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Abstract

Imported avocados, which accounted for less than 1.5 percent of total U.S. avocado supply during the 1970's and 1980's, increased their share to over 44 percent in 2002-03 and further increases are on the horizon. With inelastic demand, imports placed substantial pressure on domestic avocado prices, but demand increases due to generic advertising and promotion, higher consumer incomes and population growth helped offset increased avocado supplies and domestic prices were maintained. The new Hass Avocado Promotion and Research Order will continue to offset a portion of the price impacts of increased imports from Mexico, Chile and other suppliers.

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California avocados, a high value specialty crop, have annual sales that rank well within the top ten California fruit and nut crops. With acreage and production centered in Southern California, the state's avocado industry has prospered despite pressures from urbanization and high costs of production due to prices for land, water, and labor. Increasing consumer incomes, population growth, and avocado industry advertising and promotion programs have helped increase the demand and price for avocados over time. These favorable demand conditions and trade agreements have encouraged sharp increases in avocado imports with further increases on the horizon. During the two decades from 1970 through 1989 imports accounted for less than 1.5 percent of annual U.S. avocado consumption. The import share increased to an average of 10 percent annually from 1990 through 1997 and, with Mexican imports of fresh avocados beginning in 1997, the import share increased from 26 percent of total U.S. avocado consumption in 1998 to over 44 percent of total consumption in 2003. With U.S. demand for avocados being inelastic at the producer level, increasing imports from Chile and Mexico, continue to place economic pressure on the California industry and threaten the survival of many California producers.

Well aware of the economic pressures posed by avocado imports, and the knowledge that imports will increase, the California avocado industry, working through the California Avocado Commission (CAC), has focused its efforts on organizing programs to increase the demand for avocados, regardless of source. Industry efforts led to creation of the Hass Avocado Promotion, Research, and Information Act of 2000 that was signed into law by President Clinton on October

23, 2000 (CAC, 2004). This Act established the authorizing platform and timetable for the creation of the Hass Avocado Promotion and Research Order (HAPO), which was approved in a referendum of producers and importers by a majority vote of 86.6 percent on July 29, 2002. The HAPO became effective on September 9, 2002, with program assessments becoming effective on January 2, 2003. The initial mandatory assessment rate is 2.5 cents per pound for all Hass avocados sold in the U.S. The Hass Avocado Board, which collects the assessments, is required to give 85 percent of the domestic assessment to the CAC and up to 85 percent of importer assessments to importer associations. The CAC may use the assessments to conduct state of origin promotions, and importer associations may use the assessments to conduct country of origin promotions. Mandatory assessments to support generic advertising and promotion programs are controversial and there will be producers and importers who will question the effectiveness and legality of the HAPO.

This paper is about the effectiveness rather than the legal questions surrounding generic promotion programs funded by mandatory assessments. We examine some of the economic issues posed by the Hass Avocado Promotion and Research Order. More specifically, we:

- Examine avocado industry trends and developments leading to proposal and passage of the HAPO;
- Develop quantitative estimates of the demand parameters for California avocados;
- Use estimated demand relationships to examine the potential effects of promotion and other demand determinants on the price impacts of increased imports.

The basic question that we attempt to answer is, "To what extent can an advertising and promotion program financed by an assessment on avocado imports offset the price impacts of imports?"

Data Sources

The data used for this analysis are from readily available secondary sources listed in the references. Information on California avocado acreage for all varieties and production and prices by variety are published by the CAC in its annual reports. Some of the earliest data on acreage reported by the CAC are from the California Agricultural Statistics Service. The CAC also reports it annual advertising and promotion expenditures. Florida avocado production is from USDA's Fruit and Tree Nuts Situation and Outlook Reports. The annual Situation Reports also include data on avocado imports by source. More detail on imports and exports is found on the USDA's Foreign Agricultural Service website. Data on population, per capita income and the consumer price index are from Economic Indicators published by the U.S. Council of Economic Advisors. An Excel file containing the data used to estimate the demand relationship for avocados is available from the authors.

