Impact of Exchange Rate Changes on Domestic Inflation: he Turkish Experience

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Impact of Exchange Rate Changes on Domestic Inflation: The Turkish Experience

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ABSTRACT

This paper examines the extent to which changes in exchange rates result in changes in Turkish domestic inflation. Specifically, we determine if there has been a change in the magnitude of this impact from the pre-2003 period to the post-2003, when the exchange rates were allowed to float. Employing monthly frequency data, we estimate two impulse-response functions and pass-through coefficients, one derived for the 1994April-2002December period using 1994 price indices as base (100) and the other one derived for the 2003January-2006December period using the 2003 price indices as base (100). We confirm that exchange rate shocks feed into domestic inflation, first at the level of manufacturers' prices and then at the level of consumer prices, and that the impact of the shocks on the price variables of the various stages of the supply chain is different. Our findings indicate that the magnitude of the impact has declined for the post-2003 period by nearly one-half compared to the pre-2003 period during the early stages of the production process reflecting the predominance of the manufacturer price index in determining Turkish inflation rates. In addition, the decline in the exchange rate pass-through impact on domestic prices coincides with a 25 percent decline in the post-2003 consumer price inflation. Regardless, the consideration of the impact of exchange rate changes on the domestic inflationary process is still important when establishing monetary policies for the Turkish economy.

INTRODUCTION

The transmission of the effects of exchange rate fluctuations to the domestic inflation rates has been an issue of interest in contemporaneous economics literature. From a developing country perspective, exchange rate stabilization policies have serious

consequences on the efficiency of other *ex-post* economic policy implementations. The Turkish economy constitutes an interesting case study, being subject to chronic, double-digit inflationary framework over the 1983-2002 period. While Ertuğrul and Selçuk (2002) present a brief outline of the Turkish economy for the post-1980 period, an extensive literature review of the Turkish inflation can be found in Kibritcioglu (2001) and Saatcioglu and Korap (2006).

In 2000, an anti-inflationary stabilization program led by a quasi-currency board was established to fight domestic inflation (Ozdemir and Sahinbeyoglu, 2000). The board set fixed domestic currency exchange rates against foreign currencies, aiming to form expectations of exchange rate parities for economic agents. While this approach seemed to be successful in bringing inflation down by one-half during the first 10 months of its implementation, the subsequent two economic crises ended the program with a huge depreciation in real incomes. Dornbusch (2001), Eichengreen (2001), Uygur (2001), Alper (2001), Ertugrul and Yeldan (2002), Akyuz and Boratav (2003), and Ekinci and Erturk (2007) critically analyze the reasons for and the outcomes of the Turkish-2000 stabilization program. Currently, Turkish policy makers are trying to establish an inflation targeting (IT) framework supported by a free-floating exchange rate system, explicitly announcing annual targets through the Central Bank of the Republic of Turkey (CBRT). In this manner, a forward looking policy stance is being provided and presented as the main characteristic of the IT framework (Leigh and Rossi, 2002).

PURPOSE

This paper conducts an empirical analysis to reveal the extent to which changes in exchange rates result in changes in Turkish domestic inflation. Specifically, we determine if there has been a change in the magnitude of this impact from the pre-2003 period to the post-2003, when the exchange rates were allowed to float. The next section examines the importance of the process that describes how exchange rate changes pass through into domestic inflation. Then, we estimate empirical models for this process in the Turkish economy during the 1994-2002 and the 2003-2006 periods. Next, we conduct sensitivity analyses for the 2003-2006 period to demonstrate changes, if any, that have occurred in the pass-through relationships that we established for the 1994-2002 period. The final section presents our summaries, conclusions, and suggestions for future research.

IMPORTANCE OF PASS-THROUGH RELATIONSHIPS

As emphasized by Choudhri and Hakura (2006), an important policy debate for the contemporaneous monetary and exchange rate policy implementations is to reveal the degree to which changes in exchange rates or import prices impact or pass-through into domestic consumer prices. Related to this policy issue is the fact that a low exchange rate pass-through provides policy makers freedom to pursue an independent monetary policy. Campa and Goldberg (2002) highlight such a process where low import price pass-through of nominal exchange rate fluctuations lead to lower expenditure-switching effects in the domestic economy, thereby leaving monetary policy free to deal with real shocks. Otherwise, shocks due to the pass-through effects of import prices and exchange rates make the domestic economy fragile and susceptible to trade linkages. Using data from the OECD countries, they estimate that macro variables do not have high explanatory power in describing the pass-through process. Instead, the composition of industries in a country's import basket plays a much more important role in determining the pass-through. In this sense, the import price pass-through would mainly reflect the pricing behavior of foreign firms.

