Monetary shocks, exchange rates and trade balances: Evidence from inflation targeting countries

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ABSTRACT

This paper investigates the relationship among monetary policy shocks, exchange rates and trade balances in five Inflation Targeting Countries (ITCs). The investigation is based on Structural Vector Error Correction Models (SVECMs) with long run and short run restrictions. The findings reveal that a contractionary monetary policy shock leads to a decrease in price level, a decrease in output, an appreciation in exchange rate, and an improvement in trade balance in the very short run. Our findings contradict the findings of price, output, exchange rate and trade puzzles that have been found in many empirical studies. Furthermore they are consistent with the theoretical expectations regarding the effect of a contractionary policy. The only long run restriction that we imposed on our models is that money does not affect real macroeconomic variables in the long run, which is consistent with both Keynesian and monetarist approaches.

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1. Introduction

The effect of monetary policy shock on exchange rates and trade balances has been and remains a prominent topic among academicians, policy makers and researchers. The reason is that the topic has important policy implications but empirical researches on the topic provide conflicting results. The empirical investigation regarding the effect of monetary policy shocks on macroeconomic variables is generally based on multivariate models such as VAR, SVAR, VECM, SVECM and the impulse response derived from them. To identify the monetary policy shock, it is necessary to impose some restrictions on the above econometric models. Such models are called Structural Vector Autoregressive (SVAR) or Structural Vector Error Correction Models (SVECM), depending on cointegrating relationships among the variables. Most of the conflicting empirical results in the literature occur in consequence of restrictions imposed on the aforementioned econometric models.

Previous studies found conflicted result regarding to the effect of IT monetary policy on macroeconomic variables. On the one hand, the influential paper of Mishkin and Schmidt-Hebbel (2007) argues that inflation targeting is successful in terms of achieving lower inflation,

having smaller negative effects of oil price and exchange rate shocks on inflation, reinforcing monetary policy independence, improving monetary policy efficiency and obtaining inflation that is close to target level. But, in this paper, they claim that despite these successes, it is not clear whether monetary policy performance in countries adopted inflation targeting outperforms monetary policy in non-inflation targeting countries. On the other hand, Ball and Sheridan (2005) argue that inflation targeting does not make any difference in industrial countries: the apparent success of inflation targeting is due to the fact that inflation falls faster in countries that start with high inflation than in countries that start with a low inflation rate. That means the success reflects regression toward the mean, which should not be associated with the success of inflation targeting policy. Others arguing in this vein include Mishkin and Schmidt-Hebbel (2002) and Gertler (2005). They claim that the adoption of inflation targeting is an endogenous choice. Therefore, the findings of better monetary policy performance that are associated with inflation targeting may not imply that inflation targeting leads to better performance.

In his recent paper, Mishkin (2008) argues that "inflation targeting has been a highly successful monetary policy strategy for many emerging market countries and has led to greater improvements in performance for advanced-country inflation targeters". He compares emerging market inflation targeters with emerging market nontargeters and claims that the former recorded close to a 0.8% reduction in inflation just after adopting inflation targeting and a 7.0% reduction in the long term. Furthermore, he stresses that emerging market inflation

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targeters are more insulated from international interest rate shocks compare to nontargeters, which means inflation targeting policy framework provides targeters with greater monetary independence. Therefore he concludes that inflation targeting is not only successful in reducing inflation but also reducing variability of inflation and output.

In this study, we investigate the effect of an inflation targeting monetary policy shock on exchange rates, output and trade balances in five Inflation Targeting Countries (ITCs), namely, Australia, New Zealand, Canada, Sweden, and the United Kingdom. The investigation is based on Structural Vector Error Correction Models (SVECMs) with long and short run restrictions.

The reasons that we study the effect of an inflation targeting monetary policy shock on exchange rates, output and trade balances in Inflation Targeting Countries are as follows. Firstly, by isolating inflation targeting monetary policy shock, we can be more certain that there is no structural shift in monetary policy during the period we analyzed. Thus, expected response of macroeconomic variables to a monetary shock is more evident in ITCs. Secondly, inflation targeting monetary policy and its alternatives are different at least in terms of targeting: the reaction of macro variables to monetary policy shocks may be different under different target regime. Therefore, isolating inflation targeting monetary shock from its alternatives seems more natural in the sense that the expectations of economic units under different monetary policy regimes are different.

We set up three different SVEC models for each inflation-targeting country to analyze the effect of monetary policy on exchange rates, trade balances and other macroeconomic variables. We impose a long run (the long run neutrality of money) and a reasonable set of contemporaneous restrictions to identify the monetary policy shock. Based on some reasonable restrictions imposed on the Vector Error Correction Models (SVEMs), we obtained the results that are consistent with a general description of the possible effects of a contractionary policy shock on macroeconomic variables. Contrary to most empirical studies in the international macroeconomics literature, our models do not produce any price, exchange rates, output and trade puzzles.

