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The Monetarist Versus the Neo-Keynesian Views on Inflation: The Case of Pakistan

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ABSTRACT

Purpose: This research investigated and contrasted the Monetarist and the neo-Keynesian case for inflation behavior in Pakistan's economy from 1971 to 2019.

Methodology: Applying three dynamic Ordinary Least Squares (OLS) models, with three indicator variables for inflation (GDP deflator, Consumer Price Index and Wholesale Price Index) used one by one as dependent variable, the analysis tests the fundamental arguments of the Monetarist and the neo-Keynesian positions concerning inflation, unemployment, and money supply.

Results: The findings dominantly support the Monetarist position, indicating a significant positive relationship between money supply growth and inflationary trends, while the impact of unemployment on inflation remains minimal. However, the neo-Keynesian view also holds validity in specific contexts where unemployment negatively influences inflation. This duality underscores the complexity of Pakistan's inflation dynamics, and the contributions and relevance of both schools of thought in the country's economy.

Originality: The utilization and testing of multiple inflation indicators against three dynamic models comprehensively captures different aspects of Pakistan's economy, thereby contributing a more nuanced understanding of the subject matter to the literature.

Keywords: Unemployment, Inflation, Money Supply, Keynesian, Monetary Theory

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1. INTRODUCTION

The struggle between the Monetarist and the neo-Keynesian view on inflation is as real in public policy as in the academic literature. Monetarists hypothesize that an increase in the money supply mainly causes inflation; that is, the inflation rate is determined by the rate of monetary expansion and its acceleration. This relationship holds, they argue, even when there is high unemployment. Resultantly, they view a tight monetary policy as the most effective tool for combating inflation, regardless of the state of the labor market. To elaborate, monetarists believe that the relationship between the money supply and inflation is governed by the quantity theory of money, which states that the general price level in an economy is proportional to the amount of money in circulation.

Neo-Keynesians, on the other hand, believe that inflation is not entirely dependent on the rate of monetary expansion but rather on the state of the economy, particularly the unemployment level. According to neo-Keynesians, a tight monetary policy would not lead to higher inflation if the unemployment rate exceeds the natural or equilibrium rate. They hypothesize that the relationship between inflation and unemployment is described by the Phillips Curve, which shows an inverse relationship between the two. Inflation tends to rise as unemployment falls, and vice versa. They also believe that the Phillips Curve is not a fixed relationship but is affected by other factors such as expectations, supply shocks, and labor market institutions.

While monetarists focus on the relationship between monetary expansion and inflation, neo-Keynesians emphasize the role of unemployment and the state of the economy in determining inflationary pressures. With the recent independence of The State Bank of Pakistan and the economic turmoil the country is facing, both approaches have become very relevant for the revival of the economy. An autonomous State Bank theoretically means insulation from political interference and complete ability to utilize instruments for conducting its policies. Independence of the State Bank is an idea that gained popularity during the late 1970s and the early 1980s when developed economies of the world were facing high inflation levels due to the oil crisis. However, it is essential to note that most of these countries (Japan, New Zealand, and Australia–to name a few), at that time had comparatively higher per capita incomes than Pakistan today. In 1985, for example, the GDP per capita (in current US dollars) of New Zealand, Australia, and Japan was $7,601, $11,441, and $11,819, respectively. In 2023, Pakistan stood at $1,407 only (World Bank, 2024). Moreover, they also had sustained economic development and growth levels beforehand, which may have helped them focus entirely on inflation targeting.

The State Bank of Pakistan has leaned towards a monetarist approach since 1956 when it announced the SPB Act of 1965. More recently, the State Bank "envisages formal implementation of a Flexible Inflation Targeting (FIT) regime as a key policy objective going forward," an account on their official website claims. "Adopting this policy framework would further enhance SBP's core objective of ensuring price stability while pursuing higher and sustainable economic growth "(SBP, 2020). Briefly, this is monetary targeting for reducing inflation.

The objective of the present study is to investigate and contrast the Monetarist (Classical) and the neo-Keynesian case for inflation behavior in Pakistan's economy from 1971 through 2019. Particularly, it evaluates the hypotheses of both schools of thought by examining the relationships between inflationary trends, money supply growth, and unemployment rates. Historically, how has money supply and unemployment influenced inflation in Pakistan? In the Monetarist case, a positive and significant relationship between money supply growth and inflationary trends will be observed. In the neo-Keynesian case, an inverse relationship between unemployment and inflation will be encountered. Which economic school of thought—Monetarist or Neo-Keynesian—better explains the inflation dynamics in Pakistan? These research questions are tackled in the present study.

Furthermore, three dynamic models are applied with three different indicator variables for inflation (GDP deflator, Consumer Price Index and Wholesale Price Index) to test the robustness of these relationships. The inflation GDP deflator measures the overall price changes in the economy; the consumer price index (CPI) captures the demand side; and the wholesale price index (WPI) indicates price changes at the production or supply level.

