

## **What Explains the Current High Rate of Inflation in Pakistan?**

M. AYNUL HASAN, ASHFAQUE H. KHAN, HAFIZ A. PASHA, and M. AJAZ RASHEED

### **1. INTRODUCTION**

One of the most significant developments in the current economic scene in Pakistan has been the sharp increase in the rate of inflation. The annual average rate of increase in the wholesale price index (WPI) during the first seven months (July-January 1994-95) of the current fiscal year has been about 19 percent as opposed to 11.3 percent during the same period last year. A similar increase was also witnessed in the consumer price index (CPI) which accelerated to 13 percent as opposed to 11.1 percent during the previous period. Such a sharp increase in prices in recent months has not only caused alarm in the academic circles but has equally disturbed the country's chief executive, the Prime Minister.

The recent surge of inflation is a matter of serious concern for a variety of reasons. First, Pakistan has been a low-inflation country as it has experienced price stability during the last three decades. The rate of inflation, as measured by an increase in the WPI, averaged 2.6 percent during the 1960s. The components of the WPI, i.e., food, raw materials, manufactures, and fuel and lubricants, also grew by an average rate ranging from 2.0 to 3.4 percent p.a. during then 1960s (see Table 1 for relevant statistics). The rate of inflation crossed the single-digit threshold during the 1970s. The WPI and its components increased at an annual average rate ranging from 12 to 18 percent. The double-digit inflation during the 1970s has been the result of two major oil shocks, a massive devaluation of currency, and devastating floods destroying agricultural crops. Pakistan returned to the fold of the single-digit inflation during the 1980s. The rate of inflation remained at the single-digit level during the first three years of the 1990s with the exception of 1990-91, when the rate of inflation increased to 11.7 percent as a result of the Gulf War. It is only during the outgoing fiscal year and in the current year that the rising inflation is posing a major threat to macroeconomic stability.

M. Aynul Hasan is Economic Advisor, CIDA and is teaches at Acadia University, Canada. Ashfaque H. Khan is Chief of Research at the Pakistan Institute of Development Economics, Islamabad. Hafiz A. Pasha is Director, Institute of Business Administration, Karachi. M. Ajaz Rasheed is System Analyst, ISSP, Karachi.

The recent inundation by inflation is a phenomenon to which the people of Pakistan are not accustomed and, hence, it is a major concern for the policy-makers.

Table 1  
*Historical WPI, CPI, and Sectoral Inflation Rates*

Years	WPI General	CPI General	WPI Food	WPI Raw Material	WPI Manufac- turing	WPI Fuel Lube
1960-69	02.6	03.3	02.6	02.0	03.4	03.3
1970-79	13.5	11.9	13.4	12.9	11.7	17.8
1980-89	7.1	7.5	7.2	6.9	7.0	7.2
1990-91	11.7	12.6	9.0	7.1	17.7	16.8
1991-92	9.3	9.6	10.2	11.0	9.5	4.9
1992-93	7.1	9.3	10.6	8.4	3.3	1.2
1993-94	15.0	11.1	14.1	24.6	10.7	22.4
July to Jan. 1994-95	18.9	n.a.	n.a.	n.a.	n.a.	n.a.

Source: *Pakistan Economic Surveys*.

Secondly, high and rising inflation poses a serious threat to savings and growth. A high rate of inflation reduces the real return on financial assets, thereby discouraging savings, on the one hand, and encouraging the accumulation of non-financial assets, on the other. Given Pakistan's limited access to international capital markets, lower savings would lead to lower investment and slower growth.

Thirdly, high inflation rate erodes a country's external competitiveness by appreciating the real exchange rate and, thus, acts as a drag on exports and undermines the government's efforts to improve the trade balance.<sup>1</sup> In such an event, a sharper depreciation of the currency may become necessary which may further accelerate the rate of inflation.

Finally, high and rising inflation hurts the poor and fixed-income groups mostly owing to the higher proportion of their incomes being devoted to food items. The weight of food price in WPI is almost 53 percent. The government responded to the challenge of rising inflation mostly by concentrating on the demand management policy, i.e., by reducing the budget deficit as well as borrowing from the banking system, keeping the money supply growth close to the growth of the nominal GDP and moderating the rate of currency depreciation. The persistence of high and rising inflation clearly indicates that the government's efforts to reduce inflation have not been successful. In September 1994, the Prime Minister, through her directive, asked the Pakistan Institute of

<sup>1</sup>Real exchange rate is defined as nominal exchange rate multiplied by the ratio of the domestic to the foreign price level.

