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ALSO IN THIS ISSUE

The Soaring Eagles: California's Flagship Wines on Global Secondary Markets

Tor N. Tolhurst

California's flagship wines have been ascendant: accounting for inflation, prices on the world market for super premium wines have doubled over the past 15 years. Nearly half of the growth occurred within the last two years. A combination of climbing expert scores and surging exports, especially to China, have led to an extended period of demand outstripping supply. These conditions look likely to persist.

The cornerstone varietal of the flagship wines, and arguably California as a whole, is cabernet sauvignon.

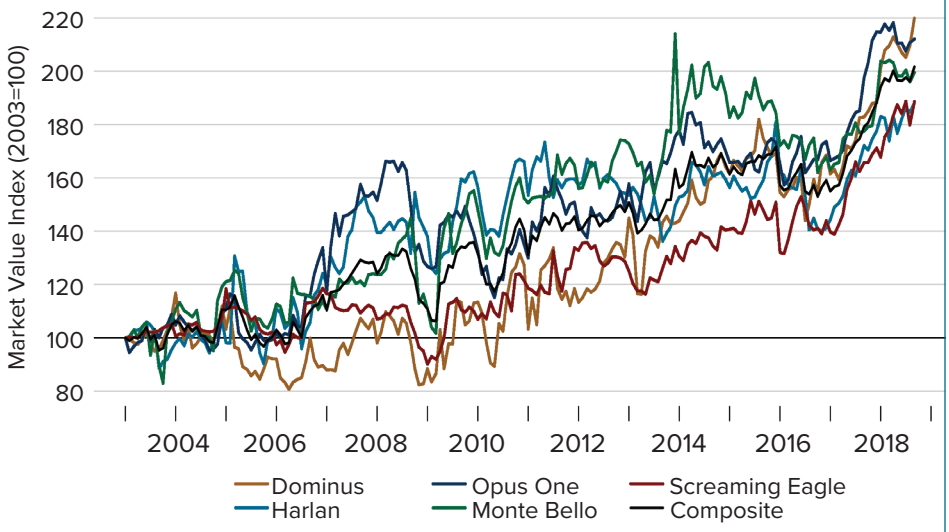
For $1,050 per bottle, the fortunate few who received an invitation to buy the 2016 Screaming Eagle release will soon have much *heavier* wallets: one month later it trades for over $3,000. The inaugural 1992 vintage, then released as one of California's most expensive wines at $75, now trades for over $6,300.

When Jean Phillips named the wine from her 1-acre plot of 80 cabernet sauvignon vines, "Screaming Eagle," she could hardly have imagined how high its prices would soar. The name might also apply to California's flagship wines more generally. Their market value has soared, more than doubling in real terms since 2003. Almost half of that ascent has occurred in the last 18 months.

Wine is one of California's most important agricultural products. Retail sales of California wines in the U.S. were worth an estimated $35.2 billion in 2017. There are 600,000 acres planted to wine grapes, with production in 49 of the state's 58 counties. Wine is one of the state's top-three agricultural export products to the European Union, China/Hong Kong, and Canada—California's three largest destination markets. California exported $1.4 billion of wine to over 130 countries in 2017, accounting for 91.5% of the total U.S. wine export value.

Flagships exert immense influence on a wine region's collective reputation. California is a leading example of their heft. Wines from the New World were second-class citizens until two (then unheralded) California wines outperformed their French counterparts in the 1976 Judgment of Paris tasting. Reputation is paramount because wine is an experience good—the consumer is uncertain about a wine's characteristics, quality, and ultimate utility until it is consumed—and the wine shopper faces a multitude of readily available options, many of which appear indistinguishable. Collective reputation generates regional price premiums and spillovers, such as tourism. According to the Wine Institute, wine attracted as many as 23.6 million visitors to California and $7.2 billion in expenditures in 2017.

Figure 1. Market Value Index of California's Flagship Red Wines



Source: Author calculations based on data provided by Liv-Ex, www.liv-ex.com.

Notes: Indices use prices from exchanges on global secondary markets collected by Liv-Ex through member auction houses and distributors. Each index represents a portfolio of vintages from 1993 onwards, with vintages added to the portfolio five years after their release. Older vintages receive less weight as determined by an "S"-shaped hyperbolic transformation. The composite index is an equally weighted index of the five component indices.

Figure 1 illustrates the real market value for a composite index of California's flagship wines, which doubled from January 2003 to September 2018. The index is composed of five components: Screaming Eagle (average market value for standard 750mL bottle of the 2013 vintage: $3,012), Harlan Estate ($1,420), Dominus ($349), Opus One ($327), and Ridge Monte Bello ($209).

These five iconic wines are the most actively traded California wines on global secondary markets. So that no individual vintage dominates the index, it incorporates prices for all available vintages from 1993 to 2013, with older vintages receiving relatively less weight in the index composition to reflect their increasing scarcity (if older vintages received equal weight, returns would be higher). New vintages are added to the index five years after their release at their market price (if purchased at release, returns would be higher, much higher, for Screaming Eagle).

The composite index realized an average annualized return of 4.57%, with low volatility and weak correlation to stock markets. Over the last two years, the annualized return was 13.14%. The composite index fell below 100 for only 13 of 189 months, last in April 2006. Negative monthly returns were experienced in only 74 of 189 months. Monthly returns for the component wines are relatively weakly correlated, so pooling them into the composite index reduces the volatility of returns: the monthly return standard deviation ranged from 3.48% to 5.77% for the flagship components, compared to 2.96% for the composite index.

Strong growth in the market value of California's flagship wines raises two questions. First, what supply and demand factors have led to price increases? Second, will prices continue to rise?

