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CHAPTER 5

International Trade and the Road Ahead for California Agriculture

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This chapter surveys California's agricultural trade environment and prospects. We pay particular attention to the impacts of the 2002 United States (US) Farm Bill, the Farm Security and Rural Investment Act (FSRIA) on California's trade in agricultural products and the prospects for California agriculture from further agricultural trade liberalization. We argue that foreign markets are extremely important to California agriculture, and that increased trade liberalization will be beneficial to most California producers since they competitively supply specialty products and continue to face barriers to trade in important markets. We also discuss the benefits of subsidies provided to agriculture in California and agricultural exports in particular. While a quantitative comparison of this support versus the potential benefits of increased trade liberalization is beyond the scope of this chapter, there is suggestive evidence that California agriculture would be better off with reduced subsidies to U.S. agriculture and concomitant increased access to markets abroad. Thus, to the extent that the political fallout from the Farm Bill results in less ambitious World Trade Organization (WTO) negotiations, the 2002 Farm Bill is costly for the California agricultural sector.

The remainder of this chapter is organized as follows: First, the chapter describes the main characteristics of California's agricultural trade. Second, the international trading environment facing California agriculture is discussed. Third, we review and discuss elements of the Farm Bill that have important implications for California's agricultural trade. These include the export programs, the highly controversial country-of-origin-labeling (COOL) guidelines, and environmental programs. Fourth, we discuss how the 2002 Farm Bill affects the U.S.'s ability to meet its current WTO obligations and its potential effect on current liberalization talks from which California has much to gain.

CALIFORNIA'S AGRICULTURAL TRADE

California agricultural producers rely on foreign markets for a significant portion of their revenues and export relatively more than producers in other states do. The value of California agricultural exports totaled about $6.5 billion in 2002, or about 20 percent of the value of agricultural commodities produced in California.[1] While it is not surprising that California's export earnings exceed those of every other state since its farm cash receipts are the highest in the country, exports are relatively more important to California than to other states. While California accounts for 12 percent of national farm cash receipts (USDA/NASS 1997), it accounts for an estimated 15 percent of total U.S. agricultural export revenue. To put these figures in an international context, the state of California exports more agricultural products than some leading agricultural countries do, including such countries as Chile and China. The annual value of Mexico's agricultural exports is only slightly larger than California's estimated value (FAO 2002).

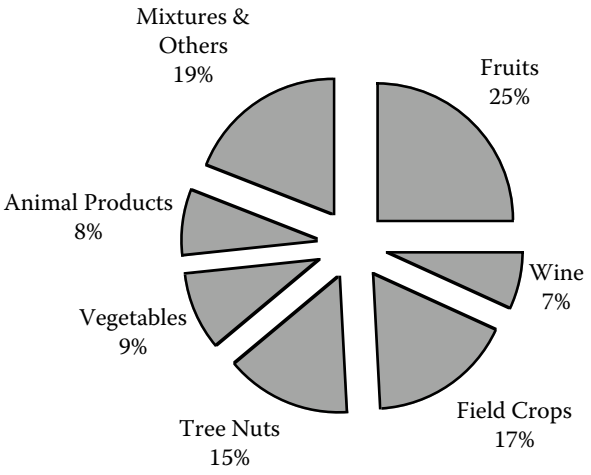
California exports a wide variety of high-value specialty crops. As shown in table 1, the top six food product exports from California in 2002 (and for most recent years) were almonds, cotton, wine, table grapes, dairy, and oranges. The state is not a significant producer or exporter of grain crops such as corn, wheat, or soybeans. In fact, the state is a net importer of feed grains.

Figure 1 highlights the diversity of California's exports. The top five products account for just over one-third of California's agricultural exports by value. Even when exports are aggregated into commodity groups, as opposed to individual products, the range of products exported by California is striking (see figure 2). According to UC Agricultural Issues Center (AIC) statistics, fruit exports comprise 25 percent of the state's agricultural exports, followed by field crops (17 percent), tree nuts (15 percent), vegetables (9 percent), animal products (8 percent) and wine (7 percent).

This diversity of exports reflects California's production diversity and differentiates the state from other important agricultural states in the U.S., which tend to produce only a few commodities. For instance, the agricultural sector in Iowa and

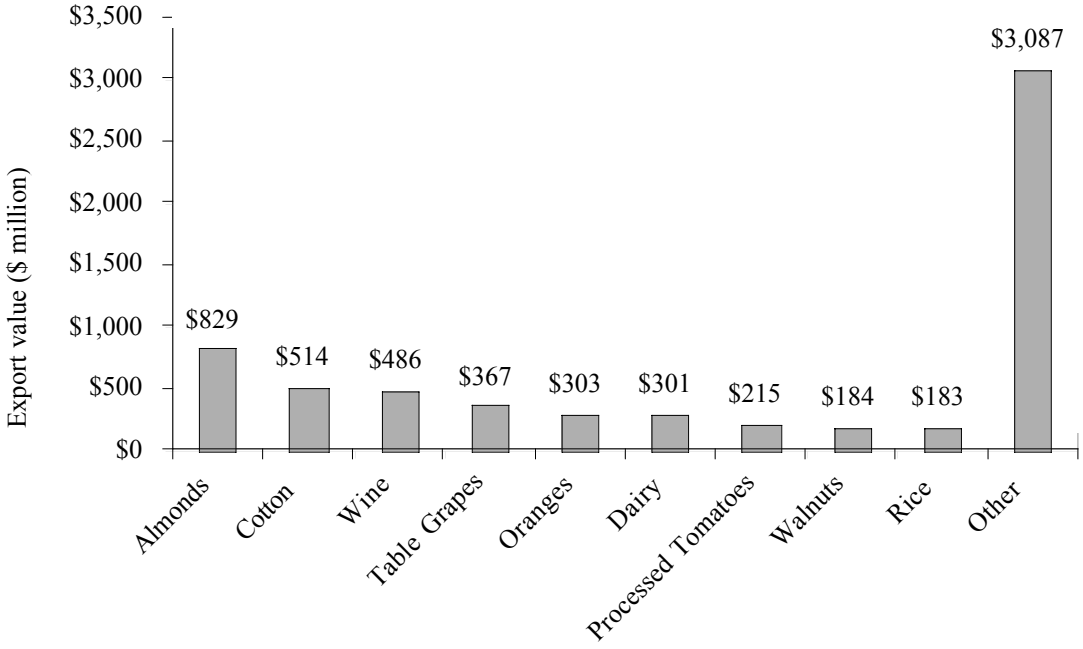
[1] Any data analyses in this chapter are constrained by the fact that state level trade data are limited (see Carter 1997 for further discussion). For example, there are no reliable data on California's agricultural imports. Almost all trade data is collected at the national level rather than the state level. In addition to this obstacle, the California Department of Food and Agriculture (CDFA) changed the method of calculating state-level export values in 1992 and then again in 1999. This makes any long-term analysis of state export trends problematic. The UC Agricultural Issues Center (AIC) has improved the reliability of California agricultural export statistics and the figures now published by the CDFA are compiled by the AIC (www.aic.ucdavis.edu).

Figure 1. California's main agricultural exports, 2002



Source: UC Agricultural Issues Center.

Figure 2. California agricultural export value by commodity group, 2002



Source: UC Agricultural Issues Center.

Illinois is concentrated in just three commodities: corn, soybeans and hogs, which account for 70-80 percent of those states' farm cash receipts. Nebraska's production of corn and cattle generates over 70 percent of that state's farm receipts. Texas depends on the cattle sector, which produces 50 percent of its farm cash receipts (ERS/USDA 2001b).

Of any other state in the U.S., the profile of Florida's agriculture is perhaps most similar to California's. While the value of agricultural production in Florida is about 25 percent of that in California, Florida's agriculture is quite diversified and the state produces fruits, vegetables, and dairy products. However, Florida is not as dependent on foreign markets as California is; many of the state's fruits and vegetables are sold domestically. Not surprisingly, this means that Florida's growers tend to be more protectionist than growers in California. As we explain a little later, California growers have a great deal to gain from breaking down foreign barriers to trade in fruits and vegetables; this is less true for Florida growers.

California's exports are destined for a diverse group of relatively high income countries, with the exception of the increasingly important Chinese market. The major foreign markets for almonds and wine are in Europe, while significant markets for the other top commodities are in Canada, Mexico, and Asia. Penetration of these desirable markets is all the more impressive because these countries remain quite protectionist with respect to agriculture, as discussed in the next section. It is estimated that about 40 percent of California agricultural exports is destined for Asia, 20 percent to Europe, and 30 percent to North America. California exports nearly twice as much of its agricultural output to the relatively wealthy European Union (EU) markets compared to the U.S. as a whole (ERS/USDA 2002b).

Table 1. California's Major Export Markets and Commodities Exported by Destination, 2002 ($million)

Canada	EU	Japan	Mexico	China and Hong Kong	S. Korea
Lettuce (113)	Almonds (422)	Rice (97)	Dairy (86)	T. Grapes (80)	Oranges (75)
Tomatoes (112)	Wine (284)	Almonds (90)	T. Grapes (43)	Oranges (62)	Beef (56)
T. Grapes (105)	Walnuts (89)	Hay (74)	Tomatoes (20)	Cotton (43)	Cotton (38)
Strawberries (105)	Pistachios (82)	Wine (71)	Cotton (18)	Almonds (39)	Dairy (18)
Wine (76)	Prunes (61)	Cotton (61)	Almonds (13)	Beef (26)	Hay (18)

Source: UC Agricultural Issues Center.

