Economic Impacts of California Avocado Commission Advertising and Promotion Programs

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California avocado growers have continuously funded generic advertising and promotion programs directed to U.S. consumers since the 1961/62 marketing year. The programs were initially conducted under a California state marketing order program, and since September 1978 have operated under the California Avocado Commission (CAC) law. Beginning in 2003, California Hass avocado producers have paid assessments of 2.5 cents per pound to the Hass Avocado Board (HAB) for Hass avocados produced and sold to handlers in California, with 85% of the assessments being returned to CAC. From 2008 through 2012, rebate income from HAB accounted for 49.5 percent of all CAC income and CAC assessments accounted for 45.6%.

California avocado growers' support of generic advertising and promotion programs has continued to grow over time, from an initial program of about $180,000 in 1961/62 to $11.63 million in 2011/12. In current (2012) dollars, cumulative expenditures totaled $487.88 million through 2011/12. HAB and the importer associations spent an additional inflation adjusted $153.47 million since 2003.

Avocado consumption has grown commensurate with promotion expenditures and expanded supplies over the past two decades. Prior to 2000, U.S. consumption of fresh avocados had exceeded two pounds per capita only four times, during the large California crop years of 1981, 1984, 1987, and 1993. As shown in figure 1, U.S. consumption has

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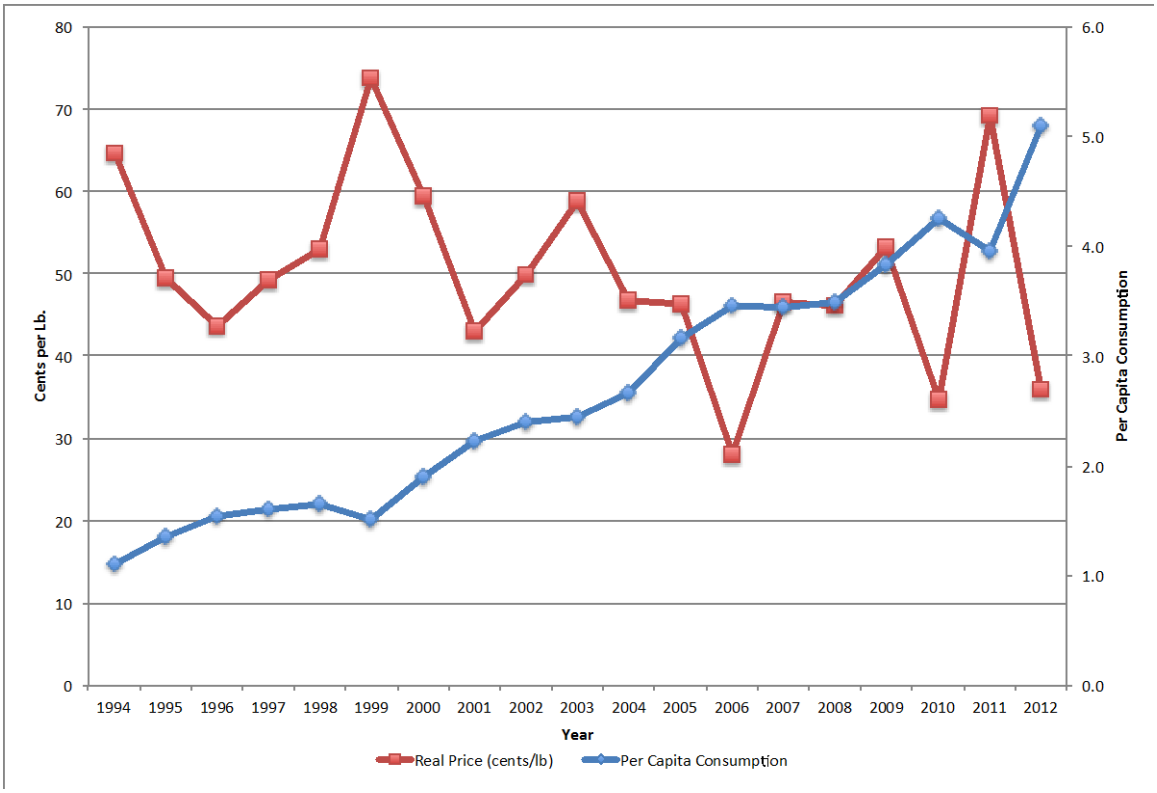
Figure 1. Per Capita Consumption and Real Producer Price for Fresh Avocados