Previous literature typically uses a single variable for inflation, potentially capturing only one aspect of the economy and thereby supporting a single approach (either Monetarist or neo-Keynesian) while disregarding the other. The significance of this research lies in its attempt to bridge this essential research gap. This is done in two ways. Firstly, the study tests both hypotheses with three dynamic models incorporated in Darrat (1985) that adhere to the fundamental arguments of the Monetarist and the neo-Keynesian schools of thought. Secondly, utilizing three indicator variables for inflation that cover different aspects of Pakistan's economy, the findings of the study are arguably comprehensive, inclusive, and impartial. This produces a more realistic and nuanced understanding of the subject matter, avoiding overfitting or overestimating the models to favor one school of thought over the other.

The paper is divided into five sections. The "Introduction" distinguishes between the monetarist and neo-Keynesian viewpoints and highlights the context and objectives of this study. The "Literature Review" briefly overviews the existing research papers testing the relationships between inflation, unemployment, and money supply. The data collection, methodology, and econometric modeling approach employed are explained in the "Data and Methodology" section. The "Analysis & Discussion" summarizes the dynamic models when applied to the data of Pakistan and interprets the results. Lastly, "Conclusion" concisely summarizes the results obtained and what they mean about the paper's original problem statement.

2. LITERATURE REVIEW

The related papers in the literature have undertaken various pathways to explore and contrast the Monetarist and neo-Keynesian approaches to inflation. These studies have worked on data spanning different periods and countries. While this research focuses on Pakistan's data, studies are undertaken with panel data, including various countries. Papers that focus on Pakistan and other countries as well have been analyzed. The studies have employed different modeling techniques, such as simple regression analysis, Autoregressive Distributed Lags (ARDL), and Vector Autoregression (VAR), to examine the relationship between inflation, unemployment, and money supply.

Pakistan

Hossain (1990) used the theoretical model of Stein (1982) to investigate the acceleration of inflation in South Asian countries, including Bangladesh, India, Nepal, Pakistan, and Sri Lanka. The research aimed to test whether changes in real money balances and bond-financed government expenditures substantially impact inflation. The results contradicted the neo-Keynesian view in all countries except Bangladesh, suggesting support for the monetarist perspective.

Stylianou *et al.,* (2024) investigated the short-run and long-run relationship between money supply and inflation in Pakistan using data from 1981 to 2021. Utilizing an Autoregressive Distributed Lag (ARDL) bounds testing technique, the results showed a negative relationship between unemployment and inflation and a positive association between money supply and inflation. Azra *et al.,* (2020) likewise observed that money supply caused inflation in Pakistan, using annual data from 1990 to 2017. Moreover, the authors found that imports, exchange rate and budget deficit are also major causes of inflation, while growth in GDP is likely to reduce it.

Mansoor *et al.,* (2018) examined the relationship between money supply, price level, and economic growth in Pakistan. They employed the Auto Regressive Distributed Lags (ARDL) model and analyzed data from 1980

to 2016. The findings indicated a long-run relationship between broad money, price level, and economic growth, with income exerting a unidirectional influence on the money supply. These results provided empirical support for the monetarist view.

Using the Johenson's test for cointegration, Sherazi *et al.,* (2022) aimed to discover the determinants of inflation in Pakistan from 1980 through 2018. Their empirical results showed inflation's positive relationship with money supply, import prices and interest rate – and its negative association with unemployment and government consumption expenditure. Kemal (2006) examined whether inflation in Pakistan is a monetary phenomenon by applying the quantity theory of money. The study demonstrated that increased money supply leads to a higher inflation rate, with a significant lag of approximately nine months. These findings supported that the system takes time to converge to equilibrium when shocks occur in GDP, money supply, or prices.

Researchers have explored broader perspectives by considering factors like political instability, a significant contributor to inflation in developing countries like Pakistan. Azam and Rashid (2014) conducted a regression analysis to examine Pakistan's monetarist hypothesis of inflation. They hypothesized that money supply is a primary determinant of inflation, but their findings revealed that structural factors such as wheat, oil, and import prices had a more significant impact. Their study emphasized the importance of policymakers addressing food supply and import prices to control inflation in Pakistan effectively. Political instability's association with inflation in Pakistan was explored by Khan and Saqib (2011) using the Generalized Method of Moments technique. Their research indicated that political instability significantly contributes to high inflation in Pakistan. They identified monetary and non-monetary models, explicitly establishing a positive relationship between political instability and inflation.

Empirical support for the Keynesian view in the context of Pakistan is not absent in the literature. Munir and Riaz (2019) explored the macroeconomic effects of fiscal policy in Pakistan, investigating the impact of various fiscal variables on private consumption, private investment, prices, real GDP, and interest rates. Their findings align with the Keynesian view, suggesting that fiscal policy influences these macroeconomic variables. Stylianou *et al.,* (2024) and Sherazi *et al.,* (2022), in addition to finding money supply growth's positive impact on inflation, also observed latter's negative association with unemployment.