The UC AIC estimated that as of 2002, leading export destinations for California agricultural commodities included Canada ($1,119 million), the European Union ($1,128 million), Japan ($905 million), Mexico ($293 million), China and Hong Kong ($345 million), South Korea ($274 million), and Taiwan ($212 million). Major crops sent to these markets are summarized in table 1. This table again shows the diversity of California's exports, but also suggests that products are targeted to different markets; each market is dominated by a different set of products, with little overlap between them. In 2002, almond exports from California were primarily destined for the EU (51 percent of California's exports), Japan (11 percent), India (8 percent) and Canada (5 percent). Most of the cotton in 2002 was sold into South Korea, Japan, Indonesia, Taiwan, and Mexico. The EU serves as the major market for California wine, followed by Canada and Japan. Canada and China/Hong Kong imported 51 percent of California's table grapes in 2002, with Canada buying 29 percent alone. The largest markets for California dairy exports are Mexico (39 percent), Japan (18 percent), and China/Hong Kong (21 percent). Korea is the largest international market for California oranges (25 percent), followed by Canada (24 percent), China/Hong Kong (21 percent) and Japan (17 percent). Processed tomato exports were shipped primarily to Canada (52 percent), Mexico (9 percent), and the EU (9 percent). The EU and Japan imported 69 percent of California's walnuts in 2002, with the EU accounting for 49 percent of sales. Most of the rice exports from California (53 percent) were sold to Japan.

California's integration into world agricultural markets is not unidirectional. Residents of the state also consume significant amounts of agricultural imports. For commodities not grown in the U.S., such as cocoa, coffee, and bananas, California relies entirely on imports. While data on import value by state is not readily available, a sense of the magnitude of import consumption can be estimated by relying on the proportion of U.S. population resident in California (12 percent in 2001) (U.S. Census Bureau 2001). In 2001, the U.S. as a whole imported beef and veal worth $2.4 billion, $1.6 billion worth of cocoa and related products, $2.7 billion worth of coffee and related products, and $1.2 billion worth of bananas and plantains (ERS 2001). If 12 percent of these products were destined for California, then, in 2001, consumers in this state spent $950 million on imports of these commodities alone.

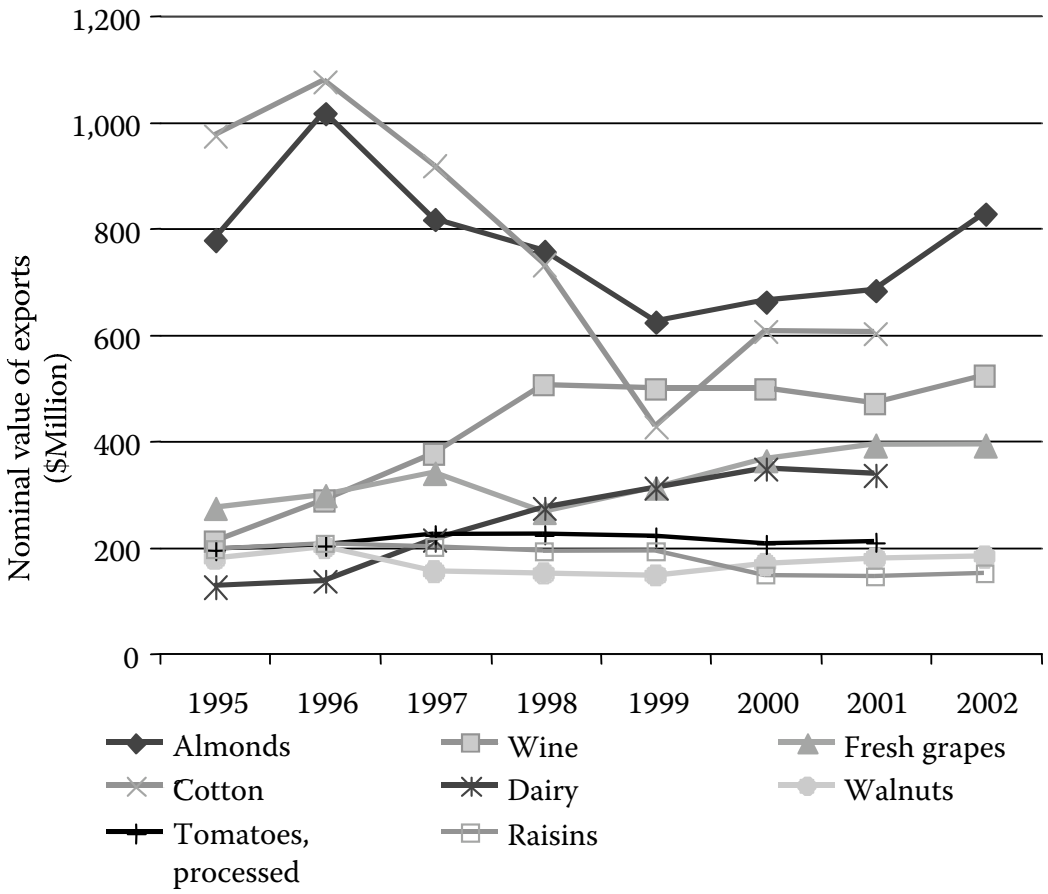
California Agriculture's Trading Environment

California agriculture faces a complex international trading environment, characterized by import tariffs, non-tariff trade barriers, new competitors, and relatively little traditional federal assistance compared to other states. In this section, we review the market environment in which California's agricultural producers compete. Increasing foreign competition and relatively closed markets have created demand within California for both increased government support for agriculture (particularly funding for foreign marketing), and further trade liberalization in foreign markets (California Farm Bureau Federation 2001, 2001b). The internal contradictions between these positions have not been resolved. We argue later that California receives little benefit from the taxpayer dollars spent on foreign marketing; consequently, the California agricultural industry may wish to concentrate on

achieving global trade liberalization even if this necessitates funding reductions for foreign marketing activities.

In the last decade, the nominal value of total U.S. agricultural exports grew by about 30 percent. Exports of some commodities important to California grew more rapidly and some less rapidly than the national average. Over this time period, U.S. dairy exports increased by 265 percent and fresh vegetable exports increased by 73 percent. Figure 3 shows how the nominal values of some major California exports changed over the period 1995-2002. According to UC AIC and the Foreign Agricultural Service (USDA/FAS FATUS database), the fortunes of California's commodities have been mixed; almonds and wine have fared somewhat better than tomatoes and raisins. While the total nominal value of California's agricultural exports has declined by about 5 percent since 1995, this figure masks widely divergent trends across commodities, so no general conclusions can be drawn.

Figure 3. California agricultural export values (nominal values), 1995-2002 (Million)



Notes: Data for 1995-2001 from UC AIC; 2002 data from USDA/FAS FATUS database; 2002 data were not available for products grown in states besides California.

Source: United States Department of Agriculture, Foreign Agriculture Service, Foreign Agriculture Trade of the United States (FATUS) database and UC Agricultural Issues Center.

In the 1990s the most significant import growth in world markets was in high-valued and processed food products like those grown in California. The share of high-value and processed agricultural products in world agricultural trade has increased from less than 40 percent in the early 1980s to well over 50 percent by the end of the 1990s (WTO 2001). At the same time, the share of fruits and vegetables in world agricultural trade remained at about 17 percent from 1990 to 2001, with a dollar value of $69.8 billion in 2001, up from $51 billion in 1990 (FAO 2002). The fact that fruit and vegetable trade did not increase any faster than total agricultural trade is very surprising given the growing per capita demand in developed countries for fresh fruits and vegetables. The stagnant share of fruit and vegetable trade no doubt reflects the high level of protectionism around the world for these food categories. For instance, two-tiered tariffs known as tariff-rate quotas (TRQs) are commonly used to restrict imports of fruits and vegetables. Worldwide, there are more than 350 TRQs placed on trade in fruits and vegetables, and more than 25 percent of all agricultural TRQs are concentrated in the fruit and vegetable trade (Skully, 2001). This phenomenon critically affects California agriculture.

As an exporter of high-value food commodities, California must contend with the fact that import tariffs in important markets such as in the EU are generally higher on processed agricultural products than on the primary commodities. This tariff wedge between a processed commodity (e.g., processed fruit) and its corresponding primary commodity (e.g., fresh fruit) is referred to as tariff escalation, and this is a significant obstacle to California exports. Tariff escalation produces a trade bias against processed agricultural products and value added products. There is general evidence of tariff escalation in OECD countries (such as Australia, Canada, the EU, and New Zealand), especially for fruits, vegetables, and nuts—major California exports. For many countries, bound tariffs tend to be higher for processed food products than for unprocessed products (WTO, 2001). Furthermore, recent tariff reductions on agricultural products exceeded tarrif reductions on processed food products in Australia, Canada, the European Union and Mexico (OECD, 2002).

Government transfers to the agricultural industry have contributed to the sector's profitability in California, particularly for those farmers not growing nuts, fruits and vegetables. Agricultural producers in California received $586 million in federal assistance in 2001; Of this about $242 million came as production flexibility contracts and loan deficiency payments. Supplemental funding of $258 million was paid directly to California farmers. The remainder of government payments to farmers came in the form of marketing support and conservation payments, which we discuss later in this chapter.

While these federal government support payments are low in total compared to those states where the major agricultural products are grains or oilseeds, this does not imply that some agricultural producers in California do not benefit greatly from subsidies and protectionist measures.[2] Over 100 farms in California received more than $425,000 each in subsidies in 2001 (Environmental Working Group 2002). Dairy, sugar and cattle producers receive significant protection from import barriers, and

[2] Twelve states received higher total federal government payments to agriculture than California in 2001. Since these states are smaller than California in both area and population, even this ranking understates the extent to which California receives a disproportionately small share of federal government agricultural subsidies.

many producers receive subsidized inputs, particularly irrigation water. Sumner and Hart (1997) estimated the Producer Subsidy Equivalent (PSE) paid to California agriculture in 1995 (updated to take the 1996 Farm Bill into account), where the PSE is defined as all government transfers to the industry including but not limited to production subsidies. They calculate that the California agricultural sector receives annual PSE transfers of $2.3 billion per year or about 11 percent of total commodity receipts. This is about one-half of the percentage PSE for all U.S. agriculture at the time, mainly because fruits and vegetables receive fewer transfers than the average commodity. However, California's PSE is higher than the percentage PSE received by producers in liberalized markets like Australia and New Zealand (Sumner and Hart 1997) where the 1995 PSE was about 3 percent. While the specific estimates of PSE vary over time, the general pattern identified by Sumner and Hart, that California producers have a lower PSE than the U.S. national average but higher than that for other agricultural exporters, holds today.

