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Ramkishen S. Rajan and Javier Beverinotti



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**The Real Exchange Rate, Sectoral Allocation and
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A Simple Exposition**

by Ramkishen S. Rajan and Javier Beverinotti *

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Abstract

The views expressed in this Working Paper are those of the author(s) and should not necessarily be considered as reflecting the views or carrying the endorsement of the United Nations. Working Papers describe research in progress by the author(s) and are published to elicit comments and to further debate. This publication has been issued without formal editing.

Global macroeconomic imbalances are among the key issues facing policymakers, especially in the US and China which are the two major affected / contributing parties. While there has been a great deal of discussion and disagreement on this important issue, what all sides have in common is the general failure to adequately pay attention to the role of the exchange rate in allocating resources internally between tradables and nontradables. These sectoral changes can have both real and macroeconomic consequences. This paper offers a simple analytical exposition of some of the issues relating to China's and East Asian development and their impact on global imbalances using a two-sector tradable and nontradables model.

JEL classification: F14, F31, F41.

Keywords: China, East Asia, Real Exchange Rate (RER), Tradables, Nontradables, US.

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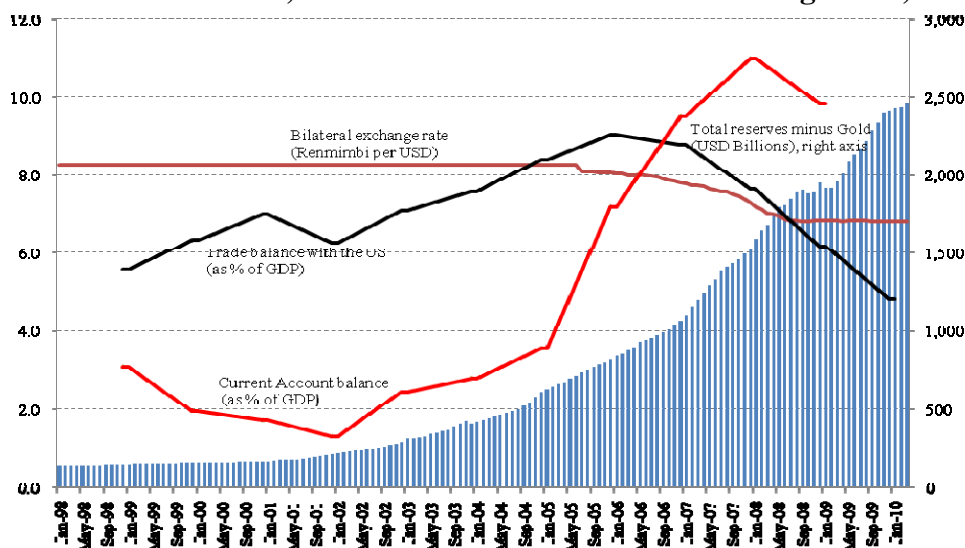
THE REAL EXCHANGE RATE, SECTORAL ALLOCATION AND DEVELOPMENT IN CHINA AND EAST ASIA: A SIMPLE EXPOSITION

Ramkishen S. Rajan and Javier Beverinotti

1. INTRODUCTION

Global macroeconomic imbalances are among the key issues facing policymakers, especially in the US and China which are the two major affected / contributing parties. While there has been a great deal of discussion on this important issue, broadly speaking, the literature has emphasized three aspects. One, whether and to what extent the Chinese Renminbi is undervalued using various measures of equilibrium exchange rates. Not surprisingly, there is no firm conclusion here, results hinging heavily on the modeling assumptions.¹ Two, political economists and policymakers have tended to focus on the actual trade or current account surpluses of China vis-à-vis the US. The argument presented here is that China’s central bank has pegged its exchange rate to the US at lower than free market rates (as evidenced by the large-scale reserve accumulation). This “undervalued” currency artificially boosted its export competitiveness while making foreign goods to China relatively more expensive, thus curbing China’s imports from the US (Figure 1). The policy option in this case is straightforward, viz. China needs to unilaterally revalue the Renminbi as it is “manipulating its currency” and if it does not do so, there may be a case for some form of retaliation by the US government.²

Figure 1: China’s Reserves, Trade Balance and Bilateral Exchange Rate, 1998-2010



Sources: International Financial Statistics, World Development Indicators and Comtrade.

¹ For instance, see Cheung, Chinn and Fujii (2007, 2009) and Goldstein and Lardy (2008) and Section 4 in Evenett (2010). In the extreme, Wang (2004) even suggested that the Chinese currency could be overvalued. Willett (2006, p.8) rightly notes that “under- and over-valuation has meaning within the context of a specific set of other policies. Changes in other policies can change the equilibrium exchange rate.”