Changes in Supply

The cornerstone varietal of the flagships, and arguably California as a whole, is cabernet sauvignon. In the broader context of Napa cabernet production, supply has increased substantially. Bearing cabernet vines increased from 9,294 acres in 1993 to nearly 21,000 acres in 2017; during that period, cabernet rose from less than one-third of all (red and white) vines in Napa to nearly one-half. At the same time, average yields remained relatively flat. Oenophiles often use yields as a proxy for quality, suggesting quality was not compromised by expansion. Overall, Napa cabernet production has doubled since 1993.

What about flagship production? It is harder to say conclusively because Opus One and Screaming Eagle do not disclose production information; however, indicators suggest the flagships also increased production, perhaps by even more than double. Figure 2 illustrates a production index that proxies for the production of the flagship wines. It is constructed by supplementing data from Dominus, Harlan, and Ridge with three other prestigious cabernet-based wines: Scarecrow (current market value for 2013 vintage: $944), Araujo Eisele Vineyard ($569), and Larkmead Solari ($224).

From 1993–2015, the production index more than tripled. Despite the extended drought, the 2015 vintage produced more than twice as much as 2003. Circumstantial evidence on Screaming Eagle production, based on approximate production levels published by its distributors, is largely consistent with this index: between 130–175 cases were produced in the mid-1990s, whereas current production is between 400–750 cases.

Also note the Global Wine Score (GWS) accompanying the production index in Figure 2. GWS provides an overall metric for wine quality by standardizing and aggregating reviews in publications such as *Robert Parker's The Wine Advocate* and *Wine Spectator*. The GWS suggests increasing production levels occurred without compromising quality.

The evidence is consistent with flagship supply increasing (perhaps significantly). All other things equal, increased supply implies *lower* prices. Thus, higher demand is the likely cause of the price increases in flagship wines.

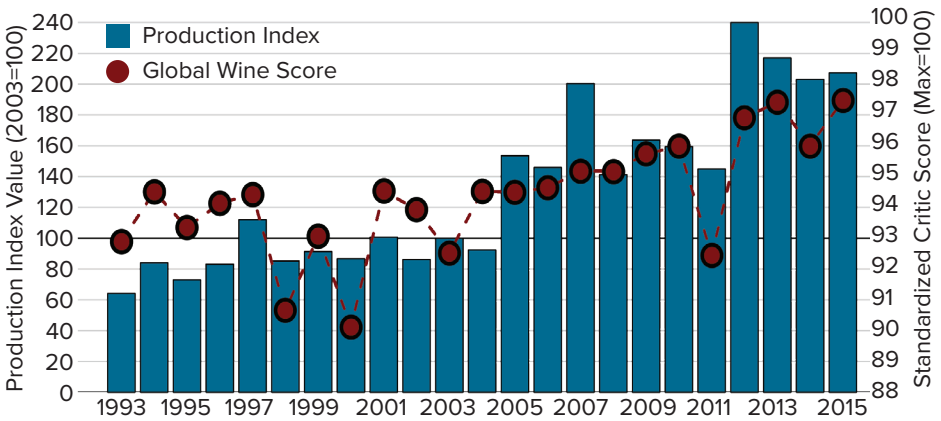
Changes in Demand

National consumption trends—wine consumption increased 31% in units of alcohol since 2002 but expenditures per unit have not kept up with inflation—provide little insight into the demand for luxury wines. Two other barometers of demand better explain the ascent in prices: quality scores and export demand.

Start with quality as measured by critic scores. Figure 2 includes the average GWS for the five flagship wines over the 1993–2015 vintages. In the first 12 vintages, one vintage was moderately poor (2003) and two vintages were exceptionally poor (1998 and 2000). Indeed, 1998 was so challenging that Harlan lost more than half its crop; similarly, Screaming Eagle did not release any wine in 2000. In contrast, none of the most recent 11 vintages were exceptionally poor. Only one (2011) was moderately poor. Overall, critic scores for the flagship wines have realized a noticeable upward trend: over the 23 vintages, average scores increased from 92.4 to 96.3, nearly four points.

Higher critic scores can significantly increase market value. GWS predicts most of the variation in prices of the flagships. All other things equal, the average score increase from 1993 to 2015 translates to a 42.7% increase in real prices. When scores are high, even small improvements rapidly increase prices: one more point would increase prices a further 44.2%. Undoubtedly the increase in critic scores has played a large role in increasing demand and doubling the real market value of the flagships since 2003.

Figure 2. Estimated Flagship Production and Quality, Vintages 1993–2015



Source: Production index is calculated by author based on data collected from corresponding winery websites. Standardized critic scores were scraped with permission from Global Wine Score (GWS), www.globalwinescore.com/.

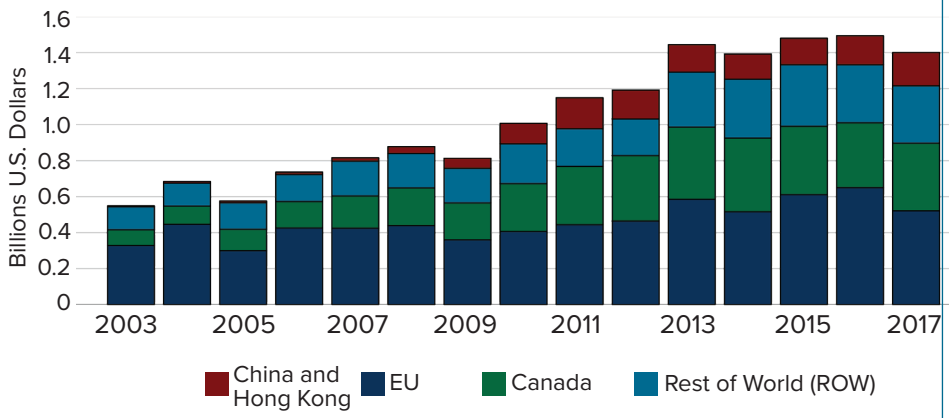
Notes: Each bar of the production index represents the volume of production relative to the 2003 vintage. Intermittent missing data were interpolated. Each GWS point is the average GWS evolution score of the five flagship wines corresponding to that vintage, excluding wine-vintage pairs which were not released (e.g., Screaming Eagle 2000).