Key Markets

A review of the characteristics of important markets for California's agricultural products shows potential for gains to producers from further trade liberalization in these countries. However, in addition to serving as important markets for California products, the EU, Mexico, and China also compete against California in agricultural trade. This suggests that increasing trade flows will entail both risks and benefits for California agricultural producers.

Canada

The formation of the Canada-United States Free Trade Agreement (CUSTA) in 1989 and the North American Free Trade Agreement (NAFTA) in 1994, has led to greatly expanded agricultural trade between Canada, California's top market, and the U.S. NAFTA was designed to integrate economic activity among three nations: Canada, the U.S. and Mexico. It serves as a free trade agreement rather than a customs union or common market. Since 1989, U.S. agricultural exports to Canada have expanded by about 3 and one-half times, from $2.24 billion to $7.65 billion. Over the same period, agricultural imports from Canada have risen almost three-fold, from $2.93 billion to $8.66 billion. Fruits and vegetables account for more than one-third of Canada's agricultural imports from the U.S., so California plays an important role in this north-south trade.

However, in spite of the CUSTA and NAFTA, Canada continues to intervene in agricultural trade flows. The country uses non-tariff barriers such as licenses that restrict imports of bulk produce, fresh fruits, vegetables, and wine. For instance, Canadian regulations on fresh fruit and vegetable imports prohibit consignment sales of fresh fruit and vegetables without a prearranged buyer (USTR 2002). Canada also severely limits imports of dairy products, eggs, and poultry. According to the WTO Appellate Body, Canada's supply management system for dairy provides implicit export subsidies for these products (USTR 2002).

Producer groups in the U.S. have called for the greater use of non-tariff barriers to limit agricultural imports from Canada. This has often been accomplished by the use

of U.S. trade remedy laws. Trade remedy laws are intended to offset "unfair" trade that injures domestic producers as a result of either foreign sales that are "dumped" into the U.S. at less than fair value or influenced by foreign government subsidies. The regular use of trade remedy laws within NAFTA illustrates the fact that any transition to freer trade in agriculture, even between countries at relatively similar stages of development, may be politically difficult.

An example of the agricultural trade tensions between Canada and the U.S. is the recent "tomato wars," in which U.S. producers accused the Canadians of "dumping" tomatoes in the U.S. market. In October 2001, the United States government made a preliminary ruling that Canadian growers were dumping greenhouse tomatoes into the United States at prices below the Canadian cost of production. As a result of this finding, Canadian sales into the United States were assessed an average tariff of 32 percent. Several weeks later, the legal tables were turned as the Canadian government initiated an anti-dumping investigation against the U.S. fresh tomato industry (Barichello 2003). The Canadian counterclaim may not have been a coincidence. Rather, it may have been a tit-for-tat reaction to the steep U.S. duties imposed on Canadian greenhouse tomato sales to the United States. By July 2002, both cases were resolved with identical rulings of no material injury. While U.S. exports of fresh tomatoes to Canada declined 10 percent over the previous year during the period of investigation, Canadian imports of greenhouse tomatoes to the United States actually increased 17 percent over that year (ERS/USDA 2002d).

Japan

Despite the fact that Japanese agriculture receives high levels of government support and has limited market orientation (OECD 2001), it is also the world's largest net importer of agricultural products. The United States supplies roughly one-third of Japan's agricultural imports, and in 2002, Japan's agricultural imports from the U.S. were valued at $8.3 billion (ERS/USDA 2003). About 20 percent of these U.S. exports to Japan originated in California. Japan is California's third largest export market for agricultural products, with rice, cotton, almonds, beef, and oranges ranking as the top commodities (see table 2). Japan's weak economy has dampened its total agricultural imports in recent years (ERS/USDA 2003).

In the 1990s, the most significant import growth in Japan was in the area of fruits and vegetables, wine, and beef (USDA/FAS 1996). More recently, grains and oilseeds have done better (ERS/USDA 2003). Japan continues to restrict imports of horticultural products, livestock products, and processed foods, all of which are important exports for California. Recently, beef exports to Japan were halted in response to the BSE scare in Europe; and Japan continues to consider implementing a "beef import safeguard," which could further lower imports even further. At the time of this writing, Japan had halted all imports of U.S. beef, due to the discovery of BSE in the U.S. (ERS/USDA 2003).

Citing phytosanitary concerns, Japan blocks imports of U.S. fresh fruit, vegetables, and other horticultural crops, keeping Japanese domestic prices of horticultural products artificially high. Government subsidies are also provided to farmers to encourage them to divert land out of rice production and into vegetables (Kenzo and Dyck 2002). Japan also has country-of-origin labeling requirements for

agricultural products that principally affect fruits, vegetables and animal products (USTR 2002b). This acts as a non-tariff barrier to trade. Japan maintains high tariffs on beef, citrus, and processed foods. In addition, imported high quality California rice is strictly controlled and rarely reaches the consumer food table in Japan. The over-quota rice tariff in Japan exceeds 400 percent.

Until recently, Japan's system of food imports used mainly non-tariff barriers such as quotas and licenses, instead of tariffs. Sazanami et al. (1995) found that Japan's tariffs on food imports averaged only 8 percent, but the (tariff equivalent) quantitative import barriers averaged 272 percent, with the rice tariff equivalent barrier at 737 percent. Despite the tariffication required by the Uruguay round of trade liberalization, of Japan's agricultural imports remain highly protected (e.g., beef tariffs of 38 to 50 percent). In addition, Japan continues to use health and safety regulations to serve as barriers to trade.[3]

In the case of fresh oranges and lemons, the U.S. (primarily California and Arizona) is the largest supplier to Japan, accounting for over 80 percent of Japan's imports. Other exporters of oranges and lemons of lesser importance in Japan are Australia, Chile, and South Africa. The Japanese Government continues to impose a high import tariff on fresh oranges. The tariff rate is 32 percent for imports during the December-May period, (the marketing season for domestically-produced citrus) and 16 percent during June-November. (USDA/FAS 2002i).

European Union

California's second most important market, the EU, provides export subsidies for beef, cheese, other dairy products, and processed fruit, in competition with California. It also provides generous production subsidies on horticultural products such as tomatoes, grapes, peaches and lemons. The EU's subsidized production of these products affects California's competitiveness in third markets.

More generally, the EU's Common Agricultural Policy (CAP) significantly isolates European farmers from international competition. The CAP is a system of subsidies and market barriers that include mandatory land set-asides, commodity-specific direct payments, and export subsidies (for an overview of EU agricultural policy, see ERS/ USDA 1999, 2002). Support to agricultural producers as a share of total agriculture receipts is 40 percent higher in the EU than in the U.S. (OECD 2002b). Much of this support comes in the form of higher prices paid by domestic consumers. Recently, there has been increasing pressure to significantly reform the CAP; the program has been called by the popular press an "extravagant folly" (Financial Times September 24, 2002) and "demented" (The Economist October 3, 2002). These publications and others have argued that reform of the CAP will be a critical element of the next round of trade negotiations, if these talks are to be successful. Enlargement of the EU to include ten Central and Eastern European countries will also create pressure for further reform.

Structural reforms of European agricultural policy will have important implications for California, both because the region competes in third markets with California, and because the region is an important customer, as discussed earlier. If the

[3] There are exceptions that are important to California. For example, raw cotton imports enter Japan duty free.

existing EU agricultural policy is applied to the 10 new member countries, the incentive will be to increase production and agricultural exports. Several of the new member countries have a comparative advantage in agriculture, especially in the area of wheat, coarse grains, and livestock. California agriculture will benefit if this expanded production results in budgetary pressure to reform the CAP. In addition, California agriculture may well benefit from projected income growth in Central and Eastern Europe that results from EU membership. Higher incomes in this region will lead to increased demand there for high-valued food, of the type exported from California.

An ongoing trade dispute between the US and the EU concerns the use of geographical indicators (GIs). The EU wants to prohibit foreign producers of food and beverage products from labeling products with European regional names (e.g., Italian Parma ham or French Roquefort cheese). The list of products that will receive this protection is an on-going subject of negotiation at the WTO. For California there is a trade-off associated with GI protection. On the one hand, California would have to stop using certain names if the EU is successful (e.g., Basmati rice or Feta cheese as these names refer to regions of other countries). On the other hand, California agriculture could use GI protection to develop niche markets for its food and beverage products, potentially capturing a price premium.

China

China is a relatively new member of the WTO, and developments in China's agricultural trade are being carefully watched by the California industry. China's land area sown to fruits, nuts, and vegetables has grown rapidly in the past decade, and trade is expected to take on a greater importance for China in coming years now that it has joined the WTO. China's horticultural exports account for more than one-half of its agricultural exports (Carter and Li 2002). Given China's rich agricultural resources, abundant labor supply, and large population, it has great potential to play a much more prominent role in agricultural trade in the coming years, as both an exporter and an importer.

China uses both tariff and non-tariff barriers to restrict agricultural imports. China has in place high import tariffs on certain agricultural commodities currently exported by California, such as citrus, table grapes, wine, beef and dairy products. There is also evidence that the value added tax in China, as currently applied, results in a price break for domestic field crops as compared to imports, of about 4 percent (USDA/FAS 2002). China has import tariffs on citrus and table grapes of approximately 10 percent and maintains a restrictive tariff rate quota (TRQ) on cotton. As part of its WTO accession negotiations, China agreed to a significant lowering of these tariffs to around 10 to 12 percent. In addition, if the WTO liberalizes world trade in clothing and textiles (e.g., removes restrictive U.S. import quotas), then China will undoubtedly expand exports of clothing and textiles. This could result in increased imports of cotton into China.

Domestic developments in China not directly related to trade policy but related to rising incomes may also present opportunities for California agricultural exports to that country. For example, both the USDA Foreign Agricultural Service (USDA/FAS 2002b) and the popular press (Barboza 2003) have recently highlighted the growing

importance of western-style supermarkets in Chinese cities, replacing more traditional markets. This may present a new opportunity for California producers, with new opportunities to supply pre-packaged or processed products and products that require refrigeration. Another example of the effect of increasing incomes on potential demand for California products is the increasing popularity of wine among the urban middle class (USDA/FAS 2002c). Coupled with the dismantling of monopolies on alcohol imports as part of WTO accession, this increasing demand may be an important opportunity for California.

