<sup>79</sup> Rising per capita incomes in several Asian markets has led to rapidly growing demand for higher-quality, higher-valued foods (e.g., beef, dairy products, wine, and other horticultural products) from reliable suppliers. With its proximity to Asian markets, Australia is well positioned to be a preferred supplier of high-quality olive oil.

### ***Reputation for high quality***

Australia has an international reputation for producing high-quality extra virgin olive oils.<sup>80</sup> The use of intensive grove management means Australian olive oil is mostly extra virgin grade. Most olive oil producers are fully integrated, owning some, if not all, of the groves from which their olives are sourced. This level of vertical integration allows producers to constantly monitor the progress of the crop and to have strict quality oversight throughout the growing and milling processes.<sup>81</sup> The Australian olive oil sector's level of integration, quality oversight, and a payment structure that incentivizes quality has resulted in fruity oils that have competed and won in olive oil competitions around the world.<sup>82</sup>

### ***Policies and certifications***

Linked to Australia's reputation for high quality is its role as a pioneer in the field of olive oil standards and testing. One way Australian oil is distinguished from other sources is through the Australian Code of Practice, a voluntary set of standards developed by the Australian Olive Association (AOA).<sup>83</sup> Producers that are signatories to the code abide by

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<sup>76</sup> Government of Australia, *Australia Olive Oil Industry Research*, August 2010, 6.

<sup>77</sup> Industry representative, email to USITC staff, February 4, 2013.

<sup>78</sup> Government of Australia, *Australia Olive Oil Industry Research*, August 2010, 10.

<sup>79</sup> Indian tariffs have been reduced from 40 or 45 percent, depending on the grade of olive oil, down to 7.5 percent. Embassy of India, "Government of India announces reduction in Duty Rates on Olive Oil," n.d.

<sup>80</sup> Rabobank, *New World versus Old World Olive Oil*, August 2012, 6.

<sup>81</sup> Industry representative, email to USITC staff, February 4, 2013; industry representatives, interview by USITC staff, California, November 14, 2012.

<sup>82</sup> Australian olive oils have scored well at various competitions, including the 2013 New York International Olive Oil Competition and the 2011 Los Angeles International Extra Virgin Olive Oil Competition. Butler, "Australia and New Zealand Shine," April 26, 2013; Zanteson, "Los Angeles Olive Oil Competition," June 9, 2011.

<sup>83</sup> Australian Olive Association website, <http://www.australianolives.com.au/content/code-of-practice> (accessed May 3, 2013).

a certain set of business and quality standards, which allows them to display a certification logo prominently on their labels at retail stores. Olive oils are periodically taken from retail outlets and tested by independent government laboratories to ensure that the product meets the standards. In addition to the Code of Practice, Australian olive oils are subject to the Australian Standards for Olive Oil and Olive Pomace Oils (AS5264-2011), which were developed in parallel to the Code of Practice.<sup>84</sup>

The goal of both the Australian Code of Practice and the standards is to better inform the consumer and to protect the integrity of the product for producers. The code and standards establish unique grading standards (differing slightly from those of the IOC and Codex Alimentarius) and testing requirements that help domestic producers to differentiate their products as high quality and thereby capture price premiums in the market. The standards are intended to better inform consumers by preventing retail labels from using terms deemed to be misleading, such as “extra light” and “pure.”<sup>85</sup> Educational efforts are also directed toward consumers and members of the supply chain to improve the understanding of the characteristics and value of the different grading specifications.<sup>86</sup> The Australian standards also require testing to detect deodorized and old oil, in addition to other tests for quality.<sup>87</sup> A further distinguishing feature of the code is that oils are tested for compliance at the retail level, whereas in Europe testing takes place at the time of bottling. For more information on the Australian standards, see chapter 3.

## ***Argentina***

Argentine olive oil production has experienced substantial growth over the past 20 years, propelling the country to become the world’s largest exporter of olive oil outside of the Mediterranean region. It is the only New World olive oil producing country with membership in the IOC. Domestic per capita consumption in Argentina is low, however, and most production is exported. Similar to Australia and Chile, Argentine oil has a different freshness window than Northern Hemisphere oils, which is attractive for Northern Hemisphere blenders. However, rising delivered costs are hurting the sector’s competitiveness in overseas markets, causing great uncertainty about the future of the industry.

### **Production Profile**

#### ***Production overview***

Unlike many other New World producers, Argentina has a history of large-scale olive oil production and consumption, though sustained success and growth has proven elusive in the past. In the early 1990s, olive oil production became profitable in Argentina, thanks to increasing world prices and a revision in Argentina’s tax policy that gave incentives to plant new olive orchards outside traditional production areas and into the northwestern

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<sup>84</sup> These standards were adopted and published in July 2011 by Standards Australia, an independent nongovernmental Australian standards organization.

<sup>85</sup> USITC, hearing transcript, December 5, 2012, 151 (testimony of Leandro Ravetti, Boundary Bend Limited).

<sup>86</sup> Industry representative, email to USITC staff, February 4, 2013.

<sup>87</sup> The Australian standards require both the DAGs and PPP chemical tests, which may detect olive oil that is not fresh, olive oil produced from poor-quality olives, or extra virgin oil blended with soft deodorized olive oil. For information on the debate around the DAGs and PPP chemical tests, see chapter 3.

part of the country.<sup>88</sup> In 2012, Argentina's total area planted to olives was estimated at 105,000 ha (about 260,000 acres), with roughly half for olive oil production, 30 percent for table olives, and the remaining 20 percent identified as dual-use.<sup>89</sup> In MY 2011/12, Argentina's olive oil production was 32,000 mt—eight times greater than production in MY 2000/01 (table 8.3).<sup>90</sup>

**TABLE 8.3** Argentina: Olive oil supply, consumption, and trade, 2000/01, 2007/08–12/13 (1,000 mt)

	2000/01	2007/08	2008/09	2009/10	2010/11	<sup>a</sup> 2011/12	<sup>b</sup> 2012/13
Production	4.0	27.0	23.0	17.0	20.0	32.0	17.0
Imports	5.5	( <sup>c</sup> )	( <sup>c</sup> )	( <sup>c</sup> )	( <sup>c</sup> )	( <sup>c</sup> )	( <sup>c</sup> )
Consumption	6.0	7.0	5.0	5.0	5.5	6.0	6.0
Exports	4.0	18.5	14.0	19.0	12.0	23.5	17.5

Source: IOC, "Tables 1–4: [World] Production, Imports, Exports, Consumption," November 2012.

Note: A marketing year spans October 1 to September 30 the following year.

<sup>a</sup>Provisional.

<sup>b</sup>Projected.

<sup>c</sup>Not available.

### *Olive growing sector*

Argentina's olive growing areas are mainly concentrated in a series of valleys at the foot of the Andes Mountains in the western part of the country. These valleys are extremely arid, but groves are irrigated from aquifers that are recharged by the Andean snowmelt.<sup>91</sup> The Argentine olive-growing sector underwent a major structural change in the early 1990s after the passage of the country's Tax Deferral Acts, resulting in a split of the industry into two types of olive-growing operations—traditional groves planted before the implementation of the law, and more modern groves planted afterward.

Approximately 70 percent (75,000 ha or 185,300 acres) of the country's total olive area are planted in high-density (HD) systems of monovarietals, designed for mechanical harvesting and drip irrigation.<sup>92</sup> These new groves typically range in size between 100 and 1,000 ha (about 250–2,500 acres),<sup>93</sup> and use more sophisticated production techniques. Yields on these operations can reach 10–12 mt per ha (25–30 mt per acre)—twice the level achieved under traditional systems, which account for the remaining 30 percent of Argentina's planted acreage.<sup>94</sup> The growth in operations of this type has shifted the bulk of production to the country's northwestern provinces of Catamarca and La Rioja, accounting for 52 percent of the country's total planted area.<sup>95</sup>

<sup>88</sup> Gobbee, "El olivo en Argentina" [Olives in Argentina] (accessed April 30, 2013); Matías et al., "Olivicultura Argentina y regional" [Argentinian and regional olive oil growing], March 2012, 1–2.

<sup>89</sup> An additional 10,000 ha (25,000 acres) of olive groves have yet to reach bearing age. IOC, "Policies: Argentina," 2012, 5. Production area shares come from 2010, but total acreage has not changed substantially since that time. See Tagarelli, "Olivo" [Olives], January 2010, 33.

<sup>90</sup> IOC, "Table 1: [World] Production," November 2012.

<sup>91</sup> Gobbee, "Argentina: Born to Be Extra Virgin," January 16, 2012, 17.

<sup>92</sup> Palma, "Olivo" [Olives], May 2010, 41; Gobbee, "Seminario de Herramientas" [Seminar on tools], September 13, 2010, 31.

<sup>93</sup> Gómez del Campo et al., "Olive Growing in the Arid Valleys," 2010, 25.

<sup>94</sup> Ibid.

<sup>95</sup> Other major producing provinces include San Juan (20 percent), Mendoza (16 percent), and Córdoba (9 percent). Gobbee and Gusman, "Argentina: Born to Be Extra Virgin," July 2–6, 2012, 4.

## ***Olive oil processing sector***

Historically, Argentina's olive oil mills produced mostly lower-quality olive oils because their primary consumers (both domestic and in Brazil, the primary export market) were price sensitive.<sup>96</sup> Producers were paid strictly on the amount of oil yielded from their olives, which provided an incentive to harvest late to increase oil yields, to the detriment of product quality.<sup>97</sup>

Today, Argentina's olive oil processing sector has an increased focus on quality. Over the past 15 years, several new mills and processing facilities have sprung up in regions of olive grove expansion.<sup>98</sup> Many of these new mills are located adjacent to olive groves, minimizing the distance and time between harvest and milling.<sup>99</sup> These new mills were built with modern technologies, have higher capacities than traditional mills, and rely largely on two-phase extraction systems.<sup>100</sup> Partly because of these modernization efforts, more than 90 percent of Argentine olive oil is now reported to be extra virgin.<sup>101</sup>

There are an estimated 90 olive oil processing facilities in Argentina.<sup>102</sup> Moreover, many new mills have up to 30 percent excess capacity to allow for the future maturation of recently planted trees that have not yet reached full bearing age.<sup>103</sup> Despite the large number of olive oil processing facilities, the industry is highly concentrated; four processors account for approximately 70 percent of the country's total production.<sup>104</sup>

## **Distribution Outlets**

### ***Domestic consumption***

In MY 2011/12, only 19 percent of Argentina's olive oil production was projected to be consumed domestically.<sup>105</sup> Historically, Argentina has consumed olive oil as a result of its heritage of large Spanish and Italian immigrant populations. However, consumption has declined from historical highs because of the popularity and affordability of cheaper substitutes, such as sunflower oil, which reportedly cost one-tenth as much as olive oil.<sup>106</sup> Per capita consumption of olive oil is estimated at 0.16 liters annually, compared with about one liter in the United States.<sup>107</sup> However, efforts to promote domestic olive oil and increase its consumption are underway. In November 2012, olive oil was declared a "national food," and a Federal Program for the Promotion of Argentine Olive Oil was established.<sup>108</sup>

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<sup>96</sup> SAGPyA-DNA, "Informe del Sector Olivarero" [Report on the industrialized food sector], May 2004, 3–4.

<sup>97</sup> Ibid.

<sup>98</sup> Pardo et al., "Propuestas de mejoras" [Proposals for improvements], April 2010, 4.

<sup>99</sup> MRECIC, "Informe sector alimentos industrializados" [Report on the industrialized food sector], 2010, 17.

<sup>100</sup> Pardo et al., "Propuestas de mejoras" [Proposals for improvements], April 2010, 3.

<sup>101</sup> Gobbee and Gusman, "Argentina: Born to Be Extra Virgin," July 2–6, 2012, 33.

<sup>102</sup> IOC, "Policies: Argentina," 2012, 7.

<sup>103</sup> Gobbee and Gusman, "Argentina: Born to Be Extra Virgin," July 2–6, 2012, 18.

<sup>104</sup> IOC, "Policies: Argentina," 2012, 7.

<sup>105</sup> IOC, "Tables 1 and 4: [World] Production and Consumption," November 2012.

<sup>106</sup> FOA, "The Local Olive Growing Industry in Argentina," 2011, 36; Gobbee and Gusman, "Argentina: Born to Be Extra Virgin," July 2–6, 2012, 12.

<sup>107</sup> IOC, "Table 4: [World] Consumption," November 2012; FAO, FAOSTAT database (accessed April 15, 2013).

<sup>108</sup> ANDigital, "El aceite de oliva" [Olive oil], November 22, 2012.



Imports represent an insignificant fraction of total domestic consumption.<sup>109</sup> Argentine olive oil imports fell substantially after the country imposed countervailing duties on olive oil shipments from the EU in 1998.<sup>110</sup> Additionally, the country raised the applied most-favored-nation (MFN) tariff rate on olive oil from 10 percent to 31.5 percent in October 2006.<sup>111</sup>

### ***Exports***

In MY 2011/12, Argentina exported 73 percent of its production.<sup>112</sup> Argentina's principal export markets in 2012 were Brazil (45 percent of total exports by volume), the United States (32 percent), and Spain (10 percent).<sup>113</sup> Between 2008 and 2012, 92 percent of the country's olive oil exports were of at least virgin grade, while refined olive oil products made up the remaining 8 percent.<sup>114</sup> In contrast to some other New World olive oil exporters, Argentina depends heavily on bulk exports—from 2006 to 2010 about two-thirds of export volumes were in bulk.<sup>115</sup> Exports bottled for direct consumption have grown over the last 5 years, but have yet to overtake bulk sales.

### **Factors Affecting Competitiveness**

Argentina is the largest olive oil exporter outside of the Mediterranean. However, the sector is currently struggling to remain globally competitive owing to an appreciating currency, stagnating global olive oil prices, and rising internal costs. The country does enjoy a production niche because of its position in the Southern Hemisphere, but the location of its groves in mountain valleys creates production challenges, with both high average temperatures and a tendency for some production areas to experience hard freezes that damage the olive trees.

### ***Rising delivered cost***

Rising costs of delivery for Argentinian oil producers, at a time when the global industry experienced a period of depressed prices, led the Secretary of Agriculture for the province of Rioja to declare that 2012 was the worst year for the country's olive growers in the past half century.<sup>116</sup> Costs of nearly all factors of production have risen, in part due to high overall domestic inflation.<sup>117</sup> In September 2012, the Regional Agricultural Experimentation Consortium of Argentina (CREA) calculated that average labor costs in

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<sup>109</sup> GTIS, Global Trade Atlas database (accessed June 19, 2013); Tagarelli, "La Olivicultura en Argentina" [Olive growing in Argentina], June 2011, 5.

<sup>110</sup> Argentina applied a \$1.00 per kg countervailing duty to imports of packaged olive oil from the EU, and a countervailing duty of \$0.80 per kg for olive oil in bulk from the EU at that time. These measures were revoked in July of 2006. See WTO, "Semi-Annual Report: Argentina," February 25, 1999; WTO, "Semi-Annual Report: Argentina," February 5, 2007; Tagarelli, "Olivo" [Olives], August 2007, 48–49.