At the same time, export demand has grown dramatically, as shown in Figure 3. Prior to 2003, the value of California wine exports was less than $500 million (M). By 2010, exports had exceeded $1.0 billion (B). Export value peaked at $1.5 B in 2016 before retreating slightly to $1.4 B in 2017. While it is hard to precisely measure the impact of export demand on flagship prices, increased export demand translates to higher total demand and hence higher prices.

The composition of export demand growth is also noteworthy. Export demand to the European Union grew at an average annual rate of 3.3% on a large base, accounting for 37.2% of all California wine exports in 2017. The second largest market, Canada (26.8% of 2017 exports), has grown at an outstanding 10.3% annual rate since 2003. However, by far the fastest rate of growth has been in exports to China and Hong Kong.

Prior to 2003, exports to Chinese markets were less than $2 million (M). From 2003 to 2017, the average annual growth rate was a staggering 25.8%. Exports to China first exceeded $100 M in 2010; in 2017, they exceeded $185 M, accounting for over 13.2% of all California wine export value. Despite the dip in exports to all destinations, exports to Chinese markets grew 14.1% from 2016 to 2017. With its fervent and growing demand for luxury wines (the basis

Figure 3. Annual Exports of California Wine by Destination, 2003–2017



Source: California Agricultural Issues Center Export Reports, 2003–2017.

Table 1. Sotheby's Auction Lots by Location and Region, 2017–2019

Region	Share of Lots	
	Hong Kong	New York
Bordeaux	37.1%	36.9%
Burgundy	41.1%	27.7%
All France	90.8%	72.7%
United States	2.1%	15.8%
Rest of World	7.1%	11.5%

Source: Sotheby's Auction Results, Hong Kong, www.sothebys.com.

Note: Calculated based on the number of lots in auctions held in Hong Kong and New York with at least one item from the respective region. Includes lots from January 2017 to April 2019.

of the *Red Obsession* documentary), Chinese markets will continue to be increasingly influential on world markets for luxury wines.

Will Prices Continue to Rise?

California's luxury wine industry faces a number of salient risks; wine is, after all, an agricultural product. Smoke contamination will prevent Screaming Eagle from releasing its 2017 vintage. Pierce's disease, which spreads quickly and can kill vines within two years, is aggravated by warmer winters. To the extent these risks are idiosyncratic, they won't hamper the long-term trajectory of prices, and systemic risks can be at least partially mitigated through innovation and resources.

The largest risk is California's tenuous standing in China, where French wines reign supreme. Table 1 demonstrates French supremacy: over 90% of lots listed for auction at Sotheby's Hong Kong included at least one French wine. In contrast, U.S. wines were included in just over 2% of lots, one-seventh of their share in auctions held in New York.

The prestige, precision, and history of French wine has always epitomized the Chinese ideal of wine more than California's maverick, opulent persona. But California has largely failed to elevate its reputation in Chinese markets above wine from other regions—Australia, Argentina, Chile, and increasingly China itself. Lower standing entails a more fragile market position.

Over and above the transitory reduction in exports, the trade war with China (unresolved at the time of writing) is straining this fragile position. As reputational dents tend to persist, damage from a trade war could have long-term repercussions on California's collective reputation in increasingly essential and influential Chinese markets. Even if California eludes these damages, more work is required to burnish its collective reputation in China.

That being said, there are many reasons to bet on a bright future for California's luxury wines. Even if the growth rate is halved, California exports to Chinese markets would exceed $300 M in four years. While it will be increasingly difficult to attain higher scores as the upper bound gets closer, even small score increases translate to large price increases. My analysis suggests that increasing from the current average score of 96.3 to 97.3 would increase prices 44.2%.

In many important markets, California remains held in the highest-esteem. This prestige partially insulates the flagships from otherwise capricious markets: wine enthusiasts prefer variety, so while the industry is competitive, it is far from winner-take-all; hard-won reputations are nearly impossible for new entrants to mimic; and the playbook for expanding production without compromising reputation via second wines (e.g., Second Flight for Screaming Eagle) or labels (Jonata and The Hilt) is well-known. The flagship wines have wide stylistic appeal, implying they are less vulnerable to the whims of changing taste and fashion.

Will prices continue to rise? As long as the flagships maintain their reputation, demand will not subside. To the extent their reputation grows in China, demand will expand. At some point, likely soon, production constraints will start to bind. The eagles look set to continue their ascent for the foreseeable future.

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For additional information, the author recommends:

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Trump, Migration, and Agriculture

Philip Martin

Farmers hoped that President Trump would provide them with a new guest worker program. After two years, farmers are responding to higher labor costs by embracing labor-saving mechanization and hiring more workers under the current H-2A program.

The U.S. is *the* country of immigration, with 4% of the world's people and almost 20% of the world's 260 million international migrants. The number two country of immigration, Germany, has 12 million migrants, a fourth of the almost 48 million foreign-born U.S. residents. The U.S. stands alone among industrial countries in having almost a quarter of its immigrants, over 11 million, unauthorized.

Immigration Reform and Control Act and Mexico-U.S. Migration

The U.S. tried to curb illegal migration with the Immigration Reform and Control Act (IRCA) of 1986 that legalized 2.7 million unauthorized foreigners, 70% Mexicans. IRCA imposed federal penalties or sanctions on employers who knowingly hired unauthorized workers in a bid to discourage them from entering the U.S. to seek higher-wage jobs. However, a proliferation of false documents among unauthorized workers, combined with IRCA's explicit warning that employers should not discriminate in checking the validity of worker documents, attracted more unauthorized foreigners to U.S. jobs.

