Inflation with GDP, Unemployment andRemittances: An Outline of the Joint Effect on Nepalese Economy

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Abstract

The major objective of this research is to examine the trend of inflation, the trend of Nepal's economic development, trends of unemployment, and trends of remittances. Likewise, anotherone is the analysis and the effect of inflation on the GDP, unemployment, and the remittances of Nepal. The method of this research is to analyze and use the secondary data to create a simple regression model based on econometrics. Furthermore, the article concludes the mathematical relation between inflation and economic growth, inflation and unemployment, and inflation and remittances. There is a positive strong relationship between inflation among GDP remittances and unemployment.

Keywords: *Determinant factor, Economic growth, Trends, Impact, Relationship*
JEL: *E31, F63, E24, F24*

Introduction:

The inflation of a country is determined by a multitude of economic factors. Three of the most significant economic factors that drive inflation are GDP, unemployment, and remittances. Inflation in Nepal has also been influenced by these three economic variables. Inflation is exacerbated by GDP, unemployment, and remittances. These three economic factors appear to have a major impact on Nepal's inflation rate (NRB, 2017).

Inflation, as measured by the consumer price index, is the annually percent change in the cost to the typical consumer of receiving a basket of goods and services that may be fixed or adjusted at defined intervals, such as yearly (Panta,1997). Most governments strive to manage inflation at roughly 2 percentages to 3percentageseach year (Paudyal, 2014).

Inflation is one of the most important barriers to Nepal's economic development. Inflation wreaks havoc on people's quality of life, impacting all sectors of the economy, as well as individuals, societies, and countries. Inflation reduces the purchasing power of money, causing it to buy fewer goods and services (NRB, 2006). Inflation is the loss of real value in a medium of exchange owing to a decrease in purchasing power per unit of money. Inflation is defined as the loss of real value in a medium of exchange due to a reduction in the buying power per unit of money.

Another key economic element that has a detrimental impact on inflation is unemployment. Changes in employment growth accompany economic expansion. In general, as the gross

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domestic product (GDP) grows, more job possibilities are produced; yet, when inflation rises, unemployment rises (Boltho& Glyn, 1995). When employment and growth rates are taken into account, Nepal comes out on top in terms of inflation metrics.

A further economic aspect influencing CPI (Consumer Price Index) and growth in poor countries is remittance. As a result, the relevant nations must develop conducive policies to support worker remittances (Bugamelli, and Paterno, 2009). In Nepal, remittances are a major source of inflation. In the previous two decades, remittances have been the backbone of Nepal's economy, yet they have changed the country's inflation status. Nepal is one of the world's poor countries with a high remittances recipient rate. Remittances have been a crucial component in raising the consumer index and the country's GDP.

Research Objective

Study focuses on understanding Nepal's inflation, GDP, remittance, and unemployment patterns and again study examine the relation between inflation and GDP, unemployment, and remittances in Nepal.

Literature Appraisal

There are many hypotheses as to why inflation occurs (Nawarathna, 2009). Moderate inflation, according to the Phillips curve, is required for an economy to continue to flourish (Mallik and Chowdhury, 2001). The inflation rate must decline because the price level growth rate is essentially another name for the inflation rate. A rise in the pace of economic growth means that there are more products for money to seek, putting downward pressure on inflation (Bhusal and Silpakar, 2011). When the money supply expands at 6percent per year and the velocity of the money supply remains constant. If yearly economic growth is 3 percent then inflation must also be 3 percent However, if the economy grows at a rate of 4 percent inflation reduces to 2 percent (Chuan, 2009).

Whenever aggregate demand grows faster than productive capacity — namely, assuming economic growth exceeds the long-run trend rate – inflation is probable. If increasing productivity drives economic growth, the expansion can be long-term and inflation-free. It is conceivable to have both negative economic growth and inflation with cost-push inflation (Keynes, 1932).

