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Discussion Paper No. 2007-E-18

IMES

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IMES Discussion Paper Series 2007-E-18
September 2007

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Abstract

The paper identifies and evaluates consequences for monetary policy of five features of East Asian development: export orientation, integrated regional trade, bank-dependent finance, the potential for persistent trade surpluses, and the aggressive accumulation of international reserves. The case for a flexible exchange rate is made in terms of the New Neoclassical Synthesis (NNS). NNS logic indicates why fluctuations in "export optimism" create problems for the sustainability of a fixed exchange rate. Cooperative credit policy in East Asia is discussed by analogy to a credit union. The paper outlines problems for monetary policy created by bank-dependent finance in East Asia. A two-country NNS model indicates that a revaluation of the RMB against the dollar is likely to exert little effect on the US trade deficit, although it should help control inflation in China. The paper argues that China can adopt a flexible exchange rate in a few years with modest reforms of its banking system. Finally, the paper considers various reasons for the accumulation of international reserves in East Asia.

Keywords: East Asia; Monetary Policy; Banking Policy; Exchange Rates; Trade Balance; International Reserves
JEL classification: F3, F4

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This paper was prepared for presentation at The Fourteenth International Conference of the Bank of Japan, "Growth, Integration and Monetary Policy in East Asia," Institute for Monetary and Economic Studies, Bank of Japan, Tokyo, Japan, May 30-31, 2007. Conversations with Hans Genberg, Bennett McCallum, Allan Meltzer, and Chris Telmer are much appreciated, as are comments by the discussants Enrique Alberola and Larry Schembri. The paper benefited from a presentation at the workshop on "New Developments in Monetary Policy in Emerging Markets, Bank of England, July 2007.

1. Introduction

East Asia is home to a diverse collection of economies ranging in size from the largest countries to the smallest city states. The regional economies are in various stages of two great transitions----from central planning or extensive regulation to a reliance on markets, and from the use of traditional production processes to the application of modern industrial techniques.

Yet, the countries of East Asia have a number of distinctive characteristics in common. For the most part, they have been export-oriented and many have succeeded consistently over time in improving the attractiveness of their exports to the developed world. Per capita products throughout the region have been converging to those of the industrialized world. Rapid productivity growth has been achieved by importing technology from abroad and building on that technology to produce evermore desirable goods for export and greater efficiency of labor at home.[1] Productivity growth and export success have moved the real terms of trade higher over time, providing an additional boost to well-being by steadily increasing the value of East Asian products at world prices.

Highly integrated regional trade is another manifestation of East Asian development. In particular, there is thriving regional trade in intermediate-goods. The proximity of nations with vastly different labor costs and technological capabilities creates opportunities for savings in the production of high-valued goods. The region is famous for locating the various stages of production of goods where they are most cheaply executed. Technologically advanced countries produce sophisticated core electronic components such as computer chips. Core components are shipped to less developed countries for assembly where labor costs are lower. The components are assembled, packaged, and shipped to export markets overseas as part of the so called "processing trade" in countries with relatively cheap labor.

[1] See, for instance, Goodfriend and McDermott (1998).

In the financial sphere, the economies of East Asia share a high degree of bank dependence accompanied by relatively thin corporate bond markets. In large part, this legacy derives from a history of government direction of economic activity. The relative absence of opportunities for direct borrowing and lending in the capital markets served to enhance the power of banking institutions to work closely with business allies and political officials to direct credit to favored borrowers. In recent years, banking crises in East Asian countries resulted in part from poorly run and inadequately regulated financial intermediaries. The relative lack of alternative non-bank financial intermediation, in turn, made entire economies more vulnerable to banking problems than is the case where corporate bond markets are more developed. In China, the banking system must be strengthened to enable the country to adopt independent monetary policy with a fully flexible exchange rate.

The economies of East Asia famously share a high saving rate. The high saving rate is related to the two great transitions and to the underdeveloped financial markets. Although many East Asian countries have absorbed domestic savings in domestic investment on average, investment has fallen short of desired saving for extend periods in many countries, producing large and persistent trade surpluses. For instance, Japan long has had persistent trade surpluses, and in the last few years China, too, has run an overall trade surplus.

The aggressive accumulation of international reserves by many East Asian central banks has been a prominent feature of East Asian economic development. Lately, an unprecedented acquisition of international reserves by the Peoples Bank of China has been claimed as evidence that China manipulates its currency for competitive advantage in international trade. As discussed below, East Asian central banks have had a variety of motives for accumulating international reserves.

