

New Demand for an Old Food: The U.S. Market for Olive Oil

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Olive oil consumption and imports have grown rapidly in the United States, tripling over two decades. Virgin oil accounts for much of the growth that is driven by higher incomes and changes in information about the role of olive oil in a healthy diet. Quantities consumed of particular types and import sources of olive oil are sensitive to relative prices.

Olive oil is hot. From the *New York Times* to the *New England Journal of Medicine* to the U.S. International Trade Commission (USITC), olive oil is making news and raising important economic and policy issues.

The California olive oil industry is also hot. Planting, production, and the reputation for quality are all increasing. Leaders in the California industry have plans to improve its competitive position in the market and become a major crop in the state. To act on their plans, however, they need more information and analysis.

To understand how the market for olive oil in the United States is evolving and the importance of economic trends and policy initiatives, we must examine the market in some detail, including how factors such as prices, income, and new information affect quantities of olive oil demanded. This article begins this detailed examination.

Global production of olive oil increased from less than 1.5 million tons in 1990 to over 3 million tons in 2012. (All “tons” in this article refer to “metric tons.”) Major producing regions, which surround the Mediterranean Sea, produce about 95% and consume about

two-thirds of the world’s olive oil (Table 1). About 300,000 tons of olive oil were sold in the United States in 2012, tripling the quantity sold in 1990. Thus, U.S. consumption now accounts for about 10% of world production.

Spain is the world’s largest olive oil producer, with Italy a distant second. Spain exports more than half of its production—most to destinations within the EU. Italy is a major exporter to destinations outside of the EU and some of what is exported from Italy is oil produced elsewhere. North Africa is a major producer and an even more important exporter of olive oil. The U.S. industry produces only 4,000 tons of olive oil annually, or only about 1.3% of U.S. consumption.

Figure 1 shows clearly that imports account for almost all the growing consumption of olive oil in the United States. Figure 1 also shows that virgin olive oils account for most of the growth of U.S. imports. The U.S. imported 200,000 tons of virgin olive oil in 2012—two-thirds of total imports. While the EU (led by Italy, Spain, and Greece) remains the dominant supplier

of olive oil to the United States, shares from non-EU countries (especially Tunisia and Morocco) have grown.

Policy Interventions, Quality Controls, and International Trade

As part of an ongoing study requested by Congress, the United States International Trade Commission held a public hearing in December 2012 to assess the U.S. competitiveness in olive oil in the context of market trends and policies, especially in Europe. At the USITC hearing U.S. olive oil industry representatives expressed concerns about European olive oil policies as well as global quality standards and compliance.

The European Commission has provided substantial support for its olive industry for decades. Until the mid 2000’s, the European Union tied financial support directly to production of olive oil. Support to the industry continues, but is less direct; now, the EU ties payments to recent capacity to produce an aggregate of commodities and as an incentive to meet environmental standards. For olive oil specifically, the EU also offers

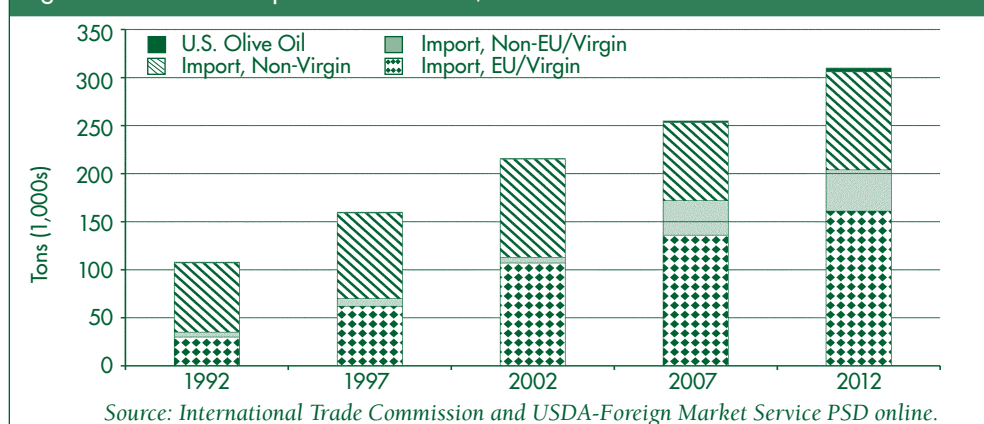
Table 1. World Production and Exports of Olive Oil (1,000 tons), Market Year 2010/11