Industry Background

California produces 85 to 90 percent of the total U.S. avocado crop with Florida accounting for the remainder. The U.S. demand for avocados has grown over time as a result of growing consumer income, increasing population, and industry sponsored advertising and promotion programs and California producers have responded by expanding planted acreage and production. During the five-year period from 1998/99 through 2002/03 the California avocado crop has averaged over 350 million pounds annually with a farm value averaging over $341 million (CAC, annual reports). California bearing acreage of avocados has recently been in the range of 59,000 to 60,000 acres after reaching a peak of just over 76,000 acres in 1987/88. More than 20 varieties of avocados have been produced commercially in California since 1950, with the relative importance of particular varieties changing significantly over time. Production of the

Fuerte variety, which accounted for the majority of California acreage and production during the 1960's, decreased to less than one percent in 2002/03 while the Hass variety's share of total production expanded from just over 21 percent in 1962/63 to over 93 percent in 2002/03. The Hass variety has two significant advantages over other major varieties -- the highest average yields and the highest average prices per pound. California accounts for all U.S. production of Hass avocados and almost all avocado imports from Chile, Mexico and New Zealand are the Hass variety.

Avocado Promotion

The California avocado industry conducted generic advertising and promotion programs under a state marketing order program from 1961 through 1977 and has operated under provisions of the California Avocado Commission since September 1978[1]. A review of annual reports of the marketing order and commission programs indicates that the industry spent over $182 million on advertising, promotion, and related services from initiation of the program in 1961 through the 2002/03 marketing year. Adjusting for price changes, industry advertising and promotion expenditures totaled about $307 million in 2003 dollars. Recently, about one-half of total expenditures have been for consumer advertising and promotion, with the remainder going for trade advertising and promotion, foodservice, public relations, international promotion, and processed products. Avocado industry advertising and promotion programs have helped increase the demand and price for avocados over time, and favorable demand conditions have been an important factor affecting the growth of avocado imports.

Before approval of the HAPO by U.S. avocado producers and importers, promotional programs by importers were sporadic. In fact, the minimal efforts by importers and widespread perception of a "free rider problem" in the face of rapidly increasing imports provided much of

the impetus for the HAPO. Now importers and U.S. producers of Hass avocados will have well-funded promotional programs coordinated through the CAC. The mandatory assessment of 2.5 cents per pound on domestically produced and imported Hass avocados will finance a coordinated program to develop, maintain, and expand markets for Hass avocados in the United States.

Avocado Imports

Competition from imported avocados is a recent development for the California industry. During the period from 1961 through 1990, avocado imports from all sources averaged just over 4.8 million pounds annually and ranged from a few thousand pounds during the 1960's to a high of 11.4 million pounds in 1986, with exports typically exceeding imports by a significant margin. Imported avocados jumped to almost 26 million pounds in 1991, increased to almost 146 million pounds in 2000, and reached a high of over 314 million pounds in 2002/03. Imported avocados averaged 207.7 million pounds annually for the five-year period from 1998/99 through 2002/03, and accounted for an annual average of 34 percent of total U.S. avocado consumption. Most U.S. avocado imports are the Hass variety from three countries, Chile, Mexico, and New Zealand. The Dominican Republic's exports to the U.S. consist mainly of green skin varieties. During the crop year 2002-03, import shares were Chile, 68.2 percent, Mexico, 22.7 percent, the Dominican Republic, 8.5 percent, with New Zealand, The Bahamas and Ecuador combined for less than 1 percent of total U.S. imports. The majority of imports arrive from September through December when domestic supplies are seasonally low, but as imports have increased, the season has been extended. Marketing year 2003-2004 imports are expected to be over 253 million pounds, which is below 2002-2003 but above the five-year average (CAC Greensheet, Oct. 5, 2004).

Mexico, the world's largest avocado producer, was unable to export fresh avocados to the U.S. before 1997 because of pest and disease problems. The USDA's Animal and Plant Inspection Service (APHIS), after studies extending over six years, announced that it would allow avocados from Mexico to be sold in 19 Northeastern and Midwestern states and the District of Columbia from November through February beginning in 1997.[2] In 2001, APHIS increased the number of states allowed to import Mexican avocados and the length of the shipping season. The initial shipping season extended from November 1, 2001 to April 15, 2002, with subsequent seasons extending from October 15 through April 15. The 12 additional states included Colorado, Idaho, Iowa, Kansas, Minnesota, Missouri, Montana, Nebraska, North Dakota, South Dakota, Utah, and Wyoming. Mexican imports averaged 25.79 million pounds annually for the three crop years (November through October) from 1999 through 2001, increasing to 59 million pounds in 2002 and 71 million pounds in 2003. Mexican imports for the 2004 crop year are expected to be almost 85 million pounds (CAC Greensheet, Oct. 5, 2004). The economic impacts of increased imports on the California avocado industry are a critical concern for individual producers and industry leadership.

