Shadow PBoC

Michael Pettis

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Central Bank Seminar (Syllabus)

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Biography: In addition to being a finance professor at the Guanghua School of Peking University, I am a non-resident Senior Associate at the Carnegie Endowment for International Peace. I joined Peking University in 2004 after teaching two years at Tsinghua University. Before coming to China in 2002 I spent fifteen years running trading and capital markets desks on Wall Street and taught nine years at the Columbia University Business School. My last position was Managing Director and head of the liability management and Latin American capital markets groups at Bear Stearns. Prior to that I ran fixed income trading and capital market teams at CSFB and JP Morgan. During this time I have advised the Mexican government on the privatization of its banking system, the Macedonian and Korean governments on their commercial bank debt restructuring, and various Latin American governments on their debt issuance strategies.

I've published nearly 300 articles in newspapers and journals in the US, China, the UK, Europe, and Latin America and several books, including *Avoiding the Fall: China's Economic Restructuring* (Carnegie Endowment Press, 2013), *The Great Rebalancing* (Princeton University Press, 2013), *After the Fall: The Future of Global Cooperation* (co-authored with Jeffrey Frieden, Dani Rodrik, and Ernesto Zedillo, Geneva ICMBS, 2012), *Is China Vulnerable? The Causes and Consequences of Financial Fragility* (Tsinghua University Press, 2003), *The Volatility Machine: Emerging Economies and the Threat of Financial Collapse* (Oxford University Press, 2001), and *Managing Sub-Investment Grade Sovereign Risk* (Euromoney Press, 1997). I received an MBA in Finance and an MIA in Development Economics from Columbia University.

Class structure: The objective of this class is to understand the fundamentals of debt, capital flows, and the role of central banks. Each class will consist partially of lectures and partially of student presentations. I expect students to participate in discussion and debate and a substantial portion of the grading will be on the basis of the quality of each student's contribution to classroom discussion. There will also be regular quizzes to ensure that students are keeping up with the reading and with current market events. There will be a final exam, either written or oral.

Course outline

1. *Introduction class*. We will discuss the role of the central bank in determining domestic monetary conditions, and use as an example what happens if the PBoC changes the value of the RMB.

   Readings:

   -- "…not with a bang but a whimper", *China Financial Markets*, September 14, 2014

   -- "What the PBoC cannot do with its reserves", Advisor Perspectives, March 11, 2010

2. *The basics of central banking*. In this class we will discuss the "impossible trinity" and why when capital can flow into and out of an economy central banks must choose between managing domestic monetary policy and managing the value of the currency.

3. *More on the fundamental role of the central bank*. As we discuss what role central banks play, and what role the PBoC plays within China, it is important among other things to understand the challenges China faces and what "rebalancing" means in the Chinese context.
   Readings:
   -- "The four stages of Chinese growth", *China Financial Markets*, June 18, 2014
   -- "And now for the hard part: China's great rebalancing", my chapter of a book edited by Stefan Halper to be published this December

4. *Global interconnectedness*. We will use the savings and investment paradigm to understand how anything that changes the investment or savings level in any country must impact the external sxector in an equal and opposite way.
   Readings:
   -- "China, Europe, and optimal currency zones", *China Financial Markets*, November 5, 2014

5. *Income inequality, savings gluts, and global monetary conditions*. In this session we will expand the model we discussed in the last session.
   Readings:
   -- "Economic consequences of income inequality", *China Financial Markets*, March 23, 2014
   -- "Why a savings glut does not increase savings", *China Financial Markets*, May 8, 2014
   -- "Syriza and the French indemnity of 1871-73", *China Financial Markets*, February 4, 2015
   -- "Michael Pettis explains the euro crisis (and a lot of other things, too)", FTAlphaville, February 6, 2015

6. *What does it mean to be a reserve currency?* Few topics generate as much confusion and nonsense as that of reserve currency status.
   Readings:
   -- "China: Turning away from the dollar", *Financial Times*, December 9, 2014
   -- "My reading of the FT on China's 'turning away from the dollar'", *China Financial Markets*, December 14, 2014
   -- "How much longer can the global trading system last?", *China Financial Markets*, September 28, 2014

-- “Are we starting to see why its really the exorbitant *burden*”, *China Financial Markets*, October 5, 2014

-- “Will the AIIB one day matter?”, *China Financial Markets*, April 11, 2015

7. *A chance to catch up*. We have addressed a number of quite fundamental issues that often seem counterintuitive and are widely misunderstood. This class has been scheduled to allow us to catch up on any issues on which we have fallen behind.

8. *The structure of the investor base*. The way markets respond to information depends on the structure of the investor base and the variety of strategies investors use to make investment decisions. In this class we will discuss the major investment strategies that nearly all investors follow and how they contribute to a well-functioning financial market.

   Readings:

   -- “When are markets *rational*?”, *China Financial Markets*, November 24, 2013

   -- “Interpreting information in China’s stock markets”, *China Financial Markets*, July 17, 2015

9. *More on the structure of the investor base*. We follow up on last week’s class by discussing what each of the investment strategies require and how markets sometimes fail to provide the necessary tools. This has implications about how markets react to information.

10. *Does debt matter?* Ask most economists how much debt is “too much” debt, or why it is bad for a country to have “too much” debt, and they will be unable to answer except with circular arguments. There are at least two reasons why debt matters.

    Readings:

    -- “If we don’t understand both sides of China’s balance sheet, we understand neither”, *China Financial Markets*, September 1, 2015

    -- “Inverted balance sheets and doubling the financial bet”, *China Financial Markets*, January 21, 2015

11. *Debt constraints*. Once a country’s balance sheet exhibits the conditions we discussed last week, growth becomes constrained.

    Readings:

    -- “When do we decide that Europe must restructure much of its debt?”, *China Financial Markets*, February 25, 2015

12. *A second chance to catch up*. We have continued to address a number of quite fundamental issues that often seem counterintuitive and are widely misunderstood. This class has been scheduled to allow us one last chance to catch up on any issues on which we have fallen behind.

13. Final exam.

…not with a bang but a whimper" [Week 1]

By Michael Pettis · September 14, 2014

Doug, Pancoast, an American entrepreneur living in Shanghai, asked to interview me for his blog, and I agreed to do so. I think it was meant to be a brief interview, but I began to respond on a Saturday evening, while waiting for the performance at my club to begin (my office is at my CD label, just upstairs from my music club), and as the performance started late and the questions were interesting and covered a lot of ground, I ended up writing quite a lot.

I thought I might reproduce the interview on my blog, not so much for the interview itself, which you can anyway find elsewhere, but because I decided that I could significantly add to the responses (they are twice as long as the original interview) with a lot of examples and with historical material that I find very interesting, both of which I think many regular readers of my blog do too.

1.) I was so impressed with how fair and evenhanded you are in the book and how you try to consider the viewpoints of all sides. I try to do this in my own writing, but find that it is sorely lacking in today's society (and indeed throughout much of history). How do you manage to stay so unbiased and so fair in a world where people are tempted to be so prejudice towards one side or another?

Thanks for saying that. To the extent that it is true I think in part it may be because my background is pretty multinational. I was born in Spain of a US father and a French mother, and I grew up in Spain, Pakistan, Peru, Haiti, and Morocco, I have sisters-in-law from Iran and Brazil, I currently live in China, and my whole career and education has been "international". Perhaps this has forced me to break free of a very provincial attitude among economists, especially those from large countries like the US or China, that among other things prevents them from recognizing how powerful global linkages can be. Everyone knows in principle that changes in one country that affect total production or total consumption automatically require predictable obverse changes in another, but economists often still have a hard time identifying these linkages and acknowledging the direction of causality, even though they know the accounting identities around which the balance of payments is structured that require these adjustment. What is more, they almost always assume that except in the most obvious cases, like the impact of China on the price of steel in the US, events can only originate in the US, or perhaps in Europe, and then cause events elsewhere.

In fact this isn't true. Because the US economy and its financial markets are so large and flexible, and because many other economies have large players – usually the state – whose behavior can drive deep domestic imbalances, it is often the US that responds to events driven abroad. For example after the 1997 Asian external debt crisis, a number of Asian countries began to accumulate US dollar reserves,

and this accumulation accelerated in the next decade. It is purely an accounting identity that if other countries become next exporters of capital to the US, they must run current account surpluses (although not necessarily bilateral surpluses, which are in fact unlikely) and the US must run current account deficits (although not necessarily bilateral deficits, of course), and it is also purely an accounting identity that if the US runs a current account deficit, its domestic savings must be lower than its domestic investment.

Every economist knows this, or should know this, and yet to say that the surge in the US current account deficit during the decade before the 2007-8 crisis was a necessary adjustment to Asian reserve accumulation policies of the last decade is considered an extremely political statement. Some economists in the US counter this claim by arguing that the US deficit cannot be caused by Asian reserve accumulation polices because it has bilateral deficits with many countries, or, what is even more absurd, because it has a low savings rate. It is true that in principle the capital-flow imbalances could have been caused by a decision by American households to reduce their savings rates sometime around 1997, which forced someone else – the East Asians, for some reason – to raise their savings rate, but it is hard to explain why excess US demand for foreign savings, and not excess supply of foreign savings, would have been accommodated by declining, not rising, interest rates.

It seems so logical, and yet it has become such a politicized argument in which the balance or payments identities are almost never invoked. I suspect the prejudice that only Americans can act independently, and everyone else must respond, may exist at least in part because most economists have either studied in the US or have studied under US-trained economists, and so without realizing it have developed a US-centric view of the world that cannot posit an alternative world.

I remember reading in the early 1990s for example a very interesting book about the US "long depression" of the 1880s and 1890s that began with the September 1873 crash in the NY Stock Exchange. The book explored the roots of the crisis in the railroad boom of the 1860s and wonderfully invoked the famous attempt by Jay Gould and James Fisk to corner the gold market in 1869. There was however almost no reference to events outside the US except in describing how the New York crisis subsequently affected British banks. It seemed that for the authors, events in the US pretty much explained everything that happened in the US economy before and after the 1873 crisis.

It wasn't until a few years later when I read Charles Kindleberger's brilliant book, *A Financial History of Western Europe*, that I realized that the 1873 crisis was a global crisis, and that it didn't even originate in the US. It actually began in May, 1873, with the collapse of the Vienna stock market, which spread to Berlin and London before it hit New York. I also learned that the roots of financial instability included the 1866 collapse of Overend, Gurny, a major London bank, and that stock markets around the world had soared shortly after Barings had financed the huge French war indemnity forced upon France after the 1870 Franco-Prussian War. One of Kindleberger's great insights was that the recycling of massive payments, such as the French indemnity, often leads to liquidity-driven speculative frenzies

in stock, bond and real estate markets.

Given this history, how could anyone possibly write a serious book about the US crisis of 1873 without writing at least as much about events in Europe as about events in the US? It didn't make sense, and yet economists and economic historians do similar things all the time – they explain events in one country by referring largely to antecedents in that country. Take the Opium War in China. The standard narrative is quite straightforward. For centuries, we are told, China produced goods that Europeans wanted – tea, silk, pottery – but Europeans produced nothing China wanted, so China ran a trade surplus and accumulated reserves in the form of silver. At some point however the English discovered that it was more profitable to export Indian opium to China, which they did, and the Chinese were so furious at the poisoning of their people that they tried to prohibit it, which led to war.

But aside from the fact that it would have been impossible for China to run a trade surplus for so long, especially when the concept of reserves did not exist, the real story is a lot more interesting and complicated than that. Beginning in the late Ming Dynasty the Chinese economy was in poor shape and its monetary system was contracting relative to the growth in population, which was made all the worse because rising silver prices caused hoarding and hoarding caused rising silver prices. As a silver-based economy, among other things China desperately needed silver to re-monetize.

At first the Chinese imported silver from Japan, but eventually the Japanese forbade further exports. Around this time the Spanish began discovering silver in the Americas, and within a century were extracting huge amounts. As the price of silver in Europe plummeted relative to gold and other products, Europe discovered that they had something that the Chinese desperately wanted and which they valued far more than did the Europeans. China's trade surplus in other words was not a trade surplus at all. There was balanced trade between Europe and China in which both sides got what they wanted.

In the 1810s Latin Americans began their wars of independence against Spain, one consequence of which was a collapse in silver production and a surge in European silver prices. When this happened England could no longer afford to exchange tea for silver, so they switched to opium, which they obtained from India at least partly in exchange for textiles, having pretty much demolished the more efficient Indian textile industry in the 18th Century. This loss of silver imports put enormous pressure on the Qing treasury and led ultimately to the sequence about which we are so familiar.

The point is that you cannot really write about the origins of the Opium War without including the very important role of the Latin American wars of independence, and yet few historians do. These kinds of sometimes-surprising global links are even more important today. Brazil and Australia had booming economies during this century, for example, but how many people know the role of artificially low Chinese interest rates in creating the boom? It is not a coincidence that the boom in both countries has ended just as the amount of interest rate repression in China has almost disappeared. It had to happen.

It is possible for Spanish economists, to take another fairly obvious example, to engage in a furious and highly politicized debate about the domestic policy distortions that "caused" the country's savings deficit that exploded shortly after it joined the euro (one side blames lazy workers for high wages and the other side blames greedy bankers for dumb lending) without acknowledging that both high wages and risky lending might be, and in this case certainly are, the consequence of policies in Europe which the Spanish economy was unable to absorb in any other way. You cannot talk about savings distortions in one country without discussing the opposite distortions in another, and yet economists do it all the time. They usually prefer to base their explanations on an attack on their ideological enemies or a defense of their ideological friends than on the very obvious arithmetic of the balance of payments.

Economists also too easily enjoy the pleasure of moralizing. It should be very easy, to take yet another example, to understand why China has the highest savings rate in the world. Most economists don't. Instead they refer knowingly to Chinese household frugality, based on Confucian values, even though Chinese household savings are pretty normal and the increase in household savings is a very small part of the total increase in savings (probably because in the US total savings are importantly a function of household savings, so everyone assumes this must be true everywhere).

China's extraordinarily high savings rate is almost wholly explained by the transfer mechanisms that subsidized rapid growth over the past two decades, leaving Chinese households with the lowest share of GDP in the world, and perhaps the lowest ever recorded for a large economy. Arithmetic, not to mention historical precedents, can easily explain why these transfers, which during this century amounted to as much as 5-8 percent of GDP annually, would drive down the household consumption share of GDP by driving down the household income share, and of course high savings are simply the obverse of low consumption.

The preference of economists, not to mention other kinds of experts, to attribute China's high savings rates to Confucian values is all the more strange when we remember that just fifty years ago East Asian countries tended to have very low savings rates, and moralizing economists then had no trouble blaming Asia's seemingly intractable poverty and low savings on Confucian values, which for much of Chinese history had been criticized for encouraging laziness and spendthrift habits. Economists want eagerly to assign virtue or vice, but sometimes it is easier simply to stick with arithmetic.

When we speak about the Chinese economy, we then run into another problem that seems to beset a great deal of economic analysis. Policies that affect the savings rate of a small country can have more-or-less predictable domestic impacts because the closed system within which it operates, the global economy, is so large that domestic policies are not affected by external constraints. But when you are thinking about a large economy, you have to change your analysis. In a globalized world anything that changes the domestic relationship between savings and investment must automatically change the relationship between savings and investment abroad in the obverse way, and that the changes may be constrained by the relative size of the closed system within which the open system. If

the savings rate of Spain (the open system) declined after 2003, as it did, the reason may have as much to do with Spain as it has to do with someone else within Europe (the relevant closed system within which it operated) – Germany, in this case – and so trying to resolve it by "undoing" the Spanish "cause" may be useless, or even reckless, as I think we in fact are seeing.

2.) I'm dying to know your thoughts on the Keynesian vs. Austrian debate on monetary policy? Do you find yourself lining up with doves like Janet Yellen who believe low interest rates are good for employment or people like Ron Paul and Stanley Druckenmiller who worry about price distortions and asset bubbles?

There is as you know a political divide between economists. One group focuses primarily on managing demand to prevent the underutilization of labor and capital (often called Keynesians). The other insist that it is only by increasing savings, which usually means increasing wealth inequality and allowing the benefits of growth to "trickle down", that we can generate the increases in investment that drive long-term economic growth (often called supply-siders, or Austrians, although for some reason true Austrians seem to loathe supply-siders).

The point to remember is that rising inequality or, especially in countries like China, a declining household share of GDP, tends to force up the savings rate and to reduce consumption, which sometimes even lowers the investment rate, as we saw in Germany during this century. But because globally savings and investment must always balance (another accounting identity often forgotten in the debate), the tendency to force up the savings rate in any country must automatically be balanced by an increase in investment, an increase in consumption elsewhere, or an increase in unemployment. This is just a matter of logic.

Because of the political divide between supply-siders and demand-siders, most economists either oppose any and every policy that increases the savings rate through greater wealth inequality, or oppose any hint of demand management, especially if it involves fiscal spending. It turns out however – once again using little more that simple accounting identities – that there are conditions under which either supply-side policies or demand-side policies will increase long-term wealth. In fact Keynes, Hayek, and the rest of them understood quite well what those conditions are.

To simplify enormously, when productive investment in the US is constrained by insufficient domestic savings (and an inability to import enough foreign capital to make up the difference), supply-side policies can genuinely create wealth that trickles down to the general population. In the United States during much of the 19th Century, for example, an erratic and unstable financial system combined with the huge infrastructure needs of a rapidly expanding continental economy meant that the US was almost always in short supply of capital. To a large extent the US growth rate, which depended on increases in productive investment, was constrained mainly by British savings, and much of this was the consequence of high British income inequality, as John Hobson pointed out.

It is not a coincidence that just as the Chinese were suffering the consequences of the global silver

shortage, in the form of the First Opium War in 1839, the US itself was in the throes of its own crisis. In 1837 a number of states, most shockingly Pennsylvania, defaulted on their debts, beginning a very deep depression that lasted for years (and, perhaps not surprisingly, is generally described in history books with few references to Latin American silver production or Chinese wars over opium). In the 19th century anything that caused the American (or British) savings rate to rise allowed US investment to expand and the country to grow.

When the world is suffering from insufficient demand, however, clearly the problem we face today, income inequality and excess savings are the problem, not the solution. There may be plenty of good investment that are not being funded in the US, but the reason they suffer from lack of funding, unlike in the 19th Century, is not because capital is to scarce or too expensive. Capital is actually too plentiful, and this shows up in the speculative flows that have driven global stock and bond markets to unreasonable levels. It is weak demand or political gridlock that prevents productive investments from being made.

So, I would argue, today we are very obviously in a "Keynesian" world of structurally weak demand, in which policy must be aimed at increasing either consumption (reducing savings) or increasing productive investment. It would always be preferable to do the latter, but it is politically very difficult to increase investment in US infrastructure through higher fiscal deficits, and of course the private sector is reluctant to increase investment, especially in manufacturing, without a revival in consumption. Washington is absolutely correct, in my opinion, to want to boost American consumption, but the Fed seems to be trying to boost consumption by igniting another asset bubble in the hopes that, like before 2007, Americans will feel "richer" and so will consume more. This isn't sustainable, however, and will leave us, as Paul and Druckenmiller fear, even more heavily indebted and more dangerously exposed to the underlying weakness in demand.

Unfortunately this analysis leaves us with policy recommendations that are unpalatable to both sides of the aisle. The US government must take the lead in rebuilding US infrastructure, which probably means increasing government debt (although it also means reducing the debt burden by increasing the value of the economy by more than the increase in debt). The US must also increase US consumption, however not by igniting another asset bubble and letting credit cards work their magic.

There are really only two ways to increase household consumption sustainably. One is to force a redistribution of income from the richest Americans to the rest. The other is to impose trade tariffs or, what amounts to the same thing, to tax foreign purchases of US assets, especially US government bonds, in order to drive down the current account deficit and so allow the US to retain a larger share of what has become the most valuable commodity in the world: demand. Needless to say it is hard to imagine either political party, or anyone associated with either the supply-side or the demand-side ideology, signing up to the whole program.

3.) Do you think there is a global currency war going on?

Of course there is. Historically whenever global demand is weak, and unemployment high, countries will try to gain a larger share of that demand by reducing wages or otherwise taxing households to subsidize production (devaluing the currency is just a way to tax the consumption of imports and to subsidize exporters). Unfortunately these policies reduce demand further by reducing real household income and, with it, the amount households can spend. This is why in the 1930s these policies were referred to as beggar-thy-neighbor policies. In effect they forced countries with high unemployment to respond to weak global demand with policies that reduced their own contribution to global demand while grabbing a larger share of the smaller total.

But we must remember that they are not doing this to be pests. In most cases they have little choice. In a world with few constraints on trade or capital flows, if you try to raise domestic consumption by raising household income – for example by raising wages – your contribution to global demand will indeed rise, but your export competitiveness will decline, and so you may retain a smaller share of that greater amount. In a globalized world, without a globally coordinated no-cheating boost in spending, beggar-they-neighbor policies may be systemically crazy but they are individually rational.

And they are always rationalized in exactly the same way. Countries try to force down wages, devalue their currencies, and otherwise increase the short-term, competiveness of their economies only in order to protect themselves from the depredations of others. Spain wants to force down workers' wages today because German wage growth was cut by more than one-half in the decade after the turn of the century, even though the German economy was growing faster than it had in the decade before, and the creation of the euro was supposed to make everyone richer. If Spain succeeds, global demand will drop but Spain's share will rise.

4.) You talked a little bit about the future of currencies in your book. In the book, you seemed to think the Euro might not survive and the dollar would continue to be the world's reserve currency. Is that an accurate depiction of your views or not?

The US dollar will remain the world's dominant reserve currency for a very long time, partly because it is the only currency that exhibits anywhere near the needed level of credibility, mobility, and low transactional costs, and mainly because for all the huffing and puffing about "exorbitant privilege" no other country is willing to pay the considerable cost of allowing its currency to be accumulated by foreign central banks whenever these countries experience weak domestic demand. The only way this will change, I think, is if, and perhaps when, Americans decide that they are no longer willing to enjoy the "exorbitant privilege", and Washington imposes restrictions on foreign purchases of US dollar assets, as was the case until the 1960s.

Five years ago I would have told you that this would never happen, but two things seem to have changed. First, as Americans become increasingly aware that when foreign central banks amass

hoards of dollars and prevent others, including the Fed, from reciprocating, they aren't doing the US any favors (and if they were, why are they so determined to prevent other central banks, including the Fed, from returning the favor?). Their purchases are aimed at boosting domestic employment, and unless productive investments in the US are unfunded because of a savings shortage (which is all but impossible to believe), their purchases must result either in an increase in US debt or an increase in US unemployment. This may sound surprising to many people, including, shockingly enough, to many economists, but is actually quite easy to prove, either by using balance of payments arithmetic or by looking at the historical precedents.

Second, it seems to me that the US is becoming increasingly isolationist, largely because it is increasingly uncertain that the benefits to the US of a US-dominated world order still exceed the costs. When the US comprised a much larger share of the "globalized" part of the world, it retained a greater share of the benefits of a stable trading environment and it cost less to maintain that environment. As the US becomes a declining share of the globalized world, the costs of imposing stability (and I have no illusions that this is done for charity) rise, and its share of the benefits decline. It is only a matter of arithmetic that at some point the costs will exceed the benefits.

As a committed internationalist I know of course, and worry, that any withdrawal of US leadership – political, military, or financial – will be painful and chaotic in the short term for the rest of the world, and especially the developing world, which is why it must be such a slow and difficult process. But many Americans believe that the US would be better off if it withdrew from its foreign commitments and maintained its strength, and its virtual invulnerability at home, except from the kinds of terrorist attacks that are anyway more likely, not less likely, to be a consequence of foreign meddling.

Will the US act on its growing isolationist impulses? Eventually it must. But as President Obama knows better than anyone else, Americans want the US to be less entangled abroad, but paradoxically they are also very critical of any of the resulting chaos that is the inevitable consequence of the US turning inwards. There was, on that note, an editorial piece in July in the *Wall Street Journal* about the Ukrainian crisis that seemed to exemplify that paradox.

Much of the piece made sense to me – although I find very parochial the American tendency always to assume that much of what happens in the world happens only because the US permitted or did not permit it to happen, as if other countries are incapable of generating history on their own – but the argument that a certain disagreeable outcome today was the inevitable consequence of the failure of the US to draw some specific line in the sand during some preceding and seemingly unrelated event three months ago, or three years ago, or whenever, if taken seriously cannot help but lead the country into one hopeless mess after another. There was one paragraph that for me was especially revealing about the difficulty Obama, and any other president wanting to disentangle the US from the world, inevitably faces:

If this doesn't wise the world up to Mr. Putin, you shudder to think what it might take. Mr. Obama spoiled

the moment by in the next breath calling for a cease-fire and "a political solution" in eastern Ukraine, reverting to his default mode: a constitutional scholar lost in a world of thugs, to borrow a phrase from the late Fouad Ajami.

I was curious as to what kind of president the author thinks would best serve the US in a world of "thugs". I suppose Obama himself could have also been a thug, and then he certainly would have been able to handle himself with glamorous equality in the Ukrainian conflict, perhaps by sending troops, but its hard to imagine that the US or the world, over the longer term, would be better off with more of a Putin style in the White House. I can't even imagine how Russia is better off with Putin in the medium term, and I think it is almost a no-brainer to suggest that the next couple of decades are going to be a very tough decade for Russia, especially if all its neighbors decide that major military expenditures are a good idea.

I suppose instead of a thug or a constitutional scholar we could have been led by the proverbial "man on the white horse" who charges gallantly into the fray and fixes things, but that man usually turns out to be either a thug or an idiot. One of the most famous men on a white horse in history (Napoleon I guess is the exemplar), is General Boulanger, who many Frenchmen, sick and tired of the hopeless mess France – still reeling from the Prussian defeat and on the verge of the Dreyfus Affair – seemed to have become, turned to in the years before 1889 to solve France's problems. Boulanger of course turned out for all his charisma to be a mediocre leader and a miserable failure, who committed suicide within a couple of years of his defeat, and unfortunately this is all too common a fate for men on white horses.

So what is the alternative? I wonder if a very unglamorous constitutional scholar might not in the long run be exactly what the US and the world needs for the US to extricate itself gradually from some of its global commitments. There is no question that it will be a messy process, and that there are many things that will go wrong, in which case a careful, cautious president who avoids grand gestures and insists on legal niceties might be the leader most likely to pull it off at the minimum long-term cost.

Either way, isolationism will be messy for the US and messier for the world, but the alternative might be worse for both if a US withdrawal eventually occurs, and occurs when the country is economically weaker and forced by circumstances to withdraw. That is when thugs will do especially well. So far, in spite of the greater visibility of sheer spite in the political debate, the US continues to be the kind of country in which a foreign crisis causes people to rally behind the president, whatever else they may think of him. This is a huge advantage that many countries don't have, and although some Americans are eager to undermine this instinct, I think it is pretty firmly embedded.

5.) In the book, you talk about the European economy and your belief that the EU will likely eventually need to break up. I totally agree. Can you talk about why Spanish and Italian bond yields have fallen so low recently and do you think it can possibly continue? What effect have the ECB's LTRO programs and

Draghi's hints and pledges of QE had? Are Europe's leaders correct to be spiking the football and proclaiming that Europe is saved…or do you still think that European leaders will ultimately be unable to make the adjustments that you say in your book that Europe must make?

This is why I am worried about the long-term prospects for the euro. Europe, in a sense, suffers from a contained version of the global weakness in demand and the consequent imbalances. When German wage growth was forced down during the last decade, it caused, or at least accommodated, a rise in the German savings rate (which is the same as a decline in the German consumption rate) and, by the way, had nothing to do with an increase in the fabled thriftiness of Germans, which makes it strange when economists use the rise in German savings to moralize. The same process also accommodated or even caused a decline in German investment.

As German savings were forced up beyond German investment, by definition it had to run a large and growing trade surplus, and for a variety of fairly well-understood reasons this surplus was always likely to be balanced within Europe. Without the ability of smaller European countries to intervene in intra-European trade, or to manage an independent monetary policy, the only possible response, as in the global case, was a rise in the indebtedness of peripheral Europe or a rise in unemployment. We saw the former before 2008 and the latter after.

In 2008 I argued that unless Berlin were willing to lead a European response, centered on a sharp rise in German demand, something Berlin didn't want to do because it would cause either their debt to grow or their export competitiveness to be undermined, peripheral Europe had only two options: break up the euro, or suffer punishingly high rates of unemployment for a decade or more. So far that analysis seems to have been correct, and Europe seems to have chosen the latter.

But with extreme right-wing parties scooping up votes by baying for the blood of bankers, demanding a withdrawal from the euro, and blaming foreigners – whether immigrants, the US, or China – for their malaise, it isn't clear to me how long these countries can continue to choose unemployment. That is why I always insist that the most important person in Europe might be not Angela Merkel but Marine le Pen. Merkel wants Europe to continue choosing unemployment, at least until the German banks are sufficiently capitalized to withstand defaults, but le Pen might force Europe to choose to break the euro.

As for why rates are so low, the answer I think is pretty obvious and widely understood. With low or negative economic growth, a serious threat of deflation, and the willingness of the ECB to do "whatever it takes" to prevent a suspension of debt payments, which would bring down both the German and the French banking systems, investors have been given lots of liquidity and assurances that the ECB will step in whenever rates get high enough to threaten the ability of countries like Spain to mange their debt burdens. A lot of investors refer to this quite openly as the "Draghi put".

The official reason for these policies is that eventually these countries will "grow out" of their debt burdens, but this is what they always say and it almost never happens. Rates will stay low either until

the German banks have managed to recapitalize themselves enough to withstand sovereign-debt restructuring (after which the ECB commitment to do "whatever it takes" will almost certainly disappear), or until investor confidence, sapped by the irresistible and unending growth in the debt burdens of these countries, disappears. Because it will take many years for the former to happen, I assume it will be the latter.

6.) Though The Great Rebalancing: Trade, Conflict, and the Perilous Road Ahead for the World Economy *was published just last year in 2013, in today's fast changing world (and 24 hour news cycle), that might seem like an eternity ago. You just talked about Europe. How do you feel the rest of the world (the U.S., China, Japan) have done in taking the steps necessary to rebalance global trade and the global economy?*

The US was fairly quick to begin the adjustment process, as it always is, perhaps because the American political system can more easily absorb the social consequences (which is a polite way of saying that the US can treat its poor badly and get away with it), but now it might be backtracking. Worsening income inequality all but guarantees, I think, that we will not see sustainable consumption growth for many years, and political gridlock makes the rollout of an infrastructure-improvement program unlikely. I do think that because of its flexibility and creativity the next decade might still be relatively good for the US, however, but any recovery can be postponed or even derailed by events in Europe or elsewhere. At some point, as Americans have always done in their history when income inequality got out of hand and the economy was in the doldrums, there will be a reversal of income inequality driven by politics, although this reversal will probably go, as it always does, too far.

Away from the US, we have also needed to see rebalancing in Europe, China and Japan of course. I have already explained why I think Europe faces many more years of high unemployment, and as for Japan, I really have no idea of how Tokyo will address its debt problem. As long as growth and interest rates are close to zero, we can all pretend the debt burden is sustainable, but any sustained nominal GDP growth will force Tokyo into a tough decision on interest rates. They can keep rates low, in which case the great reversal of the Japanese imbalances of the 1980s will itself reverse, and the Japanese consumption share of GDP will weaken (and investment probably will too in response), which means that Japan will depend even more on foreign demand to keep unemployment from rising.

Or Tokyo can raise interest rates, in which case debt costs will quickly become unsustainable, although I think government liabilities are long enough in duration that Tokyo will have a few years to adjust. Basically if Japan could resolve its debt burden at the expense of anyone but ordinary households, I think it could start to grow sustainably again, but I don't know enough about the Japanese economy to know if that is even possible. I hate even to discuss the rise of military tensions in the region, but it would be foolish to deny that this could be a way out of a politically difficult adjustment, for more than one country.

Finally, among the major economies, Beijing has eliminated most of the main mechanisms that drove China's very healthy growth in the 1990s but which resulted in the deep imbalances of the past decade, along with the country's surging debt burden. But that is just the first of two steps. It now needs to take the next, politically more difficult, step of liberalizing the economy by eliminating many of the constraints which favor politically connected businesses at the expense of China's small and medium enterprises, increasing the household share of GDP, and paying down the debt, although if it monetizes the debt or otherwise forces households to absorb the losses, which is what happened after its last debt crisis in the late 1990s, consumption will not be able to grow fast enough to bail out the economy.

India is for me sort of a wild card. Among the major economies it is the only country besides the US not to suffer from truly awful demographics (not that US demographics are good, but at least they are not nearly as bad as those of Europe, Japan, Russia and China, thanks mainly to immigration), and like the US it has a great source of sustainable demand in the upgrading of its infrastructure, but when it comes to organizing the political ability to do so it is in worse shape than even the US. I am no India expert, but my Indian friends tell me that their combination of a highly entrenched and brutally constraining bureaucracy and the determination of a growing segment of the Indian population to turn one of India's greatest strengths, their impressive diversity, into a source of violence and instability, may trump their many advantages.

As for the rest of the developing world, including Africa, high commodity prices always revives enthusiasm and hope, and low commodity prices, which I expect, always dash it. I hope this time is different.

7.) In your books, you seem careful not to directly blame China for the global imbalances, but you do mention how different countries' domestic policies contribute to the global imbalances. As a professor at Beijing University, what Bill Clinton once called "China's Harvard", do you ever feel any pushback from your contacts here in China regarding some of your criticisms of government policy?

I get that question a lot, and I think it is because many foreigners overestimate the degree of control that authorities exercise over public discussion. It is not that there isn't control. Of course there is, and there is some evidence that things have tightened up in the past year or two, but as long as you do not cross certain lines, the debate within China can be quite vibrant.

I think there may be a misperception about why I don't "blame" China. As I see it, China imposed a series of necessary and very difficult reforms in the 1980s, followed by an investment-led growth policy that had proven successful for many, many countries in the last 100 years, but like every one of the countries that had a similar "growth miracle", it also developed deep imbalances and waited too long before it began the rebalancing process (all rapid growth, as Hirschman taught us in the 1960s, is unbalanced, and the imbalances must eventually be reversed). This is why I didn't think it made sense to excoriate China. China was simply following an historical process that many developed or

middle-income countries, including the US, have followed, and now it faces the challenges that some overcame and some didn't.

Given the very touchy nationalism that exists within China, of course I was criticized by some Chinese, although because I don't really criticize government policy so much as try to describe systematically the Chinese economy and place it as firmly as possible within its historical contexts, ultimately their criticism can only be that I failed to believe that China was gloriously exempt from historical processes. While some Chinese are easily angered at any suggestion that China's development process faces risks, or at least they used to be, it is hard to credit them with much intelligence.

Most serious Chinese, economists or not, recognize that someone whose work consists of trying to analyze China's development process by comparing it to that of other countries that have followed the same development path, and describing where things have gone wrong and how these pose risks for China, can hardly be called anti-China. My students at Peking University, for example, are extremely supportive and think very differently about what I do, and I think I have convinced them that as future policymakers, especially in finance and central banking, rather than join the hype that has always accompanied every growth miracle it is their responsibility to be focus on risks and on all the ways things can go wrong.

But I have to say that it was not just aggrieved Chinese nationalists who were angry at me. I have been far more criticized by foreign economists, especially sell-side analysts and "China experts", not so much for failing to support the overhyped nonsense that was the consensus for many years, but rather because I suggested, perhaps even a little rudely sometimes, that the consensus was such obvious nonsense, and would have been rejected as absurd, as it has, by anyone with some knowledge of economic history, or of the experiences of other developing countries, or even of how balance sheets work. While these analysts were diligently compiling reams of data and processing them with all the resources Wall Street can muster in their competition to see who could come up with the most optimistic possible prediction, I – and, I should add, a number of other economists – rejected their work as being useless and, what was worse, useless in a fairly obvious and predictable way. Most of them loved their mathematical models, but were not sophisticated enough mathematicians to understand how their models worked and under what conditions they were likely to fail.

We have seen a general backlash against the use of math in economics, but we have to be careful. It is not that math is useless. It is that mathematical models imbed lots of assumptions that, if they are not understood, make forecasts useless, especially when we most need them, because when imbalances are being generated, the relationship between variables are likely to be distorted in on direction, and when the economy rebalances, the distortions will flip their signs (i.e. positive biases become negative and vice versa). Our predictions are always right, in other words, as long as nothing happens, but whenever something major happens our predictions are automatically wrong. In any economy where there is more likely to be distortion, or where automatic adjustment mechanisms are weaker, we need

to be extra cautious about the assumptions underlying our models. China is clearly such an economy, but like the drunk man searching for his car keys, we prefer to search where the light is better.

But touchy nationalists and sell-side analysts aside, I never felt any pushback from Peking University or from the authorities and no one tried to prevent me from analyzing and writing about the economy. On the contrary, I think many Chinese economists, both among policy makers and among their advisors, have always read what I wrote very sympathetically and many agreed with my views, often coming to them long before me. In fact if you read between the lines it is pretty obvious that as far back as 2007 many policy advisors in Beijing, along with Premier Wen, understood far better than most economists writing about China the kinds of imbalances that China was generating, and how difficult it was going to be, especially politically, for the adjustment process to take place.

There was always a popular myth among foreign China bulls, and it still exists today to some extent, that any skepticism about the Chinese growth miracle marked you out as a misguided foreigner, because every relevant Chinese economist agreed fully with the ecstatic hype that the press and the sell-side were saying about China. But this was never true. You were far more likely to see skepticism and even serious concern among Chinese economists than among foreign economists. How could you not? Many of them were not eagerly selling the bull pitch and were only interested in understanding what was happening in their country.

8.) In another of your books, Avoiding the Fall*, you mentioned that you expected that Chinese economic growth would not be steady in the future, but that China would likely avoid a hard landing. There's a lot that goes on here behind the scenes in China. Sometimes, the government can be quick to take action. Other times, they can be a little slow. Has the new leadership of Xi Jinping and Li Keqiang impressed you with the actions that they have taken to try and rebalance China's economy for the future?*

Because I, like all but a group probably no more that 50-100 people, have no idea about what exactly is happening within leadership circles, I can't really answer except to say that on the surface President Xi and Premier Li are doing pretty much what we would have expected if China were to embark upon a successful rebalancing – one which would, of necessity, be opposed by what in China are referred to as the "vested interests". Given the opacity of the system of course we must always be prepared to find our assumptions wildly mistaken, but on the surface it looks like the Xi-Li administration is working its way successfully through what will nonetheless be a very difficult process.

9.) How confident are you about the global economy in the short-term, the medium-term, and the long-term (bearing in mind that Keynes famously once said that, "In the long run, we're all dead.")

Not to be flip, but when JP Morgan was asked to predict the direction of the stock market, he is supposed to have replied "It will fluctuate". As good enough an answer as that was, I would add that in the past 200 years whenever we have had a global crisis, we seem to lose confidence in ourselves and

begin to lambaste democracies and decentralized economic systems for their inefficiencies and their inability to implement the "right" policies quickly and forcefully. I just read a recent *Econintersect* piece, for example, that starts right off with "The global brand of dictatorship is making a strong comeback in the democratic world."

But it did in the 1930s too. Let's not undervalue the inability of decentralized political and economic systems also to implement the wrong policies quickly and forcefully. Decentralized systems tend to correct mistakes relatively early, and do a pretty good job (or maybe a terrible job, but better than the alternatives) at economic adjustment. Growth always creates imbalances, and the important part always turns out not to be how quickly we grew during the good times but rather how successfully we adjusted from the imbalances, especially because the adjustment usually takes place during the bad times.

This is why the political, legal, social and financial institutions that constrain the adjustment process for each country are so important. Not all growth miracles, for example, are followed by successful adjustments and more long-term growth. In fact they rarely are. In the 1960s it was widely "known" that the USSR, then completing nearly two decades of phenomenal growth, whose exploits included the first manned satellite and the first space walk, would almost certainly overtake the US both technologically and economically by the end of the century.

Today those expectations seem almost comical. The country had wracked up so much debt during the late stages of its growth miracle, and for all its spectacular growth was unable to deliver more than a minimum amount of consumer products to it citizenry (it is considered shocking to say this in polite company, but consumption-driven economies seem to be far more innovative and productive that investment–driven economies, perhaps because of the decentralization of demand). By the late 1980s, when I started my career as a trader of defaulted and restructured sovereign debt, Russian debt was widely considered to be part of our market and had only not been formally restructured because foreign banks agreed to roll over principal and interest payments in order to maintain the fiction that it could repay at will.

Brazil was another miracle – indeed the first country to be called a "miracle", I believe – whose astonishing growth ended in the early 1980s, after which its relative position in the world retreated until soaring iron ore prices a decade ago reignited the boom. Beginning in the late 1950s Brazil had followed a consumption-repressing, investment-driven growth model different from that of China's mainly because consumption was repressed not with hidden transfers but rather with high explicit income taxes. It was able to achieve growth rates that exceeded 10% annually for well over a decade, but when the inevitable investment misallocation and fraudulent spending began to exhaust domestic debt capacity, the oil shocks of the early 1970s, which created the urgent need to recycle burgeoning petrodollar reserves, gave Brazil a second lease on growth. Brazil – and the rest of Latin America, I should add – then grew rapidly through the rest of the 1970s on borrowed dollars, even though the US

economy, and the European to a much lesser extent, was in a severe recession (prompting, for the first time, I think, confident assertions that the developing world, had decoupled from US demand).

Many other countries have had investment-driven growth miracles in the past sixty years. A few of them, like Japan, were already developed countries with advanced institutions, which is perhaps why the belief in the late 1980s that it would inevitably overtake the US before the end of the century as the world's largest economy seemed so credible.

Other countries, like South Korea, were among the poorest and least developed in the world. All of the growth-miracle countries that I can indentify, however, ended their miracle periods either with painful debt crises or with "lost decades" of stagnant growth, and all went through difficult transitions, some cases of which were followed by further growth miracles and most were not. But very few countries have gone from backwards economies to advanced economies. It is worth noting that excluding city-state trading entrepots like Hong Kong and Singapore, and a few oil sheikdoms, both of whose growth models cannot be replicated by most countries, the only two unquestionable success stories I can think of are South Korea and the province of Taiwan, both of whom grew most rapidly during the Cold War, when their economic success was considered to be vitally important for the US. Chile may be the third country that joins that limited group.

Rather than make wild predictions we need to understand who so few countries have actually made the transition from poor to rich. My explanation has to do with the kinds of institutions that permit adjustment, and perhaps you can find similar explanations by people like Daron Acemoglu and James Robinson, to whose work I often refer, but whether I am right or wrong, the fact is that any prediction of success that doesn't first explain why there has been so much failure is a waste of time.

And contrary to the popular press, China is probably not the fastest growing country in history. That prize probably belongs to Argentina in the four decades before 1914, but the subsequent decades nonetheless turned out pretty badly. There is a furious debate on where Argentina went wrong. Some argue that Argentina's relative decline began with the Uriburu coup in 1930, after which it seemed that the main role of government was to disrupt economic liberalization and income redistribution and unassailably to protect the existing elite. Others blame Juan Peron, whose presidency in the 1940s and 1950s entrenched a near-autarchic state-corporatism, which some would call fascist. Finally others argue that Argentina's decline only really occurred in the decade that began with Peron's death in 1974, followed by the 1976 coup that established the right-wing administration of Jorge Rafael Videla. Nearly all the explanations stress the breakdown of civil society, the entrenchment of the elite and the resistance to income redistribution. This might be a lesson worth learning for China and other developing countries.

For all the many cases of growth miracles, or of debt-fueled consumption-driven advances, like that enjoyed by Spain in the years before the 2007-08 crisis, economists seem incapable of placing whichever is the latest example within a proper historical context. We are always surprised when an

economic miracle stalls, and even when that happens, in spite of the many precedents, we are always shocked by how painful adjustment turns out to be (I cannot find a single case in history in which even the most pessimistic of skeptics did not understate significantly the amount by which growth would slow), and it takes years for us to consider that the adjustment period might not just be a temporary setback, during and after which the miracle country will sill grow relatively faster than the rest of the world.

I am sorry to say that none of this tells us much about future growth in China, the US, Europe, or the rest of the world. What it tells us is that rapid growth is always unbalanced growth, and many years of rapid growth are nearly always derailed by debt. It also tells us that relative performance in the past doesn't help us predict relative performance during the adjustment period or even after the adjustment period. Either way we'll just have to wait and see how the US and different countries in Europe and Asia adjust from the great imbalances of the past two decades. Global economic growth, to steal JP Morgan's prediction, will fluctuate.

10.) Can you talk about deflation? Some say that deflation causes consumers to persistently put off purchases while they wait for prices to fall. I feel this violates everything we know about what happens to demand when prices fall. But if prices do fall in a prolonged deflationary period, it would make debt repayment much harder and make defaults more likely. What are your thoughts and what effect would wholesale debt restructuring have on both wealth and economic growth? What is better for average people: trying to slowly inflate away debt or global debt restructuring?

It really depends on the circumstances. I am not an economist so much as a balance sheet guy, and I can tell you that inflating debt, or monetizing it in any other way (e.g. financial repression) simply transfers wealth from those who are long monetary assets (usually households) to those who are short. Deflation does the opposite.

Generally speaking I would argue that in most countries we need to boost the wealth of median households at the expense either of the state or of the economic elite, but in the case of the latter I also recognize that we have to do so carefully. Income inequality may itself be the outcome of a highly desirable incentive structure that rewards innovation and entrepreneurialism. I know this answer is sort of a copout, but the specific circumstances of each country matter, and I don't want my having gotten a few things right in China to tempt me into trying to punch too far above my weight.

What the PBoC Cannot Do with Its Reserves [Week 1]

By Michael Pettis on February 22, 2010

It is a real toss-up as to which generates more bizarre comment in the international press: Beijing's long-feared dumping of US Treasuries, or the use and value of the PBoC's central bank reserves. The revelation last week that Chinese holdings of US Treasury obligations fell in December by $34.2 billion, to $755.4 billion, generated a *frisson* of fear and excitement, leading one prominent newspaper to worry that "If there is one thing that gets investors twitchy, it is the fear that China is losing its appetite for US government bonds."

And shouldn't they get twitchy? After all this reduction in Chinese holdings of Treasury bonds comes from the USG's TIC data, so it must be true that China is dumping dollars, right?

No need to twitch, it means no such thing. First of all, the data from which this was derived indicates national ownership of USG bonds only to the extent that foreigners are directly registered holders. It says nothing about what happened to the large amount of bonds held by the PBoC and other Chinese investors indirectly or in street names. Those could have easily gone up by more than the reduction in bonds directly held by Chinese investors in their own name. If the PBoC had let maturing Treasury bonds get repaid, for example, and reinvested the proceeds into the USG bond market through another account, or in a street name, its total holdings would have actually increased even though its registered holdings would have declined.

More importantly, the TIC numbers completely fail to disclose whether China's reduced holding of USG bonds was matched by increased holding of other dollar assets, thereby increasing the pool of capital available to fund USG bonds by an amount equal to its reduced Treasury holdings. If Chinese investors decide to take on more risk, for example, they might sell USG bonds and use the proceeds to buy corporate bonds. Of course the seller of these corporate bonds will then have cash, which must be put to work, and ultimately this ends up back in the USG bond market.

