Effects of unemployment and inflation on the economy of Nepal

Nand Kishor Kumar[1]

_____

1 Tri-Chandra Campus, Tribhuvan University, Nepal.
✉ nandkishorkumar2025@gmail.com ⓘD *orcid.org/0000-0003-3844-809X*

Abstract

This is a longitudinal study for the period of 2010-2019 which examines the effect of inflation and unemployment on growth rate of Nepal. The economy of Nepal suffers from inflation and unemployment. In this paper, the impact of inflation and unemployment on growth rate in the two short-run and long-run phases was investigated and examined using Karl Pearson`s Co-efficient and Phillips Curve. The results of this model showed the significance and positive effect of inflation and unemployment on economic growth in short-run and negative effect on long-run. This paper found that policy maker should conscientiously focus on strategies to reduce and control inflation and unemployment. The planner could attempt to reduce and control over unemployment and inflation to get desired economic growth of Nepalese economy. From 2010 to 2019, Nepal's economy faced significant challenges and transformations. Understanding the interplay between inflation and unemployment during this period highlights the complexity of macroeconomic management in a developing country. Policy responses need to be multifaceted, considering both immediate economic pressures and long-term structural changes.

Keywords: Inflation, Unemployment, GDP, Karl Pearson`s coefficient, Phillip curve

1.0 Introduction

Globally, unemployment is a significant economic problem. While there are many potential causes, a nation's macroeconomic state is typically linked to it. It is a contentious and debated subject that also reveals the general state of an economy. A thriving economy is one that successfully mobilizes its human capital and has lower unemployment. With a population of about 30 million, Nepal is a developing country with a 2.7% unemployment rate. Though this figure appears to be somewhat lower, the young unemployment rate is 19.2% which can be a matter of concern (ILO, 2014).

There are several macroeconomic elements that might impact a nation's unemployment rate. The rate of unemployment is significantly impacted by variables such as the money supply, interest rates, trade balance, GDP growth rate, inflation rate, and FDI (Berensten et. al, 2011). An increase in the average price of goods and services over time in an economy is known as inflation. The buying power of money declines with rising inflation, which may result in greater unemployment rates. This is due to the possibility that businesses will have to raise prices to keep up with the inflationary trend, which might result in fewer consumer spending and a subsequent decline in the demand for products and services as well as greater unemployment rates. On the other side, unemployment rates are positively impacted by GDP growth. An expanding economy brings more investment and more work possibilities, which lowers unemployment rates. For instance, during times of economic boom, firms must recruit more people to meet the increased demand for labor, which lowers the unemployment rate.

The relationship between inflation and unemployment is a cornerstone of macroeconomic analysis. In the context of Nepal, a developing economy with unique socio-economic dynamics, understanding these relationships from 2010 to 2019 provides insights into policy effectiveness and economic challenges.

1.1 Overview of the Nepalese Economy

Nepal's economy is characterized by a heavy reliance on agriculture, remittances, and a growing service sector. The period from 2010 to 2019 saw significant events, including the devastating earthquakes in 2015 and political transitions that impacted economic stability.

Inflation and unemployment are the most widely discussed problem. The impact on inflation and unemployment on economic growth has long been a fundamental debate. This is why, they are the key macroeconomic indicators and determinant of economic growth and development (Adhikari, 2014).

When Nepalese economy turned into open economy, inflation and unemployment started. As a result, Nepalese economy bears many structural changes in various features. The unemployment in Nepal was 2.5 percent in 2010 and has increased gradually according to the report of Nepal Rashtra Bank (NRB, 2017a). In current decades, main features of economic growth were significantly studied. In the meantime, inflation and unemployment and their relationship with economic growth were significantly investigated because these economic characteristics are openly highlighted in developing countries, like in Nepal. Effectiveness mechanism and short term and long-term impact of inflation and unemployment on economic growth were not systematically examined. So, it is essential to examine the impact of inflation and unemployment on Nepalese economy from 2010-1019.

1.2 Significance of the study

Numerous empirical studies have looked at how unemployment and inflation impact the Nepalese economy. There are a few empirical studies that look at the long-term impact and effect in the Nepalese environment. In the present study, the effects of unemployment and inflation on growth will also be thoroughly examined. The discovery of these two factors will offer researchers conducting further study and some insights into the economic concerns by critically examining the problems of unemployment and inflation and their relationship.

