Comparison of the Inflation During Trump's and Biden's Terms: A Case Study on Egg Price Changes

Final Project of SURV/SURVMETH 727

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1. Abstract

This study focused on the dynamics of U.S. inflation by examining egg price trends during the administrations of Donald Trump (2017–2021) and Joe Biden (2021–2024). In order to view the changes in egg prices in the past 8 years, I have been drawing on data from the U.S. Bureau of Labor Statistics, and utilizing Shiny in R for interactive visualizations, the research provides a nuanced exploration of these trends. Under Trump's presidency, egg prices exhibited relative stability, punctuated by spikes due to the Avian Flu and the pandemic's onset. Conversely, Biden's tenure was marked by pronounced price volatility, mirroring ongoing economic upheavals and inflationary pressures, and the price tripled. This analysis offers insights into egg price changes across different presidency, illustrating the level of inflation and complex economic challenges confronted by both policymakers and consumers.

GitHub: https://github.com/KingLingchen/727.git

2. Introduction

Inflation has been a critical economic issue in recent years, affecting both policymakers and everyday consumers. As a measure of rising prices for goods and services, inflation reflects broader economic conditions and the impact of external factors. Phaneuf and McMullen indicated most American realized and awarded this country experienced unstable price level and most of the goods' price changed rapidly, especially eggs (2024). This study focuses on U.S. inflation trends during the presidencies of Donald Trump (2017–2021) and Joe Biden (2021–2024), using egg prices as a representative example. Eggs, a staple commodity, are particularly

sensitive to supply chain disruptions, seasonal demand, and external shocks, making them an ideal case study for analyzing inflation.

By leveraging data from the U.S. Bureau of Labor Statistics and employing interactive visualizations created with Shiny, this study compares price trends across the two administrations. The analysis considers key economic events, such as the onset of the COVID-19 pandemic and avian flu outbreaks, which significantly influenced egg prices and inflation. Through this comparative approach, the study aims answer those questions: (1) How did egg prices fluctuate during Trump's and Biden's terms, and what factors contributed to these changes? (2) How did external shocks, such as the COVID-19 pandemic and avian flu outbreaks, impact egg prices over time? (3) What insights can the price trends of a staple commodity like eggs provide about broader inflationary pressures and economic policies under the two administrations?

3. Methodology

3.1 Data Source

I gathered monthly egg price data from the U.S. Bureau of Labor Statistics (BLS) using its API, spanning from January 2017 to October 2024. Egg prices were selected because of their sensitivity to inflationary pressures and their significance as a staple consumer good. The dataset encompasses price fluctuations influenced by external factors like the COVID-19 pandemic, supply chain disruptions, and avian flu outbreaks. By utilizing official government data, I guarantee the accuracy and reliability of tracking price trends over the two presidential terms.

3.2 Analysis Techniques

The analysis employs interactive visualizations created using Shiny to explore egg price trends over time. Time series analysis is used to identify significant fluctuations and patterns, while key economic events and policies are overlaid for context. Additionally, comparisons between the Trump and Biden administrations are made to highlight the effects of external shocks and economic policies on price stability. The visualizations include line charts with adjustable filters for date ranges and price levels, allowing for dynamic exploration of the data.

