



## Effects of Increased Egg Prices on Food Expenditure and Consumption Patterns in Sri Lanka during the Economic Crisis

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### ABSTRACT

Eggs play an important role in Sri Lankan households as an affordable source of high-quality protein. The ongoing economic crisis in Sri Lanka caused hyperinflation with soaring food prices, including an increase in egg prices by 150%. Such price hikes threaten households already facing budget constraints and limited purchasing power. Due to scarcity and price increases, more than 60% of Sri Lankan families consume cheaper, less quantity and less nutritious food. This study describes the food expenditure pattern pre and post food price increases describes the patterns of substitution and analyzes income and price elasticity of demand for eggs. This study employs a microeconomic approach, utilizing secondary data which will be collected from official reports from Central Bank of Sri Lanka, Department of Census and Statistics, World Food Programme and other organizations in the relevant field. Obtained data was analyzed using the econometric and statistical tools.

This study reveals a substantial increase in egg prices, with a 177.66% surge from July 2021 to August 2022, and an annual average rise of 113.68% from Rs. 19.00 in 2021 to Rs. 40.6 in 2022. The price elasticity of demand for eggs is 0.48 based on the calculations, which is considered inelastic. In conclusion, this analysis underscores the inelastic nature of egg demand in Sri Lanka, with consumers displaying limited responses to price changes. The study also highlights a significant escalation in egg prices, recording a remarkable 177.66% increase between July 2021 and August 2022, along with an annual average rise of 113.68%. However, there are significant limitations in the study setting and appropriateness of data to generalize it to the total Sri Lankan population.

**Keywords:** Food expenditure, Egg consumption, Economic crisis, Food security, Price & Income Elasticity of Demand

### Introduction

Market conditions are dynamic due to various reasons. With the market conditions the demand for and supply of the goods will also change. Elasticity is a concept that quantifies the changes in demand and supply with the changes in market conditions. The price elasticity of demand is the percentage change in the quantity demanded of a good or service divided by the percentage change in the price. It usually depends on many factors such as availability and price of substitutes, income level of the consumer, education level of the consumer, and consumer preferences. (Investopedia, 2023)

Sri Lanka is experiencing its worst economic crisis since its independence in 1947. It has mainly been caused by depleted foreign reserves, unsustainable public debt, negative current account balance, and poor fiscal & monetary policies. It has affected the supply chain of essentials, devaluation of the rupee, and ultimately led to scarcity of resources, hyperinflation of essentials, and affected food security significantly. According to the World Food Programme (WFP), in July 2022 28.3% of Sri Lankans didn't consume an acceptable diet. (WFP, 2022) On the other hand, ad hoc and non-practical policies like the import ban of agrochemicals caused significant damage to the agriculture sector causing a shortage of food that is otherwise adequately produced in the country. With the above events there was severe fuel scarcity and scheduled power cuts ultimately brought up public unrest and change of the regime.

The average price of an egg increased from Rs.20.00 to Rs. 50.00 between July 2021 to July 2022 which is a 150% hike. (Zilwa, 2023). The main reason for this price hike is scarcity/ reduced production. Reasons for reduced production are shortage of animal feeds, irregularities in the supply chain due to fuel shortages, power cuts, and many more. All are interrelated and mainly due to poor and non-transparent governance. For example import ban on agrochemicals caused reduced production in the food, poultry, and egg industries which have worsened food inflation, it has also caused reduced production in export agriculture crops such as tea and rubber which has reduced the foreign currency remittance from that sector and finally with the unsustainable public debt and acute dollar crisis were fast-forwarded with Covid 19 related effects and the collapse was inevitable.

According to the food-based dietary guidelines for Sri Lankans, a healthy diet comprises six main groups:

1. Grains and tubers

2. Vegetables
3. Pulses, fish, meat and eggs
4. Milk & milk products
5. Fruits
6. Nuts and oil seeds

which contains carbohydrates, proteins, fats, vitamins, and minerals. These are required for the growth and development of our body, to provide fuel for our daily activities, to provide immunity against disease-causing agents, maintenance of daily activities, and many more. In the Sri Lankan food plate, egg plays an important role as the provider of affordable and quality protein sources. Probably that was the only affordable source of protein for the low-income quintiles of Sri Lanka.

Many previous studies concluded that the demand for food commodities is inelastic with price. But most of the studies are conducted in high-income countries with strong social protection measures. And there were no studies conducted during an economic crisis.

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## Literature Review

Different studies have explored the role of various socioeconomic factors in determining household consumption patterns of food. Common determinants are household income, food prices, education level of the household head, and ethnicity. Eggs play an inevitable role of the Sri Lankan diet except for vegans, source of high-quality protein and many other essential nutrients at low cost. Understanding the price elasticity of demand for eggs is crucial for both policymakers and market participants in the country's agricultural sector. This review aims to consolidate key studies on the price elasticity of demand for eggs in Sri Lanka, offering insights into consumer behavior and the potential impacts of economic and policy changes.