China did not reduce its dollar holdings

So was China a net seller of dollar assets in December? Almost certainly not. Just look at the PBoC balance sheet. PBoC reserves rose in December by $61.3 billion, of which $39.0 billion was the trade surplus.

Remember that China has a large current account surplus which necessarily must be recycled abroad, and the US has a large current account deficit which necessarily must be funded abroad. It would be astonishing if, under these circumstances, total Chinese holdings of USD assets declined, and of course it is impossible that they declined faster than the willingness of other foreigners to replace them.

Of course if the US current account deficit declines, net new foreign purchases must *by definition* decline too. If the US wants its current account deficit to decline so that the USG can reduce the fiscal

spending needed to generate any fixed number of jobs, this cannot possibly happen without a concomitant decline in net foreign, including Chinese, purchases of dollar assets. But it need not result in any difficulty in funding the new, lower amount of debt issuance. Depending on why it happens, reduced purchases by foreigners should probably be seen as a good thing for the US Treasury market, not a bad thing.

Confused? How can a reduction in foreign purchases help the USG fund its massive fiscal deficit? Because the purpose of the fiscal deficit is to create jobs in the US by boosting US spending. Since some of the jobs that higher USG spending creates will accrete outside the US, via demand that "leaks" abroad through the deficit and creates employment for foreign manufacturers, a smaller trade deficit can itself be expansionary for the economy. That means the USG will need to borrow less to create the same number of jobs. Fear of Chinese "dumping" of US treasury bonds, even if it were possible, should be a non-issue, but since it plays easily into various geopolitical conspiracies, we seem to love to worry about it needlessly.

Among other strange comments the TIC data generated last week were those by the *Financial Times,* arguing that "if the latest numbers mark the beginnings of a diversification by China away from US Treasuries and other dollar assets, a widely speculated rise in the value of the renminbi against the dollar is on the cards." Aside from the fact that it marks the beginnings of no such thing, it still wouldn't be an indication of any future RMB strategy. A rise in the value of the RMB may very well be in the cards, but this has absolutely nothing to do with what Beijing did with its USG bond holdings in December.

Why? Because if China had intervened less in December, the RMB would have already shot up – in December, not at some time in the near future. Of course if the PBoC believes that a rise in the RMB will cause the dollar to fall against the euro, it might have swapped out of dollars into euros as a clever trade based on its inside knowledge of the RMB strategy, but since the opposite is almost certain to be the case, it is hard to believe that any PBoC net sales of Treasury bonds would indicate its plan to raise the value of the RMB.

The TIC data in December tells us almost nothing about what will happen to the RMB. To see why, it makes sense to discuss a little how and why the PBoC has accumulated dollars, and what those dollars mean for China and the central bank. Here, the first thing to recognize is that the PBoC does not "decide", as a banker, to lend money to the US. It basically has very little choice.

Beijing is not Washington's banker

If China runs a current account surplus, it must accumulate net foreign claims by exactly that amount, and the entity against which it accumulates those claims (adjusting for actions by other players within the balance of payments) ultimately must run the corresponding current account deficit. And as long as China ran the largest current account surplus ever recorded as a share of global GDP, and the US the largest current account deficit ever recorded, and especially since China also ran an additional capital

account surplus (i.e. other non-PBoC agents ran a net capital inflow), it was almost impossible for the PBoC to do anything but buy US dollar assets. Given the sheer amounts, a substantial portion of these assets had inevitably to be USG bonds.

This was not a discretionary lending decision. It is the automatic consequence of China's currency regime, in which it pegs the RMB to a foreign currency, in this case the dollar. Why? Because when the PBoC decides on the level of the RMB against the dollar, it does not do so by passing a law, and making it a capital crime for anyone to trade at a different price. What it does is far simpler. It offers to buy or sell unlimited amounts of RMB against the dollar at the desired price.

No one will sell dollars for less than what they can get from the PBoC, nor will anyone buy dollars for more than what they can pay the PBoC, so all transactions get done at that price. That is how the PBoC (or any other central bank that intervenes in the currency market) sets the foreign exchange value of its own currency.

This means that as long as it wants to set the exchange rate, then, it must take the opposite position of the market. Since the rest of the market is a net seller of dollars (China runs a current and capital account surplus), the PBoC has no choice but to be a net buyer of dollars, which of course it must then invest.

If it stops buying dollars, it must let the market decide by itself on the new equilibrium price of the dollar. In that case the value of the dollar has to plunge in RMB terms (or the RMB soar, which is the same thing) in order for buyers and sellers to match up and for the market to clear. The moment the PBoC stops buying, in other words, the RMB will rise in value – and so it cannot stop buying in *anticipation* of the RMB rising in value, as the *FT* article suggested.

Of course the PBoC must fund the purchase of these dollars. It does so primarily by borrowing in the domestic money markets, selling PBoC bills or entering into short term repos (although it also issues some longer-term bonds), or by "creating" money by crediting the accounts of the commercial banks who sell it the dollars.

This means, to simplify, that the PBoC has a balance sheet consisting on one side of dollar assets (and here "dollar" is short-hand for all foreign assets). Against this and on the other side it has a roughly equivalent amount of RMB liabilities (I say "roughly" because when you run a mismatched balance sheet, changes in the relative value of assets and liabilities will create losses or profits).

Here is where things get interesting. China's reserves are often thought of as if they were a treasure trove available for spending. They are not. They are simply the asset side of the mismatched balance sheet. If the PBoC wanted to "spend" $100, say for example to recapitalize a bank, it could do so, but this would automatically create a $100 dollar hole in its balance sheet. – it would still owe the RMB that it borrowed originally to purchase the $100. To put it another way, the reserves are not a savings account, free for the PBoC to spend as it likes. Reserves are effectively borrowed money.

Can PBoC reserves protect China?

So the PBoC cannot give away the reserves without causing an increase in its net indebtedness. This is why I have often said, to the confusion of some of my readers, that Beijing cannot just recapitalize the banks with reserves. A substantial amount of NPLs will one way or another increase government debt. The only way Beijing can recapitalize the banks is by borrowing, or by raising direct (or hidden) taxes. Having the PBoC recapitalize the banks is just another way for the government to borrow, and since almost everyone would agree that losses in the banking system should be paid directly out of fiscal revenues, and not indirectly by the central bank, it would be a very inefficient way of doing so.

So what are reserves good for? As long as China maintains its own currency and denominates all domestic transactions in RMB, the PBoC reserves cannot be used in China. They cannot go to pay doctors' salaries, to build bridges, to lower taxes or to subsidize consumption. They can only be used to purchase or pay for things from outside China. This means that reserves ensure that China can import foreign commodities and other goods as long as it can pay for them domestically. It also means that the PBoC can ensure the availability of dollars to repay foreign debt and foreign investment.

Here is where a great deal of confusion arises. The US crisis of 2007-08 notwithstanding, we seem implicitly to believe that a financial crisis is always caused by an inability to repay foreign debt and investment, in which case having huge amounts of reserves certainly should protect a country from financial crises.

But this is only partly true. Reserves are useless in preventing domestic debt crises (not *totally*, because they affect the credibility of the currency, but the RMB today doesn't seem to suffer from a lack of credibility). As I pointed out two weeks ago, there are many cases of countries with huge amounts of reserves that nonetheless suffered from all kinds of financial crises. It is just that they never suffered from external debt crises.

When it comes to domestic debt crises, large levels of reserves actually can make things worse. Why? Because financial crises are always caused by mismatched and highly inverted balance sheets, and the central bank's accumulation of reserves is exactly that kind of balance sheet.

Of course when the rest of the country has an equally mismatched balance sheet in the other direction – like when South Korean companies in 1997 had huge amounts of won assets financed by dollar debt – the central bank mismatch enhances financial stability. It acts against the mismatch carried by the rest of the economy, and the net impact is that the economy is less vulnerable to financial crisis. In that sense reserves are a kind of insurance to protect against excessive foreign borrowing. Because South Korea, unlike China today, had too few central bank reserves against the rest of the country's too-large dollar obligations, its overall balance sheet was mismatched and it was susceptible to a collapse of the won.

But China has very little external debt – certainly very small compared to its reserves – and so this clearly isn't an issue for China. But then could the huge mismatch on the PBoC's balance sheet create

the opposite risk for China?

Balance sheet mismatches

Yes and no. And this is where another great misperception occurs. Many people in China and abroad have argued that China cannot afford to raise the value of the RMB against the dollar because it would mean that China will take huge losses because of its massive reserves. After all, if the RMB rises by 10% against the dollar, the value of its reserves will have necessarily declined by $250 billion in RMB terms. This is almost completely wrong – China will not take losses anywhere close to that amount and may probably even take a gain if it revalues the currency. Unfortunately this kind of confused thinking is nonetheless the source of some strange claims. One foreign economist even published a rather loony piece three months ago, which excoriated the Obama administration's "bogus" trade argument for revaluation as done purely for nefarious and no doubt imperialistic reasons – and to strengthen the conspiratorial air it somehow ignored the fact that nearly every country in Europe and Asia has made the same argument.

Ironically enough, it replaced the very reasonable trade argument with one that is truly bogus, and indicates how foolish and even hysterical the discussion can become. The argument is that the US wants China to revalue the RMB not because of trade rebalancing (wrong, and this makes a common but still annoying mistake about the relationship between the currency and the trade balance) but rather because of a secret American scheme to reduce the amount that the US government has to pay China on its PBoC holdings. Appreciation of the RMB, according to this theory, represents a transfer of wealth from China to the US because it effectively reduces cost to the US of servicing the debt:

If the arguments presented for RMB revaluation by the US administration have no factual basis, why are they being put forward? The real answer lies not in trade but in debt – as other writers, such as Daryl Guppy, have rightly pointed out. In asking for RMB revaluation, President Obama's advisers were, in effect, asking China to donate $150-$300 billion in RMB to the US via debt reduction.

The arithmetic of this is simple. China's holdings of US dollar assets, chiefly Treasury Bonds, are around $1.5 trillion, or 10.2 trillion RMB. A 10 percent devaluation of the dollar vis-à-vis the RMB would reduce the value of these holdings to 9.3 trillion RMB, and a 20 percent dollar devaluation would reduce their value to 8.5 trillion RMB. In either case the U.S. is asking for its debt to China to be reduced by 10-20 percent in RMB terms. It may now be seen why President Obama's advisers have a vested interest in not examining the factual situation of China's trade. They are seeking a large debt relief package.

Sigh. The arithmetic is apparently not as simple as it seems. When one of my central-bank seminar undergraduates showed me this article in December, he was chortling with glee at its bad economics and suggested I used the article to teach the freshman class – the assumption being that no PKU finance student above the level of freshman could have ever made this kind of conceptual mistake. Perhaps not, but certainly anyone writing about currency policy should have at least done the math first.

Although this article is more confused than most about the impact of an appreciation on central bank reserves, it is worth explaining why it is wrong so as to address the less excitingly conspiratorial mistakes made by the merely confused. First, can an appreciation of the RMB reduce the cost to the US government of its debt obligations? Of course not.

The US government transacts almost exclusively in dollars, raises dollars in the form of taxes and borrowing, and owns dollar assets. Since it will pay exactly the same number of dollars to Chinese investors after the change in the RMB value as it did before the change, simple arithmetic should indicate that there will be no impact at all on the cost to the US of repaying the debt. After all, if a revaluation of the RMB causes the euro to drop against the dollar (a highly plausible outcome), could it possibly be true that the USG would reduce its payments on $100 of obligations owed to Chinese investors while increasing its payments on $100 of obligations owed to European investors? Exactly how would this work?

Are there no winners and losers?

It wouldn't. The claim is nonsensical and violates simple arithmetic. But if the RMB is revalued are there no losses and gains anywhere? Yes, of course there are, but the distribution of these gains and losses is completely different from what this article claims, and depends wholly on the structure of various balance sheets. In a nutshell, anyone who is net long dollars against RMB loses, and anyone who is net short dollars against RMB gains.

First of all, will China as an economic entity lose? Leaving aside the vigorous discussion about whether an RMB revaluation will increase or reduce China's long term growth prospects (I think it will), the net balance-sheet impact of a revaluation depends on whether China is net long or net short dollars. There is no precise way of answering this question, because every single economic entity in China implicitly has some complex exposure to the dollar (by which I mean foreign currencies generally) through current and future transactions, but generally speaking China is likely to gain from a revaluation because after the revaluation it will be exchanging the stuff it makes for stuff it buys from abroad at a better ratio. The value of what it sells abroad will rise relative to the value of what it buys from abroad, and if we could correctly capitalize those values on the balance sheet, it would probably show that the Chinese balance sheet would improve with a revaluation of the RMB.

Some people might make a more sophisticated argument that since China is a net creditor – i.e. it is net long dollars – it will lose by a revaluation of the RMB. This argument also turns out to be wrong, but for more complex reasons, and to explain why I have to put on my former-trader's hat and explain the difference between a real loss and a realized loss.

If you believe that the RMB is undervalued then you must accept that China takes a "real" loss every single time it exchanges a locally produced good or asset for a foreign one. It does not "realize" the loss, however, until it revalues the RMB to its "correct" value.

In other words, the PBoC, as the representative of China's net creditor status, will immediately realize

a loss when the RMB revalues, but this loss did not occur because of the revaluation. It occurred the very day the trade took place. When a Chinese producer sold goods to the US and took payment in US dollars, there was an unrealized economic loss equal to the undervaluation of the RMB. This unrealized loss was passed onto the PBoC when it bought the dollars from the exporter and paid RMB. This loss, however, will not actually show up until the RMB is revalued, which forces the real loss to be realized (i.e. recognized as an accounting matter). Postponing the revaluation, then, is not the way to avoid the loss – it is too late for that. The only way to avoid future additional loss is to stop making the exchange, which means, ironically, that the longer the PBoC postpones the revaluation of the RMB, the greater the real loss it will take.

So a revaluation of the RMB will not cause any real loss to any Chinese entity today. The loss already occurred but hasn't been realized.

But wait, if the RMB is revalued by 10%, the value of the PBoC's assets will immediately decline by $250 billion in RMB terms. Since the Chinese measure their wealth in RMB, isn't this a real additional loss for China?

No, because remember that the only thing you can do with reserves is pay for foreign imports or repay foreign obligations. And just as the value of the reserves drops 10% in RMB terms, so does the value of all those foreign payments – by definition they must go down by exactly the same amount in RMB terms.

This means that China takes no loss. It can buy and pay for just as much "stuff" after the revaluation, and with less implied PBoC borrowing, as it could before the revaluation – and the real value of money is what you can buy with it. So the real value of the reserves hasn't changed at all – just the accounting value in RMB, but this simply recognizes losses that were already taken long ago when the trade was first made, and should be a largely irrelevant number (except perhaps for conspiracy theorists).

Wealth is transferred within China

But that doesn't mean nothing at all happened. Although the Chinese overall balance sheet is probably a little better off with the revaluation, within China there are a whole set of winners and losers. Which is which depends on the structure of *individual* balance sheets. Basically everyone who is net long dollars against the RMB loses in an appreciation, and everyone who is net short dollars against the RMB wins.

Who loses? Of course the PBoC is a big loser. It has a hugely mismatched balance sheet in which it is long nearly $3 trillion (if everything were correctly counted), funded by an equivalent amount of RMB obligations.

Exporters and their employees, too, are naturally long dollars and so they would lose. They are long dollars because more of the net value of their current and future production less current and future costs is denominated in dollars (they are "sticky" to dollar prices) – for example labor costs, land, and

almost all other inputs except imported components are valued in RMB, whereas most revenues are valued in dollars.

Chinese companies with more assets abroad then foreign debt might also lose. Who wins? Nearly everyone else in China, since everyone in the country is short dollars to the extent that there are imported goods in his life. The local tea seller is short dollars if his tea is delivered to him in gas-guzzling trucks, as is the family planning to visit Egypt next year, as is the local provider of French perfumes, as is a teenager who wants to buy Nike shoes, and so pay for the corporate sponsorship of a Brazilian soccer star playing for a Spanish team. Every household and nearly every business in China is, in one way or another, an importer (and this is true in every country), so unless they own a lot of assets abroad they are effectively short dollars and will benefit from an appreciation in the RMB.

Revaluing the RMB, in other words, is important and significant because it represents a shift of wealth largely from the PBoC, exporters, and Chinese residents who have stashed away a lot of wealth in a foreign bank, in favor of the rest of the country. Since much of this shift of wealth benefits households at the expense of the state and manufacturers, one of the automatic consequence of a revaluation will be an increase in household wealth and, with it, household consumption. This is why revaluation is part of the rebalancing strategy – it shifts income to households and so increases household consumption.

So a revaluation has important balance sheet impacts on entities within China, and to a much lesser extent, on some entities outside China. But since it merely represents a distribution of wealth within China should we care about the PBoC losses or can we ignore them? Unfortunately we cannot ignore them and might have to worry about the PBoC losses because, once again, of balance sheet impacts.

The PBoC ruins a mismatched balance sheet, and as a consequence every 10% revaluation in the RMB will cause the PBoC's net indebtedness to rise by about 7-8% of GDP. This ultimately becomes an increase in total government debt, and of course the more dollars the PBoC accumulates, the greater this loss. (Some readers will note that if government debt levels are already too high, an increase in government debt will sharply increase future government claims on household income, thus reducing the future rebalancing impact of a revaluation, and they are right, which indicates how complex and difficult rebalancing might be). In that sense it is not whether or not China as a whole loses or gains from a revaluation that can be measured by looking at the reserves, and I would argue that it gains, but how the losses are distributed and what further balance sheet impacts that might have.

I apologize for such a long post, but I promised several people that I would try to address some of these issues, and it is hard to do so briefly. In short, what the PBoC does to the value of the RMB and how it invests its reserves matter a lot to China and the world, but not always in the way China and the world think. To get it right, we need to keep in mind the functioning of the balance of payments, the PBoC and other balance sheets, and the way the two are interrelated.

And now for the hard part: China's great rebalancing [Week 3]

China's economy is at an important crossroad. After nearly forty years of annual growth rates of nearly 10 percent, the country has developed some of the deepest economic imbalances ever recorded.

Its economic trajectory since Deng Xiaoping's economic reforms beginning in the late 1970s has been surpassed only once in history, by Argentina in the four decades that ended roughly 100 years ago. While it may seem strange to compare Argentina with China, Argentina's history reminds us how even the most seemingly substantial growth miracles in history can confound our expectations. China's adjustment will ultimately determine whether the post-Mao transition will be judged as the prelude to a new world order, in which China emerges as one of the dominant global powers, or as just one more of many examples of a country whose astonishing growth never subsequently justified the expectations it generated.

While China's imbalances will reverse over the next decade or two, there are many ways in which this reversal can take place. According to economist Albert Hirschman, rapid growth is always unbalanced, and economic imbalances always eventually reverse themselves. In the 1960s and 1970s, when Hirschman first developed his economic framework, he was optimistic enough to focus primarily on how successful growth strategies could be designed. Like most economists at the time he assumed that if growth was robust, the subsequent adjustment was likely to be relatively straightforward. Over time, however, as his early hopes were replaced with disillusion and frustration, he became increasingly pessimistic about prospects for developing countries. The adjustment process turned out to be far more difficult and unpredictable than anyone had anticipated.

Hirschman noted that the policy distortions that could undermine long-term development are highly path-dependent.[1] Successful policies necessarily transform the conditions under which they were originally implemented, but it is hard, he argued, to abandon these policies once they have achieved their aims – even after they have clearly become counterproductive. Although he is not widely read among China specialists, Hirschman's concerns have special resonance in China. In March 2007, China's then-premier Wen Jiabao famously characterized China's macroeconomic conditions as "unstable, unbalanced, uncoordinated, and unsustainable", and promised to begin reforming the economy.[2] But Beijing proved unable to impose the necessary reforms and, by almost every measure, the imbalances actually worsened until 2011-12, when they finally stabilized.

Why does it take so long to adjust? Part of the reason of course may simply be that policymakers rely on faulty economic analysis. But this cannot be the full explanation. It is true that as late as 2010-11 most China specialists profoundly misunderstood China's growth model and failed to see the systematic nature of its overreliance on credit and its susceptibility to non-productive investment, but

[1] Albert Hirschman, *Shifting Involvements: Private Interest and Public Action* (Princeton University Press, 1982)

[2] "Premier Wen Jiabao's Press Conference of March 17, 2007", Website of the Ministry of Foreign Affairs of the People's Republic of China

this was not true of all of Beijing's economic policy advisors.[3] Premier Wen's 2007 speech itself showed that Beijing's understanding of its growth model was far more sophisticated than the consensus among China specialists.

Policymakers take so long to reform policies that have outlived their usefulness probably more for political reasons than economic. Successful growth strategies nearly always create powerful elites that benefit disproportionately from the distribution of growth, and just as these elites are likely to oppose any substantial change in the growth model, the institutional structure that develops around the growth model – including the financial system, the distribution of power between the central government and other important agents, the allocation of the benefits of growth, and so on – constrains the ability to change the system. It is almost certainly not a coincidence that it was around 2007, as Beijing struggled unsuccessfully to rebalance the economy, that the Chinese press first began to indentify and criticize what commentators increasingly referred to as the "vested interests", whose opposition made reform so difficult. 既得利益者导致改革非常困难：不稳定、不平衡、不协调、不可持续的中国经济

Stages of growth

The secret to long-term development success, it often turns out, is not hidden in policy-engineered growth miracles. In fact, relatively speaking, growth miracles have historically been the easy part, with many examples over the past century. It is the subsequent adjustment that has always prevented substantial convergence between developing and advanced countries.[4] In fact with the exception of two trading entrepôts, Hong Kong and Singapore, and two small Asian economies who received very strong support from the US during the Cold War, South Korea and Taiwan, it is hard to find many examples of developing countries that became advanced economies during the past century.

The checkered history of growth miracles followed by failed adjustments is important to understanding the challenges facing China. Deng Xiaoping was one of the great leaders of the 20th Century, and the reforms that he initiated and implemented in China took great daring and imagination, but in order for us to understand China's future growth prospects we need to place his policies in their proper context. Deng Xiaoping did not design China's growth model. He did something much rarer and more difficult. He took a country with a rigid and highly constraining set of institutions supporting a powerful elite and managed successfully to steer it through a radical and very difficult adjustment process.

His success in the 1980s set the stage for two further decades of rapid growth during which new institutions and elites developed, ultimately creating a new set of constraints and imbalances,

[3] "The most important feature of China's growth pattern is investment overdrive", according to Yu Yongding, former member of the Monetary Policy Committee of the People's Bank of China, "China's Policy Responses to the Global Financial Crisis", *Richard Snape*
Lecture, 25 November, 2009, Productivity Commission, Melbourne

[4] Dani Rodrik finds nearly 30 cases of economies that grew by at least 4.5 percent a year per capita over a period of 30 years or more, the vast majority of which were poor or developing countries, and yet finds that "there is no tendency for poor economies to grow more rapidly than richer economies". *The Past, Present, and Future of Economic Growth,* Working Paper 1, Global Citizen Foundation, June 2013

including a heavy debt burden, that must be resolved. Like Deng before him, President Xi Jinping must steer the country through an adjustment process in which a new relationship between the government and the country's elites is established. The historical precedents make it clear not only that China's long-term development success depends on the rebalancing path it follows, but that during this process new and unpredictable political relationships will be forged that will determine the next several decades of Chinese history.

One of the biggest mistakes analysts make in their understanding of China's development is to conflate the nearly four decades since Deng Xiaoping began his historic reforms into a single, consistent growth model from whose success we can draw conclusions about the policymaking process. It is in fact much more useful to think about this period as consisting of four very different stages, the last of which, with great difficulty, we are only just beginning. 提出将邓小平以来的中国历史划分为四个阶段

Stage 1: The first period of liberalizing reforms

The first stage began in crisis. By the end of the 1970s, Maoist polices had seriously distorted the productive capacity of the Chinese people. To prevent collapse, the Chinese economy had to be substantially transformed in a way that eliminated the many constraints on economic productivity that had developed over the preceding decades. Deng Xiaoping's reforms did just that and they were immediately successful. In 1977 China's GDP shrank by 1.7 percent. After 1977 China has never experienced a single year of GDP growth below 7 percent except in 1982, when China grew by 5.2 percent, and in 1990 and 1991, when it grew by 4.0 and 3.8 percent.

Under Deng Xiaoping Beijing relaxed laws preventing unplanned economic activity, freed workers and farmers from their work units, and reduced the role of central planning in favor of localized planning. These reforms unleashed an explosion of economic activity that generated tremendous wealth creation, although not without the significant political and economic disruptions which nearly always arise from such a difficult adjustment process.

Their implementation was never likely to be politically easy. Deng's difficult task was to reform the deep and seemingly intractably rigid institutional character of the Chinese economy without irreparably disrupting the country's social and political system. Because these reforms necessarily undermined the bureaucracy's ability to constrain and direct economic activity, they met with powerful elite resistance. This opposition to his reforms however should not have come as surprise. Liberalizing reforms almost by definition undermine constraints that benefit the elite at the expense of overall productivity, and throughout history they have always generated political opposition from powerful groups. From the few successful cases of significant adjustment, like that of the United States under Franklin Delano Roosevelt, to the many unsuccessful ones, ranging from the Ottoman Empire in the 1840s and 1850s to the Soviet Union in the 1980s, liberalizing reforms have always generated determined elite opposition, often unleashing tremendous political instability in the process.

It was probably only because power was highly centralized around Deng Xiaoping and his allies, and

because he could count on the support of the military, that Beijing overcame determined elite resistance and successfully opened the economy to market forces. Even as late as 1992, however, opposition persisted, and Deng's famous Southern Tour was organized primarily to overwhelm continued elite resistance.

Stage 2: The investment growth period.

It is really not until the next stage that we can usefully speak about the Chinese growth model, in which rather than eliminate growth constraints, new policies were implemented to generate rapid growth. Inevitably these new policies would also begin to generate the imbalances that the current administration must resolve, the most important of which in China today is the extraordinarily low share of GDP retained by ordinary Chinese households.

This low share was not an accident. Developing countries, the Ukrainian-born economist, Alexander Gershenkron noted, have historically faced two key constraints. First, perhaps because of uncertain property rights, non-credible legal systems, and unstable financial and political systems, they do not generate enough domestic savings to fund investment. This leads them to rely, like the United States in the 19th Century, on volatile foreign savings to fund domestic investment needs. Second, for many of the same reasons, the private sector usually fails to direct investment consistently into productive projects. This creates an important role for the state. It must take the lead in directing resources into building badly-needed infrastructure and manufacturing facilities.[5]

Gershenkron's conclusion was that policymakers should implement polices that force up the domestic savings rate and direct resources into urgently needed investment. In nearly every investment-driven growth "miracle" of the past two centuries the government has done just that. How does a country force up its savings rate? Because savings is equal to the total production of goods and services less total consumption, forcing up the savings rate means forcing down the consumption rate. As most consumption is household consumption, the most effective way of doing so is by repressing the growth of household income relative to GDP. The investment-driven growth model, in other words, consists mainly of implementing policies that directly or indirectly tax household wealth and use the proceeds to subsidize investment directed by central authorities.

This growth model characterized the second stage of Chinese growth. Following the lead of Japan, the template for most of the Asian growth "miracles", Beijing implemented a number of mechanisms that implicitly transferred wealth from the household sector to subsidize investment. An undervalued currency, to take one example, raises the cost of imported goods and so reduces the real value of household income, but makes exporting more profitable and so encourages Chinese manufacturers to expand production. Wages grew more slowly than productivity, to take another example, reducing the

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[5] Alexander Gerschenkron, *Economic Backwardness in Historical Perspective, a Book of Essays* (Belknap Press of Harvard University Press, 1962)

share workers received as the value of what they produced grew. Owners of course profited from a larger share, and so expanded production. By far the most important of such mechanisms, however, was financial repression, and it is important to understand how it works to see why it is so difficult to reduce China's astonishingly high savings rate.

In a financially repressed system financial savings are largely restricted to deposits in the banking system, with interest rates set by the government. In China the lending rate was set at extraordinarily low levels (often negative in real terms) and was funded by even lower deposits rates. These low rates acted as a hidden transfer from household savers – equivalent to roughly 5 percent of GDP every year during the 2000-10 period – to the state-owned enterprises, large manufacturers, infrastructure developers, real estate developers, and local and municipal governments who received most lending. With such cheap capital, it is not surprising that entities with privileged access to loans embarked on a massive investment spree, often with little concern about the quality of the investment.

These various mechanisms, by subsidizing production, caused the total value of goods and services produced in China to rise much faster than otherwise. But by constraining the growth of household income – so that in China GDP grew at roughly 10 percent a year, while household income grew by a still-enviable 7-8 percent – the household share of total GDP dropped every year to become, at roughly 50 percent of GDP, among the lowest ever recorded. Households received, in other words, only 50 percent of what they produced. Because a very weak social safety net forced them to save part of that, they were able to consume only 35 percent of China's GDP in 2010, which, when added to government consumption, left total consumption in China at 45 percent, a remarkably low share in a world which consumes 60-70 percent of total production.

Everything an economy produces is either consumed or saved. Because Chinese households consumed a far smaller share than any other country of everything they produced, China saved a far larger share of its GDP than any other country. It was not habits of thrift, in other words, but the very small share households retained of their total production that created the extraordinarily high savings that funded a massive program of investment in infrastructure and manufacturing capacity. The resulting surge in per capita productivity growth created an even greater surge in GDP growth as, coincidentally, the baby boom following the two decades of post-1949 stability poured into the workforce.

Many countries besides China have followed this kind of investment-led growth strategy – the USSR in the 1950s, Brazil in the 1960s, and Japan in the 1980s, to cite the most obvious. In some cases, like Brazil, the household transfers were explicit and occurred in the form of high income taxes. In others, like in Japan and China, they involved the transfers described above. In every case economic activity grew so rapidly that even with policies that repressed household income growth, ordinary households benefitted nonetheless from extraordinary growth in their incomes – 7-8 percent a year in the case of China.

But there was another predictable consequence of this model: the relationship between Beijing and

the country's elite was transformed. Because central authorities collect national resources and allocate them into favored projects, a powerful new group emerged that benefitted disproportionately from these policies, in large part because they were the direct beneficiaries of the constraints aimed at generating higher savings to subsidize growth by constraining the growth in household income. This group strongly supported government policies and competed actively to accomplish the objectives set out by Beijing. The more successful they were, the more they were rewarded in the form of indirect subsidies, with access to extraordinarily cheap credit quickly becoming the most profitable asset in China.

Stage 3: The overinvestment period

The third stage of Chinese growth, which probably began some time early in the last decade, was characterized by continued rapid GDP growth, but now this growth in GDP was underpinned by even more rapid growth in debt. Again this should have been easily predictable. As Hirshman argued, successful policies change the conditions that originally made them successful, and at some point these can become counterproductive and must be reversed.

Undeveloped economies almost by definition suffer from social, legal, financial and economic institutions that constrain the country's ability to absorb investment productively. In the early 1990s these constraints did not seem to matter for China when it came to selecting investment projects. The country so badly lacked infrastructure and manufacturing capacity that the only important constraint on productive investment was the pace at which savings could grow. A financial system that was indiscriminate in choosing investment projects was not a serious problem. Almost any investment project increased productivity, and so the best financial system was the one that expanded most rapidly.

This is what China got, but after many years of extraordinarily rapid investment growth, it naturally becomes increasingly difficult to identify obviously productive investments. When this happens, any inefficiency in the ability of banks to allocate capital productively can become a serious constraint. Every investment-driven growth "miracle" in modern history, consequently, even those involving advanced economies like Japan, has eventually reached a saturation point after which continued investment becomes increasingly unproductive.

But the financial system is designed to expand credit as rapidly as possible, and the costs of investing in infrastructure or manufacturing capacity are so heavily subsidized by hidden or explicit transfers from households that there is no mechanism to constrain, or even to identify, wasted investment. What is more, because cheap credit has become the most valuable asset in the economy, the agents through whom Beijing's development objectives were accomplished became increasingly powerful and increasingly determined to retain cheap credit to fund further growth.

China, like every "growth miracle" country before it, began allocating investment on an increasing scale into projects whose values could not be justified, or in some cases were justified only under the

most optimistic projections. When this happens, the debt supporting the investment rises faster than debt-servicing capacity, making credit growth unsustainable. The process is also intensely pro-cyclical – more investment seems to generate higher growth, and higher growth justifies ever more optimistic investment projections. As China begins to deleverage, however, it is worth noting that the reversal of a pro-cyclical process is itself also highly pro-cyclical, and just as the self-reinforcing growth period tends to surprise on the upside, the subsequent slowdown tends to surprise on the downside.

In spite of increasing evidence of investment misallocation, however, the powerful vested interests that benefit from the growth model have prevented adjustment long enough in every historical precedent for debt to become a serious problem. China has not been an exception. Even though by 2007 Beijing formally recognized the imbalances, Beijing proved unable to reform, and by 2010-11 it was clear to even the most naive that China was suffering from excessive credit creation. China urgently needs institutional reforms that both change the way investment had been directed for two decades and that create incentives for small businesses and ordinary Chinese to behave in more productive ways free of the constraints that had once made the investment growth model successful.

Stage 4: The second period of liberalizing reforms.

China, in other words, must begin the fourth stage of its growth period. It must rein in credit growth, and, with it, investment growth, and this requires a radical transformation of its financial system. Under its new president, Xi Jinping, China must implement a second round of liberalizing reforms that in many ways will replicate Deng Xiaoping's reforms. There is one major difference however between Deng's reforms and the reforms Xi must implement. Although both sets of reforms should lead to an immediate improvement in real productivity growth, it is very unlikely that China's adjustment under Xi will result in spectacularly high GDP growth rates the way Deng's reforms almost immediately did.

The reason has to do with debt. When Deng began his reforms Chinese debt levels were low, unlike today. As he eliminated the constraints and distortions that prevented Chinese from productive activity, the resulting increased productivity showed up immediately as higher growth. But high debt levels limit growth in three important ways. First, they cause businesses, banks, entrepreneurs, and other agents automatically to change their behavior in adverse ways. This process (called "financial distress" by finance specialists) is often misunderstood by economists, but there is overwhelming historical evidence that until debt has been reduced, highly indebted economies simply do not grow, even when reforms aimed at increasing productivity are successfully implemented. The debt itself prevents the full effect of the reforms from taking place, especially because it discourages entrepreneurs from exploiting those reforms, knowing that successful risk-taking will be diverted to satisfy creditors.[6]

Second, high levels of debt require that the Chinese economy deleverage, and, except in an economy in

[6] Michael Pettis, *The Volatility Machine: Emerging Economies and the Threat of Financial Collapse* (Oxford University Press, 2001)

which all resources, including labor, are fully and productively utilized, deleveraging always reduces growth. Finally, because the Chinese banking system has not recognized the economic losses its lending has generated, China's GDP has been substantially overstated by the amount of these bad loans. This overstatement will automatically be amortized over the adjustment period.

How will China rebalance?

Because so much investment in China is non-productive, higher investment causes the country's already excessive debt burden to rise further. Lower investment however would force up unemployment unless consumption growth can pick up the slack. Because China's low consumption share is mainly a consequence of the extraordinarily low share of GDP retained by Chinese households, to increase consumption rapidly, Beijing must force up household income at the expense of state-owned enterprises and local governments.

This is the heart of China's adjustment choices. Rebalancing the Chinese economy ultimately requires that Beijing manages among three difficult options – rising debt, rising unemployment, and wealth transfers from the state sector to Chinese households. As long as banks can fund new investment without constraint, Beijing can keep unemployment low by keeping investment growth high, even if the resulting debt reduces long-term growth. Once China reaches its debt capacity limit, however, it can no longer trade off debt for unemployment. While some optimists suggest China may have around a decade before it reaches this limit, my own view is that it has only 3-4 years. Banks have to accelerate credit to roll over the growing amount of bad debt that has not been written down, with only the excess going to fund new economic activity. With so much unrecognized bad debt, credit probably cannot grow fast enough in 3-4 years to do both. When this happens, China will have reached its debt capacity limit.

However much time it has, Beijing must transfer wealth from the state sector to the household sector fast enough that consumption can replace investment as the driver of growth before the financial system runs out of debt capacity. If not, it runs the risk of a surge in unemployment. The good news is that there is a pretty broad consensus on what reforms are needed, with the Third Plenum meeting of October 2013 providing an excellent blueprint. Already the mechanisms that created both the astonishing growth as well as the great imbalances – the implicit transfers from households to subsidize growth – have largely been eliminated. The next, more difficult, step will be to transfer substantial wealth from the state sector, mainly local governments and state-owned entities, to households – in the form of land reform, *hukou* reform, financial sector liberalization, privatization, etc. – so that household income can continue growing even as GDP growth declines.

Over the next decade or two China's imbalances will reverse and household income growth will substantially exceed GDP growth, but there are many ways this can happen. If Beijing can overcome political opposition to wealth transfers, it can maintain high consumption growth rates even as investment growth flattens or turns negative. In that case during Xi's administration Chinese

household income and consumption might grow at a vibrant 5-6 percent annually while average GDP growth drops to 3-4 percent – in my opinion the best-case scenario. If opposition however forces Beijing to rely on credit growth, China could run into debt capacity constraints, after which GDP growth would plunge, perhaps even becoming negative, but as occurred in the US from 1930 to 1933, China would still rebalance because the drop in household income would be much lower than the drop in GDP. Alternatively, like Japan after 1990, Chinese government debt could surge as GDP growth drops to nearly zero and household income drops to below 2 percent.

The point is that China will rebalance its economy, but as it juggles between rising debt, rising unemployment, and wealth transfers from the state sector to Chinese households, there are many possible paths it can take to do so.[7] Because ultimately its path will depend on hard-to-predict constraints such as Beijing's political ability to overcome elite resistance, debt capacity within the banking system, or how accommodative the external sector will be, there is no easy way to predict the outcome. The market consensus for average GDP growth in the 2013-2023 period has dropped every year for the past three years, from 8-9 percent in 2012 to 6-7 percent in 2014. It will almost certainly continue to drop in the coming years.

President Xi has only just begun the reform process and his task will not be easy. His first steps in government have been to consolidate power and to weaken potential opposition. We should however expect continued political opposition to rebalancing the Chinese economy. It took highly centralized power under Deng Xiaoping to implement the liberalizing reforms of the 1980s, and it will probably take highly centralized power under Xi to implement a new set of liberalizing reforms. Unlike Deng, however, Xi will not be able to point to an almost immediate surge in growth to justify his reforms.

This is the great challenge that the president faces, and it affects both China and its relationship with the US and the world. Historical precedents suggest that the greatest risks Xi Jinping's administration will face are likely to be political, and the greatest constraints will have to do with debt. US, European and Japanese policy should recognize these risks and constraints, and understand that much of Beijing's external and domestic policies will be driven by a difficult internal balancing act.

A hostile external environment will make the economic adjustment far more costly for China and for the administration. It is in Beijing's best interest that the world accommodate its adjustment, and although from time to time Beijing may be forced to take what seem like hostile positions on certain international issues, more often than not this will be driven largely by domestic posturing. Privately China is likely to be far more concessionary than it will be in public. The US, and the West more generally, should support reformers and friends and work privately to improve the economic consequences of their policy stances.

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[7] I describe six paths which broadly list the different ways China can rebalance in Michael Pettis, *Avoiding the Fall: China's Economic Restructuring* (Carnegie Endowment, 2013)

Over the next few years as China's economy slows, a new relationship between Beijing and the various elite groups within the country will necessarily be forged, as well as between China and the rest of the world, and new economic institutions will be created that will determine the nature of Chinese economic growth over the rest of the century. One thing is certain, however. The adjustment period that has followed every growth miracle in history has always overturned expectations, especially the most seemingly obvious and widely accepted ones. It is safe to assume that it will happen again.

The four stages of Chinese growth [Week 3]

By Michael Pettis · June 18, 2014 · Politics of rebalancing, Rebalancing · 66 Comments

From the early 1980s until now China has grown at a pace not matched since the four decades Argentina enjoyed before the First World War. In spite of some fairly goofy attempts a few years ago, however, to characterize China during this period as having followed a set of policies called the "Beijing Consensus", these decades did not involve a unified set of policies, or a set of related polices, that Beijing implemented consistently. It is far more useful, I would argue, to think about the past 3-4 decades as consisting of four very different periods, the last of which we are, with great difficulty, just starting.

The idea of a Beijing Consensus has probably help to prevent or postpone an understanding of the vulnerabilities in the current growth model and the steps China must take to address these vulnerabilities. Among other things this confusion made China's nearly four decades of growth seem far more exceptional than it was, and so created the very lazy belief among analysts that there are no historical precedents that can guide us in understanding the strengths and the vulnerabilities of China's economic trajectory.

Before explaining why China's growth trajectory can best be understood by separating out these different periods I want to re-introduce the idea of social capital, a topic about which I wrote last year. As I use the phrase, social capital is the set of institutions – including the legal framework, the financial system, the nature of corporate governance, political practices and traditions, educational and health levels, the structure of taxes, etc. – that determine the way individuals are given incentives to create value with the tools and infrastructure that they have.

In a country with highly developed social capital, incentive structures are aligned and frictional costs reduced in such a way that agents are rewarded for innovation and productive activity. The higher the level of social capital, the more likely they are to act individually and creatively to exploit current economic conditions and infrastructure to generate productive growth.

It is a hard concept to explain precisely and to quantify, but the idea of differing levels of social capital helps explain why, for example, French entrepreneurs (not to mention Indian, Chinese, Mexican and Nigerian) are more likely to create successful tech startups in the US or the UK than at home, or why it is easier to start a business in Sidney than in Beijing, or why technological innovation is not evenly spread out among countries, even among countries at similar development levels, but rather tends to cluster in a few areas in a few countries where tech entrepreneurs seem to believe that their work is made easier and the rewards greater.

Developed countries are rich because they have higher levels of social capital than backward countries, and not, as is sometimes believed, because they have abundant capital stock. On the contrary, rather than the cause of wealth, abundant capital stock should be, but isn't always (China may be an example), a consequence of abundant social capital. The resulting higher level of worker productivity makes it

easier to justify additional infrastructure that saves the time and labor of productive workers. A high level of capital stock is a "symptom" of wealth, not a cause.

In developed countries, in other words, abundant social capital encourages residents and businesses to use available conditions and infrastructure in the most productive ways possible. Undeveloped countries, on the other hand, are poor because they do not have the often-intangible qualities that allow citizens spontaneously, and without planning, to exploit their economic and infrastructure resources most efficiently and productively.

How to become a developed country

A developing country needs to implement two sets of policies if it is to succeed in advancing to the developed stage. One set is pretty obvious. These are policies aimed at directly improving the environment under which businesses operate – by giving them the resources they need, such as good infrastructure, capital, and an educated work force.

The second set is much harder to prescribe and is aimed at improving social capital precisely so that individuals and businesses can use these resources efficiently and productively. These reforms involves creating productive incentive structures, robust and efficient legal systems with predictable enforcement, financial systems that allocate capital productively, limited political and elite interference in the wealth-creation process, limited rent seeking, clarity and ease in the ability to create businesses or otherwise create economic value for society, etc. It is perhaps worth noting that in every country, reforms that build social capital are likely to be highly idiosyncratic, and dependent on that country's particular culture and history, which may explain why grand development theories applied uniformly to different countries never seem to work outside their country of origin.

To understand the challenges that face China today it is necessary to understand how these two sets of policies have very different political economy implications. Because the first set of policies often involves the allocation of resources from the center, it tends to receive tremendous support from a rent-capturing elite, and because these policies benefit the elite, this support tends to be self-reinforcing. The more the policies are implemented, the better for the elite, which in turn increases their power, which creates stronger support for the policies.

The second set of policies are much more difficult to implement because they often or usually require a dismantling of the distortions and frictions that create rent for the elite, thus the undermining the ability of the elite to capture a disproportionate share of the benefits of growth. A financial system that allocates capital efficiently and productively, for example, is not one that allocates capital on the basis of power or access. A fair, clear, and predictable legal system is not one in which some groups are privileged relative to others. If anyone can start a business, the benefits of monopoly or oligopoly are undermined.

The kinds of liberalizing reforms that increase social capital, consequently, are likely to be unpopular with the elites that have benefitted from their absence, unless perhaps the resulting or accompanying

surge in wealth or productivity is great enough to allow elites to benefit even as their share of the benefits declines. This might be one reason why, as I discuss in my book, *The Volatility Machine*, that throughout modern history developing countries often seem to embark on liberalizing economic reforms only during periods of great international liquidity, when money is flowing into risky ventures like high technology, real estate, and developing countries.

While the liberalizing reforms usually undermine the ability of the elite to capture a disproportionate share of growth, in other words, because the reforms often seem to encourage massive foreign capital inflows, and these push up the price of assets largely controlled by the elite, political opposition to the reforms is weakened. If this is true, by the way, it means that attempts at implementing liberalizing reforms are successful mainly during periods of great global liquidity, and this might have implications for China, especially if over the next few years global central banks begin to withdraw the huge liquidity injections that have underpinned asset bubbles around the world.

From social capital to physical capital

With that lengthy preamble, let me return to China's recent economic history. As I see it, the four periods that characterize China's long growth spurt can be described this way:

1. *The first liberalizing period.* In the late 1970s and early 1980s Beijing forced through a series of liberalizing reforms that I would characterize as aimed at building social capital. By eliminating laws that severely constrained the ability of Chinese to behave productively, these reforms unleashed an explosion of economic activity that generated tremendous wealth creation. It became legal, for example, for Chinese to produce and sell as individuals, not just through the relevant and usually badly managed state-controlled collectives or organizations. A limited number of farmers were allowed to keep anything they produced above some quota, and agricultural yields doubled almost immediately. If a man believed there was a shortage of bricks in his town, he could create a company to manufacture bricks, and China's hopeless jumble of soaring brick inventories in one part of the province matched by severe brick shortages nearly everywhere else was replaced with a system in which the more efficiently you made and delivered bricks, the richer both you and the country became.

But the implementation of the reforms was not easy. It undermined a very powerful party structure (not to mention the managers of the old state-controlled brick manufacturer) that had been built up over the previous three decades around the ability of its members to constrain and direct economic activity, and so these reforms met with powerful elite resistance. It was only, I would argue, because of the credibility, prestige, and power that Deng Xiaoping and the men around him had, and the loyalty they had built within the PLA, that Beijing was able to overcome elite resistance and successfully implement the reforms. Even in the 1990s, Deng struggled with elite opposition and my understanding is that his famous 1992 Southern Tour was arranged mainly to outflank and defeat provincial opposition to continued economic liberalization.

2. *The "Gershenkron" period*. As Chinese productive activity swelled it soon began, however, to run into

infrastructure and capacity constraints. This began the second phase of China's astonishing growth, one characterized by the marshalling of domestic resources to fund an investment boom aimed at creating infrastructure and capacity. Like the many previous examples of investment-driven growth miracles, China embarked on a program to resolve the major constraints identified by Alexander Gershenkron in the 1950s and 1960s as constraining backward economies: a) insufficient savings to fund domestic investment needs, which had to be resolved by policies that constrained consumption growth by constraining household income growth, and b) the widespread failure of the private sector to engage in productive investment, perhaps because of legal uncertainties and their inability to capture many of the externalities associated with these investments, which could be resolved by having the state identify needed investment and controlling and allocating the savings that were generated by resolving the savings constraint.