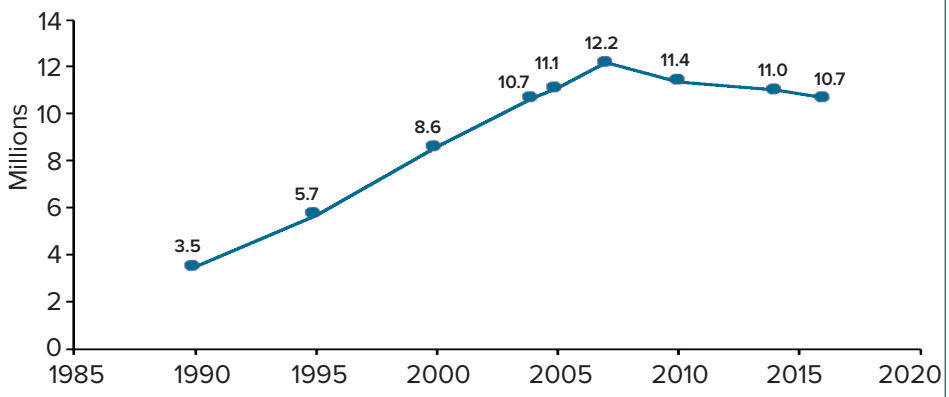
During the 1990s, illegal immigration surged and legal immigration reached current levels of a million a year. After 2000, there were several efforts to deal with persisting illegal immigration that involved efforts to re-enact a revised version of IRCA. After the House in 2005 approved an enforcement-only bill to deal with unauthorized foreigners, a bipartisan group of senators developed a Comprehensive Immigration Reform Act (CIRA) that was approved by the Senate in 2006, and another bipartisan CIRA that was approved by the Senate in 2013. These CIRA proposals rested on a three-pronged stool: more enforcement to deter illegal migration, including more fencing on the Mexico-U.S. border, a path to legal status for most unauthorized foreigners in the U.S., and new guest worker programs.

The House did not approve CIRA. The immigration stalemate in Congress prompted President Barack Obama to grant legal work and residence permits to some unauthorized foreigners. The Deferred Action for Childhood Arrivals (DACA) program created in 2012 allowed unauthorized foreigners who were brought into the U.S. before the age of 16, and who graduated from U.S. high schools, to obtain renewable work and residence permits. In 2014, Obama went further with the Deferred Action for Parents of Americans and Lawful Permanent Residents (DAPA), which would have granted work and residence permits to unauthorized foreigners with legal children in the United States. DACA was implemented and currently protects about 690,000 unauthorized foreigners; DAPA was blocked by court injunctions and not implemented.

Candidate Donald Trump made reducing illegal immigration and deporting unauthorized foreigners central themes of his quest for the presidency in 2015–16. President Trump issued three executive orders dealing with migration during his first week in office. The first set in motion plans to reduce illegal entries by building a wall on the Mexico-U.S. border and adding more Border Patrol agents. The second aimed to increase deportations from the U.S. by doubling the number of Immigration and Customs Enforcement (ICE) agents and persuading states and cities to cooperate with ICE. The third reduced refugee admissions and restricted the entry of foreigners from particular countries.

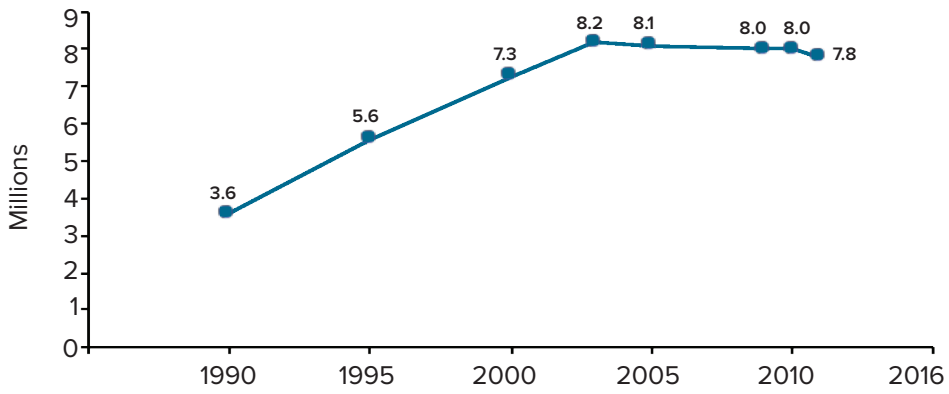
Each of these executive orders was challenged. With the stock of unauthorized foreigners in the U.S. falling (Figure 1), Mexico refused to pay for and Congress did not appropriate $25 billion to construct the border wall. The stock of unauthorized foreigners is estimated by comparing U.S. and foreign

Figure 1. Number of Unauthorized Foreigners Dropped 12 Percent from 2007 Peak



Source: Passel, Jeffrey and D'Vera Cohn. 2018. "U.S. Unauthorized Immigrant Total Dips to Lowest Level in a Decade." Pew. www.pewhispanic.org/2018/11/27/u-s-unauthorized-immigrant-total-dips-to-lowest-level-in-a-decade/

Figure 2. Number of Unauthorized Workers Dropped 5 Percent Between 2007–2016



Source: Passel, Jeffrey and D'Vera Cohn. 2018. "U.S. Unauthorized Immigrant Total Dips to Lowest Level in a Decade." Pew. www.pewhispanic.org/2018/11/27/u-s-unauthorized-immigrant-total-dips-to-lowest-level-in-a-decade/

census data and adjusting for foreigners who legalize their presence in the U.S., leave the U.S., or die. Efforts to penalize sanctuary states and cities that refuse to cooperate with ICE by holding unauthorized foreigners convicted of U.S. crimes have been blocked by court injunctions. The revised travel ban was upheld by the U.S. Supreme Court in June 2018, and refugee admissions have been reduced sharply.

