ECONOMIC GROWTH AND INFLATION: INDIA'S RESILIENCE IN THE VUCA WORLD

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Abstract: Covid-19 pandemic has changed the experience of the whole world to tackle the challenges of the VUCA that the world is facing currently. Unforeseen conditions like pandemics, crisis, and wars lead to instability in the economy negatively impacting economic growth. The pandemic shook the whole world and led to a massive economic shutdown. The economies faced high volatility, uncertainty, complexity, and ambiguity due to the unforeseen condition impacted by Covid-19. As the world was revamping from the huge impact of the pandemic, the Russia-Ukrainian war further aggravated the VUCA situation for the countries. This situation has increased inflationary pressure on the economies reducing the value of money. The current study mainly focuses on the effects of inflation on the Indian economy and the strategies for resilience in the VUCA world. Trend analysis has been done to capture the CPI and WPI (2010-2022), and to measure the relationship between inflation and economic growth. Also, the economic growth of the emerging and developed economies during Covid-19 has been analyzed. A correlation and linear regression analysis is done to understand the impact of inflation on the economic growth of India. The result of the correlation and regression analysis indicates inflation has negatively impacted the economic growth of India, with higher inflation, economic growth tends to slow down.

Keywords: Inflation, economic growth, CPI, WPI, Comparative analysis, VUCA

1. INTRODUCTION

In the words of Peterson, "The word inflation in the broadest possible sense refers to any increase in the general price level which is sustained and non-seasonal in character." Similar to this, "deflation" is the opposite and unusual reduction in this basket of a goods price index. A decline in a country's currency unit's buying power is referred to as inflation.

Inflation increases the costs of goods and services, which decreases the purchasing power of a currency unit. It affects how much it costs to live in the country. Given the increased cost of living, which also raises prices, high inflation is a major barrier to growth. To encourage spending and discourage saving, it is necessary to have a certain level of inflation in the economy. People have to invest in their money because they have lost value over time. Investments ensure that a country will grow its economy. Global trade commodities, which include consumer goods in the form of vegetables, petrol, foodstuffs, fruits, milk products, etc., have often led to inflation in India. India's central bank is attempting to depreciate the value of the Rupee against the dollar several times. This was carried out following the Pokhran bombings in 1998, which propelled India for 25 years into the League of the World's Elite. This is identified as the primary cause of inflation, instead of blaming domestic inflation. During the 1970s and 80s, inflation rates were much higher than those which had been observed in previous periods.

The letters VUCA stand for "volatility, uncertainty, complexity, and ambiguity." To characterize the unpredictable environment we live in, this phrase was initially used in the military in the 1990s and then adopted by organizations all over the world. Volatility is defined as the unexpected or abrupt shifts in consumer behaviors or market conditions brought on by unknowable factors. It is difficult to make wise decisions when there is uncertainty about what will happen in the future. When a situation can be observed or understood in different ways, it is said to be ambiguous, which makes it challenging to choose the appropriate course of action. The COVID-19 epidemic, currency fluctuations, inflation, and changes in trade policies have all presented obstacles for India's business environment in recent years. Additionally, there is perpetual ambiguity regarding India's commercial laws and regulations. Its social and cultural problems, such as caste, gender, and religion, present additional difficulties. Our nation is pursuing several actions to solve these issues, including investing in technology, emphasizing sustainability, forming alliances, and enhancing its infrastructure. To encourage economic growth and to create a more favorable and stable business environment, it has also implemented several financial initiatives, including raising investments, helping new businesses, offering support to financial institutions, encouraging digital payments, etc. These steps attempt to improve business environment security while encouraging innovation and entrepreneurship.

In India, the Consumer Price Index (CPI) and the Wholesale Price Index (WPI) are the two indices used to monitor inflation. The CPI examines retail inflation for goods and services across 260 different nations. It is based on changes in the prices people are paying for things. The Ministry of Statistics, the Ministry of Program Implementation, and the Ministry of Labor are responsible for gathering and recording this data. The WPI, meanwhile, examines the inflation of 697 different commodities' goods and services. It is based on the price fluctuations for products and services that customers purchase from factories in large quantities or at wholesale rates.

