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**What Is Special about China's Exchange Rate and External Imbalance?
A Structural and Institutional Perspective¹**

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Abstract

Declining transaction costs in exporting have boosted China's export competitiveness while high transaction costs in importing hindered imports. Exchange rate adjustments will not be able to correct the asymmetry of transaction costs in the two sectors and hence cannot address the current account imbalance in China. The large pool of 481 million under-employed rural and migrant labor forces earning less than \$120 a month has pulled down inflation and slowed currency appreciation in China. Reforms in financial, planning, and regulatory systems are necessary to reduce transaction costs so that China's under-employed labor and capital can work more efficiently together, generating more balanced trade and appropriate price level adjustments.

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1. What are the hidden causes of China's current account imbalance?

The stylized facts about China and its global imbalances in trade and capital flows are well known now:

The U.S. has run global current account deficits in most of the last 25 years and in 2006 its current account deficits reached \$857 billion or 6.5% of GDP. The huge U.S. deficits have been financed mainly by current account surpluses from Japan, China, and oil-exporting countries.

In particular, China's global current account surplus in 2006 jumped to a record high of \$184 billion or about 9% of GDP. As a result, China's foreign exchange reserves

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have reached \$1.07 trillion, the largest in the world. China also became the second-largest holder of U.S. Treasury securities, holding as much as \$353.6 billion, trailing only Japan, which holds \$648.8 billion.

On the other hand, the Chinese currency was basically pegged to U.S. dollar from 1994 to 2005. Starting in July 2005, the RMB was de-linked from the dollar and has since been under a managed float with reference to a basket of currencies. However, from July 2005 to March 2007, the RMB appreciated only about 7%.

The rapid rise in China's global current account surplus and the slow appreciation of the RMB have led to a strong Washington consensus: China should be pressed hard to raise the value of its currency so as to reduce its global current account surplus as well as its current account surplus with U.S. In Congressional hearings on 28 March 2007, Institute for International Economics scholar Morris Goldstein pointed out that China's currency is now grossly under-valued on the order of 40 percent against the US dollar. He suggested that "China should deliver right away a meaningful 'down payment' of a 10-15 percent appreciation of the RMB from its current level."

In my view, the current single-minded focus on the RMB exchange rate by Washington elites is unlikely to be helpful in addressing the imbalances in China's trading patterns. If the suggested change is so good for China, why has China not adopted the approach Washington elites are advising it to earlier? What has stopped Chinese policy-makers doing something which is supposedly both good and important for China, the U.S., and the world? Have Washington elites really carefully considered the constraints faced by Chinese policy-makers? Moreover, as rightly pointed out by Stephen S. Roach of Morgan Stanley in his testimony on 28 March 2007:

"You in the Congress need to ask yourselves an important hypothetical question: How would you feel if you got your way on the Chinese currency adjustment but found that after three or four years the pressures bearing down on American workers had only intensified?"

The objective of this paper is to clarify some of the confusion related to the debate on China's exchange rate policy and to identify the real barriers to greater flexibility in China's exchange rate. To my mind, there is no doubt that on the issues of its exchange rate and global imbalance, China, the U.S. and the world can have a win-win solution. But this can only come from better mutual understanding of the real constraints facing each side and also from each side helping the other. In some ways, the current situation in U.S.-China economic relations can be compared to that of U.S.-European economic relations in the immediate post-war period when the Marshall Plan was designed to help the European economy in order to benefit both European and American people. In this context, the recent speech by U.S. Treasury Secretary Henry Paulson in Shanghai on "The Growth and Future of China's

Financial Markets” is comparable to a preliminary draft of “Marshall Plan” (or more accurately “Paulson Plan”) for China. I certainly believe the spirit of the Marshall Plan, if applied to China, would be much more productive than the spirit of current Washington consensus on pressing China on the RMB exchange rate and trade issues. The fact is, as I will explain in detail later, China currently faces unprecedented challenges and opportunities not entirely dissimilar to those of post-war reconstruction in Europe. Without the help and cooperation of the U.S. and other developed nations, China is unlikely to be able to handle this crucial step in its economic, social and political modernization.

In a nutshell, China’s main challenge today is to develop smoothly-functioning financial, planning, and regulatory systems that can employ the remaining rural surplus labor and surplus capital, which shows up now as China’s sustained current account surplus and rising foreign exchange reserves, in an efficient, harmonious, and environmentally-friendly way. What is special for China and perhaps a few other Asian economies is the co-existence of both surplus/under-employed labor and surplus capital. Despite its status as a country with extremely low capital stock per person, China actually maintains surplus capital and is exporting it to capital-rich countries like the U.S. to finance these countries’ excess consumption. If anything, this is the problem we should focus on, not the RMB exchange rate which distracts our attention away from the root problems.

