

What's Extra Virgin? An Economic Assessment of California's Olive Oil Labeling Law

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Quality standards for olive oil have long lacked legal backing in the United States, exposing olive oil quality premia to mislabeling and exploitation. A new California law adopts international olive oil grades. This paper examines the likely effects of the legislation on the burgeoning Californian industry and market.

American per capita olive oil consumption has exploded since 1990, but until recently there was no legal or regulatory definition of olive oil grades and label content in the United States. With legislation effective January 2009, California broke this legal void and now requires that olive oil sold in the state must be labeled according to international standards. Several other states are on this same path, and federal regulation may not be far off. How might giving the coveted term “Extra Virgin” legal or regulatory bite affect olive oil markets?

Olive Oil in the United States and California

Annual per capita olive oil consumption in the United States increased over 650% since 1980. Imported Mediterranean olive oil filled most of the increase in demand. While California olives have historically been canned, with culled olives diverted for oil, many orchards planted in the past two decades are geared to oil production. Barrio and Carman report that the acreage planted for oil production increased threefold,

to over 6000 acres, between 1998 and 2004. By the end of 2009 this is expected to expand to 25,000 acres.

California's burgeoning industry currently produces less than 1% of U.S. oil consumption, but production is expected to increase from around 500,000 gallons in 2008 to 20 million gallons by 2020—which is projected to account for up to 10% of U.S. olive oil consumption. This industry is primarily oriented toward high-value oil markets. An estimated 90% of California oil production already qualifies as extra virgin olive oil (EVOO) by international standards.

There are important marketing and cost differences between the few large firms (>100,000 gallons per year) and many smaller firms (<15,000 gallons) that make up this industry. Larger firms aim for consistent flavor from year to year, while smaller producers produce small batches and blend to create “boutique” oils. Average per-gallon production costs for EVOO are \$14 for the large firms, but \$33 for the small firms.

Defining Olive Oil

There are several systems used to define olive oil grades. The United States Department of Agriculture (USDA) enacted a voluntary labeling system in 1948 that graded olive oil as A, B, C, or

D based on chemical and sensory standards, but the system, while still extant, is not widely used. In recent years, there has been a push for increased label regulation in the United States, with California and Connecticut the first to take action. New Jersey, New York, Rhode Island, Texas, and the United States Department of Agriculture (USDA) are also considering regulation.

Many of the major olive oil producing and consuming countries are party to the International Olive Council's (IOC) standards (Table 1). EVOO, the most desirable grade, is cold-processed to prevent degradation of aromatic compounds and has higher levels of healthy fats and antioxidants. Refined oil is made from processed substandard virgin oils. For olive-pomace oil, solvents are used to extract oil from pressed olive solids.

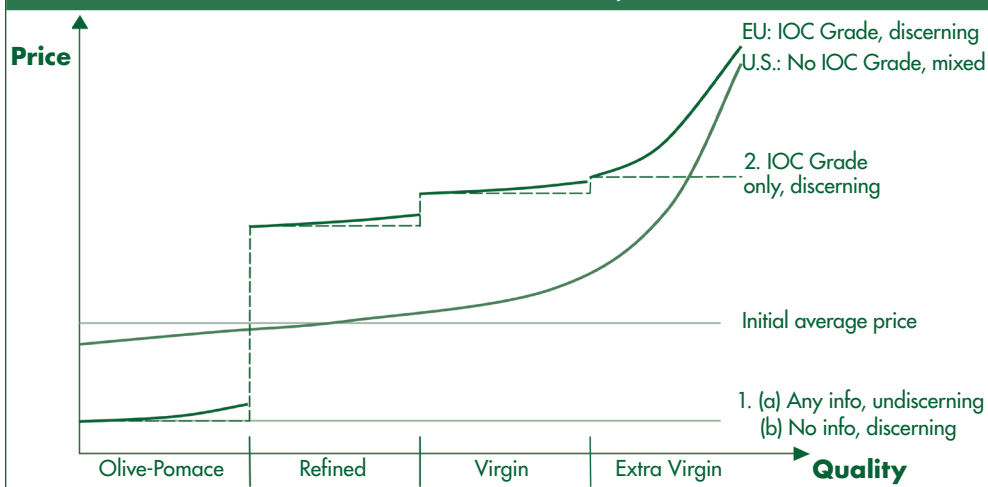
Most non-virgin oils are mixed with virgin oils to add flavor before they are sold at retail. The exact chemical and sensory standards for refined oils and olive-pomace oils change depending on the blend. Refined or olive-pomace oils intended for human consumption have stricter sensory requirements and acid limits than do those oils intended for industrial purposes. Refined oils, when blended, are labeled as light olive oil or, simply, olive oil.