According to the economic survey, the GDP baseline scenario for growth for 2023-24 is expected to be 6.5% at a nominal rate keeping inflation into account which is forecasted at 11%. Furthermore, the businesses and financial sectors would strengthen their balance sheets ultimately leading to a strong loan dispersal and capital investment cycle in FY2024 resulting in the rapid development of the economy.

In 2022, the GDP increased by 4.4% compared to the previous quarter of 2021. In contrast to the median expectation of 4.7% reported in a Bloomberg survey and the second-quarter gain of 6.3%. While the preceding year's GDP growth was revised up to a 9.1% increase, the ministry kept its 7% growth forecast for the upcoming year.

OBJECTIVES

1. To understand the trend and pattern of economic growth in India.

2. To analyze the impact of inflation on economic growth.

METHODOLOGY

The influence of inflation on economic growth in India is examined in this study using secondary data from the RBI and the World Bank together, Trend Analysis of the Consumer Price Index (CPI), Wholesale Price Index (WPI), and a thorough literature review. Further, a correlation test is done to establish the relationship between the indicators, inflation, and GDP growth of India.

Also, to analyze the impact of inflation on the GDP growth rate of India, a linear regression model is framed.

2. LITERATURE REVIEW

Sarel, M., (1996) conducted a study on the impact of inflation on economic growth. For his work, he employed regression models. When inflation is low, economic growth is not significantly harmed and may even be marginally positively impacted, according to the study's initial findings. Yet, high inflation has a detrimental impact on growth. Its adverse effect is substantial, statistically significant, and very strong. Mallik, G.et al (2001) The study used yearly data gathered from the International Financial Statistics of the International Monetary Fund to analyse the relationship between GDP growth and inflation in South Asian nations, including Bangladesh, India, Pakistan, and Sri Lanka. Techniques for modeling error correction and co-integration were used in the analysis which showed a positive correlation between inflation and economic growth. Ahmmed, M.et al (2001) analyzed the relationship between inflation and economic growth using yearly data from the World Bank Development Index. Co-integration and the Error Correction Model are the models that were used in this investigation. The result of this study is that the result exhibits that developed countries have negative coefficients of inflation and growth when compared to developing countries. Gokal, V.et al (2004) conducted a study on the connection between inflation and economic growth. They analyzed several different economic theories. They provided a brief analysis of the theoretical foundations behind the links between inflation and growth as well as an analysis of the policy considerations for central banks when determining the impact of inflation on growth with the help of non-linear least squares (NLLS). The result of the study is to maintain low inflation to foster high economic growth. Salian, V, P. et al (2011) carried out research on the empirical connection between inflation and economic expansion in India, based on information gathered by the Reserve Bank of India (RBI), Co-integration and error correction models were employed in the study. The final analysis of the study shows a negative association between India's GDP and the rate of inflation growth. Furthermore, they assert in their conclusion that inflation hinders rather than aids a nation's development. Joshi, M.et al (2020). Understanding the VUCA issues dot-com businesses have experienced over the past ten years and the foresight needed to survive in a chaotic world are the main goals of this research. BookMyShow was chosen by the case selection method as an influential incumbent entrepreneurial company in the dotcom sector. With a focus on new leadership literacies emphasizing foresight and innovation, the article offers a conceptual framework and advice for organizations to embrace a strategic combination of hindsight, insight, and foresight, using BookMyShow as a case study. Sinha, D.et al (2020) researched how the existence of humanity is in a condition of dynamic equilibrium which results in