Previous Work

Previous studies provide analytical models and empirical estimates for avocado demand parameters, price responsiveness to advertising, and acreage response to price changes. Carman and Green used a simulation model of the California avocado industry to estimate the impact of generic advertising on acreage and returns over time. They found that favorable short-run returns from advertising led to increased plantings, which tended to erode advertising returns over time. Carman and Cook used a revised version of the Carman and Green model to examine possible impacts of avocado imports from Mexico on the California industry. Using annual

imports of 0.50 pounds per capita and looking forward to 2010, they estimated that average avocado prices would decrease by almost 17 percent below base values and that California bearing acreage would be over 18 percent below the base. The simulation model included one percent annual increases in real income and population and constant CAC expenditures on promotion. With increased imports, acreage reductions no longer result in improved prices and cyclical planting incentives disappear. Acreage reductions due to price pressures from imports tend to be permanent.

Carman and Craft (1998) used a detailed simulation model to estimate the effect of California avocado industry advertising and promotion expenditures on the demand and price for California avocados and to estimate the ratio of benefits to program costs. They estimated that California avocado producers enjoyed an annual average benefit-cost ratio of 2.84 for the total 34-year period covered by their analysis. Short term advertising returns, based on fixed supply, ranged from $5.25 to $6.35 per dollar spent on advertising.

USDA's APHIS included an economic analysis in each of its reports on proposals to increase the number of states and time period for shipments of avocados from Mexico. In their 2001 report, APHIS analyzed the potential economic impact of increased imports of Hass avocados from Mexico due to 12 more approved states and an additional import period of two months. APHIS estimated that Mexican imports would increase by 16.87 million pounds annually (from 20.79 to 37.66 million pounds) and that California Hass avocado producers would lose $17.93 million per year as a result of average f.o.b. prices decreasing from a base of $1.34 per pound to $1.18 per pound (USDA 2001). The APHIS analysis assumed a constant price elasticity of demand of –0.86, perfectly inelastic supply, and constant total demand. The proposed rule to increase the number of states and time period was approved, effective

November 1, 2001. Mexican imports, which had averaged 25.9 million pounds annually for the three California crop years from 1999 through 2001, increased to 59.1 million pounds in 2001-2002, to 71.4 million pounds in 2002-2003 and to 80.5 million pounds through June 2004. Thus, the actual annual increase from the base averaged 49.5 million pounds, which is almost three times greater than the projected increase of 16.87 million pounds.

APHIS has prepared two recent reports that project the increase in Hass avocado imports from Mexico if the proposed rule to allow fresh Hass avocados from Mexico to be imported into all states of the United States year-round is approved. The first, included as part of the APHIS risk assessment, has an approximated range of Hass avocado imports from Mexico of 275 to 413 million pounds per year (USDA, 2003, Appendix E). This is expected to increase to a range of 295 to 442 million pounds annually after five years as a result of regional population growth (USDA 2003, p. 74). The second report includes an economic analysis of the proposed rule to allow fresh Hass avocados from Mexico to be imported into all states of the United States year-round. It uses a static partial equilibrium model that compares the situation before a change in import rules with the situation after all estimated adjustments to the change in import rules have occurred (USDA 2004). The base period for the analysis is October 15, 2000 through October 15, 2002 with base figures being an average of these two years. Base imports from Mexico are 38.45 million pounds, the base California f.o.b. price is $0.90 per pound and California production of Hass avocados was 376.629 million pounds. The projected equilibrium solution of the model has Mexican imports totaling 141.17 million pounds, California f.o.b. price decreasing from $0.90 to $0.67 per pound, and California production decreasing to 340.895 million pounds (USDA 2004, p. 29). The equilibrium also has imports from Chile decreasing from a base of 122.56 million pounds to 111.7 million pounds and producer prices for Chile decreasing from

$0.52 to $0.45 cents per pound. The model equilibrium has imports from Mexico and Chile totaling 252.89 million pounds, which is below actual 2002-03 imports from Mexico and Chile totaling 285.77 million pounds. Neither APHIS report considers the possible impacts of CAC and HAPO promotional programs or the effects of increasing income on the demand for avocados.

The Demand for Avocados

An assessment of the potential impacts of the Hass Avocado Promotion and Research Order on avocado prices and returns requires current estimates of major demand parameters for domestic and imported avocados. Scenarios with alternative specifications for the amount of avocado imports will be examined. The analysis will be short run in that California avocado acreage will be assumed constant.