Development Economics (PIDE) to study the causes and cures of high inflation rate in Pakistan. The PIDE responded to the directive by identifying key factors responsible for the high rate of inflation [see Naqvi, *et al.* (1994)]. These factors are: (i) increase in the prices of food, raw materials, fuel, manufactured goods; (ii) inflationary expectations; and (iii) the growth rate of money supply in relation to the GDP. Naqvi, *et al.* (1994) ranked the price of food as the most important causative factor followed by inflationary expectations. The growth in the money supply was relatively less important, partly because its impact is felt with a one-year lag.

The general perception about the causes of the recent surge in inflation points to many other factors such as increase in indirect taxes (sales and excise), excess money supply, currency depreciation, supply shocks like virus-induced reduction in cotton output and weather-induced lower wheat crop, higher agricultural support prices, increases in the prices of utilities, production losses due to power and infrastructural bottlenecks, increases in wages and salaries, as well as inflationary expectations. Though a recent study by ABN AMRO Bank (hereafter the Bank) considers the food supply shocks and adjustments in administered prices as important factors, they still blame the insufficiently tight financial policies for the recent surge of inflation. In particular, the considerable slippage from the fiscal targets set in the 1994-95 budget appears to be the key factor responsible for the current high rate of inflation.<sup>2</sup>

The present study takes these analyses to micro details and attempts not only to identify but also to quantify the factors responsible for the current high rate of inflation in Pakistan. In so doing, the present study has chosen the WPI as a measure of inflation because the impact of changes in the administered prices of utilities and the procurement prices of various crops have a direct bearing on this index of inflation. Furthermore, it examines the impact of various factors on the components of the WPI, i.e., the WPI of food, manufactures, and raw materials separately, which then feeds into the general WPI through an estimated equation. These three components account for 90 percent of the general WPI. In estimating the separate equations for each component of WPI, attempts have been made to identify as well as quantify the impacts of key policy variables. The key policy variables which are included in the equations can be grouped into five categories—demand management policies, supply-side shock, price policy, imported inflation (due to exchange rate depreciation), and the role of inflationary expectations. As will be seen in the ensuing pages, the present study provides explanations for the recent surge in inflation and suggests how to control inflation in Pakistan. A consistent time series data covering the time-period from 1972-73 to 1993-94 has been used for the analysis.

The format of the remaining paper is as follows. Section 2 presents the discussion

<sup>2</sup>See Bank (1995).

on some of the existing theories on inflation. The model used in this study is presented in Section 3. Estimated regression, simulation results, and the implications are presented in Section 4. Section 5 summarises the paper and presents some concluding remarks.

## 2. THEORIES OF INFLATION

Earlier theories on inflation relied heavily on *cost-push* and *demand-pull* factors as the key components in explaining the behaviour of prices. However, in recent years, particularly during the decades of the seventies and eighties, when acceleration of high inflation was observed, three other competing models became popular in the literature in interpreting inflation [e.g., Frisch (1977)], namely, (a) the Monetarist Inflation Model; (b) the Philips Curve Model; and (c) the Structural Model of Inflation.

The monetarist model developed by Friedman (1968, 1970, 1971) and empirically tested by Schwartz (1973) simply asserted that the prime factor explaining the current rate of 'secular price change' is the past behaviour of money to output ratio. This is also the dictum of the popular "Quantity Theory of Money" which, in Friedman's (1968) words, posits that "inflation everywhere is a monetary phenomena".

On the other hand, the Phillips curve model, which started as an empirical investigation by A. W. Phillips and was subsequently formalised by Lipsey (1960), simply postulated that there exists a trade-off between price inflation and unemployment in the economy, at least in the short-to medium-run. In other words, an economy cannot simultaneously achieve lower inflation and unemployment rates.

Streeten (1962); Olivera (1964); Baumol (1967) and Maynard and Rijckeghem (1976) promoted a "structural" approach to model inflation. Essentially, these authors argued that it is the differential rates in productivity growth, wages, and elasticities of income and prices between the industrial and services sectors that determine the long-run trend of rising prices.