unpredictable and ongoing changes in the world that we live in. Volatility, Uncertain, Complex, and Ambiguous environment is referred to by the abbreviation VUCA. This paper aims at how the corporate world has to develop unique strategies to overcome various challenges posed by these characteristics by analyzing these difficulties and considering potential solutions. The study recommends that organizations should develop contingency plans and invest in technology and human capital to manage the uncertainties of the VUCA world. Minciu, M.et al (2020) investigate the variables that affect decision-making in the VUCA environment, where businesses deal with a dynamic and demanding setting. The study entails examining the responses to an online survey that was distributed to researchers and students from various fields of study. The study emphasizes the necessity for modern decision-making procedures that can adapt to the VUCA world and guarantee economic performance in the face of setbacks. Dhillon, R.et al (2021) in their research on strategies to respond to the VUCA world aims to explore what strategies the business needs to adapt to survive this disruptive environment. The purpose of this paper is to assess the significance of organizational development and human resource management in assisting organizations in becoming VUCA-ready. Pote, T. R.et al (2021) conducted a study on the impact of inflation on the Indian economy. Their research is based on the effects of inflation on the Indian economy and inflation policies. The CPI, WPI, and core inflation are the paper's highlights since they examine the impact of recent inflation on the economy of the nation. The results of this conclusion are that the government should take tremendous, effective, and long-term policies to control inflation as this majorly affects the poor and middle-class sectors in the economy. Khalatur, S.et al (2021) measured the influence of the VUCA business climate on the financial stability of banks. Regression equations and multifactor regression analysis are used to assess the model using data from many Eastern European nations over ten years, from 2010 to 2019.The results of this study is that the most significant factors affecting financial stability in the VUCA world are volatility and ambiguity. They have also suggested that banks operating in VUCA conditions should focus on developing a flexible and resilient business model that can adapt to changes quickly. Additionally, the study recommends that banks should invest in technology, risk management, and innovation to maintain financial stability in the VUCA world. Dima, G.et al (2021) The study concentrated on the impact of the COVID-19 pandemic on stress at work and burnout among Romanian social workers in the volatile, unpredictable, complex, and ambiguous (VUCA) world. The VUCA theoretical framework and the jobs demand and resources model (JD-R) were used in this study. The results of this research are that the primary cause of work stress for social workers during the pandemic, according to the authors were workload, lack of resources, infection concerns, and increasing duties. The study also showed that social workers were more susceptible to burnout if they reported having higher levels of job stress. Begum, S. et al (2022) examined the impact of inflation on the consumer's expenditure pattern in India by implying secondary data analysis. A correlation test is used to measure the relationship between both the variables and the result showed both indicators are strongly negatively correlated. Atigala, P. et al (2022) made a study on how inflation affects economic growth. The Auto Distribution Lag model is used as the estimate approach in the study to look at how the rate of inflation affects Sri Lanka's economic development. Furthermore, they also deduce that as economic growth declines as inflation rises, there is a short-term inverse relationship between inflation and growth in the economy. Begum, S & Goyal, R. (2023) conducted a study to analyse the impact of inflationary pressure on the growth of MSME sectors and overall economic growth. Based on secondary data collected from different published reports, a correlation test and regression analysis were done. The result of the analyses emphasized the negative relationship between the inflation and MSME sector's growth rate.

