



Sources of real exchange rate fluctuations in China [☆]

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This paper reviews the evolution of China's real effective exchange rate between 1980 and 2003 and uses a structural vector autoregression model to study the relative importance of different types of macroeconomic shocks for fluctuations in the real exchange rate between 1985 and 2003. The structural decomposition shows that relative real demand and supply shocks account for most of the variations in real exchange rate changes during the estimation period. The paper also finds that supply shocks are at least as important as nominal demand shocks in accounting for real exchange rate fluctuations. In contrast, other studies that show that nominal shocks are more important in explaining real exchange rate fluctuations in industrial countries. *Journal of Comparative Economics* 33 (4) (2005) 753–771. International Monetary Fund, 700 19th Street, N.W. Washington, DC 20431. © 2005 Association for Comparative Economic Studies. Published by Elsevier Inc. All rights reserved.

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[☆] The views expressed in this study are the author's own and do not necessarily represent those of the IMF.

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1. Introduction

China's recent rapid export growth and accumulation of international reserves have generated considerable interest in modeling the determinants of the renminbi (RMB) exchange rate. Much of the existing literature focuses on the valuation of the exchange rate relative to its equilibrium. [Chou and Shih \(1998\)](#) estimate the equilibrium exchange rate of the RMB between 1978 and 1994 using both a purchasing power parity (PPP) approach and an approach based on the shadow price of foreign exchange. These authors find that the RMB was overvalued for much of this period, but close to its equilibrium value between 1990 and 1994. [Zhang \(2001\)](#) estimates a behavioral equilibrium exchange rate between 1952 and 1997 by using a set of fundamental determinants of the actual real exchange rate in a reduced-form equation. He finds that the RMB exchange rate was overvalued during most of the estimation period but close to its equilibrium in 1997. [Anderson \(2003\)](#) estimates a balance of payment model based on trade equations and finds that the RMB was undervalued in 2003.

This paper contributes to the analysis of the RMB exchange rate from a different perspective. Instead of assessing the equilibrium exchange rate, we investigate the underlying forces driving real exchange rate variations over the past two decades. According to economic theory, e.g., [Balassa \(1964\)](#), and the experiences of many countries, an economy exhibiting sustained rapid growth in its tradable goods sector is expected to experience appreciation of its real exchange rate. However, economies such as China are often subject to various shocks simultaneously, especially in periods of major structural changes. Understanding the underlying sources of RMB fluctuations helps to explain why the real exchange rate depreciated sharply during the boom of the mid-1980s while it appreciated during the output surge of the mid-1990s. In addition, insights are gained regarding the forces behind the recent real exchange rate movements in China.

Following [Clarida and Gali \(1994\)](#) and [Hoffmaister and Roldós \(2001\)](#), we construct a structural vector autoregression (VAR) model to estimate the relative importance of different types of macroeconomic shocks for fluctuations in the real exchange rate. We identify types of shocks that, in the traditional IS-LM framework, are referred to as aggregate supply shocks, aggregate demand shocks, and nominal demand shocks, i.e., shocks affecting the money market. [Jin \(2003\)](#) uses a reduced-form VAR to examine the relationship between the variation in the RMB real exchange rate and two determinants, namely, the real interest rate differential and official foreign exchange reserves. However, our structural VAR approach has the ability to identify the fundamental macroeconomic shocks affecting variables such as the real exchange rate and the interest rate differential simultaneously.

Our structural decomposition indicates that real demand and supply shocks accounted for most of the fluctuations in the real exchange rate movement during the estimation period, whereas nominal shocks were less important. During the mid-1990s, the contribution of the real demand shocks increased, which is a key factor underlying the substantial real appreciation of the RMB. In the period after the Asian financial crisis, supply and nominal shocks played important roles in determining the real exchange rate movements of the RMB. Of course, these results should be interpreted with caution because significant changes occurred in the structure of China's economy that might not have been captured properly.

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