For generally, economists have discovered that when the unemployment rate falls below a specific threshold, known as the natural rate, inflation rises and continues to grow until the unemployment rate recovers to its natural rate (Ribba, 2003). When the unemployment rate exceeds the natural rate, on the other hand, inflation tends to slow down. The natural rate of unemployment is defined as the degree of unemployment that is compatible with long-term economic growth (Sharma, 1987).A rate of unemployment lower than the natural rate indicates that the economy is expanding faster than its maximum sustainable rate, putting upward pressure on wages and prices in general, resulting in higher inflation (Fei and Qianyi, 2013). When the unemployment rate exceeds the natural rate, downward pressure is applied on wages and prices in general, resulting in lower inflation. Because wages account for a large amount of the cost of

products and services, increasing or downward wage pressure drives average prices in the same direction (Hassler and Neugart, 2003).

The unemployment rate is a key indication of a country's economic health. A lower unemployment rate is frequently linked to higher GDP, higher wages, and more industrial activity. Because the government can usually achieve a lower unemployment rate by implementing expansionary fiscal or monetary policy, it's logical to assume that policymakers will utilize these tools to accomplish that aim. One of the reasons policymakers do not act is because of the relationship between unemployment and inflation (Dahal, 2016).

Inflation's theoretical relationship with remittances may differ from its theoretical relationship with other sorts of foreign exchange receipts (Lim and Sek, 2015). Exports are the outcome of increased production capacity and local employment, whereas remittances are more akin to a gift from another country. Remittances are naturally skewed toward greater consumption or smoothing, as well as poverty relief, rather than investment. This is one reason why the research on the influence of remittances on economic growth has been difficult to come by (Baraja, 2009). As a result, a rise in aggregate demand without a corresponding increase in domestic output tends to boost the price level.

Panta (2012) used production, price level, capital inflows or portfolio inflows (as a ratio to trend GDP), stock price, and land price to investigate why an increase in capital inflows might boost asset price. They discovered that capital inflows contributed 9 to asset price appreciation in emerging East Asian economies using a VAR model, despite the fact that capital inflow shocks only explain a tiny fraction of asset price swings.

Khan and Islam (2013) used vector autoregressive approaches to examine how remittance inflows impact Bangladesh's inflation rate from 1972 to 2010. In the long run, a one percent increase in remittance inflows leads to a 2.48 percent increase in inflation, according to their empirical findings, although there is no significant association between these two variables in the short term.

Mughal (2012) tested the same impact using yearly and quarterly data for 21 rising nations, utilizing a theoretical model and panel vector auto regression methods. In anunemployment rate, remittances temporarily raise domestic money supply and inflation, but in remittance causes no change in the money supply, decrease inflation, and appreciate the real unemployment. However, Narayan, Narayan, and Mishra (2011) show that in unemployment, remittance inflows would result in a rising price level and an appreciation of the employment rate.

ResearchMethodology

In order to assess the factors that drive inflation in the Nepalese economy, data is gathered from a range of sources. The World Bank and International Monetary Fund (IMF) databases, as well as NRB, CBS, Ministry of Finance, and ADB publications, as well as other Nepalese economics and business journals, were used to compile economic data for this study. To accomplish the study objectives, all secondary data is obtained, processed, and tabulated in a time series. Major economic determinants are shown in the time series data, which spans a 19-year period from 2001 to 2019.

The major purpose of the data analysis for this study is to identify the extent and direction of CPI inflation, GDP growth rate, unemployment rate, and remittance inflow. The CPI proxies are used to calculate inflation. As a result, this section focuses on the statistical approaches used to examine secondary time series data. The data analysis approaches used in the study were descriptive statistics and ordinary least square regression analysis.

$$Y_T = \propto + \beta_0 X_T + \varepsilon \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(i)$$

Where, Y_T represents the observed value of dependent variables at time t (CPI), X_T represents the set of control variables at time T (growth rate- GDP, unemployment rate-UNEMP, and remittance inflow-REMT), denotes the constant term, β_0 represents the set of unknown parameters to be estimated, ε stands for the error term distributed normally, and T refers to a time period spanning 2001 to 2019 (19 observations).

Analysis of CPI, Unemployment, Remittance and GDP

A. TrendsofCPI:

Figure 1 shows the yearly CPI inflation rates in the Nepalese economy from 2001 to 2019. Inflation in the CPI peaked at 13.2percent in 2008/09 and peaked at 2.4 percent in 2000/01. Furthermore, CPI inflation averaged 6.84 percent during the course of the research.