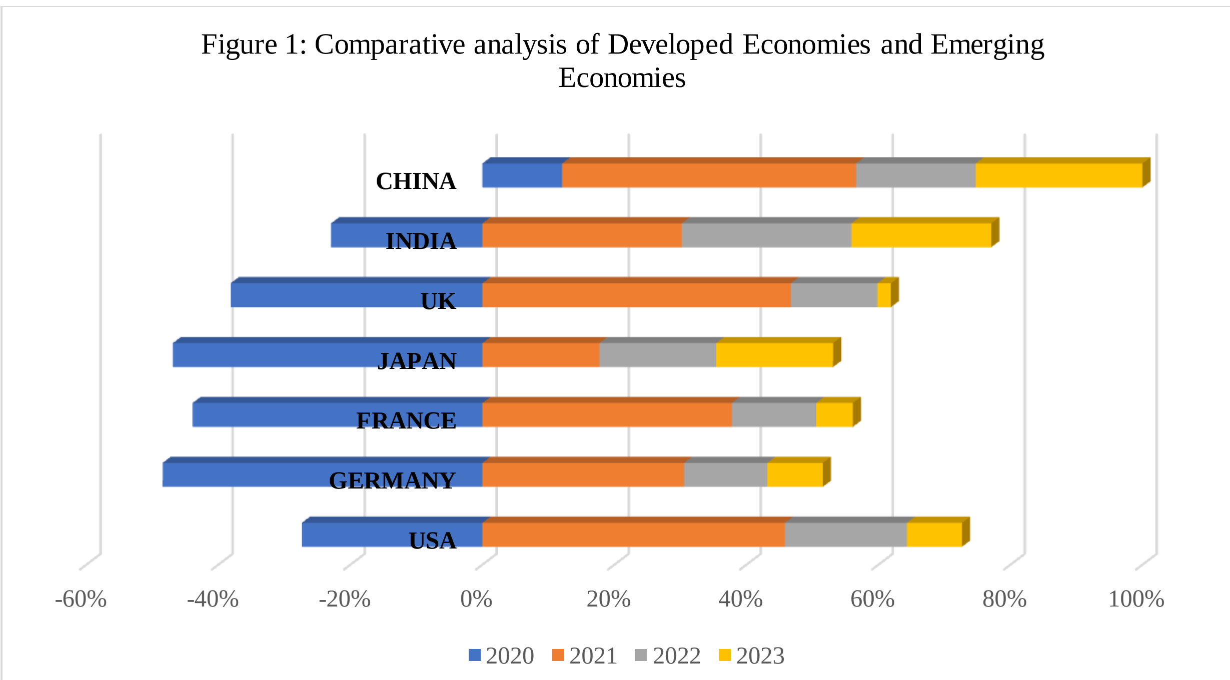
3. RESULT AND ANALYSIS

3.1 Comparative analysis of developed economies and emerging economies.

From the real GDP level before the pandemic in 2019–20, the Indian economy has fully recovered in 2021–22. Real GDP growth in 2021–22 increased by 8.7%, or 1.5%, over real GDP growth in 2019–20. According to the finance minister, to stimulate the economy's consumption and control inflation, the federal government increased the central excise duty on gasoline and diesel by Rs. 8 and Rs. 6 per litre, respectively which came into effect from May 2022 while supporting those with low and moderate incomes in the process. More vehemently than during previous tightening cycles in industrialized economies, the central banks of the number of emerging markets and developing countries have increased interest rates. Severe drops in stock prices are a result of tighter global financial conditions, which have a negative impact on GDP, and greater longer-term borrowing costs, such as rising mortgage interest rates. The slowdown in China's economy has caused more supply chain disruptions worldwide. Transportation limitations and COVID-19 outbreaks have had a substantial impact on economic activity as part of the government's zero-COVID objective. The war in Ukraine added to the worsening situation worldwide and the threat of shock waves forced Russia to suspend its energy production generally, depending on the reallocation of resources, and the moving of fuel supplies. Shortly, as supply disruptions have increased in frequency, there has been an increase in demand for considerable energy and commodities costs.

Since the Russian invasion of Ukraine began, 9 million people have fled the country, and the death toll, property destruction, and humanitarian costs of the conflict are all rising. Increased financial sanctions on Russia since April 2022 from major industrialized economies led the European Union to decide to apply import restrictions on coal. The April 2022 World Economic Outlook predicted a rise in crude oil prices, however, various compensating variables have resulted in a minor decrease in that rise. However, compared to the prior year, the supply of Russian pipeline gas to Europe has decreased by almost 60%, which caused a considerable increase in natural gas prices in June. According to estimates, Russia's economic downturn in the second quarter was not as bad as expected since crude oil and non-energy exports exceeded forecasts. In addition, the effects of the sanctions on the domestic banking sector have been minimal and the labor market has not deteriorated as much as initially predicted. These elements have also helped domestic demand hold steady to some extent. In addition, the impact of the conflict on the major European economies has been larger than anticipated due to rising energy prices, a drop in consumer confidence, and a slower rate of production due to ongoing supply chain disruptions and rising input costs.

Even though there has been some stability lately, global food costs have remained significantly higher than they were in 2021. The crisis in Ukraine is the main factor behind the rise in food prices around the world, especially for staples like wheat. Export limitations have also had an impact on this tendency, but some of them have lately been loosened. Inflation has an especially large impact on low-income countries since food consumption accounts for a bigger proportion of overall consumption. The countries most impacted are those that rely more heavily on food imports, have diets that are primarily composed of commodities with the largest price increases (especially wheat and maize), and have a significant pass-through of global food costs to domestic prices for basic foods. Low-income nations have sustained significant losses, particularly those in sub-Saharan Africa where the population already experienced severe starvation and a high death rate before the War.



Source: International Monetary Fund. World Economic Outlook, July 2022.

