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Determinants of Recent Inflation in Pakistan: Revisit

Qazi Masood Ahmed
Professor, Institute of Business Administration, Karachi, Pakistan
E-mail: qmasood@iba.edu.pk

Sulaiman D. Muhammad
Federal Urdu University of Arts, Science and Technology, Karachi, Pakistan
E-mail: sulaiman@fuuast.edu.pk

Muhammad Noman
Federal Urdu University of Arts, Science and Technology, Karachi, Pakistan
E-mail: noman.atiq19@gmail.com

Ghulam Rasool Lakhan
Federal Urdu University of Arts, Science and Technology, Karachi, Pakistan
E-mail: glakhan7@gmail.com

Abstract
This paper explores the short and long run dynamics of inflation in Pakistan using Johansen Co-integration Technique covering data from 1972-73 to 2012-13. Consumer Price Index (CPI), Exchange Rate (ER), Government Borrowing (GB), Non-Government Borrowing (NGB), Real GNP (RGNP), Indirect Taxes (IT), Growth Rate of Money Supply (GMS), Import Price Index (IPI), Real Demand relative to Real Supply (RD/RS) and Wheat Support Price (WSP) Money Supply (MS) are taken as indicators. The result shows a long run relationship among the selected variables. It is found that the ER is the most significant factor of inflation in 2011-12, GB, IT, GMS, IPI, RD/RS. It represents the output gap consist of fiscal policy inflation is highly significant.

Keywords: consumer price index, inflation, exchange rate, government borrowing, real GNP, indirect taxes, growth rate of money supply, import price index, wheat support price.

1. Introduction

The expansionary or loose fiscal and monetary policies of the government of Pakistan have resulted in improvement in various macroeconomic indicators including Gross Domestic Product (GDP) growth in several years. For example in 1960s, 1980s and the few years of the first decade of the 21stcentury, this remained above 6 percent during 2004-06. Despite this impressive performance of the economy, some worrisome factors have also appeared on the scene. The most significant of these factors is inflation, which remained in double digit in 70s and also in last several years.

It has been observed that various supply and demand side factors do contribute to an increase in inflation. A number of supply factors are responsible for the price hikes of commodities like Crude Oil, Wheat, and Soybean etc., which can pose a risk of increase

in prices of almost all other commodities of the consumer basket. The supply side jolts have high magnitude which makes the food and oil prices extremely unpredictable and be able to cause large fluctuations that cannot be countered through demand management and the monetary policy. However, in the current debates, the major focus has remained on the demand side factors of inflation and its stress has often been reflected on the event of September 11, 2001 happening in the United States of America (USA) and a blend of expansionary monetary and fiscal policies.

First the remittances also played a pivotal role in increasing the domestic demand and liberal demand-management policies which surpassed the domestic production and increased the output gap, resulting in putting a positive pressure on prices. The private consumption continued to grow above 10 percent on average during FY04 and FY06, representing the symbols of demand side force on price level.

Second, a rapid increase in net import has filled the increasing gap between local demand and production which kept growing by over 40 percent in FY05 and 24 percent in FY06fallout; a prominent escalation in the trade deficit. A growing trade deficit can be a reason of anticipation of higher inflation in the upcoming times. The increment in exports is only 10 percent in FY05. SPDC (2005) states that the "financing of the current account deficit is not an issue in the short run, but a continuing trend of a widening current account deficit will have adverse effects on expectations that could threaten hard-earned credibility on the macroeconomic front." The expectations of effect are significant and very important because there is a threat that the recent high rate of inflation, whatever its source, can certify the potentials of inflation. This can then become self-fulfilling through mechanisms such as wage contract renegotiations based on these expectations.

Third, there is a constant state of expansionary fiscal policy during the past few years. As it's the phenomena that expansionary fiscal policy ignites local demand and pressurizes the current account deficit. In other words, it expands the investment-saving gap, which has to be backed by external sources. Besides, in this situation printing of more currency to finance the fiscal deficit boosts the inflationary pressures. On the other hand, government borrowing from the SBP also increases, which again may have a severe effect on the general price level.

