



# **Fiscal and Economic Effects of Proposition 2**

by

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September 16, 2008

**Report prepared for**

**The Humane Society of the United States**

## ABOUT THE AUTHORS AND SPONSORS

This report was prepared by the Blue Sky Consulting Group, which was founded by Tim Gage and Matthew Newman in 2005 and specializes in public policy analysis and providing insights into high-level budget and fiscal policy issues.

*Tim Gage* spent over 24 years as a fiscal advisor to both houses of the California Legislature and as the Director of the California Department of Finance. As Director of Finance, Mr. Gage directed a staff of 350 in development of the state's \$100 billion budget and directed representation of the Administration on 70 state boards and commissions.

With the Legislature, Mr. Gage served for four years as the chief fiscal advisor to two Presidents pro Tempore of the California State Senate. Prior to this, Mr. Gage served for seven years as the chief consultant to the Assembly Ways and Means Committee, six years as the assistant fiscal advisor to the President pro Tempore of the Senate and three years as a Program Analyst in the Office of the Legislative Analyst.

Since leaving Finance, Mr. Gage has consulted for various clients on issues relating to budgeting and public finance. In March 2003, Mr. Gage was appointed by Governor Davis to the Board of Governors of the California Independent System Operator, the state's public benefit corporation responsible for managing California's high-voltage electric power grid.

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Previously, Mr. Newman served as the Executive Director of the California Institute for County Government (CICG), a nonpartisan public policy research institute founded by the California State Association of Counties and the California State University system. Prior to working at CICG, Mr. Newman worked as a Senior Consultant for LECG, an international economics and public policy consulting firm. Mr. Newman also served as a Policy Analyst for California's Legislative Analyst's Office, where he published studies of California's property tax, county fiscal constraints, and the earned income tax credit.

The report was prepared for the Humane Society of the United States.

## Executive Summary

In November, California voters will vote on Proposition 2, which would create minimum space requirements for egg-laying hens and other animals on California farms. Proposition 2 does not spell out specific cage sizes or characteristics, but rather requires that animals be able to turn around freely, lie down, stand up, and fully extend their limbs.

This report examines the likely economic and fiscal effects of Proposition 2 on the state of California and its egg consumers and tax payers. The measure is not expected to cause higher prices for eggs at California supermarkets. Because eggs are national commodity, price-sensitive Californians will still be able to purchase conventional eggs from non-California Producers at prices which will be unaffected by Proposition 2's passage. (Note that throughout this report, the term "conventional eggs" refers to eggs produced in battery cages.) In addition, Proposition 2 is likely to result in an increase in the availability of cage-free eggs and, thus, is likely to reduce prices for these types of eggs. Further, because egg production represents such a small share of the state's economy, both fiscal and economic effects of the measure are expected to be minor.

### *Economic Effects*

Our analysis has centered on the fiscal and economic impacts of the measure's provisions on California egg consumers and tax payers (the impact on the California veal and pork industries is expected to be minor, as these sectors are even smaller than the egg sector).<sup>1</sup> California egg producers constitute a very small part of the state's economy.<sup>2</sup> In 2007, the value of egg production in California represented just 0.83 percent of total state agricultural production value and an even smaller 0.02 percent of total state economic activity.<sup>3,4</sup> Indeed, more people are employed in the leather manufacturing sector than in egg production in California.<sup>5</sup> As a consequence, even significant changes in this sector (up or down) will not have a discernable overall impact on the state's economy.

### *Impact on Egg Prices and Production Costs*

By requiring changes in confinement standards for egg-laying hens, Proposition 2 will result in cost increases for producers, although the changes will be phased in over a number of years. The price paid by consumers for conventional eggs likely will remain unchanged. The measure does not mandate consumption of cage-free eggs, nor does it limit the sale of any eggs or egg products. As a result, any continuing demand for conventional eggs can be met by egg imports from other states, which currently account for approximately one-third of the eggs consumed in California. Nationally, California's egg supply accounts for 5.45 percent of U.S. production.<sup>6</sup> Since 2000, California has seen the number of eggs produced decline by 1.4 billion, while national production increased by 5.9 billion. The recent history of national production changes demonstrates that supplies can be readily expanded to meet any decline in California production.

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<sup>1</sup> State of California Senate Office of Research (2004)

<sup>2</sup> U.S. Department of Agriculture National Agricultural Statistics Service (2007)

<sup>3</sup> U.S. Department of Agriculture Economic Research Service (2008c)

<sup>4</sup> U.S. Department of Commerce Bureau of Economic Analysis (2008)

<sup>5</sup> Egg sector employment estimate from Sumner et al (2008); leather manufacturing estimate from State of California Employment Development Department (2007)

<sup>6</sup> Ibid.

Nevertheless, switching from conventional production to a cage-free model will increase production costs. Intensive caging is the cheapest way to produce eggs because it minimizes food, housing, and labor costs. In the studies we reviewed, the cost increase to go from a caged to a cage-free system was estimated to be between 12 and 27 percent. Even at the highest production cost change estimate, the study's author calculated that consumers would face a cost increase of about one penny extra per egg.

#### *What Happens to the Egg Production Sector?*

A recent report from the University of California Agricultural Issues Center concludes that cage-free production is too costly for farmers to remain in business. As a result, these researchers anticipate the complete elimination of the state's egg production sector should Proposition 2 become law. However, the conclusion that the sector will be eliminated by the initiative is based on the premise that California producers do not have the ability to adapt to changes in the marketplace, and that consumers (both within California and nationally) are unwilling to pay a premium for more humanely produced (cage-free), "California Grown", or other specialty eggs such as organic. But, evidence indicates that an increasing proportion of consumers are willing to pay a premium to cover the additional production costs for certain types of eggs, and that retailers are increasing the proportion of shelf-space dedicated to cage-free and other specialty egg products.

Indeed, while data on the demand for cage-free eggs is not widely available, ACNielsen retail data indicates that supermarket sales of specialty eggs increased by 63 percent between 2001 and 2005.<sup>7</sup> Additionally, U.S. consumers have demonstrated a willingness to pay a price premium for local agricultural goods, indicating that California cage-free eggs also could have an advantage over out-of-state conventional and cage-free eggs. In addition, experiences with humane animal production legislation in Europe show that consumer demand can change over time through the efforts of governments and retailers.

Although the future consumption level of cage-free eggs is unknown, the recent rapid expansion in demand for cage-free and other specialty eggs and the prospect of falling prices as production expands indicates that national demand for these products could swell to 10 or 15 percent of the market – or more – within a relatively short period of time. As this demand increases, California egg producers could serve national markets as well as local ones. Indeed, prior experience with efforts to differentiate agricultural products shows that these efforts can be very successful. For example, California producers of table grapes, avocados, prunes, almonds, raisins, and walnuts have successfully increased demand for their products through promotional efforts.<sup>8</sup> Given California's already strong foothold in the organic market and reputation as being on the environmental forefront, the egg industry could find that the transition away from conventional production caused by Proposition 2 is in fact a market opportunity.