Trump and Migration

After almost two years in office, President Trump has changed the conversation on migration in several important ways. First, migration has become much more partisan. CIRA proposals were bipartisan, including the 2007 proposal brokered by Senators Edward Kennedy (D-MA) and John McCain (R-AZ) and the 2013 proposal negotiated by four Republican and four Democratic senators. Since taking office, Trump's migration actions have appealed primarily to the populist wing of the Republican party that wants to reduce all types of migration into the U.S., while the Republican-leaning U.S. Chamber of Commerce supports the legalization of unauthorized foreigners and more guest workers.

The Democratic party is also becoming more divided on immigration. Voices that once urged limits on migration to protect U.S. workers, such as Senator Bernie Sanders (I-VT), have been superseded by Democrats who call for the legalization of unauthorized foreigners and the abolition of ICE, the agency that detects and removes unauthorized foreigners from the interior of the United States.

Second, legal immigration continues at pre-Trump levels of a million a year, but illegal Mexico-U.S. migration has slowed to a trickle. Instead of solo Mexican men arriving at the U.S. border, unauthorized border entries today are often Central American families who apply for asylum, citing domestic and gang violence in El Salvador, Guatemala, and Honduras.

The Border Patrol's mission is to prevent unauthorized entries. Central American families who enter illegally often seek out Border Patrol agents to request asylum. U.S. law does not allow children under 18 to be held in jails, so many Central American adults arrive with children and are released while they wait several years for hearings on their asylum applications. The current backlog of cases in immigration courts is almost 800,000, including 200,000 asylum cases.

Over 75% of Central Americans pass credible fear tests, meaning that they can convince a U.S. Citizenship and Immigration Services (USCIS) asylum officer that they fear persecution at home and thus are allowed to ask an immigration judge to be recognized as a refugee. However, less than 10% of Central Americans who file asylum applications after being apprehended are recognized as refugees and allowed to settle legally in the United States. The asylum application and appeal process can take three to five years, time that some applicants use to work in the United States.

The Trump administration criticized so-called catch-and-release policies that involve apprehending Central Americans who enter the U.S. illegally, apply for asylum, and then are released. First, the Department of Homeland Security (DHS) in May-June 2018 began to prosecute all adults who entered the U.S. illegally. Since children cannot be jailed, over 2,500 children were separated from their parents, some of whom were deported while their children were in shelters operated by or for the U.S. government. This child-separation policy produced a backlash and was soon ended, perhaps explaining why the number of so-called family units of parents and children from Central America rose to record levels in fall 2018.

Second, Attorney General Jeff Sessions in July 2018 reversed a 2016 grant of asylum to an El Salvadoran woman who was a victim of domestic violence, concluding that fleeing domestic or gang violence is generally not grounds to receive asylum in the United States. Sessions explicitly found that violence committed by persons who are not associated with a government is not a basis for being recognized as a refugee. A federal judge in December 2018 has temporarily blocked the Sessions guidance to immigration judges from going into effect.

In September 2107, Trump ended DACA and asked Congress to find a solution for unauthorized foreigners brought to the U.S. as children.

Congress did not act, but federal courts issued injunctions that have so far preserved DACA. Trump ended Temporary Protected Status (TPS) for many of the 320,000 foreigners from 10 countries who had the right to live and work in the U.S. when he took office. However, a federal judge issued an injunction in October 2018 that temporarily blocks the withdrawal of TPS from 263,000 Salvadorans, 59,000 Haitians, 5,000 Nicaraguans, and 1,000 Sudanese.

Other Trump administration efforts are aimed at legal immigration. President Trump supported the Reforming American Immigration for Strong Employment, or RAISE Act, introduced in 2017 to reduce the number of immigrant visas issued by half, from a million to 500,000, and to reduce refugee admissions to 50,000 a year. U.S. law has long denied immigrant visas to foreigners likely to become a "public charge," and DHS proposed regulations in fall 2018 that would consider in-kind benefits, such as the receipt of food and housing benefits rather than only cash payments, as reasons to consider foreigners to be public charges and deny them immigrant visas, drawing challenges from several states.

Agriculture and Migration

Over half of U.S. crop workers, and 60% of California farm workers, are unauthorized. Figure 1 shows that there was a 12% drop in the number of unauthorized foreigners between 2007 and 2016, while Figure 2 shows that there was only a 5% drop in the number of unauthorized workers, suggesting that those with jobs stayed in the United States.

Currently, unauthorized farm workers are aging and settling in one place with families that often include U.S.-born children, reducing follow-the-crop migration and the flexibility of the hired farm workforce. The "fresh blood" in the farm workforce are H-2A guest workers, almost all of whom are from Mexico and most of whom are a decade younger than typical 40-year old unauthorized workers.

The slowdown in unauthorized Mexico-U.S. migration since the 2008–09 recession increased farmer complaints of labor shortages and what they call a "bureaucratic" H-2A guest worker program that requires farm employers to provide housing to temporary foreign workers. However, rising state minimum wages as well as new health care and overtime pay obligations mean that farmers face higher labor costs regardless of immigration regulations, prompting a new interest in labor-saving mechanization.

There are numerous efforts to develop machines to replace workers in fruit and vegetable commodities. Most advanced are precision planting machines that facilitate the use of mechanical rather than hand weeders, since GPS devices tell the machine where plants should be, allowing the machine to remove weeds between rows and between plants. Many farmers plant new orchards and vineyards to facilitate the pruning of trees and vines mechanically. Mechanical harvesters often require more planning and investment, such as dwarf trees to reduce how far mechanically harvested fruit falls into a catching device. Machines are being developed to harvest even soft fruits such as strawberries; estimates of when these harvesters will be commercially viable depend on the cost and availability of hand workers.