² See Sections 1 and 5 in Evenett (2010). Also see Bergsten (2010) who has recommended the imposition of “countervailing currency intervention”.

Three, and in contrast to the political economists, most macroeconomists would argue that focus on *bilateral* imbalances is wrong-headed; instead, the emphasis should be on *aggregate* current account imbalances.³ The macroeconomists would generally go on to argue that if a country is running a current account deficit as the US has been, all this implies is that the domestic investment rate of the country exceeds its national savings rate and vice versa for a country running a current account surplus like China. Thus, the appropriate policy focus should be to deal with savings and investment rates in the countries involved. The exchange rate -- particularly the bilateral rate -- is a highly limited (i.e. ineffective and possibly inappropriate) tool to deal with what is essentially a macroeconomic phenomenon.⁴

Thus, there is a clear disconnect and disagreement between the various groups, causing significant controversy and confusion around the issue (Willett, 2006). However, what all groups seem to have in common is the general failure to adequately pay attention to the role of the exchange rate in allocating resources internally between tradables and nontradables which could have both real and macroeconomic consequences -- so-called "Structuralist approach". While this approach was popularized and emphasized by economists like Max Corden (see Corden, 1986), this so-called "Australian model" has by and large been rather neglected by most in the mainstream. Most textbooks on international economics have tended to ignore this exchange rate induced sectoral allocation story. Two notable exceptions are Caves, Frankel and Jones (2006, chapter 20) and Reinert (2008, chapter 23). However, beyond laying out the basic framework, neither text has pushed the analytics much further and many students / policy economists do not seem to be comfortable with analyzing the exchange rate consequences in terms of anything more than a one sector monetary model or in more direct terms of export and imports.

It is only recently that economists such as Rodrik (2008) and Eichengreen (2008) have reiterated the importance of this sectoral allocation story in China's and East Asia's rapid development. This paper offers a simple analytical exposition of some of the issues relating to China's and East Asian development and global imbalances using a simple two-sector tradable and nontradables model.⁵ Section 2 briefly reviews the concept of the real exchange rate (RER) and how to think about it in the context of tradables and nontradables. Section 3 discusses how China and East Asia seem to have used real exchange undervaluation and sectoral resource allocation to further their development and industrialization goals. Section 4 concludes with a discussion of the global imbalances and appropriate policy options for China and the US going forward.

³ In this paper we use the terms trade and current account imbalances interchangeably, effectively ignoring factor payments and interest income.

⁴ For instance, see McKinnon (2010). Krugman (2010) has argued rather unconvincingly that exchange rate revaluation in China would help boost the US exports to China, leading to income growth and higher savings thus closing its current account deficit. Taking this thesis further, conversely then a revaluation of the Chinese currency should slowdown China's growth and reduce its savings rate. However, in a study of 27 episodes of exits from pegs, Eichengreen and Rose (2010) find that while exits from pegs did lead to a growth slowdown on average over the next five years, this was largely due to a fall in consumption (suggesting therefore that savings did not change much).

⁵ We assume for simplicity a common terms-of-trade between importables and exportables such that they can be combined into "tradables". See Corden (1996) for a relaxation of this "small country" assumption and consequent implications.

2. DEFINING THE REAL EXCHANGE RATE

To understand the issue of real exchange rate (RER) undervaluation it would be useful to remind ourselves that the RER can be decomposed into two sets of relative prices, viz. relative price of traded goods between countries (so-called price competitiveness) and relative price of tradables and nontradables within a country. The (log) aggregate price index can be expressed as a weighted-average of the price of tradables (T) and nontradables (NT):

$$p = (1 - \alpha)p^T + \alpha p^N, \text{ for the domestic country} \quad (1)$$

and,

$$p^* = (1 - \beta)p^{T^*} + \beta p^{N^*}, \text{ for the foreign country.} \quad (2)$$

Then the RER, $q = e + p^* - p$, can be written as the sum of the relative price of traded goods (a) and the relative price of non-traded goods (b).

$$q = \underbrace{\alpha + p^{T^*} - p^T}_a + \underbrace{\beta(p^{N^*} - p^{T^*}) - \alpha(p^N - p^T)}_b \quad (3)$$