#### *Prices for Cage-Free Eggs Could Decline as Production Increases*

To the extent that cage-free production expands in California, consumer prices for cage-free eggs are likely to fall. Although cage-free eggs are more expensive than conventional eggs to produce, current price-premiums earned by producers on cage-free eggs exceed the additional

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<sup>7</sup> As quoted by Clark (2006)

<sup>8</sup> Carman, Cook & Sexton (2003)

costs of production. According to USDA retail data, the price premium for cage-free eggs is 81 percent (2008 to date) while research indicates that current production cost differentials for cage-free eggs likely are somewhere in the 20 percent range. This suggests that current profit margins for cage-free eggs are significant. Ultimately, economic theory indicates that, in a competitive market, the retail price differential should reflect primarily the differential in cost of production – currently less than a penny per egg, according to the studies we reviewed. Furthermore, as production increases, improvements in efficiency and economies of scale should result in additional price declines, much as these changes have resulted in production cost declines for conventional eggs over the past several decades.

Although no studies have definitively explained the price premium for cage-free or other specialty eggs, supply constraints likely explain a substantial portion of the differential. In fact, supply constraints are evident as retailers and food manufacturers have attempted to capitalize on growing consumer demand for cage-free eggs only to find that sufficient cage-free egg supplies are not available. Ben and Jerry's, Burger King, Safeway, and Costco have all indicated that they face supply constraints. Increasing supply through increased California production should not only make it easier for cage-free eggs to be stocked, it should lower consumer prices at supermarkets.

### ***Fiscal Effects***

The fiscal effects of Proposition 2 are likely to be minor. Although state and local governments purchase eggs, these purchases constitute relatively small shares of overall expenditures. And, as previously noted, the price for conventional eggs is not expected to increase. Because of the very small size of the egg producing sector, any fiscal effects stemming from economic changes to this sector are also likely to be very modest.

The state purchases eggs directly for consumption in prisons and indirectly through university campuses and school districts. In addition, counties also purchase eggs, primarily for consumption in county jails. Given that the initiative does not mandate the purchase of cage-free eggs, these government purchases need not result in an increase in procurement cost. Additionally, some government entities may experience savings to the extent that prices for cage-free eggs decline.

The proposition's effect on tax revenues is uncertain, but likely to be minor. To the extent that increased production costs are not absorbed by California egg producers, they could either decrease or stop production. These production changes would in turn result in lower tax income and sales tax revenues. These losses, however, would be minor, given the small size of the egg industry in relation to the state GDP. To the extent that producers continue production (or new participants enter the cage-free market), the state could actually see increased value from state-based egg production and correspondingly higher tax revenues as a result of the higher prices and profits associated with cage-free production. In the long term, it is at least possible that increases in the cage-free market could stem or reverse the decline of California's egg industry, thereby actually increasing revenues to the state. Once again, these gains are also likely to be marginal amidst the overall size of the state's fiscal portfolio.

***Conclusion***

The passage of Proposition 2 would have a minor impact on California consumers and tax payers. Prices for conventional eggs likely will not increase, while prices for cage-free or other specialty eggs are likely to drop as producers switch from traditional to specialty production. Furthermore, because the egg production sector is so small relative to the overall size of the state's economy, any economic changes resulting from the measure (up or down) are unlikely to be felt by average consumers. Because state and local governments buy relatively few eggs (the price of which need not change as a result of the measure), the fiscal effects of the measure are also likely to be very modest.

## Introduction

In November, California voters will vote on Proposition 2: Standards for Confining Farm Animals, which would phase-in minimum space requirements for the keeping of pregnant pigs, calves raised for veal, and egg-laying hens on California farms.

Proposition 2 does not spell out specific cage sizes or characteristics, but rather the measure focuses on an animal's ability to perform defined activities. Specifically, the measure requires that these animals be able to turn around freely, lie down, stand up, and fully extend their limbs. The measure gives producers six years to adjust their production methods to these requirements. For purposes of analysis, this report assumes, as other researchers have, that producers will have the ability to choose between a range of cage-free options, including barns, aviaries, free-range, and organic systems in order to comply with the measure's requirements.

### *Current Farm Production Practices*

The vast majority of gestating pigs, calves raised for veal, and egg-laying hens live in caged environments that restrict their movement and can adversely affect their health.<sup>9</sup> Approximately 60 to 70 percent of pregnant sows in the United States are confined to gestation crates that are only slightly larger than the animal and do not allow them to turn around.<sup>10</sup> The majority of calves raised for veal in the nation are confined and tethered in crates that restrict them from virtually all movement.<sup>11,12</sup> Battery cages for egg-laying hens (used in approximately 95 percent of current production) allow each hen just 67 to 86 square inches of floor space.<sup>13</sup> Throughout this report, we refer to eggs produced in this manner as "conventional eggs."

Although these caging practices are common, they come with a cost in terms of animal welfare. Crated sows suffer from behavioral restrictions, an elevated risk of urinary tract infections, weakened bones, and ritualistic behaviors (called stereotypies) that are often considered indicators of distress.<sup>14,15</sup> Calves in veal crates are prevented from engaging in natural social, physical, and feeding activities.<sup>16,17</sup> Cage confinement for hens can lead to a number of physical disorders, including severe disuse osteoporosis due to lack of exercise.<sup>18</sup>

In the European Union, Florida, Arizona, Colorado, and Oregon, gestation crates for pigs are being phased out. The largest national pork producer has also pledged to phase out the practice.<sup>19</sup> In addition, two of the largest national veal producers in the United States have pledged to phase out veal crates. Conventional cages for laying hens are also being phased out in the European Union. However, these practices are still the norm for California and other U.S. egg producers.

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<sup>9</sup> Fraser (2000)

<sup>10</sup> Barnett *et al.* (2001)

<sup>11</sup> U.S. Department of Agriculture Food Safety and Inspection Service (2006)

<sup>12</sup> Wilson (1995)

<sup>13</sup> United Egg Producers (2008)

<sup>14</sup> Croney and Millman (2007)

<sup>15</sup> Humane Society of the United States (2008)

<sup>16</sup> D'Silva (2006)

<sup>17</sup> Humane Society of the United States (2007)

<sup>18</sup> Shields and Duncan (2008)

<sup>19</sup> Kaufman (2007)

## *Measuring the Impact of Proposition 2*

This report examines the likely economic and fiscal effects of Proposition 2 on the state of California and its egg consumers and tax payers. The measure is not expected to cause higher prices for eggs at California supermarkets. Because eggs are national commodity, price-sensitive Californians will still be able to purchase conventional eggs from non-California producers at prices which will be unaffected by Proposition 2's passage. In addition, Proposition 2 is likely to result in an increase in the availability of cage-free eggs and, thus, is likely to reduce prices for these types of eggs. Further, because egg production represents such a small share of the state's economy, both fiscal and economic effects of the measure are expected to be minor.