However, the purpose of this work is to investigate, using both empirical verification and a thorough analysis. This report might set a precedent for other studies on inflation in Nepal. "Examining the Effects of Inflation and unemployment on Nepalese Economy (2010-2019)" is the prime issue of this study. In order to tackle the issue statement and knowledge gap mentioned before, the purpose of this research question is to provide a response to the question: What impact did unemployment and inflation have on the Nepalese economy between 2010 and 2019? This study aims to explore, through an in-depth analysis and the empirical verification, the possibility of realizing economic and financial stability using monetary management techniques. Meanwhile, it is conscious about the policy constraints or contradictions inherent in the structure of the Nepalese economy, whether they are culturally affixed, or geographically attributed.

2.0 Literature Review

Omoke and Ugwuanyi (2010) used cointegration and Granger-causality test analysis to examine the link between money, inflation, and production. The results showed that the series being utilized did not contain a cointegrating vector. Granger saw the money supply as a result of both inflation and production. The findings imply that, given that variations in the money supply are the primary driver of price level fluctuation, monetary policy may help maintain price stability in the Nigerian economy. This demonstrates how much of Nigeria's inflation is a monetary phenomenon. In the framework of the money-price-output hypothesis for the Nigerian economy, they receive empirical validity, the results showing significant causal relationship with both prices and actual production.

Fakhri (2011) investigated the connection between inflation and economic growth in Azerbaijan using the threshold model; he discovered that, around the 13% threshold, there is a nonlinear link between inflation and growth.

Umar and Zubairu (2012) examined the impact of inflation on the expansion and progress of the Nigerian economy, ultimately concluding that inflation had a detrimental influence on economic growth.

Aminu and Manu (2014) used the OLS technique to analyze the unemployed resources and inflation in Nigeria from 1986 to 2010 and discovered that the rate of economic growth in Nigeria is positively impacted by the unemployed human resources, the rate of natural resource production (rate of tapped resources), and the total inflation rate.

2.1 Nepalese Context

Ginting (2007) proposed that exchange rate pegs convey pricing developments from India. Over time, core inflation rates in Nepal and India tend to converge. The rate of adjustment to the long-run equilibrium when the two diverge in the short run is around 7% each month. It suggests that it takes around seven to eight months to go from India to Nepal. In summary, methodological developments are being observed in Nepalese studies of inflation. In order to capture the real empirical trends of the variable, researchers have been experimenting with increasingly sophisticated econometric methods.

Adhikari (2014) investigated that inflation is dangerous only when it is galloping above. The results also indicate that the effect of inflation on economic growth is not uniform. The economic actors do not have enough time to respond to high inflation when it occurs in the present. Therefore, the increase in inflation will be detrimental to the expansion of the economy. However, in cases where there had been substantial inflation in the past, economic agents were able to adjust over the course of a year, mitigating the impact of inflation and even positively influencing economic growth. According to Nepal Rastra Bank, keeping inflation near to that of India is essential to the sustainability of the peg in order to avoid currency rate mismatch.

Bhatta (2015) discovered that there is an inflection point at the 6 percent inflation rate. The growth is negatively impacted beyond this point and positively impacted below. As a result, he advises decision-makers to keep inflation around 6% in order to sustain a notable and positive rate of economic development. By using a more rigorous and alternative estimating technique, where the threshold level is endogenous, the study seeks to advance the estimation of threshold inflation.

NRB (2017b) explained India's inflation rate has decreased dramatically after the Reserve Bank of India implemented flexible inflation targeting. To keep pace with Indian inflation, Nepal has pledged to maintain an inflation rate of 4 percentage points with a +2/-2 percentage band. It is thus advised that Nepal adopt an inflation target range centered on the ideal inflation rate.

Acharya (2020) explained that relationship between unemployment and macroeconomic variables is complex, but it is generally accepted that increasing GDP, trade, and expansionary monetary policy lead to a decrease in the rate of unemployment. His paper tests this hypothesis for Nepal using time series data from 1991 to 2021 and a simple time series model. He has found that the increase in GDP, trade openness, money supply, and the rate of inflation decrease the unemployment rate in Nepal. These results have huge policy implications.

Karki, Banjara, and Dumre (2020) showed that there is no consensus on the relation between inflation and economic growth in the economic literature. They also declared that a low and stable inflation rate helps economic activities, while high inflation harms growth. This study which found overwhelming support in favor of inflation, is appropriate for growth in Nepal.

Upadhyaya and Kharel (2022) studied and explained the link between inflation, GDP, remittances, and unemployment. Using statistics on Nepal's economic growth, unemployment, and remittances, they attempted to compute inflation. When using this method of measurement, data from 2001 to 2019 were used. They explained that inflation has a detrimental influence on a country's ability to prosper economically. Although there is a long-term beneficial association, inflation appears to have had a detrimental influence on total economic growth. An examination of Nepal's economic

growth from 2001 to 2019 demonstrates that increased GDP has resulted in rising inflation, according to this study. But in terms of economic growth, this is unfavorable. In Nepal, the rise in remittances has been accompanied by a rise in inflation.