China has the potential to become a serious export competitor with the U.S. in third markets for rice and horticultural products. This is partly a result of the relative size of the two countries; the harvested area of fruits and vegetables in China is about 22 million hectares, or seven times the U.S. area for these products. As China's agricultural sector moves away from its historical focus on land-intensive grains and concentrates more on labor-intensive cash crops, markets in other parts of Asia will be subject to increased competition from China. Since joining the WTO, export opportunities have greatly improved for China for such products as rice, fruits and vegetables (Theiler and Tuan 1994). Entry into the WTO will also mean that China's consumers will have more open access to world food markets and a potential for increased imports.

There is uncertainty over the trade patterns that are likely to unfold as China opens it doors further to agricultural trade (Bhattasali, Li, and Martin 2002). There is no doubt that China has a comparative advantage in labor-intensive agricultural products such as fruits and vegetables and that exports of these products from China have been growing into markets important for California (Huang 2002). The U.S. response to China's production of these products will affect how competition from China impacts California producers.

An example of the policy response to the emergence of China as a competitor is the recent skirmish over the garlic market. Normally California accounts for over 80 percent of U.S. garlic production but it faced stiff competition from China in the mid 1990s. U.S. imports of Chinese garlic increased from about 3 million pounds a year in 1992 to 64 million pounds by 1994. This raised concerns among California producers, so California garlic growers lobbied for, and won, import relief from Chinese imports in 1994, when the U.S. government issued an antidumping order and imposed a 376 percent tariff on garlic imports from China.

Garlic production in California is highly concentrated, with less than 10 producers accounting for about 80 percent of the annual harvest. These few growers joined together to seek protection from foreign competition and they were quite successful. China never regained its market share after the antidumping case. In 1994 when the case was initiated, the value of U.S. imports of garlic from China decreased from $11.9 million to $4.1 million, a drop of 65.5 percent. However, while China's value of exports to the United States fell to $250,000 in 1995, Mexico's exports nearly doubled in value to $20 million, and Argentina's exports increased by an additional 19 percent to $3.9 million. California agriculture was involved in similar antidumping cases against China in mushrooms in 1998, concentrated apple juice in 1999, and honey in 2001.

Hong Kong

Hong Kong is physically small, very densely populated, and relatively affluent. Hong Kong's population is 7.3 million, compared with China's 1.3 billion. Hong Kong's income per head is high, at nearly $25,000 annually (CIA 2002). Because of its size, Hong Kong is highly dependent on the rest of the world for food. The California farmer plays an important role in supplying this high-valued market. For instance, fruits and vegetable exports are air-freighted across the Pacific in order to reach Hong Kong consumers within days of harvest.

The largest supplier of agricultural products to Hong Kong is the People's Republic of China, with 25 percent of the market in 2002. The United States is second, with about 15 percent of the market (FA/USDA 2003). China and California compete head-on in this market exporting similar products such as fruits, vegetables, nuts and rice.

The free market economy of Hong Kong is considered to be the most open agricultural market in the world. There are no import tariffs on food, while non-tariff barriers such as phyosanitary or plant quarantine regulations, are almost nonexistent. Even rice imports, historically protected with tariffs and quotas in many Asian markets, have been liberalized. In 2003, the Hong Kong rice import quota system was eliminated. While the market is expected to be dominated by Thai rice, there remain new opportunities for California producers (USDA/FAS 2003b).

In 2002, total U.S. agricultural exports to Hong Kong were $1.14 billion, with California supplying about 60 percent of these sales. Hong Kong ranks as the seventh largest export market for U.S. agricultural products (ERS/USDA 2003). U.S. agricultural exports to Hong Kong increased by about 80 percent from 1990 to 2000 and peaked at $1.7 billion in 1997. California is the number one supplier of fresh fruit to Hong Kong and the territory is among the top six California export markets for oranges, grapes, wine, tomatoes, dairy, raisins, and lettuce. However, California is facing strong competition for the Hong Kong market and California's market share may be eroding slightly. The U.S.'s market share of Hong Kong's fruit imports fell to 26 percent in 2000 from 33 percent in 1996 (FAS/USDA 2001d).

Even though Hong Kong is an important final market for California, it re-exports a considerable amount of fruits and vegetables from California. Mainland China is the major destination for most of these re-exports. About 30 percent of Hong Kong's fruit imports are re-exported to China. Table grapes, oranges, and apples are the key products re-exported. For example, in 2001 the U.S. sold table grapes worth $62 million to Hong Kong and $36 million worth of this trade was legally re-exported to China (FAS/USDA 2002l). In addition, some re-exports of agricultural products to China via Hong Kong are undocumented. As a result of China's high tariffs and restrictive phytosanitary requirements on imports.

With further economic integration between Hong Kong and China, farmers in China will be given incentives to improve the quality of their fruits and vegetables in order to more effectively compete with California. China has the agronomic potential to export high-quality food to Hong Kong. The hurdles in China are lack of proper incentives and inadequate infrastructure. As these hurdles are overcome, California's competitiveness in the Hong Kong market will be affected.

Mexico

Mexican agricultural trade is highly dependent on its two partners in NAFTA. Agricultural provisions were an important component of the NAFTA agreement (Orden, 1996), with agricultural tariff and non-tariff barriers being phased out over varying time periods up to 15 years. Within U.S. and Mexican agriculture, some groups supported the agreement while others opposed it. In response to these concerns, NAFTA gives special consideration to the centrality of corn in Mexican agriculture, so the country maintains significant tariffs on corn imports even as other trade barriers have been removed more quickly. In 2003, the tenth year of the NAFTA agreement, a new round of tariff reductions within the free trade area came into affect. These tariff reductions are expected to significantly affect Mexican farmers, who will face new competition from American and Canadian producers in such products as potatoes, barley and wheat, and, importantly for California, cotton, fresh apples, frozen strawberries and certain milk products (EIU 2003).

According to reports in the popular press, the competitive pressures generated by NAFTA have been economically painful for Mexican producers. This is at least partly due to the fact that structural inefficiencies in the Mexican economy (e.g., high transportation costs) increase costs of production and marketing (The Economist November 2002). Some Mexican policymakers suggest that it is also a result of the subsidies received by U.S. farmers that the Mexican government cannot hope to match (The Wall Street Journal March 2003).

At the outset of NAFTA, there was significant opposition to the agreement from U.S. agriculture. Opposition came from producers of wheat, sugar, peanuts, citrus, and winter fruits and vegetables (Orden 1996). Some agricultural interests in California opposed NAFTA because of fear of competition from low-wage Mexican agriculture in the production of labor-intensive crops. Proponents argued that NAFTA would drive down agricultural wage rates in California and thus restore the competitiveness of California's agriculture.

Factor price equalization lies at the root of the debate over the effects of liberalized trade on the competitiveness of California agriculture precisely because a large percentage of California's agricultural production is labor intensive, using a relatively high proportion of labor relative to other inputs such as land and capital. This includes the production of fruits and vegetables, nuts, and various horticultural crops, where labor costs range from 20 to 50 percent of total production costs (Martin and Perloff 1997). Prior to NAFTA these crops were protected by import tariffs ranging from 5 to 30 percent, and other non-tariff barriers such as marketing orders. Much of this labor is unskilled and most of the workers are immigrants from Mexico. This labor-intensive production means that California and Mexican agriculture differ less than might be predicted by comparing incomes per capita; thus the two regions are likely to compete against each other in third markets.

Despite protectionism on both sides of the border, there has been progress towards freer trade and cross-border investment between the U.S. and Mexico since NAFTA. For instance, in 1996 the U.S. opened its market to Mexican avocados for the first time in 82 years. Prior to this ruling, phytosanitary rules banned unprocessed Mexican avocado imports and provided considerable protection to California growers.

The U.S. decision to import avocados will extend beyond that single market and probably help in alleviating trade barriers to Mexican peaches, nectarines and cherries. Accumulated U.S. investment in Mexican agricultural production equaled $45 million from 1994 to 1997, with even greater investment in the food processing industry in Mexico of about $5 billion in 1999 (Bolling and Jerado 2001).

FEDERAL SUPPORT FOR CALIFORNIA AGRICULTURE

California agriculture receives relatively few subsidies from the federal government compared to other states. However, California does benefit from several programs designed to either explicitly subsidize exports or promote demand for California products in foreign markets. Funding for these programs continues in spite of the public commitment by the U.S. government to phase out export subsidies, and the (likely non-binding) cap placed on this form of support by WTO commitments. The programs that explicitly subsidize exports are the Export Enhancement Program (EEP) and the Dairy Export Incentive Program (DEIP). The Market Access Program (MAP) and the Foreign Market Development Program (FMD) subsidize the cost of market development activities overseas. A new program called Technical Assistance for Specialty Crops Program (TASC) is intended to fund projects that address technical barriers to the export of specialty crops. Among these programs, the most important to California producers is the MAP, which received increased funding in the 2002 Farm Bill. In this subsection, we describe each of these programs, and their importance to California agriculture.

Export Subsidy Programs

The 2002 Farm Bill, as with previous Farm Bills, authorized Export Enhancement Program (EEP) export subsidies for such commodities as wheat, rice, barley, eggs, and frozen poultry. FAS authorizes export subsides for these products either when prices are low or as "self-defense" when other countries engage in what FAS defines "unfair" trading practices (Schumacher 1998). The 2002 Farm Bill allocated $478 million annually to EEP (ERS/USDA 2002c), but the share of this subsidy that will flow to California will probably be small. In recent years only frozen poultry has qualified for EEP subsidies (totaling about $6.8 million in 2001), because world market prices have been sufficiently high for other eligible commodities, though the potential scope of the EEP was expanded in the 2002 Farm Bill. This may increase the size of the EEP subsidy captured by California producers. Specifically, the 2002 Farm Bill allows export subsidies to offset "a trade restriction or commercial requirement (such as a labeling requirement) that adversely affects a new technology (including biotechnology)." As Hudson (2002) points out, this may open up EEP to many new agriculture products not covered in earlier years.