Because China's infrastructure was far below its ability to absorb and exploit infrastructure efficiently and productively (its social capital exceeded its physical capital, in other words), it was relatively easy for the central authorities to identify productive investment projects, and as they poured money into these projects, the result was another surge in wealth creation from the early 1990s to the early 2000s. Although all Chinese benefitted from this wealth creation, the new elite benefitted disproportionately, in large part because of the constraints imposed on the growth of household income aimed at generating higher savings. Of course over time these new elites became politically entrenched. This elite today is famously referred to (in China) as the "vested interests".

3. Investment overshooting. But China was still an undeveloped economy with "backward" (in Gershenkron's sense) social, legal, financial and economic institutions that sharply constrained its citizens from achieving the levels of productivity that characterize developed countries. Its social capital was still very low, in some cases perhaps even as a partial consequence of policies that had led to the earlier rapid investment-led growth by allowing elites to control access to cheap capital, land, and subsidies. As investment surged, China's physical capital converged with its social capital (i.e. its infrastructure more or less converged to its ability to exploit this infrastructure productively), after which additional physical capital was no longer capable, or much less so, of creating real wealth.

Instead, continued rapid increases in investment directed by the controlling elites (especially at the local and municipal levels) created the illusion of rapid growth. Because this growth was backed by even faster growth in debt, however, it was ultimately unsustainable. This period began around the beginning of the last decade, I would argue, and it is the period in which we currently find ourselves.

4. The second liberalizing period. What China needs now is another set of liberalizing reforms that cause a surge in social capital such that Chinese individuals and businesses have incentives to change their behavior in ways that generate greater productive activity from the same set of assets. These must include changing the legal structure, predictably enforcing business law, changing the way capital is priced and allocated, and other factors that determined the incentives, so that Chinese are

more heavily rewarded for activity that increases productivity and penalized, or at least less heavily rewarded, for rent seeking.

But because this means almost by definition undermining the very policies that allow elite rent capturing (preferential access to cheap credit, most importantly), it was always likely to be strongly resisted until debt levels got high enough to create a sense of urgency. This resistance to reform over the past 7-10 years was the origin of the "vested interests" debate.

Most of the reforms proposed during the Third Plenum and championed by President Xi Jinping and Premier Li Keqiang are liberalizing reforms aimed implicitly and even sometimes very explicitly at increasing social capital. In nearly every case – land reform, hukou reform, environmental repair, interest rate liberalization, governance reform in the process of allocating capital, market pricing and elimination of subsidies, privatization, etc – these reforms effectively transfer wealth from the state and the elites to the household sector and to small and medium enterprises. By doing so, they eliminate frictions that constrain productive behavior, but of course this comes at the cost of elite rent-seeking behavior.

The uncertain process of liberalizing reforms

Because of rapidly approaching debt constraints China cannot continue what I characterize as the set of "investment overshooting" economic polices for much longer (my instinct suggests perhaps three or four years at most). Under these policies, any growth above some level – and I would argue that GDP growth of anything above 3-4% implies almost automatically that "investment overshooting" policies are still driving growth, at least to some extent – requires an unsustainable increase in debt. Of course the longer this kind of growth continues, the greater the risk that China reaches debt capacity constraints, in which case the country faces a chaotic economic adjustment.

Beijing must therefore embark as quickly and forcefully as possible upon what I have characterized as "second liberalizing period" economic policies, which in a sense means a return to the "first liberalizing period" reform style of the 1980s. There is by the way no longer much confusion over what these policies entail. Beijing knows more or less, perhaps a little later than optimal, exactly what must be done, although the sequencing of reforms is more controversial, and the proof that it understands the relevant issues is that the Third Plenum clearly and explicitly addressed the relevant issues head on, proposing at the end exactly the kinds of policies we would have expected if China is to embark on a new set of policies aimed at driving sharp increases in social capital.

The problem for China, of course, and as I think nearly everyone understands, is to implement these liberalizing reforms well before the country starts to bump up against its debt capacity constraints. Xi's administration must do this against what is likely to be ferocious resistance from those who have benefitted enormously from constraints on Chinese productivity growth, and who consequently stand to lose the most from real reform.

I would argue that this is exactly what President Xi seems to be doing, and why even before he was

formally in power he sought to consolidate power, undermine and frighten potential opposition, strengthen his relationship with the military, and unify the country's policymakers behind the need for reforms. This may also be why PBoC Governor Zhou – who was among the first senior policymakers, I believe, to recognize the urgent need for China to rebalance economic growth away from the current debt-addicted model – seems to be among the key economic decision-makers.

Unless President Xi is successful in consolidating power and control over economic assets, an abundance of historical precedents suggests that he is unlikely to overcome powerful elite resistance. If he is successful – and for now I am cautiously optimistic that he will pull it off – he will be in a position to implement the urgently needed liberalizing reforms that will push China onto its next stage of sustainable productivity growth, in which case he is likely to be hailed as China's greatest leader since Deng Xiaoping – and for many of the same reasons.

Perhaps not everyone in Beijing understands, however, that this will happen only after a difficult and probably long adjustment period, during which GDP growth rates, although not necessarily household income growth rates, must fall far more than they already have, for reasons I have discussed elsewhere. This matters to the long-term success of China's reforms, because sharply slowing growth may revive or unify political opposition.

In fact I suspect the reason credit growth in the past year or two has not slowed nearly as sharply as it should, or as sharply as required by the economic analysis implicit in the Third Plenum reform proposals, is precisely because of the expected impact of meaningful credit constraint on GDP growth. Any attempt to rein in credit will sharply reduce GDP growth, and there is of course likely to be a positive correlation between lower growth and a stronger and more unified opposition. Xi must take steps to slow growth, but he might not yet be able to do so.

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China, Europe, and optimal currency zones [Week 4]

By Michael Pettis · November 5, 2014 · Balance sheet fragility, Rebalancing · 306 Comments

I typically think of four main factors that determine whether or not an economy can function efficiently as a single currency or economic zone. They primarily determine the level of adjustments costs and how these costs are to be shared, so that regions more able to bear the costs absorb a larger share of those costs:

1 Labor mobility. If workers can move from one part of the economy to another with low frictional costs (which range from legal restrictions to transportation to language and other social barriers), this reduces the distortions caused by differing growth rates in different parts of the economy. Workers move easily from where they are less valuable to where they are more valuable, reducing downward pressure on wages in the weaker parts of the economy and increasing the value of labor overall.

2 Capital mobility. The same is true if capital can move easily from one part of the economy to another. Declining prices and costs in the weaker parts of the economy should attract investment from the stronger parts.

3 Fiscal policy. Mechanisms that allow an entity (usually the government) to transfer wealth from rapidly growing sectors to more slowly growing sectors – most obviously income taxes used to fund unemployment benefits – help reduce the disparity between sectors that are growing at very different speeds. This helps stabilize the economy overall.

4 Monetary policy. The transmission of monetary policy should be consistent both in timing and effect so that interest rates reflect the needs of the different parts of the economy. This is always hard to do unless each economic entity imposes strict capital controls and has its own discrete monetary policy, and while capital controls are hard enough for a country to impose successfully, they are much harder to impose at a sub-country – e.g. provincial – level.

Although I think China is clearly much more integrated as an optimal currency zone than Europe is today, it is probably less integrated than the US (I will use the US and Europe as the two extreme cases between which China falls). China of course does not have the problems of multiple sovereignty and taxation that Europe does, but there are still important frictional costs among provinces and regions that exceed those among US states and regions and that may make an adjustment to slower growth bumpier than expected.

Labor mobility

One of the most obvious such frictions is in labor mobility. Even on paper China is far from being a single, unitary labor market. Some of the constraints on labor mobility are the typical constraints for any large country, for example the costs involved in moving from one place to another very different place – cultural differences, travel expenses, even language barriers – but in China there is an additional important legal constraint: the “hukou” system, or system of residential permits. The always-useful Wikipedia describes it like this:

A hukou is a record in the system of household registration required by law in the People's Republic of China…A household registration record officially identifies a person as a resident of an area and includes identifying information such as name, parents, spouse, and date of birth.

This matters especially for China's huge population of migrant workers. Technically in China a worker's ability to work in any part of the country is constrained by the hukou system.

In 1958, the Chinese government officially promulgated the family register system to control the movement of people between urban and rural areas. Individuals were broadly categorised as a "rural" or "urban" worker. A worker seeking to move from the country to urban areas to take up non-agricultural work would have to apply through the relevant bureaucracies.

The number of workers allowed to make such moves was tightly controlled. Migrant workers would require six passes to work in provinces other than their own. People who worked outside their authorized domain or geographical area would not qualify for grain rations, employer-provided housing, or health care. There were controls over education, employment, marriage and so on.

The effect of the hukou system is to create a multi-tiered caste system for workers in which there are more desirable and less desirable hukous, usually based on differences in urbanization, growth and income:

Reformation of hukou has been controversial in the PRC. It is a system widely regarded as unfair by citizens of the PRC, but there is also fear that its liberalization would lead to massive movement of people into the cities, causing strain to city government services, damage to the rural economies, and increase in social unrest and crime. And yet, there has been recognition that hukou is an impediment to economic development. China's accession to theWorld Trade Organization has forced it to allow reformation to hukou in order to liberate the movement of labor for the benefit of the economy.

⋯Chan and Buckingham's (2008) article, "Is China Abolishing the Hukou System?" argues that previous reforms have not fundamentally changed the hukou system, but have only decentralized the powers of hukou to local governments. The present hukou system remains active and continues to contribute to China's rural and urban disparity.

Most migrant workers in large cities are technically there illegally because they do not have the appropriate hukou. This means among other things that they have limited access to social services, including health care and schooling for their children. They also have limited legal standing in case of conflicts with their managers and bosses, including conflicts over late pay (in China wages for migrant workers are often paid months in arrears).

While most Chinese recognize that the hukou system is both unfair and detrimental overall to the economy, there is, not surprisingly, opposition to real reform, which would anyway be extremely disruptive without significant changes in the abilities of municipal governments to fund themselves. Eliminating the hukou altogether, for example, would require that workers who are currently non-hukou residents be treated the same way as hukou residents, so that logically city governments

would have either to increase their revenues commensurately, or to reduce the services they currently provide to the latter. Almost certainly this would cause social service costs in cities with large migrant worker populations, including health and education, to surge, and so the largest and fastest growing cities strongly oppose real hukou reform.

Ordinary citizens with "upper caste" hukou also oppose significant reform. In China, as in most places, there is prejudice towards migrant workers, who are blamed for crime, low wages, dirty neighborhoods and drug usage. I would imagine that when overall economic growth slows and unemployment rises, tension and conflicts between those with "good" hukou and those without would only deteriorate. I would also assume that if unemployment were to rise, local government officials would naturally take steps to increase discrimination against outsiders.

As of now China effectively has a reasonably high level of labor mobility, especially because most migrant workers have moved from their villages to cities still within their own provinces, and so provincial leaders are responsible for them anyway. For this reason the default assumption among most analysts is that China has a reasonably high degree of labor mobility.

The interesting question however should be how the system would respond to conditions of much lower growth, higher unemployment, and potential labor tension. In my classes at Peking University I teach that government officials, especially regulators, should have the same pessimistic mind-set as bond investors. Instead of thinking about all the ways things can go right, they must think about what their constraints will be when things go wrong.

When we think about how labor mobility in China will affect a slowing economy, in other words, we should not assume that we will have the same level of labor mobility as we have had during the past several years. When there are plenty of jobs available and leaders of fast growing cities and provinces are eager to encourage immigration, the hukou system may work differently than when officials are worried about unemployment in their jurisdictions. We cannot say for certain, especially when the response of Beijing is uncertain, but it is certainly plausible that the hukou system will be used to reduce labor mobility if slowing GDP growth rates are associated with higher unemployment.

Money mobility

In China much if not most "fiscal" activity actually occurs through the banking system, with bank loans playing the role of fiscal expenditures and low or even negative deposit rates playing the role of fiscal revenues. Of course in a country whose financial system is dominated by banks, monetary policy is conducted largely through the banks. This means that capital mobility and the transmission of both fiscal and monetary policy is determined at least in part by the structure and mobility of the banking system.

China's banking system is divided very broadly into national banks and local and provincial banks, with each side comprising roughly 50% of the total. In the aggregate, local banks, which include city banks and rural cooperatives, are generally believed to be much weaker than the national banks. Their

relatively smaller branch networks force them to rely more heavily than their national rivals, with their large retail branch networks, on corporate deposits and purchased funds. In addition their assets are probably in far worse shape than the assets of the large banks, in large part because their lending policies are more likely to be subject to the needs of local officials.

I assume that one of the consequences of an economic slowdown in China will be a surge in potential insolvency among the smaller banks, a large part of which are probably already insolvent but kept liquid by confidence in the banking system. If (when) this happens, I suspect that the response of the financial authorities will be, rather than liquidate bad banks and pay depositors out of government revenues, to merge them into large banks. It would be politically risky to allow banks to default on depositors, and policymakers always prefer to bury expenses, hoping that over time they will resolve themselves.

Bailing out banks rather than closing them down can be economically justified under very specific conditions, formally identified long ago by Walter Bagehot, but the historical precedents suggest that protecting insolvent banks, as the US did in response to the S&L crisis of the 1980s, or Japan in the 1990s, nearly always ultimately raises costs significantly. Nonetheless in my opinion there is a very high probability that over the next ten years, rather than see the closing down of weaker banks, the Chinese financial landscape will evolve towards larger but operationally hobbled banks, much like the "zombie" banks that emerged in Japan in the 1990s.

Small banks tend to be very local in their operations, but I think in China even large national banks operate to an important extent on a provincial basis, with deposits collected in each province going largely to fund loans made within the province. What is more, governance within provincial branches, even those of the largest national banks, tend to be dominated by the needs of local government officials. This means that to some extent a national bank may be more aptly described as a group of provincial banks with headquarters (usually) in Beijing. As an aside, Anne Stevenson-Yang and Andrew Collier have both done very good work in trying to disentangle governance structures within the local banking systems.

Some of the financial reforms described in the Third Plenum are aimed precisely at modifying the ways in which local officials can influence the capital allocation process. Already there is a lot of concern among regulators about the risks associated with the ability of local officials to direct funding into favored projects, and as the economy slows, these risks will become much more obvious. We will see, of course, just how successful – and speedy – governance reform is likely to be in reducing the various kinds of frictional costs, but for now I think it is safe to assume that we cannot count on full, unfettered capital mobility within the banking system, and there is always the chance that unless Beijing forcefully intervenes, local responses to an economic slowdown will result in more, not less, localization of the banking function.

This also implies that the transmission of monetary and fiscal policy is not likely to be consistent

across the country. To the extent that fiscal expenditures take place through the banking system, without transfers among provinces it may actually be more difficult for provinces experiencing economic problems to grow deposits fast enough to expand "fiscally".

Will the costs of rebalancing be spread efficiently?

As growth slows within the Chinese economy overall, and as certain provinces and regions experience especially significant growth declines, I would guess that frictional costs and constraints on both labor and capital will remain, or even rise, and with them the transmission of monetary policy is likely to become more complex. Provinces that have relied heavily on government infrastructure spending – and the real estate boom that seems to accompany heavy government spending – may be especially affected, and these provinces are generally the poorer, Western provinces.

So what are the implications of frictions that constrain the adjustment process? If there were few relevant distortions or frictional costs within China, as China's economy slowed, the rebalancing process would be difficult in any case, but at least there would be no tendency to distribute the costs of rebalancing unevenly, with heavier costs being assigned to regions less able to bear them. Because constraining labor mobility raises the costs for provinces with higher unemployment, and lowers it for provinces with lower unemployment, low frictional costs implies that labor mobility is not constrained. The same is true for capital mobility.

While the way costs are distributed among the provinces within China matters to individual provinces, of course, it might matter a lot less overall to China if losses for one province are matched with gains for another. To understand what might happen in China it might be helpful to think about the post-crisis experiences of the US and Europe, the two extreme cases of large currency zones in which frictional costs in the former are negligible and in the latter are highly constraining. Comparing how the US adjusted to the 2007-08 crisis with the way Europe did may shed insight on the process.

There are of course many costs within the US economy that keep labor and capital mobility from being frictionless (bus fare, if nothing else), but these are low enough to make the US very clearly an optimal currency zone, and so they spread the costs of the adjustment process more evenly in the US. This is not to say of course that the US adjusted quickly and painlessly from the crisis, but when we consider the other extreme, that of Europe, it is clear that the US adjustment could have been much more painful.

In Europe the adjustment following the crisis has been much more difficult, and this can be explained at least in part by the combination of high debt and high frictional costs (especially because of localized sovereignty) that protected stronger economies at the expense of weaker economies. These frictional costs made the adjustment easier for stronger economies, like Germany, but, I would argue, harder for Europe overall.

As peripheral Europe deleveraged, if Germany had taken steps to increase domestic demand, either German debt or European unemployment would have still risen (or some combination of the two), in

the latter case with some, or even most, of the rise in unemployment occurring in Germany, but it would have risen by less than it actually did. Germany was able to take advantage of significant constraints in European labor mobility, along with Berlin's near-total control of German fiscal policy and its disproportionate influence on European monetary policy, to transfer most of the adjustment costs to peripheral Europe, and this made Europe overall worse off.

The important point for China is not so much the genesis of the crisis but whether the higher adjustment costs for peripheral Europe were matched by equivalently lower adjustment costs for Germany, with European unemployment overall remaining unchanged. I would call this a "zero-sum" adjustment, in which what was worse for one side was equivalently better for another.

If Europe had undergone a zero-sum adjustment, it would be easy to argue (at least for German policymakers) that Europe's adjustment might have been costly but it was well managed. I would argue, however, that this was not the case. A zero-sum adjustment could only have happened in principle if the rebalancing of internal European demand had occurred many years earlier, before debt levels became too high.

Early rebalancing was always unlikely of course. Like in China in 2007, when then-Premier Wen famously acknowledged China's own unsustainable internal imbalances, or in the US in the years leading up to the 2007 crisis, when the collapse in the US savings rate had long been evident, European policymakers were unwilling to adopt costly adjustment policies until they were forced to do so, even though the delay sharply raised the cost of the adjustment.

Financial distress costs

It is important to understand the role of debt in forcing up the adjustment costs. High debt levels throughout Europe, even in Germany, made the rebalancing of internal European demand much more painful for Europe overall for at least two reasons.

1 Leverage embeds pro-cyclicality into an economy – something that I have discussed many times before – so that the costs of a crisis increase as agents engage in self-reinforcing behavior in response to the crisis itself.

2 Financial distress costs are non-linear, so that a transfer of costs is not symmetrical, with benefits for one equaling costs for the other.

To take the first reason, as the crisis forced peripheral Europe to deleverage, with no mitigating rise in German demand, the combination of high debt and significant downward pressure on prices and wages forced Europe into the highly pro-cyclical financial distress process, which I would argue resulted ultimately in much higher unemployment overall than would have otherwise been the case. The combination of debt and asset and wage deflation forced the country into a downward spiral of rising financial distress costs in which the debt burden worsened unemployment and unemployment worsened the debt burden.

There is nothing new about this. History makes it very clear that during periods of unbalanced growth

and rising debt, the longer we postpone the adjustment the more expensive it becomes, and I would argue that it is precisely because high debt levels create a self-reinforcing process of financial distress (George Soros calls it "reflexivity") that this must be true.

But this tells us nothing about how frictional costs and constraints within the Chinese economy might affect the cost of its adjustment. It is the second reason that matters more in the discussion of whether or not we can think of China as an optimal currency zone, and is why I would say that Europe represents the other extreme when we try to understand why a "more optimal" currency zone adjusts less painfully than a "less optimal" currency zone.

Except when debt levels are very low, or so high relative to debt capacity that the debt is practically worthless, the cost of a "unit" of deterioration is greater than the benefit of a "unit" of improvement, and depending on the amount of debt and the size of the unit, the difference between the two can be extremely high.* If distortions and frictional costs among different provinces are extremely high, as they were among different European countries, the cost of an overall rebalancing of the Chinese economy will be disproportionately borne by the weaker provinces.

Distributing costs

Apart from issues of fairness, this might matter less to Beijing if it simply meant a distribution of the costs from one part of the country to another. In that case China's overall economic growth rate would still decline as part of the rebalancing process, but it would be a zero-sum decline, and the fact that the costs were borne unevenly within the country would not affect the overall economy. Anhui's loss of one dollar – to make up an example in which Anhui suffers more than Zhejiang from the rebalancing process – would be Zhejiang's gain of one dollar, and although political and social costs for China might change for the worse, overall economic costs for China would not rise.

But, as occurred in Europe, debt changes all of this, and this change is a consequence of the fact that financial distress costs are not linear. If the weaker parts of the Chinese economy are heavily indebted – which is likely to be the case for both the weak and strong provinces and regions – constraints in the way costs are distributed across the economy no longer result in a zero-sum game. Lowering Zhejiang's cost at Anhui's expense, in other words, would almost certainly reduce China's overall wealth.

Financial distress costs do not change in a linear fashion mainly because changes in risk perception, once the market starts to worry about debt levels, causes agents to change their behavior in ways that automatically worsen the debt burden (for those who are interested I have discussed this in several earlier issues of my newsletter as well as in my book, The Volatility Machine). Unless Zhejiang's debt burden was much worse than that of Anhui, in other words, transferring a dollar of the adjustment cost from Anhui to Zhejiang would reduce China's overall economic growth if both provinces were heavily indebted. Anhui's financial distress costs would rise by more than Zhejiang's would decline.

This is not simply an academic matter. Most analysts were surprised by the severity of the European

crisis relative to that of the US, even though in the aggregate Europe's economy seemed to have entered into the crisis in better shape (some would say much better shape) than that of the US. It had less debt overall, for example, a tiny trade deficit, no subprime mortgages, and a healthier savings rate. The reason Europe suffered more may largely be because of the frictional costs that made Europe much less optimally a single currency zone. High levels of debt created a kind of negative convexity that ensured that the overall impact of forcing weaker countries to bear a larger share of the costs of adjustment had necessarily to raise overall financial distress costs for Europe, even if weaker and stronger economies had suffered from equally heavy debt burdens, but it was made worse by the fact that the former tended to have more debt.

We need to bear this in mind as we see how China rebalances and how easily rebalancing costs are transmitted through the economy, especially as debt continues to grow while we wait for the adjustment to take place. Is China more like the US or more like Europe? I cannot really say, especially when the answer will depend in part on the timing and sequencing of the reforms Beijing implements. The pace of both hukou reform and of governance reform in the financial sector will determine in part the answer to this question, just to state the most obvious ways in which the timing and sequencing of reform matters. If China is more like Europe – that is if there are significant frictional costs that make it hard to spread the costs of rebalancing evenly across the overall economy – it is a near certainty that debt will become a much bigger problem and financial distress costs for China's economy overall will be higher.

Implications

There are unfortunately no easy ways to measure the extent and evolution of these kinds of frictional costs, but it is certainly worth keeping an eye on the way the costs of rebalancing are distributed nationally as growth continues to slow. I think there are three clear implications that investors and policymakers may want to consider:

1 The distribution of growth in China during the period of rapid growth has been extremely uneven, even when Beijing was committed to rebalancing growth among the poorer and richer provinces and has committed substantial resources to doing so. This may reflect substantial frictions within the Chinese economy and real institutional differences that have resulted in hard-to-change disparities in what I have elsewhere called "social capital". If that is the case, as the Chinese economy continues to slow, significant growth disparities between regions and provinces are likely to remain.

2 To the extent that these growth disparities remain, the distribution of adjustments costs is not likely to be zero-sum. High debt levels will ensure that the cost of China's adjustment will be higher than expected and that it will be higher as a function of frictional constraints. For this reason it is important to understand whether China, as an integrated currency zone, is closer to the US or to Europe in terms of the "smoothness" in the way costs are distributed. We need especially to watch how slowing growth affects labor mobility and capital mobility.

3 Policymakers of course will determine policy based on political considerations, but from a purely economic standpoint reforms aimed at reducing debt and increasing capital and labor mobility should take precedence over other reforms. This analysis does however leave Beijing with a contradiction. We know that moral hazard has been an important reason for investment misallocation in China, and one important step in reducing moral hazard might be to eliminate Beijing's explicit guarantee of provincial and municipal debt. This would force local governments to borrow only in ways that can be justified economically, or else lose access to funding.

But eliminating Beijing's guarantee protects the credit of the central government at the expense of local government creditworthiness, and so threatens to make financial distress costs much worse. In that case we might consider that the greater the internal frictions, the more reluctant Beijing should be to withdraw its guarantee, at least until the rebalancing process has been complete and the debt burden resolved.

Convergence is linear, and unlikely

Whereas I argue that the growth disparities among Chinese provinces probably reflect frictional constraints and differences in social capital, and so are likely to have an adverse impact on China's adjustment, I should point out that not everyone agrees. In fact some analysts argue that it is precisely because there are such great disparities within China that high growth rates are likely to be maintained for the foreseeable future, with at least one analyst arguing in 2013 that China's growth rate would remain between 7-8% through nearly the end of the decade precisely because of provincial growth disparities.

I admit that I am bewildered by his logic, which seems implicitly to be based on a widely-held but historically suspect theory of economic convergence. It requires implicitly a model of development in which the development process is linear, so that development occurs automatically as knowledge and capital is transferred from richer entities to poorer ones.

My own development model, which owes a lot to economists like Albert Hirschman, assumes that rapid growth is by nature unbalanced and heavily constrained by domestic institutions, so that the development process is specific (i.e. not easily transferred), non-linear, bumpy, and subject to reversals – because rapid growth creates deep imbalances that must be reversed. I also believe that these reversals can be brutal enough to prevent long-term convergence, which is why unlike most economists I am more impressed by successful adjustments than I am by growth miracles. More importantly, I believe development is based less on the transfer of knowledge and capital than on the transformation of domestic institutions (legal, financial, political, etc.).

In fairness, I have to acknowledge that there is no consensus on the topic. There are economists who see things very differently from me who treat convergence as a fairly linear process that, once you have figured out how to do it, can be applied to any variety of economic entities. In that case the fact that some province are poorer than others guarantees that China will grow fairly automatically if for

no other reason than that capital will be transferred from the richer to the poorer regions and convergence will do the rest.

If like me you do not believe that development occurs automatically as capital is added, then the idea that income levels of poor provinces will easily converge to the income levels associated with rich provinces becomes not just suspect but in fact almost backwards. Poorer provinces are poorer because their institutional characters make it harder for local businesses and households to exploit capital productively, and pouring money into poorer provinces will simply destroy \value more quickly than pouring it into richer provinces. Not only will it not result in faster growth overall, it will actually result in slower growth overall.

We will see what happens, but as China adjusts, I would expect that rather than converge, the income difference between the poorer and the richer provinces will persist and maybe even widen as financial distress costs for these poorer provinces rise faster than they will for the richer provinces. If local governments for provinces that are growing more quickly try to protect themselves by making it harder for migrant workers with the wrong hukou to immigrate, or by making it harder for capital to emigrate, China will slide away from a more optimal to a less optimal currency zone, and overall growth will slow.

One way that Beijing can lower the adjustment costs for China overall, in other words, is to reduce the power of local governments to intervene in labor or capital mobility. Another way is to use central government credibility to protect the creditworthiness of local government debt, even if this leads to moral hazard. China will almost certainly not force a rapid write-down of bad debt. This means that financial distress in China will persist, and over the long term, in exchange for less short-term disruption, the total cost of rebalancing the economy will be much higher

This is an abbreviated version of the newsletter that went out two months ago. Academics, journalists, and government and NGO officials who want to subscribe to the newsletter should write to me at chinfinpettis@yahoo.com, stating your affiliation, please. Investors who want to buy a subscription should write to me, also at that address.

* For those who think more easily in option terms, this becomes obvious by comparing debt with its optional equivalent, a short put on the “assets” of the borrower. Except when the delta of the option is close to zero (the borrower is so highly creditworthy that changes in the value of its asset have almost no impact on the value of debt), or when it is close to one (the value of assets is so low compared to the value of debt, that a change in the value of the assets is matched almost one-for-one with the change in the value of debt), an increase in creditworthiness has a smaller positive impact on the value of the debt than the negative impact of an equivalent reduction in creditworthiness.

Syriza and the French indemnity of 1871-73 [Week 5]

By Michael Pettis · February 4, 2015 · Europe · 358 Comments

European nationalists have successfully convinced us, against all logic, that the European crisis is a conflict among nations, and not among economic sectors. Today's Financial Times has an articlediscussing the travails of Greece's new Finance Minister, Yanis Varoufakis as he takes on Germany:

In a small but telling sign of the frosty relations between Berlin and the new Greek government, the German finance ministry last week criticised Mr Varoufakis for failing to follow through with a customary courtesy call following his appointment. Mr Schäuble, meanwhile, has warned Greece not to attempt to "blackmail" Berlin with demands for debt relief.

This is absurd. The European debt crisis is not a conflict among nations. All economic systems— and certainly an entity as large and diverse as Europe— generate volatility whose balance sheet impacts are mediated through different political and economic institutions, among which usually are domestic monetary policy and the currency regime. With the creation of the euro as the common currency among a group of European countries, monetary policy and the currency regime could no longer play their traditional roles in absorbing economic volatility. As a result, for much of the euro's first decade, a series of deep imbalances developed among various sectors of the European economy. Because Europe's existing economic and political institutions had largely evolved around the national sovereignty of individual countries, and also because the inflation and monetary histories of individual countries varied tremendously before the creation of the euro, it was probably almost inevitable that these imbalances would manifest themselves in the form of trade and capital flow imbalances between countries.(1)

We have a great deal of experience in modern history with the kinds of imbalances from which Europe suffered and continues to suffer, and from the historical precedents three things are clear. First, the imbalances that led eventually to the current crisis had their roots in hidden transfers between different economic sectors within Europe, and not between countries. It is only because of deep institutional differences among the member countries that these imbalances manifested themselves largely in the form of trade imbalances between the different countries in Europe. These hidden transfers artificially forced up the savings rates in some countries and, for reasons that I have discussed elsewhere, it is a matter of necessity, well understood in economics (although too often forgotten by economists), that artificially high savings rates in one part of an economic system must result in higher productive or non-productive investment (in advanced countries usually the latter) or artificially low savings in another part of that system.

Second, deep distortions in savings and investment historically have almost always led to an unsustainable increase in debt, and Europe was no exception. For many years European debt has risen faster than European debt-servicing capacity, but the gap between the two has not been recognized

and written down, and instead manifests itself in the form of excessively high and rising debt burdens whose costs have eventually to be assigned.

Third, and most worryingly, it has always been easy for extremists and nationalists to exploit the grievances of the various economic groups to distort the meaning of the crisis. One way is to transform it into a class conflict and another way is to transform it into a conflict among member states. Resolving a debt crisis involves nothing more than assigning the losses. In the current crisis these costs have to be assigned to different economic sectors within Europe, but to the extent that the assignation of costs can be characterized as exercises in national cost allocation, it is easy to turn an economic conflict into a national conflict.

Most currency and sovereign debt crises in modern history ultimately represent a conflict over how the costs are to be assigned among two different groups. On the one hand are creditors, owners of real estate and other assets, and the businesses who benefit from the existing currency distortions. One the other hand are workers who pay in the form of low wages and unemployment and, eventually, middle class household savers and taxpayers who pay in the form of a gradual erosion of their income or of the value of their savings. Historically during currency and sovereign debt crises political parties have come to represent one or the other of these groups, and whether they are of the left or the right, they are able to capture the allegiance of these groups.

Except for Greece, in Europe the main political parties on both sides of the political spectrum have until now chosen to maintain the value of the currency and protect the interests of the creditors. It has been the extremist parties, either on the right or the left, who have attacked the currency union and the interests of the creditors. In many cases these parties are extreme nationalists and oppose the existence of the European Union. If they succeed in taking control of the debate, the European experiment will almost certainly collapse, and it will take decades, if ever, for a European union to revive.

But while distortions in the savings rate are at the root of the European crisis, many if not most analysts have failed to understand why. Until now, an awful lot of Europeans have understood the crisis primarily in terms of differences in national character, economic virtue, and as a moral struggle between prudence and irresponsibility. This interpretation is intuitively appealing but it is almost wholly incorrect, and because the cost of saving Europe is debt forgiveness, and Europe must decide if this is a cost worth paying (I think it is), to the extent that the European crisis is seen as a struggle between the prudent countries and the irresponsible countries, it is extremely unlikely that Europeans will be willing to pay the cost. As my regular readers know, I generally refer to the two different groups of creditor and debtor countries as “Germany” and “Spain”, the former for obvious reasons and the latter because I was born and grew up there, and it is the country I know best. I will continue to do so in this blog entry.

It is a horrible irony that while the view that the European crisis is a conflict between prudent

Germany and irresponsible Spain could easily tear apart the European experiment, it terribly muddles Europe's actual experience and may create a false impression of irresponsibility. To see why, it is useful to start with a little history. Nearly 150 years ago Spain's "Glorious Revolution" of 1868 saw the deposition of Isabella II and the collapse of the first Spanish Republic. More importantly for our purposes it also unleashed within continental Europe a conflict over the succession to the Spanish throne which ultimately, through a series of circuitous events, resulted in France's declaration of war on Prussia in July 1870. This was widely seen in France as a chance partially to even the score over Prussia's victory during the Napoleonic wars, but in the end France's revanchist fantasies were frustrated. By early 1871, the French army was roundly defeated by Prussia, which during that time had unified the various German states as the German Empire under the Prussian king.

There were at least two important results of France's military defeat. Of minor importance for the purpose of my blog entry, but interesting nonetheless for those obsessed with modernism and with France's late 19th Century cultural history, like me, the Franco-Prussian War will always be remembered for its role in the subsequent creation and collapse of the Paris Commune. This event left its mark on the thinking of many cherished artists and intellectuals, from Manet and Rimbaud to Proudhon and Haussman.

But the other, to me, very interesting and far more relevant consequence was the French indemnity. As part of the privilege of conquest and as a condition for ending the occupation of much of northern France, Berlin demanded war reparation payments originally proposed at 1 billion gold francs but which eventually grew to an astonishing 5 billion, at least in part because of an explicit decision by Berlin to impose a high enough burden permanently to cripple any possible French economic recovery.

To give a sense of the sheer size of this payment, usually referred to in the literature as the French indemnity, this was equal to nearly 23% of France's 1870 GDP.(2) Germany's economy at the time,according to Angus Maddison, was only a little larger than that of France, so Germany was the beneficiary of a transfer over three years equal to around 20% of its annual GDP. This is an extraordinarily large transfer. I believe the French indemnity was the largest reparations payment in history — German reparations after WWI were in principle larger but I don't think Germany actually paid an amount close to this size, and certainly not relative to its GDP.

Transfer beneficiary

Astonishingly enough France was able to raise the money very quickly, mostly in the form of two domestic bond issues in 1871 and 1872, which were heavily over-subscribed. One of the most complete studies of the French indemnity, I think, is a booklet by Arthur Monroe published in 1919.(3) According to Monroe, the first issue of 2 billion in perpetual rentes was issued in June 1871, a mere 48 days after the treaty was signed, and was heavily oversubscribed. The second issue was even more successful:

Thirteen months after announcing the first loan the government opened subscriptions for a second, this time for three billions, again in 5 per cent rentes, but issued at 842. The response to this was astounding, for more than twelve times the amount desired was subscribed, more than half of the offers coming from foreign countries.

Monroe goes on to note that "it is no small compliment to the credit of France at this time to note that about one-third of the foreign subscriptions were from Germany," so when we think about the net transfer to Germany, it was less than 5 billion francs. Although Monroe says that more than half the subscriptions came from outside France, and one-third of those were German, with twelve times oversubscription there is no way for me to estimate how much was actually allocated to German purchasers so I have no estimate for the amount by which the 5 billion should be adjusted.

The payments were made in the form of bills of exchange and to a lesser extent gold, silver, and bank notes, and Berlin received the full payment in 1873, two years before schedule. It was during this time that Germany went fully onto the gold standard, and obviously enough the massive indemnity made this not only possible but even easy. It also guaranteed currency credibility almost from the start, and it may jolt modern readers to know that at the time monetary credibility was not assumed to be part of the German DNA, so the additional credibility was welcome.

What does all of this have to do with Syriza? A few weeks ago I was discussing with a group of my Peking University students Charles Kindleberger's idea of a "displacement", and I proposed, as does Kindleberger, that the 1871-73 French indemnity is an especially useful example of a displacement from which we can learn a great deal about how financial crises can be generated.(4) It then occurred to me that the French reparations and their impact on Europe could also tell us a great deal about the euro crisis and, more specifically, why by distorting the savings rate wage policies in Germany in the first half of the last decade would have led almost inexorably to the balance of payments distortions that may eventually wreck the euro.

It is a nice accident that the French indemnity accelerated Germany's adoption of the gold standard, because massive transfer payments from Germany to peripheral Europe were probably necessary for many of these countries to adopt the euro, in some ways their own version of the gold standard. Before jumping into why I think the French indemnity is relevant to the Greek crisis, I want to make three quick points:

1. I went into more detail on how France raised the money than might at first seem necessary for the purpose of this blog entry because it actually illustrates a potentially useful point. In the first third of my 2001 book,(5) I discussed extensively the historical role of global liquidity on the evolution of national balance sheets and sovereign debt crises. One important point is to distinguish between financial crises that occur within a globalization cycle and those that end a globalization cycle. Whereas the latter are often devastating and mark the end for many years of economic growth, the former — like the 1994 Tequila crisis or the 1997 Asian crisis, or even the 1866 Overend Gurney crisis

— may seem overwhelming at first, but markets always recover far more quickly than most participants expect. When markets are very liquid, and in their leveraging-up stage, they can absorb large debt obligations easily, and because they can even turn these obligations into "money", they almost seem to be self-financing.

The 1858-73 period was one such "globalization period", with typical "globalization" characteristics: explosive growth in high-tech communications and transportation (mainly railways), soaring domestic stock and real estate markets, booming international trade, and a surge in outflows of capital from the UK, France, the Netherlands and other parts of Europe to the United States, Latin America, the Far East, the Ottoman Empire, and other financial "frontiers". I would argue that this is why, despite Berlin's expectation that the indemnity would cripple the French economy, it was surprisingly easy for France to raise the money and for its economy to continue functioning. Germany, similarly, struggled over many aspects of the WWI reparations, but after 1921-22, when global markets began their decade-long globalization boom, driven by extraordinarily high US savings (and characterized by the familiar globalization sequence: electrification of American industry, the spread of telephones, automobiles, radios, cinema, and other communications and transportation technologies, booming international trade and capital flows, the Florida real estate mania, stock market booms, and, of course, the rise to fame of one Charles Ponzi), Germany found it relatively easy to raise the money that famously became part of the reparations recycling process — until, of course, the 1930-31 global banking crisis, after which Germany was forced into default. This may be relevant as we think about any possible future European sovereign bond restructuring. Any attempts to assess their impacts based on historical precedents must distinguish between periods of ample liquidity and the radically different periods of capital scarcity. Once the liquidity contraction begins, every debt restructuring will be brutally painful, unlike now when they are absorbed almost without a thought.

2. I explain in my book that the French indemnity actually increased global liquidity by expanding the global supply of highly liquid "money-like" assets. Of course Germany's money supply increased by the amount of the transfer (not the full amount, because part of the subscriptions actually came from Germany), but this was not offset by an equal reduction in France's money supply. The creation of a huge, highly liquid, and highly credible instrument, the two French bond issues, involved the creation of "money" in the Mundellian sense. While the transfer of money from France to Germany might have seemed systemically neutral, in fact it resulted in a systemic increase in global "money".

3. From an "asset-side" analysis, as I discuss in my January 21 blog entry, the transfer of capital over three years from France to Germany equal to more than 20% of either country's annual GDP would have had very predictable impacts — they should have been very negative for France, as Berlin expected, and very positive for German. In fact the actual results were very different. This is because

there are monetary and economic conditions under which liability structure matters much more, and conditions under which it matters much less. Economists and the policymakers they advise are too quick to ignore these differences, perhaps because there is not as well-formulated an understanding of balance sheets in economics theory as in finance theory, so that when someone like Yanis Varoufakis proposes that there are ways in which partial debt forgiveness increases overall economic value, instead of merely creating moral hazard, worried economists often recoil in horror, while finance or bankruptcy specialists (and an awful lot of hedge fund managers) shrug their shoulders at such an obvious statement.

It is mainly the third of the above three points that is relevant for the current discussion about European sovereign obligations. One might at first think that France's indemnity, at nearly 23% of GDP over three years, might have been devastating to the economy. It certainly left France with a heavy debt burden, but its immediate economic impact was not nearly as bad as might have been expected. Wikipedia's assessment is pretty close to the consensus among historians:

It was generally assumed at the time that the indemnity would cripple France for thirty or fifty years. However the Third Republic that emerged after the war embarked on an ambitious programme of reforms, introduced banks, built schools (reducing illiteracy), improved roads, spreading railways into rural areas, encouraged industry and promoted French national identity rather than regional identities. France also reformed the army, adopting conscription.

Far more interesting to me is the impact of the indemnity on Germany. From 1871 to 1873 huge amounts of capital flowed from France to Germany. The inflow of course drove the obverse current account deficits for Germany, and Germany's manufacturing sector struggled somewhat as an increasing share of rising domestic demand was supplied by French, British and American manufacturers. But there was a lot more to it than mild unpleasantness for the tradable goods sector. The overall impact in Germany was very negative. In fact economists have long argued that the German economy was badly affected by the indemnity payment both because of its impact on the terms of trade, which undermined German's manufacturing industry, and its role in setting off the speculative stock market bubble of 1871-73, which among other things unleashed an unproductive investment boom and a surge in debt.

Do capital inflows cause speculative frenzies?

As Germany began to absorb the inflows, its current account surplus of course reversed into deficits, which by definition means that there was a large and growing excess of investment over savings. Part of this was caused by rising German consumption, but much of it was caused by surging investment. Unlike in peripheral Europe 135 years later, the capital inflows were not mediated through commercial banks into the pockets of households, businesses, and local governments but rather ended up wholly in the hands of Berlin. Germany in the 1870s had an opportunity denied to peripheral Europe in the 2000s, in other words, to control the use of the massive transfer. I will get

back to this point a little later.

As money poured into Germany the German economy boomed, along with German consumption, investment (a growing share of which went into projects at home and abroad that turned out in retrospect to be overly optimistic), and into the Berlin and Viennese stock markets. By early 1873 more experienced German, Austrian and British bankers were quietly warning each other of a speculative mania, and they were right. The stock market frenzy culminated in the 1873 global stock market crisis, which began in Vienna in May, shortly after the beginning of the 1873 World Fair, and rapidly spread throughout a world brimming with liquidity (a large part of the first French indemnity payments went directly to London to pay outstanding German obligations). By September the crisis reached the United States with the collapse of Jay Cooke and Company, one of the leading US private banks, and for the first time in history the New York Stock Exchange was forced to close, for ten days. The subsequent global "Long Depression", which lasted until 1896, was felt especially severely in Germany, one of whose first reactions was the collapse of the railway empire of Bethel Henry Strousberg, a major industrialist at the time whose prehistory included a stint in jail for absconding from a previous job as financial agent with other people's money (petty criminals who become industrial magnates seem to be another characteristic of globalization periods).

Within a few years of the beginning of the crisis attitudes towards the French indemnity had shifted dramatically, with economists and politicians throughout Germany and the world blaming it for the country's economic collapse. In fact so badly was Germany affected by the indemnity inflows that it was widely believed at the time, especially in France, that Berlin was seriously contemplating their full return. The great beneficiary of French "largesse" turned out not to have benefitted any more than Spain had benefitted from German largesse 135 years later.

This is interesting. The German economy responded to French capital inflows in almost the same way that several peripheral European economies responded to large German capital inflows 135 years later. It might seem an unfair comparison at first because the 1871-73 transfer to Germany was huge, but it turns out that the magnitude of the French transfer into Germany was broadly similar, in fact probably smaller, to the inflows into peripheral Europe. By the way I should point out that I use Spain to represent peripheral Europe not just, as I stated earlier, because I was born and grew up there, and so know it well, but also because Spanish government polices were in many ways among the most "responsible" in Europe, and so cannot really be blamed for the aftereffects. Spain's debt and its fiscal accounts were far stronger than the European average and stronger than those of Germany in most respects.

It is hard to imagine that the amount of inflows into Germany from 1871 to 1873 could have been comparable to the inflows Spain experienced, but if anything they were actually smaller. Here is why I think they were. From 2000-04 Spain ran stable current account deficits of roughly 3-4% of GDP, more or less double the average of the previous decade. Germany, after a decade of current account

deficits of roughly 1% of GDP, began the century with slightly larger deficits, but this balanced to zero by 2002, after which Germany ran steady surpluses of 2% for the next two years.

Everything changed around 2005. Germany's surplus jumped sharply to nearly 5% of GDP and averaged 6% for the next four years. The opposite happened to Spain. From 2005 until 2009 Spain's current account deficit roughly doubled again from its 3-4% average during the previous five years. The numbers are not directly comparable, of course, but during those four years Spain effectively ran a cumulative current account deficit above its previous 3-4% average of roughly 21-22% of GDP. Seen over a longer time frame, during the decade it ran a cumulative current account deficit above its earlier average of roughly 31-32% of GDP.

These are huge numbers, and substantially exceed the French indemnity in relative terms. Of course the current account deficit is the obverse of the capital account surplus, so this means that Spain absorbed capital inflows above its "normal" absorption rate equal to an astonishing 21-22% of GDP from 2005 to 2009, and of 31-32% of GDP from 2000 to 2009. However you look at it, in other words, Spain absorbed an amount of net capital inflow equal to or substantially larger than Germany's absorption of French reparations during 1871-73. It is not just Spain. In the 2005-09 period a number of peripheral European countries experienced net inflows of similar magnitude, according to an IMF study, including Portugal, Greece and several smaller east European countries.

By the way in principle it isn't obvious which way causality ran between capital account inflows and current account deficits (the two must always balance to zero). In 1871-73 it is obvious that German capital inflows drove current account deficits. In 2005-09 European countries might similarly have run large current account deficits because of the capital inflows imposed upon them, but it is also possible that they had to import capital by eagerly borrowing German money in order to finance their large current account deficits. To put it differently, German money might have been "pushed" into these countries, as the "blame Germany" crew has it, or it might have been "pulled" in, by the need to finance their spending orgies, as the "blame anyone but Germany" crew insist. For those who prefer to think in more precise terms, Germany either created or accommodated the collapse in Spanish savings relative to Spanish investment. For those — including, distressingly enough, most economists — who believe a country's savings rate must be driven only, or mainly, by domestic household preferences, please refer to "Why a savings glut does not increase savings".

