



RESEARCH PAPER

Inflation and Unemployment in Pakistan: An Empirical Analysis

Dr. Ghulam Muhammad Mangnejo¹ Saqib Wahab Mahar²
Bakhtiar Ahmed³

1. Assistant Professor, Department of Economics, Shaikh Ayaz University, Shikarpur, Sindh, Pakistan
2. Assistant Professor, Department of Business Administration, Shaikh Ayaz University, Shikarpur Sindh, Pakistan
3. Assistant Professor, Department of Pakistan Studies, Shaikh Ayaz University, Shikarpur Sindh, Pakistan

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ABSTRACT

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Corresponding

Author:

mangnejo gm81@
mail.com

This empirical study has mainly examined the association between inflation and unemployment in Pakistan. The study has used the time series data from 1991 to 2015 and Eviews9 software to examine the existence of Phillips Curve in the economy. The empirical results of study reveal that inflation was higher in 90's era and simultaneously declining unemployment trend was observed. From 2001 to 2005 inflation rate was showing decreasing trend whereas unemployment was showing increasing trend. The upward tendency of inflation was recorded during 2005 to 2010. At the same time unemployment rate was showing declining trend. Increased inflation results into decreased unemployment rate which ultimately increase employment opportunity in the country. As demand for labor increased due to increase in employment opportunities, results increase in wage rate which is paid by producer to their labor. It causes to increase cost of production of goods which leads to inflation. This research paper is an observed support in existence of Phillips curve in Pakistan

Introduction

Inflation and unemployment are hot topics of all financial system. All policy-makers aim for achieving low inflation and unemployment. It is often fall out with the aim of single-digit inflation and unemployment percentage about around five percent could ensure that macro-economic strength is strengthened in an economy where everything is equal. Macroeconomic permanence is very essential to development, setting up and growth, so it is desirable to study the pressure group of other economic foundations condition the objective of permanence is to be achieved. "The topic of inflation and unemployment are significant areas for economists and trade legislature." Official main goals of

complete employment as well as steady financial system throughout low inflation achieved through macroeconomic strategy.

To clarify the "trade-off between unemployment and inflation" the Philips Curve may be used as an instrument. The link among economy's unemployment and inflation may be clarified by the Philips curve. The raise of continuous level of price of commodities and services within period of time is described as Inflation. In the condition of inflation, the monetary value declines. When average price of commodities would not increase it means there is low inflation rate. Unemployment persists at the time when somebody is keenly looking for employment but he cannot able to discover anything, in spite of his compliance to understand current salary.

The New Zealand-conceived finance specialist AW Philips continued to open this approach in 1958, providing information on unemployment and wage changes in United Kingdom during period of 1861-1957. He found the curve stable for exchange between inflation and unemployment reverse in contrast. When unemployment falls, inflation would rise as well as unemployment rise inflation would fall.

Current detailed investigation is reasonably framed by; the "Phillips curve" known as smooth curve. A replace between unemployment and inflation showed in Philips curve. Phillips Curve translates so as to if we want to reduce unemployment, must acknowledge the rising of value in the financial system. All around the world different speculations has been made for clear inflation. In our country Pakistan, inflation is a central theme and common idea of macroeconomic considerations. In the Scriptures various variables are in under consideration like powers of sound to decide on inflation cost. Money related development components are, earnings stagnation, costs of import rising, pay rates rising as well as muggy wishes etc.

To check the monetary policy approach for guidance occasionally Philips curve is used. The study in University of Massachusetts Amherst, recently spelled out the use of Philips curve, and it was added that the theory endorses and accurate research confirms that these nonconformities from inflation and drift are mainly due to the power of use assets in the economy - such as gap of true unemployment and its alleged regular rate."

"Employment" means work of different workers along with particular ending objective to get not many earnings that will be used for accomplishing their daily wants. Opposite of that, unemployment is a period when people are effectively looking for jobs and are reasonably content to work at any wage level that currently lies in the target market.