Fourth, a high growth in M_2 and loose credit policy was also the reason for high inflation in the country. Khan and Axel (2006), using monthly data from January 1998 to June 2005, concluded that the lagging growth of private sector credit and of M_2 are two significant causes of inflation in Pakistan in present years.

Although expansion of credit is usually seen in expanding economies, its growth should not be allowed to reach unsustainable limits. The International Monetary Fund [IMF (2004)], through an extensive survey of developing countries, suggests that excessive credit growth in developing countries may produce negative effects on real variables.

An increase in import prices was also noted as a salient factor in creating inflation. The ER, if depreciating in this situation, can also put rising pressure on price levels.

Similarly, some scholars accused that indirect taxes are the major causes of inflation. The Wheat Support Price (WSP) identified as an important determinant of inflation in Pakistan by Khan and Qasim (1996) and Hasan et al (1995). Now the question is how to determine the most significant explanatory factors for current inflation trends in Pakistan? This paper attempts to answer the question. To build up the discussion, the first

paper presents trend analysis of the dependent and explanatory variables. It proceeds with a review of literature, including a discussion on the reasons of why to worry about inflation, and touches on prominent theories of it. Then it presents the methodology and empirical results and finally concludes by giving some recommendations.

2. Review of Literature

Is the inflation bad for the economy? Not always. A considerable rate, about three to six percent for Pakistan (Khan, 2005 and Hussain, 2005) is often evaluated to have good effects on the economy, since it promotes investor and producer and permit growth in wages. Nonetheless, that rate goes beyond the considerable limit, negative effects come out. Worth of money comes down, that was used as the medium of exchange, this results in ambiguity of the worth of losses and gains of lenders and borrowers as well as sellers and buyers. Savings and investment are discouraged due to increasing uncertainty. As inflation reduces the real rate of return on financial assets so the savings are discouraged. This again leads to lower economic growth as a result of lower investment.

Not only can high inflation erode the gains from growth, it also leaves the poor worse off (Easterly and Fischer, 2001) and enlarges the gap among classes (SPDC, 2004). If food price increases due to inflation, it particularly affects the poor more because more than fifty percent of the income of low wage earners goes towards provision. Also, redistributes of income occur to the owners of assets and earners of large and variable income, such as profits from fixed income earners (for instance, pensioners). In Pakistan, annual inflation rate was more than nine percent in eleven of the precedent forty years. Not unexpectedly, growth of average real per capita income was 2.8 percent in years having less than 9 percent inflation, as compared to an average of 1.5 percent growth of real per capita income in the years of high inflation. The above arguments suggest that for Pakistan's economy, inflation can be bad if it crosses the threshold of 6 percent, and can be very dangerous if it goes in the double digit level.

Hence, it becomes more important for policy makers to identify the real causes of inflation and design pro-active strategies accordingly. To identify the causes, as a first step, it seems necessary to delve into the theories of inflation and then see what recent literature leads us to.

2.1 Determinants of Inflation: What does the economic literature tell?

Different schools of thought have presented their theories which discuss the causes of inflation. Starting from the debate of quality theory of money (which stresses on expectations of the buyer of a currency about its value or purchasing power) and the quantity theory of money (which provides an equation of M_2 and emphasizes the role of excess M_2 in explaining inflation). The focus of the economic literature on inflation moved to the demand-pull and cost-push factors. This is particularly true of the Keynesian era where inflation was believed to be caused by either an increase in aggregate demand or a decrease in aggregate supply. Inflation that was spurred by 'demand-pull inflation' and 'cost-push inflation' which is caused by an increase in aggregate demand and supply shocks respectively. Fiscal policy was supposed an important tool in controlling inflation in the Keynesian epoch.

During the 1950s, the issue of falling money wages led the Keynesian economists to investigate new explanations. One such investigation by A.W. Phillips resulted in the emergence of the Phillips Curve. This model was further modified by Lipsey (1960),

Samuelson and Robert Solow (1960). The model presented the idea of a 'trade-off' between inflation and unemployment. In other words, the model suggests a negative association between unemployment and inflation. Later on, links between inflation and growth were also studied (Barro 1995) and its trade-off is a hot subject of discussion in Pakistan also.