## **Economic Effects**

### *The Veal, Pork, and Egg Industries Are Small California Economic Sectors*

Currently, the state's pork industry is relatively small, responsible for only 0.1 percent of California's total agricultural market value; the veal industry is even smaller.<sup>20</sup> Therefore, our analysis has centered on the fiscal and economic impacts of the measure's provisions on egg production and on California egg consumers.<sup>21</sup>

California has about 19 million egg-laying hens, but California egg producers constitute a very small part of the state's economy.<sup>22</sup> For example, in 2007 the value of egg production in California was \$324 million, while agricultural production in California was worth \$39.1 billion.<sup>23</sup> Egg production is, thus, approximately 0.83 percent of state agricultural production value. Figure 1 shows the relative production value of California's principal agricultural sectors; the poultry and egg sector makes up just 4 percent of California's agricultural value, with eggs representing just one-fourth of this combined value.<sup>24</sup>

Although agriculture is a very important sector for the state's economy, the enormous size of the California's \$1.81 trillion GDP (in 2007) means that, in this context, egg production in California represents just 0.02 percent of total state economic activity.<sup>25</sup> Indeed, more people are employed in the leather manufacturing sector than in egg production in California.<sup>26</sup> As a consequence, even significant changes in this sector (up or down) will not have a discernable overall impact on the state's economy.

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<sup>20</sup> U.S. Department of Agriculture National Agricultural Statistics Services (2002)

<sup>21</sup> State of California Senate Office of Research (2004)

<sup>22</sup> U.S. Department of Agriculture National Agricultural Statistics Service (2007)

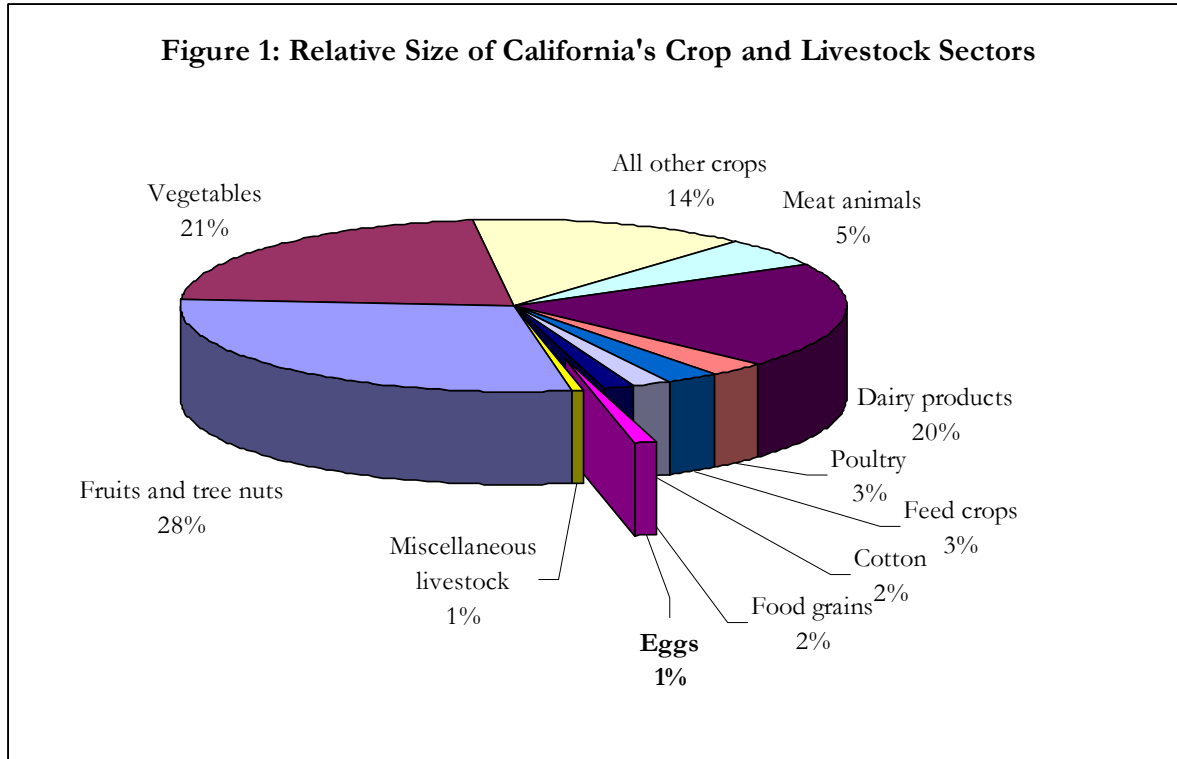
<sup>23</sup> U.S. Department of Agriculture Economic Research Service (2008c).

<sup>24</sup> Eggs and poultry are combined in U.S. Department of Agriculture Economic Research Service (2008c) data; cash receipts from U.S. Department of Agriculture Economic Research Service (2008b) were used to disaggregate eggs from the egg and poultry data.

<sup>25</sup> U.S. Department of Commerce Bureau of Economic Analysis (2008)

<sup>26</sup> Egg sector employment estimate from Sumner et al (2008); leather manufacturing estimate from State of California Employment Development Department (2007)





Source: 2007 USDA ERS Farm Income Data for California<sup>27</sup>

### ***Prices for Conventional Eggs Will Remain Unchanged***

By requiring changes in confinement standards for egg-laying hens, Proposition 2 will result in cost increases for producers (see below). Nevertheless, the price paid by consumers for conventional eggs likely will remain unchanged if Proposition 2 gains passage. The measure does not mandate consumption of cage-free eggs, nor does it limit the sale of these products. Currently, producers from other states can and do sell eggs in California at competitive prices. Because California accounts for a relatively small portion of national egg production, the gradual elimination of conventional (caged) egg production in the state is unlikely to affect national or in-state egg prices. Because of the relatively low costs of marginal production increases and the six-year phase-in of the initiative's provisions, out-of-state producers can meet any continuing demand for conventional eggs in California. Therefore, we would not expect the initiative to result in increased prices for California egg consumers. The University of California Agricultural Issues Center reached a similar conclusion, reporting in their recent report that "we would expect little, if any, cost increase and no substantial impact on prices to California consumers."<sup>28</sup>

### ***Impact on Egg Production Costs***

Although egg production represents a very small part of the overall state economy, Proposition 2 could have profound effects on animal welfare and on the industry. Switching from conventional production to a cage-free model will result in an increase in production costs.

<sup>27</sup> All product categories are as used by the U.S. Department of Agriculture Economic Research Service (2008c) except that the "Poultry and eggs" category has been broken into separate categories using cash receipts data from the U.S. Department of Agriculture Economic Research Service (2008b).