Nepal, N. P. (2022) explored that impact of remittance on inflation in Nepalese economy with econometric methodology such as Cointegration test, Vector Error Correction Models (VECM) and Granger Causality tests. He used annual data series from 1990/91 to 2018/19. The variables under the study are found to be cointegrated as reported by Johansen's cointegration test. The VECM also displays the short run and long run relationship between these variables. The Granger Causality test demonstrates the unidirectional causality from remittance to inflation.

Upadhaya and Pradhan (2023) explained that inflation can be controlled in order to address poverty as well as economic growth. They also argued policies that stabilizes the inflation to the certain threshold level matters for the long run economic growth.

3.0 Objective

This paper's main goal is to investigate Nepal's economy. Examining the association and impact of unemployment and inflation on the growth rate of the Nepalese economy between 2010 and 2019 is the paper's particular goal.

4.0 Limitations

This study focuses on the impact of unemployment and inflation on the growth rate of the Nepalese economy between 2010 and 2019 only. Nepal's statistical infrastructure has limitations in terms of data collection, accuracy, and timeliness. This makes it challenging to draw precise correlations between unemployment, inflation, and economic growth.

5.0 Methods and Procedures

Secondary data is the foundation of this work. Inflation and unemployment are the dependent variables in this paper, which uses a secondary method of data collection. The primary focus of this secondary method is a thorough literature review that includes, among other things, pertinent national level studies and reports as well as websites of pertinent organizations. Working papers and additional information sources were also investigated. Karl Pearson's correlation coefficient was used to understand the relation between Nepal's unemployment and inflation index. The study relied on the annual data from the Central Bureau of Statistics (CBS) covering all variables from 2010 to 2019. The empirical link between GDP, unemployment rates, and inflation in the Nepalese economy is the main emphasis of the current study. The current study's time frame is set between 2010 and 2019.

6.0 Findings

The trends of inflation rate, unemployment rate and growth rate of Nepal during (2010-2019) has been discussed in Table 1.

6.1 Inflation, unemployment and growth rates in Nepal (2010-2019)

Table 1 shows the data for inflation, employment and growth rates for the period of 2010-2019. The variations of these three parameters during the study period is shown in Fig.1. There is a close relationship among these macro variables, like inflation, unemployment, and growth rates, as illustrated in Fig.1. In order to find the quantitative correlation between any two macro variables one needs to calculate correlation coefficient. The correlation coefficient measures linear correlation between two sets of data and also a ratio between the covariance of two variables and the product of their standard deviations. The correlation coefficient can be calculated using the relation:

$$\text{Correlation Coefficient (r)} = \frac{N\sum XY - \sum X \sum Y}{\sqrt{N\sum X^2 - (\sum X)^2} \cdot \sqrt{N\sum Y^2 - (\sum Y)^2}} \qquad (1)$$

Table 1: Trends of Inflation rate, Unemployment rate and Growth rate (2010-2019)

Year	Inflation rate	Unemployment rate	Growth rate
2010	9.57	2.5	3.4
2011	9.57	3.2	4.8
2012	8.31	3.3	4.1
2013	9.87	3	6
2014	9.04	3.2	3.3
2015	7.21	3.2	0.6
2016	9.93	3.4	8.2
2017	4.45	3.2	6.7
2018	4.15	3.35	7
2019	4.65	3.41	2.3

