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Abstract

One of the key drivers for the policy makers is the tie-up between price inflation and unemployment. In relevance to the economic theories in yester years, Phillips Curve has witnessed negative relationship between inflation and unemployment in many economies. This has an implication that if government seeks to reduce the unemployment then the inflation goes up means if it wants to relish the lower unemployment then it has to bear the burden and consequences of inflation. This paper in distinction investigates the Phillips Curve in connection with the Gordon Triangle for the South Asian Countries i.e. Pakistan, India, Bangladesh and Sri Lanka. The systematic investigation is based on historical thirty years of the rates of inflation and unemployment for the countries outlined. The split analysis of each country highlights the relationship between inflation and unemployment, which is positive for Pakistan and negative for Bangladesh, while no relationship has been observed between the two variables (no Phillips curve) for India and Sri Lanka. The negative impact of unemployment on inflation is actually the confirmation of *Phillips Curve,* which is indentified for Bangladesh while the positive association between the unemployment and inflation (Stagflation) is also observed, which is the confirmation of Gordon triangle empirically observed and identified for Pakistan.

Keywords: Inflation, Unemployment, Phillips Curve, Gordon Triangle.

1. Introduction

1.1. Background

In an economy, Phillips Curve is the study of a converse/inverse relationship between the rate of inflation and the rate of unemployment. It has been observed for longer period the tradeoff between the two entities on stable short run basis. This relationship theory has been investigated on different

Performa's for eastern and western economies. It has been evidenced that on aggregate there is no significant relationship between Unemployment and Inflation; however there are the countries, for them the association between the unemployment and inflation were found negative and significant (Phillips Curve) while for few nations the positive association was also observed (Gordon Triangle).

1.2. Objective and Significance of the Study

The purpose of this study is to see the applicability of the Phillips Curve for the South Asian Countries namely Pakistan, India, Bangladesh and Sri Lanka, which are close to the zone of developing countries. Upheavals in inflation due to unemployment and the comprising act between the two variables as designed by Phillips Curve will identify and help one to understand in greater detail the conceptions of inflation (purchasing power, consumer price index, monetary value, nominal interest rates, hyperinflation etc) for the policy makers to set out the open market operations (export) and unemployment (downsizing, minimum wage rates, frictional employment, structural unemployment etc) to translate the outcomes on the basis of globalization and through behavioral economic way. This paper focuses to promulgate the Phillips Curve in short run while keeping an eye on the applicability of Gordon triangle to address the phenomenon of stagflation.

2. Literature Review

Phillips (1958) puts the light upon the theory of a kind of tradeoff between the rate of unemployment and the rate of inflation. Phillips (1958) identified an inverse relationship between money wage changes and unemployment in the British economy over the years. This relationship depicts that the inflation rate depends inversely upon the level of unemployment in an economy. Similar patterns were found in the other countries and Phillip's work was further taken by Solow and Samuelson (1960) made the denotative association between inflation and unemployment, as when inflation was high, unemployment was low and vice-versa. Fisher (1920) noted this kind of Phillips curve relationship way back before the Phillips (1958) where, Phillips' novel curve explained the behavior of money wages. Since the core task of policy-makers of the state is to avoid both high unemployment and runaway inflation, Phillips Curve leaves the choice with the state to choose any one higher and enjoy the lower of other. If we are willing to tolerate high levels of unemployment, simultaneously we can enjoy the low rates of price inflation and vice versa. Many macroeconomic text books, such as Hall and Taylor's Macroeconomics (1993, pp. 597-8) and Dornbusch and Fischer (2002 p.472), use the term "expectations-augmented Phillips curve" to refer to an aggregate relationship between inflation, expected inflation, and the unemployment rate.

Friedman (1970) argued that the Phillips curve relationship was only on a short-run occurrence, as high levels of both inflation and unemployment was experienced by many countries during the years and hence numerous antagonistic arguments were lifted from a group of economists headed by Friedman (1970). They argued that trade-off between inflation and employment is not found present in the longer-run. The significance of this implication is that central banks should not position the employment goals above the normal rate.

Brayton, Roberts, and Williams (1999) studied the dependency of price inflation on the unemployment rate, past price inflation, and standard measures of price supply shocks, to identify the factors behind simultaneous occurrence of low falling price inflation and low unemployment in US. Another study regarding **"**Why there is a long run tradeoff between inflation and unemployment" was conducted by Snower and Karanassou (2002), the authors investigated to identify the impact of price-wage decisions of the different time orientations (i.e.: past wages and prices and future wages and prices) on the shape of the long run Phillips Curve. Snower and Karanassou (2002) concluded that an increase in the money growth raises inflation rate and reduces the unemployment rate in the long run. Hence the long run Phillips Curve is downward sloping, in this context the authors evaluated the long run inflation-unemployment trade off for Spain, where the authors suggested a significant role for monetary policy in combating Spanish unemployment and concluded that the monetary policy has a

very substantial and prolonged effect on unemployment and the inflation. Gordon (1990) also analyzed the Phillips curve and then produced his Gordon triangle model of inflation which eulogizes the new definition of inflation that the current inflation rate equals the sum of demand-pull inflation, supply-shock/ cost- push inflation, and built-in inflation. "Demand-pull inflation" refers to the effects of falling unemployment rates (rising real gross domestic product) in the Phillips curve model, while the other two lead to *shifts* in the Phillips curve. In short, the Gordon (1990) model views inflation as having three root causes: built-in inflation, demand-pull inflation and cost-push inflation and it attempts to account for the phenomenon of stagflation. In other words and more precisely the Phillips curve explains the negative associations between the unemployment and inflation, while, Gordon triangle model accentuates upon the positive associations between the rate unemployment and inflation rate.