According to a study published in Japan in 2001, even though the Western world shows a pattern of decline in egg consumption, Asian egg consumption is in an upward trend. They were also categorized into high elasticity, medium elasticity, and low elasticity countries, based on the findings. Sri Lanka has been placed into the medium elasticity category. (A Iddamaloda, 2001).

According to a systematic review published in 2010, all food products were inelastic in price, and eggs were found to be highly inelastic (0.27). (Tatiana Andreyeva, 2010). In another study published in 2020, it is calculating and comparing the price elasticity of demand for eggs in Ukraine and Lithuania. Results reveal in both countries Egg is relatively inelastic to the prices. But in Ukraine, it's less inelastic compared to Lithuania. (Petrauskaitė-Senkevič, 2020).

But there is a significant difference observed between developed countries and developing countries. Egg consumption per capita is in a declining trend in many developed countries, and sub-Saharan countries did not show any significant changes. Surprisingly it has doubled in developing countries in the Asian region. (Kearney, 2010).

In Sri Lanka, per capita egg consumption per annum was 2.02 kg in 1985, it has doubled in 2010 and increased up to 5kg in 2013. (FAO, 2022) (Department of Census and Statistics, 2017). But within Sri Lanka the urban sector shows highest egg consumption followed by rural and estate sectors. (Sampath Bandara, 2021).

But due to the current economic crisis food insecurity has risen to a warning level and currently 33% of the people are food insecure. And 68 % are resorting to coping strategies which include reducing the number of meals, reducing the quantity of the food and quality of the food. (WFP, 2022). Sri Lanka exemplifies how its worst economic recession and the resulting macroeconomic instabilities have created unprecedented and far reaching social and economic consequences, of which deterioration in nutritional wellbeing of the population, particularly child malnutrition represents a deep concern that carries a generational burden. (CBSL, 2022)

During and after the economic crisis low to lower middle income Sri Lankan households reduced consumption of good quality food items and replaced with low quality/ inferior food items. Consumption of egg also reduced significantly together with dietary products and meat. On the other hand, consumption of plain tea and low-cost vegetables and grains increased. (Ranil Jayawardena, 2023).

Due to the inadequacy of nutrition consumed and unfulfilled hunger, there are alarming levels of malnutrition among under five children and 15.3% of under five children are underweight which was 12% in 2021. (FHB, 2022).

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## Objectives

### General Objective

To describe the food expenditure pattern pre and post food price increases during economic crisis

### Specific Objective

To measure the price elasticity of demand of eggs

To describe the patterns of substitution for eggs

## Methodology

This study utilizes a microeconomic approach to analyze the effects of increased egg prices on food expenditure and consumption patterns in Sri Lanka during the economic crisis.

The data for this study was collected through official reports such as

1. Reports from Central Bank of Sri Lanka
2. Reports from Department of Government Census and Statistics
3. Reports published by World Food Programme
4. Data collected by World vision (with permission)

To avoid discrimination in data due seasonal fluctuations and to minimize the effect of the covid pandemic indicators were carefully selected. Annual indicators were taken, and the period of 18 months was chosen.

