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**What's in a Name?**  
**Using IRI Scanner Data to Evaluate Retail Food Labeling for Shell Eggs**

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## Introduction

In recent years, consumers have become more concerned with where their food comes from and how it was produced. The food industry has responded with a growing number of food labels intended to identify production processes (e.g. raised without antibiotics, cage-free eggs, Non-GMO verified) or nutritional benefits (e.g. high protein or “carb-conscious”). In the retail shell egg market the large majority of eggs are produced using conventional methods, but a small proportion of eggs are produced using alternative processes. For example, certified organic eggs are produced following USDA guidelines and free-range eggs come from chickens (layers) with access to the outdoors.

Food manufacturers may use these labels not just to inform consumers, but also differentiate their product. An information asymmetry exists when labeling process-based claims and nutritional claims. First, consumers must trust the manufacturer is truthful and the label is correct. Second, the consumer and manufacturer may have different understandings of how the claim is defined. This is particularly interesting in the case of shell eggs, where one package of a dozen eggs may be labeled “organic”, “free-range”, and “Non-GMO verified” as well as “natural”, “high in omega-3s”, and “carb-conscious”. Manufacturers may include these labels in order to gain consumers willing to pay more for these unseen, credence attributes.

In this paper, we examine the effect of food labels on shell eggs sold at retail. The large majority of retail eggs are produced conventionally, but a small proportion of consumers are willing to pay a premium for non-conventional eggs, including organic and cage-free eggs. Using weekly IRI scanner data from 2010 through 2016, we find statistically significant price

premiums for various process-based and nutritional food labels, including organic (48% price premium) and cage-free (26%).

## Methodology

We use nationwide weekly IRI scanner data at the UPC-level from January 2011 to December 2016. IRI receives scanner data from drug, grocery, mass, convenience, club, and dollar stores, as well as Walmart and collects information including the total number of units sold per week, average unit price, and a vector of UPC level characteristics provided on the carton. All sales of fresh, shell eggs sold in the selected time period and collected by IRI are included in the sample, with the exception of hard-boiled eggs, soft-boiled eggs, cooked eggs, cultured eggs, and fertile eggs. There are over 710,000 observations representing 475 brands and 3,752 unique UPC.

We use a hedonic model to determine the implicit prices of characteristics of eggs using observable differences in market prices. To make inferences about willingness to pay, we must assume that product characteristics are not correlated with unobservable characteristics. For each UPC  $i$  in brand  $j$ , week  $t$ , we estimate the following:

$$\begin{aligned} \log(\text{Price}_{ijt}) = & \beta \mathbf{X}_{ijt} + \theta_1 \text{EggNumber}_{ijt} + \log(\text{market share})_{jt} + \theta_2 \text{Private}_{ij} \\ & + \theta_3 \text{Eggland}_{ij} + \text{month}_t + \text{year}_t + \text{month}_t \times \text{year}_t + \varepsilon_{ijt} \end{aligned}$$

In the primary analysis, *Price* is measured as the real price per egg, including promotions. These prices reflect the average price face by consumers. Because this may not be the typical price a customer may see when selecting eggs at the grocer, as a robustness check, we also measure the price of eggs as the real base price per egg. The base price is estimated by IRI and

is defined as the price eggs would have been in the absence of any promotion. All prices are converted to real prices using the GDP deflator.

Let  $\beta X_{ijt}$  be a vector of UPC specific characteristics. While we are most interested in the price premiums associated with process-based labels and nutritional claims, the model also controls for package material, color (brown v white), size, and grade. A full set of variables is found in table 1. Note that these variables represent information on the products' label, and therefore reflect the information provided to the consumer. However, they do not necessarily capture the actual processes used to produce the eggs. For example, by definition, to use the organic label on eggs, chickens must be fed non-GMO animal feed. However, not all organic eggs have non-GMO labels. To capture additional effects of including multiple process labels, the model also includes a set of interactions terms for many variables of interest, including cage-free, organic, free-range, natural, non-GMO, and omega claims, excluding any interactions with no observations (free-range and cage-free, free-range and non-GMO). Because, in general, the price per egg decreases with the number of eggs in the package, we include a measure of the number of eggs in the package, *EggNumber*.

We control for firm level and brand level effects in multiple ways. First, we control for potential effects of brand identity, we include the log of the market share of each brand in a given week. Second, we include an indicator for private label eggs (i.e. generic or store-brand) and Eggland's Best, the largest major brand by sales volume. These variables are defined at the major brand level, rather than the brand level, so they are defined in the presence of brand fixed effects, and capture premiums for these specific major brands. We also subsample on these variables as a robustness check.