Frankel et al (2005) give a brief summary of the factors affecting pass-through of the changes in import prices or exchange rates via devaluations on the inflationary framework for the developed and developing countries. They emphasize that pass-through effects have historically been much higher in poor countries than in rich ones and are significantly higher in an environment of high inflation. They observe that pass-through effects have declined significantly in the 1990s. They attribute this decline to barriers to arbitrage between different countries as well as to the 'pricing to market' phenomenon of Krugman (1987), indicating price discrimination by firms in different countries where foreign producers adjust their mark-ups to maintain a stable market share in the domestic economy thereby reducing the rate of pass-through (Korhonen and Wachtel, 2006).

The decline in pass-through from exchange rate changes into domestic inflation in emerging market economies since the mid-1990s has also been observed by Mihaljek and Klau (2001). Garcia and Restrepo (2001) observe that the exchange rate pass-through has been low for Chile and conclude that exchange rate pass-through depends on economic activity. Declines in economic activity reduce the output gap and compensate for the inflationary impact of exchange rate depreciations. Goldfajn and Werlang (2000) find that the

cyclical component of output is the main determinant of the inflationary pass-through of exchange rate depreciations.

Considering the pass-through of the changes in exchange rates into domestic inflation as an exogenous variable when analyzing domestic inflation creates controversy. Taylor (2000) argues that lower and more stable inflation is a factor behind the reduction in the degree of pass-through into the firms' own prices of both price increases at competing firms and cost increases due to exchange rate movements. Using a model of firm behavior based on staggered price setting and monopolistic competition, he explains that since firms set prices for several periods in advance, their prices respond more rapidly to cost increases in the resources they purchase due to exchange rate depreciations if such changes are perceived to be persistent. Regimes with higher inflation tend to have more persistent cost changes. A high inflation environment would thus tend to increase the exchange rate pass-through. Evidence from the U.S. supports such an explanation where relatively low persistence of inflation and the monetary policy that has delivered it have led to lower pass-through through a reduction in the expected persistence of cost and price changes.

Likewise, Choudhri and Hakura (2006) emphasizing the importance of price inertia and expectations for the exchange rate pass-through express that as prices are set by firms, the pass-through will include the expected effect of changes in the exchange rate on future costs and prices, which would also depend on the inflationary environment. For high inflation regimes, the effect of monetary shocks would be more persistent and likely to be reflected in exchange rates. Thus, the exchange rate pass-through would be larger in high inflation regimes. Gagnon and Ihrig (2001) using data from industrialized countries support the view that countries with low and stable inflation rates tend to have low estimated rates of pass-through from exchange rates into consumer prices. However, a recent study by Barhoumi (2006) on developing countries finds a little difference in the long-run exchange rate pass-through in countries with widely divergent inflation regimes.

Several recent studies focus on developing countries. Billmeier and Bonato (2004) examine the link between the exchange rate pass-through and monetary policy for Croatia and conclude that strict exchange rate targeting may not necessarily be the best policy option for Croatia since empirical findings do not reveal a high exchange rate pass-through. Choudhri and Hakura (2006) find a strong evidence of a positive and significant association between the

pass-through and the average inflation rate using data from 71 countries for the period of 1979-2000. An important policy implication emphasized is that the dependence of the exchange rate pass-through on the inflation regime should be taken into account in designing monetary policy rules and that this dependency would make it easier for a country to implement a policy targeting for a low inflation rate. Korhonen and Wachtel (2006) assess the extent and speed of exchange rate pass-through in the countries of the Commonwealth of Independent States (CIS). They find that exchange rate movements have a clear impact on price developments in the CIS countries and speed of pass-through is fairly high, with the full effect transmitted into domestic prices in less than 12 months. Coricelli et al. (2006) report empirical evidence indicating high pass-through for Czech Republic, Hungary, Poland and Slovenia that have adopted some form of floating or managed exchange rate regimes. They indicate that high exchange rate pass-through leads to the stabilization of nominal exchange rates and lowers inflationary pressures and help fulfill criteria to enter the European Monetary Union (EMU). Barhoumi (2006) using data from a large set of developing countries and employing panel estimation techniques finds that homogeneity of pass-through rates across countries can be rejected and that countries with fixed exchange rate and lower tariff barriers exhibit a higher long-run exchange rate pass-through of import prices into domestic prices than countries with higher tariff barriers and floating rates.