A fascinating theoretical discussion starter, Stock and Watson presents despite of abundant affirmation beside the ease of the Phillips curve statistics, it

were informed that the economy was going into a subsidence movement. Would you change your assumption of inflation within two tariff priorities by using unemployment rate? Strong evidence found regarding many predictors and decision makers are actually changing their assumptions. The topic has various problems regarding its necessity and importance. In 1954 The International Conference of Labor Statisticians were held where firstly given a remarkably forbidding standard explanation of unemployment, which is not essential in under developed countries, as they raised a few uncertain questions about the actual idea of unemployment. The greater extent of unemployment and the customary techniques of job search have also proved feasible. Against this background, it is argued that without a usual context of unemployment erasing estimation questions, actual data of unemployment in various emerging economies have so far been identified only with unmistakable unemployment, with the official separation of superior open doors of metropolitan area. Unemployment was one of the main problems due to the lack of adaptation in all under developing countries of the world. The high rates of unemployment in the countries of South Asia are very vital as well as critical problems which they were recognized by the industrialized states. On contrary, the exorbitant unemployment rate affects the financial system that leads to unstable monetary scenario. It tends to be a problematic in sense that in the case of unemployment, resources are under-utilized by skilled workers. The potential level of income and resources are not as much as overall population in these countries therefore was not completely used. Every government focuses on to build employment opportunities throughout different useful exercises, use of every existing factor of yield. Over populations are related to worrying problems in Pakistan like other under developed countries of the world. Population's fast increase points out various financial difficulties in the financial system. It collects the excess supply of unemployment and enhances unemployment. Those individuals who cannot locate employment in their own country, they are trying to move to a new country to find employment opportunities. This can be risky for a country's future destiny, especially when different countries are concerned. If economy faces this kind of problem, one main consideration may be to weaken monetary development. In addition, the situation in one country is different from that of different countries, leading to cold-blooded problems in the countries of origin. Long-run unemployment results depending on financial difficulties, misery, vagrancy, misconduct, disappointment and many different issues such as separation, domestic pressures, social isolation, lack of security& trust leading to collapse of healthy society. The unemployment in Pakistan stood at 5.7% during 1990s, with averaging 6.8% during 2000s. Above figures also shows the actual information regarding the Philips curve in our country.

Literature Review

Phillips speculation was upheld by Robert Solow and Paul Samuelson is most important analyst. In 1970 Samuelson and Solow observed the connection among unemployment rate and inflation in America. Correlations of backwardness have been founded among "inflation and unemployment". Compute of real actions has discretionary importance even as evaluating the effecting of the estimate; Unemployment differences and rates has been focused and explained (Stock & Watson, 2008). In addition, permanent unemployment data is used as a benchmarking information directory and investigate the results has been affected by the use of current data and final data. Anticipatory exercise on inflation has been focused this is because of two reasons. The weight dropped due to higher rates of unemployment. The normal correlation among wage behavior and unemployment during the economic cycle is researched in Philips curve. Hoover (2008) shows that inflation wage rates that could occur on some certain unemployment rate persevered for quite a while. Increasing inflation and unemployment rates illustrate the inadmissible macroeconomic development of the economy, which is referred to as stagflation. Few economists have argued that low inflation rates and unemployment are unimaginable as a result of policy, so it's a choice of policy maker which inflation rate should surrender to acceptable rates of unemployment (Ekpo, 2012). Disproportionate negative link found among "unemployment and inflation" in a under developing country such as Pakistan, using data for the years 1991 to 2015. The long term as well as carefree link among unemployment and inflation in the aforementioned era, so the short-term stuns, while in the long term there is an unchanged relationship (stuns) lope (Zaman et al., 2011). Further, carried out by Solow (1970) and Gordon (1971), discovers existence of the research that triggers a -ve exchange of the link between unemployment and inflation by estimating US information. The Phillips curve's exact discoveries are recognized as "Solow-Gordon attestation". Instead of this infact the William Phillips constructed own speculations (hypothesis) according to a firm theoretical founding, the debate on the question of either the Phillips curve actually exists or not in the period of early 1960. Phillips Curve is always open to debate right from the opening said by Islam et al. (2003: 107). The hypothesis stated that there isn't any direct association of inflation and unemployment and this was rejected by Friedman (1977) and Phelps (1967). Lucas (1976) vigorously rejected the proposal for surviving the Phillips curve. Lucas argued tradeoff between unemployment and inflation, assuming that strategic decisions developers didn't make false circumstances that where is high inflation there would be low unemployment. On the Other hand, employees after that could anticipate high inflation and want more salaries from the bosses. In that situation, high unemployment and inflation, called as "Lucas evaluate" could occur. In the era of (1970), monetary scholars began to lose passion for exploring the Phillips curve. While DeBelle and Vickery (1998:384) remarked, "The Phillips curve fell into a time of disregard in scholarly circles amid the 1980s; notwithstanding it remained a vital device for approach creators". For the most part, experimental discoveries have