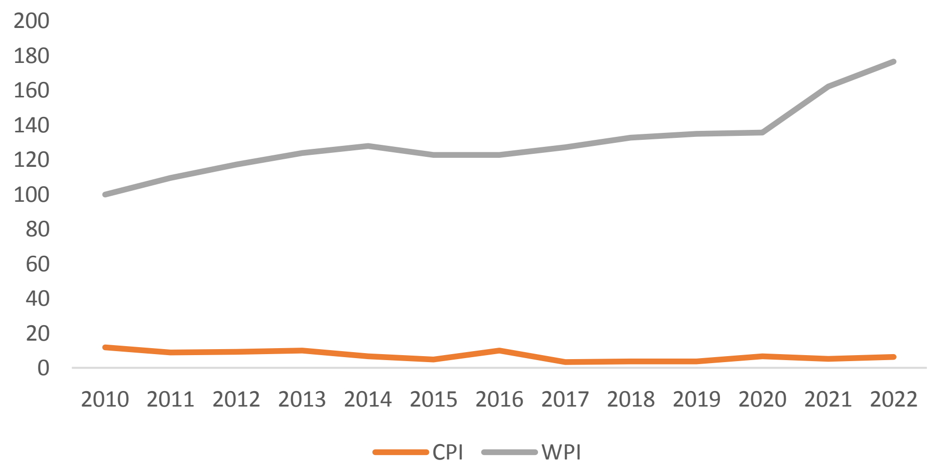
From the above figure, the baseline growth in the US is lowered downward by 2.3% points in 2022 and by 1.04% points in 2023. By raising energy prices, a full stoppage of natural gas shipments to the economies of Europe in 2022 has immensely raised global inflation. Similar to this, the baseline growth in Germany, the UK, and France is revised lower by Germany by 1.2% in 2022 and 0.8% in 2023, France by 2.3% points in 2022 and 1.0% points in 2023, and the

UK by 3.2% in 2022 and 0.5% in 2023. Japan's baseline growth is unchanged by 1.7% points for both 2022 and 2023.

The baseline growth, on the other hand, forecasts a recovery from China's lockdowns in the second half of 2022, with overall GDP growth of 3.3% in 2022 and 4.6% in 2023. Similarly, India's baseline growth rate has been reduced by 0.8% point, to 7.4% in 2022 and 6.1% in 2023. For India, the change is primarily due to less favourable external conditions and more rapid tightening of policies.

3.2 Comparative analysis between CPI and WPI of India

Figure 2:Trend analysis showing CPI and WPI in % in India



Consumer Price Index (CPI)

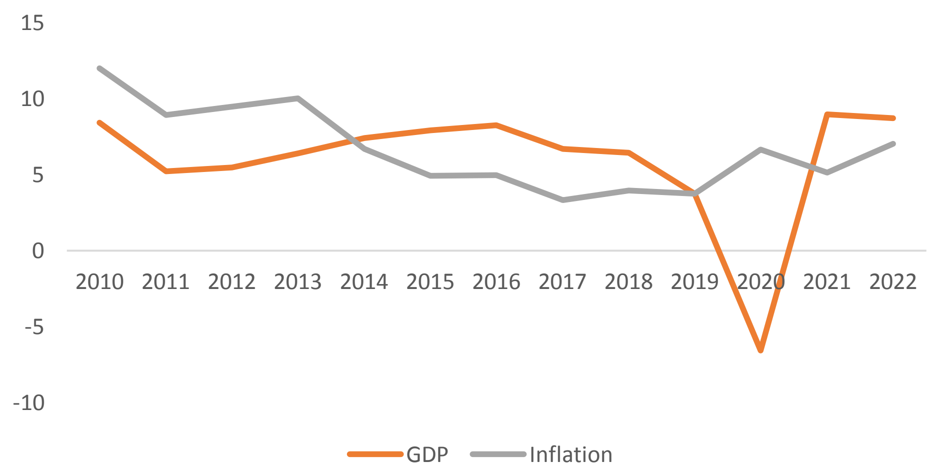
The CPI trends from 2010 to 22 demonstrate that the values are falling, which is a bad outcome from the trend analysis. The CPI was 11.98 in 2010, as seen in the graph above, and it decreased the following year, falling to 8.91 in 2011. It grew to 9.4 in 2012, and double digits were attained in 2013 when the CPI was reported at 10.01. After a sharp drop in 2014 to 6.66, it continued to fall in the years that followed. In 2015 and 2016, the CPI was 4.9, and in 2017, there was only a small shift of 3.3. It was reported as 3.9 in 2018 and 3.7 in 2019. However, it increased by 6.6 in 2020 before declining to 5.1 in 2021 and further seeing a small increase of 6.5 in 2022. The tendency has been eroding over time, parallel to the CPI's decline. The CPIs from 2015–16 (4.9), 2017–18, and 19 (3.3, 3.9, 3.7) may be demonstrated to have fallen at a quicker rate, creating the appearance that the CPI movements were unstable. Similarly, inflation has also declined over time.