Finally, dealing specifically with the Turkish economy, Leigh and Rossi (2002) consider the time period January 1994 - April 2002 and investigate the impact of exchange rate movements on domestic prices. They find that: 1) the impact of the exchange rate on prices is over after about a year, but is mostly felt in the first four months; 2) the pass-through to wholesale prices is more pronounced compared to the pass-through to consumer prices; and 3) the estimated pass-through is complete in a shorter time period and is larger than that estimated for other key emerging market countries. Arbatli (2003) finds that pass-through to prices is lower during significant economic contractions, periods with higher exchange rate depreciation and periods with lower inflation. Also, evidence for asymmetries that arise from the magnitude of the change in exchange rates is found weaker and quantitatively not very significant. Kara et al (2005) estimate that during the post-2001 period the pass-through of exchange rates into domestic prices has declined from the levels they exhibited in the pre-2001 periods. They attribute these results to the fact that Turkey switched to a floating exchange rate regime and implemented an ambitious disinflationary policy. Finally, Kara and Ogunc (2005) confirm that pass-through has weakened and slowed down after the adoption of

the floating exchange rate regime. But, total pass-through might have been sizable had the economy been hit by a one-sided shock such as a persistent depreciation.

METHODOLOGY

Time Periods and Variables Used

We consider two periods to recognize the changes in the composition of the price indices in the post-2003 period. Official reports by the CBRT (2006) announces that the new 2003:100 based price indices bring about significant changes in the scope of goods, the weight of goods, and the pricing and calculation methods, such as: 1) increasing main expenditure groups from 10 to 12 in the consumer price index (CPI) with the inclusion of communication services as a separate group; 2) inclusion of technological services; 3) exclusion of imputed rent items as a significant part of the housing group; and 4) increasing the share of energy items. Compared to the CPI with the base year 1994, the CPI with the base year 2003 contains more commodity groups that are susceptible to pass-through from exchange rates into prices and the producer price index (PPI) is more sensitive to exchange rate changes since the prices in the CPI with base year 2003 are tax-exempt. A study by the CBRT (2006) finds that the new consumer price index is really more sensitive to exchange rate developments compared to the index with base year 1994, which is mainly attributed to the increase in the share of tradable goods.

We must note that empirical findings by CBRT (2003), CBRT (2004) and CBRT (2006) allege a noticeable decline in the long-run exchange rate pass-through after the adoption of the floating exchange rate regime. Since we investigate a short time period (48 observations) for the post-floating period, we will consider only the exchange rate depreciation rather than the import prices to represent the transmission channel of pass-through effects, along with the output gap, manufacturer price index, and the consumer price index variables. Also, we do not include the oil price variable in this paper, an exclusion that is not common in most of the studies concerning this issue (McCarthy, 1999). However, Kara and Ogunc (2005) justify such an approach because the oil-based prices are administered prices in Turkey, with private consumption taxes comprising a large part of the price. Therefore, the impact of international oil price developments can often be distorted by the changes in the special consumption taxes. In addition, they state that both the influence of import prices and the depreciation of domestic currency can jointly be taken into account

since the higher depreciation would lead to higher production costs, which in turn translates into higher domestic prices.

Model Specification

We construct an unrestricted vector autoregressive (VAR) model first developed by McCarthy (1999) to examine the extent to which the Turkish economy has been impacted by the pass-through of exchange rate changes into the domestic inflationary framework. We derive this recursive VAR model using the Cholesky decomposition of the variance-covariance matrix and four endogenous variables of y_t^{gap}, Δe_t, π^{mpi} and π^{cpi}. The model is subject to structural shocks recovered from the VAR residuals. Considering monthly frequency data for the period 1994April-2006December, y_t^{gap} is the output gap which is estimated as the difference between real gross domestic product (GDP) and Hodrick-Prescott filtered trend. For this purpose, we first construct the monthly real GDP series by using the interpolation methods available in EViews 5.1, applying the low frequency to high frequency quadratic match average conversion option. QMS (2004) and Saatcioglu and Korap (2006) give a detailed interpretation of such an interpolation of low frequency time series to high frequency data. We then de-seasonalize the output data using US Census Bureau's X12 seasonal adjustment program.