The DEIP subsidizes exports of milk powder, cheese, and butter. These dairy products, unlike the products that are eligible for the EEP, are subject to federal dairy price support, creating a gap between domestic prices and world market prices. The price support is administered by the Commodity Credit Corporation, which pays "bonuses" to exporters to compensate these firms for the differential between prevailing international market prices and artificially high domestic prices

(FAS/USDA 2001b). The stated intention of the program is to develop export markets for U.S. dairy producers in markets where dairy is subsidized. In 2001, so-called bonuses of $1.76 million were awarded for U.S. cheese exports and $6.8 million was paid to U.S. non-fat dry milk exporters (FAS/USDA 2001). These low figures, far below WTO ceilings, reflect the fact that relatively little of the dairy output from most U.S. producers is actually exported. Perhaps 5 percent of volume is exported, with most going to Mexico (Brunke 2002). Butter and butter oil lost DEIP funding in 2001 and 2002 due to high domestic prices and a fragile butter market, while similar market conditions eliminated support for whole milk powder those same years (Rouse 2002). As shown in table 2, DEIP awards to California producers vary widely from year-to-year, depending on world market prices, though the bulk of export subsidy payments consistently goes to non-fat dry milk (FAS/USDA 2001c, 2002d).

Export Promotion Programs

California is a major recipient of federal DEIP funding but could benefit more from the Market Access Program (MAP) and Foreign Market Development Program (FMD). In both of these programs, authorized CCC funds share foreign market development costs with trade associations or companies for activities such as generic commodity or consumer promotions. This support is not subject to WTO caps, as discussed later.

Table 2. California DEIP Awards

Exporter	Commodities	FY 2000 ($ millions)	FY 2001 ($ millions)	FY 2002 ($ millions)
Dairy Farmers of America	Non-fat dry milk	1.37	0	0
	Whole milk powder	0.05	0	0
DairyAmerica	Non-fat dry milk	0.51	0.02	26.55
Gerber California	Non-fat dry milk	5.20	1.69	0.01
	Whole milk powder	1.42	0	0
Luxor California Exports Corp.	Cheddar cheese	1.00	0	0
Matin Trading Co.	Non-fat dry milk	0.03	0	0
Sorrento Cheese Co.	Mozzarella cheese	0.04	0	0
Total non-fat dry milk		7.11	1.85	26.65
Total DEIP awards		9.62	1.85	26.65

Source: FAS/USDA Detailed Report of Exporter awards (2001, 2002). Authors' identification of exporters based in California by address of corporate headquarters.

Under the 2002 Farm Bill, Congress authorized gradual increases in MAP funding from an annual $90 million in 1996-2001 to $100 million in 2002, $110 million in 2003, $125 million in 2004, $140 million in 2005, and $200 million in 2006 and 2007 (ERS/USDA 2002c). The MAP program funds up to 50 percent of a company or trade group's cost of branded promotion in overseas markets. Qualifying activities include trade shows, advertising, product demonstrations, and in-store and food-service promotions (FAS/USDA 2002e, 2002g). Because support is provided for the promotion of brand-name products, the MAP has been controversial and sometimes described as a form of "corporate welfare" (see for example, Cato Institute 1998).

Table 3. California Market Access Program Allocations

Trade Organization	FY 2001 Award ($ millions)	FY 2002 Award ($ millions)
Blue Diamond Growers/Almond Board of California	1.17	1.16
California Agricultural Export Council	0.37	0.47
California Asparagus Commission	0.18	0.20
California Cling Peach Growers Advisory Board	0.32	0.16
California Kiwifruit Commission	0.14	0.12
California Pistachio Commission	0.75	0.75
California Prune Board	1,86	1.76
California Strawberry Commission	0.51	0.47
California Table Grape Commission	1.87	1.87
California Tomato Commission	0.47	0.47
California Tree Fruit Agreement	0.73	0.76
California Walnut Commission	2.16	0.21
Raisin Administrative Committee	1.78	1.73
Wine Institute	2.72	3.13
Cotton Council International	7.66	6.74
Sunkist Growers, Inc	1.81	1.64
USA Rice Federation/ U.S. Rice Producers Assoc.	2.13	2.33
U.S. Dairy Export Council	1.56	1.48
Total	28.51	27.66

Source: FAS Online: Market Access Program Allocations, Fiscal Years 2001 and 2002.
Notes: Payments to cotton, rice, and dairy producers not limited to California. Sunkist products are grown in Arizona and California.

California agricultural interests receive a large portion of the federal MAP funds. Table 3 lists California companies and trade associations receiving recent MAP assistance, including national or regional trade associations of which California producers are members. While all $28 million shown in Table 5 does not flow solely to California producers and their trade associations, at least $15 million does benefit

California producers through the MAP program.[4] This amount alone is approximately 15 percent of the entire MAP budget in 2001 (FAS/USDA 2002j), meaning that California receives more than 15 percent of the MAP budget. Since California accounts for about 15 percent of U.S. agricultural export revenues but receives more than 15 percent of the MAP budget, it benefits disproportionately from MAP funds.

FMD differs from MAP in that FMD's stated goal is to target long-term development of overseas markets for generic commodities through trade associations rather than the promotion of individual brand products by companies. According to FAS/USDA, FMD gives preference to non-profit U.S. agricultural and trade groups that represent an entire industry or have a nationwide scope and is intended to support the export of value-added products to emerging markets (FAS/USDA 2002f). The FMD is also supposed to support a wider variety of marketing activities than MAP, allowing applicants to submit a marketing plan describing the world market for the given commodity, a marketing budget, and those promotional activities the trade association will undertake. In the latest Farm Bill, Congress increased annual funding for this program from $27.5 million to $34.5 million annually (ERS/USDA 2002c). Trade associations pertinent to California agriculture that received FMD funding in 2001 are listed in Table 4 (FAS/USDA 2002h). However, because FMD targets trade associations of a national scope, only one trade association included in the table represents solely California producers.

Table 4. Trade associations related to California receiving FMD funding ($1000)

Trade Association	2001 FMD Awards	2002 FMD Awards
California Agricultural Export Council	11	12
Cotton Council International	2,087	2,312
National Cottonseed Products Association	121	91
USA Rice Federation	1,688	1,649
U.S. Dairy Export Council	809	818
Total	4,716	4,882

Source: FMD Cooperator Program Budget, Fiscal Years 2001 and 2002.

The new TASC program is targeted at specialty crops, which are important to California. The program, funded at $2 million per year through 2007, is intended to subsidize the cost of activities such as seminars, field surveys, pest and disease research, and pre-clearance programs that may lower phytosanitary and technical barriers to trade for specialty crops (FAS/USDA 2003c). Peanuts, sugar, and tobacco are not eligible for support. Like the MAP, this program is open to private firms as well as non-profit trade associations, suggesting that it will be vulnerable to the same

[4] Payments to Sunkist, Cotton Council International, USA Rice Federation, and U.S. Dairy Export Council are shared by California and other participating states.

criticism that MAP has faced. Table 5 lists California organizations that will receive TASC funding in 2002.

Table 5. Trade associations related to California receiving TASC funding ($1000)

Trade Association	2002 TASC Awards
California Fig Advisory Board	78
California Grape and Tree Fruit League	67
California Table Grape Commission	160
California Tree Fruit Agreement	92
California Walnut Commission	34
California-Arizona Lettuce Export Council	160
Total	591

Source: FAS/USDA 2003b

Evidence on the effectiveness of export subsidy and promotion programs

Export subsidy programs like EEP and DEIP are constrained by current WTO commitments, and the California Farm Bureau Federation (CFBF) has taken the position that they should be phased out entirely as part of on-going WTO negotiations (Wenger 2001, Dillabo 2000). However, the CFBF's position with respect to the MAP and FMD programs is vastly different. There seems to remain a consensus in California agriculture that these programs deserve further and increased funding (CFBF 2001b).

Despite political support in California for export promotion programs, whether MAP and FMD actually benefit California's international competativeness remains unclear. FAS claims benefits from these programs using a methodology that the General Accounting Office (GAO) has called faulty and inconsistent with Office of Management and Budget guidelines (GAO 1999). A 1997 study of agricultural export programs sponsored by the GAO finds that there is no conclusive evidence that these programs benefit the aggregate economy (GAO 1997). Agricultural export programs "reallocate production, employment, and income between sectors" rather than increasing total economic activity (GAO 1997). The original justification for these programs was to support the export of government grain stocks created by domestic subsidy programs which have since been reformed. Another stated purpose, to counter agricultural subsidies in competitor countries, remains an objective of MAP. However, the GAO finds that it is difficult to effectively target MAP funds to achieve this goal because foreign subsidies are not readily identifiable.

Perhaps the most problematic element of MAP, and potentially of the TASC, is that even if it successfully increases exports of assisted commodities to targeted markets there is evidence that this is often to the detriment of unassisted products. For

example, proponents of MAP point to a projected increase of $5.30 over 40 years in walnut exports to Japan for every $1.00 spent on walnut promotion. However, another study found that while every dollar spent on walnut promotion increased walnut exports by $1.42, it actually reduced the exports of eight other horticultural products by $3.57 per dollar spent, resulting in a net reduction in U.S. agricultural exports for every dollar spent by $2.15 (GAO 1997). Studies on meat exports to Japan are also mixed, with some concluding positive findings for beef promotion with no positive effects for pork or poultry, while others only find statistically significant increases for U.S. exports of beef offal. While the targeted overseas markets may purchase more of the targeted commodity, agricultural export programs merely benefit certain U.S. exports by displacing others and do little to increase the American share of the world agricultural market (GAO 1997). Halliburton and Henneberry (1995) also conclude that there is little economic evidence that export promotion programs are effective.

