



Real exchange rate and economic growth in China: A cointegrated VAR approach[☆]



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ABSTRACT

This study investigates the relationship between the real exchange rate (RER) and economic growth in China applying a cointegrated VAR (CVAR) model. However, in contrast to the assumptions of trade partners, this paper finds that the Chinese economy has not benefited from the lower exchange rate of the RMB, and no direct linkages exist between the RER and growth in the long run. Interestingly, it appears that the Chinese economy is stimulated by the expansion of exports and inflow of foreign capital according to the empirical evidence, which also suggests that the long run equilibrium RER is jointly determined by the foreign trade, foreign reserves and the foreign direct investment. In addition, the 2005 RMB policy reform did not show any significant impact on the RER, but instead contributed to the steady economic growth. It is clear that, after the 2008 world crisis, the RMB exchange rates were largely dependent on the enhancing of the national strength and inflow of foreign capital, rather than the slow increase in foreign trade. As for policy implications, China may insist on the managed floating exchange rate policy making limited adjustments to the currency's daily floating range in response to the pressures from trade partners.

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1. Introduction

With an average annual growth rate of 9.1% from 1989 to 2014,¹ the rise of China and its currency system have received much attention from policy makers and researchers all around the world (Soleymani & Chua, 2013; Tyers, Golley, Yongxiang, & Bain, 2008). It is believed that the lower RMB exchange rates have promoted the growth in China but have harmed the trade partners' economies. Actually, the Renminbi (RMB) has been appreciated by almost 38% since 1994, but it still cannot meet trade partners' expectations. The International community has been criticizing the slow speed of RMB appreciation (Morrison & Labonte, 2010). The US authorities are even increasingly pushing China to change its currency policy since the RMB was overvalued against the US dollar (USD) by 40% according to the US congressional bill in 2007 (Woo, 2008). It seems that RMB exchange rate has played a vital part in boosting the Chinese economy, therefore, trade partners are increasingly pressing Chinese authorities to appreciate currency and make RMB more flexible and tradable in the foreign exchange market (McKinnon & Schnabl, 2014; Zhang, 2013). Taking the above into consideration, the main aims of this paper are to explore the dynamic linkages between the RMB real exchange rate and economic growth

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¹ Source: National Bureau of Statistics of China.

both in the long run and short run, to investigate the structural changes in the currency policy reform which took place in 2005, and to look at the effects on the RMB exchange rate after the 2008 global financial crisis.

Previous studies have found the relationship between the real exchange rate (RER) fluctuation and economic growth (Benhima, 2012; De Vita & Kyaw, 2011; Tarawalie, 2010).² They suggest that undervalued currency helps to increase GDP but overvalued currency has negative impacts on growth. As trade partners believe that it is the undervalued currency stimulating China's growth, thus they ramp up pressures on RMB appreciation. Chinese authorities have to respond to those pressures by making appropriate adjustments to the currency policy although RMB suffers continuously appreciation. This study is about to uncover the myth of whether the RMB exchange rate system stimulates the Chinese economy, and investigate the nexus between the RER and economic growth. Before the discussion, the general backgrounds of the Chinese economy and its currency policy will be represented.

The Chinese currency experienced two big shifts in the past two decades. Chinese authorities unified the currency system in 1994. After that, the single pegged currency policy was abandoned and the managed floating exchange rate regime was implemented in 2005. The nominal exchange rate (NER) of USD against RMB is shown in Fig. 1. To maintain a stable currency, China owns a large amount of foreign reserves. It had an exponential growth since 2005 and reached a peak of \$3311 billion by the end of 2012. Fig. 1 also demonstrates the growth rates for GDP and CPI. The annual growth rate averaged around 9%, but there was a sharp drop in 1989 due to the political turmoil. It became relatively stable since the start of market economy in 1992. Comparatively, the CPI curve shows more uncertainties. The sharp increase and decline around 1994 were due to the price mechanism reform. In contrast, foreign trade has been seeing a surprising growth in China. Trade volume increased dramatically since China joined WTO in 2001, but there was a significant recession during the 2008 world financial crisis. Since 2009, China has been the largest exporter and second largest importer in the world. The last part of Fig. 1 gives the foreign direct investment (FDI) in China. The foreign capital inflows were not much before 1990. When China exercised the market-oriented economy and deepened the opening door policy in 1992, foreign capitals started flowing into China because of the nice investment environment and peaceful political process.

From trade partners' perspective, the rise of China is bound up with the managed floating exchange rate regime. So they are overflowing with questions that are aiming to uncover the secret of China's growth. This also stimulates the author's interest in exploring the mystery. Based on the existing research evidence and the real situation in China, this paper tries to answer the following questions: (1) Whether there is a long run equilibrium relationship between the RER and economic growth in China? (2) In the past decades, what has contributed to the stability of the Chinese currency and the continuous growth? (3) Were there structural changes in the currency policy reform after July 2005? (4) Whether the correlation between the RER and economic growth was constant after the great recession?

This study differs from previous studies in the following aspects: (1) the cointegrated vector autoregression (CVAR) and its vector error correction model (VECM) are applied to investigate the long run equilibrium and short run dynamics between the RER and growth, respectively; (2) the structural break for 2005 is examined both inside and outside of the VECM; (3) the great recession test has been conducted separately and (4) the determinants of RER have included the GDP, foreign reserves, foreign trade and foreign investment, which are the growth indicators as well.

The remaining sections are constructed as follows. Literature review is given in Section 2. Data and econometric methods are discussed in Section 3. Section 4 has the details on the long run and short run relationships between the RER and economic growth, and last section concludes.

2. Literature review

Foreign trade nowadays is much more complicated and influencing than the barter in ancient times. It is associated with the economic prosperity and currency stability. Unstable currency usually has significant impacts on foreign trade and local economy. Thus an increasing number of researchers shift their interests into the field of foreign exchange rate. The extant literature pays attention to the impact of exchange rate regimes on growth and the linkages between exchange rate and growth. The studies on the Chinese economy and its currency issues are also growing in the past two decades.

2.1. Impact of exchange rate regime on economic growth

Previous studies on the impact of exchange rate regimes on economic growth try to find whether different exchange rate regimes have different impacts on economic growth. The extant literature suggests that the flexible exchange rate policy has positive impacts on growth (Sokolov, Lee, & Mark, 2011), while the fixed exchange rate regime has negative impacts on growth (Levy-Yeyati & Sturzenegger, 2003). Intermediate exchange rate regime is positively correlated with growth in emerging economies (Ma & McCauley, 2011), but it suffers from flexibility. Comparatively, floating exchange rate regimes do not show any significant impact on the advanced economies. Harms and Kretschmann (2009) find that various classifications of exchange rate regimes produce fairly similar results for industrial countries. These economies usually have a higher growth rate under the flexible exchange rate policy. While in developing countries and emerging markets, the announcement of a peg to the US currency and de facto stability in exchange rate normally have positive effects on growth. If a currency is pegged to USD only, it may hinder its economic development. As the higher the degree of dollarization, the more likely a negative effect on growth (Benhima, 2012). However, Vita and Kyaw (2011) argue that the choice of exchange rate regime does not have direct effects on the long term growth in developing countries.

² The general definition of RER is adjusting the NER with foreign (P_t^*) and domestic (P_t) price levels, $RER_t = NER_t \frac{P_t^*}{P_t}$.

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