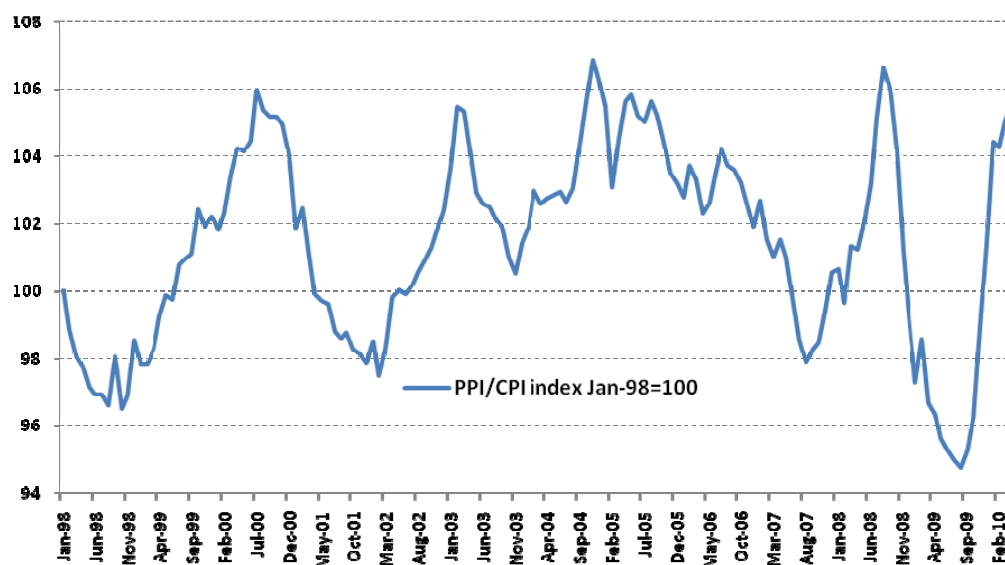
where: $a = \alpha + p^{T^*} - p^T$, and $b = \beta(p^{N^*} - p^{T^*}) - \alpha(p^N - p^T)$. An increase in q means a real depreciation.

Given the increasing degree of trade openness of economies, it is likely that the Law of One Price in traded goods tends to hold over time (at least among the East Asian economies). If this is the case, the RER is primarily a reflection of relative prices of tradables and nontradables and thus has implications both for internal resource allocations as well as external repercussions (on global imbalances).⁶

⁶ The empirical literature estimating variations in the RER (equation 3) is mixed at best. Chinn (2000) finds some East Asian RERs (Japan, Korea, the Philippines, and Singapore) to be cointegrated with relative prices, while others (China, Indonesia, and Thailand) are not. Parsley (2007) finds that about 60 percent of the variations in bilateral RERs in East Asia can be explained by variations in the relative price of tradables and non tradables. Burstein, Eichenbaum and Rebelo (2006) find that about 50 percent of movements in the RERs of selected OECD countries is explained by changes in the relative price of tradables and nontradables, the rest due to changes in competitiveness (relative price of tradables). While results on this nexus between RER and relative prices are mixed, the absence of precise proxies for tradables and nontradables should make one some pause before drawing firm conclusion from these empirical studies, i.e. a significant part of tradables could also include nontradables. For instance, see Lee and Tang (2003) who emphasize the difficulties in dissecting movements in the RER because of the existence of large non-tradables processing effect, i.e. “the inevitable involvement of nontradables in the distribution and production of tradables goods” (p.8)

One simple – albeit highly imperfect -- proxy for the RER would be the ratio of the Wholesale Price Index (WPI) or Producer Price Index (PPI) (both are broad measures of tradables) to the Consumer Price Index (CPI) (which consists of a significant share of nontradables).⁷ Figure 2 reveals that while there have been some fluctuations in this ratio over the last decade, these movements have been within a narrow range of 6 percent or so either way. Given the extraordinarily rapid growth of the Chinese economy during this period (9.5 percent on average between 1998-2009),⁸ the lack of discernible appreciation of the RER suggests a significant degree of undervaluation (we return to this point later in the paper).

Figure 2: Chinese Real Exchange Rate (RER), 1998-2010



Source: National Bureau of Statistics, China.

3. RER UNDERVALUATION IN EAST ASIA

It would be fair to say that most economists would recommend that policymakers should aim to keep the RER as close as possible to its equilibrium level, as any sort of a misalignment could create macroeconomic disruptions. Specifically, RER overvaluation stifles economic growth and export competitiveness while persistent undervaluation leads to inflationary concerns (for instance, see Aguirre and Calderon, 2005). However, China's and East Asia's development have been rather unorthodox, being centered around suppressing the price of nontradable goods relative to tradables (i.e. RER undervaluation). This was achieved through a combination of

⁷ Of course, not all components of the PPI (or WPI for that matter) are tradables and not all components of the CPI are nontradable. A somewhat more precise measure could be to examine the ratio of the trade index (i.e. exports plus imports) to CPI_{NT} , (i.e. consumer price index (CPI) of those components that are nontradable). However, even such a measure is not without its problems. Specifically, even when many goods are tradable, not all of them are actually traded (Helpman, Melitz and Rubinstein, 2008).