<sup>111</sup> According to the WTO's Tariff Analysis Online database, this was still the applied tariff rate in 2010, the last year for which applied rates were available. See WTO, TAO database (accessed April 24, 2013); Tagarelli, "Olivo" [Olives], August 2007, 48–49.

<sup>112</sup> IOC, "Tables 1 and 3: [World] Production and Exports," November 2012.

<sup>113</sup> GTIS, Global Trade Atlas database (accessed June 19, 2013).

<sup>114</sup> Ibid.

<sup>115</sup> Staffing calculation based on FOA, "The Local Olive Growing Industry in Argentina," 2011, 37.

<sup>116</sup> Portal Olivícola, "Argentina: la crisis olivícola" [Argentina: Olive sector crisis], January 3, 2013.

<sup>117</sup> Higgins, "Argentina's Olive Oil Industry," March 16, 2011.

the country rose 25 percent just from 2011 to 2012.<sup>118</sup> As a result, the costs of manual harvesting (a system which many Argentine olive groves still use) have more than doubled from 2008 to 2012.<sup>119</sup> Labor is not only expensive but scarce, with some in the industry forecasting that there will not be enough seasonal workers to harvest this year's crop.<sup>120</sup> Some growers have attempted to convert their groves to mechanical harvesting to reduce costs and avoid labor uncertainty, but this conversion is costly and further complicated by the difficulty of importing both harvesters and the parts to repair them.<sup>121</sup> Other costs, including energy prices and fertilizer, more than doubled between 2005 and 2012.<sup>122</sup>

Cost increases have not been limited to factors of production. High internal transportation costs have also hurt the competitiveness of the export sector, particularly since most olive groves and processing plants are far from the coastal ports.<sup>123</sup> Export taxes further hinder the competitiveness of the Argentine olive sector.<sup>124</sup>

Stagnant to declining global olive oil prices over the past five years further exacerbated the negative financial position of Argentine olive oil producers.<sup>125</sup> In 2012, many growers chose not to harvest their olives because the market price for a kilo of olives was lower than the cost to harvest them.<sup>126</sup> Moreover, several consecutive years of poor returns have jeopardized the 2013 harvest. Many farms are reportedly unable to access credit because of their history of recent losses, so they may be unable to finance harvesting operations.<sup>127</sup> In at least one Argentine province in 2013, the regional government disbursed emergency loans to finance the region's olive harvest.<sup>128</sup> Other growers have abandoned olive farming completely, shifting to almonds or pistachios.<sup>129</sup>

### *Location*

The location of Argentina's olive oil industry presents both an advantage and a challenge. On one hand, Argentina's location in the Southern Hemisphere means that the country's olive harvest takes place at a different time of year than in the Mediterranean.<sup>130</sup> This harvest schedule shifts the freshness window of Argentina's oils, creating unique marketing opportunities for the country's growers. For this reason, Argentina's olive oils are important to Northern Hemisphere blenders trying to reach a certain freshness and

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<sup>118</sup> CREA, "Situación de la olivicultura argentina" [The situation of Argentinian olive farming], September 2012, 5–6. General inflation was not the only factor that contributed to high labor costs; other factors may have been government work programs and wage requirements. Saieg, "Emergencia en el sector olivícola" [Emergency in the olive-growing sector], March 24, 2012.

<sup>119</sup> CREA, "Situación de la olivicultura argentina" [The situation of Argentinian olive farming], September 2012, 6.

<sup>120</sup> Portal Olivícola, "Argentina: se agudizan" [Argentina: The olive sector's problems], February 21, 2013.

<sup>121</sup> CREA, "Situación de la olivicultura argentina" [The situation of Argentinian olive farming], September 2012, 6.

<sup>122</sup> CREA, "Alerta roja" [Red alert], October 22, 2012.

<sup>123</sup> Portal Olivícola, "Argentina: se agudizan" [Argentina: The olive sector's problems], February 21, 2013.

<sup>124</sup> Higgins, "Argentina's Olive Oil Industry," March 16, 2011. The export tax is 5 percent.

<sup>125</sup> CAME, "Reclamo del sector olivícola" [Demands of the olive sector], December 7, 2012.

<sup>126</sup> Saieg, "Emergencia en el sector olivícola" [Emergency in the olive sector], March 24, 2012.

<sup>127</sup> Boyadjian, "Olivicultura: una buena cosecha" [Olive farming: A good harvest], January 27, 2013.

<sup>128</sup> Portal Olivícola, "Argentina: aguardan los créditos" [Argentina: Growers are holding on to their credits], April 25, 2013.

<sup>129</sup> CREA, "Alerta roja" [Red alert], October 22, 2012.

<sup>130</sup> FOA, "The Local Olive Growing Industry in Argentina," 2011, 32.

chemical profile in their oils.<sup>131</sup> Additionally, because Argentine growers can plant olives in a variety of different soils and microclimates, the country can produce oils with a wide range of organoleptic (sensory) attributes.<sup>132</sup>

Location also creates challenges for Argentina's olive oil industry. Most of the country's olive groves are located in arid mountain valleys with higher average temperatures than in traditional European growing areas.<sup>133</sup> Higher temperatures during oil synthesis likely worsen both oil yields and fatty acid compositions of many Argentine oils, leading to instability in oils of some varieties.<sup>134</sup> Also, the higher temperatures during harvest can cause the olives to degrade before they even reach the mill (which in some cases are 100–500 kilometers away from the farms where the olives were harvested), lowering oil quality.<sup>135</sup> On the other hand, a 2013 preliminary investigation by Argentina's National Institute of Agricultural Technology (INTA) found that 65 percent of the olive groves in San Juan province (the province with about 20 percent of Argentina's total olive area) were located in zones that experienced low temperatures far below the tolerance level of olive trees, calling into question the long-term viability of the industry in those areas.<sup>136</sup>

## Middle Eastern Producers

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### *Overview*

Olive oil is produced throughout the Middle East, but Turkey and Syria are by far the largest producing countries. Together they account for more than 60 percent of annual Middle Eastern olive oil production and approximately 10 percent of global production. Both Turkey and Syria rely mostly on traditional production methods and lack modern equipment, resulting in variable olive oil production volumes and qualities.

The main sales outlets for both Syrian and Turkish olive oil are their respective domestic markets. Exports are limited primarily to neighboring countries within the Middle Eastern region, although the potential to expand exports is much greater for Turkey than Syria. In Turkey, planted acreage and production continue to expand, potentially providing surplus product for increased exports. In contrast, after years of expansion aided by government support, Syrian production and exports have declined as a result of the civil war that began in early 2011. Both future production volumes and integration into the global market will depend on ending the political unrest in Syria.

### *Turkey*

Turkey is a significant producer of olive oil. With most of its oil destined for domestic consumption, Turkey has not played a major role in the global export market in recent years. In MY 2011/12, exports of olive oil from Turkey accounted for only 2.6 percent of

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<sup>131</sup> In 2013, for example, several Italian companies expressed interest in sourcing supplies from Argentina in response to supply shortages in Europe. See Portal Olivícola, "Italianos buscan comprar" [Italians are looking to buy], February 13, 2013.

<sup>132</sup> FOA, "The Local Olive Growing Industry in Argentina," 2011, 32.

<sup>133</sup> Gómez del Campo et al., "Olive Growing in the Arid Valleys," 2010, 28–29.

<sup>134</sup> Ibid., 43.

<sup>135</sup> Ibid., 30, 41–42.

<sup>136</sup> Portal Olivícola, "Argentina: Afirman que el 65%" [Argentina: 65% of San Juan olives], April 22, 2013.

global trade.<sup>137</sup> However, recent plantings and planned expansion of olive groves are expected to permit increased exports of olive oil in the future. The area under olive cultivation has expanded steadily—about 11 percent between 2007 and 2011—and improvements in harvesting methods have decreased the variation in annual production. As a result, Turkey’s production of olive oil has increased in each of the last five years (table 8.4).<sup>138</sup>

**TABLE 8.4** Turkey: Olive oil supply, consumption, and trade, 2000/01, 2007/08–12/13 (1,000 mt)

	2000/01	2007/08	2008/09	2009/10	2010/11	<sup>a</sup> 2011/12	<sup>b</sup> 2012/13
Production	175.0	72.0	130.0	147.0	160.0	191.0	195.0
Imports	0	0	0	0	0	0	0
Consumption	72.5	85.0	108.0	110.0	131.0	150.0	160.0
Exports	92.0	15.0	31.0	29.5	12.0	20.0	30.0

Source: IOC, “Tables 1–4: [World] Production, Imports, Exports, Consumption,” November 2012.

Note: A marketing year spans October 1 to September 30 the following year.

<sup>a</sup>Provisional.

<sup>b</sup>Projected.

Government support for the olive oil industry has spurred production growth in recent years. Between 1998 and 2011, the government allocated Turkish lira (TL) 169 million (about \$92.8 million at 2012 exchange rates) to the olive oil sector, with the goal of increasing production in order to become the world’s second-largest olive oil producer by 2014.<sup>139</sup> In December 2004, the second National Olive Summit, a partnership between the Ministry of Agriculture and public and private stakeholders, established a target of 650,000 mt of olive oil production within a decade, compared to only 195,000 mt in MY 2012/13.<sup>140</sup> The Organisation for Economic Co-operation and Development (OECD) reports that the government provided direct payments of TL 19.11 million in 2011, or TL 1.0 (\$0.55) per kg.<sup>141</sup> As well as incentives to plant trees, olive producers are eligible for reimbursement of up to 50 percent of the costs of mechanization for cultivation and processing.<sup>142</sup> Partly as a result of this support, the number of olive trees in Turkey increased from 100 million in 2004 to 165 million in 2012.<sup>143</sup> Once these trees come into production, output is forecast to increase to 300,000 mt by 2016.<sup>144</sup> As Turkey’s production increases, exports are also expected to grow substantially over the coming decade.<sup>145</sup>

Despite Turkey’s relatively low annual per capita olive oil consumption, domestic consumption is the primary marketing outlet for Turkish producers, accounting for more than 80 percent of production during MY 2007/08–MY 2011/12.<sup>146</sup> Turkish exports of olive oil fluctuated widely between 2008 and 2012, ranging from \$49 million in 2011 to \$96 million in 2009. The United States was the leading export market in 2012, followed

<sup>137</sup> IOC “Table 3: [World] Exports,” November 2012.

<sup>138</sup> Anatolia News Agency, “Periodicity No Longer Plagues Olive Sector,” October 9, 2012; Turkish government official, email to USITC staff, December 21, 2012.

<sup>139</sup> *Today’s Zaman*, “Financial Incentives for Olive Oil Producers,” June 20, 2012.

<sup>140</sup> IOC, “Policies: Turkey,” 2012, 10.

<sup>141</sup> OECD, PSE Database for Turkey, Agricultural Support Estimate (accessed December 19, 2012).

<sup>142</sup> *Today’s Zaman*, “Financial Incentives for Olive Oil Producers,” June 20, 2012.

<sup>143</sup> Tan, “Actions de promotion de l’huile d’olive” (Actions to promote olive oil), July 2, 2012.

<sup>144</sup> IOC, *Market Newsletter no. 50*, May 2011.

<sup>145</sup> Olives101.com, “Turkey’s Olive Oil Exports,” October 17, 2011.

<sup>146</sup> Turkey’s per capita consumption of olive oil is between 1.5 and 2 liters. Tan, “Actions de promotion de l’huile d’olive” (Actions to promote olive oil), July 2, 2012.

by Saudi Arabia and Japan. Despite its Mediterranean location, Turkey is not a major supplier to the EU, although in 2012 Spain was Turkey's fourth-largest export market. Turkish exporters face high EU tariffs and strong competition from other suppliers, specifically Tunisia and Morocco, that receive preferential market access (see box 2.3).<sup>147</sup> Turkey's largest markets for olive oil in 2012 have very low import duties on olive oil—5 percent ad valorem in Saudi Arabia, zero in Japan, and 3.4 to 5 cents per kg in the United States.<sup>148</sup>

Up until 2007, 70 percent of Turkey's olive oil exports were in bulk. In 2007, Turkey's Promotional Committee for Olive and Olive Oil was established, with the aim of expanding Turkey's exports of olives and olive oil in target markets, as well as promoting the brand and image of Turkish olives and olive oil.<sup>149</sup> Since 2008, U.S. imports of olive oil from Turkey have predominately been in bottles (i.e., containers of less than 18 kg). Through 2007, most of Turkey's exports of both virgin and refined olive oil to the EU were through the EU inward processing regime described in chapter 2. Since 2007, Turkish producers have continued to export refined olive oil to the EU through this program, but have shifted exports of virgin olive oil away from the inward processing regime or to other markets.<sup>150</sup>

Although Turkey's competitiveness in global markets is strengthened by government support and the recent emphasis on marketing, it continues to face challenges. The growing sector consists mostly of many small producers, using traditional methods of growing and milling. Small operators are not able to invest in new production methods (such as mechanized cultivation) and marketing, and are not able to benefit from scale economies. As a result, Turkey is considered a relatively high-cost producer in global markets.<sup>151</sup>

## Syria

Before the outbreak of its civil war in March 2011, Syria was the world's fourth-largest olive oil producer.<sup>152</sup> Production of olive oil was estimated by the IOC to have reached an all-time high of 198,000 mt in MY 2011/12.<sup>153</sup> While current information about the state of the Syrian olive oil sector is limited because of the political unrest, production levels have declined dramatically since the outbreak of the war, and Syria's role in the global olive oil market is now limited.<sup>154</sup>

Before the war, rising production was the direct result of government policies in the late 1990s and early 2000s. The Syrian government reclaimed large tracts of land owned by the private sector, and then provided subsidized seedlings and loans to boost olive tree acreage.<sup>155</sup> Production did grow, but few growers use modern equipment and production

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<sup>147</sup> *Green Prophet*, "Turkey Aims to Become World's Second Largest," December 27, 2009; Narrayani, "Turkish Olive Oil Aims for Asia," March 1, 2011.

<sup>148</sup> Turkey does have access to a small EU import quota of 100 mt at 7.5 percent ad valorem, as well as a preferential tariff rate of €12.05 per 100 kg for virgin olive oil and €27.87 per kg for other olive oil. The U.S. tariff ad valorem equivalent on imports is around 1 percent.

<sup>149</sup> Promotional Committee for Olive and Olive Oil (OOPC), "About Us" (accessed December 19, 2012).

<sup>150</sup> EU Commission, COMEXT, <http://epp.eurostat.ec.europa.eu/portal/page/portal/eurostat/home/> (accessed May 29, 2013).

<sup>151</sup> Turkekul et al., "The Competitiveness of Turkish Olive Oil," April 2010, 72.

<sup>152</sup> IOC, "Table 1: [World] Production," November 2012.

<sup>153</sup> Vij, "Syria Expects Record Olive Oil Production," November 6, 2011.

<sup>154</sup> Industry representatives, interview by USITC staff, Meknes, Morocco, January 28, 2013.