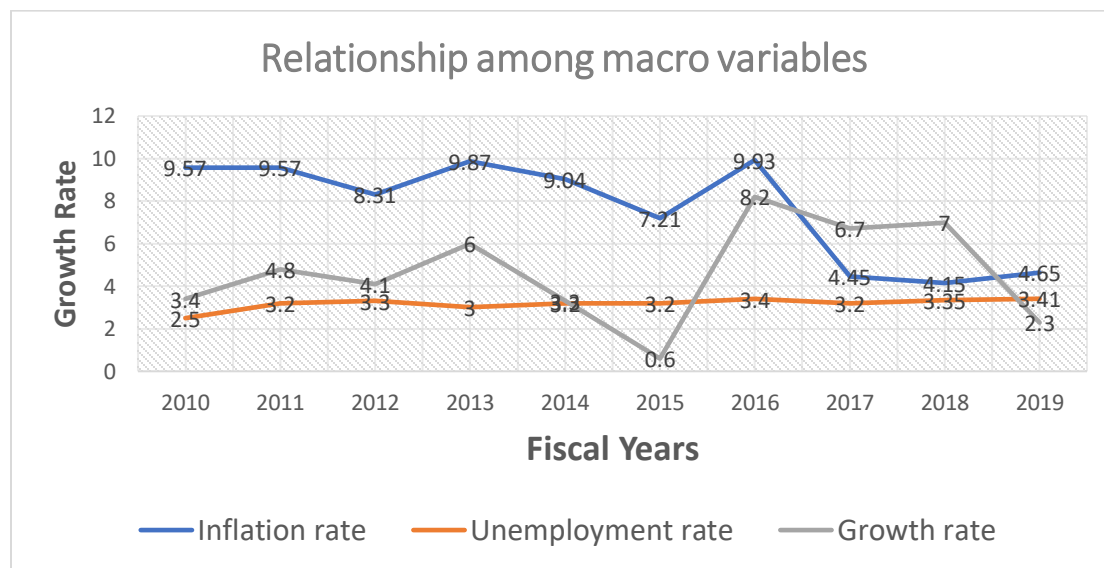**Source:** Trading Economics, Nepal Rastra Bank (2020).

Figure 1: The trends of inflation, unemployment and growth from 2010 to 2019.

6.1.1 Inflation and Growth Rates

Inflation in Nepal has been influenced by various factors, including global oil prices, agricultural output, and supply chain disruptions. In 2015, earthquakes caused supply chain interruptions, contributing to inflation (Paudyal, 2014).

In Table 1, inflation rate and growth rate are correlated with Karl Pearson`s Correlation Coefficient. The value of coefficient (r) is calculated to be 0.017. A single factor affecting the inflation rate up to 0.017 shows a strong impact of the economy.

6.1.2 Inflation and Unemployment Rates

The positive correlation between the inflation and unemployment is also depicted by Table 1. The correlated coefficient between inflation and unemployment is calculated to be 0.65. Thus, there is positive correlation between inflation and unemployment. As unemployment rate increases, inflation decreases; as unemployment rate decreases, inflation increases. This indicates the inverse relationship between the inflation and unemployment rate. This result is in agreement with the finding by Kumar (2024) who found that a 1% increase in the inflation rate in Nepal, the unemployment rate decreases by 0.09%.

6.1.3 Unemployment and Growth Rates

Looking at Table 1, a correlation between unemployment and GDP growth rate can also be expected. The correlation coefficient calculated for unemployment and growth is found to be 0.168. Thus, the rise in GDP is propelled by the rise in employment, i.e. the decrease in unemployment. In short-period, economic growth and unemployment rate, one may be slack. Increase in growth, makes more jobs that decrease unemployment. Decrease in growth, decreases the jobs and increase unemployment. Unemployment can have a debasing impact on people`s lives. Its effect not just on the unemployed one but also on the family members of unemployed may be long-lasting. When it becomes more long-term, its impact becomes more far reaching to the next generation.

7.0 Discussions

The aggregate demand shares similar components. It is the relationship between inflation, which affects the price level aspects of aggregate demand, and unemployment, which is dependent on the real output portion of aggregate demand.

There can be no trade-off between inflation and unemployment in the long-run. Decrease in unemployment can lead to increase in inflation but only in the short-run. In the long-run, inflation and unemployment are unrelated. Graphically, this curve is vertical at the natural rate of unemployment.

The GDP growth rate and the unemployment rate in Nepal are inversely correlated, implying that lowering the nation's unemployment rate may be significantly aided by economic growth. Legislators may think about putting policies like raising government expenditure, luring in foreign capital, and encouraging homegrown entrepreneurship into effect in order to boost economic development. In a similar vein, the discovery that trade openness and inflation rate have an inverse relationship with unemployment suggests that measures aimed at promoting trade openness and reining in inflation may contribute to a decrease in Nepal's jobless rate. There is an inverse relationship between inflation and unemployment, which provides a framework to analyze these dynamics. However, Nepal's economy shows unique deviations from this traditional theory.

1. **Stagflation:** Periods of high inflation coupled with high unemployment, especially post-2015, challenges the traditional Phillips Curve.

2. **Remittances:** Remittances have a dual effect by providing economic stability and thereby reducing pressure on domestic employment but also lead to inflationary pressures through increased demand.

7.1 Comparison of different studies

The impact of GDP growth on unemployment levels has been analyzed in several studies. A study by Okun (1962) found that there is a positive relationship between GDP growth and unemployment levels, as higher GDP growth leads to lower unemployment levels. A similar study by Kaldor (1957) found that changes in GDP growth have a larger impact on unemployment levels than changes in other macroeconomic variables.