Although the above three theories made important contributions in understanding the underlying behaviour of determining inflation, these models were, nevertheless, inadequate in explaining the complex dynamic phenomena of rising inflation particularly for Third World countries. This is due to the fact that many of the underlying assumptions in the above models may not hold for those economies. For instance, the instantaneously market (money and labour)-clearing assumptions made in developing "Monetarist" and "Phillips curve" models may be too restrictive for Third World economies because of the existence of structural rigidities and large sparsely distributed monetised sector. Furthermore, because of surplus labour, particularly in the agricultural sector, the so-called "trade-off" between inflation and unemployment may not be pronounced. Therefore, in developing economies, neither rapid monetary growth nor persistence of high unemployment independently is sufficient to explain the phenomenon of chronic high inflation.

In addition, it has also been argued [e.g., Kalecki (1978); Nag and Samanta (1994)] that Third World economies with a rapidly growing manufacturing sector, when encountered with supply rigidities, especially from the agriculture sector, can produce an incessant rise in relative prices in the absence of corresponding matching increases in agricultural products. Such sectoral increases in relative prices due to ensuing “structural rigidities” may easily be translated into a rising general price level, thus producing high inflation.

Criticising the existing theories of inflation in Third World economies which attempt to explain the aggregate “general price level” in terms of other broad macroeconomic monetary and demand and supply factors, Chakravarty *et al.* (1985) noted:

*“Efforts have been thwarted so far by undue reliance on analysis at the aggregative levels. It must... be recognised that price increases cannot be readily attributed to factors, influencing only supply, or only demand. Empirical investigation of the issues..., therefore, not easy at the aggregative level. At a disaggregative (micro) level there is perhaps more room for agreement as to policy actions”.*

In order to comprehend the factors explaining the behaviour of prices in Third World countries it is, therefore, imperative to construct a framework which should not only be a hybrid of the above theories of inflation but, more importantly, the analysis must be undertaken at a much disaggregated sectoral level. The next section thus develops such a model for inflation in Pakistan.

### 3. MODEL OF INFLATION

In this section, we develop a model of inflation for Pakistan by considering the factors noted earlier. Although the model constructed is consistent with the economic theory, wherein the roles of demand and supply and expectations are considered, yet it is also pragmatic in character, in the sense that the role of structured government control pricing policy is highlighted. The key factors that characterise the behaviour of the price equation include: (a) supply shock; (b) monetary policy shocks; (c) tax policy shocks; (d) external shocks; (e) pricing policy shocks; and (f) expectations.

#### **Supply Shock**

It should be noted that the supply shock variable is defined as the deviation of total availability of goods from its normal trend. Total availability of goods for a given sector, in turn, is simply the total value-added plus imports less exports of the same commodity. This variable is expected to capture the market condition of a given sector. Whenever the total availability of the commodity falls short of its long-run trend, say

due to crop failure, flood, virus etc., the price of this sector will tend to rise, everything else being equal. This variable is outside the domain of government policy and, thus, the government has no direct control over it, particularly in the short-run.

### **Monetary Policy Shocks**

This variable represents the conventional demand management policy of the government. Based on the traditional “quantity theory of money”, one would expect a positive impact of this variable on prices. Obviously, the effect of government budget deficit, in the form of “use of cash balances” or credit creation that government undertakes to finance its deficit, is subsumed in it.

### **Tax Policy Shocks**

Traditionally, the impact of tax policy on prices is indirectly related through the government budget deficit. Here, we argue that the impact of certain taxes, namely, sales and excise duties on the manufactured and raw material product prices, is more direct. This is due to the fact that whenever government announces an increase in these taxes, it is observed that the producers immediately raise the prices of their products. In some cases, the price increase would even take place prior to the actual announcement of taxes.

### **External Shocks**

For a small open economy (SOE) like Pakistan, the domestic price level cannot remain immune to external price shocks. Being a *SOE*, Pakistan has to take these foreign prices as given. The external price shock problem may be further exacerbated when the prices of imported commodities used as an input in domestic products are measured in local currency. This is due to the fact that the prices of imported foreign goods (used as inputs) valued in domestic currency also incorporate the effect of exchange rates and tariff policies. If the external price shock is accompanied by a devaluation of the local currency or a higher tariff rate, then it may be translated into the prices of domestic products.