	Production(%)	Export (%)	
		Extra-EU	Intra-EU ^a
Spain	1392 (45%)	196 (28%)	650 (67%)
Italy ^b	440 (14%)	224 (32%)	151 (16%)
Greece	301 (10%)	13 (2%)	100 (10%)
All EU-27	2209 (72%)	481 (69%)	967 (100%)
North Africa ^c	336 (11%)	139 (20%)	
Other Med Countries ^d	412 (13%)	39 (6%)	
United States	4 (0%)	-275	
Rest of World	114 (4%)	37 (5%)	
World Production/Export	3075 (100%)	696 (100%)	

Sources: International Olive Council and for EU trade information UN-Comtrade.

Notes: a. Intra-EU export is the average export of 2010 and 2011. b. Italy is a net importer when both extra-EU and intra-EU trade are considered. c. North Africa includes Tunisia, Morocco, Algeria, Egypt, and Libya. d. Other Mediterranean counties include Turkey, Syria, Israel, Jordan, and Lebanon.

Figure 1. U.S. Consumption of Olive Oils, 1000 Tons



“Private Storage Aid” that pays whenever market prices of olive oil are lower than government-set minimums. Such aid was provided in 2011 and 2012.

Subsidies for olive oil vary by country within the EU and aggregate figures are difficult to assemble. In a 2012 statement, the Spanish Minister for Agriculture, Food and Environmental Affairs said that subsidies were equal to about 40% of the value of Spanish olive oil, with aid of about \$1.3 billion. (Quoted in *Olive Oil Times*, April 2, 2012.)

Lack of quality control and standards also raises concerns among U.S. industry representatives. The retail grades and quality standards developed by the International Olive Council are not binding in the United States, and the U.S. Department of Agriculture quality monitoring program that was launched in late 2010 is only voluntary.

Olive oil producers in Europe and U.S. importers of olive oil from Europe have expressed concerns about the U.S. government investigations. European producers asked the European Commission to be ready to act on the potential threats of U.S. trade barriers.

Summary of Data and Methods for Statistical Analysis of Demand

Data on olive oil imports into the United States are available by point of entry, country of export, container size (bulk or packaged), and “quality”—as indicated by the “virgin” designation. No publicly available data provide

information on country of production of the oil (for example, if it is shipped between countries before export to the United States) and import data do not record “extra virgin” or other more-specific quality characteristics.

Olive oil is sold into three broad channels in the United States: (a) retail packages of olive oil sold to consumers, (b) olive oil sold to food service establishments for cooking and table use, and (c) olive oil used in food processing and sold as an ingredient in other foods such as sauces.

Olive oil imported in bulk containers (typically bladders holding thousands of liters) may be delivered to food processing firms, but most bulk oil is packaged in the United States for food service or retail sales. Bulk shipments have been increasing because of improved technology and the cost savings inherent in not shipping fragile and heavy retail containers. Because the consumers and market channels are mostly the same for bulk and bottled imports, we aggregate oil imported in different containers.

We estimated demand equations for three categories of olive oil at the wholesale/import stage of the market. We use the quantity of per capita imports each month to measure quantity demanded. For the relevant prices, we use average unit values computed as the ratios of import values to quantities. We treat the United States as a price-taker in the world market for olive oil because the United States accounts for less than 10%

of the world consumption, so we would not expect changes in import prices to be caused by changes in U.S. demand. In fact, import prices have fluctuated widely—driven by exporting country production and demand (Figure 2).

One concern is that given how we measure price simply as the import value divided by the import quantity, errors in the measurement of quantities would exaggerate the measured price responses in the estimation by creating an additional negative correlation between measured quantity and measured price. However, after reviewing the variations in import series by port of entry and using standard statistical tests for potential bias caused by measurement error in import prices, we conclude that any remaining bias is small in magnitude.

To complete the demand model, we use per capita U.S. personal income, the number of articles published in U.S. newspapers and magazines that report either the health benefits or the Mediterranean diet attributes associated with olive oil to account for consumer awareness, imports of Italian-style cheese and the price of canola oil—a potential substitute. Finally, we include monthly indicators to reflect seasonality and deflate all prices and income by the CPI.

For most of the discussion here, we group olive oil into three categories: virgin oils imported from the EU, virgin oils imported from elsewhere, and non-virgin oils. The classification accounts for the quality difference in olive oils and is supported by the price relations in Figure 2. We estimate separate price and income effects and substitution relationships across olive oils.