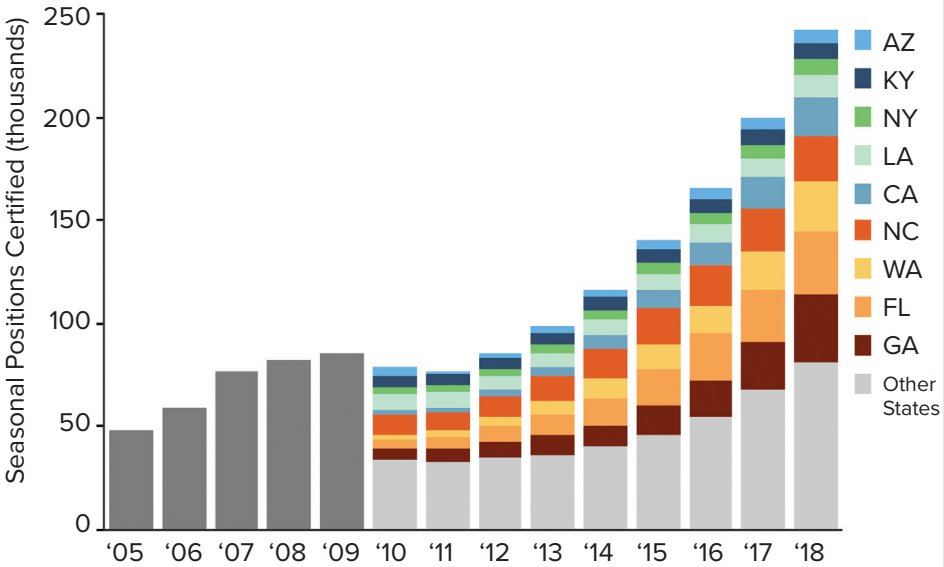
New hand workers are mostly H-2A visa holders. In order to be certified to employ H-2A guest workers, farmers must try and fail to find U.S. workers to fill jobs generally lasting less than 10 months, provide free and approved housing to H-2A workers, and pay them a super minimum wage called the Adverse Effect Wage Rate (AEWR) of $13.18 an hour in California in 2018, when the state's minimum wage was $11.

Farmers have sought an alternative to these H-2A recruitment, housing, and AEWR requirements for decades, and won a Replenishment Agricultural Program (RAW) in IRCA that was not implemented because there were no labor shortages. RAW workers could have been in the U.S. or abroad, could be hired without failed efforts to recruit U.S. workers, and would not have been housed by employers or paid the AEWR. In turn, RAW workers would have been free to "float" from one farm job to another rather than being tied to one farm by a contract as are H-2A workers.

After the election of Mexican President Fox and U.S. President Bush in 2000, farm worker advocates negotiated the Agricultural Jobs, Opportunity, Benefits and Security Act (AgJOBS) with farm employers. AgJOBS would legalize unauthorized farm workers and make it easier for farm employers to hire guest workers by reducing required minimum wages; it would also end the requirement that farmers provide housing to guest workers. AgJOBS was included in the CIRA bills approved by the Senate in 2006 and 2013.

Rep. Bob Goodlatte (R-VA) proposed a new H-2C program in the Agricultural Guestworker Act of 2018 to allow all farm employers, including those offering year-round livestock and dairy jobs, to attest that they need guest workers, and to pay them at least 115% of the federal or state minimum wage. Farm employers would not have to provide housing to H-2C workers, who would pay their own way from their countries to U.S. farm jobs. H-2C workers could change employers in the U.S., and could remain in the U.S. to do farm work for up to three years, after which they would have to stay in their home countries at least 60 days before returning to the United States.

Figure 3. H-2A Workers Certified by State, FY 2005–2018



Note: Dark gray bars represent aggregates where individual State-level are not identified.

Source: USDA, Economic Research Service using data from U.S. Department of Labor.

Goodlatte's bill was opposed by farm worker advocates who decried fewer protections for U.S. and foreign workers and divided farm employers. The American Farm Bureau Federation and most dairy associations supported the Goodlatte bill, but the National Council of Agricultural Employers and the Western Growers Association opposed it, primarily because the Goodlatte bill limited the number of H-2C visas to 450,000 a year, including 40,000 for workers employed in meat and poultry processing. The Goodlatte bill was not enacted.

President Trump's Virginia vineyard employs H-2A farm guest workers, and his hotels employ H-2B seasonal nonfarm guest workers, so many farm employers expected Trump to make it easier for employers to access low-skilled guest workers. However, there were no major changes to the H-2A and H-2B guest worker programs during Trump's first two years despite his promise in April 2018 that "For the farmers, OK, it's going to get good. We're going to let your guest workers come in…they're going to work on your farms ... but then they have to go out."

The H-2A program has been expanding rapidly under current regulations, more than tripling over the past decade, so that over 240,000 farm jobs were certified to be filled with H-2A workers in FY18, up 20% from FY17 (Figure 3). The top five H-2A states of Georgia (13%), Florida (12%), Washington (10%), North Carolina (9%), and California (8%) accounted for 52% of the jobs certified in FY18.

Over 90% of H-2A workers are from Mexico, and over 10% of jobs certified to be filled with H-2A workers were in berries. The Department of State issues H-2A visas, and the number of jobs per visa issued has been declining, perhaps reflecting the fact that many H-2A workers are employed by custom harvesters and employer associations who move them from farm to farm.

What's Next?

President Trump made reducing illegal immigration a priority. Major migration issues today include the fate of programs such as DACA, what to do about Central Americans who apply for asylum, and whether to build a wall on the Mexico-U.S. border. In December 2018, there was a partial shutdown of the federal government, the third in Trump's first two years as president, because Congress failed to include $5 billion for the border wall in bills that fund DHS and other federal agencies. Meanwhile, Mexico agreed to issue humanitarian visas to Central Americans who enter the U.S. illegally and apply for asylum in the U.S., so that Central American asylum seekers would wait in Mexico for U.S. decisions on their cases.

Farm guest worker issues have been pushed into the background by the debates over the wall, caravans of Central Americans, and the fate of DACA. Rising labor costs due to fewer new, unauthorized workers and higher minimum wages are encouraging farmers to make labor-saving management changes such as changing crops and investing in labor-saving machines. More California farmers would like to employ H-2A workers, but many are frustrated by the lack of affordable housing for guest workers.