<sup>155</sup> Mohammad, "Trade in Olive Oil in Syria," December 2006, 9.

techniques, leading to inconsistent production volumes and qualities. As a result, Syrian oil has not been preferred by major global purchasers, and exports have been limited largely to other Middle Eastern countries (e.g., Saudi Arabia and the United Arab Emirates) and China.<sup>156</sup> The civil war has further limited Syria's ability to compete in a variety of export markets. Production volumes have declined, and many mills are no longer operating. Moreover, many buyers who traditionally sourced oil from Syria are unable or unwilling to do so now.<sup>157</sup> Exports are now limited to buyers in neighboring countries, because shipping goods across borders has become more difficult, more dangerous, and more costly.<sup>158</sup>

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<sup>156</sup> O'Sullivan, "Bumper Olive Crop Expected in Syria," November 5, 2011.

<sup>157</sup> Industry representative, interview by USITC staff, Meknes, Morocco, January 28, 2013.

<sup>158</sup> Vij, "Producers in Lebanon Benefit from Reduced Syrian Imports," November 27, 2012.

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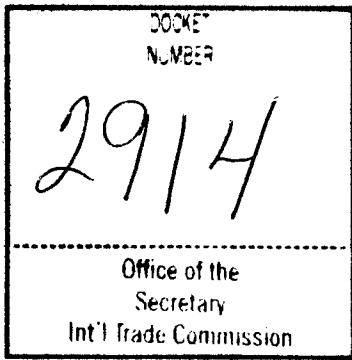
## **APPENDIX A**

### **Request Letter**

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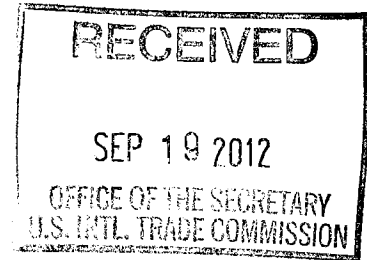




## COMMITTEE ON WAYS AND MEANS

U.S. HOUSE OF REPRESENTATIVES  
WASHINGTON, DC 20515

September 12, 2012



The Honorable Irving A. Williamson  
Chairman  
U.S. International Trade Commission  
500 E Street, SW  
Washington, DC 20436

Dear Chairman Williamson:

The Committee on Ways and Means is interested in obtaining current information on the global competitiveness of the U.S. commercial olive oil industry. The U.S. commercial olive oil industry has grown rapidly over the last decade, employing modern agriculture technologies and research to capture the growing domestic demand for olive oil. The United States is the fourth largest market in terms of olive oil consumption. U.S. consumption of olive oil has increased approximately 40 percent in the past ten years. Although domestic production has increased, the vast majority of U.S. consumption is satisfied by imports.

In order to better assess the current market conditions confronting the U.S. industry, we request that the U.S. International Trade Commission conduct an investigation under section 332(g) of the Tariff Act of 1930 (19 U.S.C. §1332(g)) and provide a report setting forth the results of the investigation. The report should include, to the extent practicable, information and analysis regarding the major suppliers of olive oil, particularly Spain, Italy, and North African countries, in addition to the United States. A significant problem is the lack of information about the commercial olive oil industry of certain major supplier countries to the U.S. market. Special effort should be made to collect data about the major supplier countries of olive oil that have little published historical data.

To the extent that information is publicly available, the report should contain:

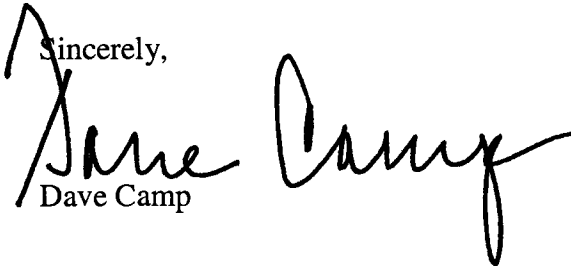
- an overview of the commercial olive oil industry in the United States and major supplier countries, including production of olives for olive oil processing, planted acreage and new plantings, processing volumes, processing capacity, carry-over inventory, and consumption;
- information on the international market for olive oil, including U.S. and foreign supplier imports and exports of olive oil in its various forms, olive oil trade between the European

Union and North African countries, and a history of the tariff treatment and classification of olive oil in the United States and major supplier countries;

- a qualitative and, to the extent possible, quantitative assessment of the role of imports, standards and grading, prices, and other factors on olive oil consumption in the U.S. market; and
- a comparison of the competitive strengths and weaknesses of the commercial olive production and olive oil processing industries in the major producing countries and the United States, including factors such as industry structure, input production costs and availability, processing technology, product innovation, government support and other government intervention, exchange rates, and pricing and marketing regimes, plus the steps each respective industry is taking to increase its competitiveness.

The report should focus primarily on the 2008-2012 time period. The Committee requests that the Commission transmit its report to Congress no later than 11 months following the receipt of this request. It is the Committee's intent to make the Commission's report available to the public in its entirety. Therefore, the report should not include any confidential business information.

Thank you for your attention to this request.

Sincerely,  
  
Dave Camp

Cc: Rep. Sandy Levin, Ranking Member

## **APPENDIX B**

### ***Federal Register* Notice**

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## INTERNATIONAL TRADE COMMISSION

[Investigation No. 332–537]

### Olive Oil: Conditions of Competition Between U.S. and Major Foreign Supplier Industries

**AGENCY:** United States International Trade Commission.

**ACTION:** Institution of investigation and scheduling of hearing.

**SUMMARY:** Following receipt on September 12, 2012, of a request from the Committee on Ways and Means (Committee) of the House of Representatives under section 332(g) of the Tariff Act of 1930 (19 U.S.C. 1332(g)), the U.S. International Trade Commission (Commission) instituted investigation No. 332–537, *Olive Oil: Conditions of Competition between U.S. and Major Foreign Supplier Industries*.

#### DATES:

November 14, 2012: Deadline for filing requests to appear at the public hearing.

November 21, 2012: Deadline for filing prehearing briefs and statements.

December 5, 2012: Public hearing.

December 12, 2012: Deadline for filing posthearing briefs and statements.

February 12, 2013: Deadline for filing all other written submissions.

August 12, 2013: Transmittal of Commission report to the Committee.

**ADDRESSES:** All Commission offices, including the Commission's hearing rooms, are located in the United States International Trade Commission Building, 500 E Street SW., Washington, DC. All written submissions should be addressed to the Secretary, United States International Trade Commission, 500 E Street SW., Washington, DC 20436. The public record for this investigation may be viewed on the Commission's electronic docket (EDIS) at <http://www.usitc.gov/secretary/edis.htm>.

#### FOR FURTHER INFORMATION CONTACT:

Project leader Brendan Lynch (202–205–3313 or [brendan.lynch@usitc.gov](mailto:brendan.lynch@usitc.gov)) or deputy project leader Alison Rozema (202–205–3458 or [alison.rozema@usitc.gov](mailto:alison.rozema@usitc.gov)) for information specific to this investigation. For information on the legal aspects of this investigation, contact William Gearhart of the Commission's Office of the General Counsel (202–205–3091 or [william.gearhart@usitc.gov](mailto:william.gearhart@usitc.gov)). The media should contact Margaret O'Laughlin, Office of External Relations (202–205–1819 or [margaret.olaughlin@usitc.gov](mailto:margaret.olaughlin@usitc.gov)). Hearing-impaired individuals may

obtain information on this matter by contacting the Commission's TDD terminal at 202–205–1810. General information concerning the Commission may also be obtained by accessing its Internet server (<http://www.usitc.gov>). Persons with mobility impairments who will need special assistance in gaining access to the Commission should contact the Office of the Secretary at 202–205–2000.

**Background:** As requested by the Committee, the Commission will conduct an investigation and prepare a report on the conditions of competition between U.S. and major foreign supplier industries. As requested and to the extent that information is publicly available, the report will include the following—

1. An overview of the commercial olive oil industry in the United States and major supplier countries, including production of olives for olive oil processing, planted acreage and new plantings, processing volumes, processing capacity, carry-over inventory, and consumption;

2. Information on the international market for olive oil, including U.S. and foreign supplier imports and exports of olive oil in its various forms, olive oil trade between the European Union and North African countries, and a history of the tariff treatment and classification of olive oil in the United States and major supplier countries;

3. A qualitative and, to the extent possible, quantitative assessment of the role of imports, standards and grading, prices, and other factors on olive oil consumption in the U.S. market; and

4. A comparison of the competitive strengths and weaknesses of the commercial olive production and olive oil processing industries in the major producing countries and the United States, including factors such as industry structure, input production costs and availability, processing technology, product innovation, government support and other government intervention, exchange rates, and pricing and marketing regimes, plus the steps each respective industry is taking to increase its competitiveness.

The Committee asked that the report focus primarily on the period 2008–2012 and that the Commission deliver its report by August 12, 2013. The Committee also stated that it intends to make the Commission's report public.

**Public Hearing:** The Commission will hold a public hearing in connection with this investigation at the U.S. International Trade Commission Building, 500 E Street SW., Washington, DC, beginning at 10:30 a.m. on

Wednesday, December 5, 2012. Requests to appear at the public hearing should be filed with the Secretary not later than 5:15 p.m., November 14, 2012, in accordance with the requirements in the "Submissions" section below. All prehearing briefs and statements should be filed with the Secretary not later than 5:15 p.m., November 21, 2012; and all posthearing briefs and statements responding to matters raised at the hearing should be filed with the Secretary not later than 5:15 p.m., December 12, 2012. All hearing-related briefs and statements should be filed in accordance with the requirements for filing written submissions set out below. In the event that, as of the close of business on November 14, 2012, no witnesses are scheduled to appear at the hearing, the hearing will be canceled. Any person interested in attending the hearing as an observer or nonparticipant may call the Office of the Secretary (202–205–2000) after November 14, 2012, for information concerning whether the hearing will be held.

**Written Submissions:** In lieu of or in addition to participating in the hearing, interested parties are invited to file written submissions concerning this investigation. All written submissions should be addressed to the Secretary, and all such submissions (other than prehearing and posthearing briefs and statements) should be received not later than 5:15 p.m., February 12, 2013. All written submissions must conform with the provisions of section 201.8 of the *Commission's Rules of Practice and Procedure* (19 CFR 201.8). Section 201.8 and the Commission's Handbook on Filing Procedures require that interested parties file documents electronically on or before the filing deadline and submit eight (8) true paper copies by 12:00 p.m. eastern time on the next business day. In the event that confidential treatment of a document is requested, interested parties must file, at the same time as the eight paper copies, at least four (4) additional true paper copies in which the confidential information must be deleted (see the following paragraph for further information regarding confidential business information). Persons with questions regarding electronic filing should contact the Secretary (202–205–2000).

Any submissions that contain confidential business information must also conform with the requirements of section 201.6 of the Commission's Rules of Practice and Procedure (19 CFR 201.6). Section 201.6 of the rules requires that the cover of the document and the individual pages be clearly marked as to whether they are the "confidential" or "nonconfidential"

version, and that the confidential business information be clearly identified by means of brackets. All written submissions, except for confidential business information, will be made available for inspection by interested parties.

In the request letter, the Committee stated that it intends to make the Commission's report available to the public in its entirety, and asked that the Commission not include any confidential business information in the report it sends to the Committee. Any confidential business information received by the Commission in this investigation and used in preparing this report will not be published in a manner that would reveal the operations of the firm supplying the information.

By order of the Commission.

Issued: October 1, 2012.

**William R. Bishop,**

*Hearings and Meetings Coordinator.*

[FR Doc. 2012-24529 Filed 10-4-12; 8:45 am]

**BILLING CODE 7020-02-P**

## DEPARTMENT OF JUSTICE

### Notice of Lodging Proposed Consent Decree Clean Air Act

On October 1, 2012, the Department of Justice lodged a proposed Consent Decree with the United States District Court for the District of New Jersey in the lawsuit entitled *United States and State of New Jersey v. Durand Glass Manufacturing Company, Inc.*, Civil Action No. 1:12-cv-06115-RBK-JS.

The action involves alleged violations of the Clean Air Act, 42 U.S.C. 7401, *et seq.*, and N.J.A.C. 7:27-22.1, *et seq.*, at Durand Glass Manufacturing Company, Inc.'s facility located in Millville, New Jersey, in regard to Durand's failure to comply with prevention of significant deterioration, new source review, and permit requirements. The action seeks civil penalties and injunctive relief. Pursuant to the Decree, Durand will pay a civil penalty of \$300,000 (based on Durand's inability to pay a larger penalty), and agreed to install advanced emission control devices on the three glass furnaces at the facility.

The publication of this notice opens a period for public comment on the Consent Decree. Comments should be addressed to the Assistant Attorney General, Environment and Natural Resources Division, and should refer to *United States, et al. v. Durand Glass Manufacturing Company, Inc.*, D.J. Ref. No. 90-5-2-1-09182. All comments must be submitted no later than thirty (30) days after the publication date of

this notice. Comments may be submitted either by email or by mail:

To submit comments:	Send them to:
By email ....	<i>pubcomment-ees.enrd@usdoj.gov.</i>
By mail .....	Assistant Attorney General, U.S. DOJ—ENRD, P.O. Box 7611, Washington, DC 20044-7611.

During the public comment period, the Consent Decree may be examined and downloaded at this Justice Department Web site: [http://www.usdoj.gov/enrd/Consent\\_Decrees.html](http://www.usdoj.gov/enrd/Consent_Decrees.html). We will provide a paper copy of the Consent Decree upon written request and payment of reproduction costs. Please mail your request and payment to: Consent Decree Library, U.S. DOJ—ENRD, P.O. Box 7611, Washington, DC 20044-7611.

Please enclose a check or money order for \$18.75 (25 cents per page reproduction cost) payable to the United States Treasury.

**Ronald Gluck,**

*Assistant Section Chief, Environmental Enforcement Section, Environment and Natural Resources Division.*

[FR Doc. 2012-24562 Filed 10-4-12; 8:45 am]

**BILLING CODE 4410-15-P**

## DEPARTMENT OF JUSTICE

### Notice of Lodging of Proposed Consent Decree Under the Clean Water Act and Safe Drinking Water Act

On September 28, 2012, the Department of Justice lodged a proposed Consent Decree with the United States District Court for the Eastern District of Pennsylvania in the lawsuit entitled *United States et al. v. GSP Management Company, et al.*, Civil Action No. 12-5553.

The Consent Decree resolves alleged violations of the Clean Water Act and Safe Drinking Water Act at mobile home parks operated by defendants in Pennsylvania, Delaware and Virginia. The defendants treat sewage and provide drinking water at a number of its mobile home parks and illegally discharged sewage, failed to properly operate and maintain treatment facilities, exceeded federal drinking water standards for certain pollutants and failed to notify residents about drinking water problems. The Consent Decree requires payment of a civil penalty of \$1,339,000, hiring a third party environmental consultant to perform environmental audits at each mobile home park, implementing

corrective measures, conducting regular inspections, and developing a company-wide environmental management system.