The modern extensions and interpretations of the famous Phillips Curve (Scheibe, J and D. Vines, 2005), suggest a positive relationship between inflation and the output gap, ER and inflation expectations. In Pakistan also, inflation is estimated to have a strong positive correlation with the output gap (SPDC, 2006). The relationship between inflation and growth rely on the economic conditions of the country. The economy can excel even without incrementing in inflation if the installed capacity of production and the efficacy is promising and well enough to retain the pace with demand (i.e. Negative output gap) and there exists an adequate capacity to handle the demand pressures. Furthermore, while the existing production reaches up to the potential output, and fills in the negative output gap and leaves no spare capacity, it shows that the economy stretched to the full employment level. In this case, any additional increase in growth comes at the expense of growing inflation. At this phase if demand keeps on growing and the productive capability does not increase, there is a severe risk of quick inflation in the long run with no further growth in the output. An extended phase of rising inflation in such a case can have severe consequences for the economy.

Coming back to the discussion on the theories of inflation, during the 1970s and the 1980s, when inflation became one of the most significant targets of macroeconomic policies, and classical economists were preparing to come up with new explanations to challenge.

Keynesian concepts, new competing models of inflation appeared in economic literature. One very important model among these was the Monetarist Model. Monetarism has its roots in the classical economic theory. The theoretical foundation of this model, presented by Friedman (1968, 1970, 1971), and empirically tested by Schwartz (1973), is the quantity theory of money. The model avows that the past behavior of M_2 to output ratio is the main determinant of current inflation. It emphasizes the role of monetary policy as against fiscal policy in controlling inflation. A famous statement of this theory is that 'inflation is always and everywhere a monetary phenomenon.

Another competing model advocated by Sunkel (1960), Streeten (1962), Olivera (1964), Baumol (1967) and Maynard and Rijckeghem (1976) is the 'Structuralist Model'. This model emphasizes supply-side factors, such as food prices, administered prices, wages and import prices as determinants of inflation. It proposes that inflation in the long run can be explained by the differential rates in productivity growth, wages and elasticity of income and prices between the industrial and services sectors. The recent and more complex issues of general price level that have emerged with the erosion of trade and other barriers call for more dynamic and pragmatic answers to the causes of inflation. None of the above discussed important theories alone can answer this question in a developing country's volatile economic environment. The recent studies on inflation, however, do have some answers to this problem.

Recent economic literature on inflation provides models that incorporate both demand and supply side factors along with policy variables and adaptive expectations. The

literature identifies the following as main determinants of inflation: monetary shocks, inflation expectations, nominal ER, the price of imports, exogenous supply and fiscal policy shocks. The methodology of this study has also been designed with modern dimensions by giving special emphasis on the impact of fiscal and monetary policies on prices and inflation.

Kandil et al (2011) employs a pair wise technique to examine the major sources that have been dynamic inflation discrepancies in the Gulf Cooperation Council countries for the previous twenty years. The outcomes propose that inflation in the Gulf Cooperation Council is mostly manipulated through the oil cycle, largely via the fiscal as well as credit channels. The outcomes as well point out that after calculating for recurring sources, convergence improved still throughout the current oil boom.

Bandara (2011) examines determinants of inflation in Sri Lanka. According to Bandara sustained economic growth with low inflation is the essential goal of macroeconomic strategy formulation in both developing as well as developed nations. This study examines the inflation determinants in Sri Lanka for time span 1993 to 2008. VAR techniques were employed to discover suitable justifications for inflation through gone along with Granger Causality Tests application. The general results of anticipated VAR techniques entail that the exchange rate, money supply as well as the Gross Domestic Product are major determinants which facilitates in discovering the inflation behavior in Sri Lanka.

Basher et al (2012) employing econometric methods with panel data which is non-stationary in nature, this study examine the main causes as well as spread of inflation in the GCC nations from the time span 1980 to 2008. They discuss that, in Gulf Cooperation Council nations, there is high co-linearity among aggregate demand indicators and money for example non-hydrocarbon output is estimated and ought to be taken care of consequently. Numerous vital outcomes come out as of the examination. Initially, the supply of money shows up like an important inflation determinant both in short as well as long run. Both the NEER and the foreign prices are explained to be more significant in elucidating persistent rise in prices in the long period of time however not in the short period of time. Adjustment speed tells that it acquires almost three years for fifty percent of an impact to the long time period stability to dissolve. A suggestion of their outcomes is to make more independent monetary policies in Gulf Cooperation Council nations.

