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Supply-side effects of exchange rates, exchange rate expectations and induced currency depreciation☆

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ABSTRACT

Within the context of a small open economy model, this paper examines the repercussions of induced currency depreciation. The results presented in this paper are based on a model with firm microeconomic foundations and which takes into account both the supply and demand-side effects of exchange rate variations. The distinguishing feature of the model is the role of exchange rate expectations. We consider three kinds of expectations; adaptive, extrapolative, and regressive expectations. We also perform several sensitivity tests based on these expectations. Our simulation exercise shows that the effect of induced currency depreciation depends largely on supply-side effects. In most cases, we find that currency depreciation results in (i) a fall in output, (ii) an increase in prices and (iii) an improvement in the balance of trade. In the absence of weak supply-side effects of exchange rates, we find that, if the Marshall–Lerner conditions hold, then depreciation of the home currency has a favorable effect on output but its effect on the balance of trade is negative.

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1. Introduction

In the present era of increased economic integration, currency exchange rate movements play a critical role in determining the behavior of both nominal and real variables, such as the balance of payments, inflation, output, employment and economic growth. Existing studies, such as Frankel (1999), Summers (2000), and Calvo and Reinhart (2002), have argued that the choice of appropriate exchange rate regime, especially in the case of economies with few restrictions on the capital account, is an important determinant of economic stability.[2] Fisher (2001, p. 1) pointed out that Mexico, in 1994, Thailand, Indonesia and South Korea in 1997, Russia and Brazil in 1998, and Argentina and Turkey in 2000 suffered from international capital market-related crises and these countries at that time followed a fixed or soft pegged exchange rate regime. In contrast, owing to their reliance on flexible exchange rate policy, countries such as South Africa in 1998, Mexico in 1998, and Turkey in 1998 managed to avoid crises. It can therefore be argued that the choice of exchange rate regime has implications for the effectiveness of monetary and fiscal policies. For instance, in the case of an open capital account, an increase in the money supply leads to depreciation of the local currency, which increases aggregate demand through an increase in net exports. Similarly, tight monetary policy strengthens the local currency and results in a decrease in aggregate demand. Tight monetary policy helps in controlling inflation but it can exacerbate the current account deficit and also contribute to increase in unemployment.[3]

At present, a number of less developed countries (LDCs) and emerging economies are grappling with problems of external debt and a current account deficit. On average, the external debt to GDP ratio in LDCs is approximately 26% whereas the current account deficit to GDP ratio is between 4 and 5%. In the early 1990s, many Latin American and East European countries followed trade and capital

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[2] The importance of the role of exchange rate policy in determining the inflation rate and other variables is not just a feature of today's world. French economist Albert Aftalion (1874–1956), using basic statistical techniques, found that, in France, causality ran from the exchange rate to prices and from prices to money. In the case of Germany, he found that causality ran from the exchange rate to money and then from money to prices (see Nenovsky, 2006).

[3] Ivrandi and Guloglu (2010) considered the impact of a contractionary monetary policy shock in five inflation-targeting countries. They argued that the contractionary shock resulted in a decrease in price level, a decrease in output, an appreciation of the exchange rate and an improvement in the trade balance. Similarly, Fischer (2001, p. 10–11) highlights the "impossible trinity" — i.e., we cannot have free capital movement, a fixed exchange rate, and an effective monetary policy at the same time.

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liberalization policies as suggested by the Washington Consensus, which emerged from the interaction of the IMF, the World Bank, and the U.S. Treasury. The main aim of this consensus is to help LDCs to boost their economies in general and tackle external debt and current account deficit problems in particular. The Washington Consensus suggests a "corner solution," that is, developing countries either absolutely fix their exchange rate with an international anchor currency or just follow a completely floating exchange rate policy. The main focus of the consensus is on the return of these economies to market fundamentalism, free from government intervention.[4] The consensus has produced mixed results. China and India, two countries that have followed the Washington Consensus, have experienced rapid economic growth. The impressive economic growth experienced by China and India can also be partly attributed to their heavy investment in education, particularly in the field of science and engineering.[5]

In the aftermath of the Asian financial crises of 1997–1998, a number of countries endeavored to abandon their soft-peg exchange rate regimes and as Williamson (2000) suggests, under pressure from the IMF opted for "corner solutions," either a completely flexible exchange rate or a hard peg. However, after a while those countries that retained the official tag of "free-floating regimes." reverted to their pre-crises practice of maintaining soft-pegs to US dollars.[6] In reality, exchange rate regimes can take a number of forms: for example, the conventional fixed peg, independent floating, soft-pegs, managed floating, horizontal bands, crawling peg, and crawling band, etc. (see Tiwari, 2003).

