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November 08, 2010

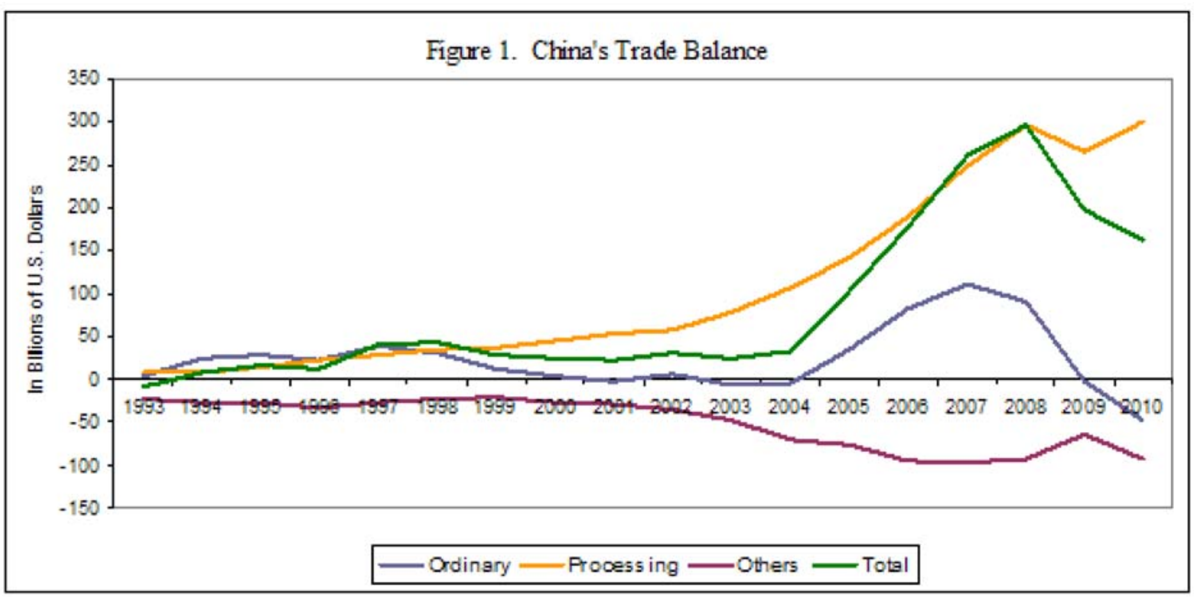
East Asian Exchange Rates and China’s Trade Surplus

By **Willem Thorbecke**

Today, we're fortunate to have [Willem Thorbecke](#), Senior Research Fellow at [Asian Development Bank Institute](#), and consulting fellow at Japan's Research Institute of Economy, Trade and Industry ([RIETI](#)) as a guest contributor. The views expressed represent those of the author himself, and do not necessarily represent those of ADBI, RIETI, or any other institutions the author is affiliated with.

China's exchange rate regime has generated consternation in recent years. However, since much of the value-added of China's exports comes from other East Asian countries, economists should focus on exchange rates throughout the region and not on the renminbi alone.

China1s trade surplus, as Figure 1 shows, is entirely in a customs regime called processing trade. Imports for processing are intermediate inputs such as hard disk drives that are brought into China for assembly and re-export. Processed exports are final goods such as computers that are produced using the imported inputs.