This paper identifies and evaluates consequences for monetary policy of the five

abovementioned features of East Asian development: 1) export orientation, 2) highly integrated regional trade, 3) bank-dependent finance, 4) the potential for persistent trade surpluses, and 5) the aggressive accumulation of international reserves.[2]

We begin in Section 2 by presenting the case for inflation targeting with a flexible exchange rate in terms of the New Neoclassical Synthesis. The case against a fixed exchange rate is made with reference to fluctuations in "export optimism" such as appear to have occurred prior to the East Asian currency collapse of 1997. Section 3 considers the case for cooperative credit policy in East Asia in light of the potential for financial contagion that extensive regional trade entails. In Section 4 the paper describes the problems that bank-dependent finance, political interference in banking, and thin corporate bond markets create for monetary policy in East Asia.

Section 5 uses a two-country New Synthesis model to argue that a revaluation of the Chinese RMB exchange rate against the US dollar is likely to exert little if any direct influence on the US trade deficit, although it should help to control Chinese inflation. Section 5 then insists that what China needs is a flexible exchange rate, not a revaluation or a sequence of managed revaluations, and argues that China can adopt an inflation target and float its currency in a few years with modest reforms of its banking system. Section 6 considers three reasons in light of monetary and exchange rate policies why East Asian central banks have aggressively accumulated international reserves. A brief summary concludes the paper.

2. The Case for Flexible Exchange Rates and the Fragility of Fixed Rates in East Asia

The case for a flexible exchange rate in the New Neoclassical Synthesis (NNS) is based on the case for targeting inflation in a closed economy originated in Goodfriend and King (1997).[3] The idea is that a monetary economy has a monopolistically competitive real business cycle (RBC) core in which firms have pricing power over the differentiated goods that they produce. If prices were

[2] Bank for International Settlements (2006) is a good overview of East Asian monetary policy in practice.
[3] See also Clarida, Gali, and Gertler (1999), and Woodford (2003).

costless to adjust, then monopolistically competitive firms would sustain the flexible-price profit-maximizing markup at all times, and the economy would display aggregate fluctuations due to supply shocks---shocks to productivity, the terms of trade, or the labor force, etc. Monetary policy would have little role in stabilization policy and business cycles would be efficient in the sense that they would occur in spite of the fact that prices were fully flexible.

However, frictions associated with the use of money---pricing in money units and the costly adjustment of differentiated product prices---cause the behavior of the NNS economy to deviate from that of its RBC core. Firms adjust employment to accommodate fluctuations in demand at sticky money prices. Fluctuating conditions in the labor market, in turn, influence unit labor costs. For instance, excessive aggregate demand increases employment, raises unit labor costs, compresses markups, and creates inflationary potential. If the central bank has credibility for low inflation, then firms adjust prices little in response to current shocks and policy actions, and instead expect interest rate policy to act on labor market conditions to restore the flexible-price profit-maximizing markup at unchanged prices.

Frictions associated with the use of money expose the NNS economy to inefficient fluctuations associated with temporary deviations of actual from flexible-price markups. By the same token, sticky prices provide the leverage for monetary policy to influence employment and output. The NNS perspective with its RBC core recommends that interest rate policy act to stabilize actual markups at profit-maximizing markups to make the NNS economy behave as if prices were fully flexible.

A key idea is that by stabilizing inflation, monetary policy also stabilizes actual markups at flexible-price profit-maximizing markups. Otherwise, firms would not be content to raise prices at the targeted rate of inflation. Hence, the NNS framework implies that inflation targeting is welfare-maximizing monetary policy. Of course, problems associated with modeling, forecasting, and

measurement prevent interest rate policy from stabilizing inflation perfectly. So frictions associated with the use of money and with monetary policy inevitably superimpose inefficient fluctuations or "bad" business fluctuations cycles on "good" real business cycles.

Some prices, such as those for energy and food, are typically more flexible than others. So the question arises, should targeted inflation include flexible as well as sticky prices, or should a core measure of inflation be targeted? The NNS perspective suggests that monetary policy should target the measure of inflation that allows the economy to behave as much like its flexible-price RBC core as possible. Hence, core sticky-price inflation should be targeted and flexible-prices should be allowed to adjust freely relative to core prices.

