Innovations

The Impact of Food Price Inflation on Child Health (Infant Mortality Rate) in Bangladesh: An ARDL Aproach

Hafsa Hakim Hillary & Roksana Akhter Lucky
Department of Economics
Mawlana Bhashani Science and Technology University
Santosh, Tangail, Bangladesh.

Corresponding Author: Roksana Akhter Lucky

Abstract

This study aims to identify child mortality in Bangladesh as a result of rising food prices from the data of 2000 – 2021.Secondary data collected from WDI is used in this study. To determine the desired results, numerous econometric time series analysis techniques have been applied, such as the Augmented Dickey-Fuller and Autoregressive Distributive Lag bounds tests. Both series are not integrated at level two, according to the Augmented Dickey-Fuller test, and the cointegration and short- and long-term relationships between the variables were demonstrated using the Autoregressive Distributive Lag Bounds testing method. These findings show that Food price inflation, fertility rate has opposingeffect on infant mortality in the long run. A 1% upsurge in food price inflation increases the infant mortality by about 0.0009442%. and a 1% increase in fertility rate increases the infant mortality by about .0033952%.The conclusions are all logically consistent, and conclusions are used to make policy recommendations. There should be increased effort by government of Bangladesh to reduce the negative correlation between rising food prices and infant mortality.

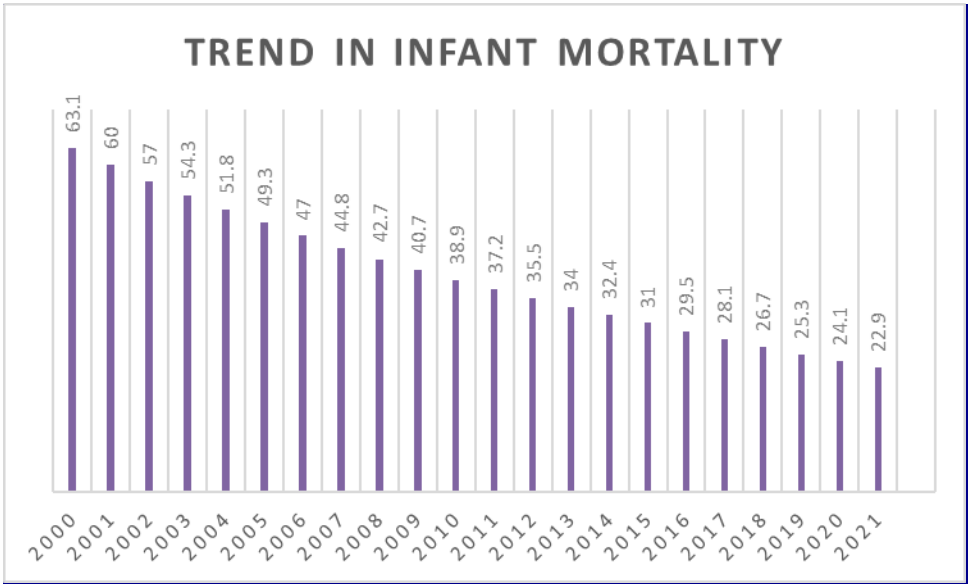
Key words: *Infant mortality rate, child health, Food price inflation, Food import, Economic growth, Fertility rate, youth population, ARDL, Cointegration, WDI.*

1. Introduction

This article's goal is to examine the connection between Bangladesh's inflation rate and infant mortality. One of the most pressing issues in the developing and underdeveloped globe is the issue of child'sdeath. Mortality rate of children is used as a tool to illustrate both the advancement of children's health and general social and economic wellbeing of a nation. A country's economic and medical situation becomes more vulnerable when child mortality rates are higher. Thus, thechild death rate falls under the scrutiny of current policymakers and researchers. To address this issue,Indicator 3.2.1 of the Sustainable Development Goals, published by the United Nations Development Programme and the World Health Organization in 2015, calls on countries to cut their infant mortality rates to under 25 deaths per 1,000 live births yearly by 2030.Nevertheless, many emerging nations continue to have increasing rates of child mortality and births, which have anadverseimpression on economic growth and expose the fragility of some health sectors in the nation. One of the South Asian developing nations is Bangladesh. There are 163.05 million people living there, andbased