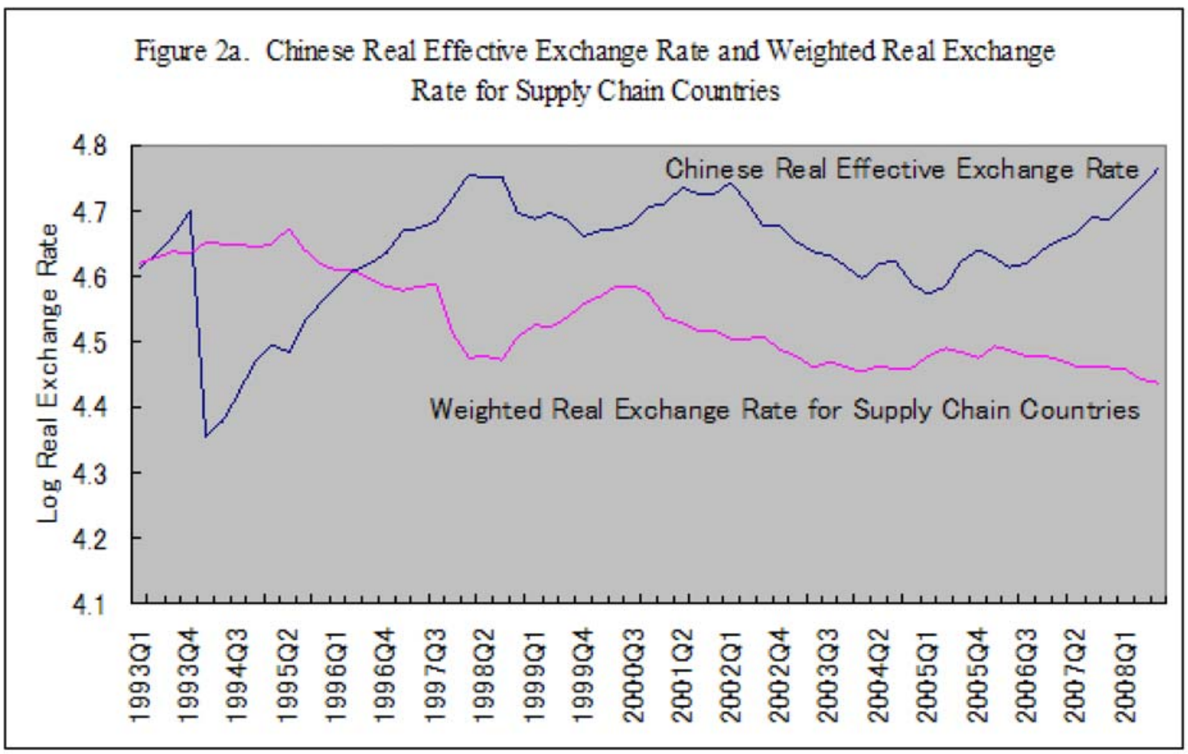


Source: CEIC Database and forecasts for 2010 based on data from January-September, 2010.

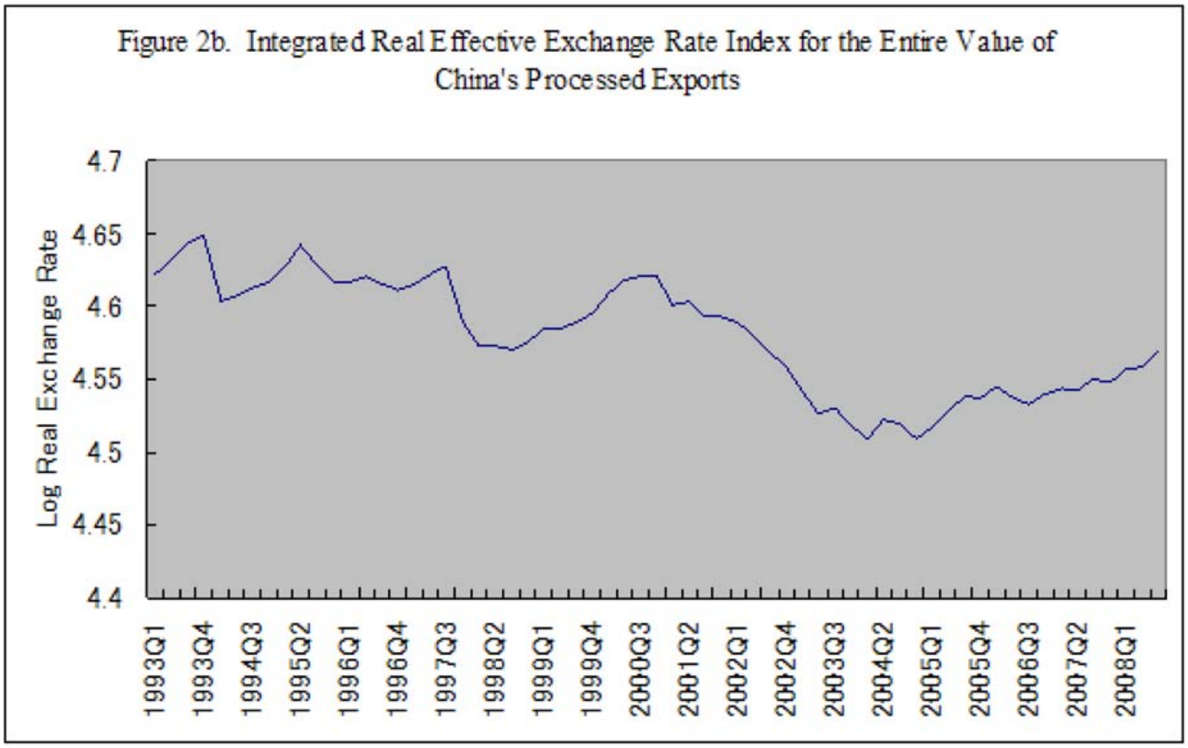
Processed goods are produced within East Asian production networks. These networks involve complicated combinations of intra-firm trade, arm's length transactions, and outsourcing (see Kimura and Ando, 2005) [[1]](#). Parts and components and semi-finished goods often flow back and forth several times between East Asian countries before going to China for final assembly and re-export. The finished products then flow disproportionately to Western countries and especially to the U.S.