The primary analysis includes time-period fixed effects, quarterly fixed effects, and yearly fixed effects, where the time-period is a week. As a final robustness check, we run the analysis using a subsample of observations in each year, for a total of six regressions. The price premium of the non-interaction variables is calculated as  $\beta_x E(Price)$ ; the price premium of the interaction of variables  $x$  and  $y$  is  $(\beta_x + \beta_y + \beta_{xy})E(Price)$ .

## Descriptive Statistics

The majority of egg packages are packaged in boxes, but approximately 1 percent are packed in flats or other packages. Almost half of all shell eggs sampled are packaged in cardboard, 30 percent are packed in Styrofoam containers, 8 percent in plastic, and the remaining 14 percent are packed in other materials. Seventy-two percent of eggs sampled were white and 27 percent were brown in color. The remaining 1 percent were other colors, such as blue. In addition, 71 percent of eggs were classified as Grade A and 26 percent were Grade AA. “Large” is the most common egg size.

Although all shell eggs have the same nutritional content, a small percent of observations had health claims highlighting different aspects of an eggs nutritional value. For instance, 2 percent of observations claimed to be high protein, 7 percent identified as low cholesterol, and 1 percent claimed “less saturated fat”. Appendix A contains a full list of claims and their classifications.

The price of a single egg, on average, is \$0.23. As seen in previous literature and market analysis, organic eggs make up only 9 percent of the sample, but their price is twice that of all eggs (figure 1). Interestingly, when the price of conventional eggs increased in 2015, the price of organic eggs remained consistent, thus reducing the potential price premium. Similarly, cage-free eggs make up 10 percent of observations and average about \$0.30 per egg (figure 2). On the other hand, claims for “Natural” and “Farm Fresh”, two terms that do not have a regulated

meaning, but may conjure bucolic images, represent about 9 percent of observations each, but do not carry the same price premium as organic eggs (figures 4 and 5).

Lastly, we turn to shell eggs labeled non-GMO. Figure 5 shows that shell eggs labeled non-GMO garner a larger price than the average egg, but this is more volatile than the organic price. Recall that all organic eggs are by definition non-GMO, but not all of them are labeled as such. In order to see how these prices really compare, we use regression analysis to control for other labeled and non-labeled characteristics.

## **Results**

Table 2 shows OLS regression results for (1) the primary model and three models used for robustness checks: (2) limiting observations to those from a private label brand, (3) limiting observations to the most common brand, Eggland's Best, and (4), using IRI's calculated base price. Models 1 and 4 are similar enough to conclude that using the average price of eggs instead of the base price that is closer to what consumers actually face at the grocer is sufficient.

Results suggest that organic eggs, free-range eggs, and cage-free eggs carry the largest price-premiums for a single label. Organic eggs are 48 percent more expensive than conventional eggs, or \$0.11 cents higher than average. Free-range eggs are 33 percent more expensive than conventional eggs and eggs labeled cage-free carry a 26 percent price premium over conventional eggs. For private label and Eggland's Best subsamples, the organic egg premium is even higher at 54 percent. Interestingly, the price premium for free-range eggs and cage-free eggs does not hold across all models: for private-label branded eggs, free-range eggs have a 7 percent price premium and cage-free eggs have a 37 percent price premium. For Eggland's Best branded eggs, free-range eggs have a 40 percent price premium and cage-free eggs have a 7

percent price premium. These results suggest there may be an interaction between these process claims and brand. Contrary to Jaenicke and Carlson (2015), we find there is little variation in premiums over time (table 3).

We found conflicting results for shell eggs labeled as Non-GMO. In the primary model, there was no statistically significant effect of labeling, but for private label eggs, there was a 46 percent price premium for the Non-GMO label. The regression results over time suggest that there was a negative price premium associated with the Non-GMO label in 2011, and then no statistically significant premium since.

Because many shell eggs include multiple labels, we interacted many of the relevant process-claims we are interested in. In our primary model, an egg labeled organic receives an \$0.11 price premium; a cage-free egg receives a \$0.06 price premium. An egg labeled both cage-free and organic receives a \$0.11 price premium. Thus, producers of this type of egg may have little incentive to include the redundant label of cage free since it does not provide additional price premium. Alternatively, a producer of cage-free eggs may be willing to go through additional steps required to label cage-free eggs organic, since there is an additional \$0.05 premium with each egg, or \$0.62 per carton.

The largest price premiums found for multiple labels are for Free-Range and Organic (\$0.14 premium), Organic and Omega Claim (\$0.13), Natural and Organic (\$0.13), and Cage-Free and Non-GMO (\$0.12). These results suggest that adding the organic label increases the price premium associated with free-range eggs (moving from \$0.08 for free range eggs to \$0.14 for organic and free-range eggs), Omega (from \$0.05 to \$0.13), and Natural (from \$0.01 to



\$0.13). Most interestingly, combining two attributes, Non-GMO claim and cage-free, produces a high price premium of \$0.12.