We represent the effect of external shocks on domestic inflation variables in our system with the depreciation of TL/US$ exchange rate (e_t). Following Billmeier and Bonato (2004), we assume that exchange rate shocks feed into domestic inflation, first at the manufacturers' level, and then at the retail level. As emphasized by Kara and Ogunc (2005), these latter price measures contain sequential shocks that can be attributed to the various stages of the supply chain. We consider output gap and nominal exchange rate variables in log-linear form, whereas inflation measures are not subject to such transformation. In line with these model specification issues, the VAR model identifying the pass-through exchange rate effects on domestic inflation using the Cholesky decomposition can be represented as follows:

$$y_t^{gap} = \mathrm{E}_{t\text{-}1}(y_t^{gap}) + \varepsilon_t^{y} \qquad (1)$$

$$e_t = \mathrm{E}_{t\text{-}1}(e_t) + \mathrm{b}_1 \varepsilon_t^{y} + \varepsilon_t^{e} \qquad (2)$$

$$\pi_t^{mpi} = E_{t-1}(\pi_t^{mpi}) + c_1 \varepsilon_t^y + c_2 \varepsilon_t^e + \varepsilon_t^{mpi} \quad (3)$$

$$\pi_t^{cpi} = E_{t-1}(\pi_t^{cpi}) + d_1 \varepsilon_t^y + d_2 \varepsilon_t^e + d_3 \varepsilon_t^{mpi} + \varepsilon_t^{cpi} \quad (4)$$

where E_t-1(•) is the expectation of a variable based on the information set at the end of period t-1. We assume that the conditional expectations in Eqs. (1)-(4) can be replaced by linear projections of the lags of the four endogenous variables. The above system of variables is estimated for both the 1994April-2002December and the 2003January-2006December periods using different price indices for their base periods. The results obtained in the later period are used to conduct sensitivity analyses of the empirical findings of the earlier period.

Testing Methods

We use the augmented Dickey-Fuller (ADF) unit root test of Dickey and Fuller (1979) to obtain our model results and then use the Phillips-Perron (PP) unit root test of Phillips and Perron (1988) to verify these results. Both tests assume the null hypothesis for the presence of a unit root against the stationary alternative hypothesis. The test statistics and the critical values used in this paper are taken from the ADF procedure in EViews 5.1. Tables 1 and 2 present the results for both periods. Below the columns headed by τ_C and τ_T are the test statistics with allowance for only constant and constant&trend terms in the unit root tests, respectively. $Z(\tau_C)$ and $Z(\tau_T)$ are the relevant PP statistics and 'Δ' denotes the first difference operator.

ANALYSIS OF RESULTS

These results indicate that the null hypothesis of non-stationarity for each variable, except for the nominal exchange rate, is rejected for both periods. However, the non-stationarity is rejected for the first difference of the nominal exchange rate. Therefore, the VAR model is estimated in the level forms of the time series used except for the nominal exchange rate, where the first difference of the time series is used.

Table 1: Unit Root Tests (1994April-2002December)

Variable	τ_C	τ_T	$Z(\tau_C)$	$Z(\tau_C)$
y_t	-4.53	-4.61	-4.00	-3.92
e_t	-1.58	-3.43	-2.23	-3.41
Δe_t	-6.73	-6.88	-6.55	-6.68
π_t^{mpi}	-6.19	-5.92	-5.92	-6.30
π_t^{cpi}	-6.56	-7.62	-6.40	-7.30
Critical Values				
1% level	-3.50	-4.05		
5% level	-2.89	-3.46		

Table 2: Unit Root Tests (2003January-2006December)

Variable	τ_C	τ_T	$Z(\tau_C)$	$Z(\tau_C)$
y_t	-3.48	-3.47	-3.35	-3.33
e_t	-2.88	-2.99	-2.35	-2.21
Δe_t	-5.81	-5.87	-4.84	-4.88
π_t^{mpi}	-4.61	-4.56	-4.43	-4.38
π_t^{cpi}	-6.10	-6.05	-7.50	-8.05
Critical Values				
1% level	-3.57	-4.16		
5% level	-2.92	-3.51		

In line with these preliminary findings concerning the time series of the variables, VAR models are constructed to determine the extent to which changes in exchange rates pass-through affect domestic inflation measures. The sequential modified likelihood ratio (LR) employing Sims' (1980) small sample modification, the minimized Akaike information criterion (AIC), and the final prediction error (FPE) criterion suggest that we should use 12 lags for the unrestricted VAR specification, whereas information criterions produced by Schwarz (SC) and Hannan-Quinn (HQ) statistics suggest 1 and 2 lag orders should be

considered. We choose the lag order suggested by the LR and AIC statistics. This specification clears the error structure of the model using Lagrange multiplier statistics LM(1) = 19.78 (0.23) and LM(12) = 12.83 (0.69) and assuming probabilities from χ^2 with 16 degrees of freedom under the null of no residual serial correlation at lag orders specified. On the other hand, lag specifications 1 and 2 produce 1st order and 12th order serial correlation problems.