Since much of the value-added of China's processed exports comes from East Asian supply chain countries, exchange rates in these countries should affect processed exports. Ahmed [2], employing an autoregressive distributed lag model and quarterly data over the 1996Q1-009Q2 period, reports that a 10 percent appreciation in other East Asian countries would reduce China's processed exports by 15 percent and that a 10 percent appreciation of the renminbi relative to non-East Asian countries would reduce China's processed exports by 17 percent. In a recent paper [3], I also test whether exchange rate changes in supply chain countries affect processed exports. Encompassing tests indicate in every case that models including both exchange rates in supply chain countries and the Chinese exchange rate are preferable to models that include only the Chinese exchange rate. Results using dynamic ordinary least squares estimation and quarterly data over the 1993Q4-2008Q1 period imply that a 10 percent appreciation of the renminbi alone would reduce processed exports by 14 percent and that a 10 percent appreciation of other East Asian currencies would reduce processed exports by 19 percent. These results are consistent with Ahmed's findings that exchange rate appreciations in other East Asian countries would reduce China’s processed exports.

Figure 2a shows the real effective exchange rate of the renminbi and the real exchange rate in supply chain countries other than China. The real exchange rate in supply chain countries was calculated by weighing real exchange rate changes in individual supply chain countries by each countries' value-added in China's processed exports. Figure 2b presents a single integrated exchange rate (*irer*) that is a weighted average of the renminbi exchange rate and the exchange rate in supply chain countries. The weights are again determined by the proportion of the value-added coming from China and from supply chain countries.



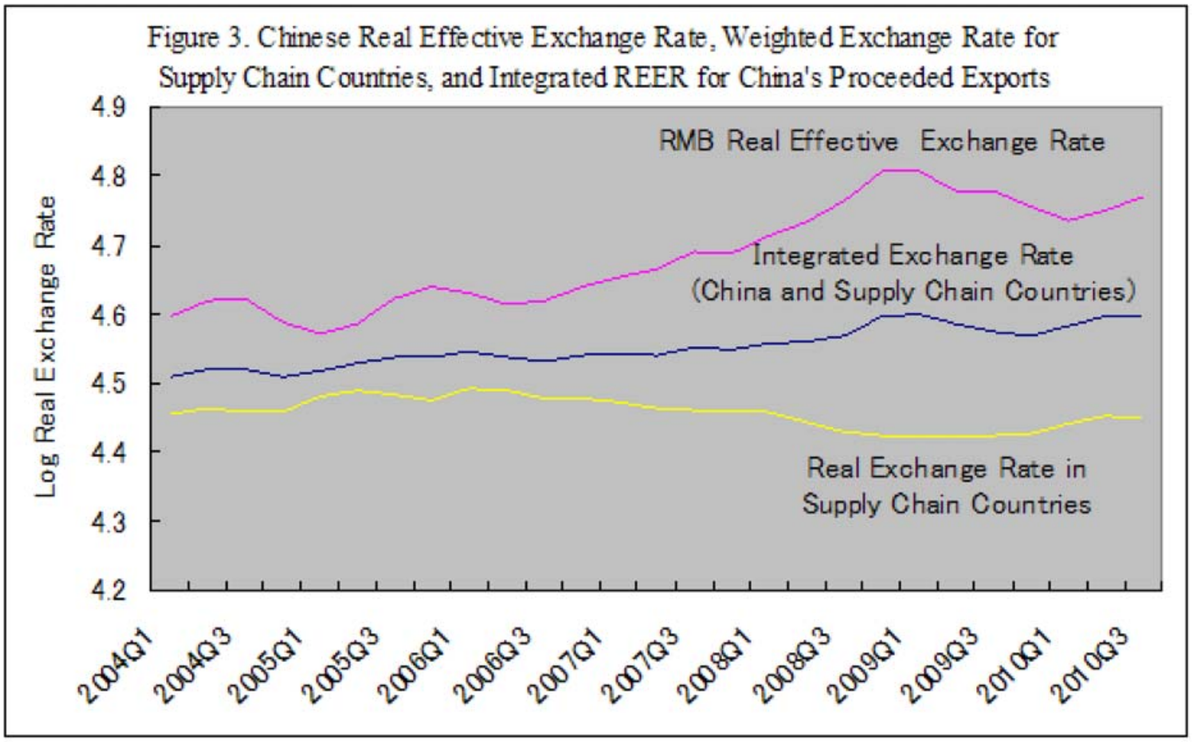
Source: International Monetary Fund, Bank for International Settlements, and calculations by the author.