**Table 1: Summary Statistics**

	Mean	Std. Dev.	Min.	Max.
<i>Market Data</i>				
Sales per UPC (\$1,000s)	\$43.05	\$183.31	\$0.00	\$7,608.33
Price per Egg (\$)	\$0.23	\$0.15	\$0.00	\$4.65
Base Sales per UPC (\$1,000s)	\$40.31	\$171.04	\$0.00	\$6,474.10
Base Price per Egg (\$)	\$0.23	\$0.15	\$0.01	\$4.65
Brand Market Share	18.38%	23.51%	0.00%	55.40%
Base Brand Market Share	18.15%	23.20%	0.00%	52.89%
<i>Packaging</i>				
Non-Box Package	0.01	0.10	0	1
Cardboard Package	0.47	0.50	0	1
Styrofoam Package	0.30	0.46	0	1
Plastic Package	0.08	0.27	0	1
Eggs per Package	14.88	10.55	1	180
<i>Egg Type</i>				
White Eggs	0.72	0.45	0	1
Brown Eggs	0.27	0.44	0	1
Grade AA Eggs	0.26	0.44	0	1
Grade A Eggs	0.71	0.45	0	1
<i>Egg Size</i>				
Small	0.01	0.10	0	1
Medium	0.12	0.32	0	1
Large	0.58	0.49	0	1
Extra Large	0.17	0.38	0	1
Jumbo	0.12	0.32	0	1
<i>Process</i>				
Non-GMO	0.01	0.07	0	1
Kosher	0.06	0.24	0	1
Organic	0.09	0.29	0	1
Cage-Free	0.10	0.30	0	1
Vegetarian-Fed	0.06	0.23	0	1
Free-Range	0.01	0.11	0	1
<i>Health Claims</i>				
Antibiotic Claim	0.05	0.22	0	1
Grain Claim	0.01	0.11	0	1
Hormone Claim	0.07	0.25	0	1
Protein Claim	0.02	0.12	0	1
Saturated Fat Claim	0.01	0.10	0	1
Cholesterol Claim	0.07	0.25	0	1
Omega Claim	0.07	0.25	0	1
<i>Other</i>				
Natural	0.09	0.28	0	1
Farm Fresh	0.08	0.27	0	1
Private Label	0.37	0.48	0	1
Eggland's Best	0.02	0.14	0	1

**Table 2: Regression Results**

	(1) Primary	(2) Private Label	(3) Eggland's Best	(4) No Promotions
<i>Market Data</i>				
Log(Brand Market Share)	0.001 (0.00)	1.47*** (0.02)	-0.07*** (0.00)	0.00 (0.00)
<i>Packaging (Base: Cardboard Packaging)</i>				
Non-Box Package	0.24*** (0.05)	0.33*** (0.01)	0.00 --	0.21*** (0.06)
Styrofoam Package	-0.06*** (0.01)	-0.04*** (0.00)	0.05*** (0.01)	-0.05*** (0.01)
Plastic Package	0.07*** (0.01)	0.07*** (0.00)	0.02** (0.01)	0.07*** (0.01)
Log(Eggs per Package)	-0.20*** (0.02)	-0.18*** (0.00)	-0.37*** (0.01)	-0.20*** (0.02)
<i>Egg Type (Base: White, Grade A)</i>				
Brown Eggs	0.16*** (0.01)	0.16*** (0.00)	0.03*** (0.01)	0.15*** (0.01)
Grade AA Eggs	0.01 (0.02)	0.05*** (0.00)	0.05*** (0.00)	0.02 (0.02)
<i>Egg Size (Base: Large)</i>				
Small	-0.25*** (0.05)	-0.11*** (0.01)	0.00 --	-0.27*** (0.04)
Medium	-0.19*** (0.01)	-0.17*** (0.00)	-0.11*** (0.03)	-0.20*** (0.01)
Extra Large	0.04*** (0.01)	0.07*** (0.00)	0.01 (0.00)	0.03** (0.01)
Jumbo	0.11*** (0.02)	0.15*** (0.00)	0.14*** (0.01)	0.09*** (0.01)
<i>Process</i>				
Non-GMO	0.04 (0.07)	0.46*** (0.03)	0.00 --	0.09 (0.08)
Kosher	0.05* (0.02)	0.06*** (0.00)	0.08*** (0.01)	0.05* (0.02)
Organic	0.48*** (0.04)	0.54*** (0.00)	0.54*** (0.01)	0.48*** (0.03)
Cage-Free	0.26*** (0.04)	0.37*** (0.00)	0.07*** (0.01)	0.25*** (0.04)
Vegetarian-Fed	0.07*** (0.02)	0.10*** (0.00)	0.05*** (0.01)	0.06** (0.02)
Free-Range	0.33*** (0.04)	0.07*** (0.02)	0.40*** (0.02)	0.32*** (0.04)
<i>Health Claims</i>				
Antibiotic Claim	0.02 (0.02)	0.09*** (0.01)	0.07*** (0.01)	0.02 (0.02)
Grain Claim	-0.02 (0.02)	0.03*** (0.01)	0.00 --	-0.01 (0.02)
Hormone Claim	-0.05* (0.02)	-0.12*** (0.00)	-0.03*** (0.01)	-0.04* (0.02)
<i>cont...</i>				