on the 2020 World Development Indicator (WDI), that number is expected to expand by 1.042% annually. In the early years after the nation's independence, child mortality and fertility rates were higher. For instance, in 1973, there were 6.904 births per woman overall. and In 1000 live births, there were 219.60 children who died (WDI, 2020).The rate of child mortality has declined over time, and according to WDI, 2020, it will be 30.80 per 1000 live births in 2019. According to the BSS report from June 14, 2022, Bangladesh has made significant progress in lowering the newborn mortality rate. Bangladesh's infant mortality rate is currently 21 per 1000 live births, according to World Bank estimates, an 85% decrease from the rate of 141 in 1971, the year Bangladesh gained independence. Although the mortality rate is reducing but it's still higher and hence it's a matter of uneasy for the policy maker.There is various influence behind infant mortality. One of the burning issues that causes infant mortality is food price inflation. Reduced purchasing power brought on by higher food prices has a substantialinfluence on people's nutrition and health. The child is worst sufferer of this food inflation.

Fig 1: Trend inInfant Mortality Rate.



Source: World Development Indicator,2021

The downward trend shown above from 2000 to 2021 suggests that Bangladesh's newborn mortality rate is decreasing. However,by 2030,SDG 3.2.1 aspires to end infant and under-five mortality that could have been prevented. 1. Throughout the world, lower infant mortality to at least 12 deaths per 1000 live births.2.Reduce the under-5 mortality rate worldwide to no more than 25 for every 1000 live births. It is so abundantly obvious that Bangladesh still has an extremely high newborn death rate, and that special policy changes are required to further reduce infant mortality.

2. Background of The Study

Fuel and food prices have increased globally as a result of climate issues, pandemic attacks, and economic instability. The pandemic, the ongoing drought in Europe, the Russian invasion of Ukraine, the obstruction of

food transportation, and the disruption of the food supply chain have all given food security and self-sufficiency a new dimension. This year, India decided to prohibit the export of wheat and sugar in order to achieve its aim of producing and storing enough food. The price volatility of food has significantly increased during the last 20 years. With the covid-19 epidemic, the Russia-Ukraine war, and other factors driving up food costs in late 2021, we are currently experiencing the third international price increase in 15 years.In march 2022, the UN food price index reached a record high, 116% higher than its value in 2000 and even higher than the peaks reached during the 2007–2008 financial crisis. Although domestic food inflation is still high by historical norms despite recent drops in international prices, this is largely due to economic mismanagement, armed conflict, or weak governance. The recent Food Security Update from the international lender cited "the high incidence of climatological shocks, depletion of foreign currency reserves, and devaluation of local currencies" as reasons for South Asia's high food inflation. It was discovered that in December 2022,Bangladesh had a consumer price inflation rate for food of 7.9%. Industry analysts and economists predicted that in 2022, a significant share of individuals will have to make dietary compromises as a result of high pricing.Due to the unchecked food inflation, customers with limited purchasing power eliminate food staples like beef, chicken, eggs, and fish from their regular menu. Those on fixed incomes continue to cut back on their protein intake, which is detrimental to public health.People now run the risk of becoming undernourished. Concern over global food security has grown as a result of the sharp increases in national food costs, which could increase the likelihood of starvation and diminish household intake of nutrient-dense foods, which could harm population health and raise mortality. Exposure to food insecurity throughout the first few years of life and throughout pregnancy is linked to an increased risk of child stunting and short-term wasting.

To attain the goal of the SDG, Bangladesh will need to keep infant mortality, fertility, and food prices under control. In Bangladesh, it is difficult to find articles on child mortality, and those that are available ignore the adverse outcomes of increasedfood costs and children's health. Consequently, in this work we tried to fill the vacuum in the literature. The long- and short-term associations between the newborn mortality rate and food price inflation will be studied in this study.