Why doesn’t the surplus capital in China lead to the hiring of more surplus labor, and thereby lead to increased wages, income, and consumption among Chinese workers? If that were to happen rapidly, it would naturally lead to the reduction of China’s global current account surplus and also to the appreciation of China’s real or nominal exchange rate. It is a pity that economists in the developed countries usually do not study this more basic question since it does not exist in their world of general equilibrium with full employment of labor and capital. The question is assumed away in the neoclassical production function framework where there are no transaction costs of getting capital and labor to work together. Too much attention has been put on the role of prices, interest rates, and exchange rates in correcting market disequilibrium. But in China, hidden transaction costs have been the single most important barrier to its growth, development and prosperity before and since the advent of market-oriented reforms.

2. What is the hidden source of China’s export competitiveness?

Since the concept of transaction costs is crucial in explaining many myths in the debate about China’s currency, it is useful to elaborate it a bit more here. Unlike the costs of inputs, which are determined by supply and demand in a market, transaction costs are man-made and determined by how well a society’s political, social and economic institutions function. For example, before China’s reforms began in 1979, foreign trade and investment by private individuals and firms were prohibited, which

meant that transaction costs in foreign trade and investment in China were artificially set at a prohibitively high level.

Since transaction costs, although sometimes hidden, are part of the real cost of doing business, when they are high, they increase the costs of doing business and reduce the competitiveness of the economy. No countries in the world worried about China's export competitiveness before 1979 although at that time the average wage for factory workers was only 24 dollars a month (under the official exchange rate of 1.5 yuan/dollar), as compared with the current monthly wages of about \$120/month for migrant workers (under the exchange rate of 8 yuan/dollar in 2006).

Clearly, low wages are not the only factor, nor even the most important factor, in explaining China's recent increase in export competitiveness. Wages in India, Indonesia, and many parts of Africa are probably much lower than in China today and China's wages are increasing steadily, especially for skilled labor. Why then do foreign investors still prefer to invest in China? Why do China's exports continue to expand as the wages of its workers increase? Clearly, it is not only due to low labor costs; declining transaction costs and expanding markets in China play a role too.

Unfortunately, few experts testifying on 28 March 2007 before the Senate Finance Committee touched upon the declining transaction costs in their analyses of China's export competitiveness. Stephen Roach wisely pointed out that "China competes not just on the basis of its currency but also from the standpoint of cheap labor costs, modern infrastructure, access to state-of-the-art technology, and increasing investment in human capital and basic research." He was right in highlighting many factors affecting China's export competitiveness other than currency but even Roach missed the important factor of declining transaction costs in China's export and foreign-invested sectors.

Declining transaction costs are particularly significant for China's export and foreign-invested sectors due to the globalization of the production process, characterized by the supply chain management technology and the institutions of multinational corporations.

Thanks to the IT revolution, the supply chain management technology championed by Hong Kong trading companies are now able to rapidly identify consumer preferences for a great variety of goods across vast geographical areas. They are also able to locate low-cost producers for each part of the supply chain quickly around the world, including in China, make reliable contracts with them, and deliver their products to consumers overseas in a timely manner, including those in the U.S., thanks to the modern logistics infrastructure in China and in the developed economies. In effect, international supply chain technology has reduced the transaction costs of exporting from China.

Unfortunately the international supply chain system does not yet work as smoothly for imports to China as for exports out of China.

Exports from China involve only a small part of the international supply chain, usually the labor-intensive processing/manufacturing part. Thanks to China's open-door policy and the efforts of multinational corporations in China, exporters can now handle this part of the production process very efficiently, using China for its reliable supply of low cost labor and production facilities. In particular, such exporters do not need worry about consumer-financing or financing the supply-chain operations for the exported product, as all of these concerns are handled outside of China using international financial markets in New York, London or Hong Kong.

The transaction costs of importing to China, however, are very high to the international supply chain system. The supply chain has to start by ascertaining consumer demand and then find the lowest cost producer. Consumer demand in China, however, is affected by many factors outside of the control of the international supply chain, including China's lack of efficient consumer financing, the absence of a functioning social safety net, a shortage of medical insurance, the weaknesses of the pension system, an absence of basic urban and rural infrastructures for individual consumption, lack of basic regulations and enforcement of environmental protection, shortfalls in the effective regulation of product quality, and a near-total breakdown in the effective protection of intellectual property rights. Hence, the international supply chain faces tremendous obstacles when it comes to importing goods into China. Clearly many of the domestic economic challenges China faces have also hindered the growth of China's imports and are at the root of China's sustained global current account surplus.

Chinese leaders have recognized these problems and are trying to change China's growth model from export-led growth to consumption-led development, but they need help from the international community. I will discuss this point at greater length later in the paper, but I want to highlight again that changes in the exchange rate alone would clearly not be able to address these problems, which contribute greatly to the imbalance in China's trading patterns, particularly when we take into account of the asymmetry of transaction costs for exports and imports.