Nguyen et al (2012) employs a plain inflation macroeconomic model to empirically examine the CPI inflation determinants for Vietnam over the time span 2001-2009. They are mainly concerned in investigative the relationships among exchange rate, the prices of crude oil, rice and inflation. Employing time series evaluation methods, they discover that the supply of money, rice prices as well as oil prices are the significant determinants of CPI inflation.

3. Data

In this study, time series data has been used with reference to Pakistan, spanning from 1973 to 2013. The series of GNP is converted into real term (base year 2000-01) by using the deflector of net external income at the aggregate level. Time series data have been collected from HBS (Handbook of statistics) of Pakistan 2010 publication of (SBP), Economic Survey of Pakistan 2011-12, Economic Survey of Pakistan 2012-13 and World Development Indicator (WDI).

3.1. Trend Analysis

It is necessary to highlight the trend in economic variables that have the potential to impact inflationary tendencies in the economy. A period from 1972-73 to 1980 (1970s in Table 1) witnessed the highest average inflation, of 12.5 percent. This high growth in CPI during this period was mainly attributed to the external oil price shock and structural changes in the domestic economy. Inflationary pressure slowed down somewhat and settled to 7.2 percent on average during the 1980s. During this period, the growth of IPI and WSPs were below the danger limits. The increase in inflationary tendencies during the 1990s may roughly be attributed to the excessive increase in GMS, rising WSPs and depreciation of the ER.

Table 1: Pattern of Inflation and Other Explanatory Variables

Periods	(Growth %)						% of GDP	
	CPI	**GDP**	IPI	**ER**	**WSP**	**GMS**	**GB**	**IT**
	(%)	**(%)**	**(%)**	**(%)**	**(%)**	**(%)**	**(%)**	**(%)**
1970's	12.5	4.8	21.6	16.0	14.0	21.0	3.27	11.75
1980's	7.20	6.5	10.8	06.0	6.90	13.2	4.15	13.60
1990's	9.70	4.6	10.2	9.10	12.7	16.8	3.07	11.47
Fy00	3.60	3.9	18.6	9.80	0.00	9.40	2.19	8.310
Fy 01	4.40	2.0	17.0	9.30	0.00	09.0	-1.18	8.170
Fy 02	3.50	3.1	11.5	9.10	0.00	15.4	0.54	8.180
Fy 03	3.10	4.7	3.70	15.5	0.00	18.0	-1.73	8.890
Fy 04	4.60	7.5	14.8	-3.60	16.7	19.6	1.11	8.680
Fy 05	9.30	9.0	10.4	-3.30	14.3	19.3	1.50	7.650
Fy 06	7.90	5.8	17.3	0.90	3.80	15.2	1.21	7.950
Fy 07	7.80	6.8	7.60	2.20	2.41	19.3	1.12	6.760
Fy 08	12.0	3.7	27.7	1.30	47.6	15.3	5.86	6.720
Fy 09	20.8	1.7	25.1	3.80	52.0	9.60	4.35	6.320
Fy 10	11.7	3.1	6.20	25.5	0.00	12.5	3.00	6.480
Fy 11	13.8	3.0	20.7	6.80	0.00	15.9	3.39	6.000
Fy 12	10.8	4.4	16.0	02.0	10.53	9.10	4.33	6.560
Fy 13	07.8	3.6	16.7	05.2	14.28	9.90	-3.23	6.100

3.2 Pattern of Inflation and Other Explanatory Variables

For the duration of the first three years of the new century and in 2000, inflation stayed under 5 percent and then jumped to 20.8 percent in 2009-10. It settled at 10.8 percent during 2011-12. The growth in WSPs and the strength of the ER remained mixed.

However, it seems that excessive money flowed towards the government public debt and M_2, along with the import price hike in 2003-04, 2005-06, 2007-08 and 2008-09.In 2011-12 it remained above 16 percent. The rise in the price of wheat in 2007-08 and 2008-09 pulled inflationary pressure at an alarming level. It may also be noted that IT rates during the last few years have also not been increased. Trend in variables alone do not provide a complete picture and further econometric analysis is required to find the role of these factors in affecting consumer prices.