The structure of the balance of payments itself does not tell us conclusively which caused which, German outflows or Spanish inflows, and no one doubts that there was a strong element of self-reinforcement that was an almost automatic consequence of the payments process, as I have discussed in the January 21 entry on this blog. If it were the latter case, however, it would be an astonishing coincidence that so many countries decided to embark on consumption sprees at exactly the same time. It would be even more remarkable, had they done so, that they could have all sucked money out of a reluctant Germany while driving interest rates down. It is very hard to believe, in other

words, that the enormous shift in the internal European balance of payments was driven by anything other than a domestic shift in the German economy that suddenly saw total savings soar relative to total investment. I have discussed many times before what happened in Germany that resulted in the savings distortion that convinces me that the flows originated in Germany, as it has many others.

What is interesting is how similar the consequence of the inflows were even though Berlin was able to control the disbursement of the inflows in a way of which Madrid could only dream. And yet from 1871 to 1873 the German economy experienced one of the most dramatic stock market and real estate booms in German history, and although the flow of funds into government coffers rather than through banks to businesses and households ensured that the subsequent rise in German consumption was not nearly as extreme as it was in Spain, Germany did engage in a frenzy of investment at home and abroad in which a substantial share of the inflows was effectively wasted in foolish investment. Of course unlike Spain today, there never was any question about Germany's obligation to repay the transfer. It had come, after all, in the form of reparations demanded by a victorious army, and not in the form of loans. In fact it took the massive US lending to Germany in the 1920s for German investment misallocation to lead to wholesale default on external debt.

Syriza's challenge

It is useful to remember this history when we confront the consequences of Greece's recent elections. Syriza's victory in Greece has reignited the name-calling and moralizing that has characterized much of the discussion on peripheral Europe's unsustainable debt burden. I think it is pretty clear, and obvious to almost everyone, that Greece simply cannot repay its external obligations, and one way or another it is going to receive substantial debt forgiveness. There isn't even much pretence at this point. This morningfinancial advisor Mish Shedlock, sent me (as a joke? as a sign of despair?) German newspaper Zeit'sinterview with Yanis Varoufakis entitled "I'm the Finance Minister of a Bankrupt Country".

Even if the question of who is to "blame", Greece or Germany, were an important one, the answer would not change the debt dynamics. It would take the equivalent of Ceausescu's brutal austerity policies in Romania, which were imposed during the 1980s in order for the country fully to repay its external debt, to resolve the Greek debt burden without a write-down. Given that Ceausescu's policies led directly to the 1989 revolution, which culminated in both Ceausescu and his wife being executed by firing squad, the reluctance in Athens to imitate Romania in the 1980s is probably not surprising.

But to say Greece simply cannot repay isn't the end of the story. As Europe moves towards a more rational debt policy with Greece, I would say that there are three important things to remember:

1. There is an enormous economic cost, not to mention social and perhaps political, to any delay. I worry about the terrifyingly low level of sophistication among policymakers and the economists who advise them when it comes to understanding balance sheet dynamics and debt

restructuring. Greece's debt overhang imposes rising financial distress costs and increasingly deep distortions in the institutional structure of the economy over time, and the longer it takes to resolve, the greater the cost.

I think most analysts understand that costs will rise during the restructuring process. I am not sure they understand, however, that delays will impose even heavier costs during the many years of subsequent adjustment. There is a lot of bad blood and recrimination among the various parties. I suspect that some of those who oppose Syriza are probably revolted by the thought that a rapid resolution of the Greek crisis would rebound to Syriza's credit, but they must understand that dragging out the restructuring process will impose far greater long-term costs on the Greek people than they think.

My friend Hans Humes, from Greylock Capital, has been involved in more sovereign debt restructurings than I can remember, and he once told me with weary disgust that while it is usually pretty easy to guess what the ultimate deal will look like within the first few days of negotiation, it still takes months or even years of squabbling and bitter arguing before getting there. We cannot forget however that each month of delay will be far more costly to Greece and her people than we might at first assume.

2. From what I read, much of the focus of the restructuring will be aimed at determining an acceptable and manageable debt-servicing cashflow for Greece. There is a mistaken belief that this is the only "real" variable that matters, and the rest is cosmetics. I don't agree. Greece's nominal debt structure will not just affect the debt-servicing cashflows but will also determine future behavior of economic agents.

There are at least two important functions of an economic entity's liability structure. One is to determine the way operating profits or economic growth is distributed among the various stakeholders, or, put differently, to determine economic incentive structures. The other is to determine the way external shocks are absorbed. This is why the restructuring process is so important and can determine subsequent economic growth. The face value and structure of outstanding debt matters, and for more than cosmetic reasons. They determine to a significant extent how producers, workers, policymakers, savers and creditors, alter their behavior in ways that either revive growth sharply or slowly bleed away value. Incentives must be correctly aligned, in other words, so that it is in the best interest of stakeholders collectively to maximize value (this rather obvious point is almost never implemented because economists have difficulty in conceptualizing and modelling reflexive behavior in dynamic systems). Rather than let economists work out the arithmetic of the restructuring based on linear estimates of highly uncertain future cashfllows, whose values are themselves affected by the way debt payments are indexed to these cashflows, Greece and her creditors may want to unleash a couple of options experts onto the repayment formulas and allow them to calculate how volatility affects the value of these payments and what impact this might have on incentives and economic

behavior.

3. In fact the overall restructuring must be designed so that the interests of Greece, the producers who create Greek GDP, and the creditors are correctly aligned. To date sovereign debt restructurings have almost never included the instruments that reflect the instruments in corporate debt restructurings that accomplish this alignment of interests, largely because these instruments have not been "invented". Among other things the negotiating committee might want to dust off the GDP warrants that were included in Argentina's last debt restructuring.

If the restructuring is well designed, within a year of the restructuring I think we could easily see Greek growth surprise us with its vigor. I was delighted to see that Greece's new Finance minister agrees. An article in Monday's Financial Times starts with the claim that "Greece's radical new government revealed proposals on Monday for ending the confrontation with its creditors by swapping outstanding debt for new growth-linked bonds, running a permanent budget surplus and targeting wealthy tax-evaders." Today's Financial Times has an article by Martin Wolf that mentions the benefits of "a growth linked bond". In The Volatility Machine I spend chapters explaining how to create liability structures that minimize external shocks, align the interests of creditors and citizens, and improve the quality of payments for creditors, and I show why these make a restructuring much more successful for all parties concerned. This is just basic finance theory. Yanis Varoufakis should really take the lead in designing an entirely new form of sovereign debt restructuring, not just for Greece but for the many countries, in Europe and elsewhere, that will soon follow it into default.

Enough people seem to hate or fear Syriza that there will be little attempt to approach Greece's problems with enough imagination to give either party what it needs, but in fact with the right cooperation, imagination, and intuitive understanding of how balance sheet structures change overall value creation, a Greek debt restructuring could leave both sides far better off than either side might imagine. Of course if done right this matters far more than for just its impact on the Greek economy. While everyone probably agrees that Greece simply cannot proceed without debt forgiveness, less widely agreed, but no less obvious in my opinion, is that there are a number of other European countries that also need debt forgiveness if they are to grow. Because I was born and grew up in Spain, and my French mother founded and ran a successful business there which my family and I still own, I am confident that I know the country well enough to say that even with some impressive reforms having been implemented under Mariano Rajoy, Spain is nonetheless one of these countries. I suspect that many other countries including Portugal, Italy, and maybe even France are too.

I also know, however, that Spanish debt prospects are an extremely sensitive and emotional topic, and I will be roundly condemned for saying this. Today's Financial Times has a very worrying article explaining why Madrid wants to be seen among the hardliners in opposing a rational treatment for Greece: "when it comes to helping Greece, there will be no such thing as southern solidarity or peripheral patronage." This is the reverse of what it should be doing. In

an article for Politica Exterior in January 2012, I actually proposed, albeit without much hope, that Spain take the lead and organize the debtor countries to negotiate a sustainable agreement, but in its fear of Podemos, the Spanish equivalent of Syriza, and its determination to be one of the "virtuous" countries, it strikes me that Madrid is probably moving in the wrong direction economically. Ultimately, by tying itself even more tightly to the interests of the creditors, Rajoy and his associates are only making the electoral prospects for Podemos all the brighter.

As it is, and for reasons that may have to do with recent history, Francisco Franco, and the psychological scars he left among those of my generation, any discussion in Spain is likely to be subsumed under non-economic considerations, especially angry denunciations of moral virtue and moral turpitude. These non-economic considerations are not irrelevant. In fact some of them are very important and even admirable. But they must be understood within a more neutral context.

As far as I can tell there are at least four important reasons that opponents of debt forgiveness, not just in Germany but also in Spain, have proposed as to why demands for debt forgiveness would be a long-term disaster for Spain:

1. Spain's economic future depends on its remaining a member of Europe in good standing. To demand debt forgiveness (let alone a renegotiation of the currency union) would cause a financial crisis and relegate Spain to backward country status.

2. If Spain fails to honor its debt commitments it will be considered forever an unreliable prospect and will be frozen out of future investment and trade.

3. More importantly, it would be morally wrong. The German people provided Spain with real, hard-earned resources which Spaniards misused. It is not fair or honorable that Spain punish the German people for its generosity.

4. Spain had a real choice, and it chose to spend money wantonly on consumer frivolities and worthless invest projects. It got itself into this mess only because of the very poor economic policies a corrupt Madrid implemented. Had Spaniards acted more like Germans and refrained from excessive consumption — the result of a flawed national character trait — it would not have suffered from speculative stock and real estate market bubbles, wasted investment and, above all, an unsustainable consumption boom and a collapse in savings. It is unfortunate that ordinary Spaniards must suffer for the venality of tis leaders, but ultimately they are responsible.

These four arguments, which are the same arguments made about other highly indebted European countries, have been made not just by the greedy Germans of caricature, but also, more importantly, by indignant locals. They genuinely believe that their country behaved stupidly and must pay the price, and it is hard not to respect their sincerity.

Blaming nations

The last of the four points is I think the most powerful of the arguments and among the most confused, and it is the one I hope I have at least partly addressed with my discussion of the French

indemnity, and that I will discuss more below, but I should briefly address the first three, and of course while I refer to Spain, in fact much of what follows is as true of Greece and other heavily indebted European borrowers as it is of Spain:

1. There is no question that a renegotiation of Spanish debt or of its status within the currency union would be accompanied by economic hardship and perhaps even a crisis. But compared to what? The Spanish economy is already in disastrous shape and there is compelling historical evidence that countries suffering under excessive debt burdens can never grow their way out of their debt no matter how radical and forceful the reforms.

This means that by refusing to negotiate debt forgiveness, not only must Spain be prepared to live with unbearably high unemployment and slow growth for many years, which would undermine the social, political and financial institutions that are the real determinants of whether a country is economically advanced or economically backwards, but in the end after many years of suffering Spain would be forced into debt forgiveness anyway, only now with an economy in far worse shape. Historical precedents also suggest that while the real reforms Madrid has implemented seem to have failed, in fact it is the debt constraint that has prevented their impacts on productivity from showing up as economic growth. I suspect that many of these reforms have actually been very positive for Spain's long-term productivity. In that sense I think Mariano Rajoy and his government have put in an impressive performance. Unless Madrid waits too long, they may very well even unleash tremendous growth once debt is written down, but until the debt is resolved, they will not seem to have worked. Throughout modern history even "good" reforms have failed to generate growth in nearly every previous case of overly indebted countries, unless of course those reforms sharply reduce outstanding debt.

Some economists argue the facts on the ground already contradict my pessimism. Last week Madrid announced excitedly that GDP grew by 1.7% last year, its fastest pace in seven years. The Financial Times pointed out that Spain was well-positioned in 2015 to continue to take advantage of lower energy costs, a weaker euro, and a cut in personal and corporate taxes, to which I would add lower metal prices, massive QE, and stronger than expected consumption. But even if these tailwinds are permanent, and they clearly are not, nominal GDP growth is still much lower than the growth in the debt burden. This is as good as it gets, in other words, and it is not good enough. As the debt burden continues to climb, and as social and political frustrations mount, Spain will slide inexorably backwards into the backward-country status it wants so badly to avoid.

2. There is overwhelming evidence — the US during the 19th Century most obviously — that trade and investment flow to countries with good future prospects, and not to countries with good track records. The main investment Spain is likely to see over the next few years is foreign purchases of existing apartments along the country's beautiful beaches. Once its growth prospects improve, however, with among other things a manageable debt burden, foreign businesses and investors will

fall over each other to regain the Spanish market regardless of its debt repayment history. This is one of those things about which the historical track record is quite unambiguous.

3. It was not the German people who lent money to the Spanish people. The policies implemented by Berlin that resulted in the huge swing in Germany's current account from deficit in the 1990s to surplus in the 2000s were imposed at a cost to German workers, and have been at least partly responsible for Germany's extremely low productivity growth — most of Germany's growth before the crisis can be explained by the change in its current account — rather than by rising productivity.

Moreover because German capital flows to Spain ensured that Spanish inflation exceeded German inflation, lending rates that may have been "reasonable" in Germany were extremely low in Spain, perhaps even negative in real terms. With German, Spanish, and other banks offering nearly unlimited amounts of extremely cheap credit to all takers in Spain, the fact that some of these borrowers were terribly irresponsible was not a Spanish "choice." I am hesitant to introduce what may seem like class warfare, but if you separate those who benefitted the most from European policies before the crisis from those who befitted the least, and are now expected to pay the bulk of the adjustment costs, rather than posit a conflict between Germans and Spaniards, it might be far more accurate to posit a conflict between the business and financial elite on one side (along with EU officials) and workers and middle class savers on the other. This is a conflict among economic groups, in other words, and not a national conflict, although it is increasingly hard to prevent it from becoming a national conflict.

But didn't Spain have a choice? After all it seems that Spain could have refused to accept the cheap credit, and so would not have suffered from speculative market excesses, poor investment, and the collapse in the savings rate. This might be true, of course, if there were such a decision-maker as "Spain". There wasn't. As long as a country has a large number of individuals, households, and business entities, it does not require uniform irresponsibility, or even majority irresponsibility, for the economy to misuse unlimited credit at excessively low interest rates. Every country under those conditions has done the same. What is more, even if the decision about the disbursement of the inflows could have been concentrated in the hands of a single, responsible entity, the experience of Germany after 1871 suggests that it is nearly impossible to prevent a massive capital inflow form destabilizing domestic markets. Germany, after all, was much better placed than Spain later was for two important reasons. First, unlike Spain today, Germany was not saddled with an enormous debt obligation which it had to repay. Second, in 1871-73 the transfers went straight to Berlin, which was able fully to control the disbursements. In 2005-09, on the other hand, the transfers to Spain left behind an enormous debt burden and were discrete and widely dispersed in ways that were almost certainly biased in favor of the most optimistic or foolish lenders and the most optimistic or foolish borrowers.

And this is a point that's often missed in the popular debate. Over and over we hear — often,

ironically, from those most committed to the idea of a Europe that transcends national boundaries — that Spain must bear responsibility for its actions and must repay what it owes to Germany. But there is no "Spain" and there is no "Germany" in this story. At the turn of the century Berlin, with the agreement of businesses and labor unions, put into place agreements to restrain wage growth relative to GDP growth. By holding back consumption, those policies forced up German savings rate. Because Germany was unable to invest these savings domestically, and in fact even lowered its investment rate, German banks exported the excess of savings over investment abroad to countries like Spain.

Why didn't Germans, rather than Spaniards, take advantage of the excess savings to fund a consumption boom? The standard response is to point to German prudence and Spanish irresponsibility, but it must be remembered that as German and Spanish interest rates converged (driven in large part by German capital flows into Spain), because they adopted a common currency at a time when Spanish inflation had been higher than German, the real interest rate in Spain was lower than that of Germany. As German money poured into Spain — with Spain importing capital equal to 10% of GDP at its peak — the massive capital inflows and declining interest rates ignited asset price bubbles, and even more inflation, setting off in Spain what Charles Kindleberger called a "displacement". This locked Spain into a classic self-reinforcing cycle of rising asset prices and declining interest rates.

What is more, under normal (i.e. pre-euro) conditions the Spanish peseta would have dropped and Spanish interest rates risen, but the conditions of the euro prevented both adjustment mechanisms, and to make things worse this gave Berlin's policies far more traction than anyone expected, locking Germany into an over-reliance on capital exports to Spain, the obverse of Germany's current account surplus. German workers gave up wage growth in order to eke out employment growth, which itself depended on an ever rising surplus. Throughout it all there was little productivity growth as German companies reduced their investment share in the economy.

Meanwhile German banks, flush with the higher savings that low wage growth, rising surpluses and growing corporate profits all but guaranteed, continued eagerly to export into Spain the savings they simply could not invest at home. So why didn't "Spain" step in and put an end to this process by refusing to borrow German money? Because, again, there was no "Spain". There were millions of households and business entities all of whom were offered unlimited amounts of lending at very low or even negative interest rates, and under the conditions of euro membership Madrid could not intervene. If German and Spanish banks blanketed the country with lending proposals, Madrid could do nothing to stop it (at least not without raising domestic unemployment and igniting the ire of Brussels and Berlin). As long as there were some greedy, overly optimistic or foolish borrowers (and in a country of 45-50 million people how could there not be?), German and Spanish banks fell over themselves to make loans. The money had to be absorbed by Spain and there was no mechanism to ensure the quality of its absorption.

Above all this is not a story about nations. Before the crisis German workers were forced to pay to inflate the Spanish bubble by accepting very low wage growth, even as the European economy boomed. After the crisis Spanish workers were forced to absorb the cost of deflating the bubble in the form of soaring unemployment. But the story doesn't end there. Before the crisis, German and Spanish lenders eagerly sought out Spanish borrowers and offered them unlimited amounts of extremely cheap loans — somewhere in the fine print I suppose the lenders suggested that it would be better if these loans were used to fund only highly productive investments.

But many of them didn't, and because they didn't, German and Spanish banks — mainly the German banks who originally exported excess German savings — must take very large losses as these foolish investments, funded by foolish loans, fail to generate the necessary returns. It is no great secret that banking systems resolve losses with the cooperation of their governments by passing them on to middle class savers, either directly, in the form of failed deposits or higher taxes, or indirectly, in the form of financial repression. Both German and Spanish banks must be recapitalized in order that they can eventually recognize the inevitable losses, and this means either many years of artificially boosted profits on the back of middle class savers, or the direct transfer of losses onto the government balance sheets, with German and Spanish household taxpayers covering the debt repayments.

Who is fighting whom?

I am not rejecting the claim that "Spain" acted irresponsibly, in other words, only to place the blame on "German" irresponsibility. But it is absolutely wrong for Volker Kauder, the parliamentary caucus leader of German Chancellor Angela Merkel's Christian Democrats, to say, according to an article in last week'sBloomberg, that "Germany bears no responsibility for what happened in Greece. The new prime minister must recognize that." There was indeed plenty of irresponsible behavior on both sides, during which time wealth was transferred from workers of both countries to create the boom and to absorb the subsequent bust, and wealth will be transferred again from middle class households of both countries to clean up the resulting debt debacle.

Put differently, there is no national virtue or national vice here, and there is no reason for the European crisis to devolve into right-wing, nationalist extremism. The financial crisis in Europe, like all financial crises, is ultimately a struggle about how the costs of the adjustment will be allocated, either to workers and middle class savers or to bankers, owners of real and financial assets, and the business elite. Because the major parties have refused to acknowledge the nature of this allocation process, and have turned it into a fight between a creditor Germany, on the one hand, and indebted peripheral European countries on the other, I was able to make in 2010-11 one of the easiest predictions I have ever made in my career — whichever extremist parties, whether of the right or of the left, who first went on the offensive against Germany, the bankers and the currency bureaucrats, I predicted, would surge in electoral popularity and would eventually reformulate the debate.

That is why the question of debt forgiveness must be reformulated by the centrist parties first.

Fundamental to the argument that Spain (or Greece, or anyone else) has a moral obligation to repay in full its debt to Germany are two assumptions. The first assumption is that "Spain" borrowed the money from "Germany", and that there is a collective obligation on the part of Spain to repay the German collective. The second assumption is that Spain had a choice in what it could do with the German money that poured into the country, and so it must be held responsible for its having mis-used hard-earned german funds.

The first assumption is, I think, easily dismissed. Germany exported capital because by repressing wage growth, Berlin ensured the high profits and low consumption that forced up its national savings rates. Instead of employing these savings to invest in raising the productivity of German workers (in fact domestic investment actually declined) it offered them either to fund German consumption at high real interest rates (and there were few takers), or through German and Spanish banks this capital was offered to other European households for consumption or to other European businesses for investment. The offers were taken up in different ways by different countries. In countries where the offered interest rates were very low or negative, the loans were more widely taken up than in countries where real interest rates were much higher. To ascribe this difference to cultural preferences rather than to market dynamics doesn't make much sense.

What started slowly quickly accelerated, again for reasons of market dynamics. As the huge inflow into Spain set off stock market and real estate booms, some Spanish households, feeling wealthier, borrowed to increase their consumption, and many Spanish households and businesses borrowed to buy real estate. In the subsequent frenzy, credit standards collapsed as Spanish and German banks fought to gain market share, and as optimism soared, consumption grew to unsustainable levels, until eventually Spain was so overextended that it collapsed. The same story can be told elsewhere. In fact this is what happened in Germany after the French indemnity.

As for the second assumption, that Spain had a choice, this too should be quickly dismissed. Clearly Spanish households and businesses in the aggregate behaved, in retrospect, with astonishing abandon. But could they have done otherwise — did they have a choice? Almost certainly not. Germany did not when it received the French indemnity, and I don't think there are many, if any, cases of countries that were able to absorb productively such massive inflows. In every case I can think of, massive capital inflows were accompanied by speculative bubbles and financial crises. Even the US in 19th century — urgently needing foreign capital to finance a massive amount of productive investment that could not be financed out of domestic savings, making it the best candidate possible to receive massive foreign inflows — was not able to absorb surges in inflows without seeing the creation of bubbles, investment scandals, and financial crises. Is it reasonable to insist that Spain's failure to choose a path that no other country in history seems ever to have chosen indicates greater irresponsibility on the part of the borrowers than of the lenders? As long as there is a widely diverse range of views among Spanish individuals and businesses about prospects for the future, as long as

there is a mix of optimists and pessimists, or as long as there are varying levels of financial sophistication, I think it would have been historically unprecedented if at least some Spanish entities did not respond foolishly to aggressive offers of extremely cheap credit, especially once this cheap credit had set off a real estate boom.

In summary, I think there are several points that those of us who want "Europe" to survive should be making.

1. The euro crisis is a crisis of Europe, not of European countries. It is not a conflict between Germany and Spain (and I use these two countries to represent every European country on one side or the other of the boom) about who should be deemed irresponsible, and so should absorb the enormous costs of nearly a decade of mismanagement. There was plenty of irresponsible behavior in every country, and it is absurd to think that if German and Spanish banks were pouring nearly unlimited amounts of money into countries at extremely low or even negative real interest rates, especially once these initial inflows had set off stock market and real estate booms, that there was any chance that these countries would not respond in the way every country in history, including Germany in the 1870s and in the 1920s, had responded under similar conditions.

2. The "losers" in this system have been German and Spanish workers, until now, and German and Spanish middle class savers and taxpayers in the future as European banks are directly or indirectly bailed out. The winners have been banks, owners of assets, and business owners, mainly in Germany, whose profits were much higher during the last decade than they could possibly have been otherwise

3. In fact, the current European crisis is boringly similar to nearly every currency and sovereign debt crisis in modern history, in that it pits the interests of workers and small producers against the interests of bankers. The former want higher wages and rapid economic growth. The latter want to protect the value of the currency and the sanctity of debt.

4. I am not smart enough to say with any confidence that one side or the other is right. There have been cases in history in which the bankers were probably right, and cases in which the workers were probably right. I can say, however, that the historical precedents suggest two very obvious things. First, as long as Spain suffers from its current debt burden, it does not matter how intelligently and forcefully it implements economic reforms. It will not be able to grow out of its debt burden and must choose between two paths. One path involves many, many more years of economic hell, as ordinary households are slowly forced to absorb the costs of debt — sometimes explicitly but usually implicitly in the form of financial repression, unemployment, and debt monetization. The other path is a swift resolution of the debt as it is restructured and partially forgiven in a disruptive but short process, after which growth will return and almost certainly with vigor

5. Second, it is the responsibility of the leading centrist parties to recognize the options explicitly. If they do not, extremist parties either of the right or the left will take control of the debate,

and convert what is a conflict between different economic sectors into a nationalist conflict or a class conflict. If the former win, it will spell the end of the grand European experiment.

I leave my readers with three questions that I hope we can discuss in the comments section:

1. If a huge amount of capital, equal say to 10-30% of a country's annual GDP, is forcibly distributed to an enormous group of entities within that country in a short time period, and if the only way in which to distribute this capital is through a wide variety of banks, with biases such that the more optimistic and irresponsible the bank, the more it profits, and the more optimistic and irresponsible the borrower, the more it receives, is it meaningful to refer to either side as behaving "irresponsibly", and if so, which side? Does this sound like a loaded question? If it is, can it be rephrased in a less loaded way?

2. There have been many cases of large capital recycling in history — just in the last 100 years I can think of the recycling of the US trade surplus to Germany and other countries in the 1920s, the petrodollar recycling to Latin America in the 1970s, and the recycling to the US of the Japanese trade surplus in the 1980s and the Chinese trade surplus in the 2000s. These were all accompanied in the recipient country by stock, bond and real estate bubbles and by overconsumption and wasted investment. Have there been cases of large capital recycling that did not end in tears for the recipients? If so, how were they different?

3. What about the other side of the recycling? In most cases the recycling country also experienced bubbles and rising debt. Have there been cases that did not also end in tears and if so, how were they different?

Notes:

(1) The imbalances themselves occurred in forms that are widely understood and for which we have many historical precedents. I discussed these in my book, The Great Rebalancing: Trade, Conflict, and the Perilous Road Ahead for the World Economy (Princeton University Press, 2013). I am far from the only one to have done so. Martin Wolf's excellent The Shifts and the Shocks: What We've Learned—and Have Still to Learn—from the Financial Crisis (Penguin Press, 2014) presents a schematic account of the causes of the crisis, and in The Leaderless Economy: Why the World Economic System Fell Apart and How to Fix It (Princeton University Press, 2013) Peter Temin and David Vine set out with great clarity the framework within which Europe's internal imbalances had inexorably to lead to the current outcome.

(2) Michael B. Devereux and Gregor W. Smith, "Transfer Problem Dynamics: Macroeconomics of the Franco-Prussian War Indemnity", August, 2005, Queen's University, Department of Economics Working Papers 1025

(3) Arthur E. Monroe, The French Indemnity of 1871 and its Effect (The MIT Press, 1919)

(4) Charles Kindleberger, A Financial History of Western Europe, (Routledge 2006)

(5) Michael Pettis, The Volatility Machine: Emerging Economics and the Threat of Financial

Collapse (Oxford University Press, 2001)

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Economic consequences of income inequality [Week 5]

By Michael Pettis · March 23, 2014 Consumption, Credit expansion, Income inequality · 215 Comments

A lot of things have happened in China since my last entry – in the FX markets, in the banking system, in the announcements of default, and in the continuing lowering of growth expectations – but for all the turmoil, as I see it nothing has happened that was unexpected and that has not been discussed many times on this blog. For that reason I decided to post a rather long essay (sorry) on income inequality and on how I think we can best think about the impact of income inequality on the global economy.

This is a loaded topic, and I suspect I am going to get a lot of responses claiming that my essay is totally brilliant or totally nonsensical based, mainly, on the political orientation of readers. This entry, however, is not intended to be political. Very few things in economics are good or bad in themselves, but rather can be good under certain conditions or bad under others. I want to try to tease out as logically as I can the conditions under which rising income inequality can be good or bad for the economy.

That is all I am trying to do. My logic may be faulty and my assumptions may be wrong, and I invite readers to challenge either, but none of this should be seen as moral or immoral. Income inequality may very well be one or the other for very solid social, political or even religious reasons, but I am interested here only in the logical economic outcomes of income inequality.

Digging deeper into the model I use to understand income inequality also allows me to dig deeper into the sources of global imbalances – the two are tightly interlinked – and how these imbalances have driven much of what has happened around the world in the past decade. This model rests on an understanding of how distortions in the savings rates of different countries have driven the great trade and balance-sheet distortions with which we are wrestling today, just as they have in most previous global crises, including those of the 1870s, the 1930s, and the 1970s. Rising income inequality is key to understanding this model.

It turns out that it is actually not that hard to work through at least one of the major economic consequences of rising income inequality. I would argue that from an economic point of view the income inequality discussion is mainly a discussion about savings, and when you introduce into the economy a systematic tendency to force up the savings rate, the economy must respond in what are only a limited number of ways.

As I will show, some of these responses require an unsustainable increase in debt, and so are temporary. There are, it turns out, two sustainable responses to a forced increase in the savings rate in one part of the economy. The first is an equivalent increase in productive investment (this, I think, is the heart of the supply-side "trickle down" theory). The second is an increase in unemployment.

Much of what I am going to argue is not new, and is merely a revival of the old "underconsumption" debate. Before jumping into the argument I want to start by quoting the

remarkable former Fed Chairman (1932-48) Marriner Eccles, who may well have been the most subtle economist of the 20thCentury, from his memoir, Beckoning Frontiers (1966):

As mass production has to be accompanied by mass consumption, mass consumption, in turn, implies a distribution of wealth – not of existing wealth, but of wealth as it is currently produced – to provide men with buying power equal to the amount of goods and services offered by the nation's economic machinery. Instead of achieving that kind of distribution, a giant suction pump had by 1929-30 drawn into a few hands an increasing portion of currently produced wealth. This served them as capital accumulations.

But by taking purchasing power out of the hands of mass consumers, the savers denied to themselves the kind of effective demand for their products that would justify a reinvestment of their capital accumulations in new plants. In consequence, as in a poker game where the chips were concentrated in fewer and fewer hands, the other fellows could stay in the game only by borrowing. When their credit ran out, the game stopped.

The key point here is that all other things being equal, rising income inequality forces up the savings rate. The reason for this is pretty well understood: rich people consume a smaller share of their income than do the poor. The consequence of income inequality, Eccles argued, is an imbalance between the current supply of and current demand for goods and services, and this imbalance can only be resolved by a surge in credit or, as I will show later, by rising unemployment.

Rising income inequality reduces demand. It does so in two ways. First, it directly forces down the consumption share of GDP, and second, it reduces productive investment by reducing, as Eccles says, "the kind of effective demand for their products that would justify a reinvestment of their capital accumulations in new plants."

But – and here is where I will presume to add something new to the historical debate about income inequality and underconsumption – there is another very important form of rising income inequality that also forces up the savings rate in a very similar way, and this has been especially important in the past two decades. A declining household share of GDP has the same net impact as rising income inequality.

We have seen this especially in places like Germany and China during the past decade. In both countries policies were implemented which, in order to spur growth and, with it, employment, effectively transferred income from households to producers of GDP.

The main form of this transfer, in the case of Germany, was an agreement around fifteen years ago to restrain wage growth. By keeping wage growth lower than productivity and GDP growth, unit labor costs declined in Germany and German workers became more "competitive" in the international markets. This forced up the German savings rate and converted Germany's current account from large deficits in the 1990s to the largest surpluses in the world.

In the case of China there were also restraints on wage growth relative to productivity growth –

not so much a policy choice, I would argue, but a consequence of the huge number of underemployed rural workers in China – but there were at least two other very important transfers. First, China has had an undervalued currency ever since 1994, which acts as a spur to growth in the tradable goods sector by effectively taxing foreign imports (and notice, by the way, that something similar happens in Germany, which also has an "undervalued" euro in relationship to the "overvalued" euro of countries like Spain, Italy and France). This reduces the real value of household income as a share of GDP.

Second, and most importantly, interest rates in China have been severely repressed during much of this century, perhaps by as much as five to ten percentage points or more. This has acted as a huge transfer from net savers, who are the household sector for the most part, to net borrowers, who consist mainly of manufacturers, infrastructure developers, real estate developers, state-owned enterprises, and government entities.

In both cases, and this is true of other countries, especially if they have large state sectors, one of the consequences of these hidden transfers is that GDP, which is the total production of goods and services, rose faster than household income for many years, meaning that households retained a smaller and smaller share of the total amount of goods and services they produced. Of course as the total share of GDP they retained contracted, it is not a surprise that they also consumed an ever-declining share of GDP.

The squeezing of the household sector

Notice how this affects total savings. Even if German or Chinese households kept their savings rates steady (i.e. they consumed and saved the same share of their income as before), their consumption as a share of GDP had to decline in line with the household income share of GDP. Most consumption is household consumption, and so as household consumption declines as a share of GDP, total consumption also tends to decline as a share of GDP, which is just another way of saying that total savings rise as a share of GDP.

This is a point that is often missed. Rising income inequality can have the same impact on savings and consumption as a rising state or business share of GDP. In a country in which the state retains a growing share of GDP, the net impact on savings and consumption is almost identical to that of a country in which income inequality is rising. In both cases consumption tends to decline and savings to rise as a share of GDP.

This tendency for rising income inequality, or a rising state share of GDP, to force up the savings rate can be a good thing. If there is a large amount of productive investment that needs to be funded, and not enough savings to fund this investment, increasing the savings rate can cause an equivalent increase in productive investment, and this increase can create sustainable demand for new jobs. Notice that these new jobs force up the total amount of goods and services produced, so that ordinary workers will see their income increase even as income inequality increases. The rich will do very well, but the rest will do pretty well too.

But what happens if there is already enough savings to fund productive investment? In that case the impact of rising income inequality is very different. To understand why, let us assume a closed economy with a moderate amount of unemployment (until we begin interplanetary trading the world is a closed economy). We can define the total amount of goods and services produced, which we usually refer to as GDP, in two ways.

First, everything that we produce must be absorbed, and the two ways we can absorb it is either by consuming the goods and services we produce, or by investing them today for future consumption. GDP, in other words, is the sum of everything we either consume or invest, or to put it arithmetically:

- GDP = Total consumption + Total investment

This is true by definition. Second, because our total income is equal by definition to the sum of all the goods and services we produce, and there are only two things we can do with our income, consume it today or save it for future consumption, GDP is also by definition the sum of savings and consumption, or, to put it arithmetically:

- GDP = Total consumption + Total savings

From these two equations it is obvious that in any closed economy savings is always equal to investment. This simple truth, which is true by definition, has very powerful implications.

Let us assume now that something has happened that caused a transfer of wealth in our economy from the poor to the rich, or that caused the household share of income to drop. To make things simpler we will assume that this transfer occurred without changing GDP, so that the total amount of goods and services is unchanged, but now ordinary households retain a smaller share. This transfer of wealth must have an impact on both total savings and total consumption.

At first the impact might seem obvious. Total consumption will decline and total savings will rise. But it is not that obvious. In order to maintain the balance expressed in the two equations, mainly the requirement that savings is always exactly equal to investment, something else must happen. There are only two possible things that can maintain the balance:

Investment must rise in line with the increase in savings.

Savings in fact do not rise, which implies that any increase in savings caused by the transfer of wealth was matched by some other event that caused an equivalent reduction in savings.

I apologize if these sound obvious, but I want to keep the flow of the argument as logical as possible, and so I hope each step follows obviously from the prior step.

Let's take the first condition. Will investment rise? There are, again to be terribly obvious, only three ways investment can rise.

- There can be an increase in productive investment.
- Unproductive investment can rise in the form of unwanted inventories.

- Other forms of unproductive investment can rise.

What causes investment to rise?

Let's consider each of these three in turn before we consider our second possibility, that savings in fact do not rise.

1. There can be an increase in productive investment.

This is obviously the best-case scenario. The tendency to increase the savings rate is met by an increase in productive investment that exactly matches the reduction in consumption. The combination of an increase in productive investment and a reduction in consumption keeps total demand constant, so that there is no imbalance (in the aggregate, of course) between the total demand for and the total supply of goods and services produced by the economy. Because the increase in investment is productive, however, over time total goods and services will grow, and, presumably, households will be able to increase their consumption in the future.

How likely is this to be happening in the current environment? It is probably not very likely. It is hard to believe that in rich countries, like the US, there are a lot of productive investments that are neglected simply because there is an insufficient amount of savings to fund them.

I am not saying that every productive investment in the US has already been made, but just that if there are productive investments that remain unfunded, it isn't because of insufficient savings. It might be because of political gridlock, high levels of uncertainty, or something else. Of course it could also be because interest rates are too high, in which case rising income inequality would, presumably by increasing the total amount of savings, cause interest rates to drop. In that case there might indeed be an increase in total productive investment.

But here is where we run into the problem signaled by Eccles. Because the purpose of investment today is to increase consumption tomorrow, if the increase in income inequality is expected to be permanent, the desired amount of productive investment is actually likely to decline. This is because, to quote Eccles again, lower expected consumption would reduce "the kind of effective demand for their products that would justify a reinvestment of their capital accumulations in new plants."

2. Unproductive investment can rise in the form of unwanted inventories.

This, as I understand it, is the process Keynes eventually described after his famous 1930 debate with Ralph Hawtrey. The process is quite easy to explain. As income inequality rises, total consumption tends to decline.

Because there is no equivalent increase in productive investment, the economy finds itself producing more goods and services that it can absorb, and the balance piles up as unwanted inventory, which is a form of unproductive investment. Of course manufacturers are unwilling to pile up infinite inventory levels so this process must eventually stop. Rising inventory levels, in other words, can only be a temporary counterbalance to rising income inequality.

3. Other forms of unproductive investment can rise.

The third way for investment to rise is if the additional savings are used to fund other forms of unproductive investment. Perhaps the tendency for savings to rise without an equivalent increase in productive investment forces down interest rates, with suddenly-cheap capital leading to speculative behavior. Charles Arthur Conant wrote about this extensively at the turn of the last century:

For many years there was an outlet at a high rate of return for all the savings of all the frugal persons in the great civilized countries. Frightful miscalculations were made and great losses incurred, because experience had not gauged the value or the need of new works under all conditions, but there was room for the legitimate use of all savings without loss, and in the enterprises affording an adequate return.

The conditions of the early part of the century have changed. Capital is no longer needed in the excess of the supply, but it is becoming congested. The benefits of savings have been inculcated with such effect for many decades that savings accumulate beyond new demands for capital which are legitimate, and are becoming a menace to the economic future of the great industrial countries.

Conant's point was that "congested" capital would end up in speculative investments that were not productive – vast tracts of empty apartment buildings, or spectacular but mostly empty airports, railroad lines, super highways and other infrastructure, or increases in manufacturing capacity even in industries that are experiencing overcapacity, or perhaps in a very expensive sporting event – but would nonetheless seem profitable because of the expectation that asset prices would continue to rise. These investments, whose low productivity will result in debt rising faster than debt-servicing capacity, can go on for many years, to the point where the implicit losses would have to be recognized, but this is clearly not a sustainable solution to excess savings because it requires limitless debt capacity.

Needless to say this seems to have been a pretty good description of recent investments in places as far apart as Arizona housing tracts, Dublin apartments, extravagant but unused Spanish airports, Chinese ghost cities, or Chinese solar manufacturers. We have seen a lot of this before the global crisis of 2007-08, and the seemingly obvious conclusion it that the tendency to increase the savings rate beyond the productive needs of the economy was balanced at least in part by a surge in speculative and unproductive investments.

These three are, logically, the only three ways we can balance the tendency for an increase in savings to be matched with a corresponding increase in investment. Either productive investment rises because productive investment had been constrained by insufficient savings, or unproductive investment rises, either in the form of unwanted inventory or in another form. The first is our best-case scenario, although for the reasons I have noted it is unlikely to describe conditions today, especially in capital-rich countries like the US. The second and third ways are unsustainable because they actually destroy value by increasing debt faster than they increase debt-servicing capacity.

What prevents savings from rising?

I said however that there is a second perfectly obvious way we can maintain the balance between savings and investments even if there is a substantial wealth transfer from ordinary households (either to the rich, or to the state sector). It is possible that total savings in fact do not rise, which implies that any increase in savings caused by the transfer of wealth was matched by some other event that caused an equivalent reduction in savings.

As far as I can work out there are really only three logical ways a transfer of wealth is consistent with no change in the total savings and consumption shares of GDP.

- The wealthy or the state consume as much as ordinary households.
- Ordinary households increase their consumption rate and reduce their savings rate.
- Unemployment rises.

Again, let us consider each of the three so that we can list the possible outcomes.

1. The wealthy or the state consume as much as ordinary households.

Clearly this hasn't happened and is unlikely to happen in the future. Both common sense and all historical precedent suggest that except perhaps over very, very long time periods, consumption does not rise linearly with income and households consume a far greater share of their income than the state sector can. This might not be true of income inequality between countries, by the way, but that shouldn't matter.

2. Ordinary households increase their consumption rate and reduce their savings rate.

This, which is what happened in the United States and peripheral Europe, is one of those brutally obvious points that so many commentators and economists have failed to grasp. I think the mechanism is fairly easy to understand and has already been much discussed, for example well over 100 years ago by John Hobson who showed how rising income inequality can cause both higher savings and lower opportunities for productive investment. The difference, he argued, poured into speculative stock, bond and real estate markets or was exported abroad to finance foreign demand for home products.

As money poured into stock, bond and real estate markets, either at home or abroad, it caused these markets to soar, making everyone feel richer. The consequence was that although ordinary households saw their share of total GDP decline, rising asset prices nonetheless made them feel wealthier, and encouraged them to maintain or increase their consumption.

Higher savings generated by the rich or the state, in other words, were matched by lower savings (or rising debt, which is the same thing) among ordinary households. Of course this can only be sustained if asset prices rise forever, but assets are locked into a circular process in which rising asset prices cause rising demand and rising demand justifies higher asset prices.

It takes rising debt to combine the two processes, so it is only a question of time before we reach debt capacity constraints, in which the system has to reverse itself, which it did in the developed

word as a consequence of the 2007-08 crisis. This process, in other words, is the default reaction to a forced increase in the savings rate in one part of the economy, but it is not sustainable because it requires a permanent rise in consumer debt.

3. Unemployment rises.

There is another way you can force down the savings rate, and this is by closing down factories and firing workers. As workers are fired, their income drops to zero. Their consumption, however, cannot drop to zero, and so they dip into their savings, borrow from friends and relatives, receive unemployment compensation, or otherwise find ways to maintain at least some minimum level of consumption (crime, perhaps, or remittances).

Of course, savings is just GDP minus consumption, and so as their production of goods and services drops relative to their consumption, by definition the national savings rate declines. This balances out the higher savings generated by rising income inequality.

If the savings rate in one part of the economy rises, without an equivalent rise in investment the only way for the economy to balance is for savings elsewhere to decline, and this can happen either in the form of a (usually credit-backed) consumption binge, or in the form of rising unemployment. The first is unsustainable.

Once we understand this it is pretty easy to explain much of what has happened in the global economy over the past decade or two. As an aside, it may seem strange to many to think that excess savings is not a good thing. We are used to thinking of thrift as good for us, and even more thrift as better, and this belief is embedded with so much moral certainty that we react with repugnance to anyone who suggests otherwise. Bernard Mandeville's Fable of the Bees was famously hated in the early 18th Century for suggesting that if we all saved everything we would all be destitute, and John Hobson, in his "Confessions of an Economic Heretic" tells how his teaching assignment was rejected because of the intervention of an Economic Professor who had read my book and considered it as equivalent in rationality to an attempt to prove the flatness of the earth. How could there be any limit to the amount of useful saving when every item of saving went to increase the capital structure and the fund for paying wages? Sound economists could not fail to view with horror an argument which sought to check the source of all industrial progress.

But excess thrift is a much more serious problem than insufficient thrift. There are two reasons besides moral outrage why we get confused about the value of savings. First, and obviously, because more savings is good for individuals, we assume that it must be good for society. It shouldn't take long to see why this is simply wrong.

Second, most economic thinking is implicitly about the US or the UK (most economic theory comes from economists trained in one or the other country). Because these countries have had a problem in the past several decades with excessive consumption and insufficient savings, we assume that these are universal problems. We want global savings to rise because we want US savings to rise,

because what is good for the US must be good for the world, right?

The global imbalances

Before using this model to examine recent history I think it would be useful to summarize. If the savings rate rises in any part of a closed economic entity, like the global economy, it must be counterbalanced by at least one other change that allows the savings and investment balance to be maintained. Either the investment rate rises, in the form of productive, or unproductive, investment, or the overall savings rate does not rise because it declines in some other part of the economy.

We are left with the table below that shows the six ways that an increase in savings caused by rising income inequality or a rising state share of GDP must be counterbalanced. Each counterbalance is shown to be sustainable or unsustainable.

Counterbalance	Condition	Sustainability
Increase in productive investment	This might happen if total desired investment had been constrained by insufficient savings	Sustainable
Rising inventories	If factories maintain production even as sales decline, inventories will automatically rise	Not sustainable
Increase in speculative investment	If there is excess capital beyond productive investment, it will flow into non-productive investments	Not sustainable
Linear change in consumption	If consumption rises with income, income inequality need not create a demand shortfall	Sustainable but a seemingly impossible outcome
Increase in credit-financed consumption	If households feel wealthier thanks to rising asset prices, they will embark on a consumption binge funded eventually by debt.	Not sustainable
Increase in unemployment	If production of goods and services exceeds the demand, factories will fire workers until supply and demand once again balance	Sustainable

From this table the problem of income inequality is obvious. There are only two sustainable solutions to the problem of a structural increase in the savings rate. Either we must see an increase in productive investment – which is unlikely except in specific cases in which desired productive investment has been constrained by lack of capital – or we must see an increase in unemployment. Nothing else is sustainable.

There are intermediate steps, but because these require debt to grow faster than debt-servicing capacity, they can only continue until debt levels are so high that the market becomes unwilling to allow them to continue to rise. These intermediate steps are easy to understand. At first, in order to

keep unemployment from rising, the excess savings can fund a surge in speculative investment or a surge in consumption, or both, with the latter kicked off by the wealth effect that is often a consequence of a surge in speculative investment.

This is exactly what seems to have happened to the global economy. As savings were force up structurally, whether because of rising income inequality or a declining household share of GDP, the system responded in ways that were sustainable (increases in productive investment) and in ways that were unsustainable (rising inventory in China, increases in speculative investment in the US, China, and Europe, and increases in credit-financed consumption in the US and southern Europe). At some point excessive debt eliminated all the unsustainable ways, and we were forced into accepting the remaining sustainable way, which is an increase in unemployment.

I should add here that this model does not tell us where the increase in unemployment must occur, but history tells us much of what we need to know. In the early stages of the adjustment unemployment usually occurs in the countries that saw the fastest increase in debt, typically the countries with excessively low savings. But as these countries begin to intervene directly or indirectly in trade, the unemployment shifts to the countries with structurally high savings rates – Germany and China, in the current case.

This shouldn't surprise us. If the global problem is insufficient demand, countries that have excess demand (deficit countries) can increase their share of demand simply by intervening in trade. Countries with excess supply (the surplus countries) have to hope that they are allowed to continue to force their excess savings onto the rest of the world or else supply and demand cannot balance domestically.