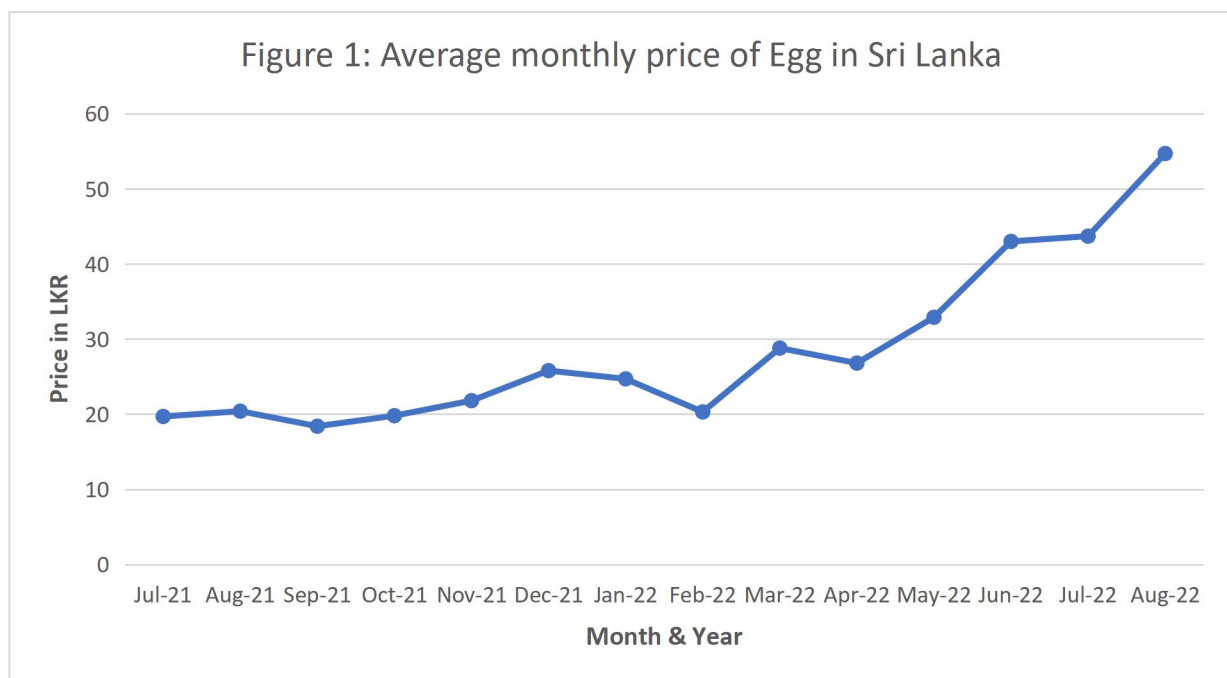
Midpoint formula was used to calculate the price elasticity of demand. The advantage of the midpoint method is that one gets the same elasticity between two price points, there is matter if a price increase or decrease. It is because the formula uses the same base for both cases.

$$|E_d| = \frac{\frac{Q_d}{(Q_{d1} + Q_{d2}) / 2}}{\frac{\Delta P}{(P_1 + P_2) / 2}}$$

$E_d$  is the coefficient of price elasticity of demand for eggs,  $Q_d$  is the amount of eggs consumed,  $\Delta Q_d$  is the change in amount,  $P$  is the eggs price,  $\Delta P$  is the change in price.

## Results & Discussion

The following graph (Figure 1) shows the change in average monthly price in Sri Lanka based on the statistics presented by Department of Statistics, Sri Lanka. There is a 177.66 increase in the monthly average price from July 2021 to August 2022. If we take the yearly average there is an increase of 113.68% from 2021 (Rs.19.00) to 2022 (Rs.40.6).



Based on the information available from Department of Animal Production and health, the domestic availability of Eggs has been dropped from 2930.41 million to 2071.78 million, which is a 29.23% drop from 2021 to 2022. Since the egg import for domestic usage was not permitted during that period the reduction is not compensated by import as well. Based on the same information per capita availability of eggs are reduced from 132.30 to 93.40.

By applying the following equation, we can derive the price elasticity for demand.

$$\frac{\frac{Q_d}{(Q_{d1} + Q_{d2}) / 2}}{\frac{\Delta P}{(P_1 + P_2) / 2}}$$

$$|E_d| = 0.35 / 0.73 = 0.48$$

As the Price Elasticity of Demand is less than 1 we can consider demand of egg as inelastic to price.

There are some limitations in this study, as the domestic availability of eggs were less than the usual domestic demand, we can't take this situation to analyze the ideal price elasticity of the demand for eggs. Because when there is a scarcity in the market everybody tends to buy it when its available. And as this data is based on total Sri Lankan consumption it includes the high-income groups and restaurants as well, and they usually buy in high quantity and preserve when its available. So, it may not resemble the average Sri Lankan consumer. We need to have a population proportionate sample and get the information from an interviewer administered questionnaire for more accurate results which we couldn't do due to time constraints.

## Conclusion

Based on the findings, it is evident that the demand for eggs in Sri Lanka exhibits inelasticity to price changes, as indicated by a calculated price elasticity of demand ( $E_d$ ) of 0.48. This implies that consumers are relatively unresponsive to fluctuations in egg prices, resulting in a less-than-proportional change in quantity demanded in response to price adjustments. The study also highlights a substantial surge in egg prices, with a staggering 177.66% increase observed from July 2021 to August 2022. Moreover, when considering annual averages, there was a notable 113.68% rise from Rs. 19.00 in 2021 to Rs. 40.6 in 2022, indicating a significant shift in the cost of this essential commodity.

However, it is crucial to acknowledge certain limitations within this analysis. Notably, the domestic availability of eggs fell below typical demand levels, introducing a potential bias in the results. Additionally, the study encompasses various demographic groups, including high-income individuals and restaurants, which may not accurately represent the purchasing behaviors of the average Sri Lankan consumer. For a more precise evaluation, a population-proportionate sample and interviewer-administered questionnaires would be preferable, though such an approach was impeded by time constraints. Despite these constraints, the study provides valuable insights into the dynamics of egg pricing and demand in Sri Lanka.

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