Economic theory predicts that programs like the MAP are not cost-effective uses of public budgets, and thus it is not surprising that it is difficult to find economic evidence in favor of the MAP. If the private benefits of marketing efforts exceed their cost, then firms should find it profitable to undertake these efforts without government assistance. Government assistance uses taxpayers' money to underwrite marketing efforts with high costs relative to benefits. While well-known arguments are made for government support for investments that have "externalities" associated with them, that is, benefits that accrue to many groups whether they pay the cost of the investment or not. However, the marketing of name-brand agricultural products is not likely to be such an investment.

MANDATORY COUNTRY-OF-ORIGIN LABELING

In the 2002 Farm Bill, Congress mandated country-of-origin-labeling (COOL) for fresh and frozen food commodities such as meats, fish, fruits and vegetables, and peanuts.[5] The new law is an amendment to the Agricultural Marketing Act of 1946 and will impose new traceability responsibilities of uncertain magnitude on suppliers at all stages of the food marketing chain. As a result, COOL has been met with heated reactions within the food and agriculture industry, and its implementation has recently been delayed by several years.

In this section we describe the COOL legislation, and suggest that current practices in the meat-packing industry will make implementation difficult. We also discuss the economics of COOL and the conditions under which this regulation could increase the profits of domestic producers. This outcome is by no means assured. Benefits to society as a whole from COOL are even less likely. As we discuss, the logic of revealed preference predicts that if consumers were prepared to pay for country-of-origin information amounts in excess of the cost of providing this information, voluntary labeling schemes would be adopted. After discussing the economics of COOL, we turn to political economy issues and review various interest groups' lobbying positions at the time the 2002 Farm Bill legislation was passed. We next consider the international trade implications of COOL which is likely to act as a non-

[5] For expositional purposes, the acronym COOL refers to mandatory labeling, unless specified otherwise.

tariff trade barrier. Whether the rule would, if implamented, be challenged in the World Trade Organization (WTO) remains unclear.

The Legislation

The commodities that COOL applies to include muscle cuts of beef, lamb, and pork, ground beef, lamb, and pork, wild and farm-raised fish and shellfish, fresh and frozen perishable agricultural commodities (fruits and vegetables), and peanuts. Under previous law, there were country-of-origin labeling requirements, but these mostly applied at the wholesale level (ERS/USDA 2001c). Shrink-wrapped packages of apples had to convey country of origin to the customer at the supermarket, while a crate of imported pears only had to indicate its country of origin to the retailer receiving the package, who by placing the pears in a bin, had no obligation to inform his/her customers of the pears' origin. Similarly, imported meat that underwent processing in the U.S. was not required to be labeled for retail sale unless that meat was received in the exact form in which it would be sold to the consumer.

The new regulation covers both domestic and imported food commodities and requires that retailers inform retail consumers of country of origin for the covered commodities. Thus, the number of businesses that must comply with COOL (if implemented has risen exponentially with the 2002 Farm Bill. Furthermore, products that lend themselves to multiple origins such as meat and fish are difficult to track, and it may be difficult to maintain records necessary for compliance.

Effective October 11, 2002, the Secretary of Agriculture, through AMS, issued voluntary guidelines for producers, retailers, or importers, as the law dictated (for more information, see AMS/USDA 2002a). Public comment was solicited during development of the program, and the Secretary was to release mandatory labeling requirements by September 30, 2004. However, as of December 2003, a House-Senate conference committee delayed mandatory compliance with COOL for all products except farm-raised and wild fish until September 2006. Strong opposition to COOL by producers and retailers is largely responsible for the postponement of this regulation. A review of the voluntary guidelines released in October reveals the complexity of the situation.

According to Federal Register 67-198, to qualify for a "United States Country of Origin" label, beef, lamb, or pork must come from an animal exclusively born, raised, and slaughtered in the United States. For beef, an animal may be born and raised in Alaska or Hawaii and transported through Canada for up to 60 days before slaughter in the United States to merit a U.S. origin label. Fish and shellfish labeled as U.S. origin must come from farmed product hatched, raised, harvested, and processed in the United States or from wild seafood harvested in U.S. waters or aboard a U.S. flagged vessel and processed either on said vessel or in the United States. Seafood labels must also indicate whether the product is farmed or wild. Peanuts and perishable agricultural commodities must be exclusively produced in the United States for U.S. origin distinction.

The exception made for beef from Alaska and Hawaii demonstrates some of the complications inherent in characterizing meat as the product of one country or another. Before slaughter and sale, an animal may pass through multiple countries and

therefore cannot be labeled as the product of a single country. In Federal Register 67-198, AMS addresses the problem of multiple origins, but an abundance of fine distinctions that a producer or retailer must consider indicates a potential for difficult and inconsistent labeling. For example, ground beef normally contains meat from more than one animal and thus could include beef from both the U.S. and another country. The new law will require the processor to verify the origin of each animal and determine the proportion used of each so that the label can reflect country of origin by prominence of weight. Thus, a label reading "From Country X, Slaughtered in the United States; Product of Country Y; and United States Product" would classify a product primarily from cattle born and raised in Country X but slaughtered in the U.S. followed by imported Country Y beef trimmings and beef trimmings of U.S. origin (AMS/USDA 2001a p. 63370).

Products exempt from the mandatory COOL regulation include ingredients in a processed food item and food sold in restaurants or through the food service channel. AMS defines an ingredient in a processed food item as either "a combination of ingredients that result in a product with an identity that is different from that of the covered commodity" or "a commodity that is materially changed to the point that its character is substantially different from that of the covered commodity" (AMS/USDA 2002a, p. 63368). Examples of the former definition could be peanuts in a candy bar or salmon in sushi. Under this definition, a bag of frozen mixed vegetables would remain a covered commodity because it maintains its identity, but the peanuts and salmon in the earlier example would not. Examples of the latter definition include anything cooked, cured, or dried like corned beef briskets or bacon. These are to be considered functionally different products than the meat the processor began with, whereas vacuum-packed steaks or roasts retain their identity after processing and thus require mandatory labeling under COOL.

COOL regulations do not affect restaurants, but have implications for nearly everyone else within the unprocessed food chain. The law states that "the Secretary may require that any person that…distributes a covered commodity for retail sale maintain a verifiable record keeping audit trail…to verify compliance" for a period of up to two years (AMS/USDA 2002a, p., 63371). This includes foreign and domestic farmers and ranchers, distributors and processors, and retailers. We discuss the ramifications of this audit trail requirement for the cost of compliance below.

Do the Benefits of Mandatory Labeling Outweigh its Costs?

The cost of COOL implementation can only be estimated at this time. The major direct costs of the program include the costs of segregating and tracking product origins, the physical cost of labels, and enforcement costs. AMS itself projects that domestic producers, food-handlers, and retailers will spend $2 billion and 60 million labor hours on COOL in the first year, though these figures were questioned by the GAO in a 2003 report. The GAO (1999b) reports that the Food and Drug Administration has estimated that the cost of monitoring COOL for producers will be about $56 million annually. The costs of implementation for produce will likely be lower than the costs of implementation for meats as some fruits and vegetables are already labeled by country of origin. From a policy perspective, whether these uncertain costs outweigh the

benefits to society of the program, and the extent to which retailers, producers and consumers will share these costs, are of equal importance.

The extent to which COOL may benefit domestic producers depends on two considerations, (1) whether country-of-origin information will induce and/or allow consumers to demand more domestic products relative to their foreign counterparts (assuming all other attributes are identical), and (2) whether the costs of COOL implementation will be differentially higher for foreign suppliers than domestic suppliers. If COOL costs foreign suppliers more to comply than domestic suppliers, the transaction costs imposed by COOL will be lower for domestic suppliers than for foreign suppliers. Even if the price elasticity of demand for foreign and domestic goods is the same, demand for foreign products will fall more than demand for domestic products, and some consumers who previously bought foreign goods will switch to buying domestic ones. This effect will be exacerbated to the extent that labels themselves affect consumers' preferences or allow them to act upon preferences that were unsatisfied before mandatory labeling. If consumers truly prefer domestic products relative to foreign ones, all other characteristics being equal, COOL will be accompanied by increased demand for domestic goods. If this effect and the differentially higher compliance costs for foreign goods are large enough, this could theoretically offset the reduced demand for labeled goods occasioned by the transactions costs imposed by COOL. Gains to domestic producers are limited by the size of the market share claimed by foreign producers prior to the introduction of COOL, but in this case domestic producers would benefit from the regulation. Consumers could be net beneficiaries as well if mandatory labeling satisfied a preference that the market previously failed to serve.

Economic theory and empirical evidence both suggest that the benefits of COOL are unlikely to outweigh the costs of compliance. Both consumers and suppliers are likely to be worse off as a result of this regulation. The major support for this conclusion comes from the concept of "revealed preference." In the absence of market failures, the fact that producers have not found it profitable to provide COOL to customers voluntarily is strong evidence that willingness to pay for this information does not outweigh the cost of providing it. If the benefits outweighed the costs, profit-maximizing firms would have already exploited this opportunity. Of course, this argument depends on whether the market for agricultural products functions well and would be responsive to consumer demands for COOL if it existed. In this section, we argue that this is indeed the case, and provide empirical support for the theoretical argument that the costs of COOL exceed its benefits. These findings are consistent with the conclusion of the U.S. Food Safety and Inspection Service (2000), that there is no evidence that "a price premium engendered by country of origin labeling will occur, and, if it does, [that it] will be large or persist over the long term."

There is little evidence that imperfections in the food market prevent producers from providing country-of-origin-labeling. Asymmetric information, where one party in a potential transaction has better information than the other, can indeed lead to inefficient outcomes. However, in standard economic theory this result arises either because a seller would like to signal that his product is of high quality but is unable to do so convincingly, or because a seller that has a low-quality product can pretend that

it is high quality.[6] But this situation does not plausibly apply in the case of COOL in agriculture. There is nothing now that inhibits producers from "signaling" the national origin of their products.