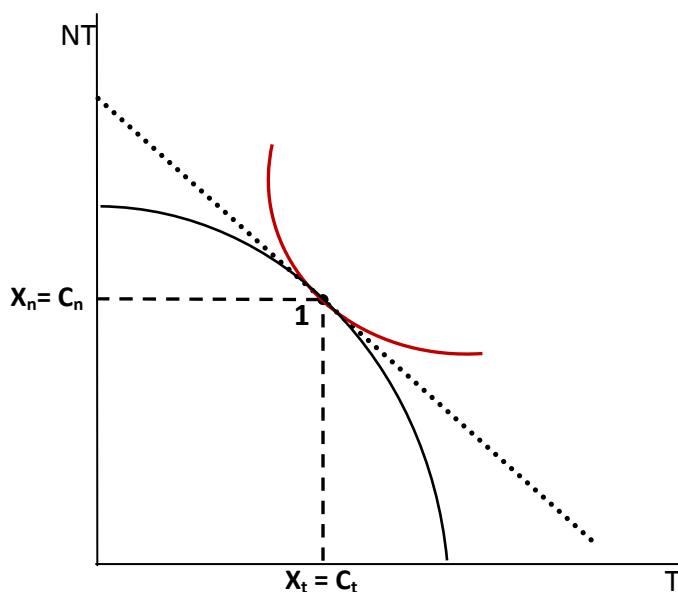
⁸ According to the World Bank *World Development Indicators*.

import tariffs and export subsidies and nominal exchange rate undervaluation which raised the relative price of tradables to nontradables, i.e. RER undervaluation. But what has been the impact of such a policy? We consider two different scenarios below.

3.1 MEAN REVERTING REAL EXCHANGE RATE: NO GROWTH EFFECTS

Assume that the country was initially running a balanced current account and produces and consumes at point 1, where production (X) is equal to consumption (C) for both products ($X_T = C_T$ and $X_{NT} = C_{NT}$), as in Figure 3. The slope of the budget line is given by the relative price of tradables to nontradables, i.e. p_T/p_{NT} , where, $p_T = s * p_T^* * (1 + s)$, and s is the per unit net subsidy on domestic nontradables.⁹

Figure 3: Non-distorted Equilibrium



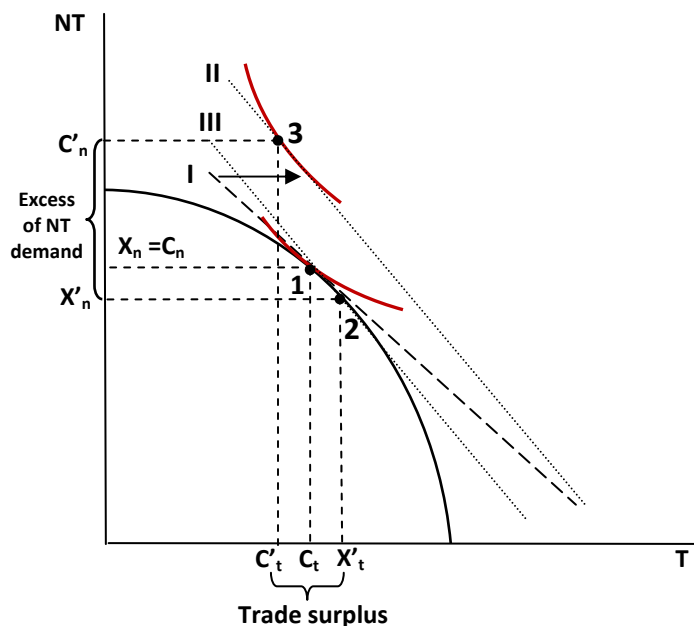
A RER undervaluation (accomplished via nominal devaluation, subsidies, tariffs, etc) leads to a steepening of the budget line (Figure 4). The rise in the relative price of tradables leads to a shift of domestic resources to that sector away from nontradables (point 2) and a corresponding fall in the consumption of tradables (C_T) and rise in the consumption of nontradables (C_{NT}) (point 3).¹⁰ As can be seen, at the new consumption point, $X_T > C_T$ (X'_T and C'_T). Thus, the surplus production of tradable goods is exported overseas (especially to the US), thus helping East Asia generate large and sustained trade surpluses (defined as excess of production over consumption of tradables). These trade surpluses in turn led to a massive infusion of global liquidity and kept

⁹ Think of s as being the net of per unit tariff on imports and subsidy (financial or otherwise) to domestically-produced tradable goods (exports and / or import-competing goods).