<sup>28</sup> Sumner *et al.* (2008)

Intensive confinement of hens is the cheapest way to produce eggs because it minimizes food, housing, and labor costs. For example, feed costs are lower in a cage-production environment, since hens do not expend energy by moving. These cage systems are characterized by lower labor costs as well, because mechanization works efficiently with caged systems.

The extent of the cost increase, however, is subject to some uncertainty. Producers have several housing options to choose between including cage-less barns, aviaries, free-range systems, or organic systems. Non-cage barn systems allow birds to move freely indoors, provide nest boxes and often perches. Single-level barns may be designed with deep litter or perforated flooring while multi-level barns, or aviaries, utilize the vertical space within the building to allow hens to move within multiple levels. Free-range systems combine barns with outdoor access. Organic systems combine cage-free housing with organic feed mandates and antibiotic use restrictions.<sup>29</sup>

The additional costs of these systems depend on the size of the flock and design choices – including pending and future innovations that could reduce costs further. However, a review of the literature can yield an estimate as to the range of likely cost increases based on current production methods.<sup>30</sup>

In their recent look at the economic impact of Proposition 2, Sumner *et al.* use cage-free and cage system cost information to estimate that production costs in California will increase by at least 20 percent following implementation of the initiative's provisions. Utilizing a similar method, Bell estimates that cage-free production would result in a 27 percent increase in production costs. Averaging European cost data, a 2004 Agra CEAS study predicted a 26 percent increase in costs when switching to a cage-free system. In all other studies we reviewed, the cost increase to go from a cage to a cage-free system was estimated to be between 12 and 27 percent (see Table 1). Even at the highest production cost change estimate, Bell calculated that consumers would face a cost increase of about one penny extra per egg.

**Table 1: Production Cost Increases in Switching to Cage-Free Systems**

Report	Cage-Free
<i>Sumner et al. 2008</i>	≥20%
<i>van Horne 2008</i>	21.40%
<i>Bell 2006</i>	27.20%
<i>Agra CEAS 2004</i>	26%
<i>Elson 2004</i>	12-18%
<i>Tacke et al 2003</i>	21%
<i>van Horne and Bondt 2003</i>	21%

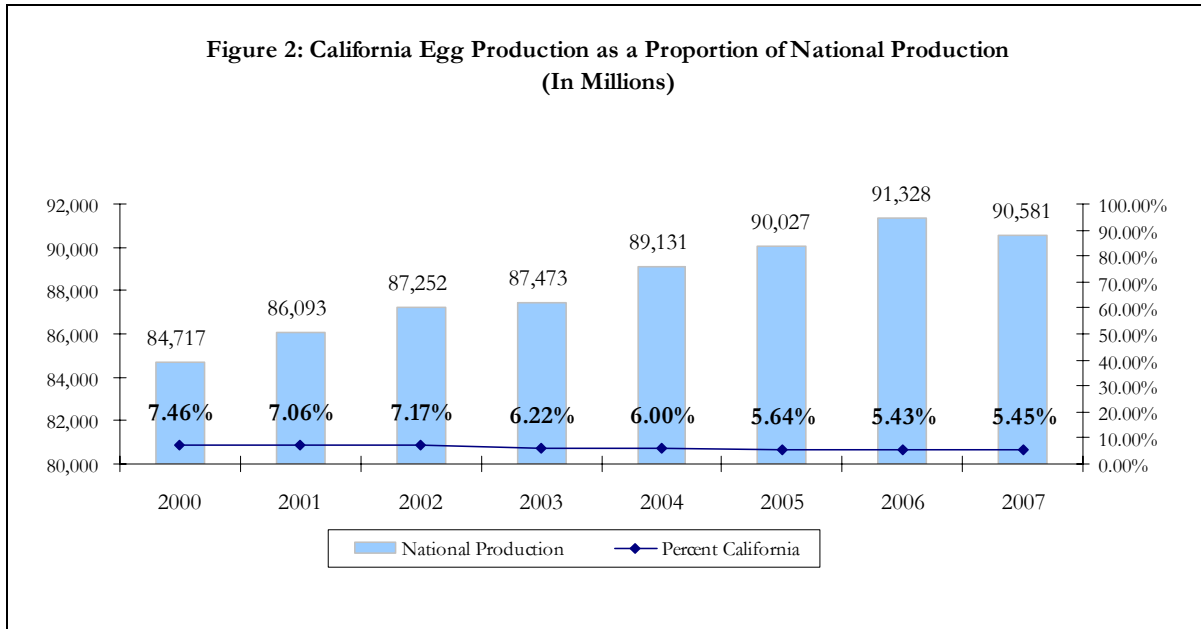
Based on a review of the available literature, it is likely that costs for egg producers would increase following implementation of the initiative, although the extent of the cost increase could vary depending of the production method selected.

<sup>29</sup> U.S. Department of Agriculture (2008)

<sup>30</sup> Costs are typically measured by taking industry averages for costs like labor, housing, and food and comparing the total costs in different systems.

**California Is a Relatively Small (and Declining) Egg Producer**

California produces a relatively small part of the national egg supply (see Figure 2). Production in the United States totaled 90.6 billion eggs in 2007.<sup>31</sup> This same year California production totaled 4.9 billion eggs, accounting for 5.45 percent of national production.<sup>32</sup> In fact, California’s production has been on both an absolute and comparative decline. Since 2000, California has seen the number of eggs produced decline by 1.4 billion while national production increased by 5.9 billion.



Source: USDA National Agricultural Statistics Service

Indeed, as human population has increased and in-state production has declined, California has become a net importer of eggs. Out-of-state producers, despite higher transportation costs, are able to compete with and supplant California producers due mainly to feed cost advantages, which make up 60 percent of production costs.<sup>33</sup> For example, in 2007, the West faced the highest production costs at 57 cents per dozen while the lowest cost region, the West North Central, faced costs of 48 cents per dozen.<sup>34</sup> These cost differences allow other states to effectively compete with California. Thus, the average number of table eggs imported by month increased 48 percent between 2003 and 2007, while in-state production decreased 19 percent over the same period.<sup>35</sup> In 2007, 4.9 billion eggs were produced in California, while 2.4 billion were imported into the state, with 41 percent of those coming from the nation’s leading egg-producing state, Iowa.<sup>36</sup>

<sup>31</sup> U.S. Department of Agriculture National Agricultural Statistics Services (2007-2008); U.S. Department of Agriculture National Agricultural Statistics Services (2006); U.S. Department of Agriculture National Agricultural Statistics Services (2007)

<sup>32</sup> Ibid.