Other Countries

Relevant studies have been conducted that explore relationships between inflation, money supply, and unemployment in different countries.

In relation to support for the Keynesian view, Atgür (2020) found support for the validity of Phillip's Curve (inverse relationship between unemployment and inflation) in the case of Turkey for the period 1988-2017. Moreover, a study by Akkina (1999) estimated nine models to test propositions on unemployment and inflation models for the Scandinavian countries (Denmark, Finland, Norway, and Sweden) based on annual data from 1960 through 1987. Even though the results strongly support the monetarist viewpoint on unemployment, they do not support the same view about inflation. Moreover, the study supports the Keynesian position in explaining the relationship between unemployment and inflation. Likewise,

In line with the Monetarist view, Abu-Alshaeer *et al.,* (2024) – employing the Autoregressive Distributed Lag (ARDL) approach for the data spanning from 2013 to 2023 – found that an increase in the money supply causes inflation in Iraq. In the case of The Gambia, Jawo *et al.,* (2023) used data from 1985 to 2021 and found that money supply, real effective exchange rate, and economic growth positively cause inflation in the long run, but are negatively associated with it in the short run. The authors recommended a shift from monetary targeting to inflationary targeting.

Imoisi *et al.,* (2023), employing annual data from 1970 to 2020 for the case of Nigeria, found that money supply has a positive and significant impact on inflation, while exchange rate and government expenditure

have insignificant effects on inflation. Similarly, Toriola *et al.,* (2022) showed that the money supply exerts a positive impact on inflation in the Nigerian economy using the data over the period 1981-2016. Moreover, they found that government capital spending negatively affects inflation, while the impact of government recurrent spending is insignificant.

Contrary to the neo-Keynesian view, which hypothesizes an inverse relationship between inflation and unemployment, Bennett (2023) found positive relationship between the two variables in short-run and long-run for South Africa. Hence, the author concluded non-existence of Hybrid New Keynesian Phillips Curve (HNKPC) in SA. The time series analysis conducted by Bükey and Kalkan (2024) for the case of Germany, using monthly data from January 1992 to April 2023, found no causal relationship between inflation and unemployment in short-tun or long-run.

Darrat (1985) compared the approach of monetarists and neo-Keynesians on inflation using Italian data. The study analyzes the relationship between unemployment, money supply, and inflation in Italy from 1955 to 1983. The author finds that the monetarist view, which emphasizes the role of money supply in driving inflation, is supported by the evidence. In contrast, the neo-Keynesian view, which highlights the role of aggregate demand, is less supported. The dynamic models applied in Darrat (1985) provide the basis for the models used in this study.

State Intervention: Historical and Contemporary Perspectives

The argument for the extent of state intervention in economic life is an ongoing debate. Elhefnawy (2020) thoroughly compared Keynesian Fordism (the state keeps the economy in check) and Neoliberal Financialization (the state retreats from many areas of economic life) by delving into their economic and historical context. Yuan (2024) quantitatively examined seven developed countries (Canada, Germany, France, Japan, Italy, the United Kingdom, the United States, and China) from 1980 to 2020. Based on the results, the study contends that the neoliberal economic model was effective in the second half of the twentieth century – to overcome inflationary pressures – but is failing to sustainably meet the needs of the post-industrial, digital economy.

Theoretically, Best (2020) examines the early "failures" of neoliberal economic policies, and how they indirectly created conditions for the return of Keynesian-style interventions in the recent era. Due to the COVID-19 pandemic, there was a sudden demand for fiscal stimulus worldwide, which imbued Keynesianism in public policy. Chohan (2022) discusses the implications of this policy change from the neoliberal fiscal realm to Keynesianism. The study theoretically approaches the possible trajectory of public finance in post-COVID era, suggesting that the path may lead to either Keynesianism, neoliberalism, or a mixed/other paradigm.

Hogan (2021) mentioned the European Union's shift from accepting austerity in fiscal policy to a more neo-Keynesian approach of fiscal intervention, especially in the face of economic crises such as the one caused by the COVID-19 pandemic. Merchant (2023) showed that after four decades of free-market capitalist ideology in the United States, industrial policy of government intervention has returned with the inauguration of the Biden-Harris Administration.

In summary, despite historical tilt towards the Monetarist economic school of thought, there is mixed empirical evidence for monetarist and neo-Keynesian views on inflation in the literature. This paper, therefore, aims to evaluate the relationship between inflation, money supply and unemployment in Pakistan using different indicators for inflation as dependent variable, employed one at a time, and applying the collected data through different econometric models.