Wholesale Price Index (WPI):

The trend study included the WPI rate for India in 2010, and it was evident that it peaked at above 100. For the years 2011, 2012, 2013, and 2014, the rates suddenly rose to 109.47, 117.47, 123.83, and 14. In 2014, it rose to 127.98, but dipped in 2015, falling to 123.00. With a value of 122.94 in 2016, the rate reached its lowest point, indicating a significant drop in the price of manufactured products. It then rose to 127.16 in 2017. The trend has significantly increased over the subsequent years; it was 132.59 in 2018, 135.09 in 2019, 135.81 in 2020, and 162.30 in 2020, showing a quicker growth in the rate of WPI.

3.3 Trend Analysis of GDP and Inflation in India

Figure3:Trend analysis on GDP and Inflation



India's inflation is the highest of all the major developing nations, reaching double digits in 2010. The cost of food was what first caused inflation, but in 2010 it showed significant growth of 11.98, and the GDP was calculated to be 8.4%. When supply is constrained and there are not enough skilled employees, inflation is structural rather than cyclical in an economy. The RBI's response was to continually raise the benchmark lending rates. Inflation rates have been increasing despite hopes from governments and central banks that they would decline due to growing prices for manufactured goods, energy, and food. There are indications that inflation has driven prices in a country with traditionally low-cost cases up to a "new normal." Inflation dropped by 8.9 in 2011 while the GDP increased by 5.2%. Later in 2012, inflation increased to 9.47 and GDP to 5.46%, and these figures increased in 2013 when inflation reached 10.01 and GDP to 6.30 %. There has been a sharp reduction in the rates in the next years. Compared to 2014, when the inflation rate was 6.6 and the GDP was 7.41%, in 2015 when the inflation rate was 4.9 and the GDP was 7.9%, we can see that there has been a minor shift in the GDP in 2016. The inflation rate also decreased significantly throughout the next years, reaching its lowest point in 2017 when it was 3.3 and the GDP was 6.68%, its highest in 2018 when it was 3.93 and the GDP was 6.45%, and hardly changed in 2019 when it was 3.72 and the GDP as 3.74%. The GDP rate fell to its lowest point in 2020 when it was -6.6% negative and the inflation rate was 6.62. We can see that things have changed significantly in 2021, with the GDP reported at 8.95% and the inflation rate falling to 5.13. We can see a difference in 2022, where the GDP was 8.7 and the inflation saw a major increase of it is 7.0%. Since the GDP declines if inflation rises and vice versa, it is clear that there has been a negative link between the two.

3.4 Correlation Test

To establish the direction of inflation and GDP growth a correlation test is conducted as shown in the below table.

Table 1: Correlation Test between Inflation and GDP growth rate(2015-2021) India

	Inflation	*GDP growth (annual %)*
Inflation	1	
GDP growth (annual %)	-0.615711148	1

The correlation table justifies the statement that both the indicators, inflation, and GDP growth are moderately negatively correlated. With a 1-unit increase in inflation, the GDP growth will decline to -0.61.

3.5 Linear Regression Analysis

A linear regression analysis is done to measure the impact of inflation on economic growth. The below table shows that the model is a good fit model. The model summary where the R square value shows that the model is 75 percent of the variance in the model. As the value is approaching 1 it is observed that it is a good fit model at a significance level of 0.05.

Regression Model:

$$GDP = 0.265947 – -0.051246\ (inflation) + u_i$$

From the table, the result shows that a 1 unit rise in inflation will decrease the GDP by 0.05. The model is statistically significant with p value less than 0.05 and R^2 shows 0.75, which makes it a good fit.