Table 1. International Olive Oil Council (IOC) Grades, Standards, and Average Prices

Olive Oil Grade	Maximum Acid Content	Sensory Requirements		Production Method	Average Premium over Olive-Pomace Oil (%)*
		Positive	Negative		
Extra Virgin	0.8%	Fruity	None	Mechanical	75%
Virgin	2.0%	Fruity	Low	Mechanical	73%
Refined	0.3%	Acceptable/good		Chemical/ Physical Filters	68%
Olive-Pomace	1.0%	Acceptable/good		Solvents	0%

*Source: International Olive Council data and Poolred.com

Figure 1. Stylized Depiction of How Label Information, IOC Grades, and Consumer Discernment Affect the Price of Quality in Olive Oil Markets



Markets for Olive Oil and “Lemons”

Consumers cannot fully evaluate olive oil prior to purchase. Producers, on the other hand, have complete information about their production techniques and the composition and quality of their oil. This informational asymmetry between consumers and producers creates wrinkles in these oil markets.

In the typical model of asymmetric information, consumers unable to discern product-level quality differences are willing to pay for the average expected quality. High-quality producers are unwilling to sell their oil for less than it is worth, which narrows the distribution of quality in the market. In some cases, high-quality products will be driven out of the market completely—leaving behind a market of “lemons” (e.g., the bad used cars that often drive good ones from the used car market).

Asymmetric information problems can be remedied by providing credible information to consumers. Label regulations are a common solution. These may be mandatory (e.g., nutritional information that firms must divulge) or optional (e.g., organic certification that firms may use if they qualify). Firms may also signal quality by making testable claims about their products’ contents, by entering competitions such as the L.A. County Fair’s Oils of the World, or by applying for quality

certification from trade groups. With both informed and uninformed consumers, high retail prices can signal quality because higher-cost firms are harmed less by foregone sales, and low-quality firms would lose more sales from informed consumers by misrepresenting their product. A survey of retail olive oils in 2008 revealed that many labels included at least one of these devices. This has partly resolved the “lemons” problem in U.S. olive oil markets.

Consumer familiarity with and preference for quality is central to solving the “lemons” problem. Given the previous lack of regulation and the rapid growth of U.S. consumption, many U.S. consumers know too little about olive oil quality to have strong preferences for quality. While most California consumers are as yet unaware of the new labeling laws, this regulation is a pre-condition for consumer education and for the formation of oil quality preferences.

Quality Information, Consumers, and Olive Oil Pricing

To explore the impacts of this law, consider two types of consumers—discerning and non-discerning—and two types of label information—regulated grades and other information. Figure 1 depicts olive oil price as a function of quality and these consumer and information types. For simplicity, we order

olive oil quality along one dimension. The price corresponding to a given level of quality is depicted on the vertical axis. Production costs increase with oil quality. Again for simplicity, we assume that olive oil markets are competitive so that these costs directly affect prices.

We consider four price profiles, each corresponding to a set of assumed consumer and information types and each implying different producer-signaling devices. The two numbered profiles represent extreme cases and serve as a benchmark to the European (EU) and U.S. profiles.

Consider first the two numbered profiles and an olive oil market with oils from across the quality spectrum. We can use initial prices in this market, assumed to equal production costs given perfect competition, to compute an average price across this quality spectrum (dotted line). Relative to this baseline, profile 1 captures two distinct cases. If the consumers in this stylized market are undiscerning about oil quality, the prevailing market price will correspond to the price of olive-pomace oil since they are unwilling to pay a quality premium with any label information (case 1(a)). The same low market price will emerge even with discerning consumers if no information is provided because of a market for “lemons” problem (case 1(b)).