It is easiest to see this process in Europe. Following the convention I have used before, I will simplify things by assuming that Europe consists of only two countries, Germany and Spain. Here, as I see it, is the sequence:

Beginning around the turn of the century, and in order to increase German employment, German labor unions, corporations, and the government agreed voluntarily to restrain wage increases in order to make Germany more competitive in the international markets. This had a double effect. First, the household share of income declined. Second, as unit labor costs dropped, German rentiersand business owners saw their share of total income rise. The net effect was that the share of GDP retained by ordinary German households declined partly because non-households (businesses and the state) retained a growing share of total income and partly because within the household sector the rich retained a growing share.

Both effects caused consumption to decline as a share of GDP, or, to put it another way, caused the German savings rate to rise (and notice this had nothing to do with rising thrift among German households). Higher German savings had to be counterbalanced, either within Germany or within Spain.

They were not balanced within Germany. German investment rates did not rise to match the increase in savings (in fact I think investment actually declined), nor did consumption among ordinary German households surge. If Germany had been a closed economy, a rise in unemployment would have been, in that case, inevitable. Instead, Germany exported the excess savings to Spain, which under the conditions of the euro Spain was not able easily to reject (tariffs or currency depreciation). Because capital exports are just the obverse of a current account surplus, this meant that after spending much of the 1990s in deficit, Germany's excess production, caused not by a surge in production but rather a decline in consumption, was resolved by the country's running a current account surplus.

This resolved Germany's problem, but only by forcing the savings imbalance onto Spain. Because savings exceeded investment in Germany, investment had to exceed savings in Spain.This meant either that productive and unproductive investment in Spain had to increase, or that savings had to decline. Martin Wolf makes this point when he argues that the expansion in Germany's tradable goods sector forced an equivalent contraction in Spain's tradable goods sector, so that in order to prevent unemployment (temporarily, as it turned out) Spain had to embrace cheap capital which unleashed both a speculative investment boom and a consumption boom.

And both happened. There was some increase in Spain's productive investment, but the lowering of Germany's unit labor costs relative to Spain made the Spanish tradable goods sector uncompetitive, reducing desired investment in the tradable goods sector. It was difficult, in other words, for productive investment in Spain to rise enough to account for the surge in German savings.

As asset prices in Spain soared, thanks to the surge in capital inflows, this made Spaniards feel wealthier. There were two obvious consequences of soaring asset prices. Excessively cheap and easily available money poured into non-productive investments – apartment buildings and bloated infrastructure, for the most part. It also funded a consumption binge, and the Spanish savings rate dropped sharply.

But neither of these is sustainable. The debt backing unproductive investment and soaring consumption could only continue if there was unlimited debt capacity. Clearly there was a limit to the debt, and the global crisis in 20007-08 put an end to the party.

This exhausted all the ways an increase in German savings could balance save one – a rise in unemployment. Not surprisingly, unemployment soared almost immediately, but of course it did so in Spain. If Spain leaves the euro, Spanish unemployment will decline sharply, but total unemployment will not, which means that German unemployment will rise.

The Fable of the Bees

Where does this leave us? Until we see a significant downward redistribution of income in Germany we don't have many options. If Spain were to leave the euro, this would solve its unemployment problem, but only by forcing unemployment back onto Germany.

Many analysts have argued that Spain could have done the same things over the past fifteen years that Germany did and so would not have suffered, but I hope this analysis shows why this solution – so called "austerity" – is completely wrong. If Spain has also taken steps to force up its savings rate by cutting wages, it would only force up the global savings rates even further and, with it, once debt capacity constraints were reached, unemployment – perhaps not in Spain, but elsewhere. The solution to excess savings, in other words, is not for low-saving countries to cut back on consumption. This will only increase global unemployment.

What is very clear from this analysis is that there are really only three sustainable solutions to the global crisis in demand. Either the world has to embark on a surge in productive investment, or we need to reduce the income share of the state and of the rich, or we must accept that unemployment will stay high for many more years.

The first is possible, but with so much excess manufacturing capacity and excess infrastructure in many parts of the world, and with significant debt constraints, we need to be very careful about how we do this. Certainly countries like the United States, India and Brazil lack infrastructure, but they do so largely because of political constraints, and it is unreasonable to assume that any of these countries will soon embark on an infrastructure-building boom.

Even if they do, the amount of excess savings is likely to be huge, and without a significant redistribution of income to the middle classes and the poor, it is hard to see how we can avoid high global unemployment for many more years. Because trade war is the form in which countries assign global unemployment, I would expect trade relations to continue to be very difficult over the next few years, as countries with high unemployment and low savings intervene in trade, thus forcing the savings back into countries with excess savings.

So what are the policy implications? Clearly Europe, the US, China, Japan, and the rest of the world must take steps to reduce income inequality. Just as clearly countries like China and Germany must take steps to force up the household income share of GDP (in fact polices aimed at doing this are at the heart of the Third Plenum reform proposals in China). Because it will be almost impossible to do these quickly, as a stopgap countries with productive investment opportunities must seize the initiative in a global New Deal to keep demand high as the structural distortions that force up the global savings rate are worked out.

But redistributing income downwards is easier said than done in a globalized world, especially one in which countries are competing to drive down wages. The first major economy to attempt to redistribute income will certainly see a surge in consumption, but this surge in consumption will not necessarily result in a commensurate surge in employment and growth. Much of this increased consumption will simply bleed abroad, and with it the increase in employment.

Less global trade, in other words, will create both the domestic traction and the domestic incentives to redistribute income. In a globalized world, it is much safer to "beggar down" the global

economy than to raise domestic demand, and so I expect that there will continue to be downward pressure on international trade.

Until we understand this do not expect the global crisis to end anytime soon, except perhaps temporarily with a new surge in credit-fueled consumption in the US (which will cause the trade deficit to worsen) and more wasted investment in China (which, because it is financed with cheap debt, which comes at the expense of the household sector, may simply increase investment at the expense of consumption). These will only make the underlying imbalances worse. To do better we must revive the old underconsumption debate and learn again how policy distortions can force up the savings rate to dangerous levels, and we may have temporarily to reverse the course of globalization.

I will again quote Mariner Eccles, from his 1933 testimony to Congress, in which he was himself quoting with approval an unidentified economist, probably William Trufant Foster. In his testimony he said:

It is utterly impossible, as this country has demonstrated again and again, for the rich to save as much as they have been trying to save, and save anything that is worth saving. They can save idle factories and useless railroad coaches; they can save empty office buildings and closed banks; they can save paper evidences of foreign loans; but as a class they cannot save anything that is worth saving, above and beyond the amount that is made profitable by the increase of consumer buying.

It is for the interests of the well-to-do – to protect them from the results of their own folly – that we should take from them a sufficient amount of their surplus to enable consumers to consume and business to operate at a profit. This is not “soaking the rich”; it is saving the rich. Incidentally, it is the only way to assure them the serenity and security which they do not have at the present moment.

Epilogue

After I sent out the first version of this essay, as I expected, I got some very heated responses, nearly all of which completely ignored the argument and focused on issues that were not relevant. If you disagree with my argument, there are only three ways you can do so. You can prove that my assumptions are wrong. You can prove that my logic is faulty. Finally, you can claim that my argument is irrelevant. You would argue, in that case, that the most important benefits or costs of income inequality do not lie in the realm of economics and have to do with social, political, or religious values or with the structure of incentives in our society.

The latter are all perfectly valid points, but they are separate from my argument. To make it easier for anyone to disagree with me in a way that is relevant or consistent, I will summarize my argument as simply, as possible, listing very specifically the propositions from which I begin and the logical sequence of the argument. The only way anyone can possibly show that I am wrong is by attacking my propositions or by finding an illogical step in my reasoning. Nothing else is valid.

Before starting let me explain some of the responses I have received that were usually irrelevant. People on the “right” focus on either of the following conclusions:

a) an increase in the state share of GDP leads to unemployment, in which case they call the argument right,

b) an increase in income inequality leads to a rise in unemployment, in which case they call the argument wrong,

c) increase in income inequality leads to a rise in productive investment, in which case they call the argument right (this whole essay, remember, is exactly the same "supply-side" argument provided by Arthur Laffer).

People on the "left" focus either on the following:

d) an increase in the state share of GDP leads to unemployment, in which case they call the argument wrong,

e) an increase in income inequality leads to a rise in unemployment, in which case they call the argument right,

f) an increase in income inequality leads to a rise in productive investment, in which case they call the argument wrong.

The problem is that you cannot agree with just the part you like. Either the entire argument is true or it is false. In fact all of these conditions can be true but are likely to be more or less important under different conditions. One of the great follies of contemporary debate, it seems to me, is that certain policies are considered to be intrinsically and always wealth-enhancing, or intrinsically and always wealth-destroying, depending on your political beliefs, whereas I would argue that these policies, and in fact many others (free trade, unionization, free banking, currency regimes, state intervention, deficit financing, etc) can be wealth-enhancing under certain conditions and wealth-destroying under others. Rather than close the door to debate we should try to figure out the conditions under which they are one or the other, and guide policy according to the relevant conditions.

I start with three propositions, from which everything else follows:

The rich in any economy save a greater share of their income than do the poor. This is an assumption that can be proven or disproven empirically. The fact that some countries are rich and others poor may complicate things, but this only means that income inequality inside a country matters, whereas income inequality between countries might or might not matter.

In every closed economy savings is equal to investment. This is true by definition because the demand side of an economy consists of consumption and investment, while the supply side (how we allocate total production of goods and services) consists of consumption and savings. Because demand and supply always balance, savings is always equal to investment.

No one has infinite debt capacity. I don't know if this is an assumption or if it is true by definition, however no one has ever disputed it.

Here is the argument, which can only be logically true or logically false:

1. From Proposition 1, if income inequality rises, the savings rate must rise.

2. From Proposition 2, if savings in one part of the economy rises, we must see one or both of the following:

a) investment must rise, or

b) savings in another part of the economy must decline.

3. If investment rises, one or both of the following must be true:

a) productive investment rises

b) non-productive investment rises

4. If savings in another part of the economy declines, one or both of the following must be true:

a) the "non-rich" increase their consumption

b) unemployment rises.

You might question whether there are indeed only two ways for savings in another part of the economy to decline, but these are the only two ways I can think of. If there is another way, it would interesting to see how it would affect the argument.

This leaves us with the following. If income inequality rises, we must see one or more of four possible outcomes, which I list as 3a, 3b, 4a, and 4b. Unless we discover any other possible outcome, these are the only ways to balance an increase in income inequality.

Let us focus on 3a and 3b:

If productive investment rises, we all get wealthier, both rich and poor (this is what the supply-siders mean by "trickle down"). The process is clearly sustainable.

If non-productive investment rises, wealth declines. Once wealth declines to some limit (it could be zero but it could also be, and is likely to be, much higher than zero) the process can be maintained only by rising debt, but from Proposition 3 there is a limit to rising debt, so this process is not sustainable.

Now let us focus on 4a and 4b:

If some of the non-rich increase their consumption, they eventually draw their savings down to their minimum level (which might be zero, but doesn't have to be), at which point they have to borrow to consume. But again, from Proposition 3 there is a limit to rising debt, so this process is not sustainable.

If unemployment rises, total savings decline, although because it might also cause investment to decline, unemployment might have to rise a great deal, which is what happened in countries like Spain once debt-fueled consumption and debt-fueled non-productive investment came to an end in 2008. This is, unfortunately, sustainable.

The conclusion, which I believe follows inevitably from the three initial propositions, is that a rise in income inequality can lead temporarily to an increase in non-productive investment or to an

increase in debt-fueled consumption, but in both cases they are unsustainable. A rise in income inequality can also lead to a rise in productive investment or a rise in unemployment, neither of which is unsustainable (unemployment in the long run might be unsustainable, but of course this does not invalidate the argument).

This means that rising income inequality must eventually lead to more productive investment or to more unemployment. There is no other conclusion. Can this argument be attacked? Of course it can. If you disagree with any one of the three initial propositions, then even if the argument is completely logical, the conclusion may be wrong. Alternatively, if you disagree with any of the logical steps, then even if the three initial propositions are correct, the conclusion can be wrong. These, of course, are the only ways in which the conclusion can be wrong.

Inevitably some one will discover that Keynes and Krugman said many of these things, in which case the essay is the work of the devil and innocent young people should not be allowed to read it, or that it agrees with things that Laffer and Friedman have said, in which case ditto. In fact an awful lot of economists in the past 200 years and on every part of the political spectrum have agreed with some or all of this model, mainly because it is just basic economics. There should be no guilt by association here, please.

Why a savings glut does not increase savings [Week 5]

By Michael Pettis · May 8, 2014 · Consumption, Income inequality · 49 Comments

Debate about the global savings glut hypothesis is mired in confusion, a fundamental one of which is the seemingly obvious but false claim that a global savings glut must lead to higher global savings. Here, for example, is a recent piece by one of my favorite economists, Barry Eichengreen:

There is only one problem: the data show little evidence of a savings glut. Since 1980, global savings have fluctuated between 22% and 24% of world GDP, with little tendency to trend up or down.

As surprising as it might sound, global savings gluts do not result in higher global savings except under specific, often unlikely, conditions.

What is a savings glut?

There is no formal definition, but whenever market conditions or policy distortions cause the savings rate in one part of the economy to rise excessively (itself an ambiguous word), we can speak of a savings glut. There are at least two main causes of a savings glut.

A rise in income inequality. We see this in Europe, the US, China, and indeed in much of the world. As wealthy households increase their share of total income, and because they tend to save a larger share of their income than do ordinary households, rising income inequality forces up the savings rate.

A decline in the household share of GDP. We've seen this mainly in China and Germany over the past fifteen years. When countries implement policies that intentionally or unintentionally force down the household share of GDP (usually to increase their international competitiveness) they also automatically force down the consumption share of GDP. Because savings is defined as GDP minus consumption, forcing down the consumption share forces up the savings share. There are many policies and conditions that do this, and I discuss these extensively in my book, The Great Rebalancing, but the main ones are low wage growth relative to productivity, financial repression, and an undervalued currency.

Notice that in both these cases, and completely contrary to the popular narrative that praises high savings as a consequence of household thrift, and so as morally virtuous, the rise in the savings rate does not occur because ordinary households have become thriftier. In the former case household savings rise simply because the rich increase their share of total income. In the latter case national savings rise without households in the aggregate increasing their savings.

How does the economy balance?

An economy's total production of goods and services (GDP) can be defined either from the demand side (consumption plus investment) or from the supply side (consumption plus savings). By definition, in other words, savings is always exactly equal to investment.

An economy experiencing a savings glut must maintain this balance. It is consequently just a matter of logic that a savings glut must be accompanied by a balancing adjustment – either by an

increase in investment or by a reduction in savings in another part of the economy – and this adjustment must occur simultaneously. The necessary implication is that whatever causes the savings glut must also cause one or both of these balancing adjustments.

There are only two ways investment can rise and two ways savings elsewhere can drop. This means that a savings glut must result in one or more of the following, enough fully to offset the savings glut:

If productive investment has been constrained by the lack of savings, productive investment will rise.

Nonproductive investment can also rise. Excess savings can cause large speculative flows into real estate or other assets, perhaps even setting off asset "bubbles". When this happens it can create additional investment outlets for excess saving in the form of projects, including most often real estate projects, whose economic value can only be justified by rising price expectations.

Rising asset prices can unleash a consumption boom if it causes ordinary households to feel wealthier and so increase their consumption (the "wealth effect"). This increased consumption creates what I will call, perhaps clumsily, a "consumption glut".

If less consumption caused by the savings glut is not matched by higher investment or by a consumption glut, total demand drops, resulting in higher unemployment. Unemployed workers stop producing goods and services but do not stop consuming. Because savings is simply the gap between production and consumption, unemployment causes the savings rate to drop.

Economists almost always miss this point. A global savings glut must be accompanied by one or more of the four adjustments listed above. It can result in higher global savings if the economy rebalances in the form of higher productive or unproductive investment, or it can result in no change in the global savings rate if the economy rebalances in the form of a consumption glut or a rise in unemployment. Nothing else is possible.

The best outcome is if a savings glut is accompanied by higher productive investment. This is often referred to as "trickle down economics" when both the rich and the poor benefit from productive investment, with the rich benefitting more.

If there is a savings glut, will productive investment automatically increase? If productive investment has been constrained by low savings it will, but productive investment tends to be constrained by insufficient savings mostly in undeveloped countries. Most excess savings, however, have originated or flow into rich countries.

In rich countries there are often many productive projects that desperately await investment, but this failure to invest is driven by other factors, and usually not by the lack of savings, so that a savings glut is unlikely to lead to higher productive investment*. Former Fed Chairman (1934-48) Marriner Eccles even argued that a savings glut could reduce productive investment. "By taking purchasing power out of the hands of mass consumers," he wrote, "the savers denied to themselves

the kind of effective demand for their products that would justify a reinvestment of their capital accumulations in new plants."

More commonly when excess savings are high they flow into real estate and stock markets, perhaps even setting off bubbles, with overinvestment in real estate an almost inevitable consequence of rapidly rising housing prices (we saw this most obviously in peripheral Europe, the US and China). These speculative flows have another impact that allows the economy to balance savings and investment. The real estate bubble makes households feel wealthier, which encourages a consumption glut, so that between the real estate boom and the consumption glut, the savings glut is fully absorbed.

But this is temporary. When the asset bubbles burst, the resulting surge in unemployment brings down the savings rate enough again to maintain the balance between savings and investment.

Savings must balance

The point here is that a savings glut need not result in an overall rise in savings. It can just as easily cause a consumption glut elsewhere whose positive impact on total demand fully mitigates the negative impact of the savings glut. The idea however that a savings glut can simultaneously create a consumption glut seems to be one of the most difficult things for many economists to understand, perhaps because it seems at first so counterintuitive.

Of course the other way a savings glut need not result in an overall rise in savings is through higher unemployment. In fact because neither an asset bubble nor a consumption glut is sustainable, unless productive investment has been constrained by a lack of savings, the only long-term consequence of a savings glut is a rise in unemployment and no rise in total savings.

In that case there might be only two sustainable ways to address the resulting unemployment. Either the savings glut is reversed, or governments act to eliminate whatever were the previous constraints on productive investment (perhaps by liberalizing constraints to investment or even by initiating a kind of "new deal" in infrastructure investment). The third way, although not sustainable, is for another asset bubble to be inflated so as to encourage another consumption glut, which seems currently to be the preferred way of US and European governments.

Which way is the causality?

It is just a matter of logic that unless investment rises substantially, a savings glut must combine with a consumption glut or with a surge in unemployment so that there is no net increase in savings. But logic only tells us that the two must occur simultaneously. It implies no obvious direction of causality. Does a savings glut cause a consumption glut, or does the consumption glut cause the savings glut? To put it in contemporary terms:

Did Chinese policies aimed at forcing up domestic savings (by forcing down the household income share of GDP) set off a consumption glut in the US, or did profligate US consumption require that Chinese savings rise to accommodate it?

Did German policies aimed at restraining workers' wages force up the German savings rate,

with excess savings pouring into peripheral Europe, setting off real estate bubbles, which then set off consumption gluts, or did over-enthusiasm about the euro cause overly confident citizens of countries like Spain to embark on a consumption binge, which could only be balanced by a rise in the German savings rate?

One way of resolving these questions might be to examine the cost of capital. Pulling capital from low-savings to high savings parts of the economy might seem to require high interest rates. Pushing capital from high-savings to low-savings parts of the economy might seem to require low interest rates.

There is so much misunderstanding about the savings glut hypothesis that much of the debate has verged on the nonsensical. Unless it unleashes a truly heroic surge in investment – productive or nonproductive, although the latter can only be temporary – a savings glut must always be accompanied either by a consumption glut elsewhere or by a rise in unemployment. No other option is possible. This is why savings gluts rarely result in higher overall savings.

This is also why any serious discussion of the savings glut must eschew moralizing and must focus instead on the direction of causality. Did distortions that created a savings glut force the creation of a consumption glut, or did distortions that created a consumption glut force the creation of a savings glut? Any analysis that does not recognize that both must occur simultaneously, and so must be resolved simultaneously, cannot possibly be correct.

Academics, journalists, and government and NGO officials who want to subscribe to my newsletter, which sometimes includes portions of this blog and sometimes (as in this case) does not, should write to me atchinfinpettis@yahoo.com, stating your affiliation, please. Investors who want to buy a subscription should write to me, also at that address.

* Perhaps in cases in which investment has been constrained by high interest rates, higher savings can unleash more productive investment. It may also be, although I cannot prove it, that when income inequality is low, higher savings associated with further increases in inequality can lead to more productive investment in part because interest rates might be high. In that case it would seem that when income inequality is high, higher savings associated with further increases in inequality will not lead to more productive investment.

Michael Pettis explains the euro crisis (and a lot of other things, too) [Week 5]

February 6, 2015

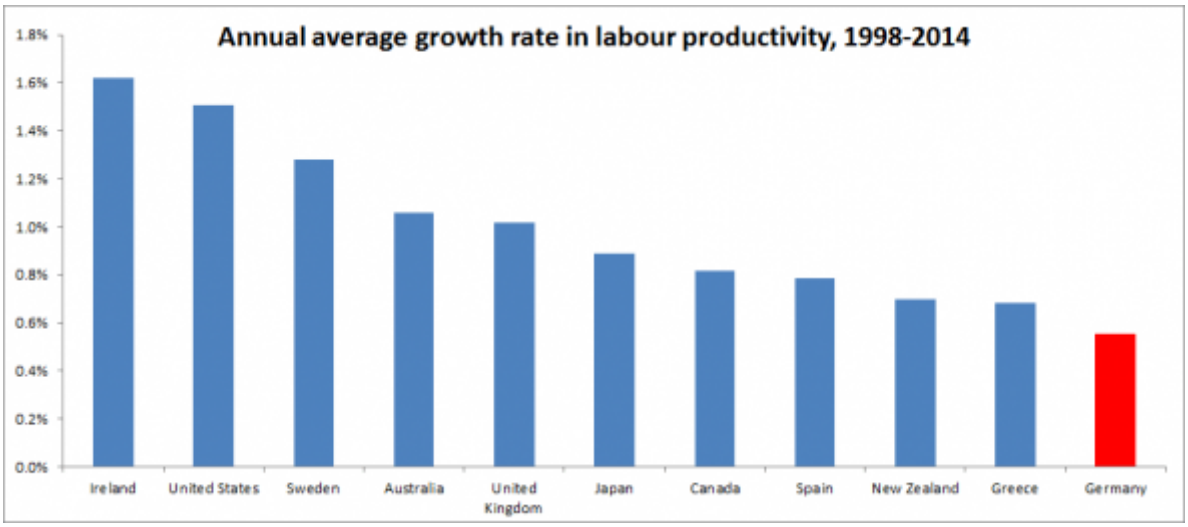
By: **Matthew C Klein**

This is literally the best analysis of the euro area's problems we've ever read. You should take the time to closely read the whole thing yourself. We'll wait.

Now that you're back, we thought we could add some value by highlighting and expanding on what we believe to be Pettis's most important insights.

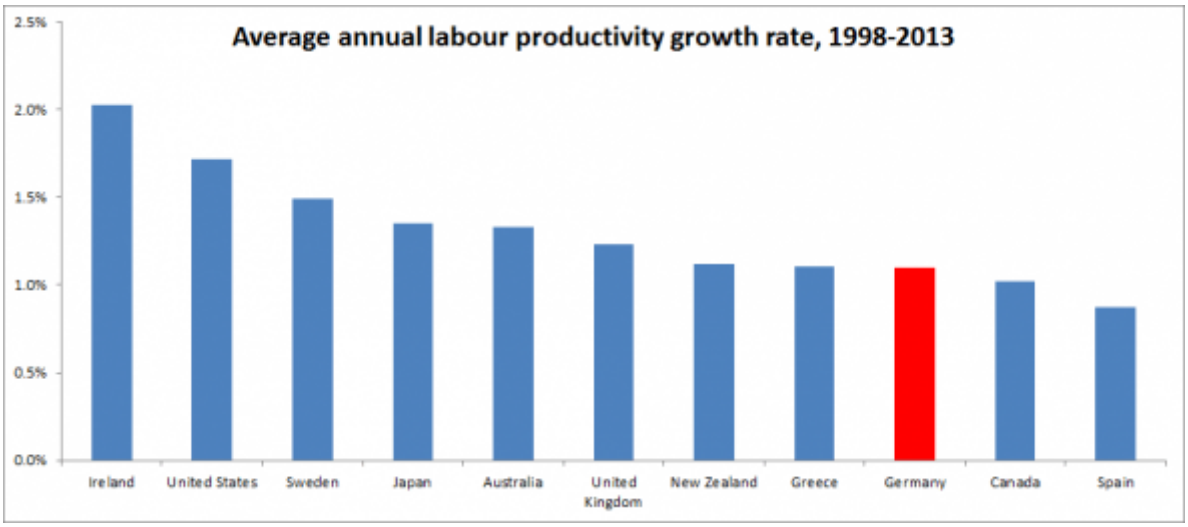
First, the relevant units within the euro area aren't countries but economic sectors. For all of the suffering that has occurred in places such as Spain, Ireland, and Greece, we shouldn't forget that German workers have suffered from stagnant wages and decaying infrastructure.

One of the worst costs — for Germany — has been the lack productivity growth. For all the talk of Teutonic competitiveness, German labour productivity has grown at the meagre pace of just 0.6 per cent per year, on average, since 1998. Output per hour worked is actually *lower* now than it was in 2007. For perspective, this track record is worse than that of practically every other rich country — including Greece and Spain!



(Source: Organisation for Economic Co-operation and Development, author's calculations)

[UPDATE: a commenter alerts us to another OECD data series on GDP per hour worked, which produces slightly -- but not meaningfully -- different results from the chart above in terms of rank order. (Part of this is probably due to the fact that this other series doesn't include 2014 data.) Germany still lags behind Greece, although it's slightly ahead of Canada and Spain. Here's the chart:



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The right distinction, therefore, isn't between countries but between classes (emphasis ours):

It was not the German people who lent money to the Spanish people. The policies implemented by Berlin that resulted in the huge swing in Germany's current account from deficit in the 1990s to surplus in the 2000s were imposed at a cost to German workers, and have been at least partly responsible for Germany's extremely low productivity growth — most of Germany's growth before the crisis can be explained by the change in its current account — rather than by rising productivity.

Moreover because German capital flows to Spain ensured that Spanish inflation exceeded German inflation, lending rates that may have been "reasonable" in Germany were extremely low in Spain, perhaps even negative in real terms. With German, Spanish, and other banks offering nearly unlimited amounts of extremely cheap credit to all takers in Spain, the fact that some of these borrowers were terribly irresponsible was not a Spanish "choice."

I am hesitant to introduce what may seem like class warfare, but if you separate those who benefitted the most from European policies before the crisis from those who befitted the least, and are now expected to pay the bulk of the adjustment costs, **rather than posit a conflict between Germans and Spaniards, it might be far more accurate to posit a conflict between the business and financial elite on one side (along with EU officials) and workers and middle class savers on the other**. This is a conflict among economic groups, in other words, and not a national conflict, although it is increasingly hard to prevent it from becoming a national conflict.

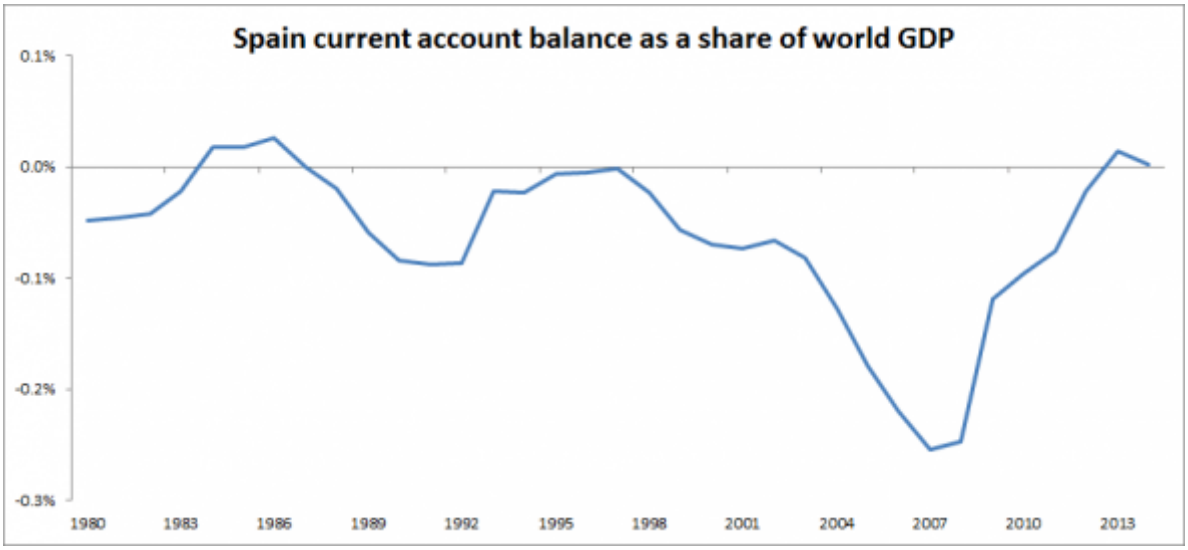
Ironically, the biggest political beneficiaries of the crisis (so far) haven't been pan-European socialists, but nationalist movements of both the right and left.

Second, when it comes to big flows of capital across borders, it's usually better to give than to receive. The basic problem is that huge inflows of money are almost never matched by commensurate increases in the number of profitable investment projects, so a ton of money gets wasted on boondoggles, usually related to real estate. That ends up boosting wages without increasing productivity. That lowers competitiveness and worsens the trade balance, which makes it harder to service foreign debts even as the obligations pile up.

(Borrowing in a currency you can print is helpful but it doesn't prevent a lot of resources getting misallocated and a lot of people ending up with excessive debt burdens.)

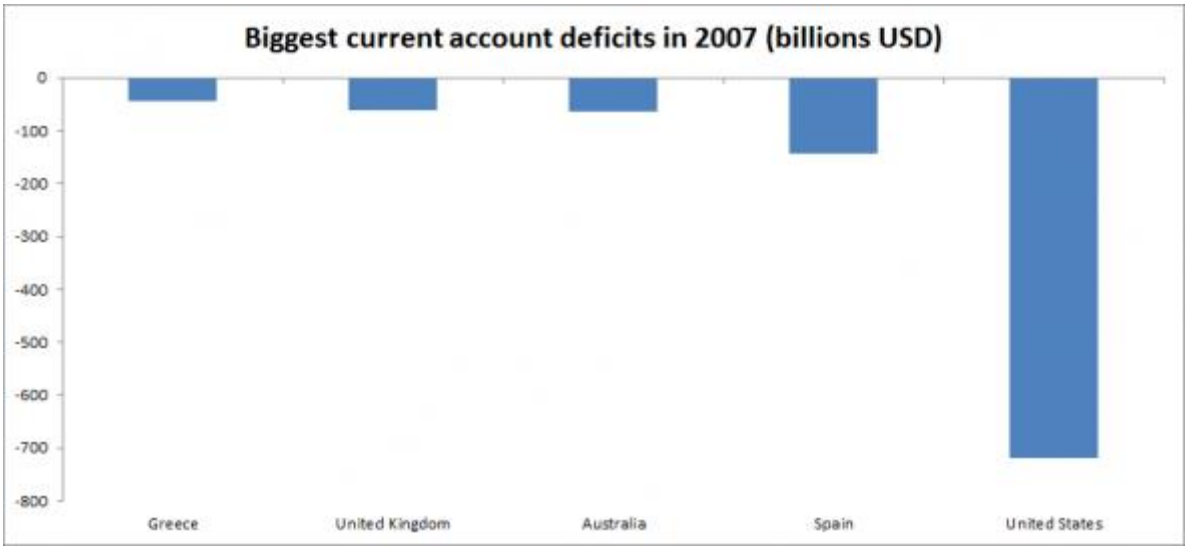
It's easiest to see how this all adds up in the case of Spain. According to Eurostat, a whopping 20 per cent of all the jobs created in Spain from 1998 through 2007 were construction jobs, even though construction accounted for a little less than 10 per cent of total employment in 1998. The result was zero growth in labour productivity in that period. (The building industry is notorious for its falling productivity, as Cardiff has noted.)

Now look at what happened to Spain's capital imports, as shown by comparing its current account balance to global GDP:

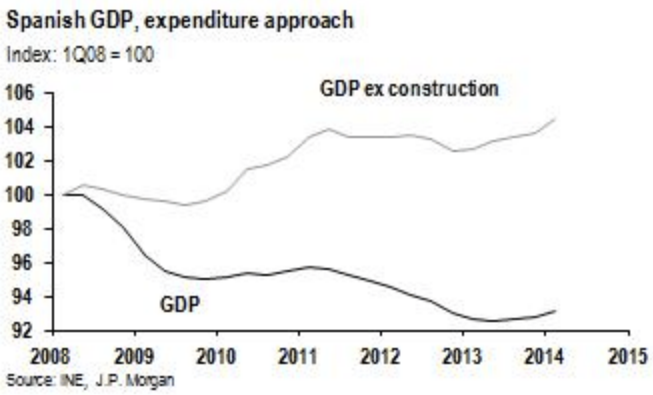


(Source: International Monetary Fund World Economic Outlook database on GDP and current account balances, author's calculations)

At the height of the bubble, Spain — a mid-sized economy in Europe that was home to only about 45 million people — was importing more capital than every other country in the world except for the United States. Also note that Greece — a country of just 11 million people — was the fifth-most dependent on foreign creditors:



In addition to reducing productivity, the lending that enabled the Spanish construction boom also led to a lot of overbuilding. The subsequent cutbacks to deal with the inventory overhang have crushed employment and GDP. Had it not been for those cutbacks, Spain's economy would actually have done pretty well. Via JPMorgan:



Pettis illustrates this brilliantly by looking at what happened to the German economy after it received reparation payments from France following the Franco-Prussian war:

From 1871 to 1873 huge amounts of capital flowed from France to Germany. The inflow of course drove the obverse current account deficits for Germany, and Germany's manufacturing sector struggled somewhat as an increasing share of rising domestic demand was supplied by French, British and American manufacturers.

But there was a lot more to it than mild unpleasantness for the tradable goods sector. The overall impact in Germany was very negative. In fact economists have long argued that the German economy was badly affected by the indemnity payment both because of its impact on the terms of trade, which undermined German's manufacturing industry, and its role in setting off the speculative stock market bubble of 1871-73, which among other things unleashed an unproductive investment boom and a surge in debt.

The party ended with the start of the Long Depression in 1873. As boom turned to bust, views on the merits of reparations changed:

Within a few years of the beginning of the crisis attitudes towards the French indemnity had shifted dramatically, with economists and politicians throughout Germany and the world blaming it for the country's economic collapse. In fact so badly was Germany affected by the indemnity inflows that it was widely believed at the time, especially in France, that Berlin was seriously contemplating their full return. The great beneficiary of French "largesse" turned out not to have benefitted any more than Spain had benefitted from German largesse 135 years later.

Third, it makes no sense to blame the recipients of the capital inflows for causing the crisis. If enough money is sloshing around willing to invest in any stupid idea, you shouldn't be too surprised that a lot of stupid ideas get funded. When, for example, Wolfgang Schaeuble, Germany's finance minister, says:

The reasons for Greece's problems can be attributable only to Greece and not to actors outside the country, and certainly not in Germany.

As he did during the press conference following his meeting with Yanis Varoufakis, his Greek counterpart, we have to remember that Schaeuble is talking nonsense. It's logically impossible for excess borrowing to occur unless there is someone sufficiently reckless (or stupid) to provide the financing.

The problem with Schaeuble's assignment of blame is that it prevents optimal solutions that are best for the majority of Europeans, Greek, Spanish, and German alike. Pettis:

An awful lot of Europeans have understood the crisis primarily in terms of differences in national character, economic virtue, and as a moral struggle between prudence and irresponsibility. This interpretation is intuitively appealing but it is almost wholly incorrect, and because the cost of saving Europe is debt forgiveness, and Europe must decide if this is a cost worth paying (I think it is), to the extent that the European crisis is seen as a struggle between the prudent countries and the irresponsible countries, it is extremely unlikely that Europeans will be willing to pay the cost.

In fact, Pettis thinks that, if anything, it was net lenders in Germany and the Netherlands who were responsible for what happened, rather than borrowers in Ireland or Greece or Spain:

It would be an astonishing coincidence that so many countries decided to embark on consumption sprees at exactly the same time. It would be even more remarkable, had they done so, that they could have all sucked money out of a reluctant Germany while driving interest rates down. It is very hard to believe, in other words, that the enormous shift in the internal European balance of payments was driven by anything other

than a domestic shift in the German economy that suddenly saw total savings soar relative to total investment.

That shift, in turn, is connected to anaemic wage growth and even weaker domestic consumption in Germany.

Fourth, it matters how your obligations are structured. Many smart people, most notably Daniel Davies, have argued that the headline numbers surrounding Greece's public debt burden are irrelevant to understanding the situation in Greece. As Davies puts it:

The total figure for "Greece's Debt Burden" is an economically meaningless number. Everyone knows it is going to be restructured at some politically convenient time in the future; it simply can't be paid back, and so it simply won't be. So increasing the size of the debt outstanding by 2.5 now just means that you increase the size of the writeoff in the year two-thousand-and-something by the same amount. Concentrate on the flows and only on the flows—the stocks are no longer a useful quantity to think about.

But the focus on flows misses the impact of the structure of the debt stock on the incentives of private sector lenders and producers, writes Pettis (our emphasis):

The face value and structure of outstanding debt matters, and for more than cosmetic reasons. They determine to a significant extent how producers, workers, policymakers, savers and creditors, alter their behavior in ways that either revive growth sharply or slowly bleed away value.

Incentives must be correctly aligned, in other words, so that it is in the best interest of stakeholders collectively to maximize value (this rather obvious point is almost never implemented because economists have difficulty in conceptualizing and modelling reflexive behavior in dynamic systems).

Rather than let economists work out the arithmetic of the restructuring based on linear estimates of highly uncertain future cashflows, whose values are themselves affected by the way debt payments are indexed to these cashflows, **Greece and her creditors may want to unleash a couple of options experts onto the repayment formulas and allow them to calculate how volatility affects the value of these payments and what impact this might have on incentives and economic behavior**.

This is why Pettis thinks Varoufakis's plan to swap existing Greek debts for obligations indexed to GDP is a good idea that ought to be expanded to other countries, including Spain and Italy. The appeal of these GDP-indexed obligations is that they give creditors an incentive to support investments in future growth.

That's very different from the current setup, where the Troika has every incentive to tie its funding to the willingness to implement austerity programmes. Even if those programmes boosted productivity in the long

term by shifting resources away from the state, the behaviour demanded by the euro area's official sector creditors exacerbates the cyclical weakness.

The good news, though, is that a different liability structure that encourages additional investment could instantly lead to stronger growth given the reforms that have already occurred. Moreover, a large-scale restructuring should encourage lots of new investment even if it also wipes out many existing creditors, at least if they are done soon. As Pettis puts it:

There is overwhelming evidence — the US during the 19th Century most obviously — that trade and investment flow to countries with good future prospects, and not to countries with good track records. The main investment Spain is likely to see over the next few years is foreign purchases of existing apartments along the country's beautiful beaches.

Once its growth prospects improve, however, with among other things a manageable debt burden, foreign businesses and investors will fall over each other to regain the Spanish market regardless of its debt repayment history. This is one of those things about which the historical track record is quite unambiguous.

That leads to the **fifth** point: euro area officials are running out of time. Patience may be a virtue in some situations, but not when it comes to crisis resolution and debt restructuring. That's especially true when you appreciate the difference between "financial crises that occur within a globalization cycle and those that end a globalization cycle."

The past few years have been a golden opportunity for even the dodgiest borrowers to raise capital at low spreads, because the rich world (where most foreign investment comes from) has been awash in savings searching for a decent return. Under current conditions, there would be plenty of investors eager to jump in and finance investment in Greece, Spain, Ireland, etc if they dramatically restructured their debts. Just think of all the "dry powder" burning holes in the pockets of the private equity firms (and their LPs!), or the bond investors searching, but not finding, decent rates of return in their home country. After all, if Ecuador can do it…

Pettis reminds us that it's always been this way. Germany was surprised at how easy it was for France to raise the money necessary to pay its 1871 reparations — a bill worth more than 20 per cent of France's annual GDP. In fact, "the French indemnity actually increased global liquidity by expanding the global supply of highly liquid 'money-like' assets."

The Weimar government also had an easy time securing credit from American and other lenders to cover its own reparations half a century later once hyperinflation had wiped out its domestic debts.

But sometimes the timing is rough. The boom in lending to Latin America funded by petrodollars in the 1970s had a very unhappy ending because the 1980s were a period of relatively high rates in America and Europe, not to mention lower commodity prices. The combination was a disaster for the debtors who had borrowed in dollars.

We at Alphaville have no insight into the future of monetary policy or global liquidity here or in Europe. But we wouldn't be surprised if it turned out that the optimal window for restructuring, even if you leave aside the political implications of persistently high unemployment, could soon close. Something for the can-kicking eurocrats to keep in mind.

Finally — and you should have figured this one out by now — nothing about the euro crisis is particularly new. All of this has happened before and all of it will (probably) happen again. There isn't any need to understand radical new financial products or technological innovations or world-historical changes in politics to figure out why everything blew up. Historical literacy and/or a decent model of capital flows in a fixed exchange-rate system would have been more than sufficient.

In fact, one of our favourite books about finance and economics — Pettis's *The Volatility Machine* — has basically everything you need to know about the euro crisis even though it was written before the euro had even launched. (The appendix on the relationship between option pricing and credit risk is worth the price of admission alone, in our view.)

No wonder he writes in his latest article that "the current European crisis is boringly similar to nearly every currency and sovereign debt crisis in modern history."

Are we starting to see why its really the exorbitant "burden" [Week 6]

By Michael Pettis · October 5, 2014 · Europe, Global trade · 214 Comments

This may be excessively optimistic on my part, but there seems to be a slow change in the way the world thinks about reserve currencies. For a long time it was widely accepted that reserve currency status granted the provider of the currency substantial economic benefits. For much of my career I pretty much accepted the consensus, but as I started to think more seriously about the components of the balance of payments, I realized that when Keynes at Bretton Woods argued for a hybrid currency (which he called "bancor") to serve as the global reserve currency, and not the US dollar, he wasn't only expressing his dismay about the transfer of international status from Britain to the US. Keynes recognized that once the reserve currency was no longer constrained by gold convertibility, the world needed an alternative way to prevent destabilizing imbalances from developing.

This should have become obvious to me much earlier except that, like most people, I never really worked through the fairly basic arithmetic that shows why these imbalances must develop. For most of my career I worked on Wall Street – at different times running fixed income trading, capital markets and liability management teams at various investment banks, usually focusing on Latin America – and taught classes at Columbia's business school on debt trading and arbitrage, emerging markets finance and financial history. Both my banking work and my academic work converged nicely on the related topics of global capital flows, financial crises and the structure of balance sheets. My 2001 book, *The Volatility Machine*, was my attempt to construct a balance sheet analysis of capital-flow volatility and financial crises.

When I moved to China in 2002, its huge savings and investment imbalances forced me to extend my "balance sheet" approach to consider the structure of the overall balance of payments rather than just the capital flows component. Like most balance sheet guys, I tend to think more easily in terms of "systems" than of components of a system, and by forcing me to focus on the way policies and institutional constraints affect the relationship between savings and investment within China and globally, thinking abut China opened up for me a whole new way of thinking about the role of the US dollar as the dominant reserve currency.

Until then, like most people, and because of its role in Latin America, I had pretty much taken the role of the dollar as a given, and assumed vaguely that its dominance gave the US some ill-defined but important advantage – after all they did call it the "exorbitant privilege". But after a few years in China (I moved to Beijing in 2002) I became increasingly suspicious of the value of this exorbitant privilege.

Frankly it shouldn't have taken so long. After all it didn't take much to see evidence of countries that did all they could to avoid receiving any part of this privilege. Capital controls have historically been as much about preventing foreigners from buying local government bonds as it has been about

preventing destabilizing bouts of flight capital, and living in China, where an aggressive demand for the privileges of reserve currency status coincide with equally aggressive policies that prevent the RMB from achieving reserve currency status (and that transfer ever more of the "benefits" to the US) made clear the huge gap in rhetoric and practice. After all the US demand that China revalue the RMB is also a demand that the PBoC stop increasing US dollar reserves.

In fact trade disputes are almost always couched in terms of trade, but the balance of payments identities make it clear that they can be equally expressed in terms of capital flows. If a country takes steps to expand its trade surplus, it is also taking steps to expand its net export of savings – these are one and the same thing. The constant trade disputes between the US and Japan in the 1980s over the undervaluation of the yen can be recast as disputes about Japan's insistence on its right to give the US more of the exorbitant privilege and the US refusal to accept Japan's seeming generosity. Trade disputes between China and the US in the 2000s were more of the same.

The creation of the euro provided another illuminating variation on the impact of reserve currency status. When German institutions – government, businesses and labor unions – negotiated among themselves at the turn of the century a sharp reduction in wage growth for its workers, they were obviously attempting to reduce German's high domestic unemployment by gaining trade competitiveness. Because these polices forced up the savings rate, and perhaps also explain why the investment rate dropped, they resulted in huge current account surplus (or which is the same thing, excesses of savings over investment) that were counterbalanced within Europe. These policies "worked", and they worked probably far better than anyone expected. The sick man of Europe, with its high unemployment and large current account deficits, turned the corner almost immediately.

Global imbalances emerge

It turns out that it wasn't just good luck or brilliant economic policy-making that accounted for the speed of the turnaround. Without anyone's realizing it, the simultaneous imposition of a single currency on a group of countries that clearly did not belong in a currency union had reduced or even eliminated the monetary adjustment mechanisms in those countries, mechanisms that would have automatically counterbalanced the resulting increase in German capital exports. Instead of multiple currencies slowing the impact of German wage policies, the creation of the euro gave these policies far more traction than they would have otherwise had.

Once China and Europe forced me to think more systematically about the balance of payments and its components, I realized how poorly economists understood trade and capital flow mechanisms. It was as simple as recognizing that an excess of savings over investment in one part of an economic system requires an excess of investment over savings in another. When country A exports net savings to Country B, if Country B suffers from underinvestment because it is constrained by insufficient access to domestic and foreign savings, Country A's net export of savings would cause an increase in wealth in Country B. Otherwise it would cause either an increase in debt or an increase in

unemployment or, what is more often the case, an increase in debt followed by an increase in unemployment. This process is pretty automatic.

Few economists, however, let alone to the general public, had realized how ambiguous are the benefits of reserve currency status, which I called in a 2011 article in *Foreign Policy* and in a chapter of my 2013book, *The Great Rebalancing*, the "exorbitant burden". A statement that is true by definition, that an excess of savings over investment in one part of an economic system requires an excess of investment over savings in another, was usually treated as politics, and anyone who thought that by pointing this out he was merely pointing out something as simple and obvious as $2 + 3 = 5$ instead found himself being attacked from the right as a Keynesian who thinks infinite deficits are good and savings are evil, and from the left as a hard money guy who blames his problems on the poor.