3. Review of Literature

Studies have looked at the effects of the current worldwide food crisis and the world economic downturn on people's diets and general health. In order to evaluate the likely impacts of rising food costs due to the financial crisis on a global scale on food intake, nutrition, and health, Brinkman et al. look at a variety of transmission routes.They demonstrate that food prices in Haiti, Nepal, and Niger were negatively correlated with a food consumption score that measures frequency of diet and variety, and they contend that the high price of food and the global financial crisis put many vulnerable households in developing nations at risk of malnutrition.(Christian, 2010) examines and expands on a variety of nutritional routes through which the current monetarycatastrophe and the ensuing rises in food costs may distress infant and child mortality. He does this by drawing on knowledge from prior crises. High food prices, in the opinion of Brinkman et al., have the potential to undo a lot of the advancement made in achieving the Millennium Development Goals (MDGs), which aim for a two-thirds decrease in under-5 child mortality (and infant mortality) between 1990 and 2015 (Goal 4).In their analysis of previous food price shocks and their recognized impacts on nutrition, Darnton-Hill and Cogill (2010), also emphasized how these shocks affect mother and child nutrition at first, primarily by reducing dietary quality, increasing micronutrient deficiencies, and concurrentlygrowing infectious illness morbidity and death at the same time.According to research by Lee et al. (2016), a household's food supply

security can be immediately jeopardized by high and rising food prices, endangering public health. The least developed (LDCs) countries in developing nations, in particular, infant and child mortality rates are increasing due to the negative consequences of increased food prices on nutrition.Schoenfeld et al. (2010) conducted a study on the potential additional impacts of contemporary inflation on the alimentary status of low-income South African households. Given SA's current poor nutritional state and the price of a healthy, diversified diet in relation to the average household income is supplied, along with any potential reduction in portion sizes of essential items as a result of increasing food prices. **Afzal et al. (2013)** investigated that the Millennium Development Goals may be hampered by Pakistan's high food prices, which also pose a serious danger to the socioeconomic well-being and food security of Pakistan's most vulnerable citizens. This study shows that while food inflation is bad, both short- and long-term economic growth are directly impacted by education. Using a Cox proportional hazard model,in 2020, Kidane and Woldemichael evaluated how exposure to food inflation affected newborns' and young children's chances of survival. According to the research, exposing fetuses to a 10% increase in the price of staple foods while they are still developing lowers their likelihood of survival by about 5.4%. **Arndt et al. (2016),** obtained that the scarcity of food, brought on by the crisis in food and fuel prices along with a short agricultural production year, was significantly worsening undernourishmentamong young children (under five) in Mozambique. **Akinloet al. (2016)**, assessed that infant and under-five mortality is significantly negatively impacted by rising food prices. Using a remarkably sizable data set of 1.7 million births in 59 underdeveloped nations, Baird et al., n.d. explored whether short-term variations in aggregate income have an impact on infant mortality.The analysis'sfindingsrevealed a noteworthy correlation betweeninfant mortality and GDP per capita.According to Jensen and Miller's 2008 analysis, households were able to switch to less expensive items, and because of government interference in grain markets, domestic prices of staple foods stayed low. As a result, the total nutritional impact of the global price increase was minimal. **Bedane, n.d.** findings indicate that a rise in food prices has anundesirable and substantialinfluence on children's nutritional outcomes.**Rising-Food-Prices-Zambia-2014, n.d.** demonstrate that rising cereal prices and other goods, such as chicken, beans, and eggs, which are high in proteins and energy, negatively affect kids' z-scores for height-for-age. **(Usman et al., n.d.)** demonstrated that Neonatal, baby, and under-five child mortality increased by 0.83%, 0.80%, and 0.64%, respectively, for every percentage point increase in actual food prices. The health of the mother and the accessibility of resources for other childcare-related inputs are two ways that rise in food prices may impact the healthiness of newborns, babies, and children.**Jiang & Liu (2022**), supports the hypothesis under test that rising inflation raises infant mortality. This is because inflation lowers real incomes while increasing the rate of goods and services, which lowers the standard of living for households. **Alves &Belluzzo (2004)**, determined three main factors influencing children's health in Brazil are poverty, inadequate sanitation, and education.**Bourne (2014),**used inflation to gauge the economic crisis and found that, there is a curvilinear link between general mortality and inflation, butthe general mortality rate is changing more slowly than inflation.