The publication of this notice opens a period for public comment on the Consent Decree. Comments should be addressed to the Assistant Attorney General, Environment and Natural Resources Division, and should refer to *United States et al. v. GSP Management Company, et al.* D.J. Ref. No. 90-5-1-1-10286. All comments must be submitted no later than thirty (30) days after the publication date of this notice. Comments may be submitted either by email or by mail:

To submit comments:	Send them to:
By email ...	<i>pubcomment-ees.enrd@usdoj.gov.</i>
By mail .....	Assistant Attorney General, U.S. DOJ—ENRD, P.O. Box 7611, Washington, DC 20044-7611.

During the public comment period, the Consent Decree may be examined and downloaded at this Justice Department Web site: [http://www.usdoj.gov/enrd/Consent\\_Decrees.html](http://www.usdoj.gov/enrd/Consent_Decrees.html). We will provide a paper copy of the Consent Decree upon written request and payment of reproduction costs. Please mail your request and payment to: Consent Decree Library, U.S. DOJ—ENRD, P.O. Box 7611, Washington, DC 20044-7611.

Please enclose a check or money order for \$15.25 for a paper copy of the Consent Decree without the exhibits, and \$52.00 for a paper copy of the Consent Decree and all exhibits (25 cents per page reproduction cost) payable to the United States Treasury.

**Robert Brook,**

*Assistant Section Chief, Environmental Enforcement Section, Environment and Natural Resources Division.*

[FR Doc. 2012-24537 Filed 10-4-12; 8:45 am]

**BILLING CODE 4410-15-P**

## DEPARTMENT OF JUSTICE

### Office of Justice Programs

[OMB Number 1121-0140]

**Agency Information Collection Activities; Proposed Collection; Comments Requested: OJP Standard Assurances Form**

**ACTION:** 60-Day Notice.

The Department of Justice, Office of Justice Programs will be submitting the following information collection request

## **APPENDIX C**

### **Calendar of Hearing**

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## CALENDAR OF PUBLIC HEARING

Those listed below appeared as witnesses at the United States International Trade Commission's hearing:

**Subject:** Olive Oil: Conditions of Competition between U.S. and Major Foreign Supplier Industries

**Inv. No.:** 332-537

**Date and Time:** December 5, 2012 - 10:30 a.m.

Sessions were held in connection with this investigation in the Main Hearing Room (room 101), 500 E Street, S.W., Washington, D.C.

### **ORGANIZATION AND WITNESS:**

#### **PANEL 1**

California Olive Ranch  
Oroville, CA

**Adam Englehardt**, Vice President of Orchard Operations

California Olive Oil Council  
Berkeley, CA

**Patricia Darragh**, Executive Director

California Olive Ranch  
Oroville, CA

**Gregg Kelley**, Chief Executive Officer

Bari Olive Oil Company  
Dinuba, CA

**Kyle Sawatzky**, Owner and Sales Manager

**ORGANIZATION AND WITNESS:**

**PANEL 1 (continued)**

Enzo Olive Oil Company  
Madera, CA

**Pat Ricchuiti**, President

Santa Cruz Olive Tree Nursery  
Watsonville, CA

**Bruce Golino**, Founder

California State University, Fresno  
Center for Agricultural Business  
Fresno, CA

**Dr. Mechel S. Paggi**, Director

University of California, Davis  
Olive Center  
Davis, CA

**Dr. Selina C. Wang**, Director of Research

**Tom Mueller**, Author of “*Extra Virginity: The Sublime and Scandalous  
World of Olive Oil*”

**ORGANIZATION AND WITNESS:**

**PANEL 2**

Akin Gump Strauss Hauer & Feld LLP  
Washington, D.C.  
on behalf of

North American Olive Oil Association (“NAOOA”)

**Eryn Balch**, Executive Vice President, NAOOA

**Frank Patton**, President and Chief Financial Officer,  
Pompeian, Inc.

**John Sessler**, Chief Executive Officer, JCS Tradecom;  
*and* Chairman of the NAOOA Executive Committee

**Bernd G. Janzen** ) – OF COUNSEL

American Olive Oil Producers Association  
Clovis, CA

**Alex Ott**, Executive Director

Boundary Bend Limited  
Victoria, Australia

**Leandro Ravetti**, Executive Director

Charles Sturt University – Australia  
Graham Centre for Agricultural Innovation  
Bathurst, Australia

**Dr. Rodney Mailer**, Associate Graham Centre Member

Yocha Dehe Wintun Nation  
Brooks, CA

**Marshall McKay**, Chairman

**ORGANIZATION AND WITNESS:**

**PANEL 3**

Georgia Olive Farms  
Lakeland, GA

**Jason Shaw**, President

The University of Georgia  
Center for Agribusiness and Economic Development  
Athens, GA

**Dr. Kent Wolfe**, Director

Georgia State Department of Agriculture  
Atlanta, GA

**Sydne Smith**, Policy Director

Cowgirl Brands LLC  
Dallas, TX

**Karen Lee**, President

Next Door Pantry LLC  
New Braunfels, TX

**Abigail Rutledge**, President

Central Texas Olive Ranch, LLC  
Granger, TX

**Joshua Swafford**, Executive Vice President

Texas Olive Ranch  
Dallas, TX

**Jim Henry**, President, Texas Olive Ranch; and  
Founding Director, Texas Olive Oil Council

The Florida Olive Council, LAA  
Gainesville, FL

**Michael O'Hara Garcia**, President

**-END-**

## **APPENDIX D**

### **Summary of Position of Interested Parties**



## Summary of Views of Interested Parties

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The U.S. International Trade Commission (Commission or USITC) held a public hearing in relation to its investigation on global olive oil trade on December 5, 2012, in Washington, DC. Interested persons were also invited to file written submissions for the investigation. This appendix summarizes the views expressed to the Commission via testimony, written submissions, or both, and reflects the principal points made by the particular party. The views expressed in the summarized materials should be considered to be those of the submitting parties and not the Commission. In preparing this summary, Commission staff did not undertake to confirm the accuracy of, or otherwise correct, the information summarized. For the full text of hearing testimony, written submissions, and exhibits, see entries associated with investigation no. 332-537 at the Commission's Electronic Docket Information System (<https://edis.usitc.gov/edis3-internal/app>).

### American Olive Oil Producers Association<sup>1</sup>

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The American Olive Oil Producers Association (AOOPA) is a federation of U.S. olive oil growers, processors, and state associations that represents over 90 percent of U.S. olive oil production. In testimony before the USITC and in written submissions, AOOPA stated that the growing domestic olive oil industry faces major obstacles to its further expansion. Principal among these were (1) improving the image of olive oil by adopting quality standards to prohibit fraud, and (2) persuading foreign governments to stop policies and practices that distort the economics of the olive oil industry.

Regarding the first point, AOOPA pointed to several studies that found numerous instances where olive oil labeled as extra virgin was found to be of a lower grade. This may be due to fraud in which oils are mixed into higher-quality oils and labeled as extra virgin, or to mislabeling, in which lower-grade olive oil is marketed as extra virgin. In order to ensure the integrity of the industry, AOOPA contends that olive oil must be correctly labeled. Toward this end, the organization is considering all mechanisms whereby a mandatory standard may be enforced, including the potential implementation of a U.S. Department of Agriculture (USDA) marketing order. The organization stressed that although it is exploring this possibility, no draft has been submitted to USDA, and there are multiple additional steps and opportunities for public comment before such an order could be implemented. AOOPA stated that the goal of such an order would not be to stop olive oil imports, but to ensure that all producers selling olive oil in the U.S. market adhere to the same standards for the benefit of the U.S. consumer.

In reference to the second point, several of AOOPA's submissions to the USITC detailed the various support programs and levels of support received by producers in European countries. AOOPA contends that these support policies reduce prices in the U.S. and global marketplace, which greatly affects domestic olive oil growers.

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<sup>1</sup> American Olive Oil Producers Association, written submissions to the USITC, November 28, 2012; December 13, 2012; and February 12, 2013; USITC, hearing transcript, December 5, 2012, 144–148 (testimony of Alexander Ott, American Olive Oil Producers Association).

## **Bari Olive Oil Company<sup>2</sup>**

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According to Mr. Kyle Sawatzky, co-owner and sales manager of Bari Olive Oil Company, Bari is a California olive oil producer that produced an estimated 50,000 gallons of olive oil in the 2012/13 marketing year, using olives supplied by 32 growers. Mr. Sawatzky testified that Bari's olive oil sales has doubled or tripled its olive oil sales each year since 2008. Mr. Sawatzky asserted that Bari had grown to the point where it can not sell all of its oil as a niche product, but is unable to compete on price with imported olive oil in mainstream grocery stores. In response, he said Bari Olive Oil has developed a line of organic olive oil and infused olive oils. Mr. Sawatzky asserted that some producers of imported olive oil receive subsidies that allow them to sell olive oil in the U.S. market at prices below costs for producers like Bari, but stated that what U.S. olive oil producers need to compete in the U.S. market is an enforceable set of standards for both imported and domestic olive oil.

## **Boundary Bend Limited<sup>3</sup>**

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Leandro Ravetti provided testimony on behalf of Boundary Bend Limited, the largest olive oil producer in Australia; he is the company's technical director. Mr. Ravetti states that the United States and Australia have similar positions in the global olive oil market in that they are home to significant olive oil consumers and to modern olive oil industries, which account for only a minority of domestic consumption. Mr. Ravetti stated that the most widely accepted grading standards for olive oil are the Codex Standard and the IOC standard. He pointed out that IOC's voting membership consists only of producing and exporting countries, while importing countries are not able to participate in voting. Mr. Ravetti also said that chemical limits imposed by European standards that utilize data from European oils fail to accommodate many high-quality olive oils from around the world, due to differences in varieties and growing conditions. Mr. Ravetti also stated that the Australian testing procedure is less expensive than the current IOC testing.

Mr. Ravetti noted that there are other standards developed for grading olive oil, notably those from the European Commission, the United States, and Australia. He stated that the Australian standard is the clearest example of an alternative and that differs from the IOC in several areas. Mr. Ravetti noted that the Australian standard bans the use of terms such as "Extra Light" and "Pure" from being used on labels, as they are considered misleading to consumers. Finally, Mr. Ravetti pointed out that Australia's is the only standard to incorporate a "best before" date policy. He noted that many producers of product that is found to be substandard claim that the product was within legal limits at the time of bottling, but that this position takes complete disregard for the consumer.

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<sup>2</sup> USITC, hearing transcript, December 5, 2012, 21–24 (testimony of Kyle Sawatzky, Bari Olive Oil Company).

<sup>3</sup> USITC, hearing transcript, December 5, 2012, 148–154 (testimony of Leandro Ravetti, Boundary Bend Limited); Leandro Ravetti, written submission to the USITC, November 29, 2012.



## California Olive Oil Council<sup>4</sup>

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The California Olive Oil Council (COOC) is a trade and marketing nonprofit association, dedicated to promoting fresh, quality extra virgin olive oils made in California. According to the hearing testimony of Ms. Patricia Darragh, the COOC was founded in 1992, and today has 400 members that produce 90 percent of the state's olive oil output. In their submission, the COOC detailed its primary activities, which include conducting educational programs (for growers, retailers, and consumers), establishing sensory protocols and panels, and operating a certification program for California oils. The submission noted that the sensory panel not only tests and certifies California olive oils, but also carries out blind taste tests on random samples of oils pulled from retail shelves, including both imported and domestic oils. The submission emphasized that the COOC's panels found that from two-thirds to three-quarters of imported olive oils labeled as extra virgin were less than extra virgin grade, which indicates that these products are mislabeled or adulterated. The COOC submission also detailed other ways in which they believe that olive oil consumers are being misled, including the use on the front label of confusing terms such as "lite" or misleading country of origin assertions such as "imported from Italy" when the oil inside the bottle in reality comes from a variety of countries.

The COOC emphasized that it seeks to level the playing field by ensuring that imported olive oils are properly labeled and identified by their actual grade, which will help consumers regain confidence in the segment. During the Commission's hearing, a COOC representative noted that retailers are increasingly trying to ensure that the olive oils that they are selling are in fact true extra virgin grade. She reported that some retailers have specifically sought out COOC-certified oils because they are guaranteed to be extra virgin.

## California Olive Ranch<sup>5</sup>

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California Olive Ranch (COR) stated to the Commission that it is a domestic olive oil firm that is involved in all stages of the marketing chain, from growing the olives to marketing olive oil to the end consumer, both for retail and food service uses. In testimony before the Commission and in written submissions, representatives of the firm expressed their belief that ineffectual quality standards, rampant fraud and mislabeling, and substantial government subsidies to EU producers has prevented U.S. olive oil producers from realizing their full potential.

In its testimony, COR stressed that its business model—based on mechanically harvesting olives at the peak of ripeness and processing them within hours, making COR an efficient, high-technology enterprise—is disruptive to entrenched market players because it produces high-quality extra virgin olive oil at a competitive cost. The firm

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<sup>4</sup> California Olive Oil Council, written submission to the USITC, November 28, 2012; USITC, hearing transcript, December 5, 2012, 13–16 (testimony of Patricia Darragh, California Olive Oil Council).

<sup>5</sup> California Olive Ranch, written submissions to the USITC, November 30, 2012; USITC, hearing transcript, December 5, 2012, 8–13 (testimony of Adam Englehardt and Gregory Kelley, California Olive Ranch).

feels that the lack of grading standards means that its product is being sold alongside lower-quality oils marketed under the same “extra virgin” label to a consumer that is uneducated about differences in olive oil quality. COR feels that questions about olive oil quality are retarding the growth of the category in the United States, and that mandatory enforcement of grades by a U.S. government entity would improve consumer confidence in the category and actually increase overall purchases of olive oil.

At the same time, COR pointed out that government aid represents a significant share of the income of European growers, allowing them to offer their product for lower prices. They assert that these levels of support depress U.S. olive oil prices and contribute to an olive oil surplus in Europe. COR also noted that European tariffs on imports of olive oil are significantly higher than U.S. olive oil tariffs, which hampers the ability of U.S. firms to compete in the European market as well. The firm expressed hope that quality and fraud problems in the industry could be resolved by U.S. government agencies, not with the intent of hindering imports, but in order to let the market determine competitiveness.

## **California State University, Fresno Center for Agricultural Business<sup>6</sup>**

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Dr. Mechel Paggi testified on behalf of the California State University, Fresno Center for Agricultural Business. Dr. Paggi states that U.S. producers face challenging competition from foreign producers, which currently have a 98 percent market share in the United States. However, according to Dr. Paggi, the industry in California has the potential to grow substantially, primarily from innovative production techniques and marketing practices. He stated that California olive oil producers have become more efficient and productive through the use of high-density groves, mechanized harvesting, and advanced irrigation and input management, adding that entrepreneurial marketing programs have increased the public awareness of California producers in particular. Dr. Paggi also stated that U.S. olive growers do not have the benefit of receiving as much government support as their competitors in Europe. Dr. Paggi pointed out that EU producers, particularly in Italy and Spain, receive direct government support and that the EU provides additional storage programs for olive oil to address oversupply.