3. Methodology

A sample of 30 years for rate of Inflation and Unemployment have been taken for all four countries of South Asian zone, from the year 1981 to 2010 and the data is acquired from online resources which includes UNO's official website and Indexmundi website. The data is analyzed and investigated through using the Simple Linear Regression via data split technique. The regression model stated as equation 1, is used as a base to show the relationship of inflation with unemployment while the rate of inflation and unemployment rate are taken as the dependent and the independent variables respectively.

$$RoI = \alpha + \beta i RoU + \varepsilon \quad (1)$$

Where,

RoU = the rate of unemployment,

α = the intercept: value predicted by the model,

βi = the coefficient value of the predictor;

RoI = the rate of inflation and

ε = the error term.

4. Findings and Results

The table 1 and 2 (Model Summary and ANOVA) reports the strength and acceptability of the relationship between the model and the dependent variable. The R Square for Pakistan and Bangladesh is significant (i.e. R2 = 0.154 at F=4.732 for Pakistan; R2 = 0.512 at F= 7.335 for Bangladesh) which tells that the model which is expressed in equation 1 explain significantly to rate of inflation 15.4% and 51.2 % respectively to Pakistan and Bangladesh while the same model which is comprised upon the intercept and the predictors (Rate of unemployment and intercept) is found not-significant for the India and Srilanka means for these both nations the model for the Philip curve is not applicable.

To see the relative comparison of the relationship between Inflation and Unemployment in all four countries we follow table 3 (coefficients table). This table reveals that for Pakistan and Bangladesh coefficients (Beta) are significant where, the rate of unemployment has a significant negative association with inflation rate for Bangladesh, which reflects the Phillips curve applicability for Bangladesh while for Pakistan the significant positive beta shows that there is a positive association between the rate of unemployment and rate of inflation which reflects the practicability of Gordon triangle model for Pakistan and confirms the condition of stagflation in this country.

Table 1: Model Summary

Name of the Country	R	R Square	Adjusted R Square	Std. Error of the Estimate
Pakistan	.392[a]	.154	.121	3.76735
India	.400[a]	.160	.040	3.31212
Bangladesh	.715[a]	.512	.442	1.36305
Sri Lanka	.245[a]	.060	.011	4.86263

Table 2: ANOVA

Name of the Country		Sum of Squares	df	Mean Square	F	Sig.
Pakistan	Regression	67.156	1	67.156	4.732	.039a
	Residual	369.016	26	14.193		
	Total	**436.172**	**27**			
India	Regression	14.586	1	14.586	1.330	.287a
	Residual	76.791	7	10.970		
	Total	**91.377**	**8**			
Bangladesh	Regression	13.627	1	13.627	7.335	.030a
	Residual	13.005	7	1.858		
	Total	**26.633**	**8**			
Sri Lanka	Regression	28.759	1	28.759	1.216	.284a
	Residual	449.258	19	23.645		
	Total	**478.017**	**20**			

Predictors: (Constant), Rate of Unemployment
Dependent Variable: Rate of Inflations

Table 3: Coefficients

Name of the Country		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	**Std. Error**	**Beta**		
Pakistan	(Constant)	4.672	1.738		2.688	.012
	Rate of Unemployment	.559	.257	.392	2.175	.039
India	(Constant)	-1.721	7.461		-.231	.824
	Rate of Unemployment	.961	.833	.400	1.153	.287
Bangladesh	(Constant)	7.875	.611		12.898	.000
	Rate of Unemployment	-.071	.026	-.715	-2.708	.030
Sri Lanka	(Constant)	7.436	3.348		2.221	.039
	Rate of Unemployment	.364	.330	.245	1.103	.284

Predictors: (Constant), Rate of Unemployment
Dependent Variable: Rate of Inflations

5. Conclusion and Discussions

In the light of above results we found that although there is no existence of Phillips Curve for India and Sri Lanka. However, in comparative analysis we come to know that there is a significant negative relationship between rate of unemployment and inflation rate in Bangladesh. Consequently, Bangladesh solely witnesses the existence of Phillips Curve, This situation can be the result of migration of the locals for job retention, and people may begin supplementing their income sources to make a tradeoff between their current spending and future requirement.

In contrast, this paper eulogized the positive relationship between inflation and unemployment in Pakistan, which reflects the shift in Phillips curve and the existence of Gordon triangle, which is far logical for a country like Pakistan where slow economic growth and stagflation have been observed for not decades but since its inception.

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