Source: International Monetary Fund, Bank for International Settlements, and calculations by the author.

One gets a different picture of the price competitiveness of China's processed exports by taking account of exchange rate changes in other East Asian countries. Figure 2a shows that there was a large devaluation of the renminbi in 1994. Figure 2b shows that this had a much smaller effect on the integrated exchange rate because exchange rates in supply chain countries remained stable. In addition, Figure 2b shows that the integrated exchange rate began depreciating in the second quarter of 1995 (due to the deprecation of the Japanese yen) and in the third quarter of 1997 (due to the Asia Crisis) even though Figure 2a indicates that the renminbi was appreciating at these times.

Turning to recent years, Figure 3 presents the three exchange rates over the last 6 years. The figure shows that the renminbi has appreciated by 20 percent since 2005. The integrated exchange rate, however, has only appreciated by 8 percent. In an arithmetic sense, the effect of the renminbi appreciation on since 2005 has been almost exactly offset by the 20 percent depreciation of the Korean won and the 14 percent depreciation of the New Taiwan dollar over this period.



Source: Bank for International Settlements and calculations by the author.

This fact helps explain the puzzle that Cline [4] discusses concerning why China's surplus did not narrow when the renminbi appreciated between 2005 and 2008. Part of the explanation, as Cline discusses, is that exchange rate changes affect trade with a lag. Another part of the explanation, though, is that depreciations in other East Asian supply chain countries offset much of the effect of the appreciation of the renminbi.

These results indicate that if policymakers are concerned about China's surplus, they need to consider exchange rates throughout East Asia rather than the Chinese exchange rate alone.

The enormous surpluses in processing trade relative to the U.S. generate pressure for nominal exchange rates throughout Asia to appreciate relative to the dollar. If East Asian currencies were to appreciate against the dollar, it would be advantageous if they could appreciate together while maintaining some measure of intra-regional exchange rate stability. By reducing intra-regional exchange rate volatility and the associated uncertainty, this would facilitate the flow of FDI and intermediate goods in Asian production networks. It would also produce a smaller appreciation of real effective exchange rates in East Asian countries since the majority of their trade is intra-regional. Finally, it would overcome the collective action problem that arises as individual countries in the region resist appreciations because they do not want to lose competitiveness relative to neighboring countries.

Ma and McCauley [5] found that during the 2006-2008 period when China managed its exchange rate relative to a basket of currencies and other Asian countries also managed their currencies relative to currency baskets, there was considerable exchange rate stability between the renminbi and other East Asian currencies. Thus, if China again adopts a regime characterized by a multiple-currency, basket-based reference rate with a reasonably wide band, the huge surpluses that East Asia is running against the U.S. in processing trade would cause currencies in the region to appreciate in concert against the U.S. dollar. Market forces could then allocate these appreciations across supply chain countries as a function of the size of their surpluses in processing trade.

Currency appreciations in Asia would be contractionary. If necessary, this effect could be offset through absorption-increasing policies. High on the list should be improving education, nutrition, and healthcare. These investments in human capital would help firms in developing Asia to become more involved in the design and engineering aspects of production and to progress from original equipment manufacturing (OEM) to original design manufacturing (ODM) and maybe even original brand manufacturing (OBM). By making it possible to climb the ladder of comparative advantage in this way, investing in human capital would yield higher returns than investing in U.S. Treasury securities and other external reserves.

This post written by **Willem Thorbecke**.

Posted by Menzie Chinn at November 8, 2010 09:34 PM

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Comments

This is a fantastic paper, with many fascinating concepts.
Thorbecke's research and ideas are very insightful.