exceeded two pounds per capita annually since 2001, exceeding three pounds per capita in 2005, four pounds per capita in 2010, and five pounds per capita in 2012.

Figure 1 also depicts the average grower price per pound in California in real (inflation-adjusted, base year 1982-84) for these same years. Although the real grower price evinces considerable year-to-year volatility, on average it has remained nearly constant despite a more than 200 percent increase in supply and consumption during the 1994 – 2012 period. Stable mean prices in the face of rapidly expanding supply is only possible due to significant increases in demand during this time.

To what extent is this expansion in demand due to the efforts of CAC and its grower members in promoting avocado consumption in the U.S.? This report seeks to provide an answer to this central question. In what follows we first summarize evidence

on demand growth and cost/return studies of fresh avocado advertising and promotion expenditures. Then we evaluate the impacts of recent CAC advertising and promotion programs in specific markets and draw conclusions.

The Impact of CAC Promotion Programs

Carman, Li, and Sexton (CLS, 2009), and Carman, Saitone, and Sexton (CSS, 2013) have conducted the two most recent studies of the impacts of avocado advertising. CLS studied CAC promotion expenditures from 1962 through 2007 and HAB promotion expenditures from 2003 through 2007, while CSS evaluated CAC promotion expenditures from 1994 through 2012 and HAB promotion expenditures for the 10 years from 2003 through 2012. Two key conclusions have emerged from these studies, along with those that preceded them. The first is that grower and wholesale prices are very responsive to changes in the supply of avocados on the market. That is, demand for avocados is quite price inelastic. The rather extreme year-to-year volatility of the grower price as the annual harvest varies in size (figure 1) is due to this inelasticity in demand.

Second, the studies have shown that promotional expenditures have significantly increased consumer demand for avocados and yielded an attractive rate of return on growers' investments. CLS estimated that the elasticity of fresh avocado demand with respect to promotion expenditures ranged from 0.15 to 0.37, depending on model specification. In other words, a 10% increase in promotion expenditures was estimated to increase demand from 1.5% to 3.7%. The more recent estimates from the CSS study ranged from 0.15 to 0.35, fully consistent with the findings of CLS.

The range of estimates in either study is due to different demand model

specifications and the difficulty of separating the impacts of promotion expenditures on avocado demand from other factors, such as the levels of consumer income, that are expected to influence demand and, in turn, are highly correlated with promotion expenditures. The authors regard the low end of this range of estimates of the promotion elasticity as a conservative lower bound on promotion's demand impact.

Studies of generic advertising usually summarize their results in the form of grower benefit-cost ratios (BCR). An average BCR greater than 1.0 means that the program has yielded a return (benefit) to growers in excess of the amounts invested to fund the program. A marginal BCR greater than 1.0 means that it would have been profitable to expand the program. CLS (2009) estimated average and marginal BCR ranging from 1.12 to 6.73, with the most likely estimates being in the range from 2.5 to 4.0. CSS (2013) meanwhile estimated average and marginal benefit/cost ratios in the range of 2.12 to 9.28.[2] Both sets of authors concluded with considerable confidence that the promotion programs conducted under CAC's and HAB's auspices have been successful in both expanding demand for fresh avocados in the U.S. and yielding a very favorable return to those funding the programs.