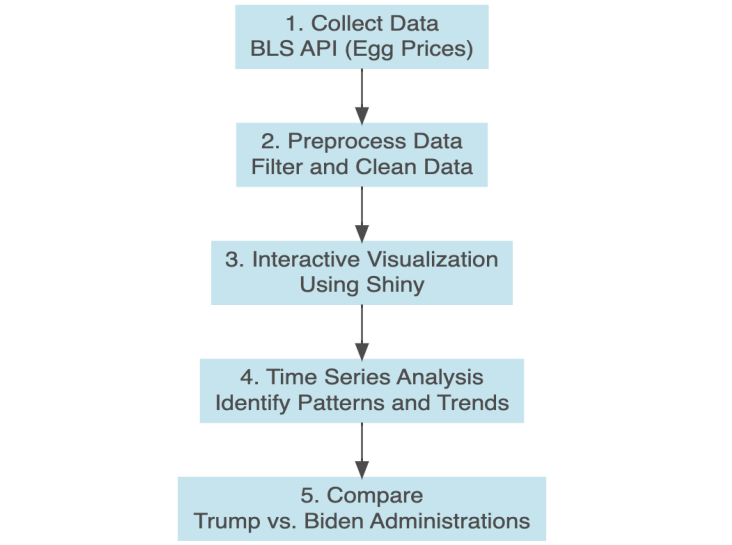

Figure 1: Flowchart

4. Result

4.1Analysis

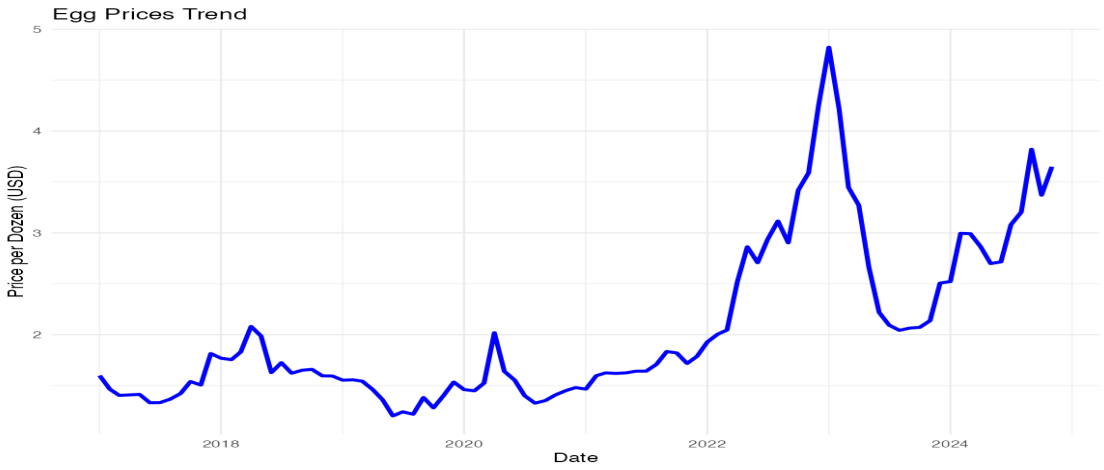

Figure 2: 8 years egg price chart

From 2017 to 2019, egg prices remained relatively stable, fluctuating in a narrow range of $1.50 to $2.50. Perhaps this period may have represented normal market conditions, with prices subject to typical supply and demand dynamics. However, the COVID-19 outbreak in early 2020 marked a dramatic start. Prices began to rise as supply chain disruptions and increased consumer demand for essentials impacted the market. This trend is consistent with inflationary pressures and disruptions across industries during the pandemic.

From 2022 to 2023, egg prices experienced a particularly sharp increase, with prices peaking at about $5 per dozen. This sharp increase was likely due to the outbreak of avian influenza, which severely impacted egg production, combined with ongoing supply chain challenges. These external shocks created a perfect storm, pushing prices to Arctic levels and putting pressure on household budgets for this staple food.

By 2024, egg prices gradually retreated from their peak but remained elevated compared to the previous levels in 2020. This suggests that while the market has stabilized, ongoing inflationary pressures or structural changes in the egg industry are keeping prices at historically normal levels. Stabilization after a peak suggests that supply chains may be recovering, or demand may be falling as consumers adjust to higher prices.

Due to the inflation and other effects, the price of eggs was tripled in Biden's term.