Posted by: Catherine Suzette at November 8, 2010 11:31 PM

The next topic of interest, could be the sources of financing within an Asian universe of atomized or fragmented production functions and integrated vertical specializations.
This subject could bear several components:
Legal borrowing entities (holdings versus operating companies) that is dividends versus cash flows.
Debts consolidation and their recognition through mothers,subsidiaries,affiliated companies.
The influence of flexible money supply in debtors countries, and the financial absorption capacity of Asia, if and when debtors countries start maintaining more restrictive discipline in their domestic money supply.
Should the past be a source of wisdom,above subjects should be integrated to the present scopes of thoughts.

Posted by: ppcm at November 9, 2010 04:16 AM

Post:
"...a 10 percent appreciation in other East Asian countries would reduce China's processed exports by 15 percent..."

Over the past few months East Asian currencies 'have' risen about 10% and yet there has been no sign of China's exports slowing down. So are we considering an additional 10%, or is the author just a little behind?

The Thai Government is engaged in talks with its neighbors to find a solution to currency appreciation in a unified effort. This post seems to ignore such realities.

This paper reminds me of the endless criticisms of China regarding the importance of education, nutrition, and health-care. Now of course China has the 3 largest banks in the world, produces more cars than the US, and is leading the world in the production of a long list of sophisticated products.

Meanwhile, the US with its wealth of 'human capital' has been supporting its 'skilled workers' through stimulus while leaving 'unskilled workers' to fend for themselves. So now, in order to reap the benefits of this wealth of human capital in the US, the less 'skilled' nations must export less. This will then supposedly lead to these over-productive nations to make improvements in things like health-care so that when they are as 'skilled' as the US is, they will then be prepared to contend with a diet-related disease epidemic and so on. Of course once they stop eating insects and all of those other disgusting natural foodstuffs, and eat more like nations with ample human capital, then, assuming that they find their own source of 'demographic dividend', they too can be smart, fat, lazy, and feudal.

Posted by: rayllove at November 9, 2010 06:52 AM

Useful information. I would still favor, however, paying more attention to official currency purchases and less to the level of the exchange rate.

Posted by: don at November 9, 2010 08:51 AM

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don,

The Brazilians have announced that they intend to do whatever necessary to keep the real from any further appreciation. QE2 has essentially given emerging nations a free pass to do whatever they deem necessary to maintain stability. In other words, "paying attention to official currency purchases" should become much more interesting, and soon. So, that which you "favor", is likely to become something of a spectator sport. The Brazilians are rumored to have said that they are prepared to purchase 600 billion dollars if necessary. And, as I said above, an alliance of Asian nations is being formed to take a similar stand. It seems that Bernanke and Geithner have had their bluff called. They did after-all go on record claiming that QE2 was not meant to devalue the dollar. It seems they are likely to get some help along those lines. Bernanke and Geithner though do not seem to be very good at poker?

Posted by: rayllove at November 9, 2010 09:55 AM

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ray,

Your post made me think that perhaps Bernanke anticipated foreign governments propping up the dollar. Even if he didn't, the impact of QE2 would be limited to domestic effects if foreign governments suck all the dollars out of the FX markets by exchanging their own currencies for dollars. Further, with hundreds of billions of reals, won, renminbi, etc pumped into the global economy to buy dollars, Bernanke succeeds in igniting a round of global inflation. As a result, the real value of debt falls in debtor countries. World debt problem solved.

At the same time, many of those dollars purchased by foreign governments will flow back into US treasuries and dampen the inflation induced increase in US treasury rates.

Finally, if foreigners are able to stabilize the dollar then commodity prices stabilize.

Is this scenario possible?

Posted by: tj at November 9, 2010 11:11 AM

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tj,

I suppose that Bernanke & Co. have a 'best and worst case scenario' in mind. Surely they anticipated the 'spillover' effect. And what you suggested has the same effect as devaluing the dollar, so I suppose that BB & Co. have the 'comes out the same either way' attitude here.

The glitch though, no matter what, is that minimizing US debt also diminishes global purchasing-power due to so much savings being held in dollar related assets. So global inflation simply shifts the burden of responsibility for the crisis from debtors to savers at the expense of global AD. I doubt though that BB & Co. are that dumb, this could do irreparable harm to the US reputation and 'brand' etc., so, like you suggested, I am inclined to think that 'they' have some clever plan, but what? Could flooding the global economy with massive amounts of 2nd tier currencies cause a growth spike with controlled inflation due to velocity factors? Those currencies would be held up as foreign reserves for longer periods than usual.

Geithner did call Mantega just before the meet in Korea and calm him down somehow.