Fresh avocado imports increased from 41 million pounds in 1995 to over 1.1 billion pounds in 2012. Given the inelastic demand, changes in quantities supplied have proportionately larger impacts on price. For example, with a price elasticity of demand of -0.25 (the estimate reported by CSS), a 1.0% increase in supply will cause a 4.0% decrease in prices, other factors constant. Without the demand expansion produced by the

[2] The range of estimates is due to differences in the demand models estimated by the authors and different assumptions about the price elasticity of supply of avocados. See the complete studies for additional details on the simulation methodologies employed in these studies.

industry's promotion programs, increased imports would have easily reduced avocado prices to levels that would have made California production unprofitable.

Indeed just a decade ago few people would have believed that the California avocado industry could survive with 1.1 billion pounds of avocado imports. For example, a USDA economic impact study prepared in 2004, prior to approval of year round access of Mexican avocados to the entire U.S. market, projected that Mexican avocado imports could increase to 141 million pounds with total imports reaching over 250 million pounds. USDA projected that California avocado prices under this scenario would fall by 15.4% at the wholesale level and by 25.6% at the producer level. The reality of course is that imports increased to over one billion pounds, yet the real grower price has, on average, remained nearly constant. The USDA study did not consider the effects of advertising and promotion, an important oversight in light of actual developments.

California Avocado Commission Regional Promotion Programs

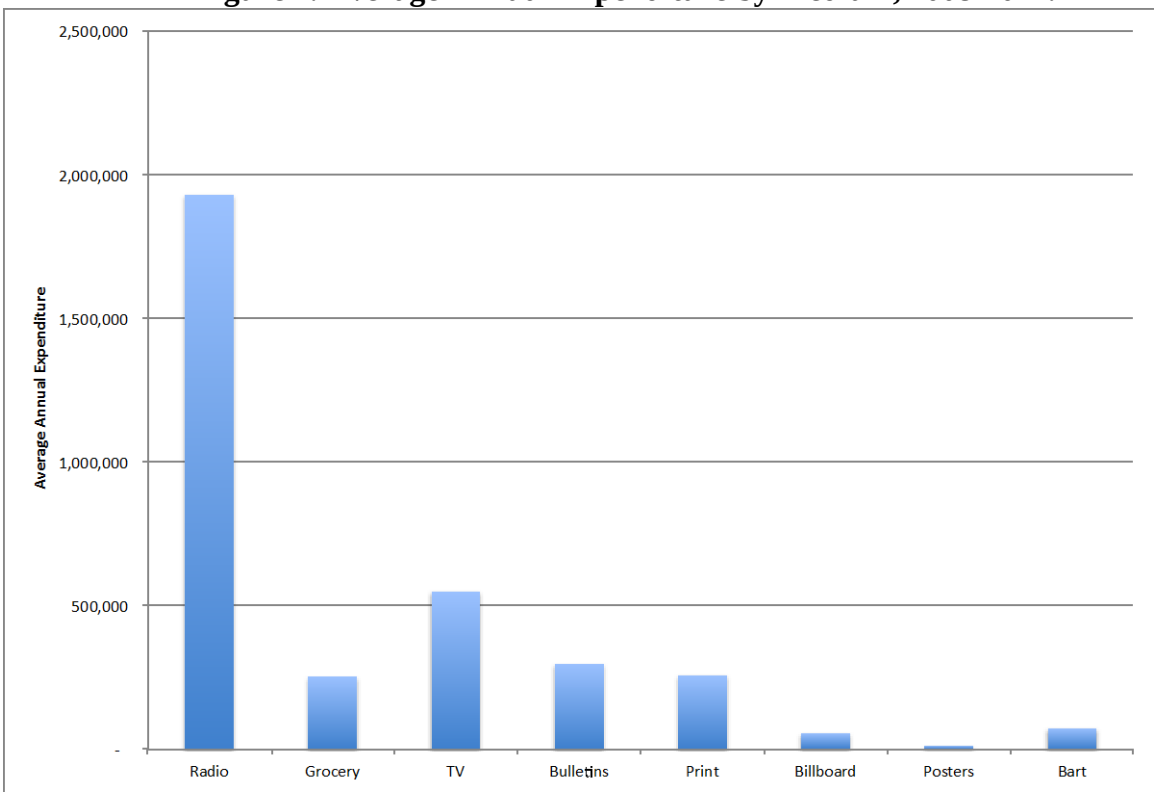
Recent CAC consumer advertising and promotion programs have focused on California and other Western markets with messages designed to develop a premium image for California avocados.[3] CAC's marketing focuses on the period from May through August when California fruit is now most available.