### **Pricing Policy Shocks**

Government may engage in two types of policies to directly control prices, namely, the procurement price and the administered price. In order to provide support, especially to the key essential agricultural products (wheat, cotton, and sugar), the government would occasionally, or on a regular basis, buy these items at a price which may be different from the market prices. For instance, in the past, in order to encourage wheat production and, at the same time, stabilise the price of this commodity, the government purchased it at a higher price from the producers and sold it at a lower price

to the consumers. This act was a kind of subsidy to the consumers which may be justified on equity grounds but it may violate the efficiency criteria. A rapid increase in the procurement prices obviously will be translated into higher food prices and thus increase the general price level.

Prices of fuel, gas, and electricity are normally set by the government and thus may be different from free market prices. In developed economies (U.S., Canada, U.K., etc.), the price of crude oil, though heavily taxed by the government, still fluctuates with the market supply and demand conditions. In a Third World country like Pakistan, such fluctuations (particularly downwards) in government-administered oil prices are seldom observed. Consequently, the price of oil as well as electricity may rise rapidly due to *ad hoc* unidirectional government-administered policies, and thus it may permeate the general price level.

### **Expectations**

The role of expectations is critical in the determination of future prices. As is well-known from the Philips curve analysis, the time profile of expected inflation is *asymmetrical* in the sense that there is an upwards bias in expectations formation of future prices. In other words, it takes rational agents a much longer time to revise their expectations formations downwards about inflation than what they would have taken for upwards expectations. It is true that a one-shot increase in prices does not necessarily create sustained inflation. However, on the other hand, if this price increase for some reason gets built into the agents' future expectations, then, for the reasons explained above, there is every danger that an upwards spiral in inflation can develop in the economy. This is why economists and policy-makers in the mid-eighties were more determined to control inflation than unemployment. Of the two evils, namely, inflation and unemployment, it is believed that the former is more damaging to the economy. It is evident that most of the developed economies (U.S., Canada, Britain, etc.) in recent years have been able to get rid of inflation (2 percent or less in some cases).

As noted earlier, the model of inflation for Third World economies not only requires the consideration of non-traditional factors but it has also been suggested that the construction of the model should be done at a much disaggregated sectoral level. This is so because the aggregate general price level is constructed by taking a weighted average of many sectoral price levels. The price level for each sector, in turn, depends on the factors identified above. Since not all the factors identified above may be responsible in explaining each sectoral price, a disaggregated approach, therefore, needs to be adopted in order to analyse the behaviour of inflation. In addition, the factors explaining the behaviour of price increase may have impacts of different intensities for the general price level as compared to that of sectoral prices. Thus, a simple investigation of the impact of the above factors on the aggregated general price level is not sufficient to establish and identify the true causes of inflation.

With the help of Flow Chart 1, we schematically demonstrate the factors explaining each sectoral price, the two-way linkages of some of the variables in the model, and also how the general wholesale price index is constructed. In Pakistan, the general wholesale price index (WPI) is based on five key sectoral prices, namely, food, raw material, manufacture, energy (oil, fuel, lubricant), and building material.<sup>3</sup> Taking the actual weights into consideration (which will be presented in the next section), we have assumed the wholesale price indices for energy (WPIE) and building material (WPIB) to be exogenously determined. However, the other three price indices (food, manufacturing, and raw material) are determined behaviourally by factors such as supply shock, monetary policy, tax policy, external prices, and future price expectations, as shown in Flow Chart 1.

In addition, the procurement prices for wheat will have an impact on the wholesale price for food while the cotton and sugarcane procurement prices will affect raw material prices. The manufactured price index will also be determined by raw materials as well as government's administered energy prices. It should be noted that our model also incorporates several definitional identities indicating the extent to which the disaggregation and the micro level detail impact analysis is possible.

Having specified the model, in order to identify the size of the impact explaining the sectoral and general wholesale price levels, the next section presents empirical results based on data.

#### 4. ESTIMATION AND SIMULATION RESULTS

In this section, we discuss the simulation results and their ensuing policy implications

##### Estimated Regression Results

Estimated ordinary least squares (OLS) regression results of the inflation model are reported in Table 2. The estimated regression coefficients in all three price equations not only have the correct stipulated signs but, in most cases, they are statistically significant at the 1 percent level. Explanatory power of each equation represented by  $R^2$  is fairly high (99 percent) and there does not seem to be a serial correlation problem.