There are also several empirical studies on child mortality indicators conducted in Bangladesh (see **Chowdhury et al., 2011; Golam et al., 2010; Islam et al., 2021; Khan & Awan, 2017; Rahman et al., 2021,** among others**)**.Using information from the Bangladesh Demographic and Health Surveys (BDHSs) conducted in 2007, 2011, and 2014, According to Khan and Awan's (2017) research, factors such as the child's sex, age of the mother at birth, her job position, the duration of the birth interval, and the parents' education were significant predictors of risk of child death.Rahman et al. (2021) used data from two repeatedly cross-sectional Bangladesh Demographic and Health Surveys (BDHS) for the years 2011 and 2014 to implement a Cox's proportional hazard model with robust standard error (SE) that corrects for the complex survey design characteristics in order to ascertain how the risk factors associated with infant

mortality alter their paths. There was no noticeable difference in neonatal survival rates between rural and urban locations. Infant mortality prevalence and the socioeconomic status of the household were highly associated. It was found that infant mortality rates were consistently higher in poor households than in wealthier ones. Infant mortality rates did not significantly differ by family size. More maternal education and media exposure led to a reduction in newborn mortality, whereas maternal work status had a detrimental consequence on baby survival.While the association flipped the other way for moms older than 27, it was related with a lower newborn death rate for mothers under the age of 27. Golam et al., 2010 study provides an insight at district-level infant mortality rates in Bangladesh in 2007.According to the data from the Statistical Yearbook of Bangladesh 2008 and the Sample Vital Registration System 2007, this study inspects the pattern and yearly rate of the decline in infant mortality between the years of 1998 and 2007 and establishes causal relationships. The best way to cut infant mortality is by immunization, especially in areas with lower quantile populations. The percentage of people who live in houses with access to electricity, the density of roads, and the number of women working in family planning have prospective and statistically substantial effects on infant death rates, which are -0.25%, -0.22%, and -0.58%, respectively.Islam et al, 2021finding the socioeconomic and demographic factors that influence mortality rate in children under five in Bangladesh was the study's main goal. Bangladesh Multifunctional Indicator Cluster Survey (MICS) 2019 cross-sectional secondary data that are nationally representative are used in this research. Raising mothers' educational attainment could lower mortality. Prenatal care may also lower the infant mortality rate.

By taking into account the significant and inclusive food price inflation, food import, economic growth, fertility rate, and percentage of people under the age of 15, particularly in the instance of Bangladesh, the findings did not offer a unified, compelling, or definitive approach on the child mortality rate.

These are the primary writing gaps. Our current research is an exhaustive endeavor to fill the knowledge vacuum and provide useful recommendations on the policy consequences of food price inflation, food import, economic growth, fertility rate, and percentage of young population indicators in the health sector, particularly child health.

4. Objective of The Study

The study's particular goals are as follows:

i.To determine the impact of increased food costs in Bangladesh on infant mortality.

ii. To look into the influence of rising food price on mortality rate of infant in the short- and long-term.

iii. To analyze the policy implication for Bangladesh government to abate infant mortality rate and foster economic growth.

5. Data Description and Methodology

5.1 Data Sources and Description of Variables

To inspect the impact of intensifying food prices on children's health (infant mortality rate), this study uses five variables along with food price inflation. In our study infant mortality rate is the Dependent variable. The infant mortality rate is the percentage of newborns that die before reaching one year old per 1,000 live births