Both the theoretical and empirical analyses regarding the effectiveness of IT policy on macroeconomic variables give different results, depending on data used, countries chosen and econometric models employed. Some of mixed and contradict results regarding the effectiveness of IT policy on some macro variables are as follows: a) Corbo et al. (2001), Neumann and Hagen (2002), Gonçalves and Salles (2008), IMF, World Economic Outlook (2005), Vega and Winkelried (2005) present evidence that " the IT policy reduces the volatility of inflation" whereas Johnson (2001), Ball and Sheridan (2005), Levin et al. (2004), Berument and Yüksel (2007) provide evidence that either the IT policy has no positive effect on the volatility of inflation or the IT increases the volatility; b) P tursson (2004); Dotsey (2003) provide evidence that "IT enhances output growth" though Fair (2007); Ball and Sheridan (2005) find no evidence that IT improves a country's performance; c) Levin et al. (2004), Nadal-De Simone (2001), Corbo et al. (2001), Neumann and Von Hagen (2002), Gonçalves and Salles (2008), World Economic Outlook (2005) offer evidence of either "no increase or a decrease in the volatility of output" due to IT policy while Cecchetti and Ehrmann (1999), Levin et al. (2004), Debelle (1999), Fraga et al. (2003) provide evidence of an increase in the output volatility; d) Laubach and Posen (1997), Honda (2000), Levin et al. (2004) find "no effect of the IT framework on the tradeoff between output and inflation" while Clifton et al. (2001), Arestis et al. (2002), IMF, World Economic Outlook (2005) provided evidence of " an improvement in the trade off ".

In a recent symposium on IT published in Comparative Economic Studies, articles on inflation targeting in some emerging market countries and these countries experiences reveal that the performances of these countries after IT regime are better than their pre-IT regime, at least in terms of containing inflation. For individual country experience, see Akyurek and Kutan (2008) for Turkey; Orlowskı (2008) for Central and East European Countries; Banaian et al. (2008) for Armenia; Gabor (2008) for Romanian; and Maliszewski (2008) for Poland.

In a special issue on inflation targeting published in Emerging Markets Finance & Trade (2008), two out of six papers in this special issue discuss general topics related to the implementation and success of inflation targeting and reveal the experience of advanced, emerging, and transition economies that adopted inflation targeting and non inflation targeting policy frameworks. The rest of the papers are related to individual country experiences.[2] In the first paper, as reported above, Mishkin argues that inflation targeting has been a successful monetary policy framework for both emerging and advanced-country inflation targeters. In the second paper, Siklos (2008) examines twenty inflation and nine non-inflation targeting countries and classify them as inflation targeters (Industrial and emerging) and non inflation targeters. He finds that inflation persistence has fallen in some but not all emerging market economies. However, he reveals that inflation targeting regime is not especially fragile in emerging market economies. As inflation targeting regime gains experience with inflation targets, the breaches in the target ranges tends to fall in inflation targeters.

The contribution of this study to the inflation targeting policy literature is to reveal the quantitative importance of an inflation targeting monetary policy shock on a bunch of ITCs' macroeconomic variables such as monetary aggregate (M), price level(P), real output(Y), real exchange rates(REXC), the trade balance (TB), real exports (REXP) and real imports (RIMP) in one paper.

The basic question is what we theoretically expect regarding the effects of a contractionary monetary policy shock on the macroeconomic variables. Unfortunately, theoretical models in economics provide more guidance with respect to long run effect of monetary policy shock and much less guidance with respect to short run effect of it. The short run effect of monetary policy on macroeconomic variables is based on either informational lag in economic policy or rigidities in the economy such as price and wage rigidities.[3]

Even though there are different opinions on the channels through which a contractionary monetary policy affects the macroeconomic variables,[4] there is a consensus that monetary policy does affect the macroeconomic variables in the short run.

A general description of the possible effects of a contractionary policy shock (an increase in interest rate) on the macroeconomic variables, with some exceptions, is as follows:

1) an initial rise in interest rate (R) and a reverse movement toward the equilibrium due to a fall in the interest sensitive components of total demand.
2) an initial fall in money (M) for the reason that money demand is negatively related with interest rate in the short run and then a reverse movement toward the equilibrium given that money is neutral in the long run.
3) an initial fall in price level (P) and a reverse movement toward the equilibrium level. It is possible to observe an initial increase in P after a contractionary monetary policy if the monetary policy systematically responses to exogenous shocks such as oil shocks, foreign policy shocks, inflationary pressure, etc. Furthermore, a number of empirical papers report the evidence of price rises after a contractionary policy, which is labeled as the price puzzle.[5] But in general, it is expected that a contractionary monetary policy leads to a fall in P. The channel might be the following: a contractionary policy leads to a fall in the price of assets and therefore a fall in the wealth, which in turn reduces consumption and prices. This channel is called wealth effect of a contractionary policy.

[2] See Yilmazkuday (2008) for the Czech Republic, Hungary, and Poland; Kara and Ogunc (2008) and Erse and Ozatay (2008) for Turkey; Holub and Hurnik et al. (2008) for the Czech Republic.
[3] See Romer (2006) for imperfect information and the rigidities in economics.
[4] See Ivrendi(2007) for the channel that monetary policy affects macroeconomic variables and for the channels that macroeconomic variables affect monetary policy.
[5] See Hansen (2004) for the new evidence of price puzzle, Brissimis and Magginas (2006) for resolving price puzzle.