In the distant past, less developed countries followed the IMF advice that stipulated weak currency exchange rates and balancing of the budget through taxes to avoid external imbalances and currency crises. However, in the case of many LDCs, a weak currency policy has not always eliminated or even reduced the trade deficit. For instance, starting from the 1950s, Pakistan devalued its currency from Rs 5.00 per US dollar to Rs 85.00 but the country is still facing acute internal and external imbalances. In fact, the debate concerning the desirability of devaluation has been going on for over 60 years. A number of theoretical and empirical studies have shown that the efficacy of devaluation depends critically on the stability of the system and the competing demand and supply-side effects of exchange rate policies. Most studies have concluded that currency devaluation may or may not be fruitful in the short run but it is neutral in the long run.[7]

The idea of currency devaluation, although practiced by many countries in the past, is once again gaining attention in both policymaking and academic circles. For example, there has been a debate in Ireland to quit the Euro and have the power to devalue the Irish pound (see O'Rourke, 2009). Some Central Banks around the globe have used monetary instruments to defend a predetermined or target exchange rate. In order to benefit from a weaker currency, some Central Banks have been engaged in the manipulation of exchange rates. For example, in the month of July 2009, China's foreign reserves exceeded US$2 trillion and her Central Bank was actively buying US dollars from the currency market to prevent further appreciation of the Chinese Yuan. At present, the monetary authorities in the US are being accused of taking deliberate steps that have resulted in depreciation of the US dollar through so-called quantitative easing. The main aim of this manipulation is to overcome the adverse effects of the global financial crisis. However, considering the international status of the US dollar and the fact that exchange rate is a multilateral phenomenon, economists are skeptical about the likely success of this policy. Whether induced currency depreciation would be of any help depends on a number of factors. For instance, trading partners closely follow each other's currency exchange rate policies, taking steps to protect their share in the export market. In recent years, countries such as Japan, Britain, Brazil, India, South Africa, Thailand, and South Korea have threatened to devalue their currencies. Switzerland is one of the nations to have been affected by recent devaluations. The Swiss National Bank (SNB) actively bought Euros between March 2009 to June 2010 to arrest further appreciation of the Swiss Franc to safeguard the interest of its exporters and to reduce unemployment.[8]

Regarding the exchange rate management debate, an important research outcome of the late 1990s and early 2000s is a challenge to the validity of the uncovered interest rate parity (UIP) condition. Economists such as Chinn and Meredith (2005); Froot and Thaler (1990), have concluded that uncovered interest parity (UIP), or forward rate unbiasedness, is rejected on empirical grounds. One of the conclusions of these studies is that agents do not form exchange rate expectations rationally. Similarly, Flassbeck (2004) argued that exchange rate expectations are not formed rationally as implied by Purchasing Power Parity (PPP) theory. Marey (2004b) concluded that exchange rate expectations might take the form of extrapolative expectations (both bandwagon and distributed lag expectations), adaptive expectations, and regressive expectations. The form of expectations is important when one is utilizing an intertemporal model, given that Central Banks regularly intervene in the foreign exchange market. Central Banks also intervene in the currency market to control inflation, unemployment and balance of payments problems.[9]

In order to avoid exchange rate volatility, emerging economies tend to follow a soft-peg exchange rate regime (Calvo and Reinhart, 2002). This involves exchange rate manipulation from time to time to achieve certain targets. This paper attempts to examine the effect of induced currency depreciation on key economic variables such as output, prices and balance of trade. We also consider and compare the effectiveness of a variety of exchange rate policies. The results presented in this paper are based on a model that has relatively firm microeconomic foundations. In our model, apart from different kinds of exchange rate expectations, we capture both the demand-side and the supply-side-effects of exchange rate variations. On the demand-side, on the one hand, exchange rate depreciation deteriorates competitiveness and helps in increasing net exports. On the other hand, however, exchange rate depreciation may have a Mundell effect i.e., it may cause an increase in real interest rates and have a negative impact on investment and consumption. Our model includes supply-side effects since we assume that home firms adjust prices in the event of both exchange rate changes and changes in the prices of foreign goods. Since exchange rate variations have both positive and negative impacts at the same time, the net effect, along with the form of exchange rate expectations, invariably depends on the magnitudes of competing effects. Since the model involves non-linear simultaneous equations, it is not possible to derive reliable

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[4] A fixed exchange rate policy was popular before World War I, from the mid-1920s to 1931 and from 1945 to 1973 (see Krugman and Obstfeld, 2009, p. 462). Most economies at present are using a policy of floating exchange rates.

[5] For an interesting critical analysis of the Washington consensus, see Stiglitz (2003).

[6] See Calvo and Reinhart (2002).

[7] See Lizondo and Montiel (1989) for a comprehensive survey of the devaluation debate.

[8] See Allen (2010).

[9] For example, when speculators strongly believe that currency devaluation is bound to happen, they start buying foreign currency, which contributes to the balance of payments problem. It is interesting to note that in 1994 Mexico suffered a great deal as the speculators, expecting further devaluation, bought a significant portion of the Mexican foreign currency reserves. This resulted in a significant depreciation in the currency's value, which triggered the currency crisis.

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