in a given year, estimations produced by the Inter-agency Group on Child Mortality Estimation of the World Bank, UNICEF, WHO, and UN DESA Population Division. Our independent variables are the youth population, age 0 to 14 (% of total), food price inflation, food import, per capita GDP growth, fertility rate, and youth population.The consumer price index (CPI) measures the cost of buying a basket of products and services for the typical consumer, which may be fixed or modified on a regular basis, such as annually. Which monitors inflation, according to WDI 2020.How many kids there are that would be born to women is shown by the overall fertility rate., which can be defined. Food Import is accounted as a proxy of food security.The rise of Bangladesh's per capita gross domestic product (GDP) serves as a substitution for the country's economic development, (WDI). The gross domestic product can be calculated as the GDP divided by the midyear population. youth population (% of total), ages 0 to 14.Since it is expected that a high proportion of young individuals in the general population will result in a reduced infant mortality rate, this variable acts as a control variable (Source: World Bank, World Development Indicators (WDI)).The World Bank's time series open data for the WDI (2020) for the years 2000 to 2020 were used to conduct our analysis for the whole of child mortality, food inflation, food import, per capita GDP growth, fertility rate, young population age 0-14(%0f total). Few of the missing value of food import indicator were taken by interpolating.

5.2 Data and Methodology

Theoretical or Empirical Rationale for Choosing the Explanatory Variables

The hypothetical or pragmatic basis for the choice of the explanatory variables in our inquiry can be described by two socioeconomic concepts: the modernization theory and the developmental state theory.According to proponents of the modernization theory (Frey & Field 2000; Frey & Cui 2016; Shen & Williamson, 1997; Rostow, 1960), modernization reduces child mortality through boosting economic production and keeping up with advancements in education, health status, and other areas. Due to this, we have used per capita GDP growth as a proxy of economic development, Food Import as a proxy of food security, food price inflation, and increasing youth population (0-14;%of total). According to proponents of the developmental state theory (Evans, 1979, 1995; Frey & Field, 2000; Shen & Williamson, 1997; Frey & Cui, 2016),When states allocate resources and manage them in a way that promotes public health and education, child mortality reduces. For this reason, we employed the female total fertility rate in our research.

5.3 Estimation Technique

To determine whether the variables that have been chosen are stationary or not, we first apply the unit root test to see how the inflation of food prices affects the infant mortality rate. A modified Dicky Fuller test is used to prevent erroneous regression results. Then we will use VAR Lag Selection Criteria to select the best lag for the ARDL bound test. The ARDL bound test approach is then cast-off to establish whether there is a long-term affiliation between the variables in the following phase.After then, the variables' short-run dynamics and long-run equilibrium will be determined using the Error Correction Model.The model would be diagnosed in this investigation utilising traditional techniques. The ARDL Bounds testing method's underlying and fundamental premise is that the mistakes in equations must be uniformly and randomly distributed. The normalcy is examined using the Skewness kurtosis test. The heteroscedasticity problem is identified using the Breusch Pegan test. The Breusch-Pagan-Godfrey Serial Correlation LM test and White test will next be used to

analyse the autocorrelation of the model.The constancy of the model would be evaluated using the recursive CUSUM and CUSUM of squares tests, per Pesaran (1997) and Brown et al. (1975), respectively.

5.4 Econometric Model Specification

In econometric form,$infant_t = \beta_0 + \beta_{1infln_t} + \beta_{2imp_t} + \beta_{3growth_t} + \beta_{4fert_t} + \beta_{5youth_t} + \varepsilon_t$.

In order to obtain the direct elasticity from each variable's estimated coefficient, we transformed variables infant, imp, to natural log form. Taking natural logarithm we can write the equation as: $lninfant_t = \beta_0 + \beta_{1infln_t} + \beta_{2lnimp_t} + \beta_{3growth_t} + \beta_{4fert_t} + \beta_{5youth_t} + \varepsilon_t$ (1)

Here,$lninfant_t$ denotes logarithm of infant mortality rate,β_0= intercept, $\beta_1, \beta_2, \beta_3, \beta_4$ &β_5= partial regression coefficient and $\beta_{1infln_t} + \beta_{2imp_t} + \beta_{3growth_t} + \beta_{4fert_t} + +\beta_{5youth_t}$ are inflation,food import,per capita GDP growth,fertility rate,young population (age 0-14;%of total) t=time period (2000-2020)ε= stochastic error term.