Figure 2 summarizes average annual CAC expenditures by medium for the period 2008 thru 2012. During most years radio has been the main medium for consumer advertising for CAC. Billboards, newspapers, in-store promotions, cable television, and

[3] The CAC's core markets in 2012 included Tier 1 (Los Angeles, San Francisco, San Diego, and Sacramento); Tier 2 (Denver, Phoenix, Seattle, Portland, and Salt Lake City); Tier 3, (Austin, Dallas, San Antonio, and Houston).

the internet have also been used, depending on the market and message.

Figure 2. Average Annual Expenditure by Medium, 2008-2012.



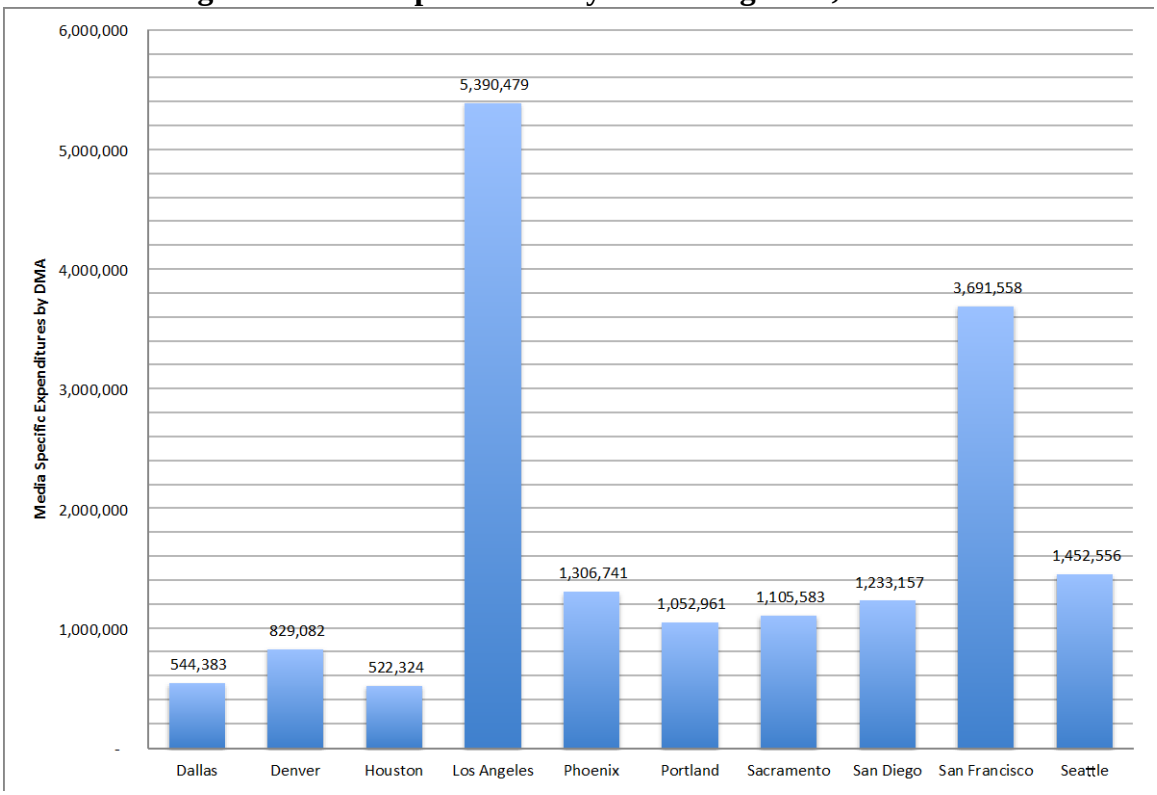
To analyze the impacts of CAC promotions in designated marketing areas (DMA) level, we used retail-level data collected by Information Resources, Inc. (IRI) and provided to us by the HAB.[4] The data include scanner data on retail sales for all fresh avocados in 38 DMAs, collected on a weekly basis for the five years spanning 2008 through 2012. Not all food retailers participate in the IRI program, so the sales reported for a DMA are not comprehensive.[5]