4. Econometric methodology, its justification and Model:

- Engel Granger (Engle and Granger 1987)
- OLS
- Johansen Co-integration

The above mentioned techniques are applied to assess long run association among the selected variables.

Whereas Engel Granger is used for bivariate modal and OLS is used when the selected variables at level became stationary. This model is neither bivariate nor the stationary variables at level therefore it is useful to find the long run relationship by applying the Johansen Co-integration technique among the variables which are the CPI, ER, GB, RGNP, IT, GMS, IPI and WSP. Nonetheless ECM is used to check short run association among the variables.

ADF (unit root test) testing regression equation as follows:

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \alpha_i \sum_{i-1}^{m} \Delta Y_{t-i} + \varepsilon_t$$

Where:

Y_t	represents time series data,
Δ	represents first difference operator,
t	represents Linear trend,
A	represents Constant
ε	represents Error term.

The null hypothesis of unit root is $\beta=0$

If non stationarity is found in variables at level then the first difference will be taken for further evaluation. The later Co-integration test is carried out to find out the relationship among these variables, whereas, Co-integration test is applied to find out the number of Co-integration equations. If there is Co-integration among the variables then there must be disequilibrium in the short run, and this problem is captured by ECM as follows:

$$ECM=\Delta CPI=\alpha+\beta_2\Delta ER+\beta_3\Delta GB/RS+\beta_4\Delta GMS+\beta_5\Delta IPI/RGNP+$$

$$\beta_6\Delta IT/MANU+\beta_7\Delta NGB/RS+\beta_8\Delta WSP/MS+\beta 9AE+\beta_{10}ECM_{t-1}+\varepsilon$$

In ECM $ECM_{t-1}$is Error Lag Term. If the coefficient of the error lag term is statistically insignificant than statistically the equilibrium error term is zero, suggesting that CPI adjusts to changes in independent variables in the same time period and there is no disequilibrium in the short run.

If the coefficient of the error lag term is statistically significant than statistically, the equilibrium error term is not equal to zero, suggesting that CPI adjusts to variation in the

independent variable, not in the same time period if the equilibrium error term is not equal to zero and disequilibrium occur in the short run.

5. Empirical Results and Analysis

Table 2: Unit Root Test (Augmented Dickey Fuller)

Variables	Calculated Value	1% Critical Value	5% Critical Value	Probability
LOG(CPI)(4)	-2.633003	-4.234972	-3.540328	0.2689
Δ(LOG(CPI))(0)	-4.067393	-4.219126	-3.533083	0.0146
LOG(ER)(0)	-1.863484	-4.211868	-3.529758	0.6540
Δ(LOG(ER))(0)	-6.476376	-4.219126	3.533083	0.0000
LOG(GB/RS)(0)	-4.126883	-4.211868	-3.529758	0.0124
Δ(LOG(GB/RS))(0)	-8.331326	-4.219126	-3.533083	0.0000
LOG(GMS)(0)	-11.74845	-4.211868	-3.529758	0.0000
Δ(LOG(GMS))(0)	-12.79331	-4.219126	-3.533083	0.0000
LOG(IPI/RGNP)(0)	-3.229901	-4.211868	-3.529758	0.0936
Δ(LOG(IPI/RGNP))(0)	-7.580642	-4.226815	-3.536601	0.0000
LOG(IT/MANU)(0)	-2.378028	-4.211868	-3.529758	0.3847
Δ(LOG(IT/MANU))(0)	-6.528932	-4.219126	-3.533083	0.0000
LOG(NGB/RS)(0)	-2.895421	-4.211868	-3.529758	0.1750
Δ(LOG(NGB/RS))(0)	-8.546105	-4.219126	-3.533083	0.0000
LOG(RD/RS)(0)	-3.668094	-4.211868	-3.529758	0.0368
Δ(LOG(RD/RS))(0)	-7.970960	-4.219126	-3.533083	0.0000
LOG(WSP/MS)(1)	-1.799327	-4.211868	-3.529758	0.6858
Δ (LOG(WSP/MS))(1)	-7.105230	-4.226815	-3.536601	0.0000
LOG(AE)(0)	-3.362462	-4.243644	-3.544284	0.0731
Δ LOG(AE,2)(0)	-7.261509	-4.226815	-3.536601	0.0000