**Table 2: Regression Results, cont.**

	(1) Primary	(2) Private Label	(3) Eggland's Best	(4) No Promotions
Protein Claim	-0.01 (0.02)	-0.04*** (0.01)	0.00 (0.01)	-0.01 (0.02)
Saturated Fat Claim	0.11 (0.07)	0.18*** (0.01)	0.18*** (0.01)	0.09 (0.06)
Cholesterol Claim	0.00 (0.01)	0.01** (0.00)	0.04*** (0.01)	-0.01 (0.01)
Omega Claim	0.20*** (0.04)	0.29*** (0.00)	-0.14*** (0.02)	0.20*** (0.04)
<i>Other</i>				
Natural	0.06* (0.03)	0.09*** (0.00)	-0.09*** (0.01)	0.05 (0.03)
Farm Fresh	0.00 (0.01)	0.03*** (0.00)	-0.06*** (0.00)	0.01 (0.01)
Private Label	-0.17*** (0.04)	--	--	-0.17*** (0.04)
Eggland's Best	-0.17* (0.08)	--	--	-0.14 (0.08)
<i>Interactions</i>				
Cage-Free and Organic	-0.25*** (0.04)	-0.32*** (0.01)	-0.18*** (0.01)	-0.24*** (0.04)
Free-Range and Organic	-0.22*** (0.04)	0.08*** (0.02)	0.00 --	-0.22*** (0.04)
Cage-Free and Natural	-0.09* (0.04)	-0.03*** (0.01)	-0.02 (0.01)	-0.09* (0.04)
Free-Range and Natural	-0.10 (0.06)	0.00 --	0.00 --	-0.10 (0.06)
Cage-Free and Non-GMO	0.24** (0.08)	-0.81*** (0.03)	0.00 --	0.24** (0.08)
Cage-Free and Omega	-0.17* (0.08)	-0.38*** (0.01)	0.09*** (0.01)	-0.17* (0.08)
Free-Range and Omega	-0.11 (0.08)	0.00 --	0.00 --	-0.11 (0.08)
Natural and Organic	0.01 (0.04)	-0.05*** (0.01)	-0.12*** (0.01)	0.01 (0.04)
Natural and Non-GMO	-0.10 (0.08)	0.00 --	0.00 --	-0.10 (0.08)
Natural and Omega	0.01 (0.02)	0.00 (0.01)	0.10*** (0.01)	0.01 (0.02)
Organic and Non-GMO	-0.30*** (0.09)	0.00 --	0.00 --	-0.30*** (0.09)
Organic and Omega	-0.11*** (0.02)	-0.05*** (0.01)	-0.04*** (0.01)	-0.11*** (0.02)
Non-GMO and Omega	-0.19** (0.07)	0.00 --	0.00 --	-0.19** (0.07)
N	710,252	260,295	13,530	58,861
R-squared	0.55	0.57	0.70	0.55