We computed weekly per capita expenditures on fresh avocados in all of the available DMAs. CAC conducts regional promotions in 13 DMAs (footnote 3). Three of these DMAs (Austin, Salt Lake City, and San Antonio) were not included in the data set,

[4] DMAs are marketing regions utilized by IRI, which correspond roughly to specific metropolitan areas.
[5] The vendor indicates that grocery stores are included in the coverage, but that supercenters and club stores are excluded. Small retailers that stock fresh avocados such as green grocers would also be excluded.

making the remaining 10 DMAs where CAC conducts promotions the "treatment" group for our study. Total CAC expenditures in these market areas are summarized in figure 3 for the period 2008 through 2012.

Figure 3. CAC Expenditures by Marketing Area, 2008-2012



The other 25 DMA in the data, where CAC does not conduct regional promotions, are, thus, available in principle to utilize as a "control" group in the study. However, the other partner organizations in the HAB, the Chilean Avocado Importers Association (CAIA) and the Mexican Hass Avocado Importers Association (MHAIA), conduct regional promotions in some of these DMAs at certain times. Accordingly, all weekly observations in DMAs when CAIA or MHAIA were conducting promotions were deleted from the data set because they would not constitute proper controls.

We used a variety of statistical models to analyze the impacts of CAC's regional promotions. The base model specified weekly per capita expenditures on fresh avocados

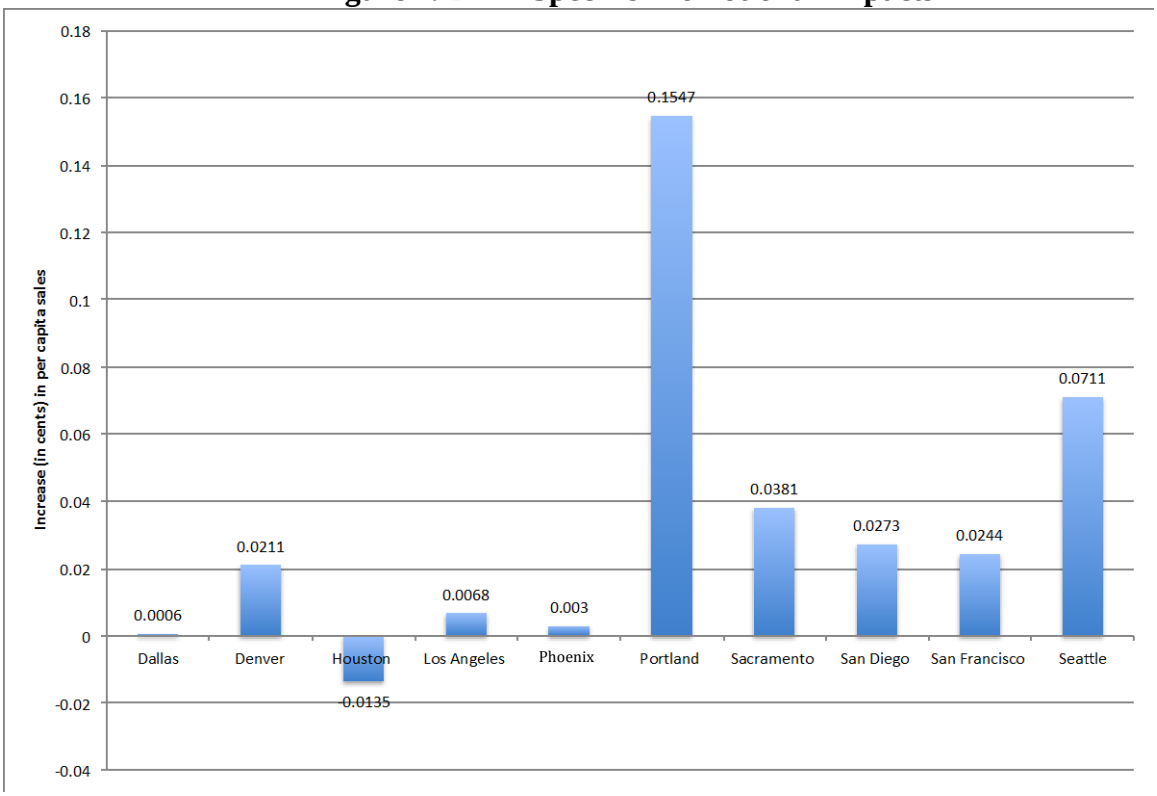
in a DMA as a function of (i) current and lagged fresh avocado prices, (ii) promotional expenditures in $1000 made by CAC in the DMA during the week, and various "fixed effects" variables to control for factors such as DMA, month of the year, year (2008 through 2012), and presence of a major holiday during the week. Some of these control variables are of interest in their own right in terms of what they tell us about avocado demand, but their primary purpose is to control for factors in addition to promotions that might influence fresh avocado sales so as not to bias our estimate of the impacts of promotions on fresh avocado sales.