¹⁰ We assume here that the substitution effect outweighs the income effect such that C_{NT} rises.

global credit conditions exceptionally loose, financing (contributing to?) the trade and current account deficits abroad and the consequent global imbalances.¹¹ However, this is not an equilibrium and, on its own, the process would not persist forever. As noted, at the new consumption point (3), $X'_{NT} < C'_{NT}$. Thus, the conundrum is why this undervaluation of relative nontradables prices persisted -- by lowering the production of nontradables relative to consumption, why was its price not pushed up relative to tradables -- so-called “mean reversion of the real exchange rate”¹²

Figure 4: Real Exchange Rate (RER) Undervaluation in a Static Setting



Conventional wisdom has been that the East Asians were able to keep a lid on the domestic demand for nontradables via financial repression which kept domestic credit reigned in while maintaining a high degree of fiscal restraint (since government expenditures tend to fall overwhelmingly on nontradables).¹³ As can be seen from Figure 5, this implies a leftward parallel shift of the budget line until we are back to a point on the production frontier like point 2 where the economy produces at point X'_{NT} and X'_T . However, consumption is reigned in to a point such as 2' where there is no disequilibrium in the nontradables sector and the economy continues to run a current account surplus $(X'_T - C'_T)$. Notice that compared to the original

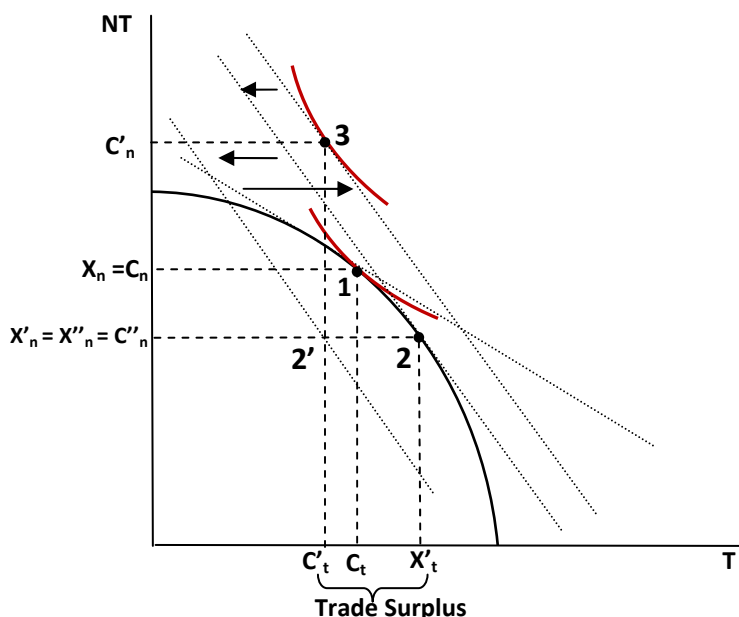
¹¹ While one school of thought argues that the US current account deficit was financed via capital inflows, the other school of thought – led by Ben Bernanke (2005) – has argued that the global savings glut overseas led to large-scale capital inflows into the US, causing lower long-term interest rates, increased consumption and investment, contributing to worsening current account deficit. Also see Blanchard and Milesi-Ferreti (2009) and Wyplosz (2010).

¹² There is a burgeoning literature that attempts to test if RERs are mean-reverting. For instance, see Gil-Alana (2000) and Jorap (2009).

¹³ See Lardy (2008) for a discussion of financial repression in China. Of course, another way they kept prices of nontradables down was via direct price controls, though this merely transforms the problem from one of prices to that of quantities and rationing (Huang and Tao, 2010).

point 1 (where there is no intervention), at point 2' the economy consumes relatively less of both tradables and nontradables, implying that welfare must be lower (lower indifference curve). In other words, in the absence of any market failures, any government intervention must be welfare-reducing.¹⁴

Figure 5: Real Exchange Rate (RER) Undervaluation Accompanied by Contractionary Demand



While this combination of macroeconomic policies (RER undervaluation and demand contraction) was clearly used by China and its East Asian neighbors, given the rapid pace of infrastructural and real estate development and overall credit growth in that region, one would be hard-pressed to argue that demand for nontradables was as heavily suppressed as some economists have suggested. While the nontradables sector may not have grown as rapidly as the tradables sector, it has, nonetheless, grown quite rapidly (Barnett and Brooks, 2006). So something does not add up. Of course, the easy answer would be that these countries -- China most notably -- have an abundant supply of rural labor looking for work in the fast-growing manufacturing sector and this helped contain the wage costs and thus kept the price of nontradables down. -- This is the so-called Arthur-Lewis classic dual-sector model where wages are set in the rural sector as supply of labor is almost perfectly elastic.¹⁵ While this may have been true in the early stages of industrialization, most data however suggests that wages started

¹⁴ Of course, it is plausible that point 2' could be located below point 1 implying consumption of tradables is the same, but at point 2', the consumption of nontradables is lower than point 1, still implying lower welfare.