NNS reasoning carries over to an open economy that imports a share of consumption goods at a foreign-currency price given in world markets and exports output at a foreign-currency price given in world markets.[4] Monetary policy should target a core index of domestic-currency denominated prices of goods and services produced for domestic use by monopolistically competitive firms. Export and import prices should be free to adjust relative to targeted core prices. Domestic currency prices of exports and imports would fluctuate due to movements in foreign-currency prices, and partly with respect to fluctuations in the foreign exchange rate. That said, import prices could be included in the targeted index to the extent that the domestic value added due to transportation and marketing, etc., is a significant part of cost.

The capacity for national monetary policies to overcome monetary frictions by targeting inflation depends critically on the nature of international monetary arrangements. In order for interest rate policy to target domestic inflation, a country must allow its exchange rate to float on the foreign exchange market. The exchange rate must be flexible to support fluctuations in the real terms of trade consistent with domestic real business cycles, since the national NNS economy must

[4] Goodfriend (2007) and references contained therein make this point.

behave like its RBC core to stabilize inflation.

The case for a flexible exchange rate is particularly strong for rapidly developing export-oriented economies such as those in East Asia, economies that can expect to improve the attractiveness of their exports to the developed world over time and thereby steadily improve their terms of trade. The reason is that interest rate policy forced to support a fixed or managed exchange rate is no longer available to stabilize domestic inflation and employment. And fluctuations in "export optimism" subsequently found to be excessive can readily create a conflict between stabilizing the exchange rate and stabilizing domestic employment and inflation. Specifically, excessive optimism about the improvement of the terms of trade that is reversed subsequently can create a credibility crisis for a fixed exchange rate regime.[5]

The argument goes as follows.[6] Suppose that export optimism raises the expected East Asian terms of trade. Since both East Asian and US residents wish to smooth consumption over time, East Asian residents borrow against the brighter future income prospects associated with the improved terms of trade and US residents lend against the expected deterioration of their terms of trade. Hence, capital flows from the US to East Asia, and East Asia runs a trade deficit with the US.

Given the home bias in consumption, the East Asian trade deficit increases demand in East Asia. Because prices are sticky initially, employment rises, wages rise, markups are compressed relative to profit-maximizing markups. Firms raise prices to restore their profit-maximizing markups, and inflation raises East Asian real exchange rates relative to the US. These outcomes resemble those of the East Asian "miracle" in the years preceding the 1997 currency crisis.[7]

The problem is this: A subsequent moderation of excessive export optimism may narrow or reverse the East Asian trade deficit and contract demand in East Asia. In this case East Asian price

[5] Obstfeld and Rogoff (1995), and Hussain, Mody, and Rogoff (2005).
[6] The discussion is based on analysis developed in Goodfriend (2007).
[7] Glick (1999).

levels that have already adjusted upward in response to excessive export optimism are exposed to deflationary pressure. At this point, the East Asian fixed exchange rate commitment is called into question. A devaluation of the exchange rate obviates the need for a period of unemployment to cut wages, elevate markups, and induce East Asian firms to deflate their prices. A credibility crisis invites speculators to attack the fixed exchange rate regime. East Asian countries are faced with a dilemma: Raise interest rates to deter speculation and incur an inefficient recession, or devalue the currency to relieve speculative pressure and risk more frequent speculative attacks in the future.

To sum up, the plausibility of rapid improvement in the terms of trade in East Asia creates circumstances which jeopardize a fixed exchange rate regime any time that a period of export optimism subsequently proves to be excessive. A flexible exchange rate handles fluctuations in export optimism smoothly by allowing the exchange rate to appreciate in response to export optimism and to depreciate if that optimism subsequently proves excessive.

