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Transmission of real exchange rate changes to the manufacturing sector: The role of financial access

Anubha Dhasmana *

Indian Institute of Management, Bangalore, India

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ABSTRACT

We explore the impact of real exchange rate changes on the performance of Indian manufacturing firms over the period 2000–2012. Our empirical analysis shows that real exchange rate movements have a significant impact on Indian firms' performance but the impact varies across different firm and industry characteristics. In particular, the impact depends upon the degree of market power, trade orientation, foreign ownership, access to domestic finance and industry concentration. Furthermore, appreciation and depreciation affect firms' performance differently. Results from Panel-VAR confirm these findings. Overall, our results point toward the need for taking into account firm and industry level heterogeneity in designing policies aimed at managing exchange rate shocks and also the role of greater financial development in currency risk management.

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1. Introduction

International economics has long been concerned with the effects of exchange rate movements on the real economy. The topic continues to attract theoretical as well as empirical researchers alike. This paper contributes to the large body of empirical literature looking at the impact real exchange rate

* Tel.: +91 080 26993211.
E-mail address: anubha.dhasmana@gmail.com

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movements on firm level performance by using a newly compiled dataset of around 1420 Indian manufacturing firms.

Exchange rate movements can affect firm performance through a number of channels, such as the cost of imported inputs relative to other factors of production, price of exports relative to foreign competitors or the cost of external borrowing. Although the impact on firm performance is only one component determining how exchange rate changes affect aggregate economic growth, it can be an important and significant determinant of the same.

An important advantage of using firm-level panel data is that it allows us to control for unobservable firm level effects while studying the impact of real exchange rate changes. These individual idiosyncrasies reflect important characteristics of a firm, which are likely to influence its response to exchange rate movements. Our empirical model uses time varying industry and firm characteristics to capture heterogeneity in response to exchange rate changes.

The main finding of this paper is that real exchange rate changes affect firm level performance but the impact varies across different firm and industry level characteristics. Firms with a larger share of exports in their total earnings and a smaller share of imports in their total inputs are likely to benefit more from depreciation in the real exchange rate. Similarly, firms with greater market power are less affected by changes in real exchange rate. More importantly, foreign equity ownership and access to domestic equity finance along with a higher degree of industry concentration are associated with significantly diminished impact of real exchange rate changes on firms' growth. Results from Panel Vector Auto-Regression reinforce these findings.

From policy makers perspective these findings have important implications. They indicate the need to take into account firm and industry specific characteristics while trying to study the impact of real exchange rate changes. At the same time, they point toward the role of greater foreign equity investment and better access to domestic equity finance in helping mitigate the impact of exogenous real exchange rate shocks. This, however, does not take away from the need to have a competitive real exchange rate and sound macroeconomic policies for encouraging robust economic growth and maintaining internal and external balance in the long run.

India presents a unique case for studying the impact of exchange rate movements. Prior to the Balance of Payments crisis in 1991, Indian Rupee was pegged to a basket of currencies dominated by the US Dollar. The external payment crisis of 1991 forced the Reserve Bank of India (RBI) to implement a set of market oriented financial sector reforms and a paradigm shift from fixed to market-based exchange rate regime in March 1993.[1] Institution of Current Account convertibility in August 1994 and gradual liberalization of Capital Account along with other trade and financial liberalization measures meant a rise in total turnover in the foreign exchange market by more than 150% from USD 73.2 billion in 1996 to USD 130 billion in 2002–03 and further to USD 1100 billion in 2011–12.[2] A direct outcome of these changes has been a rise in the volatility of Indian Rupee. Fig. 1 plots average annual volatility of monthly Rupee–USD log returns to illustrate this point.

In this backdrop, RBI's exchange rate management policy has aimed at maintaining orderly conditions in the foreign exchange market by eliminating lumpy demand and supply and preventing speculative attacks, without setting a specific exchange rate target. RBI has used a combination of tools including sales and purchase of currency in both the spot and the forward segments of the foreign exchange market, adjustment of domestic liquidity through the use of Bank Rate, CRR, Repo rate etc. and monetary sterilization through specialized instruments, toward this end.[3] An interesting feature of RBI's intervention during this period has been asymmetry during episodes of appreciation and depreciation.

[1] See the Special edition of RBI's *Reports on Currency and Finance*, Vol. III (2005–06) for detailed discussion on the evolution of India's foreign exchange market. (Link: http://rbidocs.rbi.org.in/rdocs/content/PDFs/89704.pdf) See Sen Gupta and Sengupta (2013) for a discussion on India's Capital Account Management between 1990 and 2011.

[2] Table A1 in Appendix A presents the growth in the size of foreign exchange market in India over time.

[3] For instance, RBI resorted to a net purchase of 5.4 billion USD between April and August 1997 to reduce the acute upward pressure on Rupee resulting from buoyant capital inflows and sluggish import demand. Then, as Rupee weakened in the last week of August, partly in response to the East Asian financial crisis, RBI sold foreign exchange worth 978 million USD to strengthen the Rupee. Again, a surge in capital inflows starting 2004 forced RBI to purchase foreign exchange in order to ward off the upward pressure on Rupee. This time around RBI's intervention was sterilized using *Market Stabilization Scheme* bonds issued specifically for this purpose.

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