demonstrated the blended outcomes. Some scholars found the critical exchange off connection among inflation and unemployment rates there is no difference. Alogoskoufis and Smith Amongst examine thinks about completed in 1990s; demonstrated exact proof it helps "Lucas critique" and also precluded the presence from securing exchange of correlation. King and Watson (1994) distinguished presence of Phillips curve utilizing American after war information of macroeconomic. Their discoveries gave experimental help in presence of exchange off connection amongst unemployment and inflation in United States of America over looked into time period. Hansen and Pans (2001) inspected either the Philips Curve is present or not in Lativa. Hansen and Pans (2001) additionally discovered about a noteworthy connection between unemployment and genuine inflation rate. The Philips curve hypothesis was examined (Islam et al., 2003). They used USA monetary information during period of 1950-1999 and discovered powerless long run coordinating connection and long run causality. Hart (2003) experienced the Phillips hypothesis by utilizing the time-based compensation acquiring. He reasoned that amid between war periods in Britain (1926-1966), the Phillips curve is "not bolstered by information". Furuoka (2007) inspected the long run and trade off correlation, furthermore cause and affects connection among unemployment and inflation rate regardless of Malaysia from 1975 to 2004. Current methodological development of surveying the Phillips curve is a utilization of panel information examination. For to pooled data analyzation, Turner and Seghezza utilized a strategy for Seemingly Un related Estimation "SURE" instead of Ordinary Least Squares (OLS). The analysts inferred that the general outcome gave a "solid help" to the presence of "normal" Phillips curve amongst twenty-one picked part nations from OECD. Arratibel et al. (2002) examined fresh Keynesians Phillips curve with onward looking desires by utilizing panel information. Arratibel et al. (2002) researched that unemployment rate has noteworthy association with non-tradable inflation rate. Dynamic panel information technique is utilized by Masso and Staehr (2005) and neglected to distinguish huge connection among unemployment and inflation rate. Investigation on Phillips Curve in Pakistan has been exceptionally restricted. Hasan in 1997 bolstered the presence of a Phillips Curve for short run in Pakistan from the 1972 to 1981. Malik and Tashfeen in 2007 watched an opposite connection amongst inflation and one period slacked unemployment. Satti et al (2013) locate inflationary desires in future assume critical part in inflation determent country. A dynamic relationship amongst inflation and genuine peripheral cost has been watched that is, inflation co moves emphatically along with genuine minor cost, both at slacks and leads. The Philips curve has various investigations are accessible on developed countries; there is enormous inflation for orderly exact examination that hypothesis affirms with regards to a creating nation. Considering vital political and monetary ramifications in Pakistan the hypothesis of Phillips Curve involves connection among unemployment & inflation rate.

Material and Methods

This investigation utilizes yearly perceptions from 1991 to 2015 and has used the Eviews9 software. This information is acquired from World Bank Development Indicators informational collections “WDI-2009”, Inter nations Financial Statistics “2015-16”, and Pakistan’s Economic Survey “2015-16”. This research audits that how unemployment effect inflation inside the setting of Phillips Curve that is analyzed in accompanying way:

By looking at either a time series unit root test is used; (an Augmented Dickey Fuller) or unit root test is utilized.