While the relative cost of labor can be affected directly by a change in the exchange rate, transaction costs cannot be affected very much by such a change. In my view, thanks to China's continued reform and opening, including the benefits from the accession to the World Trade Organization, the transaction costs in China's export sector will continue to fall in the near future, further enhancing the competitiveness of China's export sector even as labor costs in China are rising steadily due to expected RMB appreciation, inflation, and other causes. In other words, the hypothetical question raised by Stephen S. Roach which I quoted in the first section of this paper could become a real risk if we take into account the rapidly declining transaction costs

for exports in China. Let me repeat the quote here:

“You in the Congress need to ask yourselves an important hypothetical question: How would you feel if you got your way on the Chinese currency adjustment but found that after three or four years the pressures bearing down on American workers had only intensified?”

Given the fact that China’s labor costs are still much lower than those in the U.S. and adding the declining transaction costs for exports in China, how can the U.S. compete with China in the future if competitiveness is determined by the total costs of importing and exporting, which include both factor and transaction costs? This is the challenge to all developed economies like the U.S., Europe, Japan, Korea, Hong Kong, and Taiwan. On the part of the developed economies, the key lies in reducing transaction costs for their export and raising productivity through outsourcing to low costs regions like China. Hong Kong- and U.S.-based multinational corporations have been very successful in dealing with this challenge through integration with low cost economies, and rarely complain about China’s exchange rate. Instead, their concerns focus more on the hidden costs of doing business in China and their own countries, choosing to highlight issues such as market opening, transparency of regulations and intellectual property rights protection.

In summary, China’s export competitiveness is likely to grow even greater in the future due to the declining transaction costs of exporting. In order for China to balance its trade, it has to work hard on reducing the transaction costs for imports. Since the barriers to imports are primarily in the realm of hidden transactions costs, not in price, an emphasis on exchange rate adjustment would not be as effective as a focus on reducing the barriers and constraints facing imports into China.

3. Is there a “right” level of nominal exchange rate for China?

In the last section, I emphasized the importance of transaction costs in a country’s competitiveness and downplayed the role of exchange rates, particularly the nominal exchange rate, in influencing competitiveness. Unfortunately in public policy debates, however, exchange rates, and particularly the nominal exchange rate, tend to be regarded as the single most important variable that could affect competitiveness and trade imbalances. This is misleading in theory as well as in practice, as the following analysis will demonstrate.

We need to ask the basic question: what is the “right” or “correct” level of China’s nominal exchange rate? Most economists would point to “purchasing power parity (PPP) exchange rate”, which is a hypothetical benchmark exchange rate derived from the law of one price for the same bundle of goods.

Suppose we buy the same bundle of goods separately in China using RMB and in the

U.S. using dollars. The amount of RMB spent divided by the amount of dollars spent on buying the sample bundle of goods in China and in the U.S. respectively leads to the PPP exchange rate, which is regarded as the best possible theoretical definition of the “right” level for the nominal exchange rate.

The usefulness of this benchmark PPP exchange rate is obvious. But the problem is how to select the same bundle of representative goods in both China and the U.S. It is easy to find the same bundle of tradable goods such as computers and cameras. Surprisingly, if we use only tradable goods for calculating PPP exchange rate, it is likely to be equal to whatever nominal exchange rate currently prevails. For example, if you buy a Dell notebook in both Shanghai and New York now, the RMB amount spent in Shanghai divided by the dollar amount spent in New York is likely to be very close to 8 yuan/dollar. If there is a gap, it should be less than the costs of ordering and shipping the notebook computer between the two locales. If it is not, somebody will be able to make a fortune by buying in one place and selling in the other.

The implication is that as long as China maintains free trade, China’s nominal exchange rate will always be consistent with the PPP exchange rate based on tradable goods because of the possibility of market arbitrage. In other words, claims that China’s nominal exchange rate is undervalued are nonsensical unless they are based on a PPP exchange rate derived from buying a bundle of goods that also includes non-tradable goods.

The Economist magazine has calculated a PPP exchange rate based on Big Mac sandwiches, a product which is a non-tradable good. According to the Economist, in 2006 when China’s nominal exchange rate was round 8 yuan/dollar, it would cost 10.4 yuan to buy a Big Mac in China and \$3.15 in the U.S. As a result, the Economist’s analysis would suggest that the PPP exchange rate based on Big Mac sandwiches should be about 10.4 yuan/\$3.15 dollars, or about 3.3 yuan to the dollar. Using the Big Mac PPP exchange rate of 3.3 yuan/dollar as benchmark, China’s nominal exchange rate of 8 yuan/dollar would be under-valued by almost 60%.

So why does a Big Mac in China cost 60% less than in the U.S.? The answer is simple: the costs of non-tradable goods like labor and rent used in producing Big Mac in China are much lower than those in the U.S. Hence the under-valuation of the RMB nominal exchange rate compared to the Big Mac/PPP exchange rate should be expected and regarded as normal, given the different stages of economic development prevailing in China and the U.S. In fact, using the Big Mac/PPP exchange rate as a benchmark, the nominal exchange rates of most Asian economies are similarly under-valued.