3. East Asian Financial Cooperation

Highly integrated regional trade and processing of intermediate goods for export ties the economies of East Asia closely to each other and to fluctuations in the West's demand for exports. Tight trade linkages, in turn, create the potential for financial contagion in East Asia. Since the currency crisis in the late 1990s, the countries of the region have taken steps to cooperate on exchange rate policy. For instance, with the Chiang Mai Initiative agreed at the ASEAN+3 Finance Ministers' meeting in May 2000, East Asian nations moved to establish a network of bilateral foreign exchange swap agreements to provide liquidity support to countries experiencing balance of payments difficulties.[8] Although further cooperation on financial matters has moved slowly, the

[8] Rana (2002).

nations of the region continue to explore the possibility and desirability of closer financial and exchange rate cooperation.[9]

The case for regional financial cooperation can be explored by thinking of a "credit union." A credit union is a financial intermediary that accepts deposits from and makes loans to a group of eligible members. The key is that the members already share some prior association, such as employment in a company. A credit union economizes on the evaluation of creditworthiness, on the monitoring of loan covenants, and on enforcement costs of recovering a loan. For instance, the incentive to repay is strengthened if failure to repay is known to cost a credit union member his job. A credit union exploits information produced in a prior association to reduce the cost of financial intermediation.

Loans in a credit union rotate among the membership. The credit union keeps a share of its assets in "reserves," external securities that can be sold on short notice to fund emergency advances to its members. The credit union can make funds available to a member on short notice because the member's circumstances are well known. By exploiting the mutual knowledge of its membership, a credit union makes funds available to its members on better terms than an ordinary commercial bank, and more cheaply than can be provided individually by holding a portfolio of low-yielding liquid securities for self-insurance.

The case for financial cooperation among the governments of East Asia rests on the strength of the analogy to a credit union. East Asian nations constitute an association to the extent that they interact regularly as a result of geographical proximity, common export orientation, regional integration, and intergovernmental relationships. If the countries of East Asia can exchange information and implement surveillance processes cheaply enough on the basis of these common factors, then it may make sense for the countries of East Asia to engage in international credit

[9] See Eichengreen (2006), Fujiki and Terada-Hariwara (2007), and Kose, Prasad, Rogoff, and Wei (2006).

cooperation based on bilateral foreign exchange swaps or by setting up a regional financing facility such as a regional monetary fund. East Asian credit cooperation would allow the countries to economize on their holdings of international reserves.

That raises the question: What can international credit policy do in addition to domestic interest rate policies? After all, in Section 2 we saw that if interest rate policies are employed independently to target domestic inflation and the exchange rate is allowed to float freely, then inefficient fluctuations due to sticky prices could be eliminated. There is no need for international cooperation on monetary or exchange rate policy to achieve efficient fluctuations relative to the international real business cycle core. In fact, the countries of East Asia should allow their exchange rates to float freely of each other to accommodate fluctuations in relative terms of trade that inevitably occur due to differences in the nature and pace of development.

To pursue this question further, we must distinguish credit policies from interest rate policies. Whether done collectively or bilaterally, international credit cooperation is an arrangement by which one country borrows international reserves from another country or group of countries in order to finance officially a net capital outflow in its balance of payments. Credit transactions need not affect national interest rates if the central banks of the countries involved adjust their balance sheets to sterilize the effect of credit flows on the monetary base.

Access to borrowed international reserves helps a country to defend its exchange rate without raising interest rates. A policy of "financing" a balance of payments outflow with borrowed international reserves as opposed to "adjusting" the interest rate or the exchange rate may be appropriate when a government believes that a capital outflow will be reversed soon of its own accord. The essence of international credit policy is that it allows a government to "buy time" without resorting to potentially disruptive interest rate or exchange rate adjustments.

However reasonable the potential benefits seem, there are a number of reasons to question the usefulness of regional credit cooperation in practice. First of all, the premise presupposes that there are instances when a government has information about the duration of net capital flows that markets do not have, otherwise one might expect private capital flows to stabilize exchange rates tolerably well. On the other hand, if an underlying shock turns out to require an adjustment of the exchange rate, then credit policy can be counterproductive and expensive by delaying the necessary adjustment and incurring additional costs to repay borrowed reserves.

The main benefit to East Asia of creating bilateral or multilateral mechanisms for borrowing international reserves is that such mechanisms could deter a speculative attack on a particular country that otherwise could spread throughout the region. However, even this benefit of cooperative credit policy would be offset to the extent that it provides an incentive for investors to move capital into East Asia on a short-term rather than on a long-term basis with the expectation that a quick reversal could be financed by borrowed international reserves.

On balance, the scope for mutually beneficial governmental credit cooperation in East Asia would appear to be relatively limited. The key to efficient exchange rate behavior in East Asia is for each country to strengthen the institutional credibility of its own inflation targeting regime and to allow its exchange rate to float freely on the foreign exchange market.[10] At best, credit cooperation can supplement but not substitute for strong, independent monetary policies throughout the region.