Introducing IOC grades only to a market with discerning consumers creates the tiered price profile 2. If no additional producer signaling occurs (i.e., no additional label information), a sub-market for “lemons” develops: all oil within each grade is assumed to satisfy only the minimum quality standards for that grade. Hence, a flat price profile exists within each grade.

The U.S. and EU price profiles roughly represent the current relationship between price and quality in these markets. In both markets, producers find ways to signal oil quality, but only the EU has regulated grading standards. The

U.S. profile has a mix of discerning and undiscerning consumers and producer signaling exists. Some U.S. consumers are as discerning as their European counterparts and willing to pay as much for high-end olive oil. In contrast, the EU profile represents a long-established market with regulated grades that are familiar to discerning consumers.

California Label Regulation and Producer and Consumer Welfare

Given the rapid growth of olive oil consumption in the United States, the full effects of the labeling change will not be seen immediately. California consumers' knowledge of olive oil and ability to interpret product information vary much more than in established markets. Adoption of IOC labeling eliminates one source of asymmetric information between producers and consumers and allows consumers to develop more discerning quality preferences. Over time, the price profile in California (and ultimately in the United States if federal law intervenes) will mold closer to the EU profile in Figure 1. This area between the U.S. and EU price profiles helps us explore the welfare implications of this new labeling law.

With the label regulation and growing consumer awareness, some groups will gain and some will lose. Switching from no regulation to IOC standards will be most harmful to producers of olive-pomace oil. Prior to the enactment of labeling standards, olive-pomace oil could be sold as a higher grade of oil. With the standards in place, olive-pomace oil producers will have many fewer outlets to sell their product.

The greatest beneficiaries of the labeling legislation and associated consumer awareness are likely those producers who produce refined olive oil and lower quality EVOO—oils for which producers could not signal quality to consumers. The most viable producer signals likely exist at the upper end of the range of qualities; absent labeling

regulation, oils in this quality range will be less susceptible to the “lemons” problem than lower quality oils.

Consumers will also benefit, particularly with respect to the health benefits of EVOO, and eliminating food-allergy concerns caused by unlabeled blending. Additionally, with label regulation consumers should expect less variability in quality, which will allow them to buy their preferred oils with greater precision.

California olive oil producers will benefit in general from the adoption of IOC labeling standards, though the benefits may be distributed unevenly amongst producers. Around 90% of the olive oil produced in California is estimated to be EVOO.

A few large California firms produce lower-cost EVOO for distribution through major retail channels. A fringe of smaller producers also exists. These firms create boutique oils, which tend to be sold directly to consumers, through specialty shops and local groceries. Smaller firms rely less on the IOC system to communicate quality, and the proportion of discerning customers is higher at the upper end of the quality spectrum. California's larger firms are competing with importers of EVOO. Large firms will likely see gains due exclusively to the change in labeling. Both large and small firms may benefit in the long run from increases in consumer sophistication.

While domestic producers will nearly all benefit to some degree from the labeling change, importers' experiences will be mixed, and will depend on the quality of oil they sell and how accurately they represented their product pre-regulation. Importers of the lowest quality oils will likely be most negatively affected, while higher grades should benefit. This is borne out by prices collected in European markets over the past few years. Producer prices for refined oils are on average only 5% below prices for EVOO, while average prices for olive-pomace

oil are 57% of the average for EVOO.

These changes in Californian olive oil markets are unlikely to occur immediately for two reasons. First, standard implementation and enforcement delays may apply. Producers selling mislabeled oils may not immediately comply with the regulation. Indeed, compliance may require some further legal wrangling. Secondly, consumer awareness of these standards and their preferences will take time to adjust. The U.S. price profile may start changing soon, but will only gradually mold to the EU profile.

Our assessment of the possible impacts of California's new olive oil labeling law is stylized and exploratory. The impact on producers and consumers is an important empirical question—and one that grows in relevance as momentum builds for federal regulation of olive oil grades. The USDA has considered a voluntary system in recent years, but mandatory regulation has growing support in state-level legislation. In addition to legislation enacted by California and Connecticut, New Jersey, New York, Rhode Island, and Texas are considering this course. The spread of these grade-labeling laws across the United States will only improve market opportunities for California olive oil producers.

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For additional information, the authors recommend:

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