## **Central Texas Olive Ranch<sup>7</sup>**

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In his testimony, Central Texas Olive Ranch Executive Vice President Joshua Swafford outlined the operations of his family’s olive groves near Georgetown, Texas. To provide context on his family’s decision to grow olives, Mr. Swafford explained that the other options on their land would be to graze cattle or to grow annual crops, such as cotton, vegetables, or field crops. After considering these options, according to Mr. Swafford, he and his family decided instead to plant olive trees, which are a permanent crop and

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<sup>6</sup> USITC, hearing transcript, December 5, 2012, 31–34 (testimony of Dr. Mechel Paggi, Center for Agricultural Science and Technology, California State University, Fresno); Dr. Mechel Paggi, written submission to the USITC, November 28, 2012.

<sup>7</sup> USITC, hearing transcript, December 5, 2012, 240–242 (testimony of Joshua Swafford, Central Texas Olive Ranch); Joshua Swafford, written testimony to the USITC, December 5, 2012.

require less water. Mr. Swafford pointed out that there are a number of crop maintenance practices and equipment needed to grow olives successfully. Central Texas Olive Ranch, he said, has found success growing olives with its 23,000 olive trees—Mr. Swafford attributed part of this success to support from university extension research and advice—and installed its own mill in 2012. He stated that their olive oil is distributed throughout the state of Texas and that Central Texas Olive Ranch has recently been joined by a few new olive growers in the area.

## **Charles Sturt University, Australia, Graham Center for Agricultural Innovation<sup>8</sup>**

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Dr. Rodney Mailer of the New South Wales Department of Agriculture testified on behalf of the Graham Centre for Agricultural Innovation at Charles Sturt University in Australia. According to Dr. Mailer, the International Olive Council (IOC) was a critical resource for Australia's laboratory testing capacity when the country first began commercial production. However, Dr. Mailer stated that the IOC's testing standards do not fairly assess olive oil from production outside of the Mediterranean production regions due to differences in environment, a problem that is particularly significant since more production is taking place in nontraditional regions. In response, Australia developed two new tests based on the diacylglycerol and the pyropheophytin levels, which he claimed identify old and poorly stored olive oil more accurately; however, these tests have been rejected by the IOC. Dr. Mailer said they have not been addressed by the IOC because its membership is predominantly Mediterranean producers.

Dr. Mailer suggested that the current IOC and Codex standards are inadequate for the market. He stated that tests performed under his laboratory's direction on imported olive oil from supermarkets in the United States and Australia found that 75 percent of product tested were found to be unacceptable under their labeled grade. He added that at the same time, certain IOC and Codex standards are so restrictive that often high-quality olive oil from Australia, New Zealand, Argentina, Chile, and the United States fails to meet them. Dr. Mailer also stated that surveillance and enforcement of regulations targeting adulterated product needs to be improved, as his laboratory has found evidence of canola and olive pomace oil blended in product that was labeled extra virgin olive oil. He added that, nonetheless, there is a much smaller incidence of adulteration than failure to meet quality standards.

## **Cowgirl Brands, LLC<sup>9</sup>**

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Karen Lee, President of Cowgirl Brands, LLC, a bottler, marketer, and distributor of Texas-grown olive oil, testified about competition between domestic and imported olive oil, as well as perceived fraud in the labeling of imports. Ms. Lee testified that the production cost of Texas olive oil was currently approximately \$40 per gallon, but was

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<sup>8</sup> USITC, hearing transcript, December 5, 2012, 154–158 (testimony of Rodney Mailer, New South Wales Department of Agriculture).

<sup>9</sup> USITC, hearing transcript, December 5, 2012, 247–251 (testimony of Karen Lee, Cowgirl Brands, LLC).

expected to fall with increases in volume, to be competitive with olive oil produced in California. Ms. Lee asserted that lower-priced imported olive oil was often of lower quality, but that without adequate labeling and standards, consumers are unable to distinguish between inferior olive oil and a quality product. Ms. Lee testified that the Texas Olive Oil Council had established a standard that is more rigorous than the IOC standard, and that more rigorous standards and labeling would help consumers make better choices.

## **Enzo Olive Oil Company<sup>10</sup>**

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According to Mr. Pat Ricchuiti, a representative of the firm, Enzo Olive Oil Company is an olive grower and producer of olive oil in California. Mr. Ricchuiti compared olive production in California to the production of almonds and walnuts in the state. He asserted that the reason California olive production has not experienced the growth levels of California almonds and walnuts is because of competition from subsidized imports of olive oil from the European Union. He asserted that if EU subsidies to its olive producers were to stop, California olive production would follow an expansion path similar to that experienced by the state's almond and walnut growers. He argued that EU subsidies to its olive producers are keeping the U.S. olive oil industry from reaching its potential.

## **European Union<sup>11</sup>**

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In a written submission, the European Union (EU) (via the European Commission) provided information on olive oil production in member states and outlined the EU regulations and policies pertaining to the sector. The EU reported that olive oil production is concentrated in Spain, Italy, and Greece, and that while both traditional and modern olive-growing methods are in use in these countries, production generally remains characterized by small holdings on marginal or steeply sloped land. The EU also provided data on member countries' share of world olive oil production, consumption, and exports, showing that, when taken together, EU countries account for a majority of all three.

The submission also discussed EU regulations and policies for the olive oil industry, summarizing key measures related to marketing and quality standards, designation of origin, and agricultural support payments:

- On quality standards, the EU works closely with the IOC and aims to support and enhance the role of the IOC through the EU Action Plan for the olive oil sector;
- EU marketing standards establish grades of olive oil and labeling requirements for products sold in member states;

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<sup>10</sup> USITC, hearing transcript, December 5, 2012, 24–26 (testimony of Pat Ricchuiti, Enzo Olive Oil Company).

<sup>11</sup> European Commission, written submission to the USITC, February 11, 2013.

- The EU program on designation of origin allows producers to register and protect names of agricultural products.
- Finally, the EU provides direct support payments to olive and other farmers through its agricultural policy.
- In its submission, the EU emphasized that direct payments to olive farmers have been decoupled from production levels since 2006 and that, under the rules of the World Trade Organization (WTO), its support payments have been determined to be non-trade-distorting. The EU provides additional support to the olive oil industry in the form of a private storage aid system, which gives the European Commission the option of subsidizing private storage of olive oil when prices drop below set triggers.

## **Florida Olive Council<sup>12</sup>**

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In his hearing testimony, Mr. Michael O'Hara Garcia, president of the Florida Olive Council, stated that the Council is a not-for-profit organization promoting the cultivation and marketing of olives and olive oil in the state of Florida. Mr. O'Hara Garcia provided an overview of olive-growing activities in Florida and of potential challenges to the industry's competitiveness as it grows. Mr. O'Hara Garcia stated that there are three commercial-scale olive growers at present in Florida, and about 15 small-scale growers. He reported that there is interest from citrus growers in converting land to olive production because a pathogen called HLB disease is destroying citrus groves, spurring the need for alternative crops that can be grown in the Florida climate. Olives are one such crop. Mr. Garcia expressed his hope that the olive industry in Florida (and throughout the U.S.) will grow and follow a path to success in export markets like that of the U.S. wine and nut industries. He stated, however, that high European tariffs and EU support payments to olive growers are obstacles to the growth of the U.S. industry, especially in export markets.

## **Georgia Department of Agriculture<sup>13</sup>**

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Ms. Synde Smith, of the Department of Agriculture of Georgia state, testified on behalf of Commissioner Gary W. Black that, like other agricultural crops such as blueberries, olive production in Georgia has the potential for significant expansion. Ms. Smith stated that olive growers in Georgia receive little assistance from government programs other than extension assistance for research and development. Ms. Smith also reported that olive growers in the state had been able to meet environmental regulations. She also predicted that consumer preference for domestic or locally grown olive oil could be an important factor in U.S. demand.

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<sup>12</sup> USITC, hearing transcript, December 5, 2012, 245–249 (testimony of Michael Garcia, Florida Olive Council); Michael Garcia, written testimony to the USITC, December 5, 2012.

<sup>13</sup> USITC, hearing transcript, December 5, 2012, 243–247 (testimony of Synde Smith, Georgia Department of Agriculture).

## Georgia Olive Farms<sup>14</sup>

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According to Mr. Jason Shaw, president of Georgia Olive Farms, the company is a producer of olives and olive oil in the Lakeland, Georgia area. Mr. Shaw reported that Georgia Olive Farms first planted olive trees in 2009 and first produced olive oil in 2011. Mr. Shaw estimated that within five years, a dozen olive growers in Georgia were expected to be growing olives on over 500 acres. He stated that an expansion of olive production similar to the expansion for pecans and blueberries could result in an increase of 100,000 to 150,000 acres in olive production, but testified to his belief that U.S. olive production was constrained by European support programs for olive oil, estimated at over two billion euros annually.

## Golden Olive Ranch<sup>15</sup>

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In a written submission to the USITC, Golden Olive Ranch of Hughson, California, detailed the firm's decision to first plant olives in 2009, and its subsequent decision to remove its olive trees due to low prices caused by a combination of low-cost imports and fraudulence in olive oil labeling. The submission noted that when the firm made the decision to first plant olives, it was offered a price of \$18 per gallon for its oil. It stated that two years later, prices had dropped below \$10, imports had risen, and import prices had declined to a level that appeared to be below the cost of production. The submission stated that the situation was exacerbated by the presence of fraudulent and adulterated olive oils being misrepresented to the American consumer by mislabeling and false advertising—a direct result of the lack of enforcement of grade standards for olive oil. The submission emphasized that sales of domestic olive oil will never be able to compete fairly with fraudulent imported oils sold at below-market prices. The firm noted that its \$5 million investment in 500 acres of olive trees was a total loss, and that it made the decision to exit the market in the absence of a level playing field for U.S. olive oil growers.

## JCS Tradecom<sup>16</sup>

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John Sessler testified on behalf of JCS Tradecom, a family-owned olive oil importer. Mr. Sessler is also the current chairman of the North American Olive Oil Association (NAOOA). He stated that JCS Tradecom has developed a retail brand, ZOE, that includes a number of different olive oil products with different flavor profiles, production practices, and price points. The company sources its oil from many different regions, including Greece, Spain, and California, although its blends do not mix olive oils from different countries. According to Mr. Sessler, JCS Tradecom participates in the NAOOA's Seal Certification program, and it markets its products at independent gourmet

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<sup>14</sup> USITC, hearing transcript, December 5, 2012, 235–238 (testimony of Jason Shaw, Georgia Olive Farms).

<sup>15</sup> Golden Olive Ranch, written submission to the USITC, February 11, 2013.

<sup>16</sup> USTIC, hearing transcript, December 5, 2012, 126–133 (testimony of John Sessler, JCS Tradecom).

shops, high-end retail grocery stores, and online retailers, in addition to supplying private label and foodservice companies.

Mr. Sessler stated that the company observes increasing market segmentation and product differentiation in the U.S. olive oil market. He explained that having the ability to offer a broad range of products is one reason the company sources from many different regions and countries. While there are many price points and quality options for olive oil, Mr. Sessler stated that olive oil should not be a luxury or elite product, but one that all consumers can enjoy for its flavor, versatility, and health benefits. Mr. Sessler pointed out that JCS Tradecom's business depends on integrity and maintaining customers' trust. According to Mr. Sessler, the firm works with producers in Spain, Greece, and California to ensure internal quality requirements, and each shipment is accompanied by the appropriate IOC tests to ensure the authenticity and quality of the product. Mr. Sessler said that a federal marketing order would not be effective in enhancing standards or stemming fraudulent activity.

## **Next Door Pantry, LLC<sup>17</sup>**

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Next Door Pantry is a marketer of Texas-grown olive oil, according to Abigail Rutledge, president of the company. Ms. Rutledge testified about market competition with imported olive oil and perceived fraud in the labeling of imported olive oil. Ms. Rutledge asserted that most U.S. consumers do not have much experience with the taste of extra virgin olive oil, and without that experience, have only price as a criterion. She also asserted that U.S. olive oil producers lack the advantages of the government support and established infrastructure enjoyed by olive oil producers in the Mediterranean region. She compared the current situation facing U.S. olive oil producers today to the situation facing U.S. wine producers 40 years ago. She also reported that the Texas Olive Oil Council had adopted technical standards that are equivalent to those of the California Olive Oil Council.

## **North American Olive Oil Association<sup>18</sup>**

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The North American Olive Oil Association (NAOOA) stated that it represents the companies that account for the majority of the olive oil sold in the United States, through membership of importers, purchasers, and distributors. The NAOOA said that it is concerned with maintaining the availability of olive oil in the U.S. market and providing consumers with all grades of olive oil; it also focuses on consumer education and the promotion of the health benefits of all grades of olive oil.

According to written submissions by the NAOOA, one of their priorities is the establishment of "universal, objective, and mandatory grade standards" for olive oil, as well as a testing regime to enforce such standards. The group believes the best path is

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<sup>17</sup> USITC, hearing transcript, December 5, 2012, 251–254 (testimony of Abigail Rutledge, Next Door Pantry).

<sup>18</sup> North American Olive Oil Association, written submissions to the USITC, November 21, 2012; December 17, 2012; and February 12, 2013; USITC, hearing transcript, December 5, 2012, 126–133 (testimony of Eryn Balch, North American Olive Oil Association).

through a Food and Drug Administration (FDA) standard of identity, which would make current USDA standards mandatory and allow for both government and private company testing and enforcement. Ms. Eryn Balch, the executive vice president of NAOOA, makes it clear in the hearing testimony that the USDA standards—which are largely based on the IOC standard—should be adopted as they currently stand. The NAOOA asserts that the IOC standards govern most of the olive oil produced globally and have scientific backing, while still being dynamic enough to work well in the United States. In the absence of mandatory standards, the NAOOA explained in the hearing testimony that it takes it upon itself to test the oils of both members and nonmembers, alerting each offender if there is something amiss with either the oil or the bottle label. The NAOOA has also established a Certified Quality Seal Program, where companies are subject to more frequent testing, including random chemical tests straight from bottles bought off supermarket shelves.

In written submissions to the USITC, the NAOOA stated that a USDA marketing order is not the best and most efficient way to monitor the U.S. olive oil market for many reasons. The NAOOA pointed out that first, the United States imports the vast majority of its domestically consumed olive oil; if a USDA marketing order were to apply to imports, very large quantities of imported oil would be subject to not only increased testing costs, but also delays at the port while testing occurs. The NAOOA, in written submissions, asserts that since olive oil is a highly perishable product, these delays would result in diminished olive oil quality for consumers. Second, the NAOOA estimates that a marketing order would likely target every import lot, while an FDA standard of identity would take a more risk-based approach and therefore be more efficient. Third, the NAOOA added that a marketing order would only test olive oil at the port of entry, and, according to Ms. Balch's hearing testimony, would not prevent fraudulent activity from taking place once inside the United States. Lastly, in response to suggestions that new chemical tests, such as the pyropheophytins (PPPs) and 1,2-diacylglycerol (DAGs), should be included in order to make the standards more stringent, NAOOA argued that these tests are unreliable, are inconsistent, and do not accurately measure the purity or quality of olive oil.