The one thing both sides agreed on, however, was that the US enjoyed an advantage because of the reserve currency status of the US dollar, with some people even assuming that the US was somehow repressing the ability of Europe, China and Japan to gain the advantage for themselves. No matter how many times the US engaged in policies that tried to shift the benefits to those countries, or these countries engaged in policies that prevented them from receiving the benefits, it was somehow clear to both sides that reserve currency status is a wonderful thing that everyone wants but only the US is allowed to have.

And yet it is actually quite easy to list the conditions under which reserve currency status encourages growth and the conditions under which it forces a rise either in debt or in unemployment. In advanced countries with deep and flexible financial markets, except in the case in which capital has become severely constrained by the need for money to be backed by gold, or real interest rates have been forced up to extremely high levels in order to break inflation (as was the case in the late 1970s and early 1980s), the net inflows associated automatically with reserve currency status will not result in an increase in productive investment. They only result in an increase either in debt or in unemployment.

This is not an argument in favor of returning to gold, by the way. It is completely neutral on the issue. This argument simply restates the Keynesian insight that eliminating the discipline imposed by the gold standard is likely to become destabilizing unless there is another way to impose discipline. Robert Triffinproved this quite clearly in the 1960s, and yet for some reason, perhaps because at the time the potentially destabilizing effect was pretty distant, his insight was never developed in ways that modified the current regime of global trade and capital flows.

Conditions have changed however, and the potentially destabilizing effect is no longer so distant. In a recent essay I tried to show that if we have not already reached the point at which the dominant reserve currency status of the US dollar is harmful to the US and potentially destabilizing to the world, logically we will inevitably reach that point, and probably soon.

At the start of this essay I said that I am optimistic that we are seeing a change in the way the

world thinks about the role of the US dollar, and I think this is because the 2007-08 crisis in Europe and the US, the start of Abenomics, and the extremely difficult adjustment that China faces have all focused attention on the nature and structure of savings imbalances and their effect on the global balance of payments. It is becoming increasingly obvious, I think, that Keynes was right. Several years ago, I received an email from Kenneth Austin, a Treasury Department economist who had read one of my articles. He himself was working on the same set of ideas and over the years we have had a running conversation about this topic.

The political spectrum

Austin recently published what I think is a very important paper in the latest issue of *The Journal of Post Keynesian Economics* ("Systemic equilibrium in a Bretton Woods II-type international monetary system") which explains why currency war is really a battle over where to assign excess savings, and must lead to unemployment in the country whose assets are most assiduously collected by central banks. You need to subscribe to read the full article, but the abstract tells you what Austin set out to prove:

This article develops a model, based on balance-of-payment identities, of the new international monetary system (Bretton Woods II or BWII). It shows that if some countries engineer current account surpluses by exchange-rate manipulation and foreign-reserve accumulation, the burden of the corresponding current account deficits falls first on the reserve-issuing countries, unless those savings inflows are diverted elsewhere. The imbalances of the BWII period result from official, policy-driven reserve flows, rather than market-determined, private savings flows. The struggle to divert these unwanted financing flows is at the root of the "currency wars" within the system.

While recognition of the exorbitant burden had been growing in recent years, Austin's article focused a lot of new attention on this topic, and it seems that finally Keynes's insight is attracting the kind of acceptance that might eventually modify future policy. In August in a much-commented-upon article in the *New York Times*, Jared Bernstein explained one of the corollaries of Austin's model, pointing out that

Americans alone do not determine their rates of savings and consumption. Think of an open*, global economy as having one huge, aggregated amount of income that must all be consumed, saved or invested. That means individual countries must adjust to one another. If trade-surplus countries suppress their own consumption and use their excess savings to accumulate dollars, trade-deficit countries must absorb those excess savings to finance their excess consumption or investment.*

Note that as long as the dollar is the reserve currency, America's trade deficit can worsen even when we're not directly in on the trade. Suppose South Korea runs a surplus with Brazil. By storing its surplus export revenues in Treasury bonds, South Korea nudges up the relative value of the dollar against our competitors' currencies, and our trade deficit increases, even though the original transaction had nothing to do with the United States.

This is a key and much misunderstood point. The inexorable balance of payments accounting mechanisms make Bernstein's claim – that "Americans alone do not determine their rates of savings" – both necessarily true and joltingly shocking to most economists. How many times, for example, have you heard economists insist that the US trade deficit was "caused" by the fact that Americans refuse to save, or, even more foolishly, that "no one held a gun to the American consumer's head and forced him to buy that flat-screen TV"?

The fact is that if foreign central banks buy trillions of dollars of US government bonds, except in the very unlikely case that there just happen to be trillions of dollars of productive American investments whose backers were unable to proceed only because American financial markets were unable to provide capital at reasonable prices, then either the US savings rates had to drop because a speculative investment boom unleashed a debt-funded consumption boom (i.e. household consumption rose faster than household income) or the US savings rate had to drop because of a rise in American unemployment. There is no other plausible outcome possible. Americans cannot wholly, and sometimes even partly, determine the American savings rate.

This mistaken belief that American savings are wholly a function of American household preferences arises because most economists – and, it seems, policymakers – can only imagine American households as autonomous economic units, and are seemingly incapable of imaging them as units within a system in which there are certain inflexible constraints. The same is true about households elsewhere. Because flexible exchange rates prevent Europe from running massive surpluses, German capital exports to countries like Spain created the same constraints, meaning that Spanish households too faced the choice only of speculative investment booms, consumption booms, and unemployment.

The fact that both Spain and the US experienced first booms in consumption and speculative investment and then steep rises in unemployment is just a requirement of the arithmetic, and has nothing to do with local cultural vice finally succumbing to the cultural virtue of foreigners. Rather than try to understand how systems constrain choice, economists and bankers, most of them quite wealthy, preferred to lecture and wag their fingers at ineluctably stupid middle- and working-class households.

Is it time?

And its not just traditionally "liberal" economists who understand that trade imbalances are not caused by lazy workers. Analysts who retain sympathy for the gold standard, like self-confessed "gold bug" John Mauldin, have always understood that the main argument in favor of gold is that it imposes an unbreakable trade and capital flow discipline – indeed that is also the main argument against gold – but many of them have tended to de-emphasize reserve currency economics mainly, I think, because this particular problem is to them subsumed under their more general concerns about money. I don't know if Ralph Benko is one of them, but he has written on this

subject before and very recently wrote two articles (here and here) in *Forbes*, which has traditionally been sympathetic to the gold cause, in which he too cites Austin's paper and adds to the chorus:

The mechanics of the reserve currency system preempt these funds' ready availability for "the maintenance of industry." The mechanics of the dollar as a reserve asset, therefore, finance bigger government while insidiously preempting productivity, jobs, and equitable prosperity.

This columnist agrees wholeheartedly with Bernstein on what seem his three most important points. The reserve currency status of the dollar causes American workers, and the world, big problems. The exorbitant privilege deserves and demands far more attention than it receives. Moving the dollar away from being the world's reserve currency would be a great deal easier than many now assume.

It is hard to construct a economics "tradition" that combines Austin, Bernstein, Mauldin and Benko, and so the fact that they are all in agreement suggests that the discussion about the role of the US dollar as a reserve currency may be emerging from the broader monetary discussion that pits two very opposing economics traditions virulently against each other. Maybe it is just a coincidence that in the last year more and more economists have been questioning conventional wisdom about the benefits of dominant reserve currency status, but once this happens, the logic against the automatic assumption of exorbitant privilege is so powerful that it will be hard ever to believe again. Perhaps we have reached that tipping point.

For readers who are interested, I suggest that you might want to read the various articles, papers and blog entries I have cited above, along with my 2011 article in *Foreign Policy* and chapters 7 and 8 of my 2013 book, *The Great Rebalancing*, which Jared Berstein on his blog was kind enough to say presented "an awfully strong argument". My insistence the Keynes was right, and Robert Triffin was right, but both of them were perhaps right far too early, is quite straightforward and involves only the most basic arithmetic, although it does require you to think in terms of systems and the constraints they impose rather than about autonomous economic entities whose aggregate behavior is simply the sum of unconstrained individual decisions.

We need to keep this argument in mind. As US policymakers take steps to extend free trade through various bilateral and multi-lateral agreements, it is important both that the exorbitant burden is addressed before it becomes much more destabilizing but it is also important that the exorbitant burden not become an argument against free trade. To argue in favor of constraining unlimited purchases of US or other government bonds is not the same as arguing that the US or other countries should not engage in international trade, as many commentators have bizarrely clamed.

Like most people who think about these things I largely accept the conventional views on the advantages of free trade, although unlike some free traders I do not believe that comparative advantage is static, and I would argue, instead, that there is a lot of historical evidence that countries can successfully intervene to transform their comparative advantage in ways that generate higher

productivity growth, one of the outstanding cases being Alexander Hamilton's USA. I think it is pretty well substantiated that global output increases as more countries join the global trade and currency regime and I list the reasons why in my September 28 blog entry. But I think there are two important points that must be part of any discussion of the benefits of free trade.

First, significant trade and capital flow imbalances are the consequences of institutional or policy distortions and can in some cases destabilize the overall system (they were the causes, for example, of the 2007-08 crisis). In a well-functioning system there will always be temporary imbalances, and even some very long-running but healthy imbalances, like the current account deficits that the US ran for most of the 19th century. As a general rule, however, many years of excessively high or excessively low savings rates are almost always the consequence either of institutional distortions in one country or of their automatic obverse in another. A well functioning trading system must have a mechanism that constrains the destabilizing distortions. Once the world went off gold, it cannot be a surprise that it lost the discipline imposed by gold. Keynes tried but failed to create an alternative form of discipline, but one way or the other it must be re-established.

Second, the frequently-made argument that any intervention in trade automatically reduces global output is nonsense and completely illogical. If we were at an optimal equilibrium, for example, and this equilibrium were disturbed when one entity introduced a distortion that moved the system away from equilibrium, and if this were followed by a retaliatory intervention that moved it back to equilibrium, either the first intervention or the second intervention must have increased total output. To put it in meat and potato terms, if the Brazilian central bank intervened to force down the level of the Brazilian real against the Mexican peso by 20%, and Mexico intervened successfully by threatening sanctions unless the Brazilian central bank allowed the real to rise back to its original level, one or the other intervention must have caused output to rise. Beggar-thy-neighbor interventions, in other words, can reduce the benefits of global trade. Counter-interventions might reduce them further or might restore them to their original value. It depends on the kind of intervention.

Appendix:

Because I have written about this topic so many times before, I won't make the full argument, but it might be useful to remind readers why reserve currency status is an exorbitant burden:

1. Because for a variety of reasons dollars are the preferred form of foreign currency reserve, or of any "risk-off" kind of trade, in order to combat uncertainty or to increase domestic employment, foreign countries are most likely to accumulate reserves by buying US government bonds or other liquid, low-risk US dollar assets. This reserve accumulation might be formally classified as reserves, and accumulated by the central bank, or other institutions, some of which are referred to as sovereign wealth funds, might accumulate these reserves.

2. When it is the private sector that accumulates dollars, there are likely to be too many

potential reasons and consequences to try to summarize them. But when governments systematically accumulate huge amounts of dollars, the reason has almost always to do with creating or expanding the trade or current account surplus, which is just the obverse of expanding the export of net domestic savings. The mechanism involves suppressing domestic consumption by taxing households (usually indirectly in the form of currency undervaluation, financial repression, anti-labor legislation, etc) and subsidizing exports. These mechanisms force up the savings rate while making exports more competitive on the international markets, the net effect of which is to reduce domestic unemployment.

3. If these savings are exported to the US, for example if the central bank buys US government bonds, the US must run the corresponding trade deficit. This has nothing to do with whether the exports go to the US or to some other country. It is astonishing how few economists understand this, but if Country A is a net exporter of savings to Country B, the former must run a surplus and the latter a deficit, even if the two do not trade together at all.

4. Does the US benefit from importing foreign savings and foreign investment? The local state or country that receives the investment may benefit, but any country only benefits from importing foreign capital under one or more of three conditions:

- When a country has high levels of potentially productive investment but domestic savings are insufficient to satisfy domestic demand, the country benefits from importing foreign capital to fund these productive investments. As long as the total economic return on these investments, including all externalities, exceeds the cost of the foreign borrowing, or is funded by foreign equity investment, foreign capital inflows are wealth creating for the recipient.
- When during a crisis major borrowers, including the government, face severe short-term liquidity constraints and domestic capital is, for whatever reason, unwilling or unable to fund maturing debt, foreign capital inflows can help bridge the gap. In this case foreign investors fulfill the classic role of a central bank, lending to creditworthy borrowers or against acceptable assets in order to prevent a liquidity crisis from forcing the borrower into insolvency.
- For countries that lack technology, that have weak business and management institutions, or that suffer from low levels of social capital, foreign investment can bring with it the technology and management skills that allow the economy

In the days of the gold standard it was possible for an advanced economy like the US to suffer from the first condition. Today it suffers from none of the three conditions.

5. Let me explain why it does not suffer from the first. If the US is a net recipient of capital inflows, it is simply taking the other side of the accounting identity I listed earlier: an excess of savings over investment in one part of an economic system requires an excess of investment over savings in another part. If Japan, with its undervalued currency and repressed interest rates, forced its savings rate up above its already high investment rate in the 1980s, and used the excess to by US government bonds, the US had to see its investment rate exceed its savings rate. There are only three ways in which

the US can increase investment relative to savings, or reduce savings relative to investment:

1. It can increase productive investment.
2. It can increase nonproductive investment, especially in real estate, as foreign inflows unleash a stock and real estate market bubble, or it can increase consumption, as these bubbles unleash a wealth effect which causes ordinary Americans to increase their consumption relative to their income (i.e. reduce their savings). In either case US debt rises faster than US debt-servicing capacity.
3. Unemployment can rise as the expansion in imports relative to exports causes American factories to cut back on production and fire workers. Of course fired workers no longer produce but they still must consume, so the savings rate drops.

These are the only three possible outcomes. If productive investment in the US has been constrained by the lack of American access to capital – domestic or foreign – as was the case in the 19th Century, it is possible that reserve currency status increases American employment and wealth creation. But in advanced economies productive investment is never constrained by lack of capital. It is almost always the case, in other words, that an increase in net foreign investment to the US (and to most advanced countries by the way) must result in some combination of a speculative investment boom, a consumption boom or a rise in unemployment. What typically happens is that in the beginning we get the first two, until debt levels become too high, after which we get the third.

6. Bryan Riley and William Wilson, two economists from the Heritage Foundation, in their response to Jared Bernstein's article, provided their reasons in a blog entry last month for arguing that in principle the benefits of use of the dollar as the dominant reserve currency exceed the cost to the US of this higher debt or higher unemployment. Their piece was fairly short, and so I don't want to suggest that I am representing the full scope of their disagreement, but they suggest that the benefits are:

***Seignorage**. The largest benefit has been "seignorage," which means that foreigners must sell real goods and services or ownership of the real capital stock to add to their dollar reserve holdings.*

***Low Interest Rates**. The U.S. has been able to run up huge debts denominated in its own currency at low interest rates. The dollar's role as the world's reserve currency reduces U.S. interest rates because foreign investors like to invest in the relatively safe U.S. economy.*

***Lower Transaction Costs**. U.S. traders, borrowers, and lenders face lower transaction costs and foreign exchange risk when they can deal in their own currency. It's easier to do business with people who take dollars.*

***Power and Prestige**. The dollar's dominant reserve status gives the United States political power and prestige. Britain's loss of reserve-currency status in the 20th century coincided with its loss of political and military preeminence.*

7. I think this is a pretty fair summary of the arguments generally used in favor of supporting

"king dollar", and I think they are worth addressing specifically. To address seniorage, the benefits of seniorage are really what the whole debate is about. If the US believes that it is important for the global trading system that the US produce enough reserves for a growing global economy, and if the global trading system benefits the US, it should do so. As long as the growth in global reserves is less than the growth in the US economy, the associated rise in debt is sustainable.

But, and this is the Triffin Dilemma, if reserves and other government accumulation of US assets grow faster than US GDP, seniorage results in an unsustainable increase in US debt (or unemployment). In my previous blog entry I argued that the former may have been the case in the 1950s, but as global GDP growth exceeds US GDP growth, as more countries and regions join in the global trading system, and as there is convergence between advanced and backward economies, the growth in US debt needed to capture these benefits either becomes unsustainable or, to restrain the growth in debt, requires a rise in US unemployment.

8. To address lower interest rates, I showed in my book why foreign purchases of US government bonds do not lower US interest rates. At best they simply distort the US yield curve and in the long term even raise them. I will not repeat the full explanation here, especially as there is a bit of circularity in the argument and counterargument: If the exorbitant burden causes unemployment to rise, as Austin and Bernstein argue, fiscal revenues must drop and fiscal expenses must rise, causing total government debt to rise by the same, or more (because most of us would agree that demand created by government spending is less efficient than demand created by trade) than the capital inflows available to fund government debt. So the additional supply of funding is only equal to or less than the additional demand for funding. But if you think unemployment doesn't rise, as Riley and Wilson might argue (I am not sure if they do or don't), then total debt doesn't rise, or it doesn't rise much, and the additional funding should cause interest rates to decline. In order to keep this short I would suggest simply that we consider the following.

The larger a country's foreign current account deficit, by definition the greater the inflow of foreign money to purchase its assets, mainly government bonds in the case of the US and many other countries. The higher a country's current account surplus, by definition the greater the outflow of money to purchase foreign assets, and the less domestic money available to purchase domestic assets. Is it reasonable, then, to assume that the larger a country's current account deficit, the lower its interest rates, while the larger a country's current account surplus, the higher its interest rates? This is what the low-interest-rate argument implies.

9. To address transaction costs, while it is true that trading in US dollars reduces transaction costs for American businesses, it is hard to believe that these transaction costs are not priced into the imports and exports of their foreign counterparts. More importantly, it is not clear that reducing central bank purchases of US government bonds will cause transaction costs to rise. The vast bulk of trading volume does not consist of central bank purchases of US government bonds. It is trade and

investment related. If foreign central banks were limited in their ability to stockpile US dollar reserves, foreign exchange transaction costs would barely budge.

10. To address power and prestige, while it may be true that Britain's loss of reserve-currency status in the 20th century coincided roughly with its loss of political and military preeminence, I think it is incorrect to imply that Britain lost power and prestige after the Great War mainly or even partly because sterling lost its status as the dominant reserve currency (which in fact really occurred some time in the 1930s and 1940s). It was the destruction, during the first two years of the Great War, of London's role in trade finance (which formed the vast bulk of international lending at the time, with nearly the entire trade finance market moving to neutral Amsterdam and New York), followed by its aerial pounding in WW2, that caused London to lose its financial pre-eminence.

Even today it is hard to associate London's current role as either the first or second most important financial center in the world, depending on how you measure it, with the status of sterling as a reserve currency. What is more, the US dollar only became the pre-eminent reserve currency in the 1930s and 1940s, but the US was the leading economic power – nominally, per capita, and technologically – by the 1870s. I would argue that US power and prestige probably has more to do with the size and dynamism of its economy, with the creativity of Hollywood and New York in entertainment and fashion, with technological innovation in San Francisco, Boston, New York, Austin, and elsewhere, with its composers and artists in New York, San Francisco, and elsewhere, with its overwhelming military superiority, with its universally-valued ideal of ethnic inclusiveness and individualism, with its Ivy League and elite universities, with its think tanks, with its astonishing scientists, and with a host of other factors more important than the currency denomination of central bank reserves.

China: Turning away from the dollar [Week 6]

Questions remain over the global economic impact of Beijing's efforts to reduce its financial reliance on the US

When an economic theme goes global, Hollywood is never far behind. In the futuristic thriller Looper, retired hit man Bruce Willis travels back in time from the year 2074. Upon meeting his younger self, he advises him to stop learning French and instead head to China. In the future, Shanghai is the centre of the world and the renminbi the currency of choice.

While time travel and flying cars may not be on the horizon, at least one aspect appears closer to reality and movie bad guys are not the only ones eager to get their hands on a few "redbacks". An "age of Chinese capital", as Deutsche Bank calls it, is dawning, raising the prospect of fundamental changes in the way the world of finance is wired. Not only is capital flowing more freely out of China, the channels and the destinations of that flow are shifting significantly in response to market forces and a master plan in Beijing, several analysts and a senior Chinese official say.

In a nutshell, three big and inter-related changes are under way. China's appetite for US Treasury bonds, a cornerstone of the global economy for more than a decade, is waning. Beijing is ramping up its overseas development agenda to boost financial returns and serve key geopolitical interests. The promotion of the renminbi as an international currency is gradually liberating Beijing from the dollar zone, providing it with more latitude to open up to foreign portfolio investment flows.

The reorientation of China's strategy away from Treasuries is a slow-running trend but one which intensified last month after Li Keqiang, the premier, announced a 10-point plan for financial

reform. One of the points dealt with the deployment of China's $3.9tn in foreign currency reserves, chunks of which have been recycled into Treasuries for more than a decade, helping to keep US interest rates low and underpin economic growth in the west. However, the new plan says: "Better use should be made of China's foreign exchange reserves to support the domestic economy and the development of an overseas market for Chinese high-end equipment and goods."

A senior Chinese official, who declined to be identified, elaborated on what the plan is likely to mean in practice. "This is a big change and it cannot happen too quickly, but we want to use our reserves more constructively by investing in development projects around the world rather than just reflexively buying US Treasuries," the official says. "In any case, we usually lose money on Treasuries, so we need to find ways to improve our return on investment," he says.

Rewiring global finance

Not only is China's desire to buy US debt diminishing, so is its ability to do so. The banner years of Treasury bond purchases, during which holdings rose 21-fold over a 13-year period to hit $1.27tn by the end of 2013, were driven by an imperative to recycle China's soaring US dollar current account surpluses.

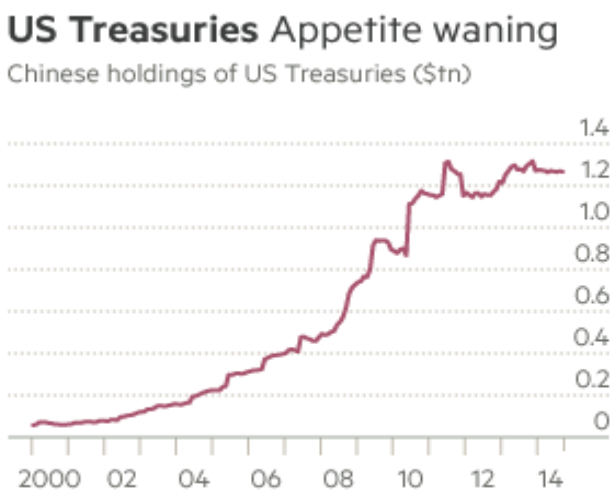
But these surpluses are narrowing sharply — from the equivalent of 10.3 per cent of gross domestic product at the peak in 2007 to 2.0 per cent in 2013. In fact, if financial flows are taken into account, China ceased over the most recent four quarters to be a net exporter of capital at all.

The impact on Treasury purchases is evident in the tapering of Chinese buying over the past three years. But analysts see structural forces driving a steeper downturn in the future.

"I absolutely think we are going to see smaller Chinese current account surpluses in the future because of greater Chinese spending overseas on tourism and services and greater spending power at home may lead to more imports," says Jan Dehn, head of emerging market research at the Ashmore fund.

All of this leads to a burning question: how convulsive an impact on US debt financing — and therefore on global interest rates — will the changes under way in China have? Analysts hold views across a spectrum that ranges from those who see an imminent bonfire of US financial complacency to those who see little change and no cause for concern. Occupying a space between these extremes are those, such as Michael Power of Investec, who see potential for a disruptive rewiring of international capital flows, but no certainty that such an outcome will transpire.

"If China starts to pursue investment programmes like developing infrastructure to regenerate the trans-Asian Silk Road, it will no longer be banking most of its surplus savings in US Treasuries," says Mr Power.



A decade ago Alan Greenspan, the then chairman of the US Federal Reserve, found his attempts to coax US

interest rates upwards negated by Beijing parking its surplus savings into Treasuries. Arguably, says Mr Power, a bond bubble has existed ever since.

"If China is now set to redeploy those deposits into capital investment the world over, does this mean the [Greenspan] conundrum will be at last 'solved' but at the cost of an imploding Treasury market?" Mr Power asks. "If so, this will raise the corporate cost of capital in the west and put yet another brake on already tepid western GDP growth."

Stephanie Pomboy, president at Macro Mavens, a US-based economics research consultancy, sees a more present peril. "The conviction that the rest of the world [China and Japan in particular] have no choice but to maintain their attachment to the US dollar is as strong as ever," she says. "Wallowing in this illusion, investors see no long-term threat to the dollar's status, even as each day it diminishes in use."

Locked in

Others, however, say that China is effectively locked into a steady continuation of US Treasury investment because any sudden sell-down of its huge holdings could send Treasury prices into a tailspin, thereby slashing the value of Beijing's position. In addition, says Jonathan Anderson of Emerging Advisors Group, China's Treasury investments are a byproduct of Beijing's intervention in currency markets to prevent the type of surge in the renminbi's value that would have eroded the competitiveness of its exports.

What is clear is that Beijing's intention to diversify the deployment of its foreign exchange reserves is strengthening. Over the past six months, it has driven the creation of three international institutions dedicated to development finance: the Shanghai-based New Development Bank along with Brazil, Russia, India and South Africa; the Asian Infrastructure Investment Bank and the Silk Road Fund.

Each is likely, or explicitly designated, to receive funding from the foreign currency reserves.

Their importance can be judged from their centrality to President Xi Jinping's aim to realise the "Chinese dream" of recapturing the status the country enjoyed during the most powerful passages in its history, say Chinese officials. The $40bn Silk Road Fund, announced last month, demonstrates Beijing's ambitions clearly. Set to be funded to the tune of some 65 per cent from the foreign reserves, the fund is charged with achieving Mr Xi's vision of building a "Silk Road economic belt" across central Asia to Europe and weaving a "21st century maritime Silk Road" through the sea lanes of the South China Sea and the Indian Ocean.

"By building roads and railways over its borders and upgrading ports in Asia, Beijing is tying its neighbours' prosperity to their relationship with China," says Tom Miller, senior Asia analyst at Gavekal Dragonomics, a research consultancy. "It is an attempt to restore China's position at the heart of Asia."

The infrastructure work will directly benefit the big Chinese construction and equipment companies that are awarded contracts financed by China-backed institutions. This, in turn, should boost the country's chances of realising Mr Xi's prediction that Chinese companies will invest some $1.25tn overseas during the next decade.

Renminbi

The launch of these development institutions is only one strand in China's aim to make finance serve geostrategic goals. An older, but perhaps more important element, is the promotion of the

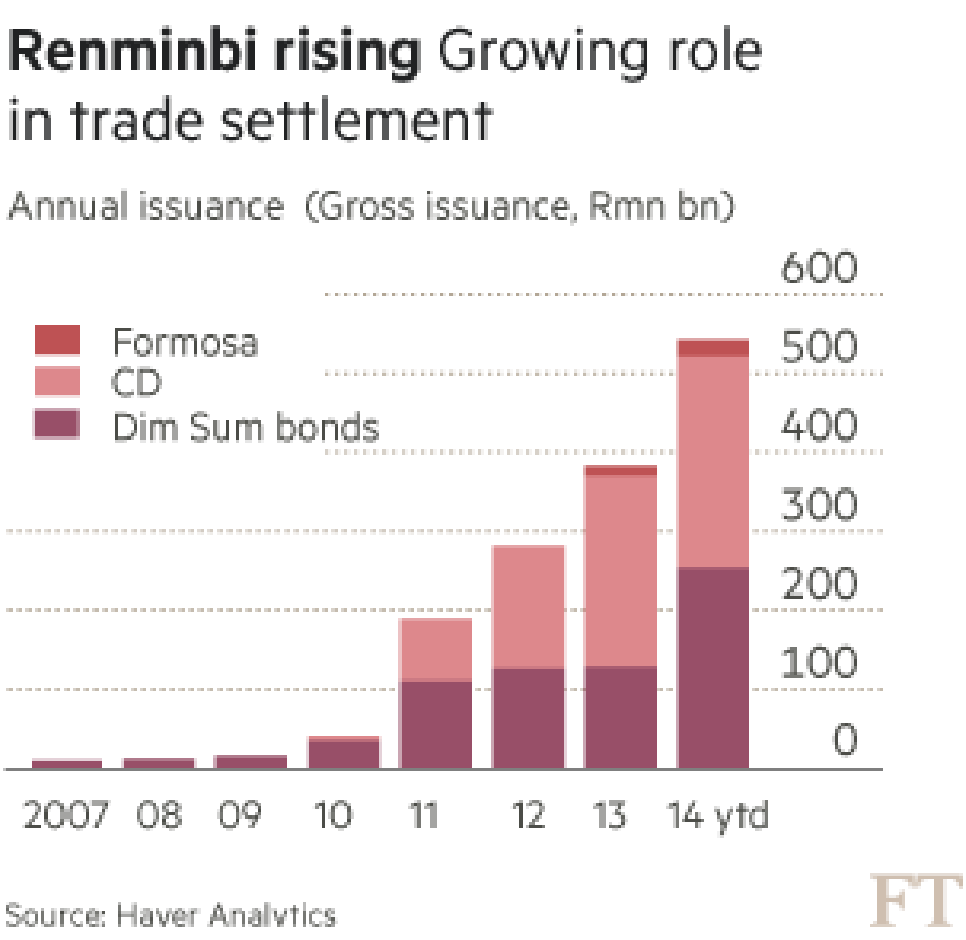
renminbi as an international currency. The drive to internationalise it is derived from a desire to carve out China's own space within a US-dominated global financial system.

The process accelerated with the outbreak of the global financial crisis in 2008 as policy makers in Beijing realised their economy's fate was umbilically linked to that of the US.

"We hate you guys", was how Luo Ping, an official at the China Banking Regulatory Commission vented his frustration in 2009. He and others in China believed that, as the US Federal Reserve printed more money to resuscitate American demand, the value of China's foreign reserves would plunge.

"Once you start issuing $1tn-$2tn . . . we know the dollar is going to depreciate so we hate you guys — but there is nothing much we can do," Mr Luo told a New York audience.

In an indication of intent, Wang Qishan, then a vice-premier and now one of Mr Xi's closest allies in the Politburo Standing Committee, was appointed in 2009 to promote the use of the renminbi in trade settlement and investment around the world. The process is driven mainly by an imperative to decouple China by degrees from its financial reliance on the US and from Washington's influence over its domestic monetary policy, officials say. As a mechanism towards this end, China is earning a greater proportion of its trade and financial receipts in renminbi. Because these earnings do not have to be recycled into dollar-denominated assets, they can be ploughed back into the domestic



economy, thus benefiting Chinese rather than US capital markets.

The renminbi's progress has been more rapid than many expected. In October, more than 22 per cent of China's trade was settled in its own currency, according to Standard Chartered, up from almost nothing five years ago. Data from Swift, the international currency clearing system, show it is now the seventh most used currency for payments. Portfolio investors are seeking it out, particularly after the opening last month of the Shanghai-Hong Kong stock connect, an initiative that provides the most unfettered access yet to the Shanghai stock market for foreigners holding offshore renminbi. Western governments are endorsing the currency, with the UK, Australia's state of New South Wales and the Canadian province of British Columbia issuing renminbi-denominated debt in the past months. Michael de Jong, finance minister of British Columbia, says the debt issue fulfilled several aims, including improving ties with China and attracting financial services from the US.

"I see the full internationalisation of the renminbi as inevitable; it's a question of when," adds Mr de Jong.

Such optimism will be welcomed in Beijing as it pursues a master plan to break free of US dominance in global finance and create a parallel, Sino-centric system that takes its cue from a mighty renminbi. Of course, much could yet conspire to blow China's ambitions off course. But if even half of what it envisages is achieved, the impact on US debt financing, the future of development finance and the opening of Chinese financial markets to international capital would be profound.

My reading of the FT on China's "turning away from the dollar" [Week 6]

By Michael Pettis · December 14, 2014 · Uncategorized · 125 Comments

The Financial Times ran a very interesting article last week called "China: Turning away from the dollar". It got a lot of attention, at least among China analysts, and I was asked several times by friends and clients for my response. The authors, James Kynge and Josh Noble, begin their article by noting that we are going through significant changes in the institutional structure of global finance:

An "age of Chinese capital", as Deutsche Bank calls it, is dawning, raising the prospect of fundamental changes in the way the world of finance is wired. Not only is capital flowing more freely out of China, the channels and the destinations of that flow are shifting significantly in response to market forces and a master plan in Beijing, several analysts and a senior Chinese official say.

While this may be true, I am much more skeptical than the authors, in part because I am much more concerned than they seem to be about the speed with which different countries are adjusting, or not adjusting, to the deep structural imbalances that set the stage for the global crisis. My reading of financial history suggests that we tend to undervalue institutional flexibility, especially in the first few years after a major financial crisis, perhaps because in the beginning countries that adjust very quickly tend to underperform countries that adjust more slowly. As I have written many times before China's high growth and very large capital outflows suggest to me how difficult it has been for China to shift from its current growth model.

Beijing has been trying since at least 2007 to bring down China's high savings rate, for example, and yet today it remain much higher than it did seven years ago. Chinese capital outflows, in other words, which are driven by its excessively high savings rates, may have less to do with master planning than we think, and certainly when I think of the most dramatic periods of major capital outflows in the past 100 years, I think of the US in the 1920s, the OPEC countries in the 1970s, and Japan in the 1980s. In each case I think we misinterpreted the institutional strengths and the quality of policymaking.

Any discussion about China's future role in global finance or about the reserve status of the dollar or the RMB is so highly politicized that you cannot approach the topic in the same way you might approach an article about the Mexican peso, or even the Russian ruble, but I figured that there are a lot of interesting points about which a discussion might anyway be illuminating. To begin with, there is much in the article with which I agree, but also some things with which I disagree. About the latter I have basically three different "sets" of disagreements:

In some cases my interpretation of both the information and the implications provided by the authors is a lot more skeptical than theirs.

The authors provide the views of several analysts concerning the impact on the US bond markets and US economy more generally of reduced PBoC purchases of US government bonds, and these views range from neutral to very negative. I would argue however that in fact these views fail to understand the systemic nature of the balance of payments, in which any country's internal

imbalances must necessarily be consistent with its external imbalances. They assume implicitly assume that PBoC purchases only affect the demand for US government bonds, whereas in fact the flow of capital from one country to another must automatically affect both demand and supply. In fact the impact of reduced PBoC purchases of US government bonds is likely to be net positive, and while this view is probably counterintuitive, and certainly controversial, in another part of the article the authors cite a Chinese official whose statement, had they explored the implications fully, would have explained why.

There is one point that they make which I think is fundamentally wrong, although a lot of people, including surprisingly enough economists and central bankers, have made the same mistake. It is not fundamental to their argument overall, but I think this mistake does indicate the level of confusion that exists about the way reserve currencies work and it is worth drawing out.

The first set of disagreements concern issues on which reasonable people can disagree, and while I have always been on the skeptical side, I also recognize that only time can resolve the disagreements. For example in discussing some of Beijing's recent activity in driving the internationalization of the RMB the authors say:

What is clear is that Beijing's intention to diversify the deployment of its foreign exchange reserves is strengthening. Over the past six months, it has driven the creation of three international institutions dedicated to development finance: the Shanghai-based New Development Bank along with Brazil, Russia, India and South Africa; the Asian Infrastructure Investment Bank and the Silk Road Fund.

There certainly have been many announcements in the past few years, not just about new global institutions that are being planned, but also about currency swap agreements and other actions taken by foreign central banks related to RMB reserves, and each of these has created a great sense of excitement and momentum. I have often thought the amount of attention they received significantly exceeded their importance, and while I won't mention specific cases because that may come across as a little rude, some of the countries whose central banks negotiated currency swap lines with the PBoC are either credit-impaired enough that any implicit extension of credit would be welcome, or are primarily making a political statement. In at least one case the currency swap is denominated in both RMB and the counterpart's national currency, but is actually settled in US dollars, and so is little more than a dollar loan indexed to RMB.

How certain are today's predictions?

I am also very skeptical about the long-term importance of the various development banks that are in the works. It is not clear to me that the incentives of the various proposed members are sufficiently aligned for there to be much agreement on their loan policies, nor is it clear to me that all the members agree about their relative status and how policy-making will occur. It is easy enough to agree in principle that there is a lot of room to improve the existing infrastructure of global financial

institutions – mainly the Bretton Woods institutions – but that may well be because the needs of different countries are either impractical or so heterogeneous that no institution is likely to resolve them.

We do have some useful history on this topic. The Bretton Woods institutions were established when one country, the US, was powerful enough to ride roughshod over competing needs, and so the misalignment of interests was resolved under very special and hard-to-replicate conditions, but since then it is hard to think of many examples of similar institutions that have played the kind of transformative role that is expected of the institutions referred to in the article. It is not as if proposals to change the global financial system have not been made before – I remember that burgeoning reserves among Arab OPEC members in the 1970s, or Japan in the 1980s, also generated waves of activity – but change is always easier to announce than to implement. This doesn't mean that the new institutions being proposed will not have a very different fate, of course, but I would be pretty cautious and would wait a lot longer before I began to expect much from them.

There is anyway a more fundamental reason for long-term skepticism. As the authors note the creation of these institutions is driven largely by China and is based on current perceptions about longer-term trends in China's growth. Historical precedents suggest however that it may be hard to maintain the current momentum. Rapid growth is always unbalanced growth, as Albert Hirschman reminded us, and what many perceive as the greatest economic strengths of rapidly growing economies are based on imbalances that also turn out to be their greatest vulnerabilities. The fact that the US in the 1920s, Germany in the 1930s, Brazil in the 1960s and 1970s, Japan in the 1980s, China during this century, and many other rapidly growing economies generated deep imbalances during their most spectacular growth phases should not be surprising at all, but it is important to remember that all of them subsequently suffered very difficult adjustments during which, over a decade or more, these imbalances were reversed (Germany after the 1930s of course "adjusted" in a different way, but it was already clear by 1939-40 that the German economy was over-indebted and substantially unbalanced).

The reversal of these imbalances involved adjustment processes that turned out very different from the predictions. While the periods of spectacular growth always get most of the attention from economists and journalists, and always create outsized expectations, the real test over the longer term is how well the economy adjusts during the rebalancing period. We can learn much more about long-term growth, in other words, by studying Japan post-1990, or the US post-1930, for example, than we can from studying Japan pre-1990 or the US pre-1930. Until we understand how adjustment takes place, and the role of debt in the adjustment process, the only safe prediction we can make, I suspect, is that the momentum that drives Beijing's current activity will not be easy to maintain.

A second area in which reasonable people can disagree is on the quality and meaning of recent data. "The renminbi's progress has been more rapid than many expected," according to the authors.

This may be true by some measures, but there has been a great deal of discussion on how meaningful some of the trade and capital flow numbers are, especially when compared to other developing countries much smaller than China. It is true that the use of the RMB has grown rapidly in recent years according to a number of measures, but so has that of currencies of other developing countries – Mexican pesos, for example – and at least part of this growth may have been a consequence of uncertainty surrounding the euro. We have to be careful how we interpret the reasons for this growth.

What is more, when you compare the share of foreign exchange activity – whether trade flows, reserves, or capital flows – that is denominated in RMB with the share in the currencies of other countries, including other developing countries, what is striking is how remarkably small it still is relative to the Chinese share of global GDP or of global trade. There are obvious reasons for this, of course, but it will be a long time before we can even say that the RMB share is not disproportionately small, and it has a long way to go just to catch up to several developing countries in Latin America or Asia. It is too early, in other words, to decide on the informational content of the growing RMB share of currency trading.

There has also been a lot of debate and discussion about how much of this data represents fundamental shifts in activity anyway. It is clear that a lot of trade is denominated in RMB for window-dressing purposes only – a mainland exporter that used to bill its client in yen, for example, will reroute the trade through its HK subsidiary, and bill the HK sub in RMB before then selling it on to the final buyer in yen. This shows up as an increase in the RMB denominated share of exports, but in fact nothing really changed. There has also been currency activity driven by speculation, or by political signaling, or by the need to disguise transactions, and so on. So much has already been said over the past few years on these issues that I don't have much to add, but it is worth keeping in my mind as we try to assess the informational content of this data that there may be strong systemic biases in the numbers

How does the RMB affect US interest rates?

I think there is a small but growing awareness of why Keynes was right and Harry Dexter White wrong in 1944 about the use of bancor versus dollars as the global reserve currency. There is a cost to reserve currency status, even though a global trading currency creates an enormous benefit to the world.

When any single currency dominates as the reserve currency, however, the cost can be overwhelming unless the reserve currency country intervenes in trade. The UK paid that cost heavily in the 1920s and less so in the 1930s after it began to raise tariffs (people forget that sterling reserves exceeded dollar reserves during this period), which is why Keynes was so adamant that the world needed something like bancor. It is in light of the debate over the value of reserve currency status that I find the discussion about the impact a shift in the status of the RMB might have on US interest rates the more interesting part of the article. According to the authors:

Not only is China's desire to buy US debt diminishing, so is its ability to do so. The banner years of Treasury bond purchases, during which holdings rose 21-fold over a 13-year period to hit $1.27tn by the end of 2013, were driven by an imperative to recycle China's soaring US dollar current account surpluses. But these surpluses are narrowing sharply — from the equivalent of 10.3 per cent of gross domestic product at the peak in 2007 to 2.0 per cent in 2013. In fact, if financial flows are taken into account, China ceased over the most recent four quarters to be a net exporter of capital at all.

Actually if financial flows are taken into account, China has not ceased over the most recent four quarters to be a net exporter of capital. I think the authors are confusing capital exports through the PBoC (increases in central bank reserves) and capital exports more generally. China's net capital export, by definition, is exactly equal to its current account surplus, and while it is true that China's current account surplus has narrowed from its peak in 2007 to its trough in 2013, it has risen very rapidly during 2014. In fact I think November's current account surplus may be the largest it has ever posted.

It is true that PBoC reserves have not increased in 2014, and have actually declined, although this may be mainly because the non-dollar portion of the reserves dropped dramatically in value, so that in dollar terms they have declined, but this was not because net exports have declined and it is not even a policy choice. Because the PBoC intervenes in the currency, it cannot choose whether to increase or reduce its accumulation of reserves. All it can do is buy the net inflow or sell the net outflow on its current and capital account, so the fact that we have seen massive capital outflows from China in 2014 means that it is exporting more capital than ever, but not in the form of PBoC purchases of foreign government bonds.

The trend, in other words, is no longer narrowing current account surpluses and less capital export but rather the opposite. An investor they cite thinks we will see a reversal of this trend: "I absolutely think we are going to see smaller Chinese current account surpluses in the future", he says, "because of greater Chinese spending overseas on tourism and services and greater spending power at home may lead to more imports."

I think we have to be cautious here. In order to protect itself from a rapidly rising debt burden, China is trying to reduce the growth in investment as fast as it can. It is also trying to reduce the growth in savings as fast as it can, but there are only two ways to reduce savings. One is to increase the consumption share of GDP, but this is politically very hard to do because it depends on the speed with which China directly or indirectly transfers wealth from the state sector to the household sector. The other is to accept higher unemployment.

Because the current account surplus is by definition equal to the excess of savings over investment, an expanding current account surplus allows China to reduce investment growth at a faster rate than can be absorbed by rising consumption – without rising unemployment. But with Europe competing with China in generating world-record current account surpluses, and with weak

consumption in Japan, it isn't easy get the rest of the world to absorb large current account surpluses.

Put differently, the biggest constraint on China's export of its savings is not domestic. It is the huge amount of savings that everyone wants to export to everyone else, but which neither China nor any developing country wants to import. Still, I suppose in principle we could see a huge shift in capital flows, with less going to the US and to hard commodity exporters (as commodity prices drop) and more going to India, Africa, and other developing countries. At any rate over the long term the authors are concerned about the impact China will have on capital flows to the US:

All of this leads to a burning question: how convulsive an impact on US debt financing — and therefore on global interest rates — will the changes under way in China have? Analysts hold views across a spectrum that ranges from those who see an imminent bonfire of US financial complacency to those who see little change and no cause for concern.

The great concern, the authors correctly note, is the idea that the US has come to depend on China to finance its fiscal deficit. If China stops buying US government bonds, the worry is that the US economy may be adversely affected, and even that US government bond market will collapse and US interest rates soar:

A decade ago Alan Greenspan, the then chairman of the US Federal Reserve, found his attempts to coax US interest rates upwards negated by Beijing parking its surplus savings into Treasuries. Arguably, says Mr Power, a bond bubble has existed ever since. "If China is now set to redeploy those deposits into capital investment the world over, does this mean the [Greenspan] conundrum will be at last 'solved' but at the cost of an imploding Treasury market?" Mr Power asks. "If so, this will raise the corporate cost of capital in the west and put yet another brake on already tepid western GDP growth."

Because PBoC purchases of US government bonds are so large, it seems intuitively obvious to most people that if the PBoC were to stop buying, the huge reduction in demand must force up interest rates. But this argument may be based on a fundamental misunderstanding of how the balance of payments works. First of all, greater use of the RMB as a reserve currency does not mean that the PBoC will buy fewer US government bonds. On the contrary, higher levels of RMB reserves in foreign central banks will by definition increase capital inflows into China. In that case either it will force the PBoC to purchase even more foreign government bonds, if the PBoC continues to intervene in the currency, or it will cause some combination of an increase in Chinese capital outflows and a reduction in China's current account surplus. This is an arithmetical necessity.

If the RMB becomes more widely used as a reserve currency, it could certainly result in lower foreign demand for US government bonds, but not lower Chinese demand. This, however, would not be bad for the US economy or the US government bond market any more than it would be if the PBoC were to reduce its demand for US government bonds. China, and this is true of any foreign country, does not fund the US fiscal deficit. It funds the US current account deficit, and it has no choice but to do so because China's current accounts surpluses are simply the obverse of China's capital account

deficits. This may not seem like an important distinction in considering how lower demand will affect prices, but in fact it is extremely important because any change in a country's capital flow can only come about as part of a twin set of changes in both the capital account and the current account.

This is true for both countries involved. There is no way, in other words, to separate the net purchase of US dollar assets by foreigners with the US current account deficit. One must always exactly equal the other, and a reduction in the former can only come about with a reduction in the latter. So what would happen if the PBoC were sharply to reduce its purchase of US government bonds? There are only four possible ways this can happen:

The reduction in PBoC purchases of US government bonds was matched by an increase in purchases by other Chinese institutions or individuals of US dollar assets. This is mostly what seems to have happened in 2014, and because the PBoC intervenes in the currency, fewer purchases of government bonds by the PBoC was not a choice, but rather the automatic consequence of increased foreign investment by other Chinese institutions or individuals. The impact on the US economy would depend on what assets the other Chinese institutions or individuals purchased. If they purchased risk-free US assets there would be no net impact. If they purchased risky US assets there would be a small, barely noticeable increase in the riskless US interest rate, matched by an equivalent reduction in the US risk premium.