**Table 3: Regression Results by year**

	(1) 2011	(2) 2012	(3) 2013	(4) 2014	(5) 2015	(6) 2016
<i>Market Data</i>						
Log(Brand Market Share)	-0.01 (0.01)	0.00 (0.00)	0.00 (0.00)	-0.01 (0.00)	0.00 (0.00)	0.00 (0.01)
<i>Packaging (Base: Cardboard Packaging)</i>						
Non-Box Package	0.23*** (0.07)	0.25*** (0.06)	0.27*** (0.05)	0.25*** (0.04)	0.23*** (0.03)	0.24*** (0.07)
Styrofoam Package	-0.05*** (0.01)	-0.05*** (0.01)	-0.05*** (0.01)	-0.05*** (0.02)	-0.06*** (0.01)	-0.10*** (0.02)
Plastic Package	0.09*** (0.02)	0.09*** (0.01)	0.09*** (0.01)	0.06*** (0.01)	0.03*** (0.01)	0.07*** (0.02)
Log(Eggs per Package)	-0.18*** (0.02)	-0.20*** (0.02)	-0.21*** (0.02)	-0.20*** (0.02)	-0.18*** (0.02)	-0.26*** (0.02)
<i>Egg Type (Base: White, Grade A)</i>						
Brown Eggs	0.19*** (0.01)	0.16*** (0.01)	0.15*** (0.01)	0.17*** (0.01)	0.12*** (0.01)	0.16*** (0.02)
Grade AA Eggs	-0.01 (0.02)	-0.02 (0.02)	-0.02 (0.02)	-0.01 (0.02)	0.03 (0.02)	0.09* (0.04)
<i>Egg Size (Base: Large)</i>						
Small	-0.19*** (0.03)	-0.21*** (0.04)	-0.26*** (0.06)	-0.25*** (0.07)	-0.31*** (0.06)	-0.35*** (0.10)
Medium	-0.19*** (0.01)	-0.20*** (0.01)	-0.18*** (0.01)	-0.16*** (0.01)	-0.15*** (0.02)	-0.24*** (0.03)
Extra Large	0.04** (0.01)	0.03 (0.02)	0.04** (0.01)	0.05** (0.01)	0.04** (0.01)	0.05*** (0.01)
Jumbo	0.11*** (0.02)	0.11*** (0.02)	0.11*** (0.02)	0.10*** (0.02)	0.09*** (0.02)	0.13*** (0.02)
<i>Process</i>						
Non-GMO	-0.28*** (0.06)	0.15 (0.28)	0.06 (0.07)	0.01 (0.09)	0.11 (0.07)	0.10 (0.07)
Kosher	0.05 (0.03)	0.06* (0.02)	0.07*** (0.02)	0.06** (0.02)	0.04 (0.02)	0.05 (0.03)
Organic	0.46*** (0.04)	0.51*** (0.04)	0.51*** (0.04)	0.46*** (0.04)	0.37*** (0.03)	0.58*** (0.06)
Cage-Free	0.23*** (0.05)	0.28*** (0.05)	0.28*** (0.06)	0.23*** (0.04)	0.17*** (0.04)	0.38*** (0.06)
Vegetarian-Fed	0.06** (0.02)	0.09*** (0.02)	0.09*** (0.02)	0.05** (0.02)	0.03 (0.02)	0.10*** (0.03)
Free-Range	0.39*** (0.07)	0.44*** (0.07)	0.43*** (0.04)	0.34*** (0.06)	0.22*** (0.05)	0.30*** (0.08)
<i>Health Claims</i>						
Antibiotic Claim	0.00 (0.02)	0.03 (0.02)	0.02 (0.03)	0.01 (0.04)	0.02 (0.03)	0.03 (0.03)
Grain Claim	-0.05 (0.04)	-0.06 (0.03)	-0.03 (0.03)	-0.03 (0.03)	-0.01 (0.02)	0.00 (0.03)
Hormone Claim	-0.02 (0.02)	-0.05* (0.02)	-0.06* (0.03)	-0.06 (0.03)	-0.04 (0.02)	-0.04 (0.03)

cont...