3. DATA AND METHODOLOGY

The paper utilizes a time series analysis approach to examine and contrast the Monetarist versus the Neo-Keynesian views on inflation in the case of Pakistan. Using annual data from 1971 through 2019, the study employs three dynamic models to test the hypothesis. The procedure for data collection, model building, and hypothesis testing are described in this section.

Data Collection

Annual data has been collected from essentially two sources: the International Financial Statistics (IFS), a store of macroeconomic and financial data collected by the International Monetary Fund (IMF), and the World Development Indicators (WDI), a database of development indicators maintained by the World Bank. Notably, the unemployment series contained missing values for observations corresponding to the years 2012, 2016, and 2017. The series also included, as can be seen in Figure **1**, breaks and irregular seasonality, due to which specific techniques for forecasting were applied.

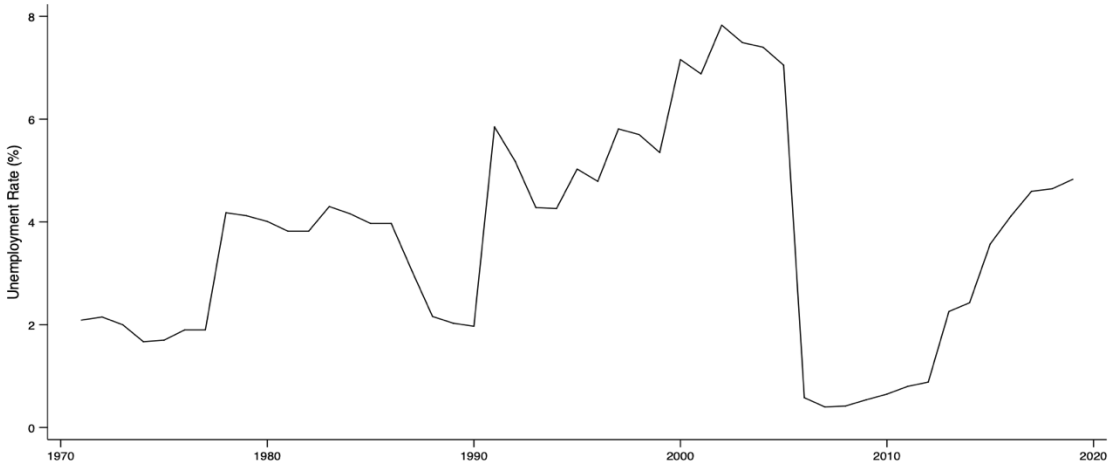

Figure 1. Unemployment Rate in Pakistan (1971-2019)

The 2012 missing value was forecasted using Exponential Triple Smoothing (ETS) using the values of the previous five years. ETS was employed to capture any seasonality in the previous years that might have been helpful in estimating the value for 2012. The 2016 and 2017 values were filled using linear regression using 2011-2015 and 2010-2016 values, respectively. The overall trend during and after these timelines appeared to be linear, hence linear forecasting was used to impute the missing values for 2016 and 2017. Sequential replacement was used in forecasting; that is, the 2012 predicted value was used in predicting the value for 2016, and similarly, these two estimations were used to indicate the value for 2017. The forecasted values provide the series with a smoother pattern towards the end, contrary to the historical irregular seasonality prior to 2010. Nonetheless, the overall upward trend from 2010 is suitably captured, which would suffice for the analysis in this study.

The paper collects three indicator variables for inflation. The inflation GDP deflator measures the overall price changes in the economy; the consumer price index (CPI) captures the price changes at the consumer or demand side; and the wholesale price index (WPI) indicates price changes at the production or supply level. All the variables are expressed as percent change per annum. These are shown in Figure **2**. Outliers in the different inflation series are treated via use of year-specific dummies. Since inflation is the dependent variable for this study, all three will be used, one by one, in the models to check for any mismatch that might appear in the

results at the demand or supply or overall level. The descriptive statistics of the collected variables are mentioned in Table **1**.