4. Bank-Dependent Finance and Corporate Bond Markets in East Asia

Corporate bond markets are relatively undeveloped in East Asia, making the region depend heavily on banks for financial intermediation.[11] Bank dependence is a legacy of relatively rapid development in East Asia. When economies are in a traditional state, firms are small, self-funding and funding by close relatives overcome problems identifying reliable borrowers and enforcing

[10] Genberg (2006).
[11] Bank for International Settlements (2005, 2006).

repayment. Relationship lending is efficient. As economies develop further, banks direct deposits to larger enterprises by recreating relationship lending through credit evaluation, loan monitoring, and managing firms in default.

In the West, where development progressed relatively slowly over the centuries, prominent firms in need of large external funding gradually bypassed information-intensive bank lending and accessed lenders directly with corporate bonds. In the United States the development of direct finance occurred simultaneously with the development of legal frameworks to deal efficiently with bankruptcy and investor protection.[12] Corporate governance standards were established over time to minimize agency costs of debt. Financial authorities promoted self-regulation of debt markets and encouraged rules for the disclosure of financial information.

Today, even firms large and visible enough to access corporate debt markets directly continue to employ banks for a variety of services such as lines of credit, borrowing on the basis of customized securities, and debtor-in-possession borrowing in bankruptcy. Moreover, firms diversify their sources of credit to insure against shocks to the cost of funds in either banking or bond markets.[13]

Non-financial development in East Asia proceeded too fast for institutions to develop in support of a corporate bond market with consequences that became evident in the last decade. Greenspan (1999) emphasized the "spare tire" role of a deep market in non-bank bond finance to cushion financial distress. The 1997 East Asian currency crisis was exacerbated by the bank-dependent finance because when banks collapsed there were few alternative ways for credit to flow to deserving borrowers. On the other hand, the 1990 collapse of real estate collateral in the US that hurt bank lending did not interrupt mortgage lending much because of the deep market in mortgage-backed securities. The protracted banking crisis in Japan hurt the economy more than it might have

[12] La Porta, Lopez de Silanes, Shleifer, and Vishny (1998).
[13] Sundaresan (2005)

if non-bank capital markets had been widely developed in that country.

The direct negative consequences for monetary policy of such developments are clear. Real interest rates have to be lower for longer than otherwise to deliver a given stimulus to aggregate demand in situations where the firms lose access to credit because of a weak banking system. This is one reason why short-term interest rates were driven to the zero bound in Japan in the 1990s. The lack of deep corporate bond markets affects monetary policy indirectly, too, by depriving the banking system of competition at the margin. Banks must compete to retain borrowers with access to direct finance. That discipline is likely to cause banks to be better managed, more innovative, and more efficient than otherwise.[14] Bank regulators benefit, too, because banks are healthier, and also because regulators have greater leeway to credibly enforce tough standards on banks when alternative avenues of finance are available to pick up the slack if need be. Regulators can exercise more discipline over the banking system if they are not held hostage to the fact that there is no alternative to bank intermediation. A financially robust banking system, in turn, is more likely to withstand a period of high interest rates needed from time to time to stabilize inflation. Thus, a deep corporate bond market indirectly enhances a central bank's credibility for low inflation.

Financial authorities throughout East Asia are aware of the vulnerabilities of excessive dependence on the banking system and have been working to broaden domestic and regional bond markets. The problem is that developing a corporate bond market means breaking the monopoly of banking on financial intermediation. Banking long has been home for well-connected wealthy businessmen and powerful political officials who collude to dominate finance and who will resist the loss of their monopoly. To succeed in diversifying financial intermediation fully, East Asia must find a way to deal effectively the political economy of finance and develop the legal, regulatory, and market infrastructure to allow deep and resilient bond markets to take root.

[14] "Rating Asian Banks," (2007).

5. RMB Revaluation, the US Trade Deficit, and Banking Reform in China

The US trade deficit with China is commonly ascribed to the fact that China keeps the RMB undervalued against the dollar.[15] The argument suggests that if China revalues the RMB, then the US trade deficit should shrink. A benchmark two-country version of the NNS model suggests otherwise---that a revaluation of the exchange rate fixed by country B has little effect on country A's trade deficit measured in units of country A output, if country A's monetary policy targets inflation credibly.[16] What China needs is not a one-time revaluation of its exchange rate or a sequence of managed revaluations, but a flexible exchange rate to secure stable inflation and employment at home and to anchor the financial stability of East Asia. China can undertake modest banking reforms in a few years to make its banking system sufficiently robust to interest rate fluctuations to adopt a credible inflation target and float its currency on the foreign exchange market. These points about the Chinese exchange rate policy, the trade balance, and banking reform are elaborated below.