In addition, no VAR residual heteroskedasticity is found using χ^2 (880) = 910.39 (0.23). Also, no heteroskedasticity or no misspecification in the VAR residuals is given for our process. But, there exists a VAR residual non-normality problem mainly due to excess kurtosis. Using skewness $\chi^2(4)$ = 1.20 (0.88), kurtosis $\chi^2(4)$ = 58.59 (0.00), JB $\chi^2(8)$ = 59.79 (0.00) that assumes Cholesky orthogonalization of Lütkepohl (1991), we indicate some outliers in the model. However, our VAR model satisfies the stability condition that all the inverse roots of the characteristic polynomial have modulus less than 1 and lie inside the unit circle which enables us to implement impulse response analysis for the dynamic interactions and leads us to the specification of exchange rate pass-through for domestic inflation. Finally, the off-diagonal elements of the residual correlation matrix are found to be lower than 0.30. These results are not reported here to save space and are available upon request.

Having satisfied statistical prerequisites, impulse response analysis is used to examine the pass-through effects of exchange rate on domestic inflation. This process tracks the path of a perturbation in one innovation in the VAR that sets up a chain reaction over time in all variables, until the variables return to the equilibrium (Green, 2000). Figure 1 indicates orthogonalized impulse-responses for MPI and CPI based inflations to a one standard deviation (sd.) innovation in the nominal exchange rate considering 1000 Monte Carlo repetitions of plus / minus 2 sd. and using small sample degrees of freedom correction when estimating the residual covariance matrix for the 1994April-2002December period. We omit the impulse response functions revealing the effects of the variables other than the nominal exchange rate and focus on the effects of exchange rate shocks on inflation measures.

Figure 1: Impulse Response to Nominal Exchange Shocks

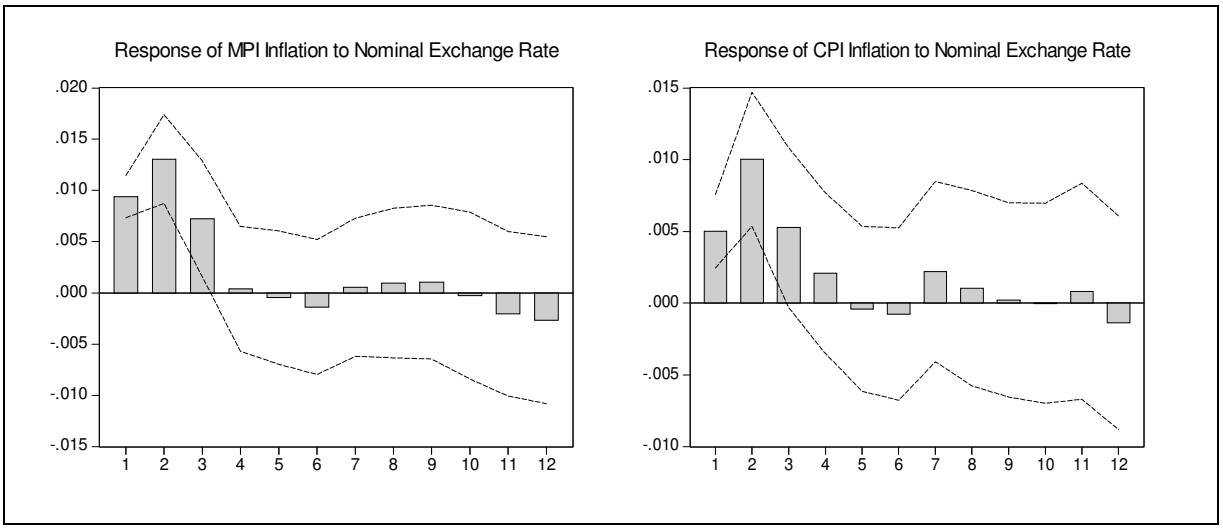

Figure 1 shows that exchange rate shocks have highly predominant effects on inflation measures. A one sd. positive shock to the nominal exchange rate would lead to significant increases of 0.9%, 1.2%, and 0.8% in the MPI based inflation for the 1st, 2nd, and 3rd periods, respectively, following the shock. As for the CPI based inflation, a one sd. positive shock to the nominal exchange rate would increase domestic inflation by 0.5%, 0.9%, and 0.5% for the same periods, respectively. In addition, the impulse responses die out in a 12-month horizon, indicating the stationary characteristics of the variables used. These findings demonstrate how exchange rate pass-through affects the Turkish inflation and are in line with those of Leigh and Rossi (2002).