The exercise above shows that it is exceptionally difficult to convincingly claim that one country’s nominal exchange rate is under- or over-valued. The intellectual basis for such claim is questionable at best because of the theoretical difficulties in defining

what the ‘right’ or ‘correct’ nominal exchange rate should be.

The more useful questions are why wages and rents in China are so low compared with those in the U.S. and why they do not catch up as fast as we might wish. To answer these questions, we have to look at the structural constraints in the Chinese economy, in particular the abundance of surplus or under-employed rural or migrant labor. I will discuss these issues later in this paper.

4. What are the transitory and lasting effects of changes in nominal exchange rate?

Although it is difficult to define the “right” level of China’s nominal exchange rate, it is still possible and important to analyze the effects of changes in the nominal exchange rate on the economy.

In the short-run, changes in the nominal exchange will immediately redistribute wealth between exporters and importers and thereby temporarily affect their competitiveness. This is why politicians driven by interest groups in the U.S. like to play with the “RMB exchange rate card” in order to get more votes in their elections. But as the individuals and firms in the affected economies adjust through market-determined wages and prices, their temporary gains or losses in competitiveness disappear! An example illustrates how this economic logic functions:

Suppose China revalues its currency by 15% tomorrow. This would immediately redistribute a large sum of wealth from exporters to importers and as a result, in the short-run, artificially reduce the competitiveness of China’s exporters by 15% and increase the competitiveness of importers to China by 15%.

However, the effects on the Chinese economy will not stop after this 15% revaluation occurs. Many exporting firms will have to close down. This may lead to deflation in China. For simplicity, let’s assume the deflation would be exactly 15% to match the revaluation. After the deflation, wages and other costs will be cut by 15% and the exporting firms will be profitable again given the cost reduction will regain the competitiveness they lost temporarily due to the shock of RMB revaluation. For importers to China, after the deflation, their customers’ income would drop by 15%, cancelling the 15% gain in purchasing power after the drastic revaluation. So in theory, the nominal revaluation will have temporary effects on the competitiveness of importers and exporters through a redistribution of income among these actors but would have no lasting effects on competitiveness after the economy adjusts to the shock.

In reality, things are much more complicated than the example given above. Fortunately, we can consult the experiences of Japan, which allowed its currency to appreciate steadily and significantly for many years during the 1990s with little effect

on reducing or eliminating Japan's current account surplus. What Japan got from the appreciation of the yen was little more than a decade of deflation!

If Japan had held its nominal exchange rate constant throughout 1990s, it would likely have faced inflation during that period. But too great an appreciation of the yen eliminated the necessity for inflation and even required some deflation to compensate the excessive appreciation of yen.

This is why Professor Ronald McKinnon, after conducting an in-depth study of Japan's exchange rate policy and its deflation in 1990s, recommended to China that it maintain its current peg to dollar. Nobel Prize winner economist Robert Mundell has also expressed similar views to those of Professor McKinnon.

Clearly the argument that changes in the nominal exchange rate would have a lasting effect on current account balances is misleading. If a country can gain real competitiveness through nominal devaluation of its currency, economic growth and development would be easy and should have been accomplished a long time ago for many developing countries.

What we know from basic economic principle and real world experiences is that the nominal exchange rate is only a benchmark for domestic price levels. Changes in the nominal exchange rate will have lasting effects only on the domestic price level, not on competitiveness. Lasting improvements in competitiveness are determined by factor costs, transaction costs, technological progress, infrastructure, human capital and other real variables, but not the nominal exchange rate.

Moreover, we should realize that sustained current account imbalances have very little to do with the level of nominal exchange rate. Current account imbalances are fundamentally about surpluses or deficits of capital, about savings and investment gaps, and about consumption and saving behaviors.

6. Why should China adopt an inflation-first and appreciation-second strategy?

Let's summarize the conclusions from the last section before we draw some implications. First, in a market economy where prices are flexible, the effects of a change in the nominal exchange rates should be offset by corresponding price adjustments on the part of firms and individuals without creating any lasting effects on the real competitiveness of economic actors. In the longer term or in equilibrium, changes in the nominal exchange rate will primarily affect inflation and price levels.

The implications of this are that inflation and currency appreciation are substitutes and they are equivalent in terms of facilitating the rise of a country's domestic price level.

More specifically, appreciation of the RMB and inflation in China are equivalent in their effect: an upward adjustment in China's domestic price level. Let's look at this from the perspective of a U.S. consumer. If China's RMB appreciates 15%, the costs of buying goods made in China are likely to increase by 15%. Now, instead of supposing a hike in the RMB exchange rate, let's imagine China witnessed 15% inflation. The effect of this inflation, as experienced by our hypothetical American consumer, would be to raise the costs of buying goods made in China by 15%. Thus, to an American consumer, whether China suffers 15% inflation or appreciates the RMB-dollar exchange rate by 15%, the effects are the same. The U.S. consumer faced with a 15% increase in his costs of buying goods made from China would not really care where the increased costs come from: inflation in China or an appreciation of the RMB.