A demand function for avocados in the U.S. was specified and estimated using ordinary least squares (OLS) and 41 annual observations for the marketing years 1961-62 through 2001-2002. Significant serial correlation was evident in the estimated equation; a Cochrane-Orcutt iterative-type procedure in SHAZAM (1993) was used to re-estimate the equation. The re-estimated equation is:

$$Qt = -0.3033 - 0.0109\ Pt + 0.1678\ Yt + 0.0683\ At \qquad R^2 = 0.90$$

$$(-1.09) \quad (-7.89) \qquad (6.11) \qquad (2.48) \qquad D\text{-}W=2.04$$

where the figures in parentheses are the t-statistics for the estimated coefficients and the variables are defined as:

Qt is U.S. per capita consumption (pounds per person) of avocados in year t from all sources (California, Florida and all imports),

Pt is the average annual f.o.b. price for all California avocados deflated by the consumer price index for all items (1982-84=1.00) in cents per pound,

Yt is real income (per capita disposable income in thousands of dollars deflated by the consumer price index for all items), and

At is the total value of advertising and promotion expenditures (in millions of dollars) by the California Avocado Commission in year t deflated by the consumer price index.

Note that each of the estimated coefficients has the expected sign and is statistically significant at the 95 percent level. The R^2 value indicates that the variables included in the equation explain 90 percent of the variation in per capita consumption of avocados. The price elasticity of demand, which varies annually from very inelastic to elastic, is equal to –0.43 at average prices and quantities. The income elasticity of demand is equal to 1.47 at mean values and the advertising elasticity of demand is equal to 0.21 at mean values. These values differ from, but are consistent with previous estimates of demand parameters for avocados.

Recent changes in the structure of the U.S. avocado market are not included in the specification of the estimated demand equation. Three changes that may have some impact include (1) importing Mexican avocados to 19 states beginning in 1997, (2) expanding the number of states eligible for Mexican imports to 31 and lengthening the shipping season from four to six months beginning November 2001, and (3) assessing all Hass avocados (domestic and imported) to support advertising and promotion programs beginning January 2003. Imported avocados, especially those from Mexico, have been available when domestic supplies are at seasonal lows. Some industry observers believe that the year-round availability of increased supplies of avocados has helped to capture shelf space in retail stores and has increased overall demand. Attempts to capture the effects of these changes using zero-one variables in the

estimated demand equation were not successful. There are other factors associated with increasing demand for avocados that may not be fully accounted for in the estimated demand relationship. We assume that a one percent increase in population increases demand by one percent but this may understate the increase since Mexican Americans, who are traditionally heavy consumers of avocados, are increasing their share of population. In addition, there has been a great deal of favorable news and publicity about the health and dietary benefits of consuming avocados that helps increase demand but may not be fully captured by the variables in the demand equation.

The Estimated Effects of Imports and Demand Shifters

Given inelastic demand and the substantial increase in imported avocados, one would expect to see a significant decrease in f.o.b. prices for California avocados. As shown in figure 1, however, the usual inverse relationship between total avocado supply and average annual price has not always held during the past several years. This result is due to the demand for avocados increasing over time, and is evident during the last two years when imports, total supply and nominal producer prices all increased. Using the estimated demand function, the relative impacts of promotion, consumer income, and population growth on the demand for avocados during the recent past is examined. Emphasis is on the six years since Mexico has exported fresh avocados to the U.S. market (1997-98 to 2002-03).

Per capita U.S. avocado consumption was 1.70 pounds and total consumption was almost 469 million pounds in 1997-98 with nominal f.o.b. prices averaging 85.64 cents per pound (real price was 52.5 cents per pound). During the six years from 1997-98 to 2002-03, real U.S. per capita income increased 8.15 percent and real CAC advertising and promotion expenditures increased 20.17 percent. U.S. population increased from 276 million in 1998 to 291.7 million in

2003 (5.69 percent). Based on estimated elasticities of demand, the quantity demanded for avocados at constant real prices increases approximately 22.4 percent from 1997-98 to 2002-03 due to increases in income, advertising and promotion, and population. The actual increase for the most recent year, however, is higher than expected. U.S. per capita avocado consumption during the 2002-03 crop year increased to 2.43 pounds per person with total consumption over 708 million pounds and the nominal California f.o.b. price averaged 108.3 cents per pound (the real price was 58.86 cents per pound). Thus, the total quantity demanded increased almost 50.1 percent from 1997-98 to 2002-03 with a slight increase in real price (from 52.5 to 58.86 cents per pound). Some of the difference between the actual and expected increase in demand may be due to increased year-round availability of avocados in some markets and to increased promotion of imported avocados with the remainder due to randomness and factors not included in the model.