ARDL Bound Test for Cointegration:

To estimate the model specified in equation (1), we use an autoregressive distributed lag model (ARDL) approach to cointegration. The following mathematical model is constructed for analysis:

$$lninfant_t = \alpha_{10} + \sum_{i=1}^{a} \beta_{11} lninfant_{t-i} + \sum_{i=0}^{b} \beta_{12} infln_{t-i} + \sum_{i=0}^{c} \beta_{13}\, lnimp_{t-i} + \sum_{i=0}^{d} \beta_{14}\, growth_{t-i} + \sum_{i=0}^{e} \beta_{15}\, fert_{t-i} + \sum_{i=0}^{f} \beta_{16}\, youth_{t-i} + \alpha_1 lninfant_{t-1} + \alpha_2 infln_{t-1} + \alpha_3\, lnimp_{t-1} + \alpha_4 growth_{t-1} + \alpha_5 fert_{t-1} + \alpha_6 youth_{t-1} + \mu_t \quad (2)$$

The terms in the model with summation signs correspond to the short-term dynamics of error correction, whereas the terms with β refer to the long-term interactions between the variables. One or more information criteria, such as HQ, AIC, SC, etc., would be used to calculate the model's maximum lag lengths a, b, c, and d. The following would be the null and alternative hypothesis for the equation previously mentioned: Cointegration does not exist in H_0; it does in H_1.In order to test the null hypothesis of the model, the F-test would be utilized to ascertain the joint significance of the coefficients of the lagged values of the variables. They provided lower and upper constraints on the crucial values in this method for a variety of scenarios. They explain that whether or not the estimated F-statistic is below the lower bound, there is no cointegration between or among the variables. A long-term relationship is ongoing if it exceeds the highest critical value. If it is within the boundaries, the test's outcome is ambiguous. Short-run dynamic parameters will be computed in this analysis by using the standard error correction mechanism as shown below:

$$lninfant_t = \alpha_{10} + \sum_{i=1}^{a} \beta_{11} lninfant_{t-i} + \sum_{i=0}^{b} \beta_{12} infln_{t-i} + \sum_{i=0}^{c} \beta_{13}\, lnimp_{t-i} + \sum_{i=0}^{d} \beta_{14}\, growth_{t-i} + \sum_{i=0}^{e} \beta_{15}\, fert_{t-i} + \sum_{i=0}^{f} \beta_{16}\, youth_{t-i} + \pi_1\, ECT_{t-1} + \mu_t \quad (3)$$

Under the error correction paradigm, ECT is the specific error correction term.Results would, as previously mentioned, illustrate the pace of recovery to the long-run equilibrium following a short-run shock.The error correction term (ECT) coefficient's negative and significant value, which also expresses long-run causality, and the other explanatory variables' significant coefficients, which indicate short-run causation, respectively. As this term's positive value denotes increasing departure from the long-run equilibrium.

6. Empirical Result Analysis and Discussions

6.1 Descriptive Analysis

Table:1 Data Description

variables	Obs.	mean	Std.dev.	Min	Max
lninfant	22	3.642588	0.3049074	3.164293	4.144721
Infln	22	6.276915	2.143755	2.007174	11.39517
Lnimp	21	2.822332	.1093699	2.631689	3.111831
Growth	22	5.999312	1.117589	3.448021	7.881915
Fert	22	2.451773	.4177483	1.979	3.218
Youth	22	32.42751	3.403875	26.45298	37.30871

*Source:*Author's estimation

Infant mortality is the dependent variable, and the independent variables are food price inflation, food import, per capita GDP growth, fertility rate, and young population (age 0-14; overall). **Table 1** provides descriptive data, including mean and standard deviation with minimum and maximum values.

6.2 Unit Root Testing

We determine whether the designated time series data are stationary formerly doing the ARDL bound test.Because the computed F-statistics supplied by Pesaran et al. (2001) are only valid when the variables are I (0) or I (1), it is essential to make sure that the variables are not stationary at an order of I (2). To determine whether there are any unit roots present in this data, we utilised the extended Dickey-Fuller test. Here, the null hypothesis that the test variable has a unit root is compared to the alternative hypothesis that it does not. The ADF unit root test results are shown in **Table 2**.