The reduction in PBoC purchases of US government bonds was matched by an increase in purchases by other foreigners of US dollar assets. The impact on the US economy would depend, again, on what assets the other foreigners purchased. If they purchased risk-free US assets there would be no net impact. If they purchased risky US assets there would be a small, barely noticeable increase in the riskless US interest rate, matched by an equivalent reduction in the US risk premium.

The reduction in PBoC purchases of US government bonds was not matched by an increase in purchases by other Chinese or foreigners, so that there was a commensurate decline in the US current account deficit. Because the US current account deficit is equal by definition to the excess of investment over savings, there are only two ways the US current account deficit can decline. If there is no change in US investment, US savings must rise, and in an economy with underutilized capacity and unemployment, this will happen as unemployed workers and underutilized capacity are put to work, either to replace imports or to increase exports. Workers with jobs save more than workers without, and companies with less underutilized capacity save more than companies with more because they are more profitable. More profitable businesses and fewer unemployed workers results in higher fiscal revenues and lower fiscal expenses, so that fewer foreign purchases of US government bonds is accompanied by a lower supply of government bonds.

Finally, because the US current account deficit is equal by definition to the excess of investment over savings, the only other way the US current account deficit can decline is if there is no change in US savings, in which case, US investment must decline. Businesses close down American factories and

otherwise reduce business and government investment. This causes GDP growth to drop and unemployment to rise.

What determines US savings?

These four, or some combination, are the only possible ways in which the PBoC can reduce its purchases of US government bonds. It is pretty obvious that the best outcome, the third scenario, requires fewer foreign purchases of US assets, as does the worst, the fourth scenario. It is also pretty obvious that what the PBoC does in largely irrelevant. What matters is whether the US current account declines. Because not only are Chinese institutions and other foreigners eager to purchase US assets, and because demand abroad is so weak, the US current account deficit is in fact likely to increase, as foreigners purchase even more US assets. The US current account deficit will only decline if growth abroad picks up or if the US takes actions to reduce its current account deficit – perhaps by making it more difficult for foreigners to invest their excess savings in the US.

If the US were to force down its current account deficit, would US savings rise or would US investment drop – put another way, is a lower current account deficit good, or bad, for the US economy? For most people the answer is obvious. A lower US current account deficit is good for growth. In fact much of the world is engaged in currency war precisely in order to lower current account deficits, or increase current account surpluses, by exporting their savings abroad.

For some analysts, however, a reduction in foreign purchases of US assets would be bad for US growth because, they argue, the US is stuck with excessively low savings rates. Because there is no way to increase US savings, a reduction in foreign purchases of US assets must cause US investment to decline.

These analysts – trained economists, for the most part – are almost completely mistaken. First of all, it does not require an increase in the savings rate for American savings to rise. Put differently, if unemployed American workers are given jobs, US savings will automatically rise even if the savings rate among employed workers and businesses is impossible to change. Secondly, these economists mistakenly argue that the reason the US runs a current account deficit is because US savings are wholly a function of US savings preferences, which are culturally determined and impossible to change. Because these are clearly lower than US investment, it is the unbridgeable gap between the two that "causes" the US current account deficit.

But while the gap between the two is equal to the current account deficit by definition, these economists have the causality backwards. As I show in the May 8 entry on my blog, excess savings in one part of the world must result either in higher productive investment or in lower savings in the part of the world into which those excess savings flow. This is an arithmetical necessity. Because China's excess savings flow into the US – mostly in the form of PBoC purchases of US government bonds – the consequence must be either more productive investment in the US or lower savings.

If productive investment in the US had been constrained by the lack of domestic savings, as it

was in the 19th Century, foreign capital inflows would have indeed kept interest rates lower, and because these foreign savings were needed if productive investment were to be funded, the result in the 19th Century was higher growth. But while it is true that in the US today there are many productive projects that have not been financed – the US would clearly benefit from more infrastructure investment for example – the constraint has not been the lack of savings. No investment project in the US has been turned down because capital is too scarce to fund it. In fact more generally it is very unlikely that any advanced economy has been forced to reject productive investment because of the savings constraint. It is usually poor planning, dysfunctional politics, legal constraints, or any of a variety of other reasons that are to blame.

This means that if China's excess savings flow into the US, there must be a decline in US savings, and the only way this can happen is either through a debt-fueled consumption boom or through higher unemployment. The analysts interviewed in the Financial Times article argue that if there were an interruption to PBoC purchases of US government bonds, the adverse consequences could range from fairly minor to the extreme – a collapse in the US government bond market – but in fact the only necessary consequence would be a contraction in the US current account deficit. While there are scenarios under which this could be disruptive to the US economy, in fact it is far more likely to be positive for US growth.

As counterintuitive as this may at first seem, several economists besides me have made the same argument, and I provide the full explanation of why fewer foreign purchases of US assets will actually increase both American savings and America growth in Chapter 8 of my book, The Great Rebalancing. What is more, the fact that the US government has put pressure on Beijing to revalue the RMB in order to reduce the US current account deficit is simply another way of saying that Washington is pressuring Beijing to reduce the amount of US government bonds the PBoC is purchasing. After all, if large foreign purchases of US government bonds were good for the US, Europe, China, or anyone else, it must follow automatically that large current account deficits are good for growth and help keep interest rates low.

And this cannot be true. Remember that by definition, the larger a country's current account deficit, the more foreign funding is "available" to purchase domestic assets, including government bonds. And yet instead of welcoming foreign funds and the associated current account deficits, countries around the world are eager to export as much of their savings as they can, which is another way of saying that they are eager to run as large current account surpluses as they can.

The arithmetic of the balance of payments

In fact there is evidence even within the article that Chinese purchases of US government bonds, far from boosting US growth, either by keeping interest rates low or otherwise, actually causes a reduction in demand for US-produced goods and services. This becomes obvious by recognizing the inconsistency between Chinese behavior and Chinese claims that they are seeking to diversify reserve

accumulation away from the dollar. The inconsistency is made explicit when the article cites a famous incident in 2009.

"We hate you guys", was how Luo Ping, an official at the China Banking Regulatory Commission vented his frustration in 2009. He and others in China believed that, as the US Federal Reserve printed more money to resuscitate American demand, the value of China's foreign reserves would plunge. "Once you start issuing $1tn-$2tn … we know the dollar is going to depreciate so we hate you guys — but there is nothing much we can do," Mr Luo told a New York audience.

Mr. Luo, of course, turned out to be wrong, and the value of China's dollar-denominated foreign reserves did not plunge. On the contrary, if the PBoC had purchased more dollars instead of fewer dollars, it would have avoided some of the currency losses it has taken since 2009. But while it might have been useful to explain why Luo was wrong about the plunging dollar, what really needed explaining is why "there is nothing much we can do".

Actually China did have a choice as to whether to buy dollars or not. Luo was right about China's lack of choice only in the sense that as long as Beijing was determined to run a large current account surplus, and as long as purchasing other currencies would have been too risky, or too strongly resisted by their governments, the PBoC did not have much of a choice. In China the savings rate is extremely high for structural reasons that are very hard to reverse. This means that the investment rate must be just as high, or else the gap between the two must be exported. Put differently, if China cannot export excess savings and run a current account surplus, either it must increase domestic investment or it must reduce domestic savings. This is just simple arithmetic, and is true by definition.

With investment rates among the highest in the world, and with much of it being misallocated, China wants to reduce investment, not increase it. Rising investment is likely to cause the country's already high debt burden to rise. But as in the case of the US, the only way it can reduce its savings is with an increase in consumer debt or with an increase in unemployment.

Because none of the options are desirable, China can only resolve its imbalance between supply and demand if it exports the excess of savings over investment, or, put another way, it must run a current account surplus equal to the difference between savings and investment. But because China is such a large economy, and the gap between investment and savings is so large, this is an enormous amount of savings that must be exported, and China must run an enormous current account surplus that must be matched by the current account deficit of the country to whom these savings are exported. The US financial market, it turns out, is the only one that is deep and flexible enough to absorb China's huge trade surpluses, and, perhaps much more importantly, it is also the only one whose government would not oppose being forced to run the countervailing deficits.

Had the PBoC tried to switch out of dollars and into Japanese yen, or Swiss francs, or Korean won, or euros, or anything else, it would have met tremendous resistance. In fact it did try to purchase some of those currencies and it did meet tremendous resistance, which is why its only option was to

buy US government bonds. I explain why in my book as well as in another one of my blog posts.

Luo's statement implies very directly that the only meaningful way to protect the PBoC from being forced to buy dollars is not by increasing the use of the RMB in international trade but rather for China to run smaller surpluses. It certainly did have a choice, but because the alternative was so unpalatable, Beijing felt as if it had no choice. China bought US government bonds not because it wanted to help finance the US fiscal deficit but very specifically because if it didn't it would be forced either to increase domestic debt or to suffer higher unemployment.

This point is a logical necessity arising from the functioning of the balance of payments. Both Lenin andJohn Hobson explained this more than 100 years ago: countries export capital in order to keep unemployment low. If the RMB becomes a reserve currency, Beijing will have to choose whether, like the US, it will allow unrestricted access to its government bonds, or whether, like Korea, it resist large foreign purchases.

If it chooses the latter, the RMB cannot be a major reserve currency. If it chooses the former, the RMB might indeed become a major reserve currency, but this will force China to choose between higher debt and higher unemployment any time the rest of the world wants more growth. The result of a rising share of reserves denominated in RMB at the expense of a declining share denominated in dollars is really Washington's goal, in other words, and not Beijing's.

Can China invest its current account surplus at home?

At the beginning of this entry I said that the authors made one assertion that is fundamentally wrong, although so many economists get this wrong that it would be unfair to blame the authors for failing to do their homework. The mistake isn't necessary to their argument, but I bring it up not just because it is a mistake commonly made but also because it shows just how confused the discussion of the balance of payments can get.

Early in the article the authors cite Li Keqiang's "10-point plan for financial reform" which includes the following

Better use should be made of China's foreign exchange reserves to support the domestic economy and the development of an overseas market for Chinese high-end equipment and goods.

They then go on to make the following argument:

As a mechanism towards this end, China is earning a greater proportion of its trade and financial receipts in renminbi. Because these earnings do not have to be recycled into dollar-denominated assets, they can be ploughed back into the domestic economy, thus benefiting Chinese rather than US capital markets.

This is incorrect. The amount that China invests at home and the amount of foreign government bonds the PBoC must purchase are wholly unaffected by whether China's trade is denominated in dollars, RMB, or any other currency.

There are two ways of thinking about this. One way is to focus on the trade itself. If a Chinese

exporter sells shoes to an Italian importer and gets paid in dollars, the exporter must sell those dollars to his bank to receive the RMB that he needs. Because the PBoC intervenes in the currency, it effectively has no choice ultimately but to buy the dollars, and the result is an increase in FX reserves. This is pretty easy to understand.

But what happens if the next time the Chinese exporter sells shoes to the Italian importer, he gets paid in RMB? In that case it is the responsibility of the Italian importer, and not the Chinese exporter, to buy RMB in exchange for dollars. This is the only difference. The Italian importer must obtain RMB, and she does so by going to her bank and buying the RMB in exchange for the dollars. Her bank must sell the dollars in China to obtain RMB, and once again because the PBoC intervenes in the currency, it effectively has no choice ultimately but to buy the dollars. The result once again is an increase in FX reserves.

The other way to think about this is to remember that the change in FX reserves is exactly equal, by definition, to the sum of the current account and the capital account. This is because the balance of payments must always balance. China's current account surplus is wholly unaffected by whether the trade is done in dollars (the Chinese exporter is responsible for changing dollars into RMB) or in RMB (the Italian importer is responsible for changing dollars into RMB). In either case, in other words, PBoC reserves must rise by exactly the same amount.

What about Chinese investment? It too is wholly unaffected. The current account surplus, remember, is equal to the excess of Chinese savings over Chinese investment. If the current account surplus does not change, and savings of course will not have been affected by the currency denomination of the trade, then domestic investment must be exactly the same.

How Much Longer Can The Global Trading System Last? [Week 6]

Michael Pettis

My last blog entry inspired an old Brazilian friend of mine, with whom I hadn't had any contact for years, to comment on this section of the interview:

It seems to me that the US is becoming increasingly isolationist, largely because it is increasingly uncertain that the benefits to the US of a US-dominated world order still exceed the costs. When the US comprised a much larger share of the "globalized" part of the world, it retained a greater share of the benefits of a stable trading environment and it cost less to maintain that environment. As the US becomes a declining share of the globalized world, the costs of imposing stability (and I have no illusions that this is done for charity) rise, and its share of the benefits decline. It is only a matter of arithmetic that at some point the costs will exceed the benefits.

My friend is a very thoughtful economist who writes often about global governance and trade, and I really enjoyed and learned from the subsequent discussion, which quickly became a three-way conversation with one of his friends. In the conversation I tried to explain why I think the break-up of the current monetary and trading regime that governs much of the world, and an American turn inward towards isolation, are very likely over the next few years, and indeed almost inevitable.

As always it helps to understand the historical context. A potted history of the current regime under which we live actually begins in the chaos of the 1920s and 1930s. The Great War, whose centennial was marked this year, had thoroughly undermined a fragile, rotted through, but still functional global economic and monetary regime with relatively clear rules. It left in its wake a system with few mechanisms with which to address the trade and capital imbalances that were all but inevitable consequence of the war.[1]

In 1944, the Allies, determined to prevent a repetition of the chaos they believed had led to war, met at Bretton Woods in New Hampshire to design and implement for the first time in history a global monetary and trade system. With a few modifications, most notably the Nixon shock of 1971, which eliminated the pretense that the global monetary system was still underpinned by gold, this is the system under which we have operated ever since.

From its inception the system was unsustainable. Backed by the unassailable power of the US, and perhaps a twinge of jealousy, Harry Dexter White, the American representative who turned out all along to have been a Soviet operative, was able to reject the alternative proposed by John Maynard Keynes in favor of his own. Keynes understood that individual countries might have great difficulty in reconciling domestic balance and external balance, and because policymakers tend to prioritize the domestic needs of the economy, the system had to be protected from the tendency for large countries to create the kinds of external imbalances that had proven so destabilizing in the 1920s and 1930s.[2]

Keynes therefore wanted mechanisms that constrained the ability of countries to create large external imbalances, whether these were in the form of large current account surpluses or of large

current account deficits. White, on the other hand, believed only deficit countries needed to be disciplined, perhaps because the fact that the US had been running large surpluses for over two decades had convinced him that surpluses were an indication of moral superiority.

What kinds of imbalances are healthy?

It may make sense to stop for a moment to distinguish the advantages and disadvantages of net capital exports and imports, which of course are simply the obverse of current account surpluses and deficits. For simplicity's sake we will assume that the world consists of two countries (relaxing the constraint does not change the analysis). If Country X begins to export large amounts of capital to Country Y on a net basis, Country X must begin to run large current account surpluses equal to the amount of its net capital exports, and Country Y will run the corresponding current account deficit. The impact of this net capital export on Country X can vary:

If Country X is an advanced economy with easy access both to domestic and foreign savings, like Germany today, or if it is an undeveloped country whose policies have forced up the savings rate above domestic investment needs, like China today, the impact of capital exports is usually positive for growth and employment because they fund foreign purchases of domestically produced tradable goods. This is the case of a "healthy" current account surplus.

If Country X is a developing country with insufficient domestic savings to fund domestic investment, net capital exports are probably caused either by flight capital or by the net repayment of external debt. Brazil the 1980s suffered from both, and its large current account surplus was an "unhealthy" one.

Similarly, the impact of this net capital import on Country Y can also vary:

If Country Y is an advanced economy with easy access both to domestic and foreign savings, like the US, the impact of capital imports depends on whether it is "pulled in" because of a large amount of productive investment that needs financing (in which case investment in infrastructure and manufacturing would rise and real interest rates would also rise to attract foreign savings) or "pushed in" as Country X tries to balance excess production at home with insufficient domestic demand by exporting excess savings to Country Y (in which case debt-funded speculative investment and debt-funded consumption would rise, and real interest rates would drop). The former case is quite rare. Advanced economies whose capital imports are simply the obverse of capital exports elsewhere must respond with either an increase in debt or an increase in unemployment. These are "unhealthy" current account deficits.[3]

If Country Y is a developing country without enough domestic savings to fund domestic investment, like the United States for much of the 19th Century, capital imports permit an increase in domestic productive investment. In that case growth will pick up and unemployment decline. Its current account deficit is "healthy".

As should be obvious, current account surpluses or deficits are implicitly neither good nor bad.

Depending on what caused them surpluses were as likely to be destabilizing to the system as deficits, and so Keynes argued that the institutions that regulated global trade and capital flows should include constraints on policies that resolved domestic imbalances (mainly high unemployment), by exporting capital. Without such constraints, it was always likely that the costs for the institution responsible for enforcing stability (and from the start White ensured that this role would be played by the United States) would at some point exceed the benefits of participating in the global trading regime. If not corrected these costs could destabilize the global trading system.

The Nixon shock

As Keynes would have predicted, destabilizing imbalances began to emerge fairly soon. In the 1950s in response to a global "dollar shortage" that had impeded the return of international trade in the late 1940s and 1950s, Germany and other countries implemented policies, including sharply undervalued currencies, aimed at acquiring dollars by running large trade surpluses. At first the US supported these policies, with the Marshall Pan contributing to the foreign accumulation of dollars from 1948 to 1952.

By the 1960s, however, there was no longer a dollar shortage. By this time, however, the policies designed to accumulate dollar had succeeded so well that the world experienced a dollar glut, but as is often the case, these policies, including undervalued currencies and export subsidies, were too firmly entrenched among powerful local manufacturers to be easily reversed. This was when a number of countries, led by France, began to game the system in a way even unanticipated by Keynes, taking advantage of the dollar overvaluation to acquire as much American gold as possible, at the price agree upon within the Bretton Woods framework.

The US response was not especially helpful. Forced to choose between unemployment (in the form of higher interest rates) and continued deficits, the US responded to German imbalances and French gold purchases in the worst way possible, by accelerating fiscal expenditures on social welfare and stepping up the war in Vietnam. They tried to reduce balance of payments pressures by imposing in 1963 a "temporary" tax (which was not withdrawn until 1974) that probably only worsened the imbalances by restricting US outflows. Given its double commitments, it was irresponsible for Washington to fund the full increase in fiscal expenditures by borrowing, but the unpopularity of the Vietnam war made Congress and presidents Johnson and Nixon reluctant to fund higher fiscal expenditures with higher taxes.

At that point the global trading and capital flows system nearly collapsed. It was clear that the cost to the United States of maintaining the regime exceeded the benefits. Rather than opt out of the system, however, the US was able to "resolve" the crisis in August 1971 by reneging on its Bretton Woods commitment to convert dollars into gold, following this up with a series of agreements in 1972 and 1973 in which Japan and Europe took steps to reduce their external imbalances by adjusting their currencies. Because there was no automatic adjustment mechanism, it was wholly up to the US to

decide whether to abandon its role altogether and allow the system to collapse, or to improvise a negotiated resolution in which other counties agreed to take on part of the adjustment cost.

The "Nixon shock" in 1971, by severing the link with gold, eliminated one of the few formal constraints left within Harry Dexter White's system, although because the gold link only existed to the extent that no one tested it, it was a fairly meaningless constraint. Since then the system has continued to function erratically and continues to be hostage to American domestic priorities. Periods of stability have been followed by periods during which one or more countries, including the US, has resolved domestic imbalances by generating large external imbalances that were themselves resolved only when they caused or threatened to cause financial crises, and then only in the painful and uncertain form of negotiated ad hoc agreements (e.g. the 1985 Plaza Accord).

These imbalances must continue to occur, and as I will show, they will become larger and increasingly difficult to resolve. It is not an accident that the deepest set of trade imbalances, followed by worst crisis since the establishment of the Bretton Woods system, was the 2007-08 crisis. Even if the US had been determined to manage its economy prudently so as to minimize the cost of its having to absorb global imbalances - and it has often chosen instead reckless monetary and fiscal policies that convert external imbalances into domestic asset bubbles - the burden placed on the United States made the global trading system unsustainable, especially as other large economies also chose reckless monetary and fiscal policies to resolve their own domestic imbalances, thereby creating or exacerbating large external imbalances.

What is the cost of stability?

How should we think about the benefits the US derives from a stable and regulated system of global trade and capital flows, the costs it must pay to maintain that system, and the stability of the relationship between the two? As I see it this question has a pretty uncomplicated calculus. Increases in global trade raises total global productivity in at least three ways.

Specialization increases productivity in the ways Adam Smith described, and in many industries there are economies of scale, so presumably the larger the market, the easier it is for production to be concentrated in scale and separated into its components. Given the size of the US and European markets, there is some evidence that the marginal benefits of additional specialization are quite low but of course this depends on specific sectors of the economy.

David Ricardo showed that as regions increasingly specialize in comparative advantage, total output will rise. There is a great deal of controversy over the idea that regions should specialize in comparative advantage, but the controversy tends to be about either the unequal distribution of the increase in output or about whether or not comparative advantage is static. There is little disagreement even among the strongest proponents of protection that specializing in comparative advantage increases total output.

Higher levels of trade and capital flows spread the diffusion of technology and institutions

more rapidly and efficiently and increase the speed of economic convergence.

It is notoriously difficult to capture the real economic value of the increase in global output created by globalization, but the tendencies that enhance the value of increased trade - specialization, comparative advantage, and the diffusion of more productive technology and institutions - are probably not linear. Increases in global trade integration, in other words, probably increase the value of the global production of goods and services at a declining rate. This suggests that the really big increases in total global output probably occur when a large economy that was previously not part of the global trading system is suddenly and quickly integrated into that system - the most obvious case is that of China in the 1990s and 2000s, and it may also be the last such case, although of course India may or may not be another such case.

Although there is no good way to determine what share of the total increase in global output the US captures (nor even a way to determine what that increase is), it is probably proportional to the US share of the relevant part of global GDP. This number has clearly been declining, both because the world has growing faster than the US and because the relevant part of the world has expanded. By the end of the 1940s and into the 1950s the US comprised, if I remember correctly, about a third of global GDP.

Because the world then really consisted of three separate groups, for my purposes the relevant US share was actually much higher. The global trading system consisted not of the entire world but rather of North America, Australia, Western Europe, and parts of Latin America, Asia and northern Africa. Communist countries were largely excluded from this system, as were countries, or parts of countries, that were too poor and too backwards to have much of an impact on global trade.

As a result the US GDP share of the relevant "global economy" was probably more than one third, and perhaps even close to one half. Whether the US captured a disproportionately large or disproportionately small share of the total benefits, and arguments can be made in either direction, it is probably safe to say that the US share of total benefits has declined since the 1940s and 1950s in line with the decline of the US share of the global trading system. As the world has grown faster than the US, and especially as countries that were once excluded from the global trading system have joined - Russia, China, and large parts of Africa and Asia - the US share of the relevant world has declined very sharply.

But there are substantial costs to maintaining this system, and these have risen sharply. As the creator of the rules, and as by far the largest player within the system, the US is not able to game the system in the way other countries can. And other countries do often game the system - among the most obvious examples being cases that I discussed above, for example Germany and France (in two very different ways) in the 1960s, Japan in the 1980s, and China in the 2000s - not for evil intent but simply because policymakers everywhere always prioritize the resolution of domestic imbalances over external imbalances, and domestic and external balances are often difficult to manage

simultaneously.

Put differently, the world economy is necessarily volatile, and to the extent that the US tries to limit destabilizing volatility, it can only do so by finding a way to absorb that volatility itself. The most obvious way the US absorbs external volatility is by absorbing trade and capital flow distortions, and the associated cost is likely to be higher to the extent that other countries try to game the system to generate more growth at home.

As I showed earlier in my potted history of the global financial system, whenever a country uses external demand to increase domestic employment and domestic production, it effectively does so by exporting capital, and in most cases the capital exports take the form of central bank purchases of foreign government bonds. Although there is a widely-held view that reserve currency status creates tremendous economic value (the "exorbitant privilege" of the US dollar), in fact most countries act as if reserve currency status conveys prestige, but at a huge cost.

Foreign capital go home!

Most countries with reserve currencies, for example, actively discourage large purchases by foreign central banks of their government bonds except in very specific cases - mainly cases in which low credibility and a declining currency creates financial or inflationary pressure. Large-scale foreign purchases of local currency assets tend to push up the value of their currency and to cause domestic demand to flow abroad. As a result, and as I showed in my example of capital flows between two countries, except for countries whose domestic investment needs are constrained by insufficient savings, or for whom foreign investment helps diffuse more efficient technology and institutions (in both cases these are mainly undeveloped countries), foreign investment is likely to lead either to higher unemployment or higher debt.

This to me is the main cost associated with enforcing a global trading and capital flow regime (I have excluded military expenses as being separate, if there are others I would be glad to hear them), and it seems to me that whether or not there are it leaves us with two relevant points here. First, there are significant costs associated with implementing and enforcing a global trade and capital flow regime. If there were not, the chaos that we saw in the 1920s and 1930s would probably have not occurred and the role of enforcer would have been voluntarily taken up, then and now, by international organizations. Second, these costs are likely to be a function of the number of players in the system and the extent to which they design policies at least in part to use external demand to generate domestic growth.

The main measure of that cost is the US current account deficit. Growth in the global economy should naturally require that the rest of the world accumulate dollar reserves, and so it is natural that the US run current account deficits as the world accumulates dollars. This permanent exchange of a small amount of dollars for real goods is the total extent of the exorbitant privilege.

But this privilege comes at an enormous risk, one which no other country wants to take. As the

rest of the global trading system grows relative to the US, the need for a rising US current account deficit poses the problemidentified by Robert Triffin.

The Triffin Dilemma, as this problem is known, points out that if foreign growth is high enough relative to US growth that the need for US dollar reserves grows faster than the US economy, the resulting US current account deficit will require that the US sell assets fast enough, or that US obligations to foreigners grow fast enough, eventually to put the US economy at risk. What is more, when large countries, like Japan in the 1980s or China in the 2000s, try to generate very rapid domestic growth by repressing domestic interest rates and undervaluing the currency, because of the resulting surge in their reserve accumulation, their soaring current account deficit must be balanced by a soaring US current account surplus, which exacerbates the Triffin Dilemma significantly.

This leaves us with two important points:

As the US economy becomes a smaller share not so much of the global economy but of the parts of the global economy that participate in international trade, its share of the total benefits must decline, and because so many new countries and regions have joined the relevant "world" in the past three decades, the US share of total benefits has declined very rapidly. As trade impediments are further gradually reduced, the growth in benefits overall is likely to decelerate, so the US retains a declining share of a more slowly growing number.

The costs it bears, however, are likely to grow inversely with its share of the relevant global economy. What is more, as more players with increasingly varied agenda join the system, the costs are unlikely to decelerate and may in fact accelerate. The costs include, but are probably not limited to, the risks identified as the Triffin Dilemma.

It seems to me then purely a matter of logic that as the world grows, as there is convergence in income disparities between rich and poor countries, and as more countries choose to join the global trading system, at some point the two lines - the higher line representing a declining share of total benefits, whose slope is likely to be slightly positive tending towards flat, and the lower line, representing rising costs, whose slope is steeply positive and becoming more so - must cross, after which point the costs exceed the benefits.

I would argue that we have probably already passed that point, and that the US would be better off today by significantly modifying the way it participates in the global trading system. The longer it waits to do so, the riskier it will be, and either the more debt or the more unemployment it will have to accept. Among other things, the US must address the role of the US dollar as the world's reserve currency and the way this role forces the US into absorbing volatility and shortfalls in demand that originate abroad.

What is unsustainable eventually stops

Many economists may disagree with me that the costs of the current role the US plays in the global trade regime exceeds the benefits, but the point of this essay is to show that even if I am wrong,

as long as the world grows faster than the US, more of the world is incorporated into the global trading system, and more countries design growth models that suppress domestic consumption in order to subsidize domestic growth, there must of necessity be a point at which it makes sense for the US to opt out of its role as shock absorber, and - by raising tariffs, intervening actively in the currency, restricting foreign purchases of US assets and especially US government bonds, or otherwise reducing capital inflows - become simply one more member of a system with no automatic adjustment process.

The current system, in other words, is inherently unstable and will sooner or later force the US economy into a position of choosing either to take on excessive risk or to abdicate its role as shock absorber. In my email exchange with my Brazilian friends, we discussed and speculated on a number of other geopolitical implications, but this is about as far as I want to go on the subject. By the way I am not making the argument, which perhaps was a little more popular a few years ago but remains popular today, of the decline of the US or of the rise of Asia. I have never really believed in either, except in the sense that in the aggregate the Asian share of the world economy is likely to rise (although not nearly as fast as some of the more intoxicated proponents of the Asian Century suggest), mainly at the "expense" of Europe and Russia, whose demographic profiles make it almost impossible for them to maintain their current share of global GDP (Japan and China too have very ugly demographic profiles that will limit the growth of their relative sizes, but of course they are part of Asia).

It seems to me however that this rise in the Asian share of global GDP will be accompanied by an even faster rise in destabilizing geopolitical tendencies within the region, so that overall the relative rise in Asian GDP will not be matched by its political rise. As most of the readers of my blog know, I expect that over the next decade we will see a number of Asian countries undergo very difficult adjustments, and I would imagine that unless handled much more carefully than it has in the past, this adjustment process is likely to increase these tensions.

But my argument does not need the 21st Century to be an American century, an Asian one, or a multi-polar one. All it requires is that the "globalized" world experience faster economic growth than the US. If this happens, to the extent that more countries with a wider range of political goals and institutions join the system created by the Bretton Woods conference, and to the extent that geopolitical tensions rise in Eurasia, it seems to me that the flat or mildly upward sloping line that represents the benefits to the US of the global trading system and the steep upward sloping line that represents the costs, if they haven't already crossed, must cross soon. And if the recent changes in high-tech manufacturing and in the distribution of energy resources favor the US, as a lot of excited talk seems to suggest although I am an expert in neither manufacturing, high tech, nor energy), it seems to me that this would cause the flattish curve that represents the benefits to the US of stabilizing the global trading system actually to turn downwards.

If I am right, and a resurgence of some kind or other of US isolationism is simply a matter of

time, the US and the world should be considering, and perhaps even already designing, the alternative sooner rather than later. Otherwise, and because this regime was created very specifically to avoid the economic chaos of the 1920s and 1930s, the reversal of this regime could very easily return us to that chaos.

[1] I am often asked for book recommendations, and while I have read more books than I can possibly count on the economic, political and cultural history of the first three decades of the 20th Century, when it comes to political economy there are two books that, in my opinion, stand above all others. For an understanding of how the Great War undermined the global system, not just Europe and the US, the focus of most histories, but throughout the world, the best book I have read by far is The Deluge: The Great War and the Remaking of the Global Order by Adam Tooze (I also strongly recommend his book on the German economy in the 1930s, The Wages of Destruction: the Making and Breaking of the Nazi Economy). When it comes to understanding the monetary and financial forces that buffeted the US and Europe, I have long considered Barry Eichengreen's book, Golden Fetters: the Gold Standard and the Great Depression 1919-1939, as the best book on a topic about which many great books have been written.

[2] One of the clearest descriptions of the difficulty policymakers have in managing both internal and external balance is Peter Temin and David Vines,The Leaderless Economy (Princeton University Press, 2013

[3] I explain how this works in more detail in chapters 7 and 8 of my book The Great Rebalancing, (Princeton 2013)

Will the AIIB One Day Matter? [Week 6]

• Michael Pettis

For now, for all the excited chatter, the Asia Infrastructure Investment Bank is an institution laden with symbolic value and little else.

When Isaac, an editor at Foreign Policy, sent me an email two weeks ago asking if I could write a piece on the new Asian Infrastructure Investment Bank (AIIB), I quickly wrote back promising 1,200 words within a few days. I thought it would be pretty easy to come up with the points I wanted to make, and all I would need was one uninterrupted day to pull them together into a coherent article.

As I see it, the creation of the AIIB is not nearly as important as everyone seems to think, and if Beijing's decision to create the AIIB, and Washington's decision to oppose it, was part of the struggle for future geo-political dominance in Asia, let alone the world, they were both going to be wrong. There were only two useful parts to this story, it seemed to me. First, it showed that neither Washington nor Beijing understood very well either the functioning of the global balance of payments or the reasons why the West, and especially the US, dominates the regime that governs global trade and capital flows (but I guess we already knew that). Second, Washington had handled this whole process so ineptly that it had managed to transform a minor initiative by Beijing into a huge symbolic disaster for Washington and a great victory for Xi Jinping.

I thought it would be easy to explain this because the discussion over the AIIB was almost a caricature of the discussion over a number of other finance-related topics during the last decade or two, in which an overwhelming consensus quickly develops around some event concerning both its unprecedented nature and the nature of its transformative impact – the sustainability of China's astonishing growth miracle, the creation of the euro, the abolishing of credit cycles by Washington, the consequences of the reserve status of the US dollar, the rise of the RMB, and so on. Both assumptions always turn out to be wrong – the event under discussion does have a very deep and very useful historical context, and this context suggests that many of the assumptions underlying the discussion are, in fact, quite implausible.

In the case of the AIIB I assume that readers of my blog are quite familiar with these assumptions, but on March 16 Singapore-based academic Kishore Mahbubani published an article that, perhaps predictably, exemplifies the more excited version of the consensus. He described the decision by Great Britain to join the AIIB as an "epochal event" signaling nothing less than "the end of the American century and the arrival of the Asian century". He goes on to say:

Any objective and calm assessment of the Chinese decision to launch the AIIB would show that this is a bank whose time has come. The Asian Development Bank has estimated that Asia needs to spend at least $8 trillion in infrastructure investment. The American-dominated World Bank and related institutions cannot possibly fulfill this demand. China's decision to use its reserves to boost Asian infrastructure investment was clearly welcomed in Asia. Given its spectacular success with

developing world-class infrastructure in record time, China has a lot of expertise in this area. Asia needs this.

In spite of the fact that I disagree with nearly every part of this paragraph, and I think there are many, and very varied, precedents for Beijing's initiative that show just how questionable many of these assumptions are, it actually turned out to be very difficult to write the article. On my first attempt I was well over the 3,000 word mark before I realized that there would be no way to finish the article and then cut it down to anything close to 1,200 words. I put the piece aside and started up the next day with a completely different strategy, but the result was the same – too many words. After the third attempt, with a new strategy but the same result, I realized that there was no way I could present my objections except in a much longer piece, and I wasn't sure whether it was worth the effort.

The string of implausibilities

I think I know why it would take much longer than I expected to write the essay. The claims about the importance of the AIIB or the significance of London's decision are based on a series of implicit and fairly abstract assumptions, and in order to dispute them I would have to specify all the possible ways in which these claims would be correct, and then show that each of them is implausible or even impossible. It is a little like the dispute over the value of reserve currency status. If someone claims that reserve currency status is valuable because it allows the country that issues the currency to reduce its borrowing costs, it is quite easy to show why this isn't true, or is true only under very specific conditions that may or may not apply. But if someone simply claims that reserve currency status is self-evidently extremely valuable, it is much more complicated to dispute the claim because then you have to consider and refute all the possible ways that this might be true.

In this essay, I thought I would follow a different tack. It might be interesting not so much to dispute the importance of the AIIB, or of Britain's decision, but rather to suggest some of the historical antecedents for Beijing's initiative and show how similar perceptions turned out to be wrong before, and so suggest the ways in which they might be wrong again.

This is not to say that the AIIB cannot become as important an institution as some of the more excited commentary suggests. It can, but only under certain fairly implausible conditions. If China's economic rise during this century leads it not just to overtake the United States but to achieve a level comparable to that of the United States in the 1940s and 1950s, and if the RMB becomes the world's dominant reserve currency, with Beijing understanding and accepting the full costs of having the RMB as the dominant reserve currency, and if Beijing chooses to implement its foreign policy objectives at least partly through the AIIB, its importance will rival that of the Bretton Woods institutions.

However if the 21st Century evolves into a bi-polar world, or a multipolar world, or if it continues to be dominated by the US, the AIIB's history will resemble that of its many antecedents. It will join the long list of much-hyped initiatives aimed at transforming the global trading regime but that now languish in obscurity, known primarily for absorbing university graduates from very

prestigious schools who have failed their other job interviews.

This just means, in other words, that if Beijing occupies the same relation to the rest of the world that Washington did in the 1940s, and if, occupying this position, its ideas about what it expected from a global trade and currency regime had not changed during the next decade or two (which, given its very difficult expected rebalancing, as I will show, makes this very unlikely) then the AIIB can replicate the rather extraordinary impact of the Bretton Woods institutions. Note however that the AIIB itself will not play a role in China's rise. It will be nothing more than one of the consequences of that rise, which is why even if this whole string of implausibilities were to become real, it is absurd to say that the AIIB itself changes anything.

Before discussing the precedents I thought I would make a quick digression about perfidious Albion. It is widely believed that David Cameron made a decision that shocked much of the world, including Beijing itself, for solidly pecuniary reasons. It was no secret that there was little David Cameron wouldn't do to ensure that London became the leading offshore center for trading RMB, and was especially worried about the close relationships between Berlin and Beijing, which, he feared, might place Frankfurt in the lead in the race to become the main trading center for RMB. Many people have interpreted Cameron's actions as implicitly anti-American, but to the extent that they matter, they were designed primarily to damage German ambitions for Frankfurt's future role as a financial center.

Booting out Frankfurt was important because of the big pot of gold associated with becoming the dominant offshore trading center for RMB. Cameron seems to believe that the RMB will soon become one of the world's major reserve and trading currencies, perhaps even overtaking the dollar, and London's primacy as a global financial center would be guaranteed if it became the leading offshore trader of RMB-denominated assets.

But this was always silly. The reason London is the world's major currency-trading center has to do with its very powerful institutional advantages. After all it was widely feared less than two decades ago that the establishment of the ECB in Frankfurt in 1998 had all but killed London's continued future as the center of European finance. In fact the creation of the euro largely wiped out local currency centers and most of the market actually migrated out of the euro zone and into London.

The reason this happened – London's unassailable institutional advantages – make it almost certain that, whatever Beijing's preferences, offshore trading in RMB would migrate to London anyway. After all the traders at Aberdeen Asset Management, say, are not going to decide whether to have their trades executed in Frankfurt or in London based on their eagerness to please Beijing. I suspect their decision will be based primarily on their evaluation of which market is deeper, more liquid, clears more conveniently, and trades more efficiently.

Will the RMB become an important reserve currency?

More importantly the RMB will not become a major reserve currency any time soon, and while its importance as a trading currency will probably continue to rise, this is from an extremely low base

and is mainly because compared to the currencies of other, smaller, developing countries, like the Mexican peso and Brazilian real, the RMB is hugely under-represented in international trade. So while it has a lot of catching up to do with the peso and the real, even if China is to become the word's largest economy, the RMB is very unlikely to catch up to the dollar for many decades because of significant constraints in the governance of Chinese financial markets. The US, after all, was the world's largest economy for fifty years prior to WW1, and Germany the world's second largest economy, and yet the US dollar was of minor importance in international trade and the German goldmark only third in importance, behind the French franc and far behind sterling.

London had spent decades proving that it was far less likely to intervene in sterling markets then any of its competitors and so, as long as it did not do so, inertia alone allowed sterling to retain its primacy, but it certainly did not need to worry about a challenge from the dollar until WW1 completely transformed global governance and the institutions that characterized international finance. The dollar in the late 19th century did not enjoy high levels of confidence in the international markets because there were doubts about the quality and credibility of Washington's governance and about whether Washington would resist intervening in its financial markets or in the currency if it felt that it was in the national interest to do so. Even if the dollar today were at risk somehow of losing the huge advantage inertia creates, the same constraints that prevented the dollar from mounting a challenge to sterling's pre-eminence before WW1 make the ERMB an unreliable international currency.

While use of the RMB as a reserve currency or as a trading currency will probably rise in the next decades, this is mainly because of its still very low base. According to SWIFT, for example, which settles interbank trading orders and is one proxy for currency use, the RMB broke into the top five currencies at the end of last year, accounting for 2.2% of SWIFT transactions (the USD accounted for 45% and the euro 28%, and because all transaction involve two currencies, I think a 50% share is the limit any currency can have). Given China's size, this is a tiny share, but even this may overstate the importance of the RMB if part of the transactions were driven by substantial amounts of currency speculation seeking to get around the rules that limit China's capital account.

In fact it probably was. The latest SWIFT numbers, for February, show that the RMB has dropped to 7th place, with a 1.8% share, and that the number of companies expecting to increase their use of RMB has declined in the past year. It is probably not a coincidence that use of the RMB rose when expectations were that RMB appreciation was a sure thing, and is declining at the same time that uncertainty rises about the future value of the RMB.

Whatever its fate as a trading currency, however, the RMB cannot soon become a dominant reserve currency. To understand why, it might be useful to consider the following. There are only two scenarios under which foreign central banks can accumulate enough RMB-denominated Chinese government bonds (CGBs) for this to happen.

1. As foreign central banks buy CGBs, the PBoC intervenes and the RMB does not rise, in which case the PBoC's assets rise by exactly the same amount as foreign central bank purchases of CGBs.

2. As foreign central banks buy CGBs, the PBoC does not intervene and the RMB rises enough that the rise in foreign purchases of CGBs is matched by the combination of a decline in China's current account surplus and an increase in China's capital account deficit. If the RMB rises, of course, we are unlikely to see an increase in China's capital account and in fact may even see it decline into a surplus. This means that the current account surplus must decline by more than the amount of CGBs that foreign central banks purchase, and in fact could easily drive the current account into deficit.

Some have suggested as a third scenario that other Chinese entities could be forced to buy foreign assets purely in response to foreign central bank purchases of CGBs, but this would basically be a version of Scenario 1, with the only difference being that Beijing directed some other entity to play the intervention role of the PBoC.

Whether Beijing decides to go this path, or the PBoC intervenes directly, there are important consequences that make it implausible. Either the rise in RMB reserves would have to be matched with an increase in PBoC holdings of advanced country reserves, mainly US dollar and perhaps euro bonds (other advanced countries are too small to matter), or if Beijing wanted to stop accumulating dollars and euro, it would have to be matched with an accumulation of government bonds, or even infrastructure loans, in Malaysian ringit, Brazilian reais, Mexican pesos, Indian rupees, and other developing-country government bonds. Given China's poor track record in lending to developing countries and the huge associated risks, Beijing is unlikely to want to do this. Remember that if we are expecting the RMB to become a major reserve currency (let alone the major currency) China has to be prepared to see some pretty huge inflows and matching outflows, running into the trillions of dollars.

Central bank swaps

The effect would be to have RMB reserves in all these other central banks — Brazil, Malaysia, India, Mexico and other developing countries – rise in exchange for an equivalent rise in the PBoC's central bank reserves, denominated in all these various currencies. While the use of the RMB as reserves would certainly rise, there would be no net trade impact or monetary impact because centrals would simply swap government bonds with each other. In fact asset swaps have been among the major mechanisms by which RMB reserves have accumulated in foreign central banks.

But for the RMB to become an important reserve currency simply as a function of asset swaps between central banks has important risk implications. A few creditworthy countries might be willing to play this game in the beginning, giving the PBoC some of their government bonds in exchange for their central banks receiving CGBs, but why bother? It just means that they take on China credit risk and get no benefits at all, except to make Beijing happy.

In the days of the "China Century" when it was believed that whoever made Beijing the happiest would get rich by becoming the leading off-shore trading center for the world's dominant reserve currency, there might have been some demand from the Switzerlands or Luxembourgs of the world, but I wonder if David Cameron might not be among the last people still to believe this, and anyway this game involves very small amounts of swaps and will only go on until London has already become the leading off-shore RMB trading center.

So who is left who will want to do these swaps with the PBoC? Pretty obviously the only contenders will be countries that have trouble raising credit. Beijing, in other words, can exchange trillions of dollars worth of CGBs and receive government bonds from pretty much every dodgy credit in Latin America, Europe, Asia and Africa. While I am sure that there are many who will hail this as a brilliant geopolitical move, I would have to say that if it really were a good move, and if having the dominant reserve currency was such a great advantage, then this strategy could and should have been replicated by other credit-worthy countries long before China had thought it up, and they could have easily taken away the exorbitant privilege from the US decades ago. After all there was a time when the yen was supposed to become the dominant reserve currency, and it had far better technical credentials then than the RMB does today, and yet Tokyo never followed this path.

More pointedly, in 1965 French finance minister Valéry Giscard d'Estaing complained bitterly about the exorbitant privilege the dollar's reserve status gave the US, allowing it to print as many dollars as it liked to finance its deficits, but France could have easily engaged in massive swaps with central banks around the world in the 1960s and 1970s under Giscard d'Estaing's guidance. Had Paris done so, today the French franc would reign supreme among currencies, or, more likely, France would be totally bankrupt.

That's why I think Scenario 1 of the two scenarios is almost impossible except as a way for the RMB to become a little more actively used as a reserve currency. If China really wants the exorbitant privilege, it is stuck with Scenario 2 and its associated trade implications. It can only gain reserve currency status by allowing unlimited amounts of foreign purchases of CGBs, with little to no commensurate PBoC intervention, in which case it gets the US privilege of being forced into current account deficits. I really don't see any way around this.

If you believe, as most of us seem to, that Beijing is not willing to run large current account deficits in order accommodate the accumulation by foreigners of RMB reserves (especially if foreigners begin to accumulate RMB for the same trade-related reasons that the PBoC accumulated US dollar reserves), and if you also believe that the PBoC will not be willing to accumulate perhaps trillions of dollars worth of developing-country government bonds (i.e. lend trillions of dollars to developing countries), then you cannot also believe that the RMB will become a major reserve currency, let alone the dominant reserve currency, because you have eliminated the only two ways foreign central banks can accumulate sufficient amounts of RMB reserves.

What does history "prove"?

Most analysts do not understand the reserve accumulation process well enough to understand the logic of this argument, but they nonetheless are fairly confident about their predictions for the RMB on the grounds that history supports them. This is usually because, however, their understanding of history is not much better. One thing, we are often told, is that as the Chinese economy becomes the world's biggest, its currency must become the dominant reserve currency because history proves that the world takes on the currency of its largest economy as its preferred reserve currency.

History proves no such thing. First of all, there is no "history" as such. There has only been one fiat currency in history that was a dominant reserve currency, and this was the US dollar, beginning either in 1944, or in 1971 after the "Nixon shock", or some time in between, depending on your reading of the history. There has also been only one case in history in which a currency generally recognized as the dominant reserve currency was replaced by another, and this was the replacement of sterling with the dollar, some time in the 1930s or early 1940s, again depending on your read of history.

More importantly, as I discuss above, the US economy became the biggest in the world in the later 1860s or early 1870s, during which time Germany became the second, and yet the dollar was considered a fairly unimportant reserve currency right up until the late 1910s (and Germany only went on gold in the early 1870s). The dollar only became important, in other words, forty to fifty years after the US became the world's largest economy, and the dollar only became the dominant reserve currency perhaps more than seventy years after the US had acquired its leading economic status.