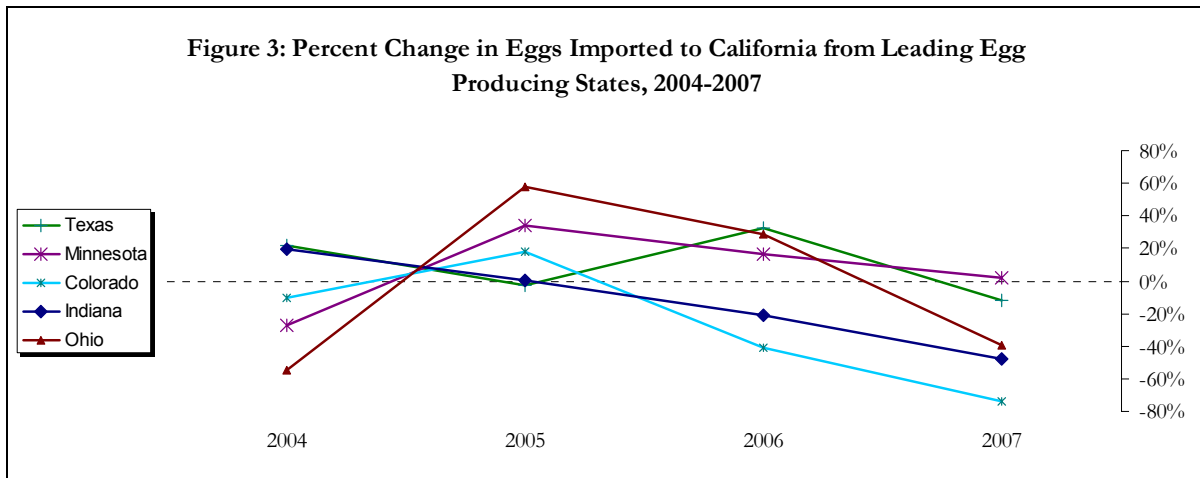
<sup>33</sup> Sumner *et al.* (2008)

<sup>34</sup> Bell (2002-2008)

<sup>35</sup> Ibid.

<sup>36</sup> Ibid.

This shift in production demonstrates that imports are increasingly competitive with California produced conventional eggs. In fact, in past years the number of imported eggs has readily expanded or contracted within just a year's time (see Figure 3). Seven other leading egg production states – Indiana, Iowa, Texas, Utah, Minnesota, Ohio, and Colorado – have seen their California exports change markedly over the last 5 years. For example, the number of Texas eggs imported increased 22 percent from 2003 to 2004, decreased 3 percent in 2005, and increased again by 33 percent in 2006 before dipping the next year by 12 percent.<sup>37</sup> In Ohio, imports expanded 58 percent just between 2004 and 2005. Even on a national level, production can change easily from year to year. During the period 2001 through 2006, national production increased by almost six billion eggs.<sup>38</sup> As the recent history of national production capabilities demonstrates, egg production can be readily expanded (as needed) to meet any decline in California production, with consumers unlikely to see price increases for conventional eggs as a result of the passage of Proposition 2.



Source: Bell's Egg Industry Statistical Reports 2003-2007

***End of the California Egg Sector? – Not Likely***

A recent report from the University of California Agricultural Issues Center concludes that cage-free production is too costly for farmers to remain in business. As a result, these researchers anticipate the complete elimination of the state's egg production sector should Proposition 2 become law. There can be no doubt that, by requiring a change in production methods that would increase costs for producers, Proposition 2 will have a significant impact on the sector. Because of the ability of out-of-state producers to continue to sell cage-produced eggs into California, it will become more difficult for California producers to compete on price alone.

However, the conclusion that the sector will be eliminated by the initiative is based on the premise that consumers (both within California and nationally) are unwilling to pay a premium for more humanely produced (cage-free), "California Grown", or other specialty eggs such as organic. Thus, under the UC view, farmers will have to bear the additional production costs

<sup>37</sup> Bell (2002-2008)

<sup>38</sup> U.S. Department of Agriculture National Agricultural Statistics Services (2006)

alone and consumers will turn to conventionally produced eggs imported from other states.<sup>39</sup> There is evidence, however, that an increasing proportion of consumers are willing to pay a premium to cover the additional production costs for certain types of eggs, and that marketing and informational efforts on behalf of producers could further stimulate this demand.

*California Egg Producers Will Need to Adjust to Changing Market Conditions Regardless of Proposition 2*

Conventional egg production in California has been in steady decline for some time, while specialty production has been on the rise. Since 1971, the number of laying hens in California has decreased 54 percent.<sup>40</sup> In 2007, California produced 5.45 percent of the national total of table eggs, down from 7.46 percent in 2000. Compare this, however, to California's increasing importance within the organic egg market. In 2005, California ranked second in the nation by organic flock size, with 12 percent of the national organic laying hen population. And unlike caged hens, between 2000 and 2005, the number of California certified organic laying hens – which are cage-free – increased 141 percent, outpacing national growth.<sup>41</sup>

*Demand for Cage-Free Eggs Is Increasing*

Data on the demand for cage-free eggs is not widely available and is often subsumed within the data on the larger specialty egg category. However, according to ACNielsen retail data, specialty eggs, which include cage-free, organic, and nutritionally enhanced eggs, increased in supermarket sales by 63 percent between 2001 and 2005.<sup>42</sup> This figure is probably an underestimate because it does not track health food stores and farmers' markets, where 48 percent of organic eggs are sold.<sup>43,44</sup> Although specialty eggs still constitute a relatively small portion of overall egg sales, according to the president and CEO of egg producer R.W. Sauder Inc., Paul Sauder, cage-free eggs have been the biggest growth area since 2002 and specialty eggs could grow to be as large as 50 percent of the retail market on the East and West Coasts, with a national average of 10 to 15 percent.<sup>45</sup>

Polling data offers some additional evidence of growing consumer interest in cage-free or other specialty eggs. A recent California survey found that consumers would like more information about where their food came from and how it was produced. Indeed, according to survey data, the most desired new label was one that addresses the humane treatment of animals.<sup>46</sup> In a 2004 Golin/Harris poll for the United Egg Producers, 77 percent of consumers reported that they would switch to or consider switching to an egg brand with an animal care label, while 54 percent would be willing to pay 5-10 percent more for eggs with this label.<sup>47</sup> A British study examined the underlying disconnect between the broad support of humane animal treatment and narrower retail support and discovered that the lack of standards and labels, limited

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<sup>39</sup> Pickett (2006)

<sup>40</sup> U.S. Department of Agriculture National Agricultural Statistics Services (2007-2008); U.S. Department of Agriculture National Agricultural Statistics Services (2007)

<sup>41</sup> U.S. Department of Agriculture Economic Research Service (2008a)

<sup>42</sup> As quoted in Clark (2006)

<sup>43</sup> Ibid.