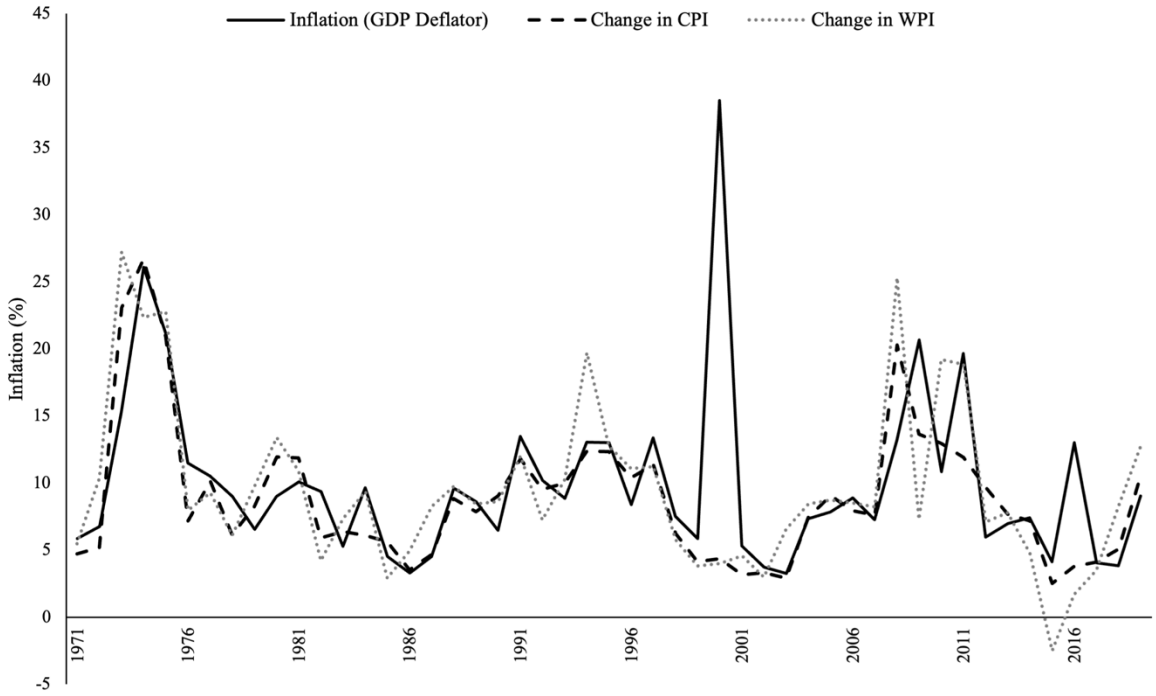

Figure 2. Trend of Different Inflation Series in Pakistan (1971-2019).

Table 1. Descriptive Statistics of Collected Variables.

Symbol	Variable	Description	Source	Mean	SD	Min	Max
U	Unemployment	Unemployment rate (annual %)	IFS	3.67	2.07	0.4	7.83
μ	Money Supply Growth	Broad money (M2) growth rate (annual %)	WDI	15.53	7.12	-1.2	42.91
π*	Inflation GDP Deflator	Inflation is measured as the growth rate of GDP implicit deflator (annual %)	WDI	9.95	6.41	3.26	38.51
π	Consumer Price Index	Growth in Consumer Price Index (CPI) of all items (annual %)	IFS	8.92	5.19	2.53	26.66
π	Wholesale Price Index	Growth in Wholesale Price Index (WPI) of all items (annual %)	IFS	9.58	6.15	-2.52	27.23

*π is used with all three inflation variables.

Econometric Modelling

The paper conducts Dickey-Fuller (DF), Augmented Dickey-Fuller (ADF), Phillips-Perron (PP), and ADF-GLS unit root tests for the selected variables. Results are summarized in Table **2**.

Table 2. Unit Root Testing Results.

		Dickey-Fuller (DF)	Augmented Dickey-Fuller (ADF)	Philips-Perron (PP)[a]	ADF-GLS[b]
Unemployment Rate	Stationarity	I(0)**	I(0)**	I(0)*	I(0)*
	Specification	Drift	Drift	Drift	No Trend
	Lags	-	1	3[c]	1
Money Supply Growth	Stationarity	I(0)***	I(0)***	I(0)***	I(0)***
	Specification	Drift	Drift	Drift	No Trend
	Lags	-	1	3	0
Consumer Price Index	Stationarity	I(0)***	I(0)***	I(0)***	I(0)***
	Specification	Drift	Drift	Drift	No Trend
	Lags	-	1	3	1
Wholesale Price Index	Stationarity	I(0)***	I(0)***	I(0)***	I(0)***
	Specification	Drift	Drift	Drift	No Trend
	Lags	-	1	3	3
Inflation GDP Deflator	Stationarity	I(0)***	I(0)***	I(0)***	I(0)***
	Specification	Drift	Drift	Drift	No Trend
	Lags	-	1	3	1

***, ** and * rejecting null that unit root exists at, 1%, 5% and 10% significance respectively

[a] Testing against Z(rho) Test Statistic

[b] Testing against DF-GLS mu Test Statistic

[c] Newey-West lags, calculated by software through int(4*(N/100)^(2/9))

All variables are integrated of order zero according to each test; they are stationary at level series, which is expected of a string representing annual change. Based on the results of these tests, the Ordinary Least Square approach would be an appropriate choice for testing the paper's hypothesis.