4.2.1 Trump's term

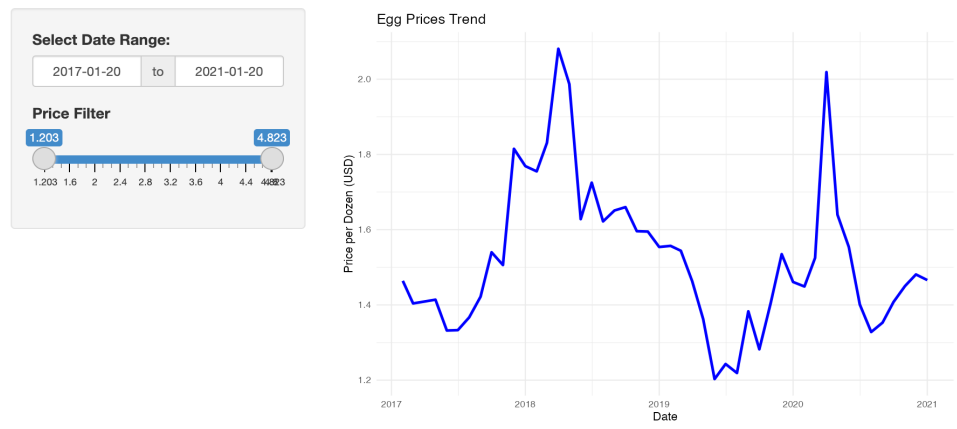

Figure 3: Trump

During Trump's term (2017–2021), egg prices experienced notable fluctuations. They were relatively stable early on but spiked significantly in late 2018, prices then declined and stabilized throughout 2019 before surging dramatically in 2020 during the COVID-19 pandemic. By late 2020, prices began to normalize as supply chains adapted and demand stabilized.

The avian influenza outbreak in early 2018, which referred to the highly pathogenic avian influenza H5N6 and H5N8 strains in Asia, Africa, the Middle East, and Europe. Countries such as Taiwan, France, the United Kingdom, and the Netherlands were affected by infected birds (the United States relies on these countries for its egg supply), and prices rose due to lower supply. Also, egg prices surge as panic buying during the coronavirus pandemic leads to a surge in demand

Durbin and Funk indicated the price of chicken feed, which represents 70 percent of a farmer's costs has fallen significantly after doubling between later 2020 and 2022 (2024), which might be the reason why the egg price went down rapidly after later 2020.

4.2.2 Biden's Term

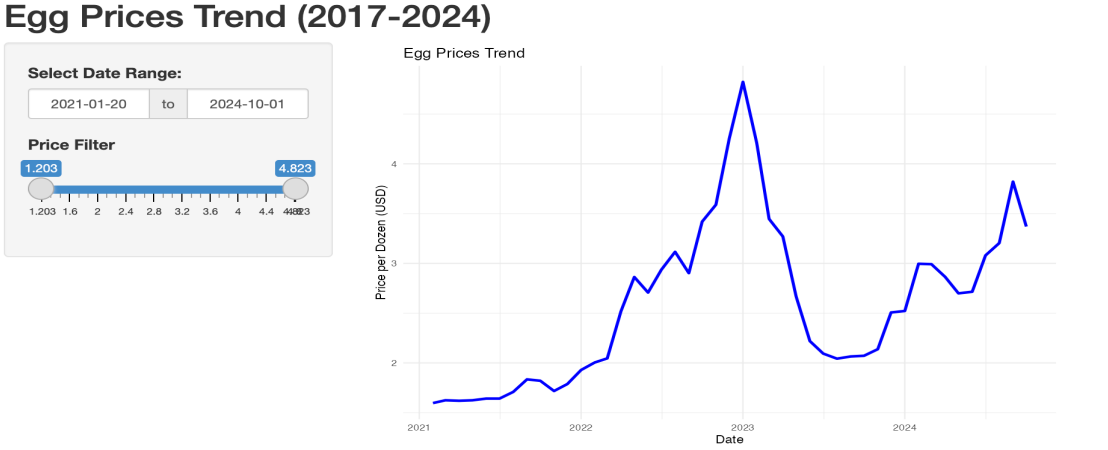

Figure 4: Biden

During Biden's term (2021–2024), egg prices exhibited significant volatility, and inflation goes higher than ever in his term, eggs are tripled than Trump's term. We would notice that prices started relatively stable but began to climb steadily in 2022, and reached a sharp spike occurred

in early 2023. Following this peak, prices dropped significantly but remained higher than pre-2022 levels. By 2024, prices showed renewed upward movement, suggesting ongoing challenges.