<sup>44</sup> As cited in Oberholtzer *et al.* (2006)

<sup>45</sup> As quoted in Clark (2006)

<sup>46</sup> Howard and Allen (2006)

<sup>47</sup> Golin/Harris International (2004)

availability, and price are the main barriers between connecting ethical precepts and consumer action.<sup>48</sup>

*European Experience Indicates That Demand Could Increase Following Cage Ban*

Since the 1980s, Europe has been home to an increasing number of initiatives, at the country and union level, to improve the conditions of egg-laying hens. As such, it provides a good case study for the effects of legislation and consumer awareness campaigns on demand. In 1988, the European Commission clarified the minimum standards for cages and, in 1999, banned the use of conventional cages by 2012. Between 1993 and 2003, the entire European Union saw the percentage of hens kept in alternative housing rise from 3.6 to 11.9.<sup>49</sup> However, variation is wide at the national level with a smattering of countries at 1-2 percent, a couple at 4-5 percent and 12-13 percent respectively, and a large number of countries with nearly 20-30 percent of their birds in non-cage systems. In some cases, the percentage of alternative eggs sold at the retail level is higher than domestic production levels with, for example, sales close to 50 percent in the Netherlands, Sweden, U.K., and Denmark.

In the United Kingdom, which recently had a national discussion on banning “enriched” cages, conventional eggs have declined from 79 percent of the domestic production in 1998 to 62 percent at the end of 2007. During this time, cage-free barn eggs have fluctuated between 4 and 7 percent of the domestic production while free-range and organic eggs have seen considerable producer growth at 13 percent and 6 percent, respectively.<sup>50</sup> Additionally, retailers have substantially increased the share of shelf-space given to cage-free eggs. For example, between 2003 and 2005, two supermarket chains, Asda and Co-op, increased cage-free availability by 24 percent and 25 percent, respectively.<sup>51</sup>

Switzerland banned cages in 1981, allowing for a ten-year transition. All shell eggs are now produced without cages. And with the help of retailers, marketing and promotion, and government programs, consumers have demonstrated a willingness to pay a premium for cage-free eggs. In fact, imports of shell eggs fell sharply between 1990 and 1995 as consumer preferences changed and import protection measures were adopted.<sup>52</sup> In addition, as producers adjusted to non-cage production, prices actually declined between 1991 and 2000 by almost 30 percent.<sup>53</sup>

Similarly, in Sweden, cages were banned in 1988 with a ten-year transition period. By 2005, the industry had almost completely abandoned conventional production methods, but did not lose out substantially to egg imports.<sup>54</sup> In fact, observers note the proven willingness of Swedish consumers to pay a higher price for eggs produced under improved animal welfare conditions. Thus, Swedish egg production was virtually unchanged in 2004 relative to 1971 (though it was down from its peak in the 1980s).<sup>55</sup> Most importantly, although the traditional cage ban induced

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<sup>48</sup> Schroder and McEachern (2004)

<sup>49</sup> Agra CEAS Consulting Ltd. (2004)

<sup>50</sup> U.K. Department for Environment, Food, and Rural Affairs (2008)

<sup>51</sup> Pickett (2006)

<sup>52</sup> Agra CEAS Consulting Ltd. (2004)

<sup>53</sup> Sumner *et al.* (2008)

<sup>54</sup> Berg and Yngvesson (2006)

<sup>55</sup> Agra CEAS Consulting Ltd. (2004)

some producers to quit rather than invest in larger “enriched” cages or other production techniques, a number of new entrants began production in cage-free barn systems, resulting in a constant number of eggs available.<sup>56</sup> Retailer support and media attention have played major roles in changing consumer demand to match production changes.<sup>57</sup>

*Demand for “Locally Produced” Food Is on the Rise*

A portion of the success of European producers likely can be attributed to a desire on the part of consumers to buy locally produced food. U.S. consumers have increasingly demonstrated the same willingness to pay a price premium for local agricultural goods, indicating that California cage-free eggs (or even “California Grown” eggs) also could have an advantage over out-of-state conventional and cage-free eggs. In fact, several studies have demonstrated that this desire to buy locally produced foods is greater than support for organic foods in the general population.<sup>58</sup> Even without any production differences, statewide “buy local” programs have had success garnering consumer support despite the fact that locally produced goods are often sold at price premiums.<sup>59</sup> In her review of the literature, Painter finds that a willingness to pay for local goods does exist, with about a third to half of the general population willing to pay a 10 percent premium. Thus, if successfully marketed, California produced eggs have the potential to stave off competition from egg imports.

*Prices for Cage-Free Eggs Could Decline as Production Increases*

Cage-free eggs are priced higher than conventional eggs because they cost more to produce and because they are more limited in supply. In developed markets with more competition, cage-free prices are not as high.<sup>60</sup> Currently, however, price premiums earned by producers on cage-free eggs exceed the additional costs of production. These premiums are falling, partly because prices for conventional eggs are rising. For example, according to USDA retail data, the price premium for cage-free eggs decreased from a national average of 139 percent in 2006 to 81 percent in 2008 (to date) and from 146 percent to 67 percent in the Southwest region.<sup>61</sup> For organic brown eggs, these premiums and decreases were higher; decreasing from 255 percent to 146 percent nationally and 212 percent to 123 percent in the Southwest region.<sup>62</sup> Table 4 presents data on the yearly decrease in the price premium. Given that studies show that current production cost differentials for cage-free eggs likely are somewhere in the 20 percent range, producers are receiving a substantial price premium (well in excess of twice the estimated cost differential).

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<sup>56</sup> Ibid.

<sup>57</sup> Ibid.

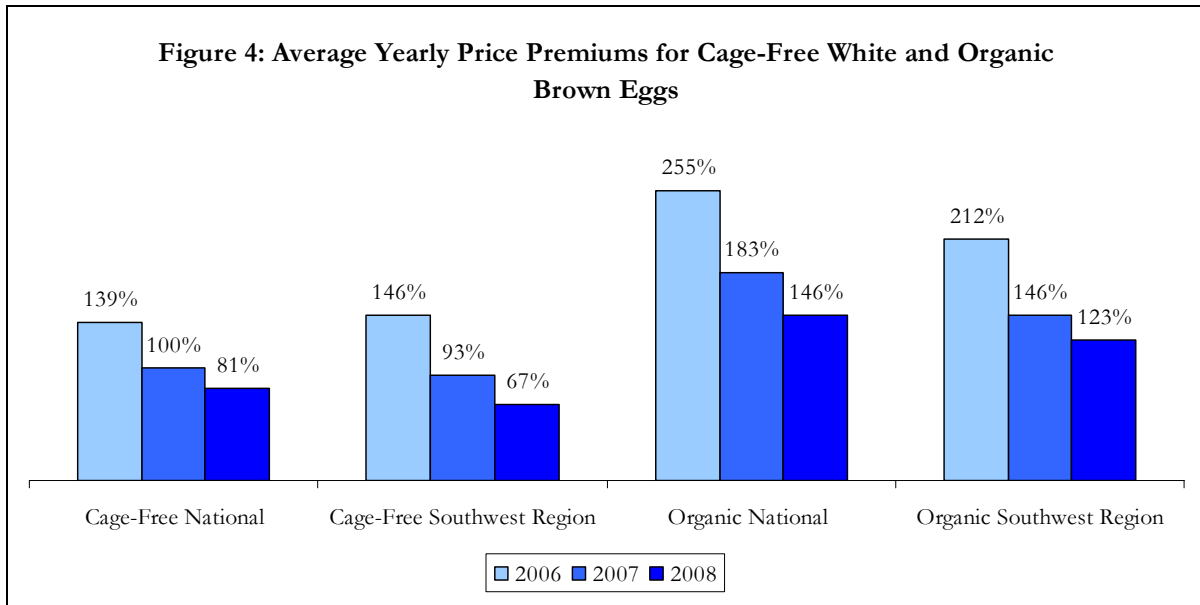
<sup>58</sup> Painter (2007)

<sup>59</sup> Ibid.

