

**A Three-Country Model with Fixed and Floating Exchange Rates
Under a Stock-Flow Consistent Approach
-- A Study of the Diversification of China's Foreign Reserves**

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(March 2008)

Abstract

China's total foreign exchange reserves rose to US\$1.4 trillion at the end of August 2007 (The People's Bank of China, 2007). China's foreign reserves have exceeded those of Japan to become the largest in the world. China has invested a large part of its foreign reserves in US treasury bills and bonds and other US dollar securities. In order to finance its huge current account deficits, the United States has relied heavily on Asian purchases of its debt. Over the last few years, there has been some debate about the impact of the diversification of China's foreign reserves—changing the currency composition of its reserve portfolio or shift it across different asset classes—as can be read from Dooley, Folkerts-Landau, and Garder (2004); Blanchard, Giavazzi, and Sa (2005); Xia (2006); Wang (2006); Zheng and Yi (2007); and Dullien (2007).

The purpose of this paper is to develop a three-country model with fixed and floating exchange rates based on a stock-flow consistent approach, focusing the impact of the diversification of China's foreign reserves on the economies of China, the U.S., and Euroland. In our three-country model, China and the U.S. are tied by a fixed exchange rate, while Europe is on a floating exchange rate regime with both the U.S. and China. Each economy is made up of five sectors: households, firms, commercial banks, the government, and a central bank. Our

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model simulates what would happen to these three economies if China were to decide to diversify its foreign reserves.

The experiment and simulation results show that, following the diversification of China's foreign reserves, the euro appreciates against the dollar and the RMB, with an overshooting effect on the exchange rate. China and the U.S. can benefit from the diversification, while the Euroland economy slows down. These findings are consistent with those obtained by Blanchard et. al (2005) and Dullien (2007) in their portfolio balance models.

Through parameter sensitivity analysis, we find that the diversification of China's foreign reserves has a differential impact, depending on its size and schedule. The bigger the share of euro bills in China's foreign reserve portfolio, the larger will be the negative effects on Euroland. Gradual diversification, in place of a one-step change, can overcome the overshooting effect on exchange rates. However, as the share of euro bills in China's reserves gradually goes up, based on a target level, the value of the euro against the dollar and the RMB gradually rises. China's GDP ends up higher, while the economy of Euroland becomes worse off.

What seems particularly interesting is that the models uncover some sort of path dependence. How the central bank of China achieves its target diversification rate has an impact on the steady state values of the model. In other words, the transition path towards the diversification target influences its long-run equilibrium. The equilibrium levels of the key endogenous variables (such as GDP and trade balance among others) depend on the path taken to achieve the target diversification rate. Our simulation results provide an example of path dependence, that is, both the starting steady state and transitional states can have significant long-run effects.