At the point when the any variable is discovered, co incorporated, to decide long run causality a Granger causality test is connected.

Research Hypothesis

It is witnessed that unemployment and Inflation both have direct as well as indirect connections. Therefore, hypothesis is to inspect the presence of Phillips curve by taking into consideration, regardless of whether inflation and unemployment has a direct or indirect connection with regards to Pakistan.

Results and Discussion

Augmented Dickey-Fuller unit Root test at level

Null Hypothesis: INFLATION has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 0 (Automatic-based on SIC, maxlag=5)

	t-statistics	Prob.*
Augmented Dickey-Fuller test Statistics	-1.658405	0.7381
Test Critical values: 1% level	-4.394309	
5% level	-3.612199	
10% level	-3.243079	

*Mackinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(INFLATION)

Method: Least Squares

Sample (adjusted)

Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistics	Prob.
INFLATION (-1)	-0.244355	0.147343	-1.658405	0.1121
C	0.214101	0.149166	1.435323	0.1659
@TREND(1991)	-0.000652	0.004371	-0.149096	0.8829
R-Squared	0.116617	Mean dependent var	-0.018637	
Adjusted R-Squared	0.032485	S.D dependent var	0.150702	

S.E df regression	0.148234	Akalke info criterion	0.863582
Sum squared resid	0.461439	Schwarz criterion	-0.716325
Log likelihood	13.36298	Hannan-Quinn criter.	-0.824514
F-statistics	1.386118	Durbin-Watson stat	1.696280
Prob (F-statistics)	0.271999		

To check the data stationary of the Augmented Deckey Fuller test (ADF) is utilized. The results of ADF test statistics (-1.658405) is more than significant values (-4.39, -3.612, -3.243) at 10%, 5% and 1%critical level, in that order, H_0 can't be rejected or concluded. It means inflation faces a unit root problem and the inflation is not series of stationary.

Null Hypothesis: UNEMPLOYMENT has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 2 (Automatic-based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test Statistic	-2.735791	0.2331
Test Critical Values: 1% level	-4.440739	
5% level	-3.632896	
10% level	-3.254671	

*Mackinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(UNEMPLOYMENT)

Method: Least Squares

Sample (adjusted):

Included observations: 22 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
UNEMPLOYMENT (-1)	-0.298348	0.109054	-2.735791	0.0141
D(UNEMPLOYMENT (-1))	0.115360	0.166075	0.694526	0.4967
D(UNEMPLOYMENT (-2))	0.502136	0.166288	3.019683	0.0077
C	0.099813	0.027694	3.604081	0.0022
@TREND(1991)	-0.001051	0.001240	-0.847794	0.4083
R-squared	0.507412	Mean dependent var		0.005225
Adjusted R-squared	0.391509	S.D dependent var		0.042075
S.E of regression	0.032821	Akaike info Criterion		-3.798785
Sum squared resid	0.018313	Schwarz criterion		-3.550821
Log likelihood	46.78664	Hannan-Quinn Criter.		-3.740373
F-statistic	4.377906	Durbin-Watson stat		2.586979
Prob (F-statistic)	0.012926			

The results of ADF test statistics (-2.735791) is more than the significant values (-4.440, -3.632, -3.254) at 10%, 5% and 1% critical level, in that order, H_0 can't be

rejected or concluded. It means unemployment faces a unit root problem and the unemployment is not series of stationary.

Augmented Dickey-Fuller Unit Root Test at 1st difference

Null Hypothesis: UNEMPLOYMENT has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 2 (Automatic-based on SIC, maxlag=5)

Augmented Dickey-Fuller test Statistic	-2.735791	0.2331
Test Critical Values:		
1% level	-4.440739	
5% level	-3.632896	
10% level	-3.254671	

*Mackinnon (1996) one sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(UNEMPLOYMENT)

Method: Least Squares

Sample (adjusted):