The research employs three dynamic models. The first of these, proposed by Stein (1982), uses the inflation acceleration (expressed as the difference of inflation) as the dependent variable and the lags of unemployment, inflation, and money supply as independent variables:

$$\Delta\pi_t = \alpha_0 + \alpha_1 U_{t-1} + \alpha_2 \pi_{t-1} + \alpha_3 \mu_{t-1} + \varepsilon_t \quad (1)$$

In the case of the monetarist hypothesis, α_1 (the effect of the unemployment rate on inflation) is close to zero, α_2 is negative and significant, and α_3 (the impact of money supply growth on inflation) is positive and significant. For the neo-Keynesian hypothesis, α_1 is negative and statistically significant, while α_2 and α_3 are not statistically different from zero.

The second model, suggested by Turnovsky and Wohar (1984), utilizes the inflation variable at level series but includes the lag of the change of unemployment rate (expressed as the difference of unemployment) as one of the explanatory variables:

$$\pi_t = \beta_0 + \beta_1 U_{t-1} + \beta_2 \pi_{t-1} + \beta_3 \mu_{t-1} + \beta_4 \Delta U_{t-1} + e_t \quad (2)$$

Again, in the case of the monetarist hypothesis, β_1 is close to zero, β_2 is negative and significant, and β_3 is positive and significant. Moreover, $\beta_2 + \beta_3$ is approximately equal to unity. For the neo-Keynesian hypothesis, β_1 is negative and statistically significant, while β_2 and β_3 are not statistically different from zero.

Lastly, Stein (1982) proposes a model that employs inflation acceleration as the dependent variable and introduces the difference between lagged unemployment rate and lagged inflation rate, hence imposing the restriction that both these variables have "identical effects on the acceleration of inflation "(Darrat, 1985).

$$\Delta\pi_t = \delta_0 + \delta_1 U_{t-1} + \delta_2[\mu_{t-1} - \pi_{t-1}] + u_t \qquad (3)$$

In the context of this model, the monetarists claim that δ_1 is close to zero and δ_2 is significantly positive. On the other hand, neo-Keynesians argue that δ_1 is negative and statistically significant, while δ_2 is not statistically different from zero.

Upon estimating the models, the paper proceeds to hypothesis testing. The theories will be tested by evaluating the coefficients' sign, magnitude, and statistical significance for the relevant variables. Moreover, post-regression diagnostic and robustness tests were performed on all models to observe if serial correlation or heteroscedasticity existed. These include the Durbin-Watson statistic, which helps detect autocorrelation; the Breusch-Godfrey LM test, which examines the correlation of the model's residuals; and White's test, which checks the variance of error terms.

Analysis and Discussion

The empirical results of the first model are summarized in Table **3**. When the GDP deflator is selected as the dependent variable, the lagged unemployment rate's effect on inflation acceleration is negative and significant. Moreover, the impact of the lag of money supply growth on the acceleration of inflation is close to zero and insignificant. These two findings are in support of the neo-Keynesian view. On the other hand, the effect of lagged inflation on the acceleration of inflation is negative and significant, which is in line with the monetarist view. Hence, the model does not provide a conclusive position.

For the same model, but when either CPI or WPI is selected as the dependent variable, the lagged unemployment rate's effect on inflation acceleration becomes insignificant, and the impact of the lag of money supply growth on the acceleration of inflation becomes significantly positive. Moreover, the impact of lagged inflation upon the acceleration of inflation is negative and statistically significant in these cases. Hence, the first model empirically supports the monetarist position for Pakistan when CPI or WPI are used as indicators for inflation.

Table 3. OLS Regression Results – Model 1

$\Delta\pi_t = \alpha_0 + \alpha_1 U_{t-1} + \alpha_2 \pi_{t-1} + \alpha_3 \mu_{t-1} + \varepsilon_t$								
Dependent	**ΔInflation GDP Deflator**			**ΔCPI**			**ΔWPI**	
	Coefficient (Standard Errors)	**P-Value**		**Coefficient (Standard Errors)**	**P-Value**		**Coefficient (Standard Errors)**	**P-Value**
Constant	10.723*** (2.064)	0.000		4.241** (1.662)	0.014		4.673** (1.783)	0.012
Unemployment(t-1)	-0.74*** (0.272)	0.009		-0.184 (0.207)	0.380		-0.014 (0.232)	0.952
Inflation(t-1)	-0.934*** (0.088)	0.000		-0.674*** (0.086)	0.000		-0.851*** (0.077)	0.000
Money Supply Growth(t-1)	0.003 (0.081)	0.970		0.096* (0.055)	0.087		0.116* (0.059)	0.057

D1	31.349*** (3.964)	0.000						
D2	10.451*** (2.404)	0.000						
D3				12.538*** (1.523)	0.000			
D4							13.695*** (1.324)	0.000
D5							-9.212*** (2.967)	0.003
Number of Observations	48			48			48	
R-Square	0.826			0.707			0.826	
Adjusted R-Square	0.806			0.68			0.805	
F Value	40***			25.95***			39.87***	
Root MSE	3.762			2.623			2.862	

*** significant at the 1% level, ** significant at the 5% level, * and significant at the 10% level.

D1: dummy 1, 1 if year=2000, to accommodate outlier value in Inflation GDP Deflator.

