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The Implications of Interstate Commerce Restrictions on Retail Egg and Pork Prices and Demand

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Massachusetts is considering a ballot initiative requiring all pork and poultry products sold in the state to be produced without the use of gestation stalls or cages. This "cage-free" law would likely raise consumer retail pork and egg/poultry prices.

The purpose of this analysis is to discuss the potential impact of the pending Massachusetts law on consumer pork prices by examining how the California egg law impacted retail prices eggs in California. The analysis is based on retail egg price data in California versus the rest of the United States for the year prior to the law going into effect (2014) and the first 10 months after the law went into effect (January through October, 2015), which were the most recent data available at the time of the analysis. These data were obtained from the Nielsen Perishables Group and analyzed by Midan Marketing, who conducted a "difference-in-difference" (DID) analysis of the law by comparing retail egg prices between California and the United States before and after the law took effect. The advantage of using a DID framework is that other factors that could effect retail price changes before and after the law took effect are differenced out, and what is left is solely attributable to the impact of the law. This method was necessary because there was an outbreak of avian influenza in late 2014 and 2015, which impacted egg production nation-wide including California.

Midan Marketing's analysis of the Nielsen data found that egg prices in California increased by $1.05 per dozen (or 37.8%) when comparing the first 10 months of 2014 to the first 10 months of 2015. Egg prices also increased in the rest of the United States by $0.56 (or 27.4%) over this period, which was probably mainly due to the avian influenza outbreak which negatively impacted production. Hence, differencing out the rest of the U.S. price increase from

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the California price increase, this means that the California law raised egg prices in the state by $0.49 per dozen, or almost 18% in 2015. To put this increase into perspective, over the same period the Consumer Price Index for All Food increased by 1.3% and the Consumer Price Index for All Items increased by 0.5%. In other words, the increase in egg prices as a result of the California egg law was 13.5 times higher than the inflation-rate for all food and 35 times higher than the overall inflation rate.

What does this mean for egg demand? Economists measure price sensitivity of demand by what is called the "price elasticity" of demand, which measures the percentage change in quantity demanded given a 1% change in price. Kaiser (2006) found that U.S. consumers are not very sensitive to changes in egg prices; a 10% increase (or decrease) in egg prices would lead to a mere 0.2% decrease (increase) in quantity demanded. In other words, the average consumer barely pays attention to the price of eggs when making her purchase decision. Applying Kaiser's (2006) elasticity estimate to the 18% price increase due to the California law suggests that the average decrease in quantity demanded would only be 0.41%.

Midan Marketing looked at what happened to egg sales volume from 2014 to 2015. Surprisingly, even though the average price increased by a whopping 37.8% in 2015 in California, sales volume actually increased by 4.2% in California, while decreasing by 0.6% for the rest of the United States. This seemingly counter-intuitive result for California is most likely due to a favorable shift in some of other (non-egg price) egg demand drivers coupled with the extremely inelastic demand for eggs. For example, the Census Bureau reports that per capita income increased by almost 6% in California over the first three quarters of 2015 compared with only a 3% increase for the rest of the United States. Kaiser (2006) found that every 10% increase in per capita income increased egg demand by about 2%. Therefore, this and perhaps other changes in egg demand drivers may be accounting for the increase in demand rather than the price increase.

According to the Midan Marketing analysis, total dollar sales of eggs increased by 43.5% in California from 2014 to 2015, while egg expenditures increased by 26.7% in the rest of the United States over this time period. Differencing out the rest of the United States, this implies that California consumers will spend 16.8% more on eggs due to the new state egg law. Based on average per capita consumption of 21.5 dozen per year and an average price in California of $3.83 per dozen, California consumers are spending almost $14 per person more on eggs due to the law. For a family of five, that works out to about $70 per year.

This increase in consumer expenditures may not be that severe for the average household in California, but the same is not true for the poorest households in the state. DiPeitre (2012) discusses the distributional impacts of California's new egg law arguing that, if applied to the total United States population, the resulting increase in egg prices disproportionately harms lower income households; primarily African American and Hispanic families who are younger, headed by a female, and located in the south and southwestern United States. Likewise, Allender and Richards (2010) find that larger households and/or households with limited means are most likely to be affected by this increase in egg prices. Allender and Richards (2010) estimate that the loss in consumer welfare totals $106 million due to this law. Furthermore, DiPeitre (2012) argues that since egg demand is so highly price inelastic, the increase in retail egg prices could

cause poorer households to reduce purchases of other essential items rather than reduce purchase of eggs, which would have negative health consequences. For instance, poor families already consume fewer fruits and vegetables than more financially stable households, and could purchase even less of these healthy products due to the rise in egg prices.

Sources

Allender, William J. and Timothy J. Richards. "Consumer Impact of Animal Welfare Regulation in the California Poultry Industry." *Journal of Agricultural and Resource Economics* 35(2010):424–442

DiPeitre, Dennis. "Economic Justice and the Price of Eggs." Working Paper, 2012.

Food Navigator. http://www.foodnavigator-usa.com/Markets/US-egg-consumption-highest-it-s-been-in-7-years

Lusk, Jayson. http://jaysonlusk.com/blog/2014/3/28/meat-expenditure-shares.

Nielsen Perishables Group, 2015.

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