Since the equations are in logarithmic form, the estimated coefficients will represent elasticity of the respective variables. It is interesting to note that elasticity of supply relative to its long-run value has the greatest negative effect on food prices (84.8 percent) followed by the raw material prices (3.7 percent). This is due to the fact that the supply of food includes commodities which may be perishable (e. g., vegetable,

<sup>3</sup>It should be noted that in this study we have used WPI as opposed to CPI, because some of the important possible contributors of inflation, namely, procurement and administered prices, are not included in the CPI.



**Flow Chart 1**  
**Schematic Diagram Explaining the Inflation Rate in Pakistan**

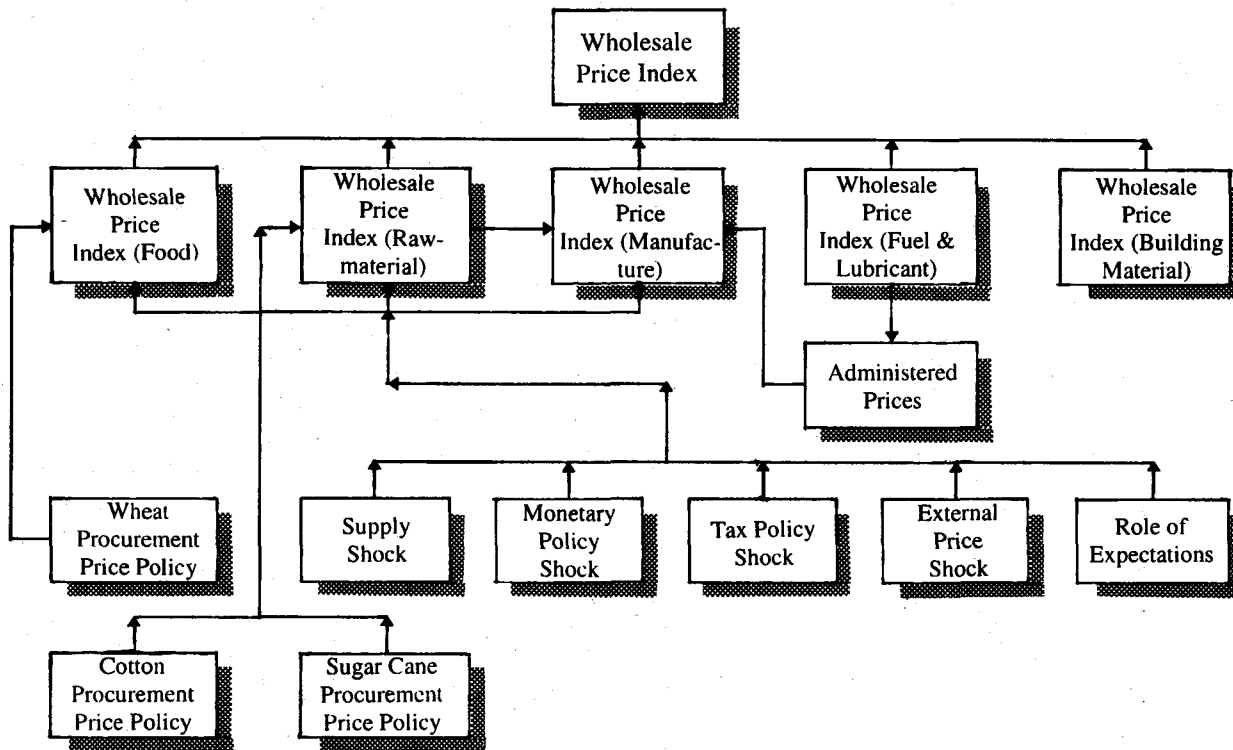


Table 2

*Estimated OLS Regression Results of the Inflation Model for Pakistan*

Items	Price Indices		
	Food	Manufacturing	Raw Material
Supply Shock	-8.48 (2.5)**	-.103 (1.4)	-.372 (1.8)***
Monetary Policy	.004 (0.1)	.157 (2.9)*	.271 (5.2)*
Procurement Price	.419 (3.4)*	—	.003 (1.2)
Tax Policy	—	.229 (3.4)*	—
External Prices	—	.249 (5.0)*	.497 (5.4)*
Expectations	.554 (4.4)*	—	—
$R^2$	.99	.99	.98
Durbin Watson (DW)	1.35	1.67	1.62

- Notes:
1. Numbers in parenthesis are *t*-values.
  2. One asterisk indicates significance at less than 1% level of significance.
  3. Two asterisk indicates significance at less than 5% level of significance.
  4. Three asterisk indicates significance at less than 10% level of significance.

fruits, etc.) and cannot be stored for a longer period (wheat and rice) as opposed to the manufactured (textile, garments) or raw material (cotton) products.