5.1 Invariance of the Trade Surplus to a Revaluation of a Fixed Exchange Rate

Goodfriend (2007) develops a 2-country, 2-good, 2-period benchmark NNS model of international adjustment to explore the behavior of the balance of payments, the terms of trade, and aggregate fluctuations with respect to interest rate and exchange rate policies followed by two large countries. In the model, countries A and B each specialize in the production of a distinct composite of differentiated consumption goods. Representative households in A and B live for two periods---the present and the future.

Households choose how much of each composite good to consume each period and supply work effort each period to firms which produce the consumption goods. Firms are owned

[15] Yu Yongding (2007) provides a useful perspective on related issues.
[16] Devereux and Genberg (2007) also stress the ineffectiveness of nominal currency appreciation as a means of current account adjustment.

domestically by households, so household income each period is the sum of domestic wages and profits. Households have access to a credit market where they can borrow or lend internationally to consume more or less than their current income allows.

Households maximize lifetime utility taking as given the current and future world terms of trade, current and future real wages in A and B, and real interest rates in the two countries. A no-interest-arbitrage condition links the two financial markets. As is standard in the benchmark NNS model, there is no capital and all output is consumed each period. Borrowing by country A from country B in period 1 is reflected in a trade deficit for A and a trade surplus for B. All international borrowing is repaid in period 2. There are three household optimality conditions: one for the allocation of consumption between the two composite goods, a second for the allocation of time between work and leisure, and a third for the allocation of consumption over time. The model determines the endogenous variables in terms of exogenous variables in the two countries reflecting productivity levels, home good biases in consumption, and impatience to consume.

Country A (representing the US) is assumed to target domestic inflation with interest rate policy, and thereby to stabilize its actual markup at the flexible-price markup. Importantly, monetary policy in country A makes A's economy behave like its real business cycle core, regardless of what country B does. Country B (representing China) is assumed to employ its interest rate policy to stabilize the B-money price of A-money (the RMB-dollar exchange rate).

Of particular interest for the question at hand is that country A's trade balance measured in A-good units is independent of the terms of trade. The sign of the trade balance depends on relative current and future home biases in consumption in the two countries and on relative impatience to consume. For instance, country A has a trade deficit (and country B a trade surplus) if A households are more impatient than B households or if country A is expected to improve the attractiveness of its

exports relative to country B, i.e., if B-household home bias in consumption is expected to decline. (Recall the discussion in Section 2.)

What happens if country B (China) revalues B-money relative to A-money (appreciates the RMB against the US dollar) still maintaining a fixed exchange rate? Assume that central bank A continues to stabilize the dollar price of A goods exactly. If the RMB price of B goods in country B is sticky, then the revaluation of the RMB versus the dollar makes Chinese goods more expensive relative to US goods. In other words, the revaluation temporarily improves the competitiveness of US exports to China and hurts the competitiveness of Chinese exports to the US.

According to the benchmark model, however, the revaluation of B's exchange rate has no affect on country A's trade balance measured in A-good units. The reason is as follows. First of all, monetary policy in country A stabilizes inflation and the markup in A, and thereby stabilizes A-country output and income measured in A-good units.

Second, the exchange-rate-induced deterioration of A's terms of trade induces A households to substitute away from B goods and toward A goods in consumption. However, the deterioration in A's terms of trade also reduces the value of A-good income in terms of B goods. For separable log utility, the substitution effect exactly offsets the income effect, leaving unchanged the A-household demand for A goods. Also, the A-good value of A-household expenditure on B goods remains unchanged.

Third, the real interest rate in country A is invariant to the exchange rate revaluation. Hence, current relative to future A-household spending measured in A-good units is also stabilized. Since A-household aggregate income and aggregate consumption expenditure (both measured in A-good units) are each invariant to the revaluation-induced change in the terms of trade, country A's trade balance measured in A-good units is invariant also.