D2: dummy 2, 1 if year=1973,4,5, else 0, to accommodate outlier values in Inflation GDP Deflator.

D3: dummy 3, 1 if year=1973,4,5,2008, else 0, to accommodate outlier values in Consumer Price Index.

D4: dummy 4, 1 if year=1973,4,5,1994,2008,10,11 to accommodate positive outlier values in Wholesale Price Index.

D5: dummy 5, 1 if year=2015, to accommodate the only year with negative inflation in Wholesale Price Index.

The empirical results of the second model are summarized in Table **4**. When the GDP deflator is selected as the dependent variable, the effect of lagged unemployment rate on the acceleration of inflation is negative and significant. Moreover, the impact of the lag of money supply growth on the acceleration of inflation is insignificant and not much different from zero. In this case, the effect of lagged inflation on the acceleration of inflation is insignificant. Hence, the findings are in favor of the neo-Keynesian view.

When either CPI or WPI is selected as the dependent variable, the effect of lagged unemployment rate on the acceleration of inflation becomes insignificant, and the impact of the lag of money supply growth on the acceleration of inflation becomes significantly positive (the monetarist position). At the same time, the effect of lagged inflation upon the acceleration of inflation is positive and statistically significant, which does not support the monetarist standpoint. Though inclining more toward the monetarists, the second model empirically does not provide a conclusive position when either CPI or WPI is opted.

Table 4. OLS Regression Results – Model 2

$\pi_t = \beta_0 + \beta_1 U_{t-1} + \beta_2 \pi_{t-1} + \beta_3 \mu_{t-1} + \beta_4 \Delta U_{t-1} + e_t$						
Dependent	**ΔInflation GDP Deflator**		**ΔCPI**		**ΔWPI**	
	Coefficient (Standard Errors)	**P-Value**	**Coefficient (Standard Errors)**	**P-Value**	**Coefficient (Standard Errors)**	**P-Value**
Constant	10.987*** (2.131)	0.000	4.463** (1.743)	0.014	4.156** (4.156)	0.030
Unemployment(t-1)	-0.825*** (0.295)	0.008	-0.233 (0.224)	0.307	0.036 (0.248)	0.883
Inflation(t-1)	0.048 (0.092)	0.606	0.315*** (0.088)	0.001	0.162** (0.077)	0.045

Money Supply Growth(t-1)	0.02 (0.09)	0.22	0.101* (0.06)	0.099	0.123* (0.065)	0.063
ΔUnemployment(t-1)	0.3 (0.517)	0.564	0.130 (0.347)	0.710	0.019 (0.375)	0.961
D1	31.677*** (4.086)	0.000				
D2	10.516*** (2.455)	0.000				
D3			12.538*** (1.523)	0.000		
D4					13.836*** (1.339)	0.000
D5					-8.962 *** (2.996)	0.005
Number of Observations	48		48		48	
R-Square	0.701		0.768		0.815	
Adjusted R-Square	0.657		0.74		0.787	
F Value	15.65***		27.12***		29.38***	
Root MSE	3.812		2.67		2.882	

$***$ significant at the 1% level, $**$ significant at the 5% level, $*$ and significant at the 10% level.

D1: dummy 1, 1 if year=2000, to accommodate outlier value in Inflation GDP Deflator.

D2: dummy 2, 1 if year=1973,4,5, else 0, to accommodate outlier values in Inflation GDP Deflator.

D3: dummy 3, 1 if year=1973,4,5,2008, else 0, to accommodate outlier values in Consumer Price Index.

D4: dummy 4, 1 if year=1973,4,5,1994,2008,10,11 to accommodate positive outlier values in Wholesale Price Index.

D5: dummy 5, 1 if year=2015, to accommodate the only year with negative inflation in Wholesale Price Index.

The empirical results of the third model are summarized in Table **5**. Upon employing any indicator variable for inflation, the effect of lagged unemployment rate on the acceleration of inflation is insignificant. At the same time, the second term's coefficient is positive and highly significant. These results are consistent with the monetarist viewpoint. Hence, the third model empirically supports the monetarist position for Pakistan when any indicator for inflation is selected.