Included observations: 22 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
UNEMPLOYMENT (-1)	-0.298348	.109054	-2.735791	0.0141
D(UNEMPLOYMENT (-1))	0.115360	0.166075	0.694526	0.4967
D(UNEMPLOYMENT (-2))	0.502136	0.166288	3.019683	0.0077
C	0.099813	0.027694	3.604081	0.0022
@TREND(1991)	-0.001051	0.001240	-0.847794	0.4083
R-squared	0.507412	Mean dependent var		0.005225
Adjusted R-squared	0.391509	S.D dependent var		0.042075
S.E of regression	0.032821	Akaike info Criterion		-3.798785
Sum squared resid	0.018313	Schwarz criterion		-3.550821
Log likelihood	46.78664	Hannan-Quinn Criter.		-3.740373
F-statistic	4.377906	Durbin-Watson stat		2.586979
Prob (F-statistic)	0.012926			

As the results of ADF test-statistics shows (-4.146) is lesser than significant values (-4.01, -3.62, -3.24) at 10%, 5% and 1% critical level, in that order, and P value is less than 0.05 so H_0 can be rejected or concluded. It means inflation faces no unit root problem and the inflation is a series of stationary.

Null Hypothesis: Unemployment has a unit root

Exogenous: Constant, Linear Trend

Lag Length: 2 (Automatic- based on SIC, maxlag=5)

	t-Statistic	Prob.
Augmented Dickey-Fuller test statistic	-2.735791	0.2331
Test Critical values: 1% level	-4.440739	
Null Hypothesis: D(UNEMPLOYMENT) has a unit root		
Exogenous: Constant, Linear Trend		
Lag Length: 5 (Automatic-based on SIC, maxlag=5)		

	t-Statistic	Prob.
Augmented Dickey-Fuller test statistic	-3.795526	0.0415
Test Critical values: 1% level	-3.571559	
5% level	-3.690814	
10% level	-3.286909	

*Mackinnon (1996) one-sided p-values.

Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 18.

Augmented Dickey-Fuller Test Equation
 Dependent Variable: D(UNEMPLOYMENT,2)
 Method: Least squares

Sample (adjusted):
 Included observations: 18 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DUNEMPLOYMENT (-1))	-1.438090	.378290	-3.795526	0.0035
D(UNEMPLOYMENT(-1),2)	0.383636	0.315619	1.215505	0.2521
D(UNEMPLOYMENT (-2),2)	0.810519	0.281264	2.881702	0.0163
D(UNEMPLOYMENT (-3),2)	0.6898839	0.289904	2.379547	0.0386
D(UNEMPLOYMENT (-4),2)	0.503125	0.253436	1.985211	0.0752
D(UNEMPLOYMENT (-5),2)	0.475703	0.183880	2.587022	0.0271
C	0.043754	0.025282	1.730597	0.1142
@TREND (1991)	-0.002836	0.001493	-1.899079	0.0868

R-squared	0.868673	Mean dependent var	-0.006697
Adjusted R-squared	0.776743	S.D dependent var	0.059520
S.E of regression	0.028123	Akaike info Criterion	-4.003350
Sum squared resid	0.007909	Schwarz criterion	-3.607629
Log likelihood	44.03015	Hannan-Quinn Criter.	-3.948786
F-statistic	9.449370	Durbin-Watson stat	2.245447
Prob (F-statistic)	0.001030		

The results of ADF test statistics shows (-3.79) is less than the significant values (-3.57, -3.69, 3.28) at 10%, 5% and 1% critical level, in that order, and P value is less than 0.05 H_0 can be rejected or concluded. It means unemployment faces no unit root problem and the unemployment is a series of stationary.

For checking the stationary of time series data unit root test of ADF has been used and the overall results shows that “all variables are non-stationary at initial level. After taken first difference variables are stationary at 95% level of significance”.