Table 2: SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.867838834
R Square	0.753144242
Adjusted R Square	0.67085899
Standard Error	0.037876243
Observations	5

ANOVA

	Df	*SS*	*MS*	*F*	*Significance F*
Regression	1	0.013131	0.013131	9.152846	0.046518
Residual	3	0.004304	0.001435		
Total	4	0.017435			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	0.265947	0.078084	3.405914	0.042277	0.017449	0.514445	0.017449	0.514445
Inflation	-0.051246	0.016939	-3.02537	0.056518	-0.10515	0.002661	-0.10515	0.002661

As a result, the world has seen significant rises and drops in inflation. Existing studies on India, to the best of our knowledge, the Consumer Price Index (CPI) and Wholesale Price Index (WPI) from 2010 to 2022 (Table 2) are used. We found that when there is higher inflation in the economy, economic growth tends to slow down. These findings have significant policy implications. Inflation is negative for economic growth rather than beneficial beyond the tolerance rate. Greater inflation elasticities imply that inflationary spirals may extend beyond a safe limit.

As an import-oriented nation, India's high production costs result from high import costs, which raise the price of goods and services. Given the excessive volatility in crude oil prices around the world, inflation is likely to continue to be volatile. The rate is subject to changes in oil and commodity prices in the future, and because of ineffective government policies, inflation is on the rise. While expanding the money supply may seem beneficial, it can also have negative effects, such as depreciating the home currency and causing inflation. Minor decisions, such as not regulating the country's money supply and not adjusting interest rates on an annual basis to keep up with inflation, can also contribute to uncontrollable inflation. Therefore, the government must implement precise measures to limit demand to a set level, and one approach to prevent "profit-push" inflation is to enact price controls. Here, the government can impose restrictions when the price increases.

4. CONCLUSION

This research focuses on two critical issues, Inflation, and Economic Growth. Recent advances in the body of knowledge concerning the relationship between inflation and growth, as well as seemingly contradictory supporting data, have motivated it, as have emerging markets. To see if there is a link between GDP growth, inflation, and the type of inflation, if there is one. This study revealed that the relationship between inflation and economic growth is unfavorable. Second, changes in growth rates affect inflation more than growth. A trend analysis is performed on annual data on the growth-inflation relationship in India using Consumer Price Index (CPI) and Wholesale Price Index (WPI) data from 2010 to 2022 to empirically measure the relationship between inflation and economic growth. The results show that both are negatively correlated, that when there is higher inflation in the economy, economic growth tends to slow down, and that the negative growth effects of inflation are more prevalent above an inflation threshold of around 7.0% in the previous year 2022.

The Russia-Ukrainian war has further accelerated the inflationary pressure due to the rise in oil prices as India is mostly dependent on oil imports. Since OPEC has declared to cut down the supply, it is likely to increase the price of per barrel oil which will further lead to inflation. To reduce the impact of VUCA, India has focused on reducing imports, producing oil, and sealing the deal with Petrobras and Ecopetrol as a preemptive measure.

To prevent any adverse long-term repercussions of excessive inflation on GDP and to execute more direct policy measures that aim to promote growth, the Reserve Bank of India should, therefore, intensify its anti-inflation efforts.

The study also suggests tackling the VUCA effect due to unforeseen situations, that better growth can be attained by controlling inflation and boosting public investment. To achieve this, the Government needs to manage the budget deficits to stimulate growth and keep inflation low. Simulations indicate that this could be achieved by reallocating public spending from consumption to investment. However, implementing such a strategy may be difficult, especially in a developing country with a multi-party democracy.

Also, Covid-19 like situation, that led to the shutting down of the economy, and food shortages, it is important that investment should be made in inventories, information assimilation to create awareness, investment in human capital, and precautionary measures by the government. Selecting acceptable inflation rates and achieving the maximum possible growth under that rate via public investment financed through budget deficits may be a more feasible approach. This framework allows policymakers to examine all possible trade-offs. It may be more practical to select tolerable levels of inflation and achieve the highest possible growth given that rate through deficit-financed public spending.

The government should prioritize investment over unproductive spending, which affects both GDP and Inflation. Therefore, establishing stability and the requisite infrastructure can pave the way for more direct policy initiatives to promote growth.

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