**Table 3: Regression Results by year, cont.**

	(1)	(2)	(3)	(4)	(5)	(6)
	2011	2012	2013	2014	2015	2016
Protein Claim	-0.02 (0.04)	-0.01 (0.03)	-0.02 (0.03)	0.01 (0.03)	0.01 (0.02)	0.00 (0.03)
Saturated Fat Claim	0.01 (0.04)	0.12 (0.09)	0.18** (0.06)	0.20*** (0.04)	0.12* (0.06)	0.06 (0.11)
Cholesterol Claim	-0.02 (0.02)	-0.01 (0.02)	0.00 (0.01)	0.01 (0.01)	0.01 (0.01)	0.03 (0.02)
Omega Claim	0.25*** (0.04)	0.25*** (0.05)	0.23*** (0.05)	0.16** (0.06)	0.07* (0.04)	0.24*** (0.06)
<i>Other</i>						
Natural	0.04 (0.03)	0.08*** (0.02)	0.08** (0.03)	0.06* (0.03)	0.06 (0.03)	0.04 (0.05)
Farm Fresh	-0.01 (0.02)	-0.02 (0.02)	-0.01 (0.02)	0.03 (0.02)	0.02 (0.01)	0.02 (0.02)
Private Label	-0.04 (0.05)	-0.08* (0.04)	-0.15*** (0.03)	-0.08* (0.04)	-0.11** (0.04)	-0.24*** (0.07)
Eggland's Best	0.02 (0.08)	-0.13 (0.07)	-0.24** (0.08)	-0.21** (0.08)	-0.13 (0.08)	-0.11 (0.12)
<i>Interactions</i>						
Cage-Free and Organic	-0.20*** (0.04)	-0.26*** (0.04)	-0.26*** (0.04)	-0.25*** (0.04)	-0.18*** (0.04)	-0.35*** (0.04)
Free-Range and Organic	-0.25** (0.09)	-0.25** (0.09)	-0.25** (0.09)	-0.25** (0.09)	-0.25** (0.09)	-0.25** (0.09)
Cage-Free and Natural	-0.04 (0.04)	-0.04 (0.04)	-0.04 (0.04)	-0.04 (0.04)	-0.04 (0.04)	-0.04 (0.04)
Free-Range and Natural	-0.17* (0.08)	-0.17* (0.08)	-0.17* (0.08)	-0.17* (0.08)	-0.17* (0.08)	-0.17* (0.08)
Cage-Free and Non-GMO	0.56*** (0.08)	0.56*** (0.08)	0.56*** (0.08)	0.56*** (0.08)	0.56*** (0.08)	0.56*** (0.08)
Cage-Free and Omega	-0.18* (0.09)	-0.18* (0.09)	-0.18* (0.09)	-0.18* (0.09)	-0.18* (0.09)	-0.18* (0.09)
Free-Range and Omega	-0.06 (0.07)	-0.06 (0.07)	-0.06 (0.07)	-0.06 (0.07)	-0.06 (0.07)	-0.06 (0.07)
Natural and Organic	-0.02 (0.06)	-0.02 (0.06)	-0.02 (0.06)	-0.02 (0.06)	-0.02 (0.06)	-0.02 (0.06)
Natural and Non-GMO	-0.32*** (0.05)	-0.32*** (0.05)	-0.32*** (0.05)	-0.32*** (0.05)	-0.32*** (0.05)	-0.32*** (0.05)
Natural and Omega	0.00 (0.03)	0.00 (0.03)	0.00 (0.03)	0.00 (0.03)	0.00 (0.03)	0.00 (0.03)
Organic and Non-GMO	0.00 --	0.00 --	0.00 --	0.00 --	0.00 --	0.00 --
Organic and Omega	-0.17*** (0.04)	-0.17*** (0.04)	-0.17*** (0.04)	-0.17*** (0.04)	-0.17*** (0.04)	-0.17*** (0.04)
Non-GMO and Omega	0.00 --	0.00 --	0.00 --	0.00 --	0.00 --	0.00 --
N	117,684	119,945	119,336	117,455	119,402	116,430
R-squared	0.59	0.60	0.60	0.58	0.49	0.57