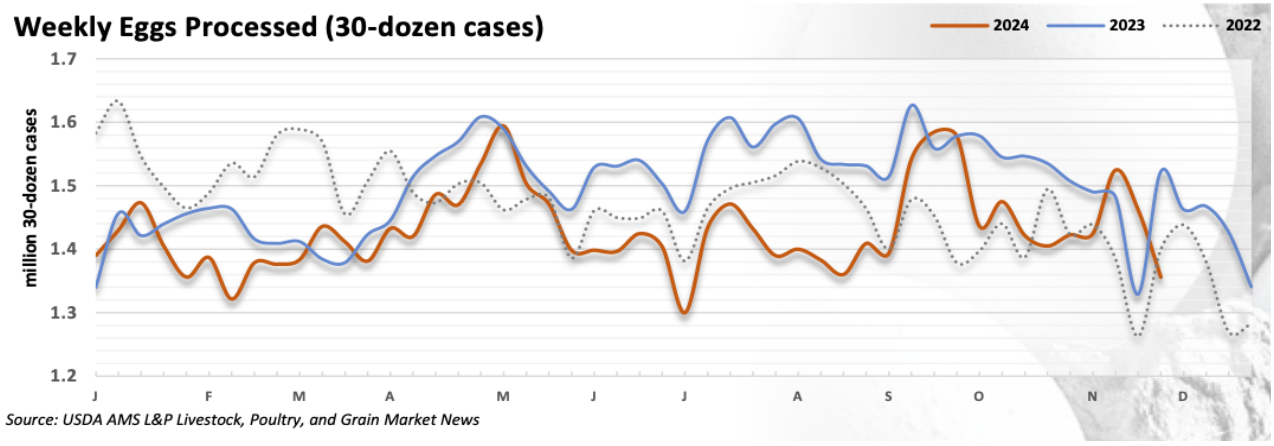

Figure 5: Weekly Eggs Processed (2022-2024)

As shown in the chart, egg production in 2024 is much less than that in 2022 and 2023, so the surge in egg prices in 2024 may be affected by supply and demand. However, we can also know that since the egg supply in 2023 is much higher than that in 2022 and 2024, the price change in early 2023 is not caused by supply and demand.

The significant increase in egg prices in 2023 was primarily caused by a widespread outbreak of avian influenza, which led to the loss of many egg-laying chickens and a sharp decline in egg production, resulting in a supply shortage and higher grocery store prices. Additional contributing factors included rising costs for feed, labour, and packaging, further exacerbating the price surge. Hence the price reached its peak in 2023.

Hernandez indicated as the labor market became increasingly competitive during 2021 and 2022, core inflation surged due to the elevated ratio of job vacancies to unemployment. This ratio

serves as a crucial indicator of wage pressures that subsequently manifest in price increases for goods and services. Consequently, as workers engaged in wage negotiations, businesses responded by implementing wage hikes (2023). As overall incomes of Americans rise, prices rise, and so do egg prices, the co-called post-epidemic crisis is the reason why the egg price is generally higher in Biden's term.

5. Conclusion and Discussion

During the Trump presidency, egg prices remained relatively stable, with spikes driven primarily by seasonal demand and the initial impact of the pandemic. The market proved resilient as supply chains adapted, and prices stabilized by the end of 2020. In contrast, the Biden presidency was characterized by increased price volatility and a sharp increase in egg prices overall, largely driven by the 2023 avian influenza pandemic and ongoing inflationary pressures. The threefold increase in prices compared to the Trump presidency highlights the compounding effects of supply chain challenges, rising input costs, and increased consumer demand in the post-pandemic economy.

At the same time, the findings highlight the need for proactive strategies to enhance supply chain resilience, address labor market imbalances, and ease inflationary pressures, even though financial subsidies for farmers affected by avian influenza. Policymakers and stakeholders should consider investing in sustainable agricultural practices and taking steps to reduce the impact of external shocks on food production.

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