7.2 Policy Responses

The Nepalese government and central bank employed various policy tools to manage inflation and unemployment:

1. **Monetary Policy:** The Nepal Rastra Bank (NRB) used interest rate adjustments and foreign exchange interventions to stabilize prices.

2. **Fiscal Policy:** Government spending on reconstruction post-2015 earthquakes aimed at boosting employment and economic recovery.

3. **Structural Reforms:** Efforts to diversify the economy and improve the business climate aimed at creating sustainable employment opportunities.

8.0 Conclusion

Using Karl Pearson's correlation coefficient methodology, this research examines the impact of inflation and unemployment on economic development in Nepal. The findings also showed that inflation and unemployment have a positive relationship with economic growth, indicating that they do not impede it. Technically speaking, this kind of economic growth is known as "Exclusive Growth," meaning that it does not correspond to the typical citizen's level of life in the nation. Policymakers should work together to improve productivity in order to raise output levels in other economic sectors of Nepal. This will help to lower unemployment and inflationary prices for goods and services, allowing for inclusive economic growth in the country.

References

Acharya, K. R. (2020). Macroeconomic determinants of unemployment in Nepal. *NCC Journal, 5*(1), 38–44.

Adhikari, R. (2014). Whether inflation hampers economic growth in Nepal. *IOSR Journal of Economics and Finance, 5*(6), 52–56. https://doi.org/10.9790/5933-0565256

Aminu, U., & Manu, D. (2014). The growth effects of unemployed resources and inflation in Nigeria. *Journal of Economics and Sustainable Development, 5*(2), 108–122.

Berentsen, A., Menzio, G., & Wright, R. (2011). Inflation and unemployment in the long run. *American Economic Review, 101*(1), 371–398. https://doi.org/10.1257/aer.101.1.371

Bhatta, S. R. (2015). Optimal rate of inflation for Nepal: An empirical investigation. *2nd International Conference on Economics and Finance, Kathmandu*. https://mpra.ub.uni-muenchen.de/96696/7/MPRA_paper_96696.pdf

Fakhri, H. (2011). Relationship between inflation and economic growth in Azerbaijani economy: Is there any threshold effect? *Asian Journal of Business and Management Sciences, 1*(1).

Ginting, E. (2007). Is inflation in India an attractor of inflation in Nepal? *Working paper, International Monetary Fund*, Washington, DC. https://www.imf.org/external/pubs/ft/wp/2007/wp07269.pdf

International Labour Organization (2014). *Labour market transitions of young women and men in Nepal*. Youth Employment Programme, Employment Policy Department.

Kaldor, N. (1957). A model of economic growth. *The Economic Journal, 67*(268), 591–624. https://doi.org/10.2307/2227704

Karki, S., Banjara, S., & Dumre, A. (2020). *Relationship between inflation and economic growth of Nepal.* T.U., Nepal.

Kumar, N. K. (2024). F-Test and analysis of variance (ANOVA) in economics. *Mikailalsys Journal of Mathematics and Statistics, 2*(3), 102–113. https://doi.org/10.58578/mjms.v2i3.3449

Nepal, N. P. (2022). Inflation caused by remittance in the Nepalese economy. *Adhyayan Journal, 9*(2), 1–7.

Nepal Rastra Bank (2017a). *Economic review, FY 2015/2016*. Nepal Rastra Bank, Government of Nepal.

Nepal Rastra Bank (2017b). *Analysis of inflation in Nepal*. Nepal Rastra Bank Research Department, Baluwatar, Kathmandu.

Nepal Rastra Bank (2019). *Nepal consumer price index (CPI).* Trading Economics. https://tradingeconomics.com. Nepal.

Nepal Rastra Bank (2020*). Economic review, FY 2019/2020*. Nepal Rastra Bank, Government of Nepal.

Okun, A. (1962). Potential GNP: Its measurement and significance. *Cowles Commission/Foundation Papers, 190*, 1963. https://cowles.yale.edu/publications/cfp/190

Paudyal, S. B. (2014). *Determinants of inflation in Nepal: An empirical assessment*. Nepal Rastra Bank Quarterly Economic Review.

Upadhaya, H. P., & Pradhan, B. L. (2023). Trend analysis of inflation and economic growth of Nepal. *International Journal of Silkroad Institute of Research and Training, 1*(2), 53–58. https://doi.org/10.3126/jsirt.v12.61664

Upadhya, Y. M., & Kharel, K. R. (2022). Inflation with GDP, unemployment, and remittance: An outline of the joint effect on the Nepalese economy. *IJMSS, 3*(1), 154–163.