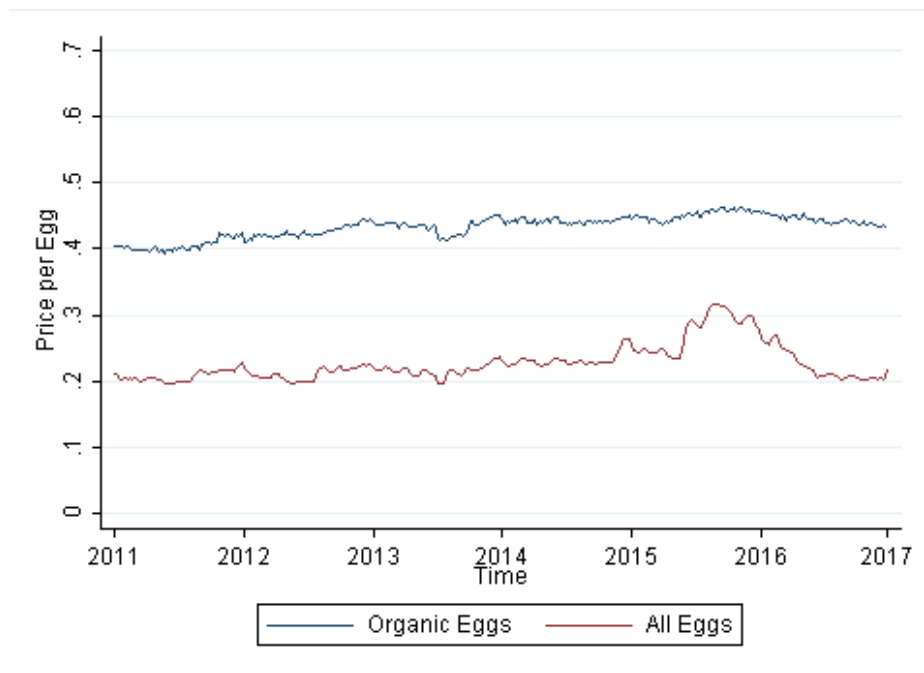


Figure 1. Organic Eggs over Time

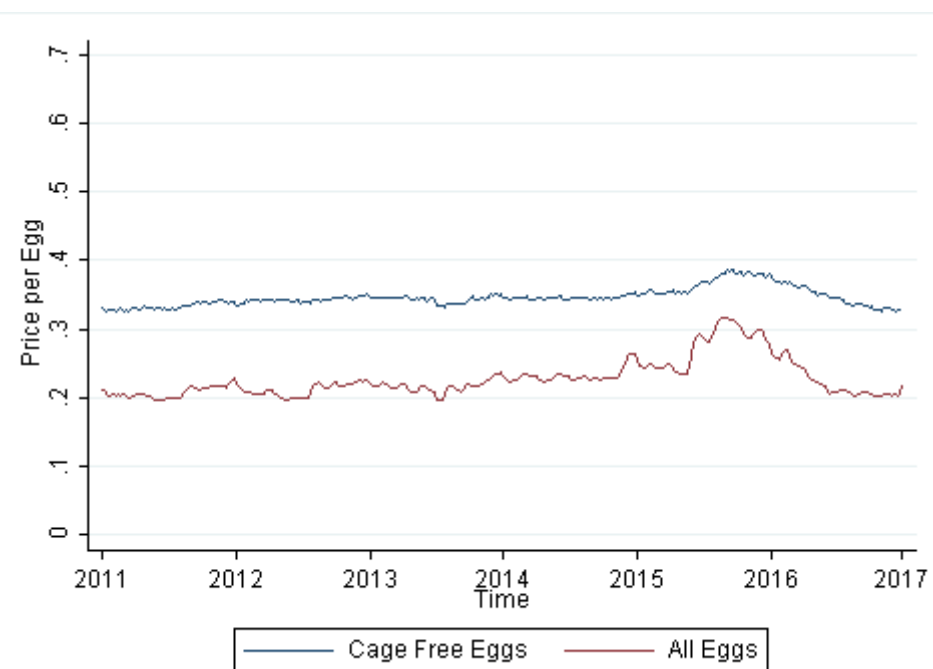


Figure 2. Cage Free Eggs over Time

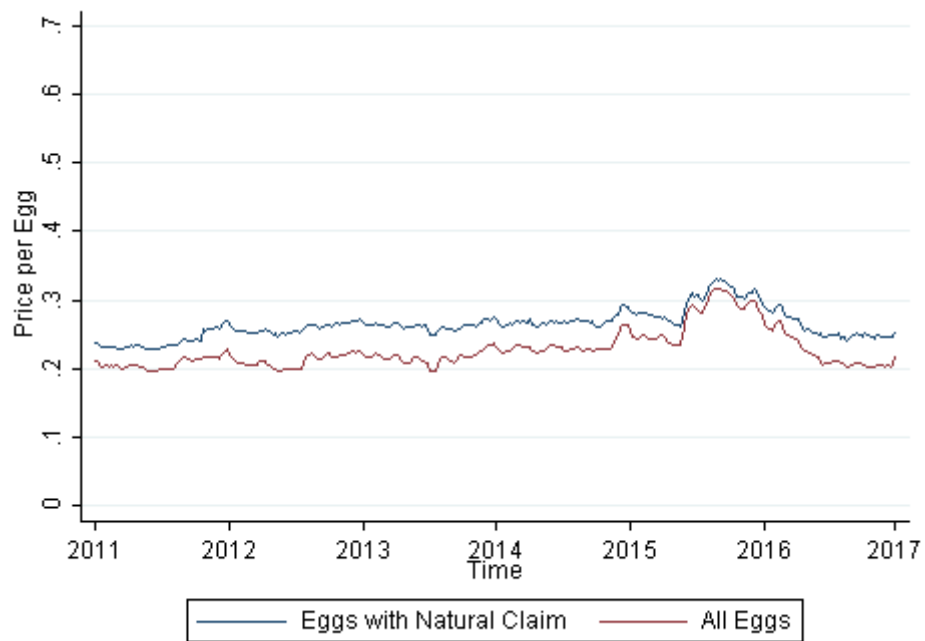


Figure 3. Natural Eggs over Time

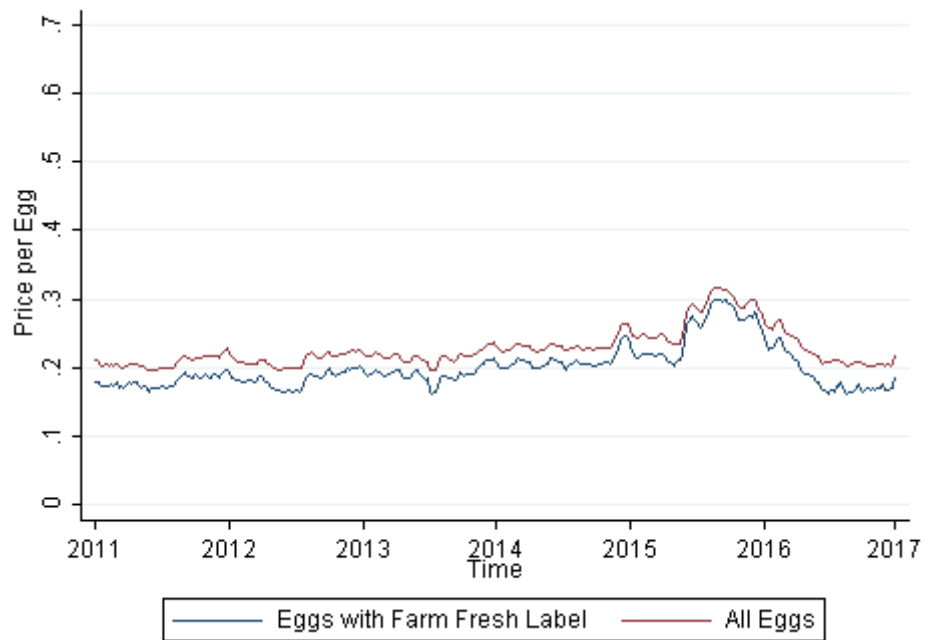


Figure 4. Farm-Fresh Eggs over Time



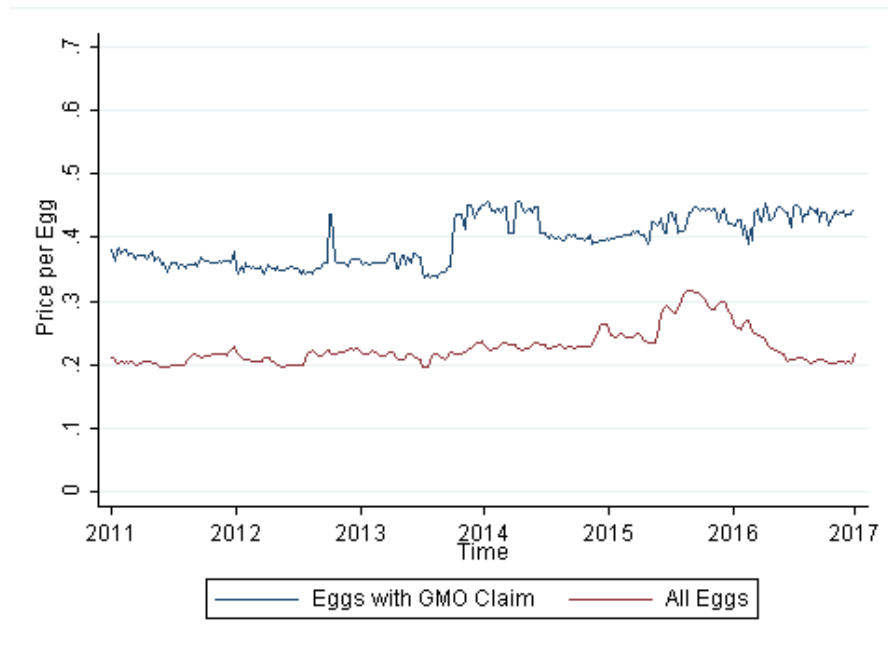


Figure 5. Non-GMO Eggs over Time

## Appendix: Classification of Claims

Classification	Claim Printed on Package
Non-GMO	<ul style="list-style-type: none"> <li>• “No GMO”</li> <li>• “Non GMO Project Verified”</li> <li>• “Not Treated with GMOs”</li> </ul>
Vegetarian-fed	<ul style="list-style-type: none"> <li>• Vegetarian”</li> <li>• “Vegan fed”</li> <li>• “Vegetarian fed”</li> </ul>
Organic	<ul style="list-style-type: none"> <li>• “100% organic”</li> <li>• “Made with organic ingredients”</li> <li>• “USDA/Certified organic”</li> <li>• “Other organic claim”</li> </ul>
Antibiotic claim	<ul style="list-style-type: none"> <li>• “No antibiotic”</li> <li>• “No antibiotic added”</li> <li>• “Not treated with antibiotic”</li> <li>• “Other antibiotic claim”</li> </ul>