The NAOOA also asserted in its written submissions that the growth of the domestic olive oil industry is not being stunted by imports. According to the NAOOA, the domestic industry targets different consumer segments and therefore faces little direct competition from imports. In addition, the NAOOA stated that the decoupled support given to olive growers through the EU is not passed downstream to bottling companies, meaning it does not suppress prices of imports in the U.S. market.

## **Pompeian, Inc.**<sup>19</sup>

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Pompeian, Inc., is a U.S. importer of olive oil and other Mediterranean foods. Frank Patton, CFO and president of Pompeian Olive Oil Company, noted that Pompeian had been importing olive oil in bulk, blending and bottling the oil at its facility in Baltimore, Maryland, since 1906. Mr. Patton testified that in order to ensure a consistent, unique flavor profile and other factors, such as the stability of the product, Pompeian's extra virgin olive oil is blended from extra virgin olive oil from a variety of sources, including

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<sup>19</sup> USITC, hearing transcript, December 5, 2012, 28–31 (testimony of Frank Patton, Pompeian Inc.).



from California, and from different varieties of olives. He explained that in order to ensure the shelf life of its extra virgin olive oil, the oil is packaged in bottles designed to limit exposure to ultra-violet light.

Mr. Patton testified that Pompeian conducts chemical and sensory tests of oil samples before purchase, and continues to test the oil at various stages of processing, including testing of oil purchased from retail establishments. Mr. Patton testified that in addition to its own internal testing regime, Pompeian is the first U.S. olive oil company to participate in the USDA voluntary quality monitoring program, and also participates in the North American Olive Oil Association Quality Seal Program in order to ensure that the extra virgin oil meets applicable quality standards. Mr. Patton testified that Pompeian decided to participate in the USDA quality monitoring program because other government agency regulations, such as those of the FDA, are concerned with safety, but do not address product quality.

## **Santa Cruz Olive Tree Nursery<sup>20</sup>**

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Santa Cruz Olive Tree Nursery is a commercial producer of olive trees for planting in both super-high-density (SHD) and traditional production systems located in Watsonville, CA. In a written submission to the USITC, Santa Cruz Olive Tree Nursery provided comments about the need for standards in the U.S. olive oil market. The submission noted that existing olive oil standards from the IOC and USDA cover both purity and quality of olive oil. However, the submission states that current quality standard limits are easy to meet so that even were these standards to be enforced in the U.S. market, American consumers would still lack assurance that the quality of oil they intended to purchase was what they actually received. The submission noted that newer chemical tests are available to test for quality which would address some of the deficiencies in the current testing regime. Furthermore, the submission states that IOC tests for olive oil purity discriminate against producers based on area and climate, which make them useless as scientific tools to screen out adulteration. In hearing testimony given at the USITC, the party noted that the IOC has demonstrated considerable resistance to changing any of its standards.

The submission emphasizes that the industry would be better served by a standard that focuses on measures of quality and diminishes the use of purity criteria, and states that a USDA marketing order would be the proper vehicle for developing a new framework that promotes clear and cost effective grading standards for the benefit of the entire olive oil sector and for U.S. consumers. In testimony given at the USITC, the firm noted that confusion of the consumer regarding olive oil quality is a major hurdle for the California industry, and this confusion is driven by the current system of grades and labeling. It added that if this confusion were alleviated, then the industry could move forward based on quality.

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<sup>20</sup> Santa Cruz Olive Tree Nursery, written submission to the USITC, November 28, 2012; USITC, hearing transcript, December 5, 2012, 27–31 (testimony of Bruce Golino, Santa Cruz Olive Tree Nursery).

## Senator Lois Wolk<sup>21</sup>

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In a written submission to the USITC, California State Senator Lois Wolk, chair of the California Senate Subcommittee on Olive Oil Production and Emerging Products, noted the work of the Subcommittee in assisting the olive oil industry in meeting the challenges of a healthy and growing industry. One of the actions of the subcommittee highlighted in the submission was the convening of an informational hearing on January 26, 2012, entitled *Challenges Facing California's Olive Oil Industry*, and the submission includes a transcript of this hearing.

This hearing investigated the competitive, quality, and authenticity issues of olive oil and included three panels of witnesses: the first panel was dedicated to the topic of extra virgin olive oil fraud, the second panel related the California olive oil industry perspective, and the third panel highlighted the world view of the industry from the perspective of both North American importers and Australian olive oil producers. Recurring themes presented throughout the hearing included issues of olive oil quality and authenticity. Domestic producers emphasized that a lack of enforcement of standards makes it difficult for producers of true extra virgin olive oil to compete in this market. There was some disagreement at the hearing, however, as to the pervasiveness of olive oil adulteration in the U.S. market.

Aside from the hearing, Senator Wolk's submission noted that California was the first state to establish quality standards for extra virgin olive oil. The submission concluded by emphasizing the potential of California's olive oil industry to produce a healthy product that is ideally suited to the state's climate and growing conditions. The submission warns, however, that continuing to allow mislabeled, fraudulent, and corrupt product to be sold as extra virgin olive oil does a disservice to growers, producers, and consumers in this growing market.

## Texas Olive Ranch<sup>22</sup>

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In written and oral testimony, Mr. Jim Henry, who owns Texas Olive Ranch and is also the founding director of the Texas Olive Oil Council, described the expansion of the Texas olive oil industry and the challenges to its growth. Mr. Henry explained that he started growing olives in Texas on an experimental basis in 1993 and began commercial production in 2007. At present, he is in the process of investing in expanded olive growing in the Victoria, Texas, area, which offers a more suitable climate than that found around his existing groves, which are located further southwest. According to Mr. Henry, his expansion is part of an overall expansion of Texas olive growing and milling capabilities in recent years. He said he believes the industry in Texas offers significant potential, especially for sales in channels like farmers' markets, where customers can see and taste the product.

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<sup>21</sup> Senator Lois Wolk, written submission to the USITC, January 15, 2013.

<sup>22</sup> USITC, hearing transcript, December 5, 2012, 242–245 (testimony of Jim Henry, Texas Olive Ranch); Jim Henry, written testimony to the USITC, December 5, 2012.

Despite this growth potential, according to Mr. Henry, there are numerous challenges to the olive oil industry in Texas. He said that among these are lack of consumer awareness of the availability of locally produced olive oil and of the differences in flavor between the local product and imports; unavailability of crop insurance and financing due to the nascent status of the industry in Texas; lack of sufficient economies of scale; and competition from lower-priced imports from Europe, which, in Mr. Henry's view, are able to sell at low prices due to government assistance provided by the European Union and national governments in Europe.

## **Tom Mueller<sup>23</sup>**

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Tom Mueller stated that he is a freelance journalist and author based out of Italy who has extensively covered the olive oil industry worldwide. Mr. Mueller pointed out that fraud has plagued the olive oil industry going back to the Roman Empire, as it is a valuable and expensive vegetable oil that can easily be mixed with less expensive oils. Mr. Mueller stated that U.S. consumers usually buy extra virgin olive oil for its flavor and for health reasons and that inferior olive oil undermines the consumer in this regard. According to Mr. Mueller, quality is the key component on which consumer should base their buying habits, rather than specific geographic or other labels.

Mr. Mueller stated that olive oil quality is not a matter of nationality, as high- and low-quality oils are produced all over the world. He said he believes that responsibility for fraudulent sales and marketing lie with U.S. authorities that do not properly enforce existing laws, with international olive oil organizations that look after the interests of members at the expense of the market's reputation, and with the International Olive Council, which has been too slow to respond to the need for quality standards.

## **University of California at Davis, Olive Center<sup>24</sup>**

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The University of California at Davis Olive Center (Olive Center) stated that it is a self-funded university-industry coalition that promotes olive research and education, addressing the needs of California olive growers and processors. In addition, the Olive Center noted that it provides fee-based laboratory analysis of olive oil for the public.

The Olive Center said that it conducted three recent studies on olive oil, funded in part by the California olive oil industry, which found that a large share of olive oil sold in U.S. supermarkets did not meet the IOC minimum standards or were adulterated. It stated that the three studies on olive oil quality analyzed 207 samples purchased from U.S. supermarkets and foodservice distributors and found that 65 percent of Mediterranean olive oil samples did not meet the IOC's minimal sensory standards for extra virgin, and that two of the samples were adulterated with canola oil.

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<sup>23</sup> USITC, hearing transcript, December 5, 2012, 37–42 (testimony of Tom Mueller); Thomas B. Mueller, written submission to the USITC, November 29, 2013.

<sup>24</sup> University of California (UC) Davis, written testimony to the USITC, December 5, 2012, 34–37 (testimony of Selina Wang, UC Davis); UC Davis, written submission to the USITC, February 12, 2013; December 5, 2012.

Olive Center researchers reported that the studies they conducted used DAGs and PPP tests, which, they noted, the IOC claims to be unreliable. The Olive Center stated that it has been unable to review the scientific basis for the IOC claim, however, because the IOC has not released its scientific justification to the public. The Olive Center states, however, that the International Organization for Standardization (ISO) has recognized the DAGs and PPP tests after years of scientific review. In its support for the tests, the Olive Center notes that although these tests are not perfect, they are preferable to the current loose IOC chemical standards. Olive Center researchers state that the DAGs and PPPs levels in olive oil are directly related to the age of the olives used to produce it, so the results of testing their levels are very closely related to the age and the freshness of the oil and correlate best with sensory characteristics. The Olive Center has recommended that the USDA add the DAGs and PPP tests to U.S. standards.

The UC Davis Olive Center noted that it currently offers DAGs and PPP testing as a service to the California olive oil industry and reports that currently there are no other U.S. labs offering such testing. Olive Center staff asserted that in view of the university's overhead expenses, the Olive Center does not view testing as a moneymaking activity; rather, the Olive Center provides this testing with the goal that other labs will start doing this type of testing and drive down its costs in the future.

Researchers from the Olive Center state that they are also working with Spanish researchers, who, they note, have vast experience in olive oil research, as well as chemical manufacturers, to develop specific instruments for olive oil testing—ones that can identify other chemical markers that would correlate to organoleptic flaws in olive oil. Researchers at the Olive Center, along with lipid scientists around the world, believe that modern chemical testing techniques, including chromatography and spectrography, can be used to correlate and identify chemical markers that identify a threshold level for a flaw. The researchers stated that these flaws include rancidity, fustiness, and mustiness, which are all indicators of problems either with the olives that were used to produce the olive oil, the way it was produced, or the way it was stored.

In response to questions about the subjective and objective nature of olive oil sensory analysis, the Olive Center stated that objective sensory testing is a valid scientific method used to measure the intrinsic sensory attributes of a sample and confirm and quantify the presence of sensory defects. The Olive Center said that sensory evaluation has been endorsed and accepted by various professional organizations, such as the Institute of Food Technologists and the American Society for Testing and Materials. The Olive Center stated that objective sensory testing is endorsed as well by the IOC. The Olive Center explained that the IOC provides written standards for objective sensory evaluation, including definitions for the vocabulary of sensory properties and defects, a point system for assigning grades or classifications, methods for panel training, and certification of laboratories evaluating olive oil. By contrast, according to the Olive Center, subjective sensory evaluation measures an assessor's feelings toward a sample and is clearly not appropriate for olive oil assessments.

## **University of Georgia, Center for Agribusiness and Economic Development<sup>25</sup>**

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Dr. Kent Wolfe, of the University of Georgia's Center for Agribusiness and Economic Development, presented a comparison of olive oil production costs in the state of Georgia with those in Spain. He testified that the subsidy provided by the European Commission to olive producers in Spain lowers these producers' ongoing costs for olive production from slightly below those of producers in Georgia to "substantially" below those of producers in Georgia. He testified that, as a result, Georgia's olive oil industry was retarded in its growth from a niche market to a mature industry.

## **Yocha Dehe Wintun Nation<sup>26</sup>**

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Chairman Marshall McKay testified on behalf of the Yocha Dehe Wintun Nation. Chairman McKay stated that he is the elected tribal chairman of the sovereign, federally recognized tribal nation. He noted that the nation is located in California and is a producer of olive oil, managing over 11,000 acres of land that grow over a dozen crops and 300 head of cattle. Chairman McKay stated that the nation is committed to preserving the land for future generations with a focus on responsible stewardship and sustainability. According to Chairman McKay, the Yocha Dehe planted 82 acres of high-density Arbequina olive trees in 2008; additionally, since the closest mill was two and a half hours away and freshness is essential to their olive oil production, the Yocha Dehe built their own state-of-the-art mill to produce their oil, as well as oil made from the olives of many other local olive producers.

Chairman McKay reported that the Yocha Dehe believe that the U.S. olive oil market should be fair for producers and consumers, pointing to recent studies indicating that some product on the market does not meet quality standards. The Yocha Dehe support the recommendations proposed by the University of California at Davis report that would raise standards, improve and increase testing, and conduct research to improve packaging in order to preserve freshness. Chairman McKay noted that the Yocha Dehe product marketed at several small retail stores competes against lower-priced imported extra virgin olive oil, but that these products should be more expensive due to import costs alone. According to the Chairman, this indicates that something in the market is not right. Chairman McKay stated that U.S. consumers suffer because they are buying products that are mislabeled in the marketplace.

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<sup>25</sup> USITC, hearing transcript, December 5, 2012, 240–244 (testimony of Kent Wolfe, University of Georgia).

<sup>26</sup> USITC, hearing transcript, December 5, 2012, 158–163 (testimony of Chairman Marshall McKay, Yocha Dehe Wintun Nation).



## **APPENDIX E**

### **Consumer Demand for Olive Oil: Econometric Results from Retail Scanning Data**

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This appendix provides detail on the econometric estimates of demand reported in chapter 4. These estimates are based on retail scanning data provided by Nielsen. The analysis estimates consumer preferences for olive oil using the geographic splits in the data to control for unobservable factors, using panel data methods.

## Data

The Nielsen data contain revenue and units sold information for olive oil products at the universal product code (UPC) level. These data are reported at different geographic aggregations. Panels are formed by using data for nine U.S. Census divisions over three years at a weekly frequency (156 weeks). The observed sales correspond to the period February 2010–February 2013.

As many as 2,275 different UPCs were observed in the data. Many of the UPCs, however, represent different presentations of the same product, with variations by size or type of packaging.<sup>1</sup> These UPCs were aggregated for each brand, oil grade and oil source combination. For instance, STAR Extra Virgin and STAR Extra Virgin California stand as two product choices. Product prices were harmonized to dollars per liter.

These data are further aggregated into five product groups for which their demand is estimated.<sup>2</sup> The first three groups split the extra virgin oils, which together account for the majority (63.7 percent) of the observed sales, according to whether the products are domestic or foreign, and if foreign, whether they are branded or unbranded. The fourth group comprises the flavored olive oils, and the fifth group includes other refined olive oils that are virgin, light taste, etc. The specific 5 groups are listed in table E.1, along with their respective market shares by value.