Table:2 Unit Root Test Results

Variables	t-statistics	Critical value			p-value	Remarks
		1%	5%	10%		
Lninfant	-1.607	-2.567	-1.740	-1.333	0.0632*	I (0)
Infln	-3.017	-2.567	-1.740	-1.333	0.0039***	I (0)
Lnimp	-2.865	-2.583	-1.746	-1.337	0.0056***	I (0)
Growth	-2.360	-2.567	-1.740	-1.333	0.0153**	I (0)

Fert	-2.426	-2.567	-1.740	-1.333	0.0133**	I (0)
Youth	4.270	-2.539	-1.729	-1.328	0.9998	NS
▲youth	-2.219	-2.583	-1.746	-1.337	0.0206	I (1)

Source: Author's estimation

Notes: Mackinnon approximate p-value (5%),

Significance for 10%, 5%, and 1% is denoted by (*), (**), and (***), respectively.

If the p-value is less than 0.05, the non-stationarity null hypothesis is rejected, indicating that the series is stationary. The results of Table 2 show that, with the exception of young, all variables are stable at values that reject the null hypothesis of nonstationary or unit root. Once this has been determined, the next step is to run stationarity tests on the variables after determining their initial difference. The findings in Table 2 demonstrate that all the variables have achieved stationary behavior following a single differencing. All of the study's variables are integrated at the order I (0) level, with the exception of young, which is stationary at I (1As a result, the variables in this study's order of integration are a combination of I (0) and I (1), which satisfies the requirement for using the ARDL approach. Therefore, the autoregressive distributed lag (ARDL) technique to co-integration is acceptable for this study.

Finding the unit root tests allows us to estimate equation 2 and test for the existence of a long-term relationship or cointegration between the variables. Due to the fact that all of the involved series are annual, we limit the maximum lag orders in our model to two, or i=2.The appropriate number of delays is established using the Akaike info criterion (AIC). The lag order that minimizes the AIC is ARDL (1,1,0,0,0,1).

6.3 Test of cointegration

Number ofindependent variable **K=5**

Table:3 F-Bounds Test and T-Bounds Test for Cointegration relationship

F-statistics=6.429	**Lower bound, I(0)**	**Upper bound, I(1)**	**T-statistics=-5.622**	**Lower bound, I(0)**	**Upper bound, I(1)**
Critical values			**Critical values**		
10%	2.26	3.35	10%	-2.57	-3.86
5%	2.62	3.79	5%	-2.86	-4.19
2.5%	2.96	4.18	2.5%	-3.13	-4.46
1%	3.41	4.68	1%	-3.43	-4.79

Table 3 lists the calculated F- statistic, T-statistics, and critical values for the lower and higher boundaries. The F-statistic (6.429) exceeds the upper bound critical value I (1) at the 1% level of significance. As a result, the null hypothesis may be disproved, and the results demonstrate that our variables are related over the long term. The T-statistic (5.622) at the 1% level of significance is below the upper bound. Therefore, it is possible to rule out the null hypothesis, and the findings show that our variables have a lasting link.

6.4 Short run and long run model

Table4: Long run and short run estimation

	Variables	coefficients	t-statistics	p-value
ADJ	**Infant**	-1.23988	-5.62	0.000***
LR	**Infln**	.0009442	5.35	0.000***
	Lnimp	0.0015545	0.66	0.524
	Growth	-.0003878	-1.91	0.086*
	Fert	.0033952	2.87	0.017**
	Youth	-.0132158	-4.12	0.002***
SR	**Infln D1**	-.000658	-2.96	0.014**
	Youth D1	-.0167709	-2.80	0.019**