Figure 2 below describes the cumulative pass-through coefficients of the impulse response functions estimated in line with many other studies conducted on this issue, such as Leigh and Rossi (2002), Kara and Ogunc (2006), and Choudhri and Hakura (2006). We compute the pass-through coefficient as the ratio of cumulative impulse responses of each price index after *j* months to the cumulative response of the exchange rate to an exchange rate shock after *j* months. That is:

$$PT_{t,t+j} = P_{t,t+j} / E_{t,t+j} \qquad (5)$$

where $P_{t,t+j}$ is the cumulative change in the price level and $E_{t,t+j}$ is the cumulative change in the nominal exchange rate between months *t* and *t+j*.

Figure 2 below shows that exchange rate pass-through into inflation is higher for the MPI based inflation when compared to the CPI inflation, supporting the *ex-post* findings of Kara and Ogunc (2005). This occurs because private manufacturing sectors have been highly subject to producing and processing tradable goods which depend on imports for the required input materials. Thus, the MPI based inflation is affected to a large extent by the changes in import prices and exchange rates. However, consumer prices include non-tradable goods which are mainly affected by domestic developments rather than by a pricing behavior sensitive to external developments. Our findings indicate that exchange rate pass-through steadily increases within the period and 90% of the exchange rate changes are cumulatively passed-through into the MPI inflation within 14 months. For the CPI based inflation, these take the values of 70% and 14 months, respectively.

Following Kara and Ogunc (2005) and Korhonen and Wachtel (2006), we assess the extent of pass-through by estimating the percent of the exchange rate changes that are reflected in inflation by the end of the 18 months. Table 3 reports these estimation results and shows somewhat higher values than the estimates of Kara and Ogunc. The magnitude of pass-through values verifies the importance of the exchange rate pass-through mechanism on domestic inflation, especially for the earlier stages of the supply chain.

SENSITIVITY ANALYSIS

Next, we examine whether the results for the pre-2003 period can be verified by the data for the post-2003 period using new price indices with the base year 2003: 100. We use a maximum lag specification of 6 due to the shorter span of the data for the second time period. The LR, FPE, and AIC statistics suggest the use of 2 lags, while SC and HQ statistics suggest 1 lag to be considered. As for the diagnostics, we find that 1 lag order is subject to 1st and 12th order serial correlation problem. But lag order 2 does not indicate any serial correlation problems, with LM(1) = 12.39 (0.72) and LM(12) = 18.48 (0.30), and using probabilities from χ^2 with 16 degrees of freedom. No VAR residual heteroskedasticity is found using χ^2 (160) = 159.19 (0.50) under the null hypothesis. Also, unlike the results obtained in the first period, the VAR residuals are found to be multivariate normal, using skewness $\chi^2(4)$ = 4.65 (0.32),

kurtosis $\chi^2(4) = 7.40$ (0.12), and JB $\chi^2(8) = 12.06$ (0.15). We find that no root lies outside the unit circle, so the VAR satisfies the stability condition. Figure 3 below describes the orthogonalized impulse responses for MPI and CPI based inflations to a one sd. innovation in the nominal exchange rate, considering 1000 Monte Carlo repetitions of plus / minus 2 sd.

Figure 2: Estimated Cumulative Pass-Through Coefficients (1994April-2002December PERIOD)