As expected, the money supply or monetary policy has the smallest impact on agricultural food price (only .0037 percent) as opposed to the prices in the more formal manufactured goods sector (2.5 percent). Procurement prices for wheat seem to be highly significant in food prices (40 percent) while the impact of cotton and sugar procurement prices on the raw material index is, at best, marginal (.003 percent).

It appears that both sales tax and excise duties may significantly raise the wholesale prices for manufactured product (23 percent). As for the prices of imported commodities, it seems to have a much greater effect on raw materials (50 percent) than the manufactured prices (30 percent). This is so because the price increase of the imported products directly contributes to the price of raw material, whereas, in the case of manufacture goods, the impact comes indirectly through input prices.

Finally, the role of expectations (captured by a lagged value of WPI) turned out to be relevant for the food prices. In fact, in terms of the size of its impact on food prices, it is higher (55.4 percent) than the coefficient of the procurement price of wheat.

It is intuitive to find out that expectations affect food prices but not other indices, e.g., raw material or manufactured products, because food is an essential item (wheat, rice, vegetable, etc.) in the consumer's basket and, thus, any shortage in this commodity would result in speculation and people in this case would tend to believe the worst-case scenario.

Although the analysis of regression coefficient results was useful in explaining the marginal impact of different policy and non-policy shocks on sectoral prices, it, however, did not enable us to identify the contribution of these shocks on the overall wholesale price index. We present below the simulation results of the model to identify the contribution of the shocks in explaining the inflation rate in Pakistan.

### **Policy Simulations and Their Implications**

Table 3 reports simulation results on the contributors of inflation in Pakistan in 1994-95. Essentially, Table 3 presents three types of numbers:

- (i) *Percentage changes in the policy and non-policy shocks between 1994-95:* These figures simply reflect the extent of changes either observed or assumed in the policy and non-policy factors of inflation, namely, supply shock, monetary policy, procurement prices policy, tax policy, external price shock, administered price policy, and expectations. For instance, during 1994-95, a 17 percent growth rate in the money supply is assumed while the shortage of food commodity represented by supply shock will only be 1 percent. The figures for policy and non-policy shocks are given in the parenthesis of Table 3.
- (ii) The second type of numbers reported in Row Two across each shock in Table 3 represent the contributors to sectoral inflation. For instance, a one-percent negative supply shock will have about a 5.9 percent (of actual 14.4 percent) increase in food prices. This number is calculated by simply multiplying the regression coefficient of the supply shock (-.8477) with its corresponding growth rate (-1 percent) and then dividing the result by the observed actual 14.4 percent inflation rate for food prices  $[(-.8477 \times -1)/.144 = 5.89]$ .
- (iii) The third type of numbers in Row One across each shock in Table 3 show the contributor to the overall inflation rate. For instance, while the sectoral contribution of 1 percent supply shock to food price is 5.9 percent (of 14.4), the impact of the same 1 percent shock to the overall WPI via food prices is only 3 percent. This number is obtained by simply multiplying the size of the shock (1 percent) to the regression coefficient (.8477) and the weight of food prices (.5063) in the WPI and then taking it as a percentage of the overall inflation rate of 14.18 percent  $[(.5063 \times -.8477 \times -1)/.1418] = 3.03]$ .