¹⁵ For a recent review of the model, see Kirkpatrick and Barrientos (2004).

rising fairly quickly. Cai Fang (2007), for instance, has argued that China has already reached the “Lewis turning point” and there would be significant upward pressures on industrial wages.¹⁶ But there is the broader question as to why, in the era of non-commodity-based currencies, countries would ever want to bias production towards the tradables sector, let alone run trade surpluses at the seeming expense of overall consumer welfare.¹⁷ The obvious answer here would be that, from a growth perspective, the demand for nontradables is limited by the size of the domestic market and is relatively price inelastic, while that for exportables is highly elastic.¹⁸ However, the problem with this line of reasoning is that if market forces were allowed to operate on their own the price of nontradables would fall relative to tradables, leading to a sectoral resource reallocation without any need for government intervention in the form of currency undervaluation. The same point holds true if, as some have argued, that export markets are more dynamic and allow a country to rapidly move up the value-added chain. This implies that the relative price of tradables will rise even more rapidly vis-à-vis nontradables and lead to a natural movement of resources from nontradables to tradables without any need for government intervention.

3.2 DYNAMIC GROWTH EFFECTS AND MARKET FAILURES

Rodrik (2008) has offered an explanation / justification for the East Asian countries’ undervaluation policies. He argues that one must go beyond the usual (static) resource reallocation effects and emphasizes dynamic gains from favoring export-linked manufacturing. These benefits could be in the form of learning-by-doing and demonstration effects that are external to the firm. Thus, left to themselves markets would under-produce such goods and government intervention could jump-start growth via a RER undervaluation to internalize these externalities. In other words, a RER undervaluation could act as a form of industrial policy, helping to rapidly propel East Asian economies into global manufacturing powerhouses.¹⁹ Taking this argument further, by channeling resources into the production of tradables, there may also be some positive productivity spillovers to the nontradables sector helping to keep the output of that sector up despite the relative decline in its price. In other words, there may be dynamic expansionary effects which balance, if not outweigh, the static contractionary effects.

The foregoing possibility is outlined more formally in Figure 6 below. The starting point is as before. To be more specific, the economy is initially in equilibrium at point 1 and the RER

¹⁶ See footnote 23 below. Zhao (2010) offers a useful discussion of the predicament and policy concerns regarding migration of China’s rural workers to the country’s urban and industrializing areas.

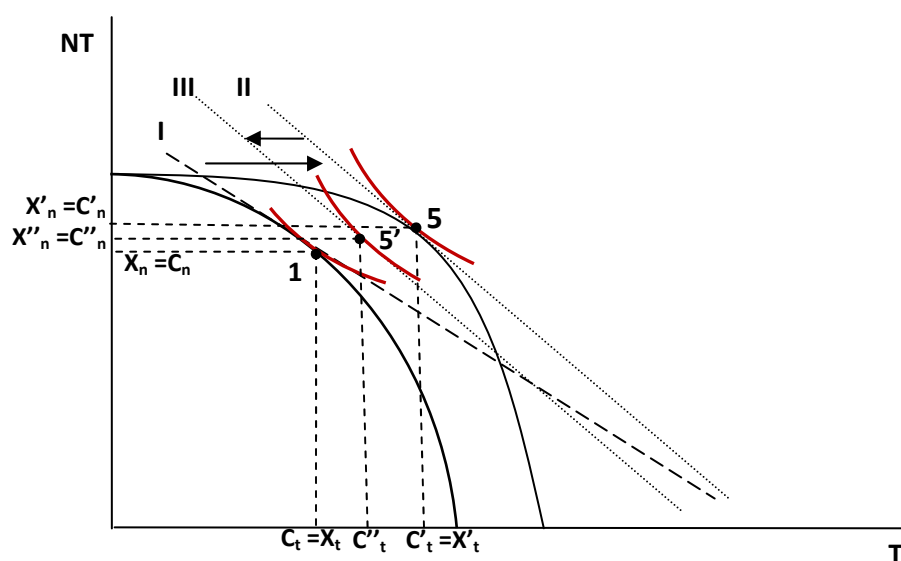
¹⁷ More precisely, as noted later, the issue of biasing production towards tradables and running a trade surplus do not always go hand-in-hand.

¹⁸ A priori it is unclear how the income elasticity of tradables compares to nontradables – this is a relatively unexplored area.