Grain claim	<ul style="list-style-type: none"> <li>• “Other grain claim”</li> <li>• “Other whole grain claim”</li> <li>• “Flax”</li> </ul>
Hormone claim	<ul style="list-style-type: none"> <li>• “No hormone”</li> <li>• “No hormone added”</li> <li>• “Not treated with hormones”</li> <li>• “Other hormone claim”</li> </ul>
Protein Claim	<ul style="list-style-type: none"> <li>• “High protein”</li> <li>• “Other protein claim”</li> <li>• “Source of protein”</li> </ul>
Saturated Fat Claim	<ul style="list-style-type: none"> <li>• “Less saturated fat”</li> </ul>
Cholesterol Claim	<ul style="list-style-type: none"> <li>• “Functional cholesterol”</li> <li>• “Low cholesterol”</li> </ul>
Omega Claim	<ul style="list-style-type: none"> <li>• “High omega”</li> <li>• “More omega”</li> <li>• “Extra omega”</li> <li>• “Omega 3 ALA”</li> <li>• “Omega 3 DHA/EPA”</li> <li>• “Omega 6”</li> <li>• “Omega added DHA/EPA”</li> <li>• “Other omega claim”</li> <li>• “Source of omega ALA”</li> <li>• “Source of omega DHA/EPA”</li> </ul>
Natural	<ul style="list-style-type: none"> <li>• “100 percent natural”</li> <li>• “No artificial”</li> <li>• “Other natural claim”</li> </ul>