Whatever their revealed preference, do consumers have a stated preference for country-of-origin labeling? The GAO (1999b) summarizes survey evidence as indicating that American consumers claim they would prefer to buy U.S. food products if all other factors were equal, and that consumers believe American food products are safer than foreign ones. However, surveys also suggest that labeling information about freshness, nutrition, storage, and preparation tips is more important to consumers than country of origin (GAO 1999b; for further a review of survey evidence see Robinson 2003). Revealed preference arguments in their simplest form suggest that if consumers truly preferred domestic food products, it would only take one grocer to limit store items to domestic-only products before other stores saw this grocer's success and followed suit (Golan, et al. 2000).

Many producers have voluntarily provided labeling information for a variety of reasons. Producers of organic products have voluntarily labeled their products to attempt to capture a premium, as have producers of "dolphin-safe tuna." If demand for information exists, agricultural producers have generally been adept at seizing this opportunity. Similarly, many lamb imports from Australia and New Zealand already bear obvious country-of-origin labels going beyond legal requirements because consumers prefer this product to domestic lamb and lamb from the rest of the world (Golan et al. 2000). Thus, Australian and New Zealand suppliers have an incentive to label their lamb products because they infer a positive net benefit to doing so, while producers and retailers who abstain from the practice must know that sales will not increase enough from offset labeling costs.

There are other non-economic arguments used to support mandatory COOL that relate to food safety. It is possible that COOL would make tracing disease outbreaks easier, thus reducing the health costs of food-related diseases. This is less likely than might initially seem to be the case, because of the long delay between disease outbreaks and the shipment of contaminated products (GAO 1999b). If domestic products are systematically safer than foreign products, substitution towards domestic goods could also increase the average safety level of food consumed. However, there is little evidence that foreign food products are systematically less safe than domestic products. Existing inspection rules ensure that foreign and domestic meats meet the same standards.[7] Foreign fruits and vegetables do not systemically carry more pesticide residue than their domestic counterparts (GAO 1999b). There is insufficient evidence to determine if bacteria levels differ between foreign and domestic produce (GAO 1999b).[8]

[6] The classic example of this is the used car market where sellers will always claim that cars are not lemons; would-be buyers have difficulty determining which claims are legitimate. See, Akerlof (1970).

[7] The fact that this inspection process results in foreign meat bearing a sticker reading "USDA Grade" in grocery stores was raised as a complaint during the debate over COOL. It was argued that this misleads consumers into assuming that the meat they purchased originated in the U.S.

[8] Concerns about food safety may become more salient in coming years, making mandatory labeling more desirable and the marginal cost of the COOL regulation lower. For example, the FDA has proposed that, under the authority of the 2002 Bioterrorism Act, it will require the food industry to improve record keeping (GAO 2003). If this occurs, the incremental costs of COOL implementation will be reduced.

Not surprisingly, in light of revealed preference arguments, many retailers have argued that the cost of COOL implementation will be excessive and burdensome (see for example, the comments of U.S., Canada and international pork organizations sent to the U.S. Secretary of Agriculture (Roper et al. 2002)). As noted above, AMS has forecast an annual cost of $2 billion to implement the regulation. These costs will be borne by the private sector as the Farm Bill provides no funds to alleviate industry costs for developing and maintaining the necessary record-keeping systems (AMS/USDA 2002b). In addition, the statute prohibits the development of a mandatory identification system for certification purposes. Instead, USDA must "use as a model certification programs in existence on the date of this Act" (AMS/USDA 2002a). As discussed earlier, USDA is also allowed to require a verifiable recordkeeping audit trail from retailers to verify compliance." These seemingly contradictory directions to the USDA—no mandatory identification system is allowed, but an audit trail from retailers may be required—could limit the AMS's ability to implement the COOL legislation, but is likely intended to act as a prohibition against any efforts to mandate full-scale "traceback" requirements that would track products from the farm gate to the grocery store (Hayes and Meyer 2003). Such a formal traceback requirement would impose costs with legal incidence on producers in the field unlike a certification program, where the legal incidence of the costs of regulation falls mostly on retailers and processors. Of course, the economic incidence of the costs of this regulation will be determined by the price elasticity of demand (and derived demand) for products, as explained in the discussion that conceptualized COOL as a transaction cost.

While retailers' organizations, like the Food Marketing Institute, have generally been against mandatory COOL, perhaps the loudest complaints about the cost of COOL have come from the meat packing and processing industry. In particular, the costs of tracking and labeling the origin of ground meat products are expected to be relatively high. For example, the president of the American Meat Institute, a trade group representing meat packers and processors has claimed that COOL regulation will be costly and complicated and that it will "force companies to source their meat not based on quality or price, but based on what will simplify their labeling requirements" (Boyle 2002). The National Pork Producer's Council also opposed COOL legislation (Roper et al. 2002), and has since funded a study that estimates that the cost of COOL implementation will translate into a $0.08 per pound increase in the average retail cost of pork (Hayes and Meyer 2003). A key element of this study is an argument that, whatever the intention of the authors of the COOL legislation, implementation will in practice require complete "traceback" capability from the farm to the retail level. With the 2003 discovery of BSE in the U.S., a comprehensive traceback system for livestock may receive greater political support.

Agricultural ranchers and growers have largely welcomed the COOL legislation. The California Farm Bureau (CFBF 2003), the Rocky Mountain Farmers Union (RMFU 2002), and the Western Growers Association (McInerney 2003), among other such organizations, have endorsed this regulation. These organizations generally argue that (1) consumers "want" labeling, (RMFU 2002), (2) consumers have a "right" to country-of-origin information (Delta Farm Press 2001), and (3) that the legislation is a valuable "marketing tool" (Maralee Johnson, Executive Vice President of the

Illinois Beef Association, as quoted in the Tarter 2000). The first of these arguments is weakened by the logic of revealed preference. In the case of meat products, the comments of the president of the American Meat Institute above explain the logic of the third justification; packers may demand more domestic inputs if this lowers the cost of COOL compliance. There is also some suggestion that the alleged market power exercised by the relatively concentrated meat-packing industry has created rents that COOL will dissipate (Tarter 2000). That is, the bargaining position of producers relative to packers will be improved as a result of these rules. This is at least in part because legal liability for failure to comply with COOL will rest with retailers, not with suppliers closer to the farm gate.

COOL as a Non-tariff Barrier to Trade

COOL has been justified as an attempt to favor domestic products in the U.S. market, and early indications suggest that foreign suppliers believe it will do so. Canadian cattle groups have suggested that beef be given a "North American" label if it comes from any country in NAFTA (Hord 2002). Meat producers in New Zealand have stated their disappointment with the regulation (Southland Times 2003).

International trade considerations may have made COOL more politically palatable in 2002 than it had been in the past. In 2002, the EU required member states to label all beef at the retail level, including ground beef, with information about the country of birth, fattening, and slaughter. This tightens regulations that have been in place since 2000 (European Union 2000). Canada, Mexico, and Japan all have some version of COOL regulation. Other labeling initiatives have also been introduced in the EU, particularly for foods containing genetically modified organisms (GMOs), regulations which are generally thought to be detrimental to U.S. products (Rousu and Huffman 2001).

One of the main arguments in favor of COOL, discussed above, has also been used to justify mandatory GMO labeling in Europe. That is, the consumer has a "right to know" what they are eating. Ironically, the U.S. government has strongly opposed mandatory GMO labeling, and for good reason. In practice, GMO labeling has not given EU consumers greater choice, because food processors in Europe have recombined ingredients away from GMOs to avoid labeling. As suggested by comments from meat packers, the same pattern may develop with COOL.

Just as intended, COOL is a non-tariff barrier to trade; this does not necessarily mean that it will be challenged at the WTO, but it could be vulnerable to such a challenge, or subject to negotiation. At the WTO, country-of-origin labeling is covered as a technical regulation subject to the WTO Agreement on Technical Barriers to Trade which states that countries are allowed to take measures to protect human health or prevent deception of consumers, subject to the requirement that countries are not unjustifiably discriminated against, and that measures do not constitute a disguised restriction on trade.[9,10] In NAFTA, country of origin labeling is allowed, but

[9] The precise wording of the text is: "no country should be prevented from taking measures necessary for the protection of human, animal or plant life or health, of the environment, or for the prevention of deceptive practices, at the levels it considers appropriate, subject to the requirement that they are not applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail or a disguised restriction on international trade…."

requirements must be minimally difficult and costly. Concerns about meeting this requirement may have been what initially prompted Secretary of Agriculture Ann Venneman to speak positively about the suggestion that a "North American" label could be appropriate (Hord 2002b). COOL compliance may be most costly for developing country suppliers to the U.S. market who lack recordkeeping infrastructure to maintain audit trails. To this extent, COOL directly conflicts with the spirit of trade liberalization in the Doha Development Agenda, which aims to give preference to the trade agendas of developing countries.

To justify the continued existence of the Export Enhancement Program, which purports to offset subsidies and other trade-distorting practices used by other countries, Congress expanded its list of unfair trade practices to include "unjustified trade restrictions or commercial requirements, such as labeling, that affect new technologies, including biotechnology" (ERS/USDA 2002c). The irony of this new requirement in the same bill mandating country-of-origin labeling will not be lost on U.S. trading partners where consumer distrust of biotechnology, whatever its scientific merits, is an important phenomenon. Challenging labeling of GMOs at the WTO may be more difficult after the passage and implementation of the 2002 COOL regulation.

IMPLICATIONS OF ENVIRONMENTAL PROGRAMS FOR INTERNATIONAL TRADE

The 2002 Farm Bill roughly doubles annual federal expenditure on environmental programs, including the Environmental Quality Incentive Program (EQIP), the Conservation Reserve Program (CRP) and the new Conservation Security Program (CSP), from $2 billion to $4 billion, over 1996 levels.[11] Each of these programs benefits producers in California. The CRP pays farmers to convert environmentally sensitive cropland to conservation uses. EQIP provides technical assistance, cost-sharing, and incentive payments for producers that undertake qualifying practices that provide environmental benefits. The new CSP provides incentive payments of about $300 million per year for the maintenance or implementation of soil, water, and air quality conservation activities. By paying producers to maintain practices they have previously found to be profitable to undertake, CSP payments are not necessarily intended to internalize environmental externalities but are certainly intended to support agricultural incomes.