<sup>60</sup> Average packer to producer prices for barn eggs in the UK have decreased from a 75 percent premium over conventional eggs in 1998 to 29 percent in 2007. U.K. Department for Environment, Food, and Rural Affairs (2008)

<sup>61</sup> Cost comparison is between Cage-Free White and USDA Grade AA White eggs. The Southwest region includes California and Nevada.

<sup>62</sup> For data reasons, costs comparison is between USDA Organic Brown and USDA Grade AA White eggs.



Source: USDA Agricultural Marketing Service Weekly Egg Retail

Although no studies have definitively explained the price premium for cage-free or other specialty eggs, supply constraints likely explain a substantial portion of the differential. In fact, supply constraints are evident as retailers and food manufacturers attempt to capitalize on consumer demand for cage-free eggs only to find that sufficient cage-free egg supplies are not available. Ben and Jerry's and Burger King have both made pledges to utilize cage-free eggs, but have experienced difficulties in finding all the eggs needed to immediately meet their demand.<sup>63</sup>

In addition, two major retailers, Safeway and Costco, are increasing the percentage of cage-free eggs they purchase from suppliers and offer to consumers. As in Europe, these retailer moves can make a big difference in the success of alternative egg production and consumer acceptance. However, both retailers face supply constraints. A lack of available supply has kept Costco from declaring a cage-free only policy. Instead, Costco indicated that "there are not enough cage-free eggs to supply Costco now, and it's impossible to know when the situation will change."<sup>64</sup> Currently, cage-free eggs constitute 11 percent of Costco egg sales.<sup>65</sup> More recently, Safeway announced its initiative to significantly increase the number of cage-free eggs on its shelves. Even after adding 12 regional and national cage-free brands and launching its own cage-free label, Safeway has only committed to doubling its supply from 3 to 6 percent due to "realistic availability in the cage-free egg market."<sup>66</sup>

Increasing supply through increased California production should not only make it easier for cage-free eggs to be stocked and utilized by intermediaries, it should lower consumer prices at supermarkets. Ultimately, economic theory indicates that, in a competitive market, the retail price differential should reflect primarily the differential in cost of production – currently less than a penny per egg, according to the studies we reviewed. Furthermore, as production increases, improvements in efficiency and economies of scale should result in additional price

<sup>63</sup> Severson (2007)

<sup>64</sup> Brettman (2007)

<sup>65</sup> Sullivan (2008)

<sup>66</sup> Dowling (2008)



declines, much as these changes have resulted in production cost declines for conventional eggs over the past several decades.

Very limited data exist on consumers' willingness to pay for cage-free eggs, making predictions about future demand in the face of falling prices difficult. However, research into demand for organic and locally produced foods can serve as a rough approximation. Yiridoe *et al.* find that demand for organic goods tends to depend more on the price differential with conventionally grown products than on the absolute prices. Overall, this premium has to be between 10 percent and 20 percent for most consumers to purchase organic goods.<sup>67</sup> Demand tends to drop off dramatically if the price premium is over 20 percent. Therefore, we would expect that, to the extent expanded production results in price declines such that the retail price differential is similar to the production cost differential, demand for cage-free eggs could increase substantially.

### *Serving National Demand*

Demand for cage-free, locally produced eggs likely will increase in coming years (regardless of whether Proposition 2 passes). As demand increases, California egg producers can serve national markets as well as local ones, to the extent that local production exceeds local demand. As noted with respect to conventionally produced eggs, the egg market is national in scope, with suppliers from various regions shipping eggs throughout the country, including, notably, into California. These same market forces could just as well apply in reverse, with California cage-free producers serving the growing national demand for specialty eggs.

Prior experience with efforts to differentiate agricultural products shows that these efforts can be very successful. Producer-based advertising for California commodities like table grapes, avocados, prunes, almonds, raisins, and walnuts have all been found to increase demand for the products enough to overcome the costs involved in the promotion.<sup>68</sup> As the New York Times remarked, commodity advertising is "unreasonably effective."<sup>69</sup> Given California's already strong foothold in the organic market and reputation as being on the environmental forefront, the egg industry could find that the transition away from cage production required by Proposition 2 is a market opportunity for a flagging sector.

Although data is limited, the best available information indicates that, nationally, specialty eggs account for about 5 percent of national consumption, up from 2 percent a few years ago.<sup>70</sup> This equates to about 4.5 billion eggs. Using a range of likely estimates (from 5 to 20 percent) for the national demand for specialty eggs by 2014, we find that that between 5 and 20 billion cage-free or specialty eggs will need to be produced (see Table 2).

By 2014, we estimate that California egg production will decrease to 3.9 billion eggs, based on the declining production trend since 2000. If all production switches to cage-free, organic, or other specialty eggs, the total output of California egg producers would likely be around a quarter of national demand (assuming national demand for specialty eggs of 15 percent of the

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<sup>67</sup> Yiridoe *et al.* (2006)

<sup>68</sup> Carman, Cook & Sexton (2003)

<sup>69</sup> Varian (2006)

<sup>70</sup> Clark (2006)

total). In fact, if demand for specialty eggs simply remained at 5 percent, national demand in 2014 would still outpace California supply.

**Table 2: What Happens If Current Trends Continue? Potential California Cage-Free Production in Relation to Potential National Demand Changes**  
(In Millions)

<i>Year</i>	<i>Current/Estimated National Production</i>	<i>Current/Potential Specialty Egg % of Market</i>	<i>Estimated Specialty Production</i>	<i>Current Conventional/Potential Cage-Free CA Production</i>	<i>CA Production as a % of National Specialty Production</i>
2007	90,581	5%	4,529	4,938	109%
2014	101,772	5%	5,089	3,891	76%
2014	101,772	10%	10,177	3,891	38%
2014	101,772	15%	15,266	3,891	25%
2014	101,772	20%	20,354	3,891	19%

Note: Shaded area indicates current U.S. and California production, and California conventional production as a percent of national specialty production. Unshaded areas indicate Blue Sky projections of national and California (cage-free/specialty) production levels. Current and historical production data from the USDA National Agricultural Statistics Service.