California farmers face higher labor costs, rising competition from imported fresh fruits and vegetables, and ever-lower costs of robots and other labor-saving devices. What is unknown is whether the Trump administration will urge Congress to make major changes to the H-2A program or propose new guest worker programs that could make guest workers more attractive than mechanization. There is a great deal of uncertainty about policies that affect labor costs, frustrating farmers who want clearer signals on the likely evolution of labor costs.

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Lessons from Berkeley's Sugar-Sweetened Beverage Election and Tax

Scott Kaplan, Rebecca Taylor, and Sofia B. Villas-Boas

In 2014, Berkeley passed the nation's first sugar-sweetened beverage (SSB) tax, also known as a soda tax, through a public vote. Using sales data from Berkeley retailers, we find that sales of soda fell relative to non-SSB beverages by 10–20% after the election outcome and before the tax was ever passed on to consumers. Our findings suggest soda tax media coverage and election outcomes can have larger effects on purchasing behavior than the tax itself.

In 2014, Berkeley voted to pass "Measure D," also known as a sugar-sweetened beverage (SSB) tax (or more commonly as a soda tax), becoming the first city in the United States to institute such a policy and the first to do so through a local election. Measure D imposes a penny-per-fluid-ounce tax to be paid by distributors of SSBs, with the goal of reducing consumption of such beverages, or if demand is deemed unresponsive, raise tax revenues to fund nutritional programs and education.

SSB taxes have gained momentum in recent years because of rising awareness of potential negative health externalities resulting from excessive sugar consumption. While evidence is mixed that there are "market failures" in the context of food, or more specifically, sugar consumption (i.e., over-consumption that places an economic burden on society), many believe that these taxes can be used to correct food-related market failures should they exist.

Studies have found that there is a strong correlation between sugar consumption and chronic diseases like diabetes, heart disease, and obesity. Treatment of these diseases places a substantial economic burden on the healthcare system, the costs of which are not completely internalized by those being treated. For example, an obese individual may require more expensive healthcare than an average-weight individual, the costs of which are not completely borne by the obese individual because of the way insurance programs are typically structured.

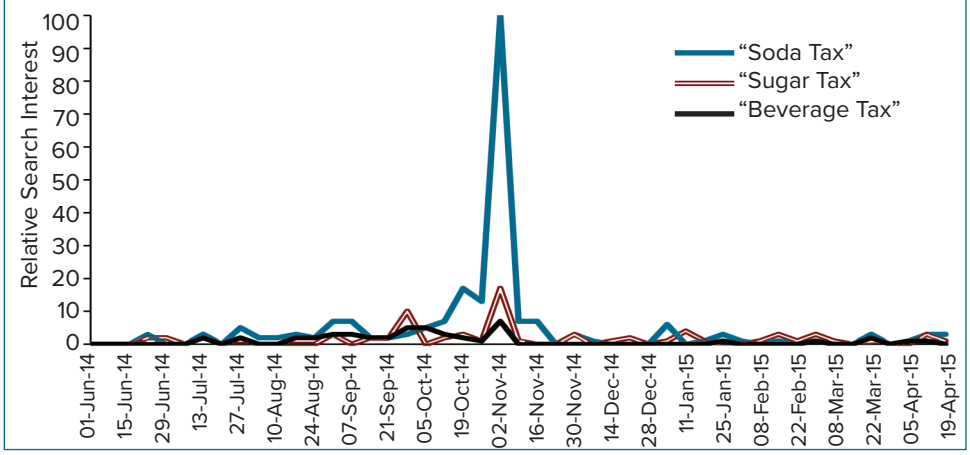
The Affordable Care Act, also known as "Obamacare," shares costs among taxpayers, and employer-provided insurance policies similarly pool risk across workers, and so unhealthy people in both of these insurance systems drive up average costs for everybody. Sugar taxes have the potential to correct these externalities by making sugar consumers pay for the impacts of their consumption on the healthcare system as a whole.

There have been several studies attempting to estimate the impact of the Berkeley SSB tax on consumption of these beverages. Those using purchase data from retailers find reductions of approximately 10% in consumption of SSBs, while survey-based work finds much larger effects, reaching reductions as high as 50%. Additionally, there is some evidence that consumers may be "border shopping" and purchasing their SSB products just outside city limits.

Given that the tax imposes a penny-per-fluid-ounce price increase, which will change relative prices depending on the size of beverages, the upper end of this range suggests that consumers of SSBs are highly responsive to price changes. The more responsive consumers are to price changes, the more "effective" taxes are in changing behavior. On the other hand, if consumers are relatively unresponsive to price changes, taxes will lead to significant revenue generation that can be used to

Figure 1. "Yes" Campaign Advertisement for Measure D in Berkeley

Figure 2. Google Trends Web Search Interest of "Soda Tax," "Sugar Tax," and "Beverage Tax" in the San Francisco Bay Area Over Time



influence consumption in other ways (e.g., educational programs).