From the above analysis, we can see that those who are pushing China to revalue the RMB by 15% or 40% are really asking China to adjust upwards its domestic price level by 15% or 40%. But why not just recommend to Chinese policy-makers 15% or 40% inflation? We can see immediately the difficulties in engineering inflation as high as 15% to 40% in China.

Although inflation and currency appreciation play the same function in raising the domestic price level, they work through very different economic mechanisms.

Inflation is a result. It can be engineered by the central bank but will not only take time but also requires the cooperation of each individual and company in the economy. This has been shown clearly in the experiences of Japan during its deflationary decade in the 1990s. Inflation is an aggregation of price adjustments in each sector and market where rational individuals and companies make decisions about how to respond to changes in wages and prices.

However, large currency appreciation or revaluation, as recommended to China by many scholars in Washington, has to be initiated by aggressive government intervention from the top. When the exchange rate changes, it will affect all members of society immediately through a forced redistribution of wealth, followed by forced wage and price adjustments. Structural inflation, which accommodates domestic price level changes, works through individual markets with much less shock to the society.

To speed up the growth of China's domestic price levels, China can of course use either inflation or currency appreciation, or even use both at the same time. In my view, China should be encouraged to run a stable but low rate of inflation first, say about 5% a year, so as to facilitate the steady growth of its domestic price levels with those in more developed economies. When structural inflation, which is different from pure monetary inflation, is expected to reach beyond 5%, China should also add currency appreciation as an additional instrument to further absorb the pressure for increases in domestic price levels. The extent of currency appreciation should be

determined by the market in the sense that appreciation would not be so excessive as to push inflation down below 3%.

This inflation- first and appreciation-second strategy would avoid the risks of both deflation and excessive inflation. It will also be able to deter currency speculation as speculators would need to worry about inflation in China whenever they bet on the appreciation of RMB. Speculators and investors can still bet on real estate, which will rise in value with both inflation and appreciation, but the catch-up of prices in property should be viewed as a leading indicator for the catch-up of overall price levels in China and should not concern the Chinese authorities too much as long as the investors are required to make sizable downpayments for their properties.

7. What are underlying drivers for structural inflation and/or currency appreciation in China?

In general, price levels in China are much lower than those in the U.S., however there are exceptional cases. For example, some luxury consumer products and services can command higher prices in China than in the U.S. Many tradable goods such as international brand computers and cameras have similar prices in the two countries. The gap in price levels between China and the U.S. can be measured by the difference between China's nominal exchange rate (8 yuan/dollar in 2006) and the PPP exchange for GDP as calculated by the World Bank (2.6 yuan/dollar in 2006).

This gap is as much as 67.5% and can be closed in only one of two ways (or a combination of both): 1) additional inflation in China that is greater than inflation in the U.S., or; 2) appreciation of the RMB relative to dollar. The larger the gap, the higher the potential pressure on inflation and currency appreciation in China.

As discussed earlier in the Big Mac example, the gap in price levels is due to differences in the prices of non-tradable goods in the two countries since the prices for tradable goods will converge very quickly due to the possibility of arbitrage. Why do the prices of non-tradable goods in China increase? This is the crucial question for understanding structurally-induced inflation and currency appreciation, and is a question which has been addressed by the economists Balassa and Samuelson.

According to the Balassa-Samuelson theory, rising productivity in China's tradable sector (manufacturing) should raise the wages of engineers. This development should entice workers from the non-tradable sector, such as stylists in hair salons, to shift to the manufacturing sector. As a result, if there is no surplus labor in the economy, wages for hair stylists will also rise even though there is little productivity gains in the haircutting business. Increases in wages for all sectors will lead either to inflation or will require a currency appreciation in order to accommodate the increase in price levels stemming from the productivity gains in the manufacturing sector. According to this theory, productivity growth in the tradable goods sector is the driver for structural

inflation and currency appreciation. However, before inflation and currency appreciation can take off significantly, the economy first needs to reach a state of full employment. This is pretty easy for economies like Japan, Korea, and Hong Kong, where full employment was achieved soon after industrialization started. However, this process will take much longer for China.

Indeed, consistent with the Balassa-Samualson theory, the productivity growth in Japan's exporting industry led to a rapid rise of Japan's price levels during the 1950s to the 1990s, which were facilitated by inflation during the 1950s to the 1970s and then through yen appreciation during the 1980s and 1990s.