*Source:*Authors estimation

6.5 Post estimation diagnostic tests

6.5(I) Diagnostics tests

Table 5: post estimation results

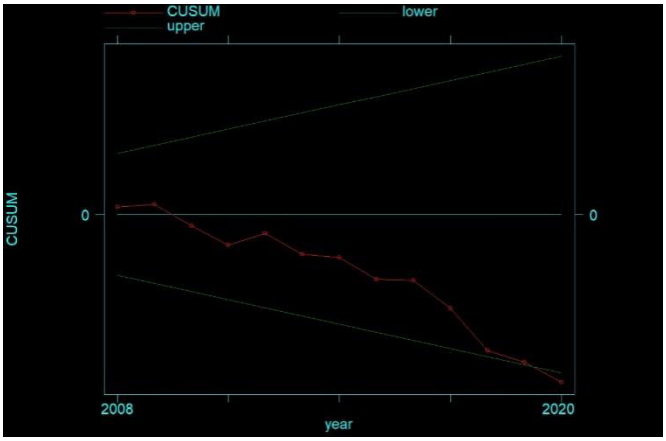
Diagnostics	Statistics	Interpretation
Skewness	$Chi^2 = 0.43(0.4425)$	Normally distributed
Kurtosis	Chi^2 1.62(0.4984)	Normally distributed
Durbin Watson d statistics	d-stat = 2.057195	No serial autocorrelation
Heteroskedasticity Test **(I)Breusch-Godfrey LM test** **(II)Breusch-Pagan test**	(I) Chi^2 =8.143(0.0865) (II) Chi^2 =0.92 (0.5298)	(I)Homoskedasticity (II)) Homoskedasticity

Source: Author's estimation

6.6 (II) Structural Break Test

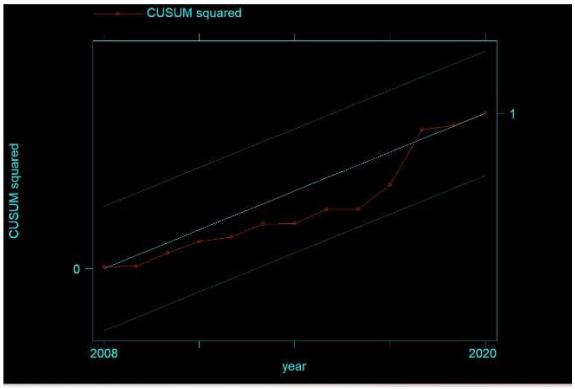
The cumulative sum and the 5% critical line are plotted simultaneously

Figure 2: plot of CUSUM test



Source: Author's estimation

Figure 3: plot of CUSUM square test



Source: Author's estimation

Figure 2 and 3 represent that CUSUM and CUSUM square are situated between two critical lines. Therefore, the estimated model is structurally stable.

7. Conclusion and Recommendations

In this article, we focused primarily on the association between rising food prices and infant mortality. A rise in food price inflation results in an increase in infant mortality because infant mortality and food price

inflation are negatively connected in the short term but positively correlated over the long term. Keynesian consumption function can be used to understand the short-term relationship. According to Keynes, when income is low compared to recent levels, people will maintain their standard of living by not lowering consumption, and when income is high, consumption won't increase proportionately. A person still needs essential items even if they have no money, such as food, shelter, utilities, and healthcare. These expenses are regarded as autonomous or independent because they cannot be avoided independently of the restricted personal income. This can be accomplished by withdrawing funds from a savings account, utilizing a credit card cash advance, or borrowing against future income (via a payday or regular loan). As a result, the short-term continuation of our infant mortality rate's declining trend might be expected. Long-term income fluctuations affect people's purchasing power, making it difficult for them to access healthy food and medical treatment. The infant child ultimately suffers the most. A high infant mortality rate can be caused by inadequate nutrition or proper diet.

Our findings have policy implications that comprise enhancing the volatility of food costs in order to preserve the existing infant mortality trend, which is declining. The role of food price inflation, economic growth, fertility rate, and youth population should be appropriately analyzed to assure the sustaining of the decreased infant mortality rate.It's crucial to attain food security and lessen volatility in food prices. The supply of food must be raised in order to guarantee food security and lower the volatility of food prices. To guarantee balanced economic development in Bangladesh,the overall fertility rate ought to be maintained at equivalent levels. To provide a better environment for kids, sustainable economic growth that doesn't harm the environment is necessary.

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