Table 5. OLS Regression Results – Model 3

$\Delta\pi_t = \delta_0 + \delta_1 U_{t-1} + \delta_2[\mu_{t-1} - \pi_{t-1}] + u_t$						
Dependent	**ΔInflation GDP Deflator**		**ΔCPI**		**ΔWPI**	
	Coefficient (Standard Errors)	**P-Value**	**Coefficient (Standard Errors)**	**P-Value**	**Coefficient (Standard Errors)**	**P-Value**
Constant	-1.73 (1.822)	0.348	-3.42*** (1.114)	0.004	-5.782*** (1.487)	0.000
Unemployment(t-1)	-0.57 (0.408)	0.170	0.209 (0.25)	0.406	0.485 (0.325)	0.142
[Money Supply Growth(t-1) – Inflation(t-1)]	0.433*** (0.086)	0.000	0.275** (0.056)	0.000	0.4*** (0.065)	0.000
D1	38.09***	0.000				

	(5.811)					
D2	10.218*** (3.62)	0.007				
D3			11.228*** (1.926)	0.000		
D4					12.596*** (1.932)	0.000
D5					-5.395 (4.286)	0.215
Number of Observations	48		48		48	
R-Square	0.597		0.508		0.616	
Adjusted R-Square	0.559		0.474		0.58	
F Value	15.93***		15.13***		17.23***	
Root MSE	5.665		3.362		4.202	

*** significant at the 1% level, ** significant at the 5% level, * and significant at the 10% level.

D1: dummy 1, 1 if year=2000, to accommodate outlier value in Inflation GDP Deflator.

D2: dummy 2, 1 if year=1973,4,5, else 0, to accommodate outlier values in Inflation GDP Deflator.

D3: dummy 3, 1 if year=1973,4,5,2008, else 0, to accommodate outlier values in Consumer Price Index.

D4: dummy 4, 1 if year=1973,4,5,1994,2008,10,11 to accommodate positive outlier values in Wholesale Price Index.

D5: dummy 5, 1 if year=2015, to accommodate the only year with negative inflation in Wholesale Price Index.

The aforementioned findings dominantly support the Monetarist position, indicating a significant positive relationship between money supply growth and inflationary trends, while the impact of unemployment on inflation remains selectively minimal. However, the neo-Keynesian view also holds validity in specific contexts where unemployment influences inflation. This duality underscores the complexity of Pakistan's inflation dynamics, and the contributions and relevance of both schools of thought in the country's economy.

The partial support for the neo-Keynesian perspective, particularly in the sub-models where unemployment influenced inflation, suggests that the relationship between the variables under study is complex and may be context-dependent. It calls for a more nuanced approach to public policy, recognizing that the labor market conditions cannot be entirely disregarded to explain the inflation phenomenon. Further, the sub-models that are displaying inconclusive results possibly point towards uncertain structural or exogenous elements, such as the informal employment sector or external shocks causing political instability and worldwide economic fluctuations. The impact of such structural/exogenous elements on the relationships between inflation, unemployment and money supply can become the subject of future research.

Providing a balanced view by acknowledging the contributions of both the Monetarist and the neo-Keynesian standpoints, this study proposes that a hybrid policy framework – that is adaptable and context-sensitive – may be more effective in the context of Pakistan's economic climate.

4. CONCLUSION

The study explores the relative merits of the Monetarist and the neo-Keynesian approaches for the case of Pakistan. Using OLS technique, three dynamic models were applied, and each model was then significantly

analyzed for the three dependent variables employed for inflation, namely GDP deflator, CPI and WDI. The summary matrix of the findings is presented in Table **6**.

Table 6. Summary Matrix of Model Findings.

	Inflation GDP Deflator	**CPI**	**WPI**
Model 1	Inconclusive	Monetarist	Monetarist
Model 2	Neo-Keynesian	Inconclusive, but inclining towards Monetarist	Inconclusive, but inclining towards Monetarist
Model 3	Monetarist	Monetarist	Monetarist

Using annual data for Pakistan from 1979 through 2019, most of the results of the above analysis favor the monetarist position, indicating a significant positive relationship between money supply growth and inflationary trends, while the impact of unemployment on inflation remains selectively minimal. However, one cannot rule out the effects of neo-Keynesian dynamics on Pakistan's economy, as inverse association between unemployment and inflation were observed in certain models.

Challenges encountered during the study included missing data in unemployment series and outliers in inflation series. The former was addressed by forecasting and imputing missing values, and the latter by incorporating dummies to control for the unwanted effects of outliers. An important limitation, therefore, was the inability of the results to explain the nature and characteristics of the outlier values in inflation series. These outliers, one may argue, are not divorced from the external shocks that have affected Pakistan's economy in the past. Future research may delve into these external and structural elements to analyze more profoundly the infrequent variability in inflation behavior in Pakistan. Another interesting avenue for research would be to conduct a chronological analysis on inflation behavior in Pakistan and empirically find the different years/timeline that showed the Monetarist or neo-Keynesian inclination. This will offer deeper insight into how the government and The State Bank of Pakistan operated historically.

In terms of public policy, the results of the study propose an adaptable and hybrid policy framework that incorporates elements of both the Monetarist and the neo-Keynesian theories, as that may be more effective given the nuanced nature of inflation-money supply-unemployment nexus. Even though controlling money supply might manage inflationary trends, policymakers cannot ignore the interplay of unemployment and other macroeconomic variables in inflation dynamics.

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