From 1950 to 1960, Japan's average inflation rate was 5.3%, exceeding average U.S. inflation rates of 2.6% by 2.7 percentage points. From 1960 to 1971, Japan's average inflation rate was about 5.5%, exceeding average US inflation of 3.4% by 2.1 percentage points. However, following a period of high inflation during the first oil crisis in the early 1970s, Japan's central bank started to clamp down very hard on inflation. As a result, from 1979 to 1993, Japan's average inflation rate was about 2.3%, 2.4 percentage points below the average US inflation rate of 4.7% per annum. With inflation under control, the only alternative way to accommodate the continued growth in Japan's price levels was through yen appreciation. The yen, previously pegged to the dollar at 360 yen/dollar started to appreciate in 1971 and then after the 1984 Plaza Accord went all the way to about 100-120 yen/dollar in the 1990s. The Plaza Accord, in which the U.S.-led coalition forced Japan to appreciate the yen, would not have been necessary if Japan had allowed its domestic inflation to exceed that in the U.S. in 1970s and 1980s. The appreciation of the yen in the 1990s was so excessive that it led to a decade of deflation in Japan.

The story in Hong Kong is much simpler but is also consistent with the Balassa-Samualson theory. With the Hong Kong dollar linked to the US dollar, Hong Kong's average inflation rate during 1980 to 2000, brought about by its strong productivity growth, was about 3 percentage points higher than the average US inflation rate per annum. Inflation in Hong Kong was around 10% for a number of years in the 1990s. The productivity gains brought about by developments in supply chain management technology in the international trade sector and by the rapid development of the Hong Kong financial sector have pushed up prices in all sectors in Hong Kong since labor, land and capital were all at full employment. The unemployment rate in Hong Kong at the peak of the 1990s business cycle was as low as 2%.

The story for China is a bit complicated but still appears to be consistent with the Balassa-Samualson theory. A number of studies have shown that rapid labor productivity growth in China's industrial sector has occurred and is continuing. This productivity growth has led to a steady increase in the wages of urban workers. High and rising urban wages attracted as many as 119 million migrant workers from

China's rural areas to its coastal cities in recent years. But due to the large pool of rural and migrant labor forces, which may amount to as many as 481 million people, the growth in wages for rural and migrant workers has been very slow until recently. As a result, inflation has been low and currency appreciation very slow in China during the last decade despite the country's tremendous growth rates. However, in the next decade or two, as China's baby boom generation starts aging and the economy continues to grow rapidly, China is likely to get closer and closer to full employment. When this happens, China is likely to experience similar rapid structural inflation and/or currency appreciation such as experienced by Japan and Hong Kong. The key underlying assumption of this model, of course, is continued productivity growth in the manufacturing sector.

8. So how fast should RMB appreciate?

The most useful way to consider the question of how fast the RMB should appreciate is not to look at what American or Chinese politicians want. As pointed out before, the nominal exchange rate is just one of two variables that figures in the determination of domestic price levels; the other variable is the inflation rate. If the RMB appreciates too fast, China will get deflation; if the RMB appreciates too slowly, China will get inflation. The combination of inflation and RMB appreciation will then determine China's domestic price level relative to that of U.S. price levels.

To restate this result, China's domestic price levels, which determines the costs of goods made in China to American consumers, is determined by the underlying growth of productivity in China, not by China's premier, not by the governor of China's central bank, and not by Congressmen in Washington. This point cannot be overemphasized if we want to discuss China's currency policy scientifically and objectively.

Both American consumers and producers have to look at the gap between China's domestic price levels and U.S. price levels. This gap is calculated by comparing the nominal dollar exchange rate of the RMB (8 yuan/dollar in 2006) with the PPP RMB/dollar exchange rate for GDP in China (2.6 yuan/dollar in 2006). In 2006, China's domestic price level is 2.6/8.0, or 32.5% that of the U.S.

For the sake of simplicity, let's assume China will maintain an inflation rate exactly the same as that in the U.S. Using this assumption, we can then calculate the number of years needed for China's price level to catch up to the same level in the U.S., assuming also a constant annual rate of RMB appreciation. The result from this simple arithmetic shows that it will take 57 years if RMB appreciates at 2% a year, 38 years if at 3% a year, 23 years if at 5% a year, 15 years if at 8% a year, and 8 years if at 15% a year.

Now let's ask ourselves: how many more years would it take for China's domestic

price level to reach the U.S. price level, taking into account the past global experiences in the convergence of price levels among developed and developing countries? Your answer could very well fall into a range from 15 years to 38 years, which then would imply a range of annual RMB appreciation from 3% to 8%, assuming no extra inflation in China as compared to inflation in the U.S.

In my view, it is not possible for China's domestic price level to reach that in the U.S. within 15 years time. If this common sense judgment makes any sense, then China's average annual currency appreciation plus its extra inflation would not possibly to exceed 8%. Hence, 4% per year extra inflation and 4% per year currency appreciation would probably be the best we can hope for China.

The actual pace of inflation and RMB appreciation in China at the present is far from this "limit". In 2006, China's inflation rate was only 1.5%, much lower than the inflation rate in the U.S. of 2.5%. In fact, relative to the U.S., China had deflation in 2006! The average rate of RMB appreciation in 2006 was around 3%. So in 2006 China's domestic price level increased only about 2% ($1.5\% - 2.5\% + 3\% = 2\%$) relative to that in the U.S. At this pace, it will take China 57 years to catch up to the U.S. price level. No wonder so many in Washington are getting impatient about China's currency policy! However, while it is easy to complain about China's slow adjustment, it is difficult to find a solution to speed up China's price level catch-up.