The effects of increased imports on returns to California avocado producers will be estimated using scenarios that apply estimated elasticities of demand to alternative values for each of the demand shifters. The estimated elasticities come from the demand equation, which was estimated with data through 2001-02. We elected to not include 2002-03 data in the estimated demand equation because of the change in structure due to new advertising financed by assessments on importers. While the observed increase in per capita demand from 2001-02 to 2002-03 is greater than expected given a one percent increase in real income and a 31 percent increase in advertising and promotion expenditures, the difference between observed and expected demand is small. Specifically, given the increases in per capita income and advertising and promotion, per capita consumption is expected to increase from 2.34 pounds to 2.525 pounds at constant real prices. The actual increase was to 2.43 pounds per capita, with real prices increasing from 49.75 to 58.86 cents per pound. Given the difference between actual and

expected consumption, the price increase with consumption of 2.43 pounds per capita is expected to be on the order of 8.7 percent, or an increase from 49.75 to 54.08 cents per pound. This is about eight percent below the actual real price of 58.86 cents per pound in 2002-03.

Actual production, prices, imports, income, CAC and HAB promotional expenditures, and population for the 2002-03 crop year are used for the base values. We then examine the effects on California f.o.b. avocado prices of increases in per capita income, population and new advertising and promotion expenditures for three levels of imports. The assumptions and the resulting estimated values for various levels of the demand shifters are presented.

Base Values

The 2002-03 values used are: California production = 335.2 million pounds; Florida production = 62.0 million pounds; population = 291.7 million; income = $28,120 per capita; CPI = 1.84 (1982-84 = 1.00). The price series used for California avocados is the average annual f.o.b. price for all California avocados with 2002-03 average price = 108.3 cents per pound. The base total revenue for California is $363.0 million. The California f.o.b. price for all avocados is used as a proxy for imported Hass avocados to provide an estimate of the comparative impacts of alternative scenarios on import revenues.[3] California Avocado Commission advertising and promotion expenditures totaled $10.31 million. The Hass Avocado Board, the Chilean Avocado Importers Association and the Mexican Hass Avocado Importers Association also spent $3.0 million on advertising and promotion during the 2002-03 year. Base advertising and promotion is the total of $13.31 million. Three levels of imports are specified. The first uses 2002-03 Mexican imports of 71.36 million pounds and imports from Chile and other suppliers of 243.18 million pounds, for total imports of 314.54 million pounds. The second uses imports from Mexico of 141.2 million pounds (the equilibrium level of Mexican imports in APHIS 2004) and

imports from other countries of 200.0 million pounds for total imports of 341.2 million pounds. The third uses imports from Mexico of 275 million pounds (the smallest level of Mexican imports in APHIS 2003) and imports from other countries of 200.0 million pounds for total imports of 475.0 million pounds.

Actual imports of 314.54 million pounds in 2002-03 resulted in average California f.o.b. prices of 108.3 cents per pound and total revenue to California producers of $363.0 million. Using base values for the demand shifters, estimated price elasticity of demand equal to –0.43 and total imports increasing to 341.2 million pounds results in estimated California prices of 97.73 cents per pound and total returns to California producers of $327.59 million. Finally, imports of 475.0 million pounds result in average California prices of 51.0 cents per pound and total returns to California producers of $172.81 million.

Increased Advertising and Promotion

The HAPO authorizes an assessment of 2.5 cents per pound on all Hass avocados sold in the U.S. with the resulting funds to be spent on advertising and promotion programs to increase the demand for Hass avocados. The funds raised from imports in excess of the $3.0 million included in 2002-03 total advertising and promotion are new funds while those raised from California producers and importers will be funds that were previously used for avocado promotion. The base scenario includes $13.31 of advertising and promotion expenditures. Base production, income and population levels are specified. With 314.54 million pounds of imports, the amount spent on advertising and promotion increases from $13.31 million to $18.17 million, resulting in an estimated f.o.b. average price is $1.27 per pound and returns for California producers of $425.03 million. Imports of 341.2 million pounds increase total advertising and promotion funds to $18.84 million, resulting in an estimated average f.o.b. price of $1.17 per