Fig-1: Trends of CPI from 2000/01 – 2018/19
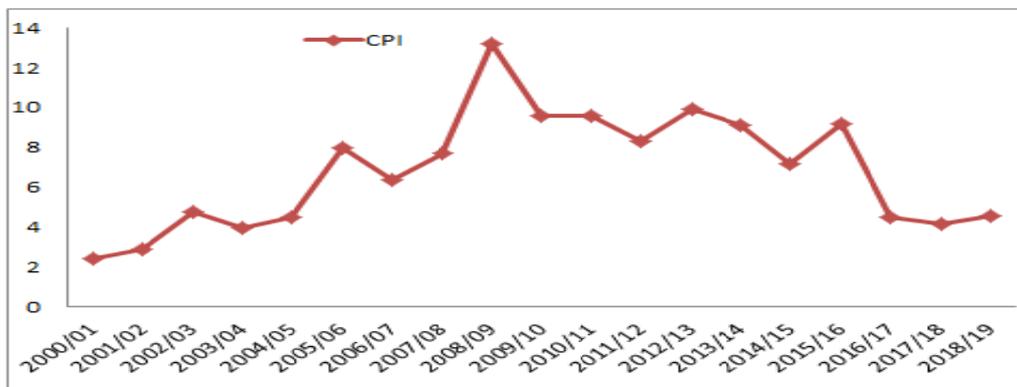
Source: Economic Survey, 2020, Ministry of Finance, Kathmandu, Nepal

Since 2001, CPI inflation has been steadily rising, peaking in 2008/09. Following the occurrence of the maximum value, it is revealed to be on a downward trend until 2019.

B. GDP Growth Rate

As shown in Figure - **2**, Nepal's GDP is highest at **8.2** percent in 2016/17and lowest at 0.1percent in 2001/02**.** Also, from 2011to 2019, Nepal's GDP is average 4.12percent.
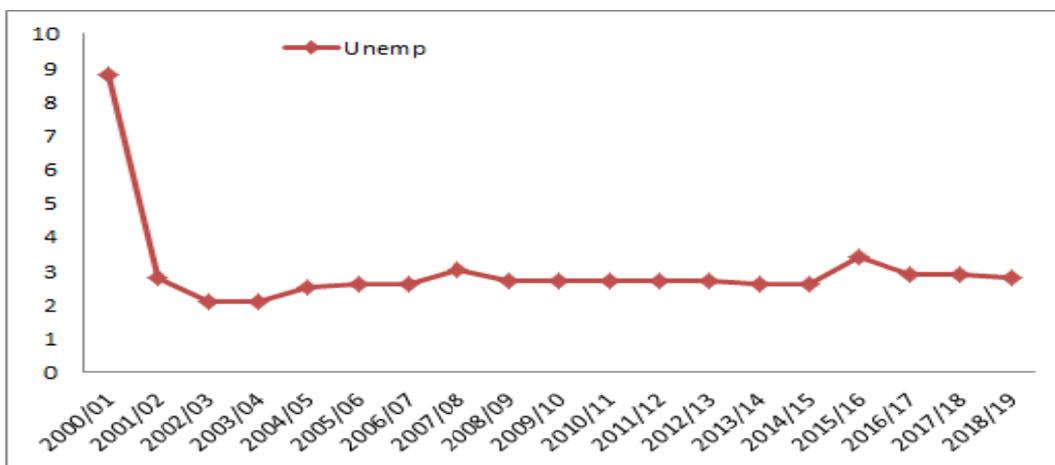
Fig-2: Trends of GDP Growth Rate from 2000/01 – 2018/19
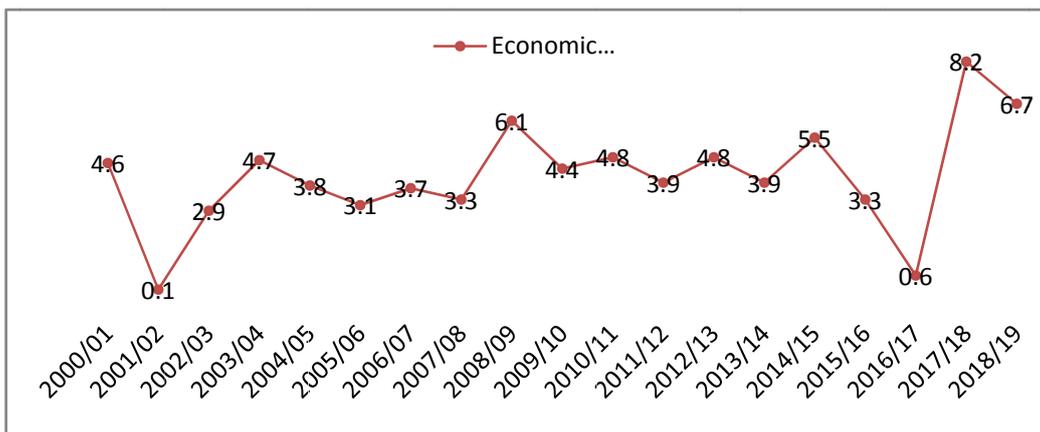
Source: Economic Survey, 2020, Ministry of Finance, Kathmandu, Nepal