¹⁹ To be more precise, Rodrik offers two distinct arguments as to why tradables (in the modern sector) are underprovided in market equilibrium. One, tradables production is more sensitive to institutional quality compared to nontradables and thus weak institutions act as a relative tax on tradables. Absent a country’s ability to repair its weak institutions and overall business environment, real exchange depreciation could be a sort of subsidy to offset this “tax” (so-called “second-best argument”). The second story about dynamic gains which we note above, is elaborated upon in a more sophisticated model by Korinek and Serven (2010) who show how undervaluation can help firms internalize “learning-by-investing” spillovers in a two-factor model.

undervaluation changes the composition of consumption and production, generating a trade surplus and excess demand of non-tradables. We know from the previous explanation that this would not be sustainable without demand compression. However, assume now that there are growth effects that make possible an outward movement of the production frontier.²⁰ In the case where the economy experiences growth-effects, the economy could be in an equilibrium such as point 5 where the production and consumption of both tradables and non-tradables rise, thus unambiguously increasing overall welfare (point 5 being northeast of point 1).

Figure 6: Real Exchange Rate (RER) Undervaluation Accompanied by Dynamic Growth Effects



As before, if the country wanted to run a trade surplus for whatever reason, it would require a degree of contractionary aggregate demand policies such that consumption is below the production frontier. The important point though, is that even at point 5' it is plausible that the consumption of both tradables and nontradables is higher than the initial equilibrium (point 1). What we have not explained is why the authorities would want to run a trade surplus per se (i.e. choose point 5' which is welfare-inferior to point 5). In fact, many of the East Asian countries began the process of effectively subsidizing the tradables sector much before they started running trade surpluses. Aizenman and Lee (2008) refer to the former (i.e. supporting tradables) as “financial mercantilism” and the latter (i.e. trade surpluses and reserve hoarding) as “monetary mercantilism”. While we have discussed the possible rationale for financial mercantilism, such monetary mercantilism may be due to a desire to build-up net foreign assets for precautionary purposes as a war-chest against future crises (for instance, Carroll and Jeanne, 2009 and Durdu, et al., 2008) or future consumption in general (i.e. low discount rate or high degree of risk

²⁰ The economy can produce the same amount of non-tradables, and more tradables with the same quantity of resources, or even more of both goods if externalities spill over from the tradables to nontradables sector.

aversion), or the neo-mercantilist belief that exports per se are special (as opposed to tradables more generally) (for instance, see Korinek and Serven 2010).²¹

4. CONCLUDING REMARKS

This paper has explored how RER undervaluation in China led to sectoral reallocation of resources which may in turn have helped transform it into an industrial and export power, not unlike many of its East Asian counterparts in the 1970s to 1990s. In the scenario outlined in this paper, if there are positive externalities from producing tradables, which might also benefit the nontradables sector²², it is plausible that the country is able to produce and consume more of both tradables and nontradables simultaneously. While the country would still need to curb domestic demand if it desires to run a trade surplus, we have shown that it could still be in a welfare-enhancing position compared to the case where the markets were able to operate freely. This seems to be a plausible growth story for East Asia and China. Of course, these policies have also contributed to external imbalances with the US as well as globally. However, from China's perspective, why would it consider changing its policy stance now if this undervalued RER-based development strategy has indeed been so successful?

One, apart from US pressure which may be counter-productive -- but understandable as China has effectively pursued a "beggar thy neighbor" strategy -- the Rodrik explanation is unlikely to be valid forever. Indeed, over time it is generally believed that the productivity of the tradables sector will outpace that of nontradables and real wages will have to start rising as the country develops. This inevitably puts upward pressures on domestic nontradables and therefore on the RER (so-called "Balassa-Samuelson" effect).²³ China has clearly been feeling intense price pressures in recent times.²⁴ In addition, China is no doubt facing growing opportunity costs of holding low-yielding foreign exchange reserves, an issue that has been discussed extensively elsewhere.²⁵

Two, in the absence of fast growth in the US and Europe, it is unlikely that China will be able to keep exporting its excess production of tradables unless it can find comparable new markets. It is not clear that the so-called Bretton Woods II model of the world economy (Dooley et al., 2003) - - "which is essentially a story about the external consequences of the adoption of a competitive RER as a growth strategy by China and other developing countries" (Eichengreen, 2008, pp.2-3)

²¹ Hausmann, et al. (2005) argue that it is not just tradables or exports that are special, but rather, that certain types of exports are associated with higher productivity levels than others.

²² Of course, stating that there may be market distortion is easy; providing specific evidence is a much tougher proposition.