**TABLE E.1** Defined product groups and market shares

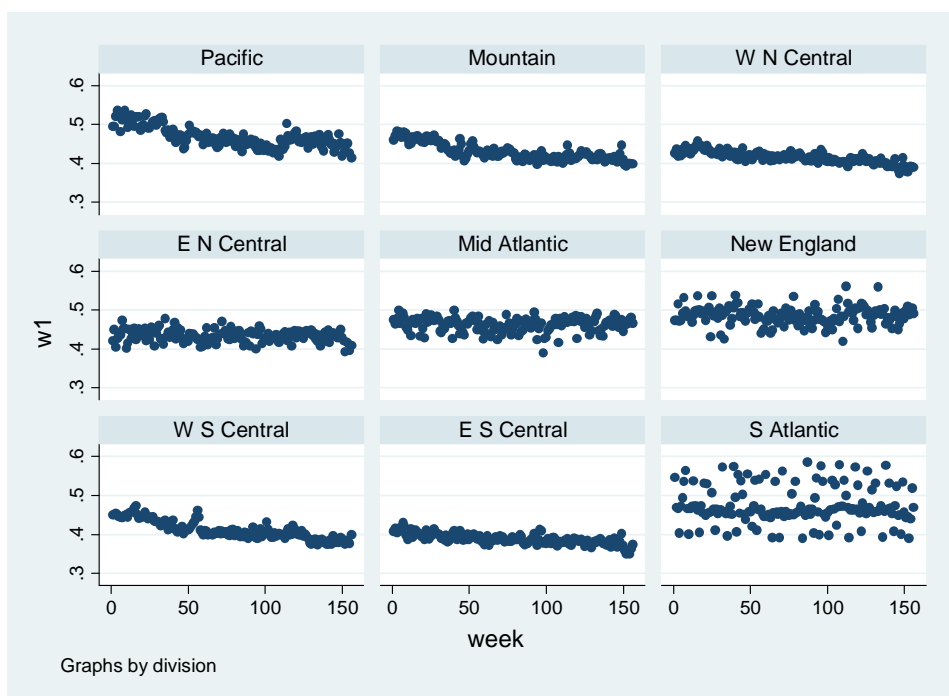
Group	Abbreviation	Description	Market share
1	BRA_EV_F	Branded extra virgin foreign	45.2
2	UNB_EV_F	Unbranded extra virgin foreign	17.5
3	BRA_EV_D	Branded extra virgin domestic	1.1
4	__FL__	Flavored oils, whether or not branded, whether or not foreign	1.1
5	__OT_F	Other refined oils, all of which are foreign, whether or not branded	35.1

Expenditure shares for the product groups are further explored by division and over time in figures E.1–E.5. These figures show substantial differences in market share trends by product group and divisions. Figure E.3 shows the small market share for the domestic olive oil, in many divisions very close to zero. It also shows a growing trend, but mainly in the West (Pacific and Mountain). In contrast, foreign branded extra virgin oils, with the largest market share levels overall, have maintained market shares in the Northeast (Mid Atlantic and New England), while lost market shares in the West (figure E.1).

<sup>1</sup> For instance, a popular product, Bertolli Extra Virgin, is identified in the data with 12 UPCs, depending on bottle size and material.

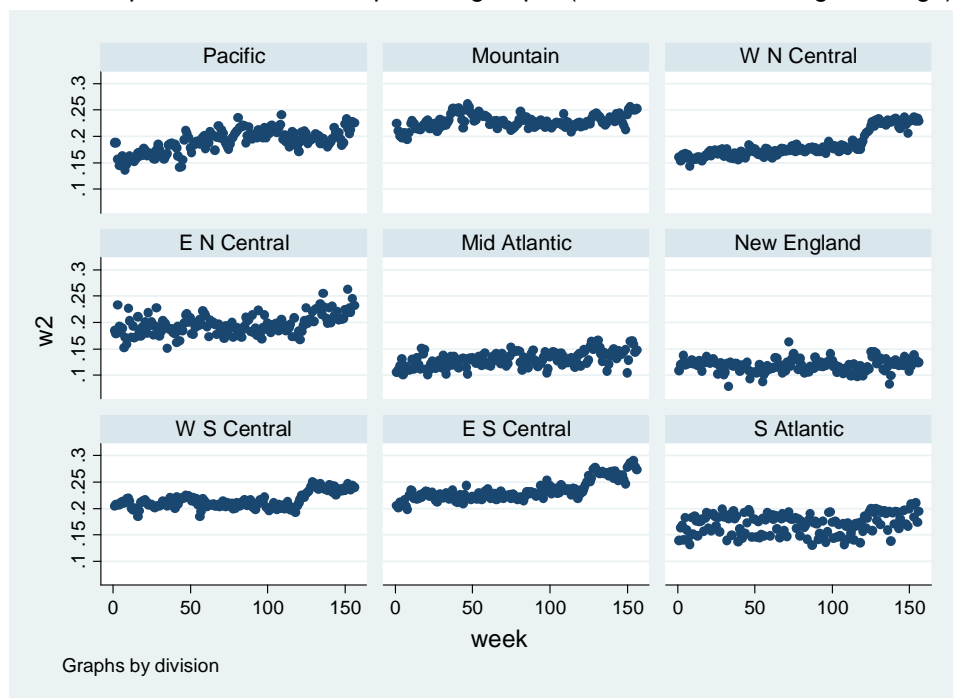
<sup>2</sup> Consumers may exhibit preferences over brands and demand analyses at the brand level are common in demand estimation for differentiated products. See, e.g., Hausman et al., “Competitive Analysis with Differentiated Products,” 1994; Hausman, “The Valuation of New Goods under Perfect and Imperfect Competition,” 1996. The large number of brands in the data, however, renders such analysis unfeasible.

**FIGURE E.1** Expenditure shares for product group 1 (branded, extra virgin, foreign)



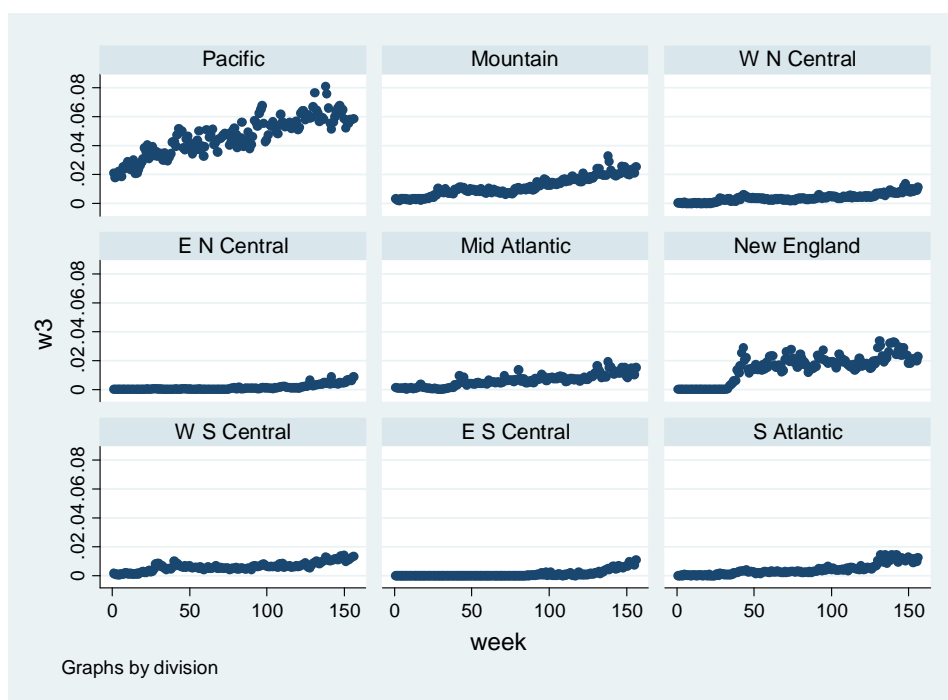
Sources: Nielsen, U.S. Retail Market Data, 2013; USITC staff estimates.

**FIGURE E.2** Expenditure shares for product group 2 (unbranded, extra virgin, foreign)



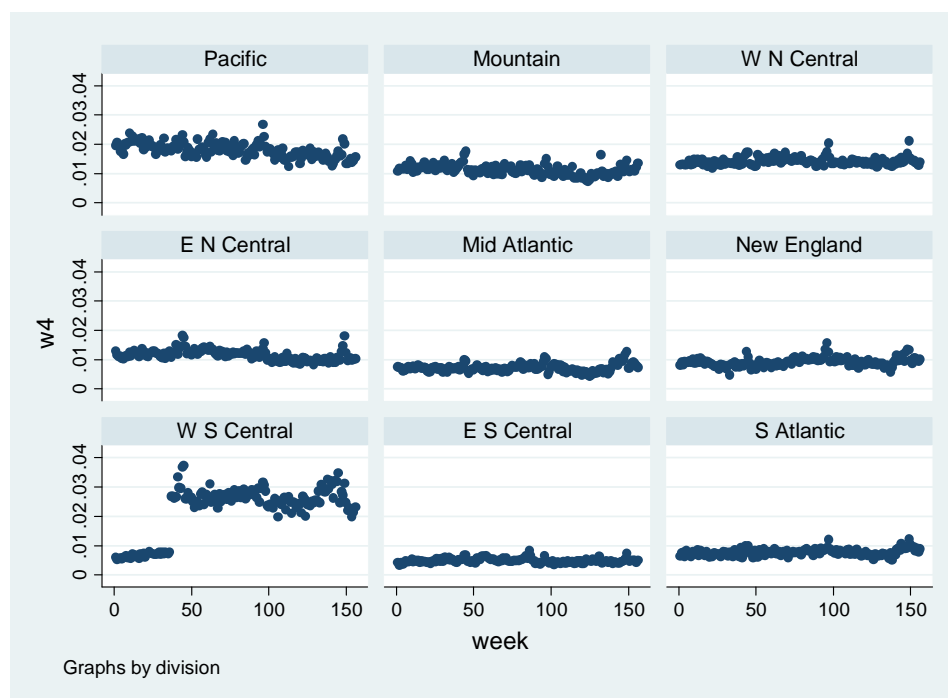
Sources: Nielsen, U.S. Retail Market Data, 2013; USITC staff estimates.

**FIGURE E.3** Expenditure shares for product group 3 (branded, extra virgin, domestic)



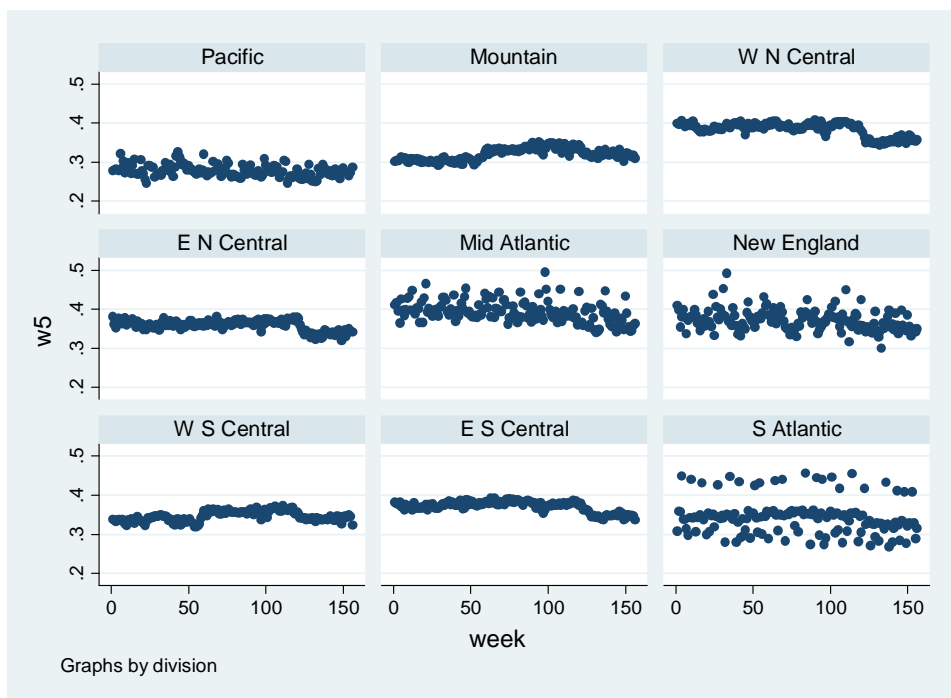
Sources: Nielsen, U.S. Retail Market Data, 2013; USITC staff estimates.

**FIGURE E.4** Expenditure shares for product group 4 (flavored olive oil)



Sources: Nielsen, U.S. Retail Market Data, 2013; USITC staff estimates.

**FIGURE E.5** Expenditure shares for product group 5 (other refined olive oil)



Sources: Nielsen, U.S. Retail Market Data, 2013; USITC staff estimates.

## Base Model

The analysis is conducted at the product-group level and demand is estimated using an Almost Ideal Demand System (AIDS) model.<sup>3</sup> In its basic form, the model specifies the system of equations

$$w_{idt} = \alpha_i + \beta_i \ln(m_{dt} / P_{dt}) + \sum_j \gamma_{ij} \ln p_{jdt} + \varepsilon_{idt}, \text{ for } i = 1, \dots, J \quad (1)$$

$$\ln P_{dt} = \alpha_0 + \sum_i \alpha_i \ln p_{idt} + \frac{1}{2} \sum_i \sum_j \gamma_{ij} \ln p_i \ln p_j \quad (2)$$

where the dependent variables  $w_{idt}$  are the expenditure shares of olive oil product group  $i$  in division  $d$  at time  $t$ . These shares are modeled in terms of price indices for each of the product groups  $p_{jdt}$  and total expenditure on olive oil (i.e., across the five olive oil groups)  $m_{dt} \cdot P_{dt}$ , in turn, is the exact price index for the system, as defined in equation (2).

<sup>3</sup> Deaton and Muelbauer, "An Almost Ideal Demand System," 1980.

A linearized version of the AIDS model (LA-AIDS), also suggested by Deaton and Muellbauer, uses the Stone price index  $\ln P_{dt} = \sum_j w_{jdt} \ln p_{jdt}$  in place of the nonlinear index in (2). This version is widely applied in the empirical literature because of its computational convenience. To reduce potential bias from endogeneity, fixed-weights are often used

$$\ln P_{dt} = \sum_j \bar{w}_{jd} \ln p_{jdt} \quad (3)$$

where  $\bar{w}_{jd}$  are the average expenditure shares over the whole data period by product group and division.