pound and returns for California producers of $392.18 million. When annual imports are increased to 475 million pounds, the total promotion budget increases to $22.185 million, resulting in an estimated f.o.b. average price of $0.67 per pound and total revenue for California producers of $224.58 million. The price impact of advertising and promotion will probably be less than for California fruit since wholesale prices for Hass avocados from Mexico and Chile have recently averaged from 73 to 90 percent of the wholesale price for California fruit (APHIS 2004, p. 16). If the price impact of advertising and promotion for imported avocados is 70 percent of the impact estimated for California avocados, expenditures under the HAPO will provide importers with net returns ranging from $3.48 to $4.32 per dollar spent on advertising and promotion.

Increased Income

U.S. real per capita income grew 7.24 percent during the five years from 1999 through 2003. The effects of an increase in real income of 5.0 percent on average domestic prices and revenues are examined under this scenario. Base production, population and advertising levels are assumed. When income increases 5.0 percent from the base value, estimated average f.o.b. prices are $1.27, $1.16, and $0.61 per pound, respectively, for imports of 314.5 million pounds, 341.2 million pounds and 475.0 million pounds. The estimated price increase due to increased income is 16.9 percent of the base price for each level of imports. Note that each one percent increase in real income will increase prices by 3.38 percent for each level of imports.

Population Growth

U.S. population grew 4.5 percent during the five years from 1999 through 2003 (from 279.1 to 291.7 million). The effects on average base prices of population increasing five percent (from 291.7 million to 306.28 million) on average prices are estimated. Base production, income

and advertising levels are assumed. When population increases 5.0 percent from the base value, estimated average f.o.b. prices are $1.19, $1.10, and $0.58 per pound, respectively, for imports of 314.5 million pounds, 341.2 million pounds and 475.0 million pounds.

Summary of Comparative Effects of Changing Demand Determinants

The comparative effects of specified increases in advertising and promotion expenditures, per capita income, and population on estimated average f.o.b. California avocado prices for alternative imports are summarized in table1. Each column in the table shows the impact of increased imports on average f.o.b. prices given specified values for the demand shifters. Each row in the body of the table indicates the increase in average price expected with the specified increase in the demand shifter for the level of imports in the first column. For example, given imports of 341.2 million pounds, increased advertising and promotion under HAPO is expected to increase average California f.o.b. prices from $0.98 to $1.17 per pound. As shown, increased advertising and promotion is expected to offset much of the price impact of increased imports. Over time, increases in real income and population will also increase demand. Thus, while demand for avocados is very inelastic at the f.o.b. level, the price depressing effect of increased imports can be offset over time by expected increases in demand. Using 2002-03 estimates, it appears that five percent increases in real income and population combined with increased promotion mandated by HAPO could increase annual U.S. demand for avocados by an estimated 140 million pounds at constant real prices. With base level imports from countries other than Mexico totaling 240 million pounds, this level of demand would accommodate Mexican imports of up to 211 million pounds (and total imports of 450 million pounds) without depressing real f.o.b. prices below 2002-03 levels. Given recent average increases, however, it could take

almost four years for real incomes to increase five percent and almost five years for a similar increase in population.

Concluding Comments

Imported avocados, which accounted for less than 1.5 percent of annual U.S. avocado consumption during the 1970's and 1980's, increased their share to over 44 percent in 2002-03 and further increases are on the horizon. The California avocado industry's strategic emphasis on demand expansion programs has helped avoid what could have been devastating price pressures normally associated with inelastic demand and the sharp increase in avocado imports. The industry was also fortunate to have the buildup of import volume phased over time such that demand increases due to increased population, increased consumer income, and industry sponsored advertising and promotion programs were able to keep pace with supply. Thus, while increased imports can have dramatic price decreasing impacts during a given marketing year, growth in demand over the last six years as a result of increased income, more consumers and industry promotional efforts has offset most of the impact of increased avocado imports.

The California avocado industry continues to face challenges associated with the prospect of sharply increased imports from Mexico as restrictions on imports of Mexican avocados are reduced and, perhaps, removed. The analysis indicates that new advertising and promotion funded by assessments on imports under the HAPO will help to offset the price impact of imports on domestic avocado producers and should also provide very attractive returns to importers. Phasing increases in imports to match avocado demand increases associated with increased income, population and promotion can preserve returns for both importers and domestic producers.