Key Findings About Olive Oil Demand in the United States

Our set of estimated demand equations includes the impacts by type of olive oil. We also use our estimates by type of oil to calculate effects for all olive oil considered as an aggregate.

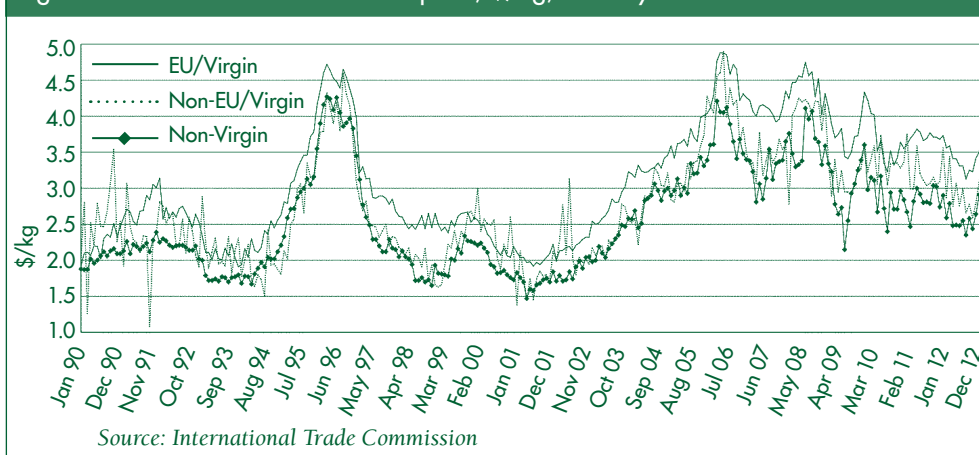
We evaluate the estimated elasticities of demand (the percentage change in the consumption quantity in response to a 1% increase in each demand determinant) at recent average prices and quantities (the three-year period January 2010 to December 2012).

The U.S. quantity demanded for all olive oil falls when the average price of olive oil increases, but the percentage effect is small. A 10% increase in the price of all olive oil would reduce U.S. total consumption of olive oil by about 2%. Because of substitution among olive oils, the price elasticity of demand for each individual olive oil type is larger.

We find that the quantity demanded of EU virgin oil would increase significantly with a 10% increase in the price of virgin oil imported from non-EU countries, but U.S. consumption of both types of virgin oils is insensitive to changes in the price of non-virgin oils. That is, virgin oils imported from EU and non-EU countries tend to substitute for each other, but non-virgin oils do not seem to compete significantly with virgin oils. We find that canola oil is a slight substitute for olive oil as a group, but the substitution effect applies mostly to non-EU virgin oil.

We also find that U.S. consumption of olive oil would grow by about 10% if U.S. personal income grows by 10%. Most of the income effect applies to EU virgin olive oil, which would rise by more than 20% with an increase in income of 10%. In contrast, the consumption of non-virgin oil has no statistically significant response to an increase in personal income. Finally, we find that accumulated information about the healthiness and trendiness of olive oil (measured by the number of articles published in the popular press) and the ongoing globalization of the American diet (measured by the quantity of imports of Italian-style cheese) both stimulate more olive oil consumption in the United States.

Figure 2. Unit Values of Olive Oil Imports, \$/kg, January 1990–December 2012



Alternative aggregations, specifications, and methods used to check robustness of our estimated impacts, yield results that are consistent with those reported here.

Final Remarks

Olive oil consumption has been growing rapidly in the United States, but U.S. production remains a tiny part of the total supply in the U.S. market. Virgin oil imports have been gaining, as have imports of olive oil directly from North Africa—both at the expense of non-virgin oil from the EU. These trends have generated controversy as the U.S. industry seeks to evaluate how EU policies and lack of consistent mandatory quality standards affect demand and market shares for olive oil. We find that attention to the health benefits of olive oil and its place in a flavorful and healthful Mediterranean diet has contributed to growth in consumption. Olive oil consumption also responds to income growth and to relative price changes.

The currently available data have not allowed us to estimate impacts of prices, income, or market trends on the consumption of olive oil produced in the United States. Nonetheless, the growing market provides opportunities and U.S. industry can gain insights from analysis of market relationships and estimates of effects of prices and other factors on olive oil imports.

Much more work is needed to understand olive oil demand more fully and to place the demand analysis reported here in a context that allows one to evaluate impacts of policy. We are engaged in such a project and expect to report results later this year.

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