## Estimated Demand

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The demand system in (1) is estimated with the inclusion of product-division fixed effects  $\alpha_{id}$  and product-division trends  $\lambda_{id}t$ . The former are included to account for time-invariant differences in demographics or preferences, and the latter to account for changes in demographics or preferences, possibly at varying rates, across the country. Thus, the model that is fitted to the data becomes

$$w_{idt} = \alpha_i + \alpha_{id} + \lambda_{id}t + \beta_i \ln(m_{dt} / P_{dt}) + \sum_j \gamma_{ij} \ln p_{jdt} + \varepsilon_{idt}, \text{ for } i = 1, \dots, J \quad (4)$$

which is estimated both as an AIDS and LA-AIDS by seemingly unrelated regressions (SUR), after imposing the typical restrictions from consumer maximization:  $\sum_i \alpha_i = 1$ ,  $\gamma_{ij} = \gamma_{ji}$  for all  $i$  and  $j$ ,  $\sum_j \gamma_{ij} = 0$  for all product  $i$ , and  $\sum_i \beta_i = 0$

Similar to the price index for the system, price indices for each of the product groups  $p_{jdt}$  were approximated from the product-level data using a Stone index,  $\ln p_{jdt} = \sum_k \bar{w}_{kd} \ln p_{kdt}$ , where  $p_{kdt}$  are the prices of all products  $k$  in group  $j$ . Alternate approximations were used and the results reported for robustness.<sup>4</sup>

Estimated model parameters, which cannot be interpreted directly as elasticities, are shown in table E.2.<sup>5</sup> Parameter estimates and reported mean values in the table, however, can be used to form elasticities. Results in table E.2, especially derived elasticity estimates, are robust to the choice of an AIDS or LA-AIDS model, so further analyses rely on the linear model.

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<sup>4</sup> A similar analysis in the literature uses proxy  $p_{jdt} = \sum_k w_{kdt} p_{kdt}$  and instrumental variables to address the potential endogeneity bias from this index. See Chaudhuri et al., “Estimating the Effects of Global Patent Protection in Pharmaceuticals,” 2006.

<sup>5</sup> Parameters not shown (e.g., for group 5 in table E.1) can be easily retrieved by the imposed restrictions on symmetry and homogeneity of degree zero in prices and total expenditures.

**TABLE E.2** Estimated parameters for 5 product group model

	AIDS				LA-AIDS			
	$i = 1$	$i = 2$	$i = 3$	$i = 4$	$i = 1$	$i = 2$	$i = 3$	$i = 4$
$\hat{\gamma}_{i1}$	-0.340 (0.121)				-0.337 (0.114)			
$\hat{\gamma}_{i2}$	0.109 (0.038)	-0.220 (0.028)			0.105 (0.032)	-0.213 (0.027)		
$\hat{\gamma}_{i3}$	0.005 (0.007)	-0.006 (0.004)	0.000 (0.001)		0.004 (0.005)	-0.005 (0.004)	0.000 (0.001)	
$\hat{\gamma}_{i4}$	-0.014 (0.012)	0.007 (0.006)	-0.001 (0.000)	0.017 (0.010)	-0.015 (0.012)	0.009 (0.007)	-0.001 (0.000)	0.018 (0.010)
$\hat{\beta}_i$	0.013 (0.029)	-0.025 (0.016)	-0.004 (0.001)	-0.008 (0.002)	0.013 (0.030)	-0.025 (0.016)	-0.004 (0.001)	-0.008 (0.002)
Own price elast.	-1.778 (0.281)	-2.103 (0.148)	-0.992 (0.095)	0.380 (0.776)	-1.778 (0.281)	-2.106 (0.147)	-0.993 (0.095)	0.377 (0.773)
<u>Mean values</u>								
$\bar{w}_1$	0.441							
$\bar{w}_2$	0.188							
$\bar{w}_3$	0.012							
$\bar{w}_4$	0.013							
$\bar{w}_5$	0.346							
$\ln(\bar{m}/\bar{P})$	12.499							

Note: Estimated by SUR. Regressions also include product fixed effects, product-division fixed effects, and product-division trends. Robust standard errors with clustering in parenthesis.  $N = 1,092$ .

All estimated own-price, cross-price, and expenditure elasticities for the five product groups are in table E.3. For the most part estimated elasticities show the expected sign. All own-price elasticities are negative, except for the flavored olive oils. For that category, its own-price elasticity flips from a positive to a negative value depending on the choice of index used to aggregate the product prices. This sensitivity to the price index is consistent with considerable product churning in this category. Cross-price elasticities in the fourth column also show that the price of flavored olive oil does not have a significant effect on the demand for any of the other product categories in the system. Based on these results, the flavored olive oils were excluded from the analysis and the demand system re-estimated for all non-flavored olive oils. Estimated elasticities for this model are shown in table E.4. Table E.5 provides standard errors for the benchmark specification.

**TABLE E.3** Estimated price and expenditure elasticities (all olive oil)

Product-group price index		p1	p2	p3	p4	p5	m
<i>Benchmark:</i>							
$\ln \hat{p}_{jdt} = \sum_k \bar{w}_{kd} \ln p_{kdt}$	q1: BRA_EV_F	-1.778	0.233	0.010	-0.035	0.540	1.030
	q2: UNB_EV_F	0.617	-2.106	-0.023	0.049	0.595	0.869
	q3: BRA_EV_D	0.529	-0.333	-0.993	-0.057	0.202	0.652
	q4: ____FL__	-0.878	0.789	-0.048	0.377	-0.633	0.392
	q5: ____OT_F	0.672	0.287	0.002	-0.033	-1.997	1.069
<i>Robustness checks:</i>							
$\hat{p}_{jdt} = \sum_k w_{kdt} p_{kdt}$	q1: BRA_EV_F	-1.833	0.231	0.015	-0.005	0.604	0.988
	q2: UNB_EV_F	0.538	-2.093	-0.048	0.041	0.565	0.997
	q3: BRA_EV_D	0.660	-0.721	-1.091	0.054	0.325	0.774
	q4: ____FL__	0.038	0.688	0.052	-0.757	-0.510	0.489
	q5: ____OT_F	0.746	0.299	0.008	-0.027	-2.070	1.043
$\hat{p}_{jdt} = \sum_k \bar{w}_{kd} p_{kdt}$	q1: BRA_EV_F	-1.631	0.218	0.015	-0.041	0.402	1.036
	q2: UNB_EV_F	0.590	-2.100	-0.037	0.064	0.627	0.856
	q3: BRA_EV_D	0.741	-0.546	-1.031	-0.050	0.233	0.652
	q4: ____FL__	-1.107	0.989	-0.043	0.369	-0.663	0.455
	q5: ____OT_F	0.500	0.302	0.003	-0.033	-1.837	1.066
$\ln \hat{p}_{jdt} = \sum_k w_{kdt} \ln p_{kdt}$	q1: BRA_EV_F	-1.796	0.257	0.012	-0.010	0.545	0.993
	q2: UNB_EV_F	0.591	-2.080	-0.037	0.051	0.459	1.015
	q3: BRA_EV_D	0.545	-0.539	-1.049	0.045	0.226	0.772
	q4: ____FL__	-0.081	0.856	0.045	-0.601	-0.599	0.380
	q5: ____OT_F	0.677	0.247	0.005	-0.031	-1.930	1.033

*Note:* Elasticities are conditional on total expenditures on olive oil. Elasticities evaluated at mean values.

**TABLE E.4** Estimated price and expenditure elasticities (all nonflavored olive oil)

Product-group price index		p1	p2	p3	p4	m
<i>Benchmark:</i>						
$\ln \hat{p}_{jdt} = \sum_k \bar{w}_{kd} \ln p_{kdt}$	q1: BRA_EV_F	-1.792	0.235	0.009	0.528	1.020
	q2: UNB_EV_F	0.619	-2.058	-0.025	0.598	0.865
	q3: BRA_EV_D	0.495	-0.350	-1.002	0.226	0.630
	q4: ____OT_F	0.656	0.289	0.003	-2.008	1.060
<i>Robustness checks:</i>						
$\hat{p}_{jdt} = \sum_k w_{kdt} p_{kdt}$	q1: BRA_EV_F	-1.833	0.234	0.015	0.601	0.983
	q2: UNB_EV_F	0.548	-2.038	-0.046	0.553	0.983
	q3: BRA_EV_D	0.636	-0.688	-1.113	0.398	0.767
	q4: ____OT_F	0.742	0.291	0.010	-2.082	1.039
$\hat{p}_{jdt} = \sum_k \bar{w}_{kd} p_{kdt}$	q1: BRA_EV_F	-1.655	0.224	0.014	0.391	1.027
	q2: UNB_EV_F	0.602	-2.049	-0.037	0.633	0.852
	q3: BRA_EV_D	0.678	-0.552	-1.052	0.292	0.635
	q4: ____OT_F	0.485	0.305	0.005	-1.854	1.058
$\ln \hat{p}_{jdt} = \sum_k w_{kdt} \ln p_{kdt}$	q1: BRA_EV_F	-1.796	0.257	0.011	0.542	0.987
	q2: UNB_EV_F	0.593	-2.018	-0.035	0.454	1.006
	q3: BRA_EV_D	0.508	-0.514	-1.065	0.298	0.772
	q4: ____OT_F	0.676	0.245	0.007	-1.949	1.022

*Note:* Elasticities are conditional on total expenditures in non-flavored olive oil. Elasticities evaluated at mean values.



**TABLE E.5** Price and expenditure elasticities (all nonflavored olive oil), national and Pacific

	National				
	p1	p2	p3	p4	m
q1: BRA_EV_F	-1.792 *** (0.274)	0.235 *** (0.065)	0.009 (0.011)	0.528 *** (0.199)	1.020 *** (0.067)
q2: UNB_EV_F	0.619 *** (0.180)	-2.058 *** (0.187)	-0.025 (0.023)	0.598 *** (0.107)	0.865 *** (0.081)
q3: BRA_EV_D	0.495 (0.427)	-0.350 (0.377)	-1.002 *** (0.098)	0.226 (0.199)	0.630 *** (0.116)
q4: ____OT_F	0.656 ** (0.279)	0.289 *** (0.071)	0.003 (0.007)	-2.008 *** (0.217)	1.060 *** (0.061)
	Pacific Division				
	p1	p2	p3	p4	m
q1: BRA_EV_F	-1.743 *** (0.258)	0.220 *** (0.061)	0.007 (0.009)	0.496 *** (0.189)	1.019 *** (0.062)
q2: UNB_EV_F	0.615 *** (0.179)	-2.043 *** (0.184)	-0.020 (0.022)	0.581 *** (0.108)	0.867 *** (0.080)
q3: BRA_EV_D	0.129 (0.109)	-0.089 (0.096)	-0.997 *** (0.025)	0.051 (0.051)	0.906 *** (0.029)
q4: ____OT_F	0.811 ** (0.346)	0.358 *** (0.088)	0.001 (0.009)	-2.245 *** (0.270)	1.075 *** (0.075)

*Note:* Elasticities are conditional on total expenditures in non-flavored olive oil. Elasticities evaluated at mean values. Robust standard errors with clustering in parenthesis. Significant at the 10 percent (\*), 5 percent (\*\*), and 1 percent (\*\*\*) level.

Expenditure elasticities are all larger than zero, indicating that olive oil is a normal good. All own-price elasticities are negative and significant at the 1 percent level, consistent with expectations. All foreign product categories show comparable own-price elasticities in the range of 1.8–2. The demand for the domestic variety, however, is significantly less sensitive to its own price, with an elasticity of about 1. Consistent with this last point, the demand for the domestic extra virgin olive oil shows significantly lower response to the prices of all other olive oils in the system. In fact these cross-price elasticities are not statistically different from zero.

Looking at the cross-price elasticities for the other product groups shows significant substitutability across all types of imported olive oils. Although these cross-price elasticities among the imported oils are not statistically different, the point estimates suggest some perceived quality from product branding that may be at least as important as the perceived quality from the oil grade.

## Nested Demand

An alternative demand system using a nested structure was briefly considered. At the top level, this model captures demand for olive oil grade (extra virgin versus other). The next level considers preference among foreign branded, foreign unbranded and domestic branded extra virgin oils (i.e., groups 1–3 in table E.1).

The lower-level system is estimated using an AIDS specification as in equation (4). That estimation yields elasticities conditional on expenditures on extra virgin oil that are shown in the top panel in table E.6. These results are not too different from the results obtained when demand for non-flavored olive oil is modeled using a single level (non-nested results discussed in table E.5).

**TABLE E.6** Extra virgin elasticities from a nested model

	Conditional elasticities		
	P1	P2	P3
q1: BRA_EV_F	-1.459	0.366	0.011
q2: UNB_EV_F	1.044	-1.833	-0.027
q3: BRA_EV_D	0.601	-0.452	-0.983
	Unconditional elasticities		
	P1	P2	P3
q1: BRA_EV_F	-1.138	0.077	-0.006
q2: UNB_EV_F	0.532	-1.051	-0.040
q3: BRA_EV_D	0.078	-0.674	0.004
	Unconditional elasticities, alternative specification		
	P1	P2	P3
q1: BRA_EV_F	-0.603	0.305	0.007
q2: UNB_EV_F	0.936	-0.879	-0.029
q3: BRA_EV_D	0.490	-0.499	0.014

*Note:* Elasticities evaluated at mean values. Table panels described in text.

The conditional elasticities, which hold expenditures on extra virgin oil constant, can be adjusted to account for the effect that expenditures may switch to other olive oils in response to changes in the price of extra virgin oil. This adjustment is derived from the parameter estimates in the upper-level demand. In estimating this upper-level demand an AIDS specification is first considered. The resulting unconditional elasticities are shown in the middle panel of table E.6. The bottom panel in the table shows an alternate estimation, where the upper-level demand has been estimated using a simpler log-log demand specification.<sup>6</sup>

The “unconditional” elasticities in table E.6, particularly the own-price elasticity for the domestic variety, differ from the non-nested results discussed before. This difference may reflect different substitution patterns between each extra virgin category and the “other” category (non-extra virgin) that may be better handled in a single-level demand system.

<sup>6</sup> For a multi-level demand system that follows this structure, see Hausman, “The Valuation of New Goods under Perfect and Imperfect Competition,” 1996.

The more flexible structure used to derive the elasticities in table E.5 is taken as the preferred specification.

## Endogenous Prices

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An identification challenge in demand estimations relates to the endogeneity of prices, in the sense that prices are simultaneously determined by demand and supply. For instance, while prices determine product demand (as in equation 1), suppliers are likely to also set prices in response to demand conditions. In the estimations above, product prices and thus product group price indices  $p_{jdt}$  in equation (4) are treated as predetermined. One rationalization of this treatment is that, while prices are not exogenous, to the extent that suppliers do not revise prices in the short run, this stickiness attenuates the simultaneity concerns.

A more corrective approach would involve the use of instrumental variables, given appropriate instruments, to account for the possible endogeneity of prices. Ideal instruments would include cost shifters (e.g., input prices) that would vary by the different product groups and that can be observed at the data frequency. In practice, such instruments are difficult to obtain. A possible instrumental variable approach in the literature, of using prices in other divisions as instruments, was tried but it did not produce reasonable results.<sup>7</sup>

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<sup>7</sup> The idea behind this approach is that prices for product  $j$  can be modeled as  $p_{jdt} = f(\alpha_{jd}, c_{jt}, \xi_{jdt})$  that includes a division fixed effect, underlying costs and demand shocks. Note that  $c_{jt}$  does not vary across divisions. Thus, prices in other divisions would signal common cost shocks.

For these instruments to be valid, however, demand shocks  $\xi_{jdt}$  should be uncorrelated across divisions, which is an untestable assumption. See Hausman et al., “Competitive Analysis with Differentiated Products,” 1994; Nevo, “Measuring Market Power in the Ready-to-Eat Cereal Industry,” 2001.

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