#### *What Happens to Producers and Consumers If Proposition 2 Passes?*

Basic economic theory would dictate that, if demand for cage-free and other specialty eggs was not being met, the profit opportunity alone would lure the right number of producers into the market or cause existing producers to expand supply. However, markets are not perfect, and non-market barriers can impede the adoption of new production techniques. As Mokyr observes, the adoption of new production processes is often the target of long debates and public discourse, where persuasion and rhetoric inform choices just as much as the market. This technological inertia that impedes adoption of new ideas is rational because the change will inevitably improve the welfare of some and deteriorate that of others.<sup>71</sup>

Production changes sometimes require a certain amount of faith in the future of the market. Within the past five years, major companies such as Ben and Jerry's, Burger King, Safeway, Costco, Hardee's, Carl's Jr., and Denny's have adopted cage-free purchasing policies, and more than 330 colleges and universities have started using cage-free or organic eggs in their dining halls. As conventional producers have indicated, it takes faith that the spike in cage-free demand is "not just a fad."<sup>72</sup> Action by California citizens to pass Proposition 2 would likely assure producers that, in fact, the majority of Californians do support cage-free production processes.

Therefore, while it is by no means guaranteed that most California producers will switch to cage-free or other specialty egg production, it is likely that at least some producers will seek to make the transition, while in other cases new in-state entrants will replace conventional producers who opt to exit the market. Evidence indicates that there is increasing interest among consumers in cage-free and other specialty egg production. Furthermore, past experience with other products indicates that the successful differentiation of agricultural products based on production location and/or process could serve to bolster California egg production. Combined with the likely price

<sup>71</sup> Mokyr (1997)

<sup>72</sup> Severson (2007)

declines for specialty eggs as production increases and production technologies improve, these factors may well provide an opportunity for California egg producers while lowering food costs for consumers of cage-free and other specialty eggs.

The impact on consumers, though by no means certain, is very likely positive. Although no research on the impact on consumers of a policy such as Proposition 2 has been completed to date, a recent U.K. study looked directly at the value of a cage ban, and concluded that a substantial consumer benefit could result.

This research found that the consumer benefits of the EU's ban on conventional cage egg production outweighed the costs to producers.<sup>73</sup> This study used consumer surveys and the contingent valuation method to weigh the support and willingness to pay for cage-free production and then adjusted the results downward to get a conservative estimate of the benefits. Using this methodology, the study's authors found that consumers were willing to pay 12 pence extra per dozen eggs, which added up to 548 million pounds sterling (\$961 million) annually.<sup>74</sup> This outweighed an estimate of the annual cost of the legislation to producers, which was 466 million pounds (\$817 million) per year.

The consumer benefits of California's measure (if passed) could be even higher than those predicted for the EU ban because price-sensitive consumers will still be able to purchase imported, conventionally produced eggs. The U.K. study was based on the assumption that all production would switch to cage-free, which would result in a welfare loss for price-sensitive consumers who prefer lower-priced, conventional eggs. In California, however, consumer gains would accrue just to those who elect to purchase (now lower priced) cage-free eggs, because there is no loss to consumers who do not have a high enough willingness to pay for cage-free eggs, as they can simply buy imported conventional eggs.

In addition, eliminating the use of dense confinement systems for farm animals will address negative health and environmental impacts that are currently uncompensated byproducts, or externalities, of the production system. As a recent Pew Commission report on Industrial Farm Animal Production found, these confinement practices contribute to antibiotic-resistance, air quality problems, water contamination, and public health issues for workers and neighbors.<sup>75</sup>

## Fiscal Effects

The fiscal effects of Proposition 2 are likely to be minor. Although the state and local governments purchase eggs, these purchases constitute relatively small shares of overall expenditures. And, as previously noted, the price for conventional eggs is not expected to increase as a result of Prop 2. Because of the very small size of the egg producing sector, any fiscal effects stemming from economic changes to this sector are also likely to be very modest.

The state purchases eggs directly for consumption in prisons and indirectly through university campuses and school districts. In addition, counties also purchase eggs, primarily for

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<sup>73</sup> Bennett *et al.* (2001)

<sup>74</sup> Pounds were converted to current American dollars using the September 10, 2008 exchange rate from Yahoo! Finance.

<sup>75</sup> Pew Commission on Industrial Farm Animal Production (2008)

consumption in county jails.<sup>76</sup> . Given that the initiative does not mandate that the state purchase cage-free eggs, these government purchases could come from egg imports and need not, therefore, result in an increase in procurement cost.

Additionally, some government entities may experience savings to the extent that prices for cage-free eggs decline. (As explained in more detail previously in this report, an increase in supply of cage-free eggs likely will reduce retail prices paid by consumers.) Several universities purchase only cage-free eggs. For example, the University of California at Berkeley and San Francisco State University buy only cage-free shell eggs. Many other local entities among the state's 1,000 school districts and more than 500 cities and counties also purchase cage-free eggs, and will consequently see a savings to the extent that cage-free prices fall.

The proposition's effect on tax revenues is uncertain, but likely to be minor. To the extent that increased production costs are not absorbed by California egg producers, they could either decrease or stop production. These production changes would in turn result in lower tax income and sales tax revenues. These losses, however, will be small given the size of the egg industry in relation to the state's overall economic output.

Furthermore, while it is certainly plausible that the initiative's passage will accelerate the years-long decline in the state's egg production sector, it is also likely that many producers would choose to continue production while new participants may enter the cage-free, organic, or other specialty egg markets. The cage-free egg market (currently) brings higher price premiums to producers, meaning that they see higher profits in this market in addition to higher costs. Thus, the state could actually see increased value from state-based egg production and correspondingly higher tax revenues. In the long term, it is at least possible that the cage-free market could stem or reverse the decline of California's egg industry, thereby actually increasing revenues to the state. Once again, these gains are also likely to be marginal amidst the overall size of the state's fiscal portfolio.

## Conclusion

Although the passage of Proposition 2 would result in significant changes for some egg producers (and their flocks), the impact on California consumers will be minor. Prices for conventional eggs at local supermarkets likely will not increase, while prices for cage-free or other specialty eggs are likely to drop as producers switch from conventional to specialty non-cage production. And while it is not clear whether the proposition will accelerate the years-long decline in the California egg production sector or stimulate an increase in the specialty egg category, because the egg production sector is so small relative to the overall size of the state's economy, any economic changes (up or down) resulting from the measure are unlikely to be felt by average consumers. Furthermore, because state and local governments buy relatively few eggs (the price of which need not change as a result of the measure), the fiscal effects of the measure are also likely to be very modest.

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<sup>76</sup> A significant proportion of schools are reimbursed by the federal government for egg purchases. This is in addition to egg donations to California schools by the USDA.

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