²³ Consistent with this, the IMF (2010) finds that RER appreciations lead to a shift of resources from tradables to nontradables as expected with little change in overall employment and output growth. However, there is a decline in total factor productivity (TFP) growth which one would expect if the productivity growth in tradables sector outpaced that of the nontradables sector. Also see Lee and Tang (2003).

²⁴ Anecdotal evidence pointing to wage-price pressures and labor unrest in China is growing (for instance, see People, 2010 and The Economist, June 10, 2010). For more systematic evidence on China's real wages rates, see Tao Yang, Chen and Monarch (2009).

²⁵ For instance, see Ouyang, Rajan and Willett (2010) and Wang (2009) for discussions on China's reserve buildup and issues of monetary policy management.

-- is sustainable or desirable. A more sustainable strategy would be to allow its RER to appreciate somewhat and reorient production and consumption towards nontradables.

So the Chinese undervaluation policy and its hitherto export-led growth paradigm may have reached its limits. Further Renminbi revaluation along with expansion of domestic demand is likely necessary going forward. With regard to the latter, substantial increases in domestic demand in China would require domestic structural reforms, including removing domestic cost distortions, upgrading domestic financial markets and safety nets, as well as reducing retained earnings of firms.²⁶ Goldstein and Lardy (2009), Huang and Tao (2010) and OECD (2010) discuss the many structural reforms needed in China, including and especially the importance for the country to undertake a series of internal price reforms as many factor prices which have hitherto been severely distorted need to be more market-determined. The need to adjust internal factor prices in China appears to have been recognized at the highest policy levels in China (Hu, 2010 and Huang, 2010). China has simultaneously begun to adjust the RER via nominal appreciations. This is apparent from the announcement by the People's Bank of China (PBC) on June 19, 2010 that it will abandon its currency peg to the dollar and manage the Renminbi more flexibly against a currency basket.²⁷

This said, it is not at all apparent that even if China does revalue the Renminbi significantly over time, the US current account deficit will see any perceptible/significant improvement. In fact, between mid-2005 and mid-2008 the Renminbi rose about 20 percent against US dollar and about 15 percent in real terms (against a basket of currencies), while China's external imbalances with the US, and in aggregate, rose.²⁸ The Japanese experience in the mid-1980s may be relevant here. The Plaza Accord, which led to a sharp revaluation of the yen, was accompanied by a decline in Japan's bilateral trade surpluses with the US and the rest of the world. However, the overall trade deficit of the US vis-à-vis Asia was largely unaffected as the US started to run larger trade deficits with other East Asian economies including and most recently with China, as Japanese manufacturers started to produce final goods from their lower cost neighbors for exports.²⁹ The Plaza Accord emphasizes that it is fallacious to assume we live in a two country world (also see Huang, 2010). For the US, what would be more relevant is not what China does with the Renminbi. Rather, the US itself must simultaneously take durable steps to raise its own

²⁶ Qiao and Song (2009) offer a detailed overview of China's savings rate.

²⁷ See the People's Bank of China: <http://www.pbc.gov.cn/english/detail.asp?col=6400&id=1488>. It is important to keep in mind that China did make a similar announcement on July 21, 2005 when it started allowing the RMB to gradually appreciate vis-à-vis the US dollar. That policy was put on hold from July 2008 as China returned to a firm US dollar peg with the onset of the global financial crisis because of concerns about export and growth slowdown and global deflation. See Frankel (2009) for an empirical evaluation of China's exchange rate regime.

²⁸ China runs a trade deficit with other East Asian neighbors like Japan and Korea. In fact, in March 2010 China's ran an aggregate trade deficit, its surpluses vis-à-vis the US and the EU being offset by trade deficits with Asia and elsewhere. http://www.chinadaily.com.cn/bizchina/2010-04/10/content_9711353.htm. For a discussion on China's exchange rate and impact on Asian trade, see Garcia-Herrero and Koivu (2010). More generally, Chinn and Wei (2009) fail to find evidence of a link between exchange rate flexibility and the rate of current account reversion for a sample of 170 countries over the period 1971-2005.

²⁹ The IMF (2010, chapter 4) discusses the Plaza Accord and the impact of currency account surpluses reversals in Japan and elsewhere.

national savings over time, including lowering the unsustainable fiscal deficit.³⁰ Failure to curb US excesses would merely lead to a transfer of excess tradables production from China to some other country like India or Vietnam which would then be re-exported to the US and the global imbalance would likely persist.

³⁰ See Elmendorf (2010) for a discussion of trajectories on US fiscal deficit and debt. Of course, there may be a short-run trade-off between fiscal consolidation and ensuring growth momentum. This issue is beyond the scope of this paper.

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