Posted by: rayllove at November 9, 2010 12:25 PM

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tj,

I think your previous comment shook loose the answer that was lost somewhere in my cluttered mind.

There is only one solution. First though one must recognize that global AD must be stimulated somehow, and, for the US to inflate its debt down, that can only weaken global AD. So there is a paradox.

But, while there is too little global purchasing-power, there is too much liquidity, especially with QE and other monetizing efforts to drive down currencies. These though are like two sides of the same coin. The money is there, it is just a matter of putting that money in the hands of consumers instead of investors without disrupting the global equity and bond markets.

So, that said, the money must be transferred from currency traders to consumers, globally. Currency traders being the logical choice because their loses will have little influence on stocks and bonds.

To facilitate this, currency traders must believe that carry-trades are a sure thing. For them to believe this they must assume that the dollar is on its way down. And these carry-trades do of course push up reals, bahts, wons, and etc. These nations though could print ex-nihilo currency and use that to buy dollars so as to drive the dollar back up, and their currencies down. If this were done enough to drive the dollar above where it is now that would in effect be like getting cheap stimulus funds via currency traders. This could essentially be wealth redistribution on a global scale, depending on how far it is taken, and it does solve multiple problems while increasing global AD. Then too, naturally, nations could recycle their dollars back through T-bills and the Fed then continues to regulate the supply of dollars accordingly. This then makes for low interest-rates and, sales of US goods and services benefit from the increase in global demand.

(Perhaps a tiny portion of those funds could be used to hire BB some bodyguards too, he may have some popularity issues on Wall St. But I don't see where he has any other choice? And it is not like Wall Steeters don't have it coming).

Posted by: rayllove at November 9, 2010 04:23 PM

Thanks for this very useful post.

Posted by: Phil Rothman at November 10, 2010 06:44 AM

"Now of course China has the 3 largest banks in the world, produces more cars than the US, and is leading the world in the production of a long list of sophisticated products."

And all they had to do was, essentially, have the Chinese government pay their way there. Gee, maybe America should adopt that model if these are the measures that matter.

Posted by: BMP at November 10, 2010 09:14 AM

BMP,

I'm not quite sure of what you are getting at? The US Government subsidizes industries so as to "pay" for progress. The US Government also provides 'artificial' economic activity by paying private contractors for work that would not exist otherwise. And of course there is no end to socialized losses while allowing privatized gains.

Your comment though seems to suggest that governments are not meant to assist in commercial enterprise. As if you have too often been told that 'big government' only gets in the way. As if the private sector 'could' create enough jobs if only the government were not hoarding workers.

Or perhaps you are suggesting that The US could also produce sustained double-digit growth if the government paid for more, as if it is as easy as printing money. I really don't know what you mean.

Posted by: rayllove at November 10, 2010 10:24 AM

Wow ray you seem to be really militant, are you one of these 3rd worlder's gloating over your despotic governments' successes or a bitter westerner who is upset that we also, just like the asians, live in an oligarchy?

Your metrics for success are somewhat strange though -- studies of Chinese banks practices clearly demonstrate that the CCP has perfected the art of moving government deficits on banks' balance sheets since the early 90s when Premier Zhu 'fixed' the Chinese economy by having billions of SOE debt transfered to 'private' balance sheets of the big 3 banks.

Posted by: why so militant? at November 10, 2010 02:34 PM

If I am "militant" it is because I have spent time in poor countries that were ravaged by US 'business interests' and I have seen the truth first hand. I have been in nations that were accused of being 'totalitarian' when the only people capable of cleaning up the mess left by Americans, were people who happened to be wearing uniforms. Not because they were despotic though, the despots were in the neighboring country, the one at the top of US aid list, no, in the country being put back together by soldiers, there was no fear or repression, only a great many dedicated people in uniforms who were working, doing the jobs that their predecessors failed to do. They were building schools and clinics and trying to right a 100 year's worth of tyranny that was supported by the USA.

So, take the progress that nations such as China and Brazil have made on poverty reduction out of the global equation, and what is left is the same exploitative 'business-friendly' tactics that leave people and their land in ruin. Does it matter then how the Chinese, Brazilians, Malaysians, etc., break this cycle of ruin? Not really, they are finding solutions to problems that much wealthier nations have chosen to only make worse. Do you realize that for every dollar that the developed nations spend on development, that they receive three dollars in return. Yet they have trouble understanding why global AD is weak.

So, "militant", perhaps. But naive, nope.

Posted by: rayllove at November 10, 2010 09:20 PM

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