C. Trends of Unemployment

Fig-3: Trends of Unemployment 2000/01 – 2018/19

Source: Economic Survey, 2020, Ministry of Finance, Kathmandu, Nepal

The above unemployment figure-3 depicts the recorded unemployment rate in the Nepalese economy from 2001 to 2019, which displays the unemployment rate (in percentage) in the Nepalese economy from 2001 to 2019. In 2001, the greatest unemployment rate was 8.80 percent, while the average unemployment rate in the Nepalese economy over the research period was 3.007 percent. In 2003 and 2004, it was at its lowest point of 2.09 percent.

D. Trends of Remittances
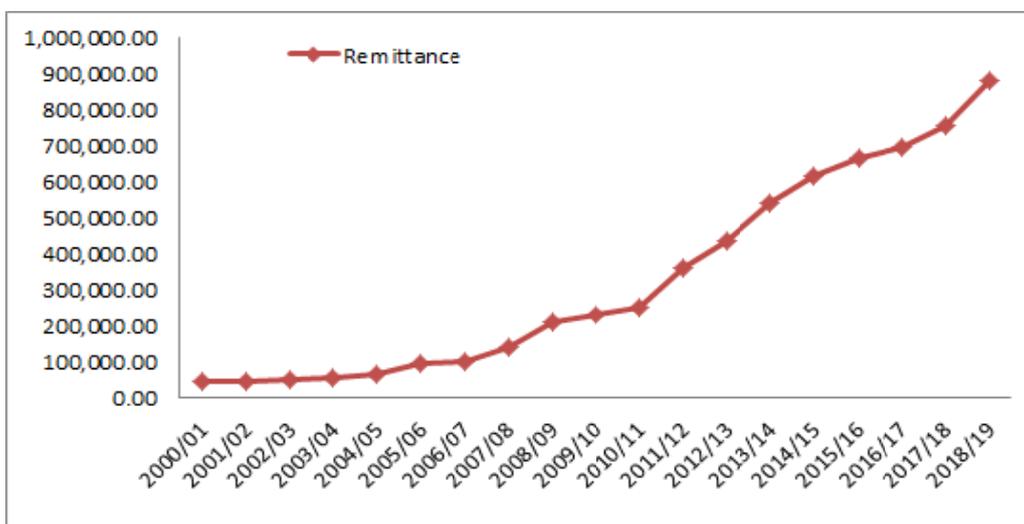
Source: Economic Survey, 2020, Ministry of Finance, Kathmandu, Nepal

From 2001 to 2019, the remittance figure displays the observed numbers of remittance inflow into the Nepalese economy. Remittances are at an all-time high in the 2018/19 fiscal year (NRs. 879,271.30 million). Remittances increased consistently from 2001 to 2011. Following that, it has increased rapidly until 2019, when it reaches its highest point.

Table-1: Correlation Analysis

Variables	CPI	GDP	UNEMP	REMIT
CPI	1			
GDP	0.921344	1		
UNEMP	0.762701	0.885858	1	
REMIT	0.87774	0.89201	0.8861025	1

Table-1 shows the result of correlation analysis among the entire variable used in the study. The result shows as it was expected, that there is a strong positive correlation, among CPI and GDP(0.92), UNEMP(0.76), and REMIT(0.87). That indicates that CPI will increase as GDP,UNEMPand REMIT will increase.