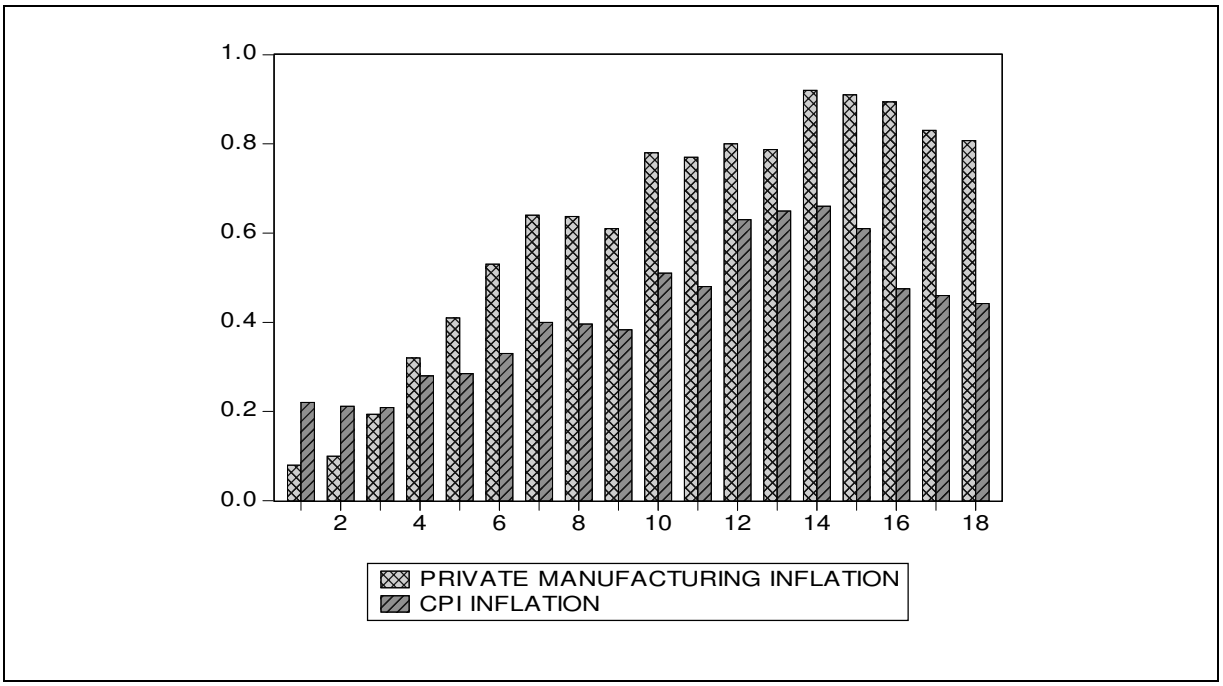

Table 3: Extent of Exchange Rate Pass-Through (1994-2002)

MPI Inflation	80%
CPI Inflation	48%

Figure 3 shows that while the MPI inflation is affected by exchange rate shocks in a statistically significant manner, the same is not true for the CPI inflation. Having statistical significance for two periods after the one sd. exchange rate shock, manufacturing price inflation increases by 1% and 0.4%, respectively. Thus, for the 2003-2006 period, the predominant effects of the exchange rate pass-through for domestic inflation occur in the earlier stages of the supply chain.

In Figure 4 we report the cumulative pass-through coefficients from the impulse response function obtained using equations 1-5. Our findings indicate that 52% of the exchange rate changes are cumulatively passed-through into the MPI inflation within 5 months. For the CPI inflation, these take the values of 44% and 8 months, respectively. Finally, results in Table 4 reveal that the extent of the pass-through significantly decreases for the post-floating period. However, the pass-through of exchange rate is still quite high. Thus, controlling domestic inflation will be hard and the *ex-post* effectiveness of stabilization policies will be reduced if there are unexpected shocks to exchange rates and economic policy makers fail to include the impact of exchange-rate pass-through on domestic prices in their policy formulations.

SUMMARY, CONCLUSIONS, AND SUGGESTIONS FOR FUTURE RESEARCH

Turkey has been trying to implement an inflationary targeting policy regime following the 2001 crisis period. However, the factors that affect the success of these policies must be considered by the policy makers and future policy recommendations must be constructed using accurate expectations of these factors. This study develops a model and describes the process whereby changes in exchange rates pass-through to and impact the Turkish inflationary framework during the pre- and post-2003 periods. The larger the extent of pass-through the lower will be the effectiveness of economic policies that aim to control inflationary pressures. Also, we examine whether the extent of exchange rate pass-through into domestic inflation has changed for the post-2003 period.