This invariance of country A's trade balance to the revaluation of country B's exchange rate is a consequence of features of the benchmark NNS model. Yet, those features are not unreasonable. And the fact that invariance holds in this case suggests that one should not expect a revaluation of the RMB against the dollar to have much if any effect on the US trade balance measured in units of US output.

That said, an RMB revaluation against the dollar could be helpful in another respect--to contain inflation inside China. According to the model, an RMB revaluation would create a deficiency of demand for Chinese output that would weaken labor markets and elevate markups in China. Such deflationary pressure on prices inside China could be useful to offset a preexisting inflationary compression of markups. What could cause preexisting inflationary pressure? The fixed exchange rate regime in China is subject to the same kind of inflationary pressure described in Section 2 with respect to fixed exchange rates in East Asia more generally. Under a fixed exchange rate regime, one might expect inflation to develop inside China as it improves the attractiveness of its exports to the developed world and thereby improves its terms of trade. From this perspective, an appreciation of the RMB against the dollar would allow China to improve its terms of trade while maintaining domestic price stability.[17]

5.2 Banking Reform and Exchange Rate Flexibility in China

The debate about Chinese exchange rate policy is reaching a critical point. If the RMB's value continues to be tightly managed, the United States might increase protectionist pressure against China to try to force a revaluation. In light of the discussion above, such actions would be needlessly confrontational. Goodfriend and Prasad (2007) argue that modest reforms of China's banking system would enable China to float its currency in a few years and put in place an

[17] Higgins and Humpage (2005) describe the actual behavior of the Chinese real exchange rate.

independent interest rate policy regime that would improve Chinese macroeconomic performance at home and defuse tensions abroad.

Independent interest rate policy requires a flexible exchange rate, not a one-off revaluation or a sequence of managed revaluations. But then the exchange rate can no-longer serve as the nominal anchor for monetary policy. China must put in place the institutional capacity to target low long-run inflation credibly so that an inflation target can serve as the new nominal anchor.

To prepare China for independent interest rate policy Chinese banks must be made financially robust to fluctuations in short-term interest rates. Financial robustness is necessary to allow interbank interest rates to fluctuate credibly as needed to manage independent monetary policy effectively.

The source of the robustness problem in the Chinese banking system is that Chinese banks have long been a primary means of financing state-owned enterprises (SOEs) and many Chinese banks are run by local managers politically motivated (or under pressure from regional government officials) to direct credit to well-connected borrowers. Chinese banks are assured of a large and growing stock of deposits as a result of the high saving rate, capital controls, and thin debt and equity markets. Under these conditions Chinese banks have had a tendency to build up non-performing loans (NPLs) over time with the tacit approval of the government.

The problem is that banks whose interest earnings are significantly impaired due to NPLs may have cash flow sufficient only to pay relatively low interest on deposits. Since banks are tightly connected through the payments system and a network of interbank balances, financial distress anywhere threatens the entire system. A fragile banking system could make the PBC reluctant to raise interest rates to head off inflation. Even the perception that the PBC is reluctant to raise interest rates would threaten the credibility of the central bank's commitment to low inflation.

In recent years many Chinese banks have been recapitalized with funds from the large stock of international reserves, so balance sheets are currently in reasonably good shape. However, going forward the banking authorities must strengthen incentives for bank managers to make prudent loans to viable enterprises. Bank managers cannot be asked to lend prudently, with the expectation that a loan be repaid and bank capital preserved, when managers are rewarded by the political system for directing credit to connected borrowers or SOEs, and then largely excused for loan losses.

The Chinese authorities could put in place in a few years the necessary reforms to blunt the incentive for banks to accumulate NPLs, in part because the authorities have been working hard to strengthen the banking system for some time now. Much is at stake. The NPL problem must be addressed to make the banking system financially robust to interest rate fluctuations in order to improve monetary policy and exchange rate policy in China.

6. International Reserve Accumulation in East Asia

Many central banks of East Asia have accumulated international reserves at unprecedented rates in recent years both absolutely and as a percentage of GDP.[18] Yet aggressive international reserve accumulation has had very different motives. Foreign exchange accumulation in Japan may have helped to deter deflation when Japanese interest rate policy was immobilized at the zero bound. Korea and Singapore, among others, acquired international reserves after the East Asian currency crisis to self-insure against another external shock. In China, the accelerated pace of international reserve accumulation in recent years reflects the trade surplus and the fact that capital controls to protect the banking system limit the private movement of capital abroad.[19] This section reviews the various motives for acquiring international reserves and their relationship to monetary policy.