For me the interesting question is why it took nearly half a century after the US became the world's largest economy for the US dollar to become an important reserve currency and whether this has implications for China. The answer may be partly because of the uncertainty surrounding the dollar, and American commitment to gold backing (in fact the Federal Reserve System was not created until 1914), and given the structure of the Chinese political system and a wide range of financial market governance issues, it is not hard to imagine reasons why the RMB might also attract uncertainty.

The late use of the dollar may also be explained partly because during much of this time the US was running trade surpluses and, except for its bankers, it would not have benefitted from foreign interest in acquiring large amounts of dollars. China faces a very difficult rebalancing, and while status-seeking is an especially powerful urge in China, anyone in Beijing who can ignore the status that would come from managing the dominant reserve currency would see that substantial foreign acquisition of RMB-denominated CGBs would make the rebalancing so much more difficult that it would all but guarantee a failed adjustment. Even if China does become the world's largest economy, in other words, the RMB may face some of the same constraints that prevented the dollar from becoming an important currency in the five decades before WW1.

There are other mistaken historical references. Some people have pointed out that the US was able both to run surpluses in the 1940s and 1950s and still have the dominant reserve currency, as was England at the end of the 19th century, but both cases occurred under conditions that do not apply to China today. In the former case, the US economy represented at least 50% of the relevant world back then (excluding among others communist countries like the USSR, China, and their various allies). Much more importantly, the system simply didn't work. The world was not able to acquire nearly as many dollars as it needed, and the result was the famous "dollar shortage" which was severe enough that it threatened to derail the global recovery. Only the huge gift of the Marshall Plan was able temporarily to resolve it in Europe. China can replicate the US of the 1940s and 1950s, in other words, only if it were able to make as large a gift, even though it is much poorer than most countries and represents about one-third of the share of global GDP that the US represented.

As for the British example at the end of the 19th Century, in those days currency was part of reserve accumulation, but much if not most reserves were in the form of gold or silver, and while Britain had the most important reserve currency, the difference between central bank holdings of sterling and central bank holdings of other gold-based currencies, like the franc, were pretty small relative to total trade. The gap between British capital exports and the British current account surplus, in other words, could be quite small and still allow the world to accumulate enough sterling for sterling to be the dominant reserve currency. This is no longer the case. Reserves are held primarily in the form of government bonds and reserve accumulation is much greater relative to trade.

There was a reason Keynes supported bancor instead of dollars as the global reserve currency during the 1944 Bretton Woods conference, and it was not, as everyone assumes, just because of nationalist pride. He saw how sterling reserve status without the automatic constraints of gold backing helped undermine the British economy in the post-WW1 period as countries that needed to boost growth accumulated sterling. He knew this would happen to the US, and while this might not matter at a time in which the US was roughly half of the relevant world, and in which there was much more cooperation among major governments and central banks, eventually the US would no more be able to absorb the cost, just as England was not able to do so in the 1920s.

This is why I think the dollar will eventually lose its reserve status, not because it will be replaced by the RMB but rather because the US will eventually figure out that it entails too a high cost and that it is no longer willing to pay that cost. When this happens, unless there is a credible alternative, perhaps the SDR, the US will be better off by forcing the world to abandon the dollar but the rest of the world, especially developing Asia, would be much worse off. My main point, however, is not that the US should not accept its role any longer but rather that until China decides it is willing to pay that cost (assuming that it is able, which I very much doubt), I really cannot see how the world can possibly acquire enough RMB for it to become a dominant reserve currency.

Other things to consider for the AIIB

This blog entry is already far more than three times the length of the article I was supposed to provide for Foreign Policy, and I still haven't fully addressed just the key reasons for skepticism about the importance of the AIIB. Because addressing them fully would take this essay easily into book length, let me just suggest them:

1. We have a terrible track record of extrapolating from periods of rapid growth to predict which country is the "rising power". In fact more broadly, depending on how you define them, there have been 30-40 "growth miracles" since WW2, of which perhaps only two came even close to achieving consensus expectations. In every case, including the "successes" the growth period was followed by a terribly and unexpectedly difficult adjustment that derailed all earlier expectations.

More relevantly, in the past century these growth miracle countries have included at least four rising powers that were expected to become the dominant geopolitical and financial power in the world – the US in the 1920s, Germany in the 1930s, the USSR in the 1950s, and Japan in the 1980s. In every case they rebelled bitterly against the existing global financial framework, complaining that it was designed to maintain the status quo and restrain their rise. Every one of these countries initiated policies aimed at transforming the world to align interests correctly and accommodate their rise to dominance. Only one of them succeeded.

The United States in the 1920s was the only country that met expectations. It had already been the world's largest economy for nearly five decades, but played a minor role in the global system until WWI thrust it into center stage. In the 1920s the US experienced a period of spectacular growth during which institutional distortions forced up its saving rate and resulted in massive trade surpluses, along with the largest accumulation of central bank reserves in history (it is worth noting, by the way, that although the US in the 1920s experienced some of the conditions that characterized China's growth model, of the four "rising powers" its economic growth was the least similar). Like Beijing today, during this period Washington demanded a greater say in the institutions that shaped global trade and capital flows, but was very suspicious of European initiatives designed, it believed, to enhance the status quo at American expense. For the most part Washington refused to participate, or attempted to create its own institutions. The "rising power" period, however, came to an end, along with most of the expectations generated during the 1920s. US growth was derailed in the 1930s as it was forced into a very difficult adjustment, and among the casualties were the ambitions associated with its geopolitical dominance.

In the 1930s Germany designed a version of the investment-driven growth model, with the two fundamental characteristics similar to China's growth model that both caused soaring growth and deepening savings imbalances (policies that force up savings by constraining household income and

the centralization of the investment process). At the time many if not most economists, not just in Germany but also in the US, expected that Germany would soon overtake the US economically and become the world's largest economy. Of course WW2 interrupted the rebalancing process, but economic historians argue that had war not occurred, Germany would have probably faced a debt crisis by the early 1940s.

A fully developed version of the investment-driven growth model was implemented in the USSR after WW2 and led to such spectacular growth that, by the early 1960s, most economists and analysts, including apparently President Kennedy, fully expected the USSR to overtake the US both economically and technologically well before the end of the century. Instead, in the now familiar sequence, the USSR suffered a brutal rebalancing and an ultimately disruptive adjustment. Although the USSR participated in the Bretton Woods conference and approved the final agreement, Moscow almost immediately rescinded its agreement and proposed a number of financial initiatives within the Soviet or communist blocs, none of which survive. And while the USSR urgently sought to accumulate dollars for trade and reserve accumulation, its unwillingness to hold these dollars in US-based banks subject to pressure from Washington played a large part in the creation of the offshore market for dollars, and eventually for other currencies. This initiative can be listed as one of the few "reforms" by disgruntled "rising powers" to have survived and changed the global financial regime, but its effect, ironically, was not to undermine the Bretton Woods system so much as to extend it.

In the 1970s and 1980s Japan developed the most successful version to date of the investment growth model, with such stunning results that the Japanese economy was unanimously expected to overtake that of the US, and the yen replace the dollar, before the end of the century. During this period Tokyo complained bitterly about the Washington-dominated global regime and attempted a number of reforms whose consequence included a bitter dispute over the Asian Development Bank and Japan's role in the regime that governed global trade and finance. Once again, however, a growth model based on structures that forced up both savings and investment generated very high growth levels, but at the cost, in its later stages, of deep savings imbalances and a soaring debt burden, the consequence of which was yet again an unexpectedly difficult adjustment in which all earlier expectations about needed reforms in the global system of trade and capital flows were either jettisoned or modified.

There have been four times in the past 100 years, in other words, in which we were more or less certain (absolutely certain in the cases of the US in the 1920s and Japan in the 1980s, very certain about the USSR in the 1950s, and arguably certain about Germany in the 1930s) that a country would become the dominant economic and geopolitical power, and only once did this turn out to be true. Anyone old enough to remember the 1980s will remember that we were even more certain about

Japan's rise in the 1980s than we are about China's rise today, but in the Japanese case, as in every other case, we were flabbergasted by how difficult the economic adjustment turned out to be, which suggests at the very least that we might want to wait to see how Beijing manages China's rebalancing before we insist that this time is indeed different.

2. Whatever the outcome, the adjustment period has always overturned the institutions and expectations generated during the growth period. This is why even if China becomes only the second successful case of five in which our predictions about the "rising power" turn out to be correct, it is foolish to assume that the expectations that led to the creation of the AIIB will remain unchanged. China's priorities will have shifted during its rebalancing to such an extent that today's goals will not apply to the conditions that accompany its position of dominance. During the adjustment, domestic institutions and political conditions have always been so radically transformed that the country "before" the rebalancing period had a completely different set of objectives and goals from the country "after" the rebalancing period.

It is important not to underestimate this point. Regardless of whether or not it becomes the world's largest economy, the China that emerges from the adjustment of the next decade or two will be a very different China, with different institutions, different objectives, and different priorities. Among the easier predictions, it is a virtual certainty that the imbalances that force China today to recycle massive current account surpluses will have reversed themselves, so that the recycling process will no longer be a major objective.

3. The world is not starved of capital. In fact it has too much capital. The idea that the AIIB will be important because its accumulation of lending power will give it something important that the world needs is widespread but completely wrong. In fact the world is satiated with excess savings, to the point where it has driven interest rates in some countries negative. In fact China and the other founding members of the AIIB who know that they desperately need places to put their money but who do not understand why they have this problem are probably hoping that the bank will be able to increase credible demand for savings by transforming real demand from non-credible borrowers into real demand from borrowers whose credit has been mysteriously enhanced somehow by the AIIB.

4. Management of the regime that governs global trade and capital flows depends not on the support of institutions like the World Bank and the IMF but rather on the willingness to underwrite the costs of trade volatility. The reason the US more than any other country sets the global rules for trade and capital flows is not because the US dominates the IMF and the World Bank, whose financial firepower underpins US power. It is because the US has been willing to absorb the volatility generated

by trade policies of other countries, and this willingness is based not so much on the openness of its domestic markets for goods and services to foreign trade (although it is clearly more open than any other major economy) but on the fact that its capital markets are open. This point confuses many analysts, who think of the capital and current accounts separately. The right way for any country that wants to power domestic growth by boosting exports is by increasing productivity. In that case it will export more abroad, but the resulting increase in wealth will also cause it import more, and it will not obviously run either a surplus or a deficit, but rather a trade imbalance close to zero.

But if increasing productivity is too hard, it can also boost exports simply by accumulating US assets, the most common of which ways to do so is to have the central bank acquire US government bonds. As its net capital exports to the US grow, its current account surplus and the corresponding US current account deficit will automatically grow by exactly the same amount. I have explained why this must be the case many times, including last year in the September 28 and October 5 entries in my blog. This consequence was why the UK remained so important after WW1, even though its economy was dwarfed by that of the US and was smaller than that of Germany. Countries that needed surpluses purchased British government bonds – at England's great cost, as Keynes tried to explain.

Most analysts, even US government officials involved in international trade and foreign policy, simply do not understand how this works, but the confusion this causes does not make the accounting identities any less true. In fact the mechanism has been explained often enough by many economists whose work focuses on the functioning of the global balance of payments, from John Hobson and Charles Arthur Conant at the end of the 19th Century, to Keynes in the 1930s and 1940s, to Jared Bernstein and Kenneth Austin today.

Any discussion about how China is going to transform the global financial architecture, in other words, is primarily a discussion about when China will open up its capital markets to unrestricted foreign purchases of domestic assets, especially Chinese government bonds, and its willingness to allow other countries to power domestic growth by accumulating renminbi reserves. This of course also means that the discussion is ultimately about China's willingness to run large current account deficits to stabilize employment elsewhere. And yet most people on either side of the discussion would probably say that it will be many decade, if ever, before China permits this kind of access to its markets.

5. The only countries not reluctant to import the savings of other countries are those who capital exporters shun. These are developing countries who have obvious investment needs but in whom investors are very reluctant to invest because of low credibility. The AIIB has not addressed

how it will differ in the way in which it supplies the estimated $8 trillion in infrastructure that Asia needs to ensure that it will be more successful than the many national and multilateral development banks that have made the same and similar promises.

And while people like Mahbubani might claim that China's "spectacular success with developing world-class infrastructure in record time" gives us reason to expect success for the AIIB, the evidence suggests no such thing. While Beijing certainly has in recent years lent aggressively to developing countries, and many analysts at first hailed what they called a novel approach and hard-headed business intelligence, every time a new country, or group of countries, first begins to invest abroad aggressively, we hear exactly the same sorts of things.

But every time, as soon as global economic conditions turn, we discover that this most recent wave of investment has been successful largely because of its willingness to misprice risk. Inevitably it is followed by defaults and a very dramatic change in approach. It is too early to tell if China will prove to be the sole deviation from historical precedence, but a very depressing article three weeks ago in the Financial Times suggests that when it comes to lending to developing countries, China's experiences are turning out to be remarkably consistent with those of its predecessors. It is not easy to lend large amounts to developing countries and get repaid.

This is such a heavily politicized subject that for many people skepticism about the transformative power of the AIIB is not the result of better or worse logic, deeper or shallower knowledge of history, or a more or less faulty understanding of how the balance of payments works. It is simply the result of whether or not one is hostile to the idea of China's rise.

In fact most of the debate about China in the last decade has been held hostage to this absurd idea, even after the past decade has proven conclusively that a certain amount of skepticism is not only sensible, but would have resulted in much better policies and a less dangerously imbalanced economy. We have plenty of history to suggest that we should be skeptical about the importance of the AIIB and the role it is likely to play.

It is always a good thing when more money is devoted to developing infrastructure in poor countries, but there is a long history of national and multilateral development institutions that have pledged to do a better job than their predecessors. They have all discovered, however, that this is never as easy as it seems. The AIIB has not explained exactly how it plans to channel money into developing countries while avoiding the two big problems its predecessors have always faced: how to ensure that the money is not wasted, and how to channel large amounts of debt financing without creating financial distress and non-repayment risk. For now, for all the excited chatter, the AIIB is an institution laden with symbolic value, and little else.

Interpreting information in China's stock markets [Week 8]

By Michael Pettis · July 17, 2015 · Uncategorized · 92 Comments

Anyone who reads my blog is already likely to know the story. Until the market peaked on June 12, with the Shanghai Composite at 5,178, China had experienced a stock market boom that saw the Shanghai index rising in what seemed like a straight line by more than 135% in one year. The boom seemed almost inexplicable from a fundamental point of view. The market soared as growth expectations for the Chinese economy fell, corporate profitability was squeezed, and banks, who dominate the index, saw a sharp rise in NPLs. What's more, during this period it was increasingly clear that China's declining GDP growth was still overly reliant on excessively rapid credit growth, and that to get control of the latter the former would have to drop a lot more.

Although the market peaked in mid-June, the panic really began some time in the first week of July (July 7 is now being referred to by some as China's "Black Tuesday"), by which time, however, the market had already lost nearly one third of its value. Since late June Beijing had implemented a series of measures to stop the decline, none of which had the desired effect, and by the weekend of July 4-5 there was a sense of complete desperation as the regulators reached for wholly unprecedented attempts to control the fall.

The stock market panic seems to have ended on July 9, when the Shanghai markets closed up 5.8% on the day, followed by strong gains the following Friday and Monday, but Tuesday's 3.0% decline set hearts fluttering again, and the nervousness did not abate over the next three days as stocks continue to rise, but not without drama. For now I think we can safely say the panic is finally over, but none of the fundamental questions have been resolved and I expect continued volatility. Because I also think the market remains overvalued, however, I have little doubt that we will see at least one more very nasty bear market.

Either way the panic and the policy responses have opened up a ferocious debate on China's economic reforms and Beijing's ability to bear the costs of the economic adjustment. Among these costs are volatility. Rebalancing the economy and withdrawing state control over certain aspects of the economy, especially its financial system, will reduce Beijing's ability to manage the economy smoothly over the short term but it may be necessary in order to prevent a very dangerous surge in volatility over the longer term.

Sunday's *Financial Times* included an article with the following:

Critics of the measures unleashed by Beijing last week argue that they point to a fundamental tension at the heart of China's political economy that a free-floating renminbi would test even more

severely. The ruling Chinese Communist party, they argue, is ultimately incapable of surrendering control of crucial facets of the country's economic and financial system. As one person close to policymakers in Beijing puts it: "The problem with this system is that it cannot tolerate volatility and markets are all about volatility."

It's not just that markets are about volatility. It is that volatility can never be eliminated. Volatility in one variable can be suppressed, but only by increasing volatility in another variable or by suppressing it temporarily in exchange for a more disruptive adjustment at some point in the future. When it comes to monetary volatility, for example, whether it is exchange rate volatility or interest rate and money supply volatility, central banks can famously choose to control the former in exchange for greater volatility in the latter, or to control the latter in exchange for greater volatility in the former.

Regulators can never choose how much volatility they will permit, in other words. At best, they might choose the form of volatility they least prefer, and try to control it, but this is almost always a political choice and not an economic one. It is about deciding which economic group will bear the cost of volatility.

But one way or another there will be an enormous amount of volatility within the Chinese economy, not just because it is a relatively poor developing country, which have always been more volatile economically than advanced countries, but also because it is so highly dependent on investment to generate growth. Hyman Minsky argued that economies driven by investment are extremely volatile and overly susceptible to changes in sentiment, and he is almost certainly right.

During the market panic I posted a number of short (1,500 character maximum) messages for my clients on a service available to them through Global Source, who administers my newsletter. I thought in this blog entry I would reproduce the July 8-10 messages in their entirety because they focus on a technical aspect of the Chinese markets that I think is extremely important to understand if we want to understand why volatility is not going to go away. The key point is to distinguish between the types of investment strategies that investors follow (which I discuss more explicitly in my 2013 book on China and in a November 24, 2013, blog entry) and to understand the different ways in which they interpret new information.

The more widely dispersed the investment strategies, and the greater the range of interpretations by which new information is assessed, the more stable a market is likely to be. In China not only is the market wholly speculative, for the reasons I discuss in the blog entry, but even among speculators there seems to have been a dramatic convergence in the way they interpret information. Because this has only been reinforced by the recent behavior of the regulators, it is almost inconceivable to me that we will not see more highly disruptive movement in the Chinese stock

markets:

Here are the July 8-10 short messages I posted to clients:

July 8 – China's markets are unpredictable but mechanical

China's Spinal Tap stock market is a volatility machine whose every knob has been turned to eleven. Value investors lack the tools they need to project or value cash flow, and so cannot play their stabilizing role no matter what policy enticements are implemented. Policy interventions undermine the regulatory stability that value investors crave, and because the many interventions include attempts to suppress the disruptive impact of shocks, a powerful and poorly-understood consequence is, paradoxically, to magnify the impact of especially large disruptive shocks. With already high expected volatility mechanically jacked up by perhaps the highest margin levels ever recorded, and by the popularity of the investment "strategy" of riding what everyone knows to be a bubble (and of course bailing out just before it bursts), and the events since Friday should be easy to understand, if no less depressing.

If I had to bet I'd bet that a desperate Beijing will wheel out enough firepower eventually to stabilize the markets, but as I describe in my 2001 book, *The Volatility Machine*, many years of one-way price movement (the 2007-08 stock market disaster being among the few widely-shared exceptions), has left China with the typical developing-country national balance sheet and financial system in which automatic stabilizers are rare and sharply self-reinforcing mechanisms common.

It is important to understand just how mechanical the market collapse has been. By "mechanical" I don't mean, unfortunately, that if you're smart enough you can figure out where it is going. You can, however, figure out what might matter and how different outcomes will affect the economy. You should also understand that a recovering market is likely to be highly path-dependent, although much less so should it fall much further.

July 8 – What policies can stabilize the market?

We must avoid the tendency to think of interventions aimed at stabilizing markets as being independent of the structure of the market. In my Peking University seminar I warn my students that because most of the world's leading economists have been directly or indirectly trained in a tradition that French social scientists, although not French economists, refer to ominously as "Anglo-Saxon", there is a tendency for us, even Beijing policymakers, to default automatically to an American or British context.

The Chinese stock markets however operate under very different conditions. In a speculative

market with few value investors, policies aimed at boosting prices by increasing the present value of discounted future cash flows are largely irrelevant. Given economic expectations that were already weak, and can only have been weakened further after the events of the past few days, prices are still far too high to justify purchasing on value unless interest rates drop much further.

This is why I'm not especially impressed by policies, like interest rates cuts or attempts to cut the cost of stock purchases that are implicitly aimed at encouraging value investors to step up their purchases. We know that increasing the economic value of expected cash flows can cause speculators to step up their purchases, but it is important to understand why. Speculators will purchase in response to policies directed at increasing economic value only if they anticipate a consequent increase in buying by value investors.

July 8 – What might cause speculators to buy?

Broadly speaking speculators buy or sell assets for two reasons:

- Some event is expected to cause, either for technical or fundamental reasons, a near-term change in the supply of or demand for an asset large enough to affect prices, even if only temporarily, and they transact in anticipation of that price change. This event can include technical factors, for example, a change in margin account rules, as clearly happened in China last week, or the impact of MSCI inclusion on foreign purchases, which until it was rejected last month was among the most often-cited reasons for buying Chinese stocks. This event can also include fundamental factors, for example higher-than-expected growth may set off speculative buying if it is expected to increase purchases by value investors.
- Some event, in China the most obvious of which is government signaling, provides a reason for speculators to assume a collective response. Even if the signal has no economic value, for example an editorial in the People's Daily extolling share purchases as patriotic, speculators will assume that the editorial sets off a self-consciously collective response that becomes self-reinforcing.

There are at least two important qualities that characterize speculative markets. For a value investor the decision to buy or sell depends on his interpretation of a piece of news, while for a speculator it depends on his expectation of the collective interpretation of a piece of news. The former can range widely while the latter tends to converge very quickly. This means that while small changes in the way news is interpreted or in market sentiment will have a limited impact on overall supply or demand in a market dominated by value investors, a market dominated by speculators is extremely sensitive to changes in the way news is interpreted or in market sentiment.

July 8 – What can the government do to move markets move in China?

- Because China's market is highly speculative, policies that are directed at improving the fundamental value of stocks will have almost no impact on market prices.
- Uncertainty is currently so high that it will have sharply undermined the ability of speculators to agree collectively on how to interpret signals, or on how to judge the impact that technical or fundamental events will have in causing supply to drop or, more importantly, demand to rise.
- Because the obverse policies are blamed for setting off the collapse, some policymakers believe that relaxing rules on margin, or lowering its cost, will have the reverse impact and will stabilize the market. It will not. Such policies can accommodate speculative purchases, but they cannot start the purchasing process until speculators are convinced.
- Speculators will only return to the market if they can be credibly convinced that prices are going to rise, or are credibly convinced that a floor has been established. (The risk is that this might set the stage for another sharp rally.)
- Recent events have seriously undermined the credibility of government signaling.
- I suspect, consequently, that the only way to create a credible floor, or to create credible expectations of rising prices, is by "brute force". Beijing must force entities under its control, or entities it can influence, to buy shares until all uncertainty is removed.

July 8 – Does the Chinese stock market crash matter?

It is hard to argue that the stock rally had any significant positive economic impact, so some analysts argue that it collapse will not impact the economy either.

This may be true in a direct sense. But there are three important ways the stock market decline might matter. The first is direct. The combination of the rally and the crash may represent a significant shift in wealth from poorer Chinese to richer Chinese. This must cause total consumption to drop, although the amount will depend on the magnitude of the shift, of which we have no information.

Second, and indirectly, if the market crash causes perceptions of economic uncertainty to rise, households might respond by cutting back on consumption.

Third, and also indirectly, if the crash undermines Beijing's credibility, or confidence in its ability to manage the economy, it could undermine the financial sector, which relies very heavily on the high credibility Beijing enjoys. This is the least likely but most damaging potential impact.

Of course the longer it takes for Beijing to stabilize the market the more its credibility is likely to be undermined. In a worst case scenario Chinese households may blame their losses on their having

invested in the stock market because of what is widely perceived as very active cheerleading by policymakers.

July 9 – Should the government have intervened?

After a terrifying beginning with Shanghai down 3.2%, markets turned around dramatically and Shanghai closed up 5.8% on the day. But 194 more companies suspended trading today. Over half of all companies now don't trade. As I suggested yesterday, it wasn't the subtle measures that proved most effective but rather outright bans on selling and large concerted buying, including share buyback pledges from nearly 300 SOEs.

Is this the end of the "correction"? Maybe, but only the foolish know for sure. I still think Beijing will eventually halt the slide and set off another rally, but not because there is value at these prices. The rally has always been about excess liquidity and the widespread belief that Beijing's guarantee now extends to the stock market, and I think with last week's and this week's intervention Beijing has invested too much of its credibility to back down.

But the intervention hasn't been without controversy. In an angry article in *CaiXin* Ling Huawei argues that there had been no threat to the country's financial system, and that "only a systemic risk that threatens financial stability justifies a government bailout". Yesterday I pointed out that unless value investors are confident that they have reliable information and understand the rules of the game, they will refuse to participate. Beijing's intervention, Ling argues, can only have undermined whatever confidence there might have been.

But intervene they did, so now unless Beijing can disentangle the market's performance and its own credibility, the choices seem limited. Is disentangling possible? I don't know, but if it is, someone very senior will have to take responsibility for some pretty big decisions.

July 9 – Why do financial crises happen?

- Financial crises are analogous to bank runs. They occur when the liquidity needed to bridge the gaps created by mismatches between assets and liabilities suddenly becomes unavailable. Insolvency by itself is not a sufficient condition, and only leads to a financial crisis when it causes creditors to refuse to roll over liabilities that cannot be serviced out of assets.
- Financial crises can be triggered by a wide variety of events, some seemingly trivial, but they require the following conditions:
- Significant asset and liability mismatches within the country's balance sheet and financial system, usually exacerbated by highly pro-cyclical mismatches that reinforce exogenous shocks

(because highly pro-cyclical entities outperform during periods of economic expansion, there is a natural sorting process in which the longer such periods last, the more a country's financial system will be tilted towards pro-cyclicality).

- A period in which mutually reinforcing slower-than-expected economic growth and faster-than-expected credit growth create rising uncertainty about the allocation of debt servicing costs.
- A transmission mechanism from the trigger event into the financial system, for example a fall in the price of assets can cause a surge in non-performing loans, or it can cause households to cut back on consumption.
- When these conditions are in place, even a small shock can directly or indirectly (in the latter case by forcing agents to respond adversely to a rise in uncertainty), trigger a self-reinforcing series of events that spiral out of control.

July 9 – Does size matter?

The Chinese stock market panic is unlikely to trigger a financial crisis in China, but not, as many argue, because of its relatively small size and narrowly dispersed ownership. What matters is that although nationally there are significant mismatches between assets and liabilities among individual institutions and within particular sectors of the financial services industry, and these mismatches are highly pro-cyclical, China is protected from crisis by its relatively closed capital account, its high level of reserves, and most importantly of all, the fact that much of the mismatch between assets and liabilities are resolved on a system-wide basis through Beijing's implicit or explicit guarantee of most components of the country's financial system.

China is protected from the risk of financial crisis, in other words, mainly by Beijing's credibility, which remains very high. Without this credibility, more than three decades of rapid growth accommodated by a financial system designed for credit expansion has left the country with what would otherwise be an extraordinarily vulnerable balance sheet.

Inevitably as the country unwinds the balance sheet mismatches, debt has grown more quickly than expected and the economy more slowly in a mutually reinforcing process. This will continue as Beijing rebalances the economy, temporarily increasing the country's underlying vulnerability until it is able to rein in credit growth and resolve the uncertainty about how the growing gap between debt servicing costs and debt servicing capacity is assigned. As long as the credibility of the implicit Beijing guarantee is maintained, however, I think that while China suffers from excess debt, it is unlikely to suffer from balance sheet instability.

There are two important implications. First, policymakers must ensure that protecting

Beijing's credibility is a priority. Second, investors must ensure that they evaluate changes in credibility accurately.

July 10 – A collective decision to rally

With the market up 5.2% by 1 pm, I think the "correction" is over. Analysts have pointed out the many reasons for skepticism, most importantly, I think, that over half of the listed companies have suspended trading in their shares. The full buying power that Beijing can command, plus the return of speculative buying, has been concentrated on a sharply reduced supply of shares.

So how can we take the market's revival seriously? Much of the buying was forced, and there were formal and informal restrictions on selling. One of my Chinese friends complained (although he went long early Thursday afternoon): "It is illegal to sell and illegal not to buy, so how can prices not go up?"

In other words neither fundamental reasons (i.e. improvements in value) nor even technical reasons (i.e. more demand than supply) justify confidence that the panic is over and prices will rise next week. It was as if prices were simply legally required to rise, and so they did, and because this legal requirement cannot last, while technical imbalances still favor selling, you might think that the panic is far from over.

But this is a speculative market in which the way information is interpreted has converged tremendously, and it seems that the reaction of the regulators and two good days have provided strong enough a signal to allow a collective interpretation. If today were not Friday, I would bet heavily that prices would surge again tomorrow, but because it is Friday, Chinese investors have two days in which to let the confusion and panic of the past two weeks gnaw away at their confidence in their collective response. If Beijing keeps a tight lid on the news and prevents anything from undermining this perception, I suspect that prices will defy the technical imbalance and rise all week.

July 10 – The Shanghai Composite and the Keynesian beauty contest

For months I have been arguing that the most worrying source of volatility in the Chinese stock market was not its speculative nature nor even the unprecedented use of margin. It was the large share of Chinese investors whose strategy was to ride what they believed to be a bubble. This to me is why the fall was so terrifyingly swift and so hard to contain.

Why? Because a well functioning market requires a wide range of investment strategies and, even among investors with similar strategies, it requires information to be interpreted in a wide range of ways. If investment strategies converge, the impact of new information also converges.

In China we saw a remarkable convergence in investment strategies and in the way information was interpreted. As Keynes explained with his beauty contest example, it is as if while players differed as much as ever on how they define beauty, they agree on how beauty is fashionably defined and know instantaneously of any change in fashion. The consequence is that they always select the same "winner", and every change in fashion causes an immediate change in selection. This can only cause volatility to explode.

It is too early to say, but the extent and ferocity of the market break and the panicked response of the regulators may result in even further convergence. If the rally is restored I have little doubt that the regulators will take steps to try to limit volatility. Margin, for example, will never be allowed to reach the extent that it had (and this has implications for credit growth, by the way), and a little sand might be thrown into the machinery, perhaps by raising transaction taxes or forcing wider bid-offer spreads. But we shouldn't overestimate their impacts. If Beijing is able credibly to revive the rally – a big "if" – we will want to watch closely whether once again most investors are cynically riding what they believe to be a bubble.

What next?

So where do things stand now? It is pretty clear to me that Chinese investors recognize that they have collectively decided that the correction has ended and that prices are going to rise. In a speculative market this is all it takes for prices to rise.

But while this recognition seems quite solid, in fact there are a number of factors that can quickly undermine it, and what matters is not new information the suggests prices must fall but rather just new information that undermines confidence in the strength of the consensus. This may not seem as important a distinction but in fact it is. It doesn't necessarily take bad news to cause prices to fall again. News that undermines our confidence that there is widespread agreement about our collective consensus is enough to do that.

What worries me most is that many of the measures employed by the regulators to halt the panic are unorthodox enough, to put it mildly, that they can introduce all kinds of new convexities and implied options that we don't fully understand. As we begin to recognize and understand them, however, these might be enough to undermine confidence in our widespread agreement about having reached a consensus.

I realize this is very abstract, but it might help make things a little clearer to consider one of the best-known of the measures employed over the desperate weekend of July 4-5. This measure is described in a recent article in *CaiXin*, which describes a meeting held by the CSRC involving the heads

of China's 21 largest brokers:

After the sit-down, the firms announced in a joint statement that to stabilize the stock market they would spend at least 120 billion yuan combined to buy exchange-traded funds linked to blue-chip stocks listed on the Shenzhen and Shanghai bourses. Moreover, the firms pledged to hold all stock that had been bought with their own money until the index reached at least 4,500 points.

The CSRC ordered the firms to hand over that 120 billion yuan to the China Securities Finance Corp. (CSF), a four-year-old agency co-founded by the country's major securities and commodity exchanges and clearinghouse to finance brokerage firms' margin trading and short-selling business, the person said. They were told the money would be used for stock purchases.

At the meeting, the person said, a disagreement arose over how the securities firm's funds would be managed. One executive proposed forming a committee with representatives from securities firm to make all investment decisions, but that idea was rejected.

All money transfers from the firms were to be completed by 11 a.m. the following Monday, the person who attended the meeting said. The firms complied. Then on July 8, as part of the CSRC strategy, the CSF said it would set aside 260 billion yuan to finance stock purchases by the 21 securities firms.

Why would this matter? Because if brokers are holding large amounts of shares that they are eager to sell, but cannot do so until the index hits 4,500, this creates a barrier, or at least a speed bump, at around 4,500 whose impact as the market races up is hard to determine. This acts effectively as a kind of call option that investors must give away any time they buy stocks while the index is below 4,500.

Here is how I tried to explain it in the discussion following one of the messages I posted above:

How meaningful it is that brokers might not be permitted to sell until the index is above 4,500? If this is a serious constraint, it means that if you buy the index (and this is also true of individual stocks but messier to figure out), you are effectively giving away a call option struck at 4,500.

So how would you value this short position in the implied call? Put differently, would you buy at 4,090 if you thought your upside were capped at 4,500 (up 10%) and your downside "capped" by these put options you correctly see the government giving away? Would you buy at 4,290 (up 5% to get to 4,500)? I have no idea, and I suspect the regulators don't either, but I am pretty sure you won't ever pay 4,500 until you think the implied option is about to expire, in which case you'd buy as much

as you could get your greedy hands on.

With all that has happened this market could be jam-packed with implicit options, which means trading patterns are going to be very hard to figure out at first. I still think the panic is over – for now, anyway – but mostly because we aren't smart enough to be uncertain about what is being signaled. On the other hand it is 1:30 a.m. in Beijing, so maybe I am getting way too metaphysical about it.

As an aside, my reference to "these put options you correctly see the government giving away" is in response to a client's comment that Beijing's determination to keep the market from falling creates a series of implied put options which investors are long, but there is enough uncertainty about these implied options that it is hard to know how they will impact the market and, more importantly, when they will be "withdrawn". There are implied options everywhere in this mess of orthodox and unorthodox measures to prop up the markets, and their impact must be to distort convexity in complex ways and to increase volatility, not because of their direct impact on the market but rather because they are complex enough to cause investors to wonder about the robustness of the collective investor-base interpretation.

Protecting Beijing's credibility

In this market, you buy because you believe that everyone has agreed on the collective interpretation of government signaling. Anything that undermines the confidence you have in the collective interpretation must undermine your decision to buy, and in fact because everyone is watching everyone else, at some point, this can become a collective decision to sell.

Before closing, I want to expand on this part of one of the July 9 messages I sent out to my clients:

China is protected from the risk of financial crisis, in other words, mainly by Beijing's credibility, which remains very high. Without this credibility, more than three decades of rapid growth accommodated by a financial system designed for credit expansion has left the country with what would otherwise be an extraordinarily vulnerable balance sheet.

I discuss this more in a July 14 OpEd piece I did for the WSJ where I argued that:

In many ways, China is primed for an economic crisis. As the economy performs below expectations quarter after quarter while the debt burden surges, slow growth and rising debt are being tied together in a mutually self-reinforcing process—almost the definition of an unstable balance sheet. There is so much pressure within the financial system right now that twice in the past

two years attempts at deregulation have been followed by market disruptions.

We shouldn't have expected otherwise. History suggests that developing countries that have experienced growth "miracles" tend to develop risky financial systems and unstable national balance sheets. The longer the miracle, the greater the tendency. That's because in periods of rapid growth, riskier institutions do well. Soon balance sheets across the economy incorporate similar types of risk.

It is not just developing countries that do this, of course. In 1978, during a lecture at NYU, Paul Volcker described the US economy in a way that is very familiar and almost standard for central bankers:

A long period of prosperity breeds confidence, and confidence breeds new standards of what is prudent and what is risky. For a while, the process is self-reinforcing, sustaining investment and risk-taking. But it may also contain some of the seeds of its own demise: eventually natural limits to some of the trends supporting the advances are reached and the advance cannot be sustained so easily…Financial positions are extended and the economy has become more vulnerable to adverse and unexpected developments.

This process is far more technical and systemic than most people realize, and more than is implied in Volcker's speech. The point is that during expansionary periods it is normal for economic agents to find themselves mismatching assets and liabilities in such a way that the financing gap – the gap between debt-servicing costs and cash flows generated by long term investment – can easily be refinanced by eager bankers (who have learned that excessive optimism is rewarded), in ways that systematically increase profitability. The whole financial system tends to incorporate these kinds of mismatches.

During the contraction phase, however, it suddenly becomes costlier to refinance the gap, and the practice of mismatching assets and liabilities causes debt, not profits, to rise. If the mismatch is severe enough, the balance sheet must lead almost inevitably to crisis – unless government credibility is high enough to guarantee that the mismatch will always be refinanced and the accompanying surge in debt can be absorbed (usually by the government).

That is why defending Beijing's credibility is key. Conditions will deteriorate, growth will slow more than expected, debt will rise faster than expected, and the refinancing gap will create huge uncertainty about its resolution. Beijing must consequently resist any temptation to expend credibility, which includes taking on debt, unless the alternative is a financial system collapse, or, as Ling Huawei put it in his *Caixin* article, "only a systemic risk that threatens financial stability justifies a government bailout".

Two years ago almost to the day we saw a similar sequence, in which minor financial-sector reform was followed by explosive growth in leverage as banks responded "creatively" to the reform. When the regulators tried to reverse the rapid credit growth they accidently triggered the credit crunch of June 20, 2013, in which interbank rates soared to 30% (and probably much higher).

The financial system is structured in a way that makes it increasingly difficult to withstand the slowing growth and rising debt burden that is all but inevitable over the next 3-4 years. The historical precedents suggest that Beijing will be overly confident about its ability to manage rising financial instability, but this creates the risk that at some point it will not be able to do so. This is the real cost of the stock market debacle, both as the stock market soared, largely on the back of the implicit put option Chinese investors thought Beijing had granted them, and even more so when Beijing responded to the panic by committing its full credibility to the existence of this put. As I explained in the WSJ article:

The next two to three years are vitally important. In the best case scenario, Beijing will continue to rebalance its economy and to restructure the country's balance sheet and financial system. Yet this cannot happen except under much slower growth. Because the debt will burden will continue to rise for at least another four or five years, Beijing will be tested more than ever. To defend itself from crisis, it must become increasingly stingy with its protection.

When are markets “rational”? [Week 8]

By Michael Pettis ·November 24, 2013 ·Market structure ·53 Comments

Last month’s award of the Nobel Price in economics set off a great deal of chortling because one of the three recipients, Eugene Fama, received the award for saying that markets are efficient at capital allocation and another, Robert Schiller, received the award for saying they are not. Typical is this response by John Kay:

The Royal Swedish Academy of Sciences continues to astonish the public when awarding the Nobel Memorial Prize in Economics. In 2011 it celebrated the success of recent research in promoting macroeconomic stability. This year it pays tribute to the capacity of economists to predict the long-run movement of asset prices.

People with knowledge of financial economics may be further surprised that this year Eugene Fama and Robert Shiller are both recipients. Prof Fama made his name by developing the efficient market hypothesis, long the cornerstone of finance theory. Prof Shiller is the most prominent critic of that hypothesis. It is like awarding the physics prize jointly to Ptolemy for his theory that the Earth is the centre of the universe, and to Copernicus for showing it is not.

To me, much of the argument about whether or not markets are efficient misses the point. There are conditions, it seems, under which markets seem to do a great job of managing risk, keeping the cost of capital reasonable, and allocating capital to its most productive use, and there are times when clearly this does not happen. The interesting question, in that case, becomes what are the conditions under which the former seems to occur.

I wrote about this most recently in my most recent book about China, *Avoiding the Fall*, and I think it might be useful to recap that argument. I argued in the book (based on some articles I published in 2004-05) that an “efficient” market is one that has an efficient mix of investment strategies. Without this efficient mix, the market itself fails in its ability to allocate capital productively at reasonable costs.

Investors make buy and sell decisions for a wide variety of reasons, and when there is a good balance in the structure of their decision-making, financial markets are stable and efficient. But there are times in which investment is heavily tilted toward a particular type of decision, and this can undermine the functioning of the markets.

To see why this is so, it is necessary to understand how and why investors make decisions. An efficient and well-balanced market is composed primarily of three types of investment strategies—fundamental investment, relative value investment, and speculation—each of which plays an important role in creating and fostering an efficient market.

- Fundamental investment, also called value investment, involves buying assets in order to earn the economic value generated over the life of the investment. When investors attempt to project and assess the long-term cash flows generated by an asset, to discount those cash flows at some rate that acknowledges the riskiness of those projections, and to determine what an appropriate price is, they are acting as fundamental investors.
- Relative value investing, which includes arbitrage, involves exploiting pricing inefficiencies to make low-risk profits. Relative value investors may not have a clear idea of the fundamental value of an asset, but this doesn't matter to them. They hope to compare assets and determine whether one asset is over- or underpriced relative to another, and if so, to profit from an eventual convergence in prices.
- Speculation is actually a group of related investment strategies that take advantage of information that will have an immediate effect on prices by causing short-term changes in supply or demand factors that may affect an asset's price in the hours, days, or weeks to come. These changes may be only temporarily and may eventually reverse themselves, but by trading quickly, speculators can profit from short-term expected price changes.

Each of these investment strategies plays a different and necessary role in ensuring that a well-functioning market is able keep the cost of capital low, absorb financial risks, and allocate capital efficiently to its more productive use. A well-balanced market is relatively stable and allocates capital in an efficient way that maximizes long-term economic growth.

Each of the investment strategies also requires very different types of information, or interprets the same information in different ways. Speculators are often "trend" traders, or trade against information that can have a short-term impact on supply or demand factors. They typically look for many opportunities to make small profits. When speculators buy in rising markets or sell in falling ones—either because they are trend traders or because the types of leverage and the instruments they use force them to do so—their behavior, by reinforcing price movements, adds volatility to market prices.

Different Investors Make Markets Efficient

Value investors typically do the opposite. They tend to have fairly stable target price ranges based on their evaluations of long-term cash flows discounted at an appropriate rate. When an asset trades below the target price range, they buy; when it trades above the target price range, they sell.

This brings stability to market prices. For example, when higher-than-expected GDP growth rates are announced, a speculator may expect a subsequent rise in short-term interest rates. If a significant number of investors have borrowed money to purchase securities, the rise in short-term rates will raise the cost of their investment and so may induce them to sell, which would cause an immediate but temporary drop in the market. As speculators quickly sell stocks ahead of them to take advantage of this expected selling, their activity itself

can force prices to drop. Declining prices put additional pressure on those investors who have borrowed money to purchase stocks, and they sell even more. In this way, the decline in prices can become self-reinforcing.

Value investors, however, play a stabilizing role. The announcement of good GDP growth rates may cause them to expect corporate profits to increase in the long term, and so they increase their target price range for stocks. As speculators push the price of stocks down, value investors become increasingly interested in buying until their net purchases begin to stabilize the market and eventually reverse the decline.

Relative value investors or traders play a different role. Like speculators, they tend not to have long-term views of prices. However, when any particular asset is trading too high (low) relative to other equivalent risks in the market, they sell (buy) the asset and hedge the risk by buying (selling) equivalent securities.

A well-functioning market requires all three types of investors for socially useful projects to have access to appropriately-priced capital.

- Value investors allocate capital to its most productive use.
- Speculators, because they trade frequently, provide the liquidity and trading volume that allows value investors and relative value traders to execute their trades cheaply. They also ensure that information is disseminated quickly.
- Relative value trading forces pricing consistency and improves the information value of market prices, which allows value investors to judge and interpret market information with confidence. It also increases market liquidity by combining several different, related assets into a single market. When buying of one asset forces its price to rise relative to that of other related assets, for example, relative value traders will sell that asset and buy the related assets, thus spreading the buying throughout the market to related assets. It is because of relative value strategies that we can speak of a unified market for different assets.

Without a good balance of all three types of investment strategies, financial systems lose their flexibility, the cost of capital is likely to be distorted, and the markets become inefficient at allocating capital. This is the case, for example, in a market dominated by speculators. Speculators focus largely on variables that may affect short-term demand or supply for the asset, such as changes in interest rates, political and regulatory announcements, or insider behavior.

They ignore information like growth expectations or new product development whose impact tends to reveal itself only over long periods of time. In a market dominated by speculators, prices can rise very high or drop very low on information that may have little to do with economic value and a lot to do with short-term, non-economic behavior.

Value investors keep markets stable and focused on profitability and growth. For value investors, short-term, non-economic variables are not an important or useful type of information. They are more confident of their ability to discount economic variables that develop and affect cash flows over the long term. Furthermore, because the present value of future cash flows is highly susceptible to the discount rate used, these investors tend to spend a lot of effort on developing appropriate discount rates. However, a market consisting of only value investors is likely to be illiquid and pricing-inconsistent. This would cause an increase in the required discount rate, thus raising the cost of capital for borrowers.

Because each type of investor is looking at different information, and sometimes analyzing the same information differently, investors pass different types of risk back and forth among themselves, and their interaction ensures that a market functions smoothly and provides its main social benefits. Value investors channel capital to the most productive areas by seeking long-term earning potential, and speculators and arbitrage traders keep the cost of capital low by providing liquidity and clear pricing signals.

Where Are the Value Investors?

Not all markets have an optimal mix of investment strategies. China, for example, does not have a well-balanced investor base. There is almost no arbitrage trading because this requires low transaction costs, credible data, and the legal ability to short securities. None of these is easily available in China.

There are also very few value investors in China because most of the tools they require, including good macro data, good financial statements, a clear corporate governance framework, and predictable government behavior, are missing. As a result, the vast majority of investors in China tend to be speculators. One consequence of this is that local markets often do a poor job of rewarding companies for decisions that add economic value over the medium or long term. Another consequence is that Chinese markets are very volatile.

Why are there so few value investors in China and so many speculators? Some experts argue that this is because of the lack of investors with long-term investment horizons, such as pension funds, that need to invest money today for cash flow needs far off in the future. Others argue that very few Chinese investors have the credit skills or the sophisticated analytical and risk-management techniques necessary to make long-term investment decisions. If these arguments are true, increasing the participation of experienced foreign pension funds, insurance companies, and long-term investment funds in the domestic markets, as Beijing has done with its QFII program, is certainly seems like a good way to make capital markets more efficient.

But the issue is more complex than that. China, after all, already has natural long-term investors. These include insurance companies, pension funds, and, most important, a very large and remarkably patient potential investor base in its tens of millions of individual and family savers, most of whom save for the long

term. China also has a lot of professionals who have trained at the leading U.S. and UK universities and financial institutions, and they are more than qualified to understand credit risk and portfolio techniques. So why aren't Chinese investors stepping in to fill the role provided by their counterparts in the United States and other rich countries?

The answer lies in what kind of information can be gathered in the Chinese markets and how the discount rates used by investors to value this information are determined. If we broadly divide information into "fundamental" information, which is useful for making long-term value decisions, and "technical" information, which refers to short-term supply