The continued exemption of environmental payments from support ceilings makes payments for environmental benefits (compensation for the cost of internalizing environmental externalities created as a result of agricultural production) an attractive program for policy makers wishing to subsidize agriculture while meeting WTO obligations.

International trading rules have only recently become potential constraints on the form and content of U.S. domestic support to agriculture. The Uruguay Round Agreement on Agriculture (URAA) introduced a major reform that the U.S. must take

[10] COOL differs from geographic indication protection (e.g., rules which require that only wine produced in Bordeaux can be labeled as Bordeaux wine), which is covered in the Trade-Related Aspects of Intellectual Property Rights Protection, though both forms of protection can act as non-tariff barriers to trade.
[11] For an overview of these programs and other environmental or conservation elements of the 2002 Farm Bill, see Anderson 2002, and Lovejoy and Doering 2002.

into account when setting domestic agriculture policy: a ceiling on so-called trade-distorting domestic support for agriculture.[12] All support for agriculture must be classified as trade distorting, minimally trade distorting, or non-trade distorting, and, while total support levels are unconstrained, trade-distorting support must fall at or below a negotiated cap (now equal to about $19 billion for the U.S.) that declines over time.[13] "Amber box" support is trade-distorting and counts towards countries' negotiated cap, and "green box" support is deemed not trade-distorting and may be allowed without limits.[14] Since supposedly non-distorting "green box" spending is not subject to a cap on support expenditure, identifying support measures that can qualify as "green box" is valuable from the perspective of policymakers wishing to both subsidize agriculture and meet WTO obligations. Green box support includes income support not related to production decisions (i.e., fixed "decoupled" payments or income insurance), environmental and land retirement program payments, domestic food aid, research and extension services, and export promotion programs like the MAP. Over 80 percent of U.S. domestic support for agriculture in 1998 was defined as "green box" by the USDA in 1998 (for a review of the WTO categories into which current U.S. support for agriculture falls, see Nelson 2002).[15] From 1995 to 1998, U.S. aggregate measure of support to agriculture (Amber box support that is not *de minimus*) declined while Green box support grew slightly (these trends are discussed in detail by Paggi 2002).[16]

While the rules for some of the environmental programs, in particular the CSP, are still being developed, in general, environmental payment programs can be designed for inclusion in the WTO green box, making increased funding for these programs attractive. Domestic support qualifies for the WTO green box if the measure, (1) is paid for by federal government revenues (as opposed to consumers through a price mechanism), (2) does not provide price supports, and (3) does not distort trade or has minimal effects on trade. Environmental payments in particular must be limited to the extra cost or loss of income incurred as a result of participation in the program.

Some authors have argued that, whatever its merits as a negotiating position, subsidies for agriculture as a means of generating desirable joint outputs (such as stewardship) or environmental benefits is poor public policy (Normile 1999). This is principally because subsidies for agriculture or payments to agricultural producers for environmental services do not directly target the production of the desired nonfood outputs (e.g., open space, or rural livelihoods) but do so indirectly (see OECD 2001). In general, less transparent programs lacking clear environmental goals are unlikely to be cost-effective means of achieving desired environmental outcomes. Bohman et al. (1999) give the example of beautiful meadows to illustrate this claim. Meadows are desirable, and one way of creating them is to provide support to dairy farmers; in this

[12] The URAA also required all countries to convert non-tariff barriers to trade to tariffs ("tariffication") and to reduce tariffs over time. Developing countries were given a separate, less stringent, set of commitments.
[13] Technically countries have agreed to caps on their aggregate measure of support (AMS). The AMS totals, commodity by commodity, all support directly tied to prices or production. It is related to the producer subsidy equivalent (PSE).
[14] However, if the amber box support level is "*de minimis*," that is, the subsidy is product-specific but less than 5 percent of the value of production, or it is non-product specific and less than 5 percent of the total value of agricultural production, then it is exempt from the amber box support cap. There is another category of support, used by European countries. So-called blue box support, which is trade-distorting, but not subject to reduction commitments.
[15] European support for agriculture is far more heavily concentrated in the amber box than U.S. policies (Beierle 2002), though recent reforms to the EU Common Agricultural Policy do appear to increase the role of green box support (Kelch, Hash, and Normile 2002).
[16] From 1998 to 2000, AMS actually increased in the U.S. according to unofficial calculations (Korves and Skorburg 2000)

case, meadow existence is indirectly supported. A more transparent policy, more closely targeted to meadow creation, would be to compensate people for maintaining meadows. Dairy farmers may or may not be the most efficient providers of the desired good. More generally, other social objectives can be accomplished by broader development initiatives (e.g., tax breaks for business location in rural areas), and environmental externalities can be internalized through targeted and transparent regulations and taxes. The key empirical question, on which further research is needed, is which desirable nonfood outputs are genuinely joint outputs of food production, and which of these would be supplied at a socially inefficient level if food production were not subsidized (OECD 2002). Too often, proponents of multifunctionality may overstate the extent to which positive environmental or social externalities are truly joint outputs of food production as an excuse to avoid the politically difficult task of reducing subsidies to agriculture. Environmental goals might be more cost-effectively achieved with policies not intended to subsidize agriculture.

WHAT'S AT STAKE FOR CALIFORNIA AT THE WTO?

California agricultural producers cannot all win from increased trade liberalization. Ending government support for agriculture and lowering tariff barriers will inevitably benefit some more than others. On the whole however, California producers sell high-value competitive products, and their major markets, especially Japan and the EU, remain protected and difficult to penetrate. Coordinated liberalization that affords California increased access to these markets, even if at the expense of increased competition from China and Mexico, could be an important opportunity. This is all the more true because most of California's agricultural producers have few subsidies to give up. Even the loss of the export promotion programs would not be very costly; these programs provide little benefit to the industries they support.

Because California agricultural producers as a whole stand to gain from global trade liberalization, if the 2002 Farm Bill jeopardizes the possibility of wide ranging reform at the WTO, it may be correct to conclude that the Farm Bill was costly to California farmers. Negotiations are currently stalled; largely over disputes about government support to agriculture in the U.S. and EU.

The international response to the 2002 Farm Bill has generally been negative; the Bill has been characterized as politically motivated, and a violation of the spirit, if not the law, of the U.S. commitment to reduce domestic subsidies for agriculture undertaken in the URAA and at the commencement of the Doha round of negotiations (European Union 2002, The Economist May 9, 2002). It does appear that the U.S. will not violate its support cap of $19 billion as a result of the 2002 Farm Bill (Babcock 2002), although this depends on whether the U.S. commits explicitly to reducing support outlays in the event that a violation appears likely. Yet there is some suggestion that the moral authority of the U.S. as a proponent of liberalization (generally agreed to be beneficial for food-exporting poor countries) at negotiations has been compromised. Others argue that new provisions of the Farm Bill may represent bargaining chips that can be used in negotiations to encourage other developed countries to reduce their own support for agriculture (Babcock 2002). The

current U.S. negotiating position, announced in July 2002, proposes further tariff reductions, an end to export subsidies and a somewhat tighter cap on amber box domestic support (USTR 2002c).

Despite the negative international reaction to the Farm Bill, there remains a relative consensus, at least in the popular press, that the EU's CAP is possibly more damaging to developing country agriculture than U.S. farm policy. In addition, as recently as January 2003, the French government reaffirmed its commitment to protect French farms from international competition. It is difficult to predict how this unapologetic stance, in contrast to the continuing claims by U.S. representatives at the WTO that their country is committed to reform, will impact WTO negotiations.

The U.S. balancing act between a stated commitment to trade liberalization at the WTO and the 2002 Farm Bill also contrasts with the position of the Cairns Group of countries at the WTO.[17] The Cairns Group countries (a coalition of developed and developing country agricultural exporters), provide little domestic support for agriculture and are relatively competitive producers expected to benefit from trade liberalization. The Cairns group has called not only for substantial reductions in distorting domestic support and an end to export subsidies, but also a stricter interpretation of the rules for including support measures as green box support. The group's negotiating proposal states that "since the conclusion of the Uruguay Round the green box has been abused" (Cairns Group 1998).[18] Certainly, it is plausible that, even if individual programs in a country's green box claim do not distort trade, the total level of green box support may do so. Given the wide differences between the visions of the EU and the Cairns Group, with the U.S. somewhere in between, trade negotiations will continue to be difficult.[19]

CONCLUSIONS

California's agricultural trading environment holds both new challenges and new opportunities. Established markets in developed countries continue to erect barriers to California's specialty crops, and the developing Chinese market holds uncertain benefits, but also the promise of new competition. Lowering barriers to trade in the protected EU and Japanese markets will undoubtedly benefit California, even if it comes at the cost of reduced subsidies and support at home.

Further trade liberalization in agriculture is a promising avenue for the expansion of California's agricultural trade. As such, California producers should guard against the temptation to support the expansion of domestic policies and non-tariff barriers that make far-reaching genuine liberalization less likely. Growers in Florida can afford to be protectionist because they are not so dependent on foreign markets; California

[17] The Cairns Group includes Argentina, Australia, Bolivia, Brazil, Chile, Colombia, Costa Rica, Guatemala, Indonesia, Malaysia, Paraguay, Philippines, South Africa, Thailand, and Uruguay.

[18] Notably, green box spending by the U.S. has expanded significantly in the recent past. In 1986-88 total expenditures that would have qualified for the green box totaled about $26 billion. As of 1997, they stood at $51 million (Hart and Babcock 2001).

[19] The difficulty of multilateral liberalization of agricultural trade was much in evidence in 2003. At negotiations under the auspices of the WTO, a group of developing countries (called the G-22) formed a coalition to fight against generous farm subsidies, particularly for cotton and sugar, in the EU and the US. The G-22 effectively stalled the Cancun WTO Ministerial, refusing to negotiate further without concessions on agricultural subsidy policy from richer countries, and will likely remain an important negotiating party.

growers have no such luxury. The 2002 Farm Bill, to the extent that it has damaged prospects for liberalization in WTO negotiations, may be costly to California agriculture. The challenge going forward will be to support policymakers taking difficult political decisions that can further liberalization efforts.

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