[1] The act authorizing the formation of the CAC was passed by the California legislature in late 1977 and signed into law by Governor Jerry Brown. In a referendum held in the summer of 1978, growers approved establishment of the CAC by a majority of 74.6 percent of the growers producing 83 percent of all fruit (CAC, June 1979).

[2] These states include Connecticut, Delaware, Illinois, Indiana, Kentucky, Maine, Maryland, Massachusetts, Michigan, New Hampshire, New Jersey, New York, Ohio, Pennsylvania, Rhode Island, Vermont, Virginia, West Virginia, and Wisconsin.

[3] Wholesale prices for imported Hass avocados are often less than for California Hass avocados but prices for Hass avocados are higher than the average for all California avocados. The price impact of advertising and promotion on imported avocados has not been estimated, but is expected to be similar to the effect for domestic fruit.

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Figure 1. Total U.S. avocado supply and California f.o.b. price, 1992 to 2003.

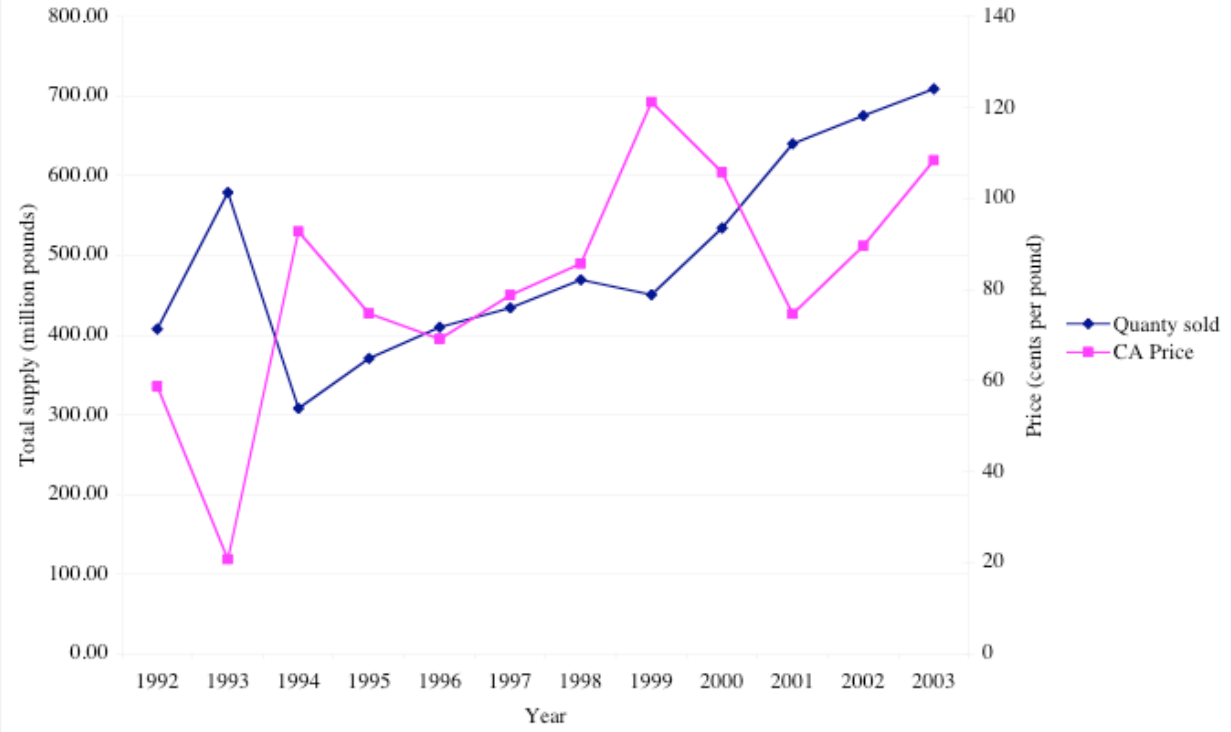

Table 1. A Summary of estimated average annual California avocado prices for alternative imports given assumed levels of income, population, and advertising, 2002-03 base values.

Imports	Base	HAPO	Income	Population
(million lbs.)		2.5 cents/lb.	Base +5%	Base + 5%
		Average f.o.b. avocado prices, dollars per pound		
314.5	1.08	1.27	1.27	1.19
341.2	0.98	1.17	1.16	1.10
475.0	0.51	0.67	0.61	0.58