9. Why is it that China's inflation rate is so low and at the same time its RMB appreciation rate is so slow at present?

According to a survey by the Ministry of Agriculture, in 2006 the total employment in China is 764 million. Of this total, only 283 million jobs belong to the urban employment sector. The number of migrant workers reached 119 million in 2006, an increase of 7 million over the previous year. The average monthly wage for migrant workers was about 958 yuan, or \$120. If we subtract 283 million urban and 119 migrant workers from the total of 764 million, China still has 362 million rural workers. If we combine the rural and migrant workers, we get a total of 481 million Chinese unskilled workers, who are currently earning \$120 a month or less. Many of these workers are likely under-employed and would be eager to shift to a job that pays higher wages.

481 million rural and migrant workers in China face two choices: stay in the villages or migrate to urban regions to find a job in the industrial or service sectors. If they stay in the villages, they can maintain a standard of living more or less the same as that for an average Chinese peasant, which is barely above the subsistence level. If they choose to find a job in the cities, they have to compete with other migrant workers for the limited number of urban jobs. Fierce competition in the unskilled labor markets, which are linked nation-wide through the newly completed inter-province highway system, mobile phones, bus and rail routes as well as the

informal township associations, has driven wages for unskilled labor down to a very competitive level similar to the subsistence income of the average Chinese peasants. None would envy the position of a Chinese rural or migrant worker. They are competing in a labor market that American workers and Chinese urban residents would not willingly enter. Nonetheless, despite the fact that their incomes are low, they deploy their purchasing power for things like mobile phone and public transport services, which are essential for their job and their frequent search for an even better new job.

In recent years, the Chinese government has tried very hard to increase the wages for migrant workers as well as the incomes of Chinese peasants. In 2006, wages for migrant workers increased as much as 12% after the government's made an effort to raise the minimum wage. Shenzhen, the special economic zone city next to Hong Kong, increased its minimum wage by 17% last year. But the income of rural residents in China increased only 1.2% in 2006. As explained above, the incomes of migrant workers and rural residents are closely linked due to their freedom to move between urban and rural jobs. In order to raise the income for one group, it is necessary to raise the income for both groups.

It is this huge pool of unskilled workers that is slowing the growth of wages in China, and it is this pool of underutilized labor that ultimately dampens inflationary pressures in China. If the growth of the Chinese economy starts to slow down, for example as a result of a 15% revaluation of the RMB, we can easily see deflation and massive unemployment in China due to the competition of 481 million unskilled Chinese workers who are surviving barely above the subsistence.

The low wages of unskilled workers also has adverse effects on the environment and public health, as unskilled workers may encourage low-cost production that generates huge environmental and public health damage when the government and the industries with low profit-margins do not have enough resources and incentives to take necessary precautions and preventive measures. Although it is difficult to get reliable data, from my own experience in visiting many rural enterprises I can conclude that the costs of pollution and of the waste from low-energy efficiency technology could be much larger than the thin profits and low wages generated from many rural industrial enterprises. Unfortunately the central government of China has not yet found an effective way to limit the low-efficiency activities that provide socially-costly employment to the unskilled labor pool. China needs help from the international community to identify and stop these value-subtracting industries quickly before permanent damage is done to the environment and people.

10. Should China adopt a tighter or looser monetary policy?

The structural constraints associated with China's surplus labor pool are the main causes for the slow catch-up in China's price level, although difficulties in

macroeconomic policies also play an important role. As pointed out earlier, in 2006 China effectively witnessed deflation if benchmarked to the U.S. inflation rate. According to the Asian Development Bank (ADB), in 2006, inflation reached 2.2% in Korea, 5.5% in India, 7.9% in Pakistan, 13.1% in Indonesia, 7.5% in Vietnam, and 6.2% in the Philippines, all of which were higher than the 1.5% inflation rate in China. It seems fair to say that in the global context China experienced deflationary pressure in 2006 even though China's growth rate was 10.7%.

Surprisingly both the Chinese government and international organizations like the ADB, World Bank and International Monetary Fund have urged China to tighten monetary policy so as to restrain investment when China actually recorded one of the lowest inflation rates in the world in 2006. On the other hand, the ADB, among others, recommended that other Asian economies, many of which have much higher inflation rates than China in 2006, raise investment, especially in infrastructure, which was exactly what China did in the past.

Why should we recommend that one economy, such as India, increase investment when inflation is high, while recommending that another economy, such as China, reduce investment when inflation is low? The typical answer is that "China is special", that China has over-capacity, and that therefore China should reduce investment and increase consumption.

The advice on increasing consumption cannot be wrong. However, consumption in China today is largely under the control of individual families and firms. They have probably already tried their best to optimize their consumption given all the constraints they face, and are unlikely to welcome the government telling them how to spend their money.