Notes: [Y: The Level form of the variable Y] [Δ (Y): The first change of the variable Y] [Δ (Y, 2): The second difference of the variable Y] Table 2 represent the result of the ADF unit root test (with trend and intercept) and all the selected variables are observed non stationary at level. Later on, stationery is found in the variables at first difference. In brackets, value shows the lag length of difference variables where all the variables are integrated at order one i.e. is I (1), at the Next stage we used Johansen Co-integration test to find the long run relationship among the variables whether it exists or not, along with Johansen's two likelihood ratio statistics is evaluated: Trace statistics and maximum Eigen value statistic. The results of the above mentioned Co-integration tests are reported in Table 3.

Table 3: Johansen Test for Co-integration (Trace)

Probability	Trace Statistics	5% Critical Value	No. of Co-integration Equation
0.0000	408.6411	239.2354	None *
0.0000	272.2121	197.3709	At most 1 *
0.0000	203.4078	159.5297	At most 2 *
0.0005	151.6066	125.6154	At most 3 *
0.0047	108.7734	95.75366	At most 4 *
0.0321	72.17354	69.81889	At most 5 *
0.0894	45.06279	47.85613	At most 6
0.2544	22.83331	29.79707	At most 7
0.3490	9.180682	15.49471	At most 8
0.5701	0.322526	3.841466	At most 9

Significance at the 5% level Illustration of Table 3 Johansen Co-integration test: Trace statistics show that all chosen variables are integrated significance at the five percent level of and the null hypothesis is rejected.

Table 4: Johansen Test for Co-integration (Max-Eigen Statistics)

Probability	Max-Eigen Statistics	5% Critical Value	No. of Co-integration Equation
0.0000	136.4290	64.50472	None *
0.0036	68.80433	58.43354	At most 1 *
0.0570	51.80117	52.36261	At most 2
0.1108	42.83320	46.23142	At most 3
0.1171	36.59991	40.07757	At most 4
0.2575	27.11075	33.87687	At most 5
0.2088	22.22948	27.58434	At most 6
0.3942	13.65262	21.13162	At most 7
0.2982	8.858156	14.26460	At most 8
0.5701	0.322526	3.841466	At most 9

Significance at the 5% level Illustration of Table 4 Johansen Co-integration test: maximum Eigen statistics also show that all selected variables are integrated significance at five percent level and the null hypothesis is rejected.

Table 5: Long Run Co-integration Equation (Normalized First Co-integration Vector)

Variables	Coefficient	Standard errors	t values
LOG (ER)	0.224450	0.02043	10.9862
LOG (GB/RS)	0.028448	0.00415	06.8549
LOG(GMS)	0.040236	0.00582	06.9134
LOG(IPI/RGNP)	0.141936	0.02976	04.7693
LOG(IT/MANU)	0.345997	0.02232	15.5016
LOG(NGB/RS)	0.092723	0.00658	14.0916
LOG(RD/RS)	7.292507	0.60638	12.0263
LOG(WSP/MS)	0.333397	0.02338	14.2599
LOG(AE)	1.123666	0.03559	31.5725

Illustration of Table 5 This equation shows that the CPI is highly affected with ER, GB, GMS, IPI, IT, NGB, RD/RS, WSP and AE. There is a positive relationship among GB, IT and CPI, this relationship is strong so fiscal policy is a significant tool to affect the inflation, on the other hand CPI also respond positively ER and IPI and this relationship is significant at the 5% level so external sector also significantly affects the inflation. GMS and CPI has a positive long run association so monetary policy also affects inflation and confirms the view of the monetary school of thought that the growth rate of money supply directly causes inflation. CPI has a positive long run association with AE. Growth in prices forms expectations for inflation in future. The function of expectations is significant in the determination of upcoming prices.