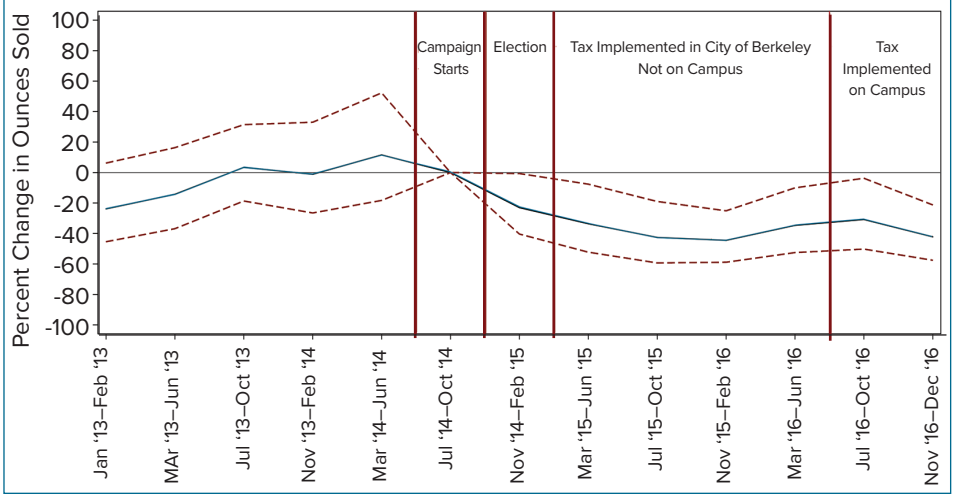
Information and Social Norms vs. Prices

All of the work discussed above compares consumption of SSB products post-tax implementation vs. pre-election. However, in our recently published paper in *Economic Inquiry*, we go a step further and estimate changes in sales during the campaign and election periods, before the tax was actually implemented in the market. We find strong effects of the "Yes" election outcome on consumption before any beverages were taxed, suggesting that there is an important, non-price mechanism affecting individual behavior in this particular context.

In fact, we estimate that this non-price effect is even larger than the actual price effect associated with the tax implementation. We look primarily at regular soda compared to other less-advertised SSBs (e.g., sports and energy drinks) and non-SSBs (e.g., milk and diet drinks), since the campaign and election focused on "Berkeley vs. Big Soda" (see Figure 1).

There was also heightened attention and awareness about Measure D at the time of the election, as evidenced by "Google Trends" data shown in Figure 2. One can see that search interest in "Soda Tax" in the San Francisco Bay Area reached peak popularity right before the November 4, 2014 election, also indicating that people viewed Measure D primarily as a tax on regular soda products.

Figure 3. Effect of the Soda Tax Campaign and Election on Campus Retail Regular Soda Sales Relative to Other Beverage Products



While it may be the case that storefronts in Berkeley changed prices after the election outcome and before the tax went into place, we have concretely identified a non-price mechanism because we have access to beverage sales on the University of California, Berkeley campus, which did not adjust prices of SSB products until August 2016 (confirmed by the UC Berkeley Food and Dining administration). We also confirm no change in the availability of beverage products in these stores. These data include total ounces purchased by product-month, where products are identified by a specific "universal product code" (UPC).

In order to estimate reduction in sales of regular soda, we first identified the different impactful periods associated with Measure D in Berkeley. There are five important periods: the "pre-campaign," "campaign," "post-election/pre-city implementation," "post-city/pre-campus implementation," and "post-campus implementation." We compare sales changes of regular soda in each of these periods to a set of reasonable control products (mentioned previously), after adjusting for time trends and overall level differences in product sales. Figure 3 depicts our primary findings from analyses of the on-campus retail data.

The vertical axis depicts the percentage change in ounces sold of regular soda versus the set of control beverages in each time-period (denoted on the x-axis) relative to the "campaign" period (July '14–October '14). The solid blue line represents these estimates, while the dotted lines represent the confidence intervals of these estimates. One can see that there is very little change in the relative ounces sold of each of these groups until Measure D passed on November 4, 2014 (as indicated by the upper bound of the confidence interval falling below 0%).

Our findings suggest regular soda sales fell on the Berkeley campus by 10–20% compared to the control

category beverages in the "post-election/pre-city implementation" period (November '14–February '15). We find additional drops in the "post-city/pre-campus implementation" period (March '15–July '16), but by lesser magnitudes than 10–20%. Note that there was still no price change on the Berkeley campus during this time, so additional reductions were not a result of increased prices of SSBs on campus.

Overall, we find reductions of 18–36% in regular soda sales across these two periods compared to the "campaign" period. Furthermore, we find no additional declines in regular soda sales in the "post-campus implementation" period (August '16–December '16) when prices of all diet and regular SSB products increased by $0.25.

Another important policy question is whether or not these non-price effects are persistent long after the election. Our study examines sales effects two years after the election outcome (through December '16), finding that there are indeed lasting declines in sales. All of our on-campus findings are backed up by A.C. Nielsen retail scanner data from storefronts in the city of Berkeley, albeit with slightly lower magnitudes (See note below).

Conclusions

Highlighted news coverage and local elections play an important role in disseminating information to the public, and this information can change behavior. Investigating whether campaigns and elections also lead to behavioral changes, whether through information or social norms channels, has important policy implications about how and where SSB policies may be effective in altering SSB consumption. For example, if the social norm revealed by the election was the driving mechanism behind the consumption change, and not information revealed by the media campaign, we might expect larger effects when consumers identify more closely with other voters.

While policies adjusting prices are important levers to change habits and boost economic welfare, the effectiveness of certain policies may depend on non-price mechanisms. Local elections may be a powerful tool to change decision-making processes of consumers, especially to the extent that they highlight information awareness campaigns and election outcomes to their populace. When thinking about SSB taxes (or other types of policies affecting consumers) in other cities, the most important takeaway is that consumer responses may depend on the presence of an information campaign or public vote leading up to policy action.

An interesting line of further research may be to identify the extent to which campaigns and elections lead to behavioral changes in situations when elections did not lead to actual policy changes. For instance, in 2014 San Francisco did not elect to pass a soda tax, but still had a campaign preceding the election. In addition, there are other products that have been subject to campaigns without election implications, for example the Food and Drug Administration's anti-vaping campaign "The Real Cost." There may be ways to identify these information effects more distinctly by examining different types of campaign and election processes in other products.

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Note: Researchers' own analyses calculated based in part on data from The Nielsen Company (US), LLC and marketing databases provided through the Nielsen Datasets at the Kilts Center for Marketing Data Center at The University of Chicago Booth School of Business. The conclusions drawn from the Nielsen data are those of the researchers and do not reflect the views of Nielsen. Nielsen is not responsible for, had no role in, and was not involved in analyzing and preparing the results reported herein.

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For additional information, the authors recommend:

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