On average, across the DMAs where CAC conducts promotions, we found a statistically significant and positive impact of CAC promotions on per capita sales. The impact was very stable across model specifications and was about 0.016 cents per week in additional per capita consumer expenditure per $1000 expended on promotions by CAC in the DMA, or about 2.3% in additional sales, given the average weekly promotional expenditure by CAC. This statistically significant impact represents a lower bound on the impacts of CAC's regional promotions because it ignores the "dynamic" impacts of such promotion, namely that promotions in a given week are likely to also increase sales in later weeks as well. The manner in which the promotions data were collected and provided to us made it impossible to test for these impacts. Also missed are impacts on consumers outside the DMA who come into contact with the promotional messages.

A second analysis involved examining the specific impacts of CAC promotions on each of 10 DMAs included in the IRI data set where CAC conducts promotions. These results are summarized in figure 4. Seven of the 10 individual-DMA impacts were

positive and statistically significant. Two of the three instances where CAC promotions did not have a statistically significant positive impact on demand were Houston and Dallas, the two DMAs among the 10 studied with the lowest total expenditure. It may be that CAC's expenditures in these markets did not reach the necessary threshold for effectiveness. The two largest per capita impacts from CAC's regional promotions were in the northwest—Portland and Seattle.

Figure 4. DMA Specific Promotional Impacts



We also attempted to examine the relative effectiveness of the alternative promotion media utilized by CAC. In general this analysis was unsuccessful because CAC tends to employ a similar mix of radio, grocery, print, billboard, etc. media in its campaigns, making it impossible to identify the distinct impact of each medium. However, we were successful in isolating an impact of CAC's recent 4th of July initiative due to its uniqueness in the data. CAC designed a unique campaign featuring radio and

television advertising in June and July of 2012 in the four California DMAs promoting California avocados as a home-grown choice for consumers. We found that this campaign caused a statistically significant boost in fresh avocado expenditure in the targeted DMAs of about one cent per capita per week or about 5.6%.

Conclusions

The growth in U.S. fresh avocado demand over the last two decades is unprecedented for the fruit and vegetable sector, and the promotion programs conducted by CAC have been a very important factor contributing to the increased demand. Avocado growers have realized a very attractive rate of return from their expenditures on promotion programs.

Total promotion expenditure for fresh avocados is impressive for an agricultural commodity, but the advertising intensity of commodity promotion programs (e.g., as measured by advertising-to-sales ratios) is relatively low compared to branded food products. Evidence from the recent studies strongly suggests that expansion of the industry's promotion programs would yield additional net benefits to growers.

References

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