Engle-Granger

HYPOTHESIS:

- (1) H_0 : unemployment does not affect inflation
- (2) H_0 : inflation does not affect unemployment

Granger Causality Test

Pairwise Granger Causality Tests

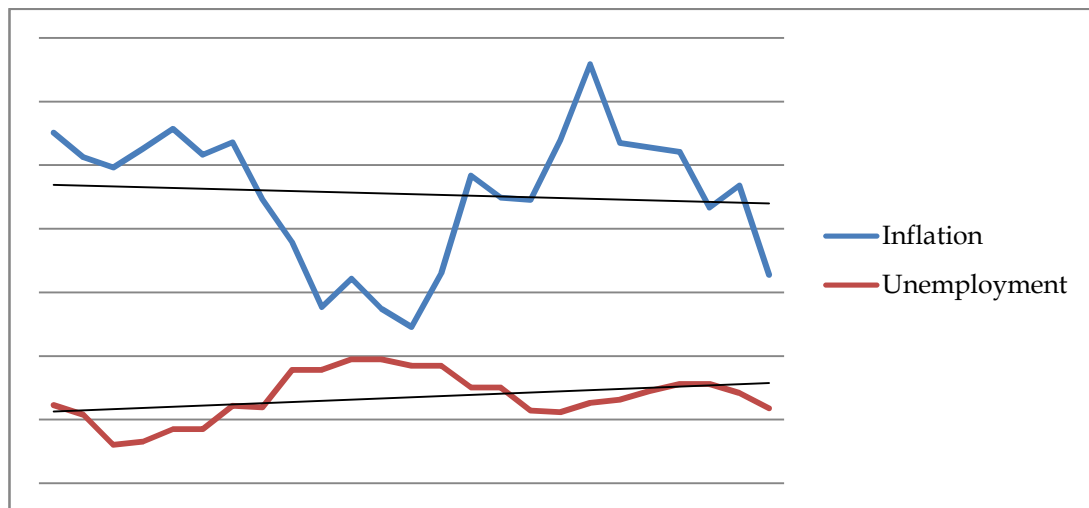
Sample:

Lags: 2

Null Hypothesis:	Obs	F-Statistics	Prob.
UNEMPLOYMENT doesnot Granger Cause INFLATION	23	3.02943	0.0434
INFLATION doesnot Granger Cause UNEMPLOYMENT		0.51559	0.6057

- (1) **Unemployment does not cause Inflation** (we do have sufficient evidences at number of lags Two) where P value is 0.0434, which is less than criterion level,(0.05) hence we reject H_0 hypothesis.
- (2) **Inflation does not cause Unemployment** (we do not have sufficient evidences at number of lags Two), where P value is 0.6057 which is more than criterion level (0.05) so we do not reject H_0 hypothesis.

Trend of inflation and unemployment



Interpretation

Results of above table reveals that inflation was higher in 90's era and at the same time unemployment was showing decreasing trend. From 2001 to 2005 inflation rate showing decreasing trend and unemployment was showing increasing trend. The upward trend of inflation was recorded during 2005 to 2010. At the same time unemployment rate was showing declining trend. Increased inflation results into decreased unemployment rate which ultimately increase employment opportunity in the country.

As demand for labor increased due to increase in employment opportunities, results increase in wage rate which is paid by producer to their labors. It causes to increase cost of production of goods which leads to inflation.

Conclusion

The impact of inflation is upon every one there for it is considered as universal phenomenon. As a scholar, this is our liability to discover the Phillips Curve's actuality that is increased inflation leads to increase the opportunities for jobs that finally results into growth of economic in Pakistan "the research gives insight of presence of Phillips Curve in Pakistan". From this paper Policy makers can get supervision for Pakistan to develop future policy decisions. It could do same for other under developing nations specifically for the members of South Asian Association for Regional Cooperation, such as, Bhutan, Bangladesh, Maldives, India, Srilanka and Nepal. Also we can assess the existence of Philips curve by approaching the SAARC countries.

Recommendations

This empirical research has examined the association between inflation and unemployment and existence of Philips Curve in Pakistan. The study has found the existence of Philips Curve in the Pakistan during the research period. This study recommends the appropriate economic policies may be designed to stabilize the economic growth and control the inflation and unemployment in the economy. Further this study recommends more empirical research on the topic for the guidance of economic policy designers and managers.

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