Figure 3: Impulse Response to Nominal Exchange Shocks

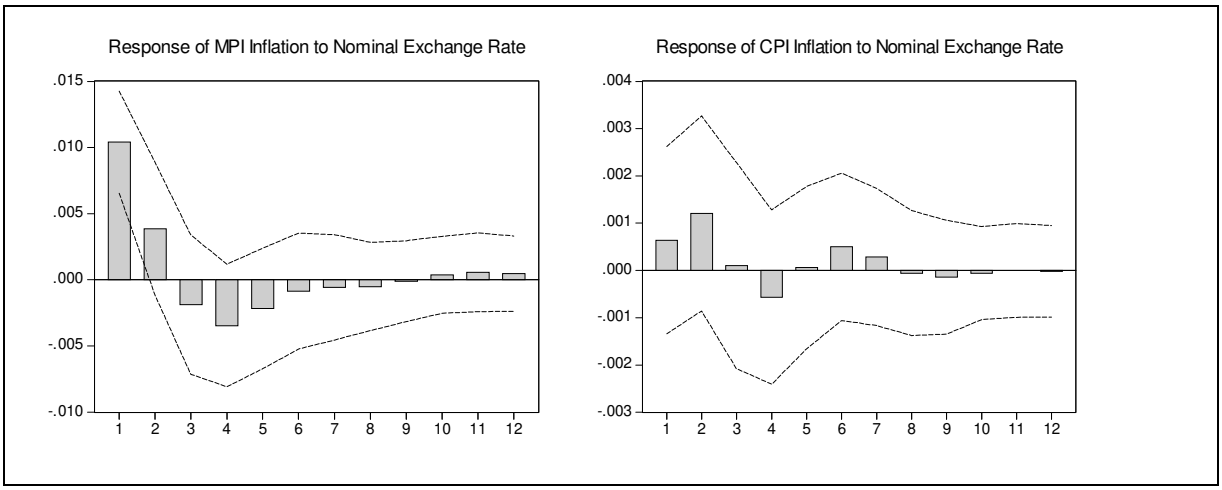

Figure 4: Estimated Cumulative Pass-Through Coefficients (2003January-2006December)

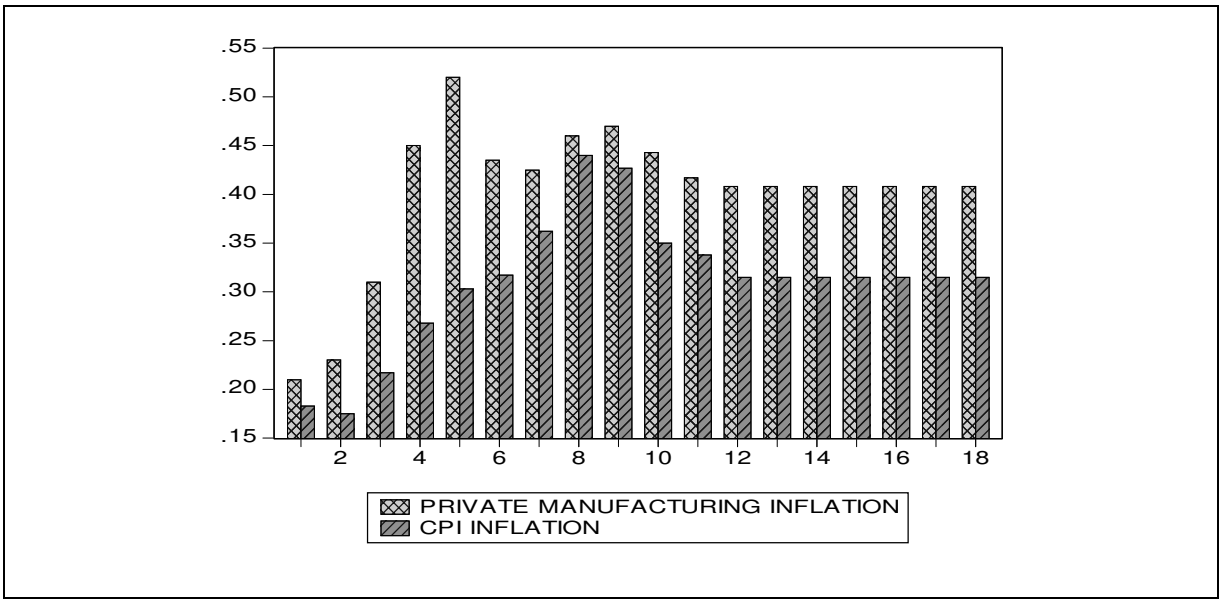

Table 4: Extent of Exchange Rate Pass-Through (2003-2006)

MPI Inflation	44%
CPI Inflation	35%

Our findings reveal that the extent of pass-through declined for the post-2003 period by nearly one-half when compared to the pre-2003 period, especially during the early stages of the production process. The change in this relationship coincided with a decline of nearly one fourth for the CPI inflation as well. However, the pass-through of exchange rate changes are still important in determining the behavior of the domestic inflationary process and should be taken into account by to ensure control over domestic inflation. Future studies must be conducted to verify the results described in this paper. In addition, the post-2003 results obtained by this study must be re-examined using substantially longer time period and a larger data set.

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