6.1 International Reserve Accumulation at the Zero Bound

[18] Alberola and Serena (2007), and Higgins and Klitgaard (2004).
[19] Green (2007).

When interest rate policy is immobilized at the zero bound in an effort to deter deflation, a central bank must continue to expand its balance sheet to stimulate the economy. However, base money and domestic short-term securities are perfect substitutes at the zero bound, so stimulus can no longer by provided by conventional open market purchases of short-term domestic securities. In that case, however, a central bank can provide stimulus by purchasing such assets as long-term bonds or foreign exchange on an unsterilized basis, i.e., with newly created base money. By choosing to acquire long-term bonds in the 1990s, the BOJ was able to provide additional monetary stimulus at the zero bound. If the outstanding stock of long-term bonds or other domestic assets to buy is deemed insufficient to provide the necessary stimulus, then the acquisition of international reserves can play an important, even an essential role in the implementation of monetary policy at the zero bound.

6.2 International Reserve Accumulation for Self-Insurance

When interest rate policy is not immobilized at the zero bound and the exchange rate is flexible, operations in international reserves are not needed to implement monetary policy if there is an adequate stock of short-term securities for a central bank to buy. Nevertheless, central banks of highly-open, export-oriented economies build up a stock of international reserves with which to intervene on an unsterilized basis against turbulence in foreign exchange markets. For example, Korea and Singapore have accumulated very large stocks of international reserves respectively even though each has a flexible exchange.

As discussed in Section 3, however, intervention in foreign exchange markets is likely to be of relatively limited value. Moreover, the accumulation of a very large stock of international reserves can be counterproductive if it causes the public to believe that the central bank will employ interest rate policy to stabilize the exchange rate at the expense of domestic price stability. Benefits

believed to derive from foreign exchange operations must be balanced against credibility problems that such operations can create for the central bank's commitment to targeting low inflation.[20]

6.3 International Reserve Accumulation with a Managed Exchange Rate and Capital Controls

In China, the accumulation of international reserves is dictated by the managed exchange rate and capital controls. The Peoples Bank of China (PBC) acquired its large stock of international reserves mainly by accommodating years of net inflows of foreign direct investment at a fixed exchange rate and by accommodating the overall trade surplus that emerged in the last few years. To curb the inflationary potential of such reserve accumulation, the PBC has sterilized its acquisition of international reserves with sales of non-monetary central bank debt called PBC bills.

Many observers regard the acquisition of international reserves by the PBC as evidence that China undervalues its exchange rate.[21] In the absence of capital controls, however, Chinese residents would likely move capital out of the country privately to earn higher interest at banks abroad and to diversify their growing wealth in mature corporate bond and equity markets overseas. In light of the discussion in Section 5.2, it seems reasonable to regard the acquisition of international reserves by the PBC in large part as a consequence of controls on the outflow of capital to protect the weak Chinese banking system. If Chinese banks were made financially robust to higher interest rates, then interest rates could move higher to stabilize investment. Interest rate policy could freely and credibly target inflation, the exchange rate could be floated, and capital controls could be lifted.

Unfortunately, higher interest rates could hurt China's external balance according to the "current account identity" by encouraging saving and discouraging investment.[22] Even if internal stability were secured by worsening external balance, however, the external situation would be

[20] Broaddus and Goodfriend (1996).
[21] United States Treasury Department (2006).
[22] Given the current high saving rate in China, the positive income effect of higher interest on spending could offset much of the substitution effect of higher interest on saving.

improved greatly in one critical respect. China's trade surplus could no longer be ascribed to its manipulation of the exchange rate. The PBC would no longer need to acquire international reserves and instead, flexible exchange rate adjustments could encourage private capital outflows to accommodate China's current account surplus.

7. Conclusion

The paper addressed a set of common concerns that pertain to monetary policy in East Asia. Broadly speaking, the concerns are rooted in the fact that the countries of East Asia have developed relatively quickly from command-oriented, traditional economies to modern industrialized market economies. The problem is that non-financial development has outrun financial development. The countries of East Asia recognize the problem. Governments throughout the region are working to improve the financial robustness of banks and deepen non-bank financial markets in order to strengthen the institutional capacity to target inflation and facilitate exchange rate flexibility to secure macroeconomic stability in the future.

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