Table 3

*Sectoral Contributors to Inflation in Pakistan 1994-95*

	Wholesale Price Index					
	Food	Manufac- turing	Raw Material	Fuel	Building Material	General
<b>WPI WEIGHTS</b>	<b>50.63</b>	<b>24.06</b>	<b>8.97</b>	<b>11.79</b>	<b>4.55</b>	<b>100</b>
<b>Supply Shock</b>						
Overall WPI	3.0	0.2	0.2	–	–	3.5
Sectoral WPI	5.9	0.9	4.3	–	–	–
% Change in Supply	(–1)	(–1.3)	(–1)	–	–	–
<b>Monetary Policy Shock</b>						
Overall WPI	0.2	4.5	2.9	–	–	7.7
Sectoral WPI	0.4	18.6	52.8	–	–	–
% Change in Money	(17)	(17)	(17)	–	–	–
<b>Procurement Price Shock</b>						
Overall WPI	34.4	–	0.02	–	–	34.4
Sectoral WPI	66.9	–	0.4	–	–	–
% Change in Prices	(23)	–	(15)	–	–	–
<b>Tax Policy Shock</b>						
Overall WPI	–	9.7	–	–	–	9.7
Sectoral WPI	–	39.8	–	–	–	–
% Change in Tax Rates	–	(25)	–	–	–	–
<b>External Price Shock</b>						
Overall WPI	–	9.9	2.2	–	–	12.1
Sectoral WPI	–	40.7	40.0	–	–	–
% Change in External Prices	–	(23.5)	(7)	–	–	–
<b>Administered Price Shock</b>						
Overall WPI	–	–	–	18.6	–	18.6
Sectoral WPI	–	–	–	100	–	–
% Change in Admn. Price	–	–	–	–	–	–
<b>Expectations</b>						
Overall WPI	13.9	–	–	–	–	13.9
Sectoral WPI	27.0	–	–	–	–	–
% Change in Expected Price	(7)	–	–	–	–	–
<b>Sectoral Inflation Rates</b>	<b>14.4</b>	<b>14.4</b>	<b>8.7</b>	<b>22.4</b>	<b>16.5</b>	<b>14.18</b>

It is interesting to note that while a 17 percent monetary expansion during 1994-95 has the greatest impact in enhancing the raw material prices (52.8 percent of 8.7 percent), this effect, however, is not translated into increasing the overall inflation rate. This is so because monetary expansion has little impact on food prices (only 0.4 percent of 14.4 percent) which, of course, dominates (with a weight of over 50 percent in WPI) the overall inflation rate in Pakistan. Therefore, the more popular view professed by the *1993-94 Economic Survey* (p. 71), that “factors which were common throughout this period (1990–93) were expansionary fiscal and monetary policies .... contributed to sustain inflationary pressure”, does not hold for Pakistan, at least not in the short run. In fact, the total contribution of monetary policy to overall inflation during 1994-95 will only be 7.7 percent of the 14.18 percent as shown in Table 3.

Another widely held view [*1993-94 Economic Survey*, p. 71] that “factors like rains, floods, commodity-specific shortages (cotton, wheat, etc.) which were experienced during 1992-93” also contributed to the rising inflation may not be supported on the basis of our study. Our results in Table 2 suggest that the share of 1 percent negative supply shock in creating overall inflation in Pakistan is only 3.5 percent of the 14.18 percent during 1994-95.

External prices and government tax policies each have contributed quite significantly in terms of raising prices of manufactured products (over 80 percent of 14.4 percent) and raw material (40 percent of 8.7 percent), respectively. In addition, their combined contribution in raising the overall price level may exceed 25 percent of the 14.18 percent.

The role of price expectations while operating only through food prices cannot be underestimated in explaining the overall prices. Our results, in this context, suggest that 7 percent inflationary expectations may end up contributing about 14 percent (of the 14.18 percent) to the overall inflation rate.

Finally, one of the most interesting findings of this study is that the key contributor in explaining the over all current inflation rate in Pakistan is neither the demand management policy nor the supply shock, but, interestingly enough, it is the procurement price, particularly that of wheat and administered prices of fuel, gas, and electricity. Our results suggest that a 23 percent increase in the recent procurement prices will result in about 35 percent (of the 14.18 percent) increase in the overall inflation rate while another 19 percent (of the 14.18 percent) can be due to administered prices.

## 5. CONCLUDING REMARKS

This paper analysis, in quantitative terms, the factors responsible for the recent upsurge in the rate of inflation in Pakistan. These relate to various shocks, emanating from the supply-side, monetary, and fiscal policy, international prices, government procurement, support or administered prices, and from the emergence of stronger

inflationary expectations in the economy. Contrary to popular perceptions, we find that the contribution of supply shocks and monetary expansion to the rise in the wholesale price index in 1994-95 is somewhat limited. The principal factors contributing to the current inflation appear to be the rise in procurement prices (especially of wheat) and administered prices (primarily of energy inputs) and the increase in indirect taxes (largely in GST) in the 1994-95 budget. Many of these actions have been taken as part of the agreement with the IMF on the ESAF. While these have been seen as once-and-for-all changes, they have perhaps tended to produce a spiralling effect. Also, there has been a component of imported inflation and the impact of rising inflationary expectations. Altogether, it appears that during the current fiscal year, a large number of factors have been operative in explaining the high rate of inflation in Pakistan.