The result of General equation of ECM shown below:

Table 6: Error Correction Model

Variables	Coefficient	Std. Error	t – Value	Probability
C	-0.032188	0.516344	-0.062339	0.9507
D(ER)	-0.830372	0.180180	-4.608558	0.0001
D(GB/RS)	-9.004545	10.82351	-0.831943	0.4125
D(GMS)	0.130821	0.045000	2.907173	0.0071
D(IPI/RGNP)	423076.7	260458.5	1.624354	0.1155
D(IT/MANU)	1.789413	12.17872	0.146929	0.8842
D(NGB/RS)	-16.00831	35.11865	-0.455835	0.6520
D(RD/RS)	-171.6491	96.93140	-1.770831	0.0875
D(WSP/MS)	16281.58	5956.022	2.733634	0.0107
D(AE)	148.1625	6.343891	23.35514	0.0000
ECM(-1)	-1.265058	0.174596	-7.245621	0.0000
R^2 0.967355	**DW 1.777**	**Adj. R^2 0.955696**		**F-statistic 82.97 (0.00)**

Illustration of Table 6 in the short run dynamic, the coefficient error correction term (ECT) has a negative sign and it is statistically significant at the one percent level. The estimate of ECT explains the rate of adjustment from short run towards the long run equilibrium path.

The decision to add the number of lags in ECM is taken on the basis of Vector Auto Regression (VAR) model. Value of coefficient of ECT approximately is -1.27 which highlighted that the disequilibrium is corrected in one year and adjusted towards long run equilibrium.

5.1Results & Policy Implications

The estimation results, presented in Table 5, are encouraging and show desired and theoretically correct signs of the coefficients. ER, GB, NGB, IPI, GMS, RD/RS and IT are statistically significant at less than 5 percent level. The estimated equation is supported by the diagnostics presented in Table 5. In ECM High R2 and Durbin Watson test supports the model specification whereas ADF Test (unit root test) to test the stationarity. Since the variables are in the log form, the estimated coefficients can be termed as elastic.

Table 7: Contribution to Inflation

Period	CPI %	ER	GB/ RS	GMS	IPI/ RGNP	IT/ MA NU	NG B/ RS	RD/ RS	WS P/ MS	AE	Other s
1973-77	18.0	4.0	0.51	0.72	2.55	6.22	1.66	1.31	0.54	0.21	0.24
1978-88	7.30	1.6	0.20	0.29	1.03	2.52	0.67	0.53	0.21	0.08	0.14
1988-90	7.60	1.7	0.21	0.30	1.07	2.62	0.70	0.55	0.22	0.09	0.14
1991-93	11.0	2.5	0.31	0.44	1.56	3.80	1.01	0.80	0.33	0.13	0.16
1994-96	11.7	2.6	0.33	0.47	1.66	4.04	1.08	0.85	0.35	0.14	0.16
1997-98	10.1	2.3	0.28	0.40	1.43	3.49	0.93	0.73	0.30	0.12	0.16
1999-07	5.50	1.2	0.15	0.22	0.78	1.90	0.50	0.40	0.16	0.06	0.10
2008-12	12.3	2.8	0.34	0.49	1.74	4.25	1.14	0.89	0.36	0.14	0.19

Table 7 presents the contributions of the explanatory variables in the headline inflation.

As we have witnessed the structural change during 1970's and the condition of doubt in economies, the role of inertia is quite evident. Importance of inertia in prices is quite important as the people of Pakistan are sensitive to price increase (inflation) so they are conscious about the anticipated inflation prior to their optimization decisions.

Table 1 presents the contributions of the explanatory variables in the headline inflation. During 1980's we have observed 7.2 percent of inflation which is relatively lower than the previous decade (1970's). The major factors in the increase in CPI are due to the private sector borrowing, adaptive expectation and currency depreciation. Contribution of adaptive expectations, however, declined from 49 percent during the 1970s to 28 percent in the 1980s.As a result of these; denationalization policies provided the significant role to the private sector which ultimately surged the borrowing trend in the respective sector.

The political and economic scenario of 1990's was very unstable. First of all, the liberalization policies were asserted and hence took the momentum. Later on, the country faced the restriction for doing the nuclear explosion which laid burdens on prices which eventually led to an average inflation of 9.6 percent. Also, due to increase in the support prices of wheat, the government was put under a burden to borrow. So the major reasons for the rise of inflation rate during 90's are government and private sector borrowing, currency depreciation and the adaptive expectations.

