

Structural Change and the Dynamics of Real Exchange Rate

Yong Wang, Jenny Xu, and Xiaodong Zhu*

Abstract

In the past decade, China's exchange rate and the huge trade imbalance between China and the US have received enormous attention from both policy circles and academia worldwide. One central academic question is what determines the level and dynamics of long-term real exchange rate between a large rich country like the US and a large emerging economy like China. A standard framework in the literature to address this question is the Balassa-Samuelson model, which predicts that a country's currency should appreciate in real terms as the productivity in tradable sector improves. Based on this framework and given the fast productivity growth in China's manufacturing sector, many have argued that China's real exchange rate would have appreciated more without government interventions in the currency market.

However, this analysis typically assumes that composition of tradable and non-tradable sectors remains unchanged for each country so that the real exchange rate dynamics is driven by the relative price of tradables vs non-tradables. In reality, both China and the US have been undergoing significant structural changes in the last two decades: China is experiencing fast industrialization with labor moving from agriculture into manufacturing, whereas US is undergoing de-industrialization with labor moving from industry into services. This asymmetric structural change implies that the relative size of tradables and non-tradables moves in the opposite directions in these two countries. Therefore, the real exchange rate dynamics should be affected not only by the relative prices between tradables and non-tradables, but also by the change in sectorial compositions due to endogenous structural changes.

In this paper, we first examine empirically the Balassa-Samuelson effect in the presence of structural change. Using cross-country data on per capita income, price level and employment shares by sector, we find that a country's tradable sector's share of employment is a more significant predictor of the country's price level than its per capita income, suggesting that the widely used empirical Balassa-Samuelson model is often mis-specified and biased in the face of structural change. We then re-examine the theoretical relationship between price level and per capita income in a model with structural change and show that the positive relationship between price level and per capita income predicted by the standard model is not a robust result in a multi-sector world. In contrast, the relationship between a country's price level and the tradable sector's share of employment is much more robust. Finally, we extend our theoretical analysis into a dynamic trade model with unbalanced trade to quantitatively examine how structural changes and policy distortions may have influenced the dynamics of the China-US real exchange rate. We show that much of the slow increase in the value of the Chinese currency over the last decade can be accounted for by the significant expansion of the tradable sector in China.

* Wang and Xu: Hong Kong University of Science and Technology; Zhu (corresponding author): University of Toronto. Email: xzhu@chass.utoronto.ca.