Given this diagnosis of the causes of the recent inflation, a number of policy recommendations can be made. These include moderation of future increases in administered or procurement prices and continued attempts by the government to dampen inflationary expectations through strong policy statements and actions. Also, in the forthcoming budget of 1995-96, escalations in indirect tax rates need to be kept at a minimum. Finally, it needs to be emphasised that the rate of monetary expansion must be restrained if a permanent rise in the long-run rate of inflation in the economy is to be avoided.

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## **Comments**

Accompanying the rise in inflation in recent months has been a strong pickup in interest in measuring and studying the rate of price increase. An intense debate over the causes of inflation has begun. Various commentators, including economic policy-makers, academics, journalists, and bankers, have attributed the acceleration of prices to a variety of factors. Among these are an expansionary fiscal policy; adverse supply shocks, particularly in the agricultural sector; increases in administered prices, including utilities and petrol; the lagged effects of rapid monetary expansion in 1992-93; the lagged pass-through of the devaluation of the rupee by 10 percent against the US dollar in July 1993; and increases in government procurement prices of the main agricultural commodities.

This paper is a welcome response to the raging debate about the causes of inflation in Pakistan. By putting together a comprehensive data-set on the relevant variables and rigorously testing their relationships, the authors propose to quantify the contribution of each factor to the overall pickup in inflation. For the reasons outlined below, however, the empirical estimates reported in the paper may be considerably biased and, consequently, the main conclusion drawn by the authors—that much of the pickup in inflation is due to increases in procurement prices—is difficult to accept.

My comments are divided into two broad groups, covering first the theoretical underpinnings of the model and then turning to the estimation techniques and results.

### **1. THEORETICAL UNDERPINNINGS OF THE MODEL**

#### **Supply Shocks**

Supply shocks are measured in the paper as the deviation of actual output from trend or potential output. The authors argue that a negative supply shock should be associated with rising prices since there would be a reduced availability of goods. Such an interpretation, however, appears to be at odds with the basic business cycle theory, which suggests that an expansion of output at a rate faster than potential is associated with higher resource utilisation and increasing inflationary pressures.

#### **Monetary Policy**

While the rate of monetary expansion is likely to be closely related to the rate of price increase, the timing of changes in either can vary. The paper is silent about the appropriate lag structure governing this relationship.



### **Tax Policy Shocks**

The paper notes that changes in taxes are likely to affect prices. However, only recent increases in taxes are modelled, while the recent reductions in import duties are not included.

### **External Shocks**

As with monetary shocks, the timing and extent of exchange rate pass-through is important and needs to be dealt with carefully in order to arrive at unbiased estimates of the inflation equations.

## **2. ESTIMATION TECHNIQUE AND RESULTS**

### **Methodology**

The stationary tests reported in the paper indicate that all the variables are *trend*, not *mean*, stationary. However, tests to confirm whether the estimated equations reported in Appendix C cointegrate are not reported.

### **Estimates**

While not calculated by the authors, the estimates indicate that a 100 percent increase in the money supply would increase the overall price level by 6.7 percent. Such a result appears to question the validity of the entire model.

### **Expectations**

Expectations of future prices are captured in the paper by the inclusion of a lagged value of the wholesale price index (WPI) in the estimated equations. While the importance of expectations in determining the actual rate of inflation cannot be disputed, the authors' modelling of expectations is less than satisfactory. The overall WPI is related to its components by an identity, and the fact that lagged WPI is significant only in the food price equation may be related to the large weight that food occupies in the overall WPI. Indeed, the food component of the WPI and the overall WPI are likely to be highly correlated, and the lagged WPI variable may simply be capturing lagged adjustment of food prices to the various other shocks. An alternative (more satisfactory) method for capturing expectations would be to regress each of the components of the WPI on a set of independent and lagged dependent variables and then use the resulting predicted value of the left hand-side variable as a measure of expectations.

**Aasim M. Husain**

ABN AMRO Bank,  
Karachi.