Table-2: Regression Analysis

Summary Output of Regression Statistics					
Multiple R	0.95437510				
R Square	0.92558171				
Adjusted R Square	0.91830194				
Standard Error	0.09636273				
Observations	19				
SignificanceF	2.5560E-17	*SS*	*MS*	*F*	
Regression	3	18.92106625	6.307022	0.718087	
Residual	15	131.7463022	8.783087		
Total	18	150.6673684			
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*
Intercept	10.55875629	3.209963256	3.28937	2.03698E-1	3.716881568
GDP	0.481147762	0.379573745	-0.47724	0.64007	-0.990190049
UNEMP	0.423728961	0.562674475	-1.46395	0.163848	-2.023041214
REMIT	0.731092928	5.061475983	0.54354	0.594748	13.53937361

The multiple R (0.95) and R Square (0.92) values are also quite high, indicating that the model is statistically significant. It also reveals that GDP, UNEMP, and REMIT explained about 92 percent of the fluctuations in CPI during the research periods in the economy, with the remaining 8% explained by other determining variables outside the model. This result demonstrates that the regression model utilized in the study is a perfect match.

This model's F-statistics is 0.7180.43 and its Significance f is 2.556E-17, both of which are significant at the 5% level, indicating that the dependent variables are substantial drivers of Nepalese economy CPI.

The P-value for the entire explanatory variable in the model is extremely low, indicating the model's relevance. In order to demonstrate the model's importance, an econometric test was used in this study. Because the econometric test used in this study revealed a statistically significant relationship between the model's dependent and independent variables.

Conclusions

The main result of the study is a concise explanation of the link between inflation, GDP, remittances, and unemployment. This research looks at the impact of Nepal's economic development, the remittances it gets each year, and the impact of unemployment on the country's economy. In Nepal, a number of factors impact inflation. However, using statistics on Nepal's economic growth, unemployment, and remittances, we attempted to compute inflation. When using this method of measurement, data from 2001 to 2019 is used. In some mathematical models, the hypothesis is calculated and its magnitudes are not observable, but in others, it is easily evaluated.

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. As a result, we may argue that when a country's economic progress is needed, inflation should be lowered.

In Nepal, the rise in remittances has been accompanied by a rise in inflation. To put it another way, a research done between 2001 and 2019 discovered that as remittances grew, so did inflation. However, in our study, we did not look at the impact of higher remittances on economic growth.

Another study in this article looks at the unemployment and inflation situation in the same way. Unemployment and inflation have alsopositive relationship, according to the regression model. The mathematical examination of the study's data from 2001 to 2019 indicates the positive relationship. This is, however, an uncommon event.

The study's key conclusion is that GDP and inflation have a positive connection, meaning that the bigger the GDP, the higher the inflation. And again, the unemployment rate also has a positiverelationship with inflation, meaning that the higher the unemployment rate, the higher the inflation rate. In the Nepalese economy, remittances grow in lockstep with an increase in worker remittances.

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Annex-1:Percentage change in CPI, GDP, unemployment and remittance

F/Y	CPI change	GDP change	Unemployment Change	Remittance Change
2000/01	2.4	1.89	8.8	-
2001/02	2.9	0.2	2.79	34.0
2002/03	4.8	3.8	2.09	64.0
2003/04	4.0	4.4	2.09	26.0
2004/05	4.5	3.2	2.5	8.0
2005/06	8.0	3.7	2.59	33.0
2006/07	6.4	2.8	2.59	14.0
2007/08	7.7	5.8	3.0	23.0
2008/09	13.2	3.8	2.7	28.0
2009/10	9.6	4.3	2.7	9.0
2010/11	9.6	3.8	2.7	5.0
2011/12	8.3	4.6	2.7	32.0
2012/13	9.9	3.8	2.7	15.0
2013/14	9.1	5.7	2.6	20.0
2014/15	7.2	3.0	2.6	9.0
2015/16	9.2	0.2	3.4	9.0
2016/17	4.5	7.7	2.9	1.0
2017/18	4.2	6.3	2.9	8.0
2018/19	4.6	6.7	2.8	13.0

Source: Economic Survey, 2010/2015/2020, Ministry of Finance, Kathmandu, Nepal