Since the health insurance and social security networks in China are in their infancy, many Chinese people choose to save a great deal of money as a hedge against severe illness. In the absence of student-loan programs, families also choose to save a great deal for their children's education. As roads, subways and schools for many newly developed residential communities are underdeveloped, many middle class Chinese families decide to buy property, betting on the capital gains but refraining from moving into the new property until the road and/or subway networks are completed. These are their best choices given the structural/economic constraints of Chinese society. As a result of the individual best choices available to Chinese households, consumption remains low and savings rates remain high. All of this begs the question, how can China best increase domestic consumption?

In the context of the above examples, the answers are quite straight forward: build an integrated health insurance system; create student-loan or scholarship programs; and build more roads, subways, and schools. All these solutions, not surprisingly, require investment. But these are productive investments, and productive public

investments are fundamentally different from the investment that generates unproductive over-capacity, since these investments will free up the consumption power of Chinese households, which are currently held back as a hedge against potential negative future eventualities.

Unfortunately the National Bureau of Statistics of China cannot distinguish productive from unproductive investment. When the statistics on the investment rate were reported as too high, the Chinese government put a brake on investment, depressing both productive and unproductive investment. When investment, especially productive investment, is constrained, imports do not grow fast enough to keep up with exports. As discussed in the previous section, investment in the supply chain system that supports China's exports has largely been carried out by foreign-invested companies and is not affected by the Chinese government's macro-economic control policies. On the other hand, imports depend heavily on the domestic consumption and investment. Hence, China developed a large current account surplus because the government failed to allow enough productive investment.

What China needs, then, is a set of macro-economic policies that increases productive investment and consumption while reducing unproductive investments. This is almost impossible since the macro-economic instruments available to the government, such as its control over the money supply, the exchange rate, interest rates, and bank reserve ratios do not distinguish between productive from non-productive investment. Without much choice, the Chinese government was forced to go back to its old tools: administrative controls, industrial policy and political discipline including an anti-corruption campaign.

In summary, because of the difficulties in distinguishing productive investment from unproductive investment, the central bank of China faces a dilemma: if it adopts a loose monetary policy, it will have to deal with over-capacity when unproductive investment expands out of control; if adopts a tighter monetary policy, it will have to deal with a current account surplus when imports and productive investment cannot grow fast enough to keep up with the expansion of exports.

In terms of speeding up China's catch-up in domestic price level, the international community should encourage China to adopt a loose monetary policy, which means less sterilization of its rising foreign exchange reserves. A loose monetary policy is necessary to accommodate steady structural inflation, and a low and stable inflation rate is a necessary condition for facilitating an orderly RMB appreciation that would not risk deflation. But in order to convince China to adopt a loose monetary policy, it is necessary to help China to develop a robust financial, planning and regulatory system that can distinguish productive from unproductive investments.

11. How to distinguish productive investment from unproductive investment?

This is a question no individual can answer. The entire financial, planning and regulatory system in the modern economy is designed to answer this question, to screen out good projects and finance them at low costs while rejecting poorly-designed projects. These services are desperately needed in China. They are what make London, Hong Kong and New York the global financial and business capitals that they are today.

The essential function of a good modern financial, planning and regulatory system is to reduce the transaction costs between capital and labor so that they can productively work together. Without this system, China will not be able to employ productively and fully the 481 million rural and migrant workers. Instead, China may have to create hundreds of socially-costly rural enterprises which create more pollution and social instability than they generate in profits and wages. China's imports will not be able to balance off its exports, which will continue costing the US and other nations jobs while encouraging protectionism. China's potential purchasing power will be locked up in its foreign exchange reserves instead of becoming productive investment and consumption which would bring contracts for goods and services produced by American workers. This is why I regard Treasury Secretary Paulson's Shanghai speech on China's financial sector reform as a draft of "Marshall Plan" which could bring a win-win result for both China and the U.S. in the 21st Century.

The strength of the financial sector in the U.S. contrasts sharply with the weakness of that sector in China. With a strong financial sector, the average American can afford to maintain a low savings rate since they can secure capital gains on their investments in property and capital markets. With a weak financial sector, the Chinese consumer has to maintain a high saving rates, lower consumption (and hence a lower standard of living), and thus China's surplus capital cannot be used to hire productively all its own people. Americans today worry about the competition from China just like Hong Kong people did a decade ago. But today, people in Hong Kong realize that when China is growing productively, there will be more work than all of Hong Kong's labor pool can handle. I have no doubt that if America can help China fix its financial sector, China will create an enormous demand for American goods and services, with consequent benefits and employment opportunities for the American people. Supply creates demand if only we have an efficient financial sector and if the transaction costs are decreasing towards zero.

How to build a robust financial, planning and regulatory system in China with help from the international community is a topic beyond the scope of this paper, but should be the focus of U.S. and international community efforts to increase China's consumption, rather than a narrow-minded focus on simple RMB exchange rate revaluation.

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