The inflation was controlled during 2001-04; major reason was not increased in the support price of the wheat during 2001-03. But in 2004-05 it goes up to 9.3 percent and minor decreased to 8 percent in 2005-06. Adaptive expectations alone explain 45.73 percent of the inflation in 2005-06 and 31.1 percent in 2004-05. In terms of percentage points, this equals to 3.66 out of total 8 percent CPI growth in 2005-06 and 2.89 out of total 9.3 percent inflation in 2004-05.

The expectation of inflation and its critical role can be explained by the phenomena in the increase in house rents, hoarding and asset price hikes. The second most important factor is non-government sector borrowing (NGSB). The NGSB borrowing growth was more than 30 percent during 2004-05, while in 2006 it was 23 percent. The contribution of NGSB was 38 percent in 2004-05 and 35 percent in 2005-06.In terms of percentage points; it contributed 3.5 percentage points in total inflation of 9.3 percent in 2004-05 and 2.8percentage points in total inflation of 8 percent in 2005-06. The third important factor was imported prices, which explains 26.7 percent (2.1 percentage points) of the inflation in 2005-06 and 13.6 percent (1.3 percentage points) of the inflation in2004-05.During 2004-05, two other factors that also played an important role were government sector borrowing and support/procurement price of wheat, which contributed, 17.6 percent (1.7percentage points) and 11.8 percent (1.1 percentage points), respectively. Government taxes, due to the greater role of direct taxes, seem to put downward pressure on consumer prices. This seems logical since there has been no increase in the tax rates over the last few years. The policy of not depreciating the ER paid off by not putting any further strong pressure on import costs. This policy, however, cannot be sustained for a long period and a very sharp revision is expected at the time to come. Rising trade deficits are also indicated in the same direction.

From 2005-06 to 2008-09 the inflation reached at twenty figures, and every selected variable had a significant contribution. The major reason of this high inflation was the food which was caused by world food shortages especially wheat and oil prices.

In 2011-12 the inflation is still in double digit, which is far-reaching to the recommended and suggested rate of inflation (3% to 6%) for Pakistan's economy.

5.2Conclusion

This paper evaluates the role of different factors such as ER, GB, NGB, IT, GMS, IPI, RD/RS and WSP in explaining inflation in Pakistan. The empirical analysis reveals that the most significant factors which explain the 10.8 percent inflation in 2012-13 were Exchange rate, Government Borrowing, Nongovernment Borrowing, Indirect Taxes, Growth rate of Money Supply, Import price index, and Demand relative to supply pressures. Fiscal policy was significantly affecting inflation. As far as Government borrowing contributes to inflation in 2012-13, it also did contribute in 2004-05. The policy of keeping stability in the ER was successful in holding it from putting further

pressure on prices. The role of WSP was not significant. We can safely state that the expansionary monetary policy's influences on GDP growth, it also contributes to rise in consumer prices. Also the extraordinary growth in the 'loose credit' available to the private sector had a substantial role to play in upsetting the price mechanism. The availability of finance at a minimal or practically no cost stimulated speculators and hoarders.

The role of adaptive expectations then became prominent when people started expecting higher prices in the future and land, house rents and food prices raised to record levels The main concern that emerges out of this scenario is whether it is possible for the economy to come out of this price spiral in the presence of high expectations for inflation in future and rising trade deficit? Would the policy makers be able to control the flow of credit to nonproductive sectors and to profit seeking activities? Would the policy of subsidizing food items through the government-run Utility Stores are successful or would it be another episode of mismanagement?

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Abbreviation and Acronyms

ADF:	Augmented Dickey Fuller
AIC:	Akaike Information Criteria
CPI:	Consumer Price Index
ECM:	Error Correction Model
ER:	Exchange Rate
GDP:	Gross Domestic Product
GMS:	Growth rate of Money Supply
IMF:	International Monetary Fund
IPI:	Import Price Index
IT:	Indirect Taxes
OLS:	Ordinary Least Square
RGNP:	Real Gross National Product
SBP:	State Bank of Pakistan
SIC:	Schwartz Information Criteria
SPDC:	Social Policy and Development Centre
VAR:	Vector Auto regression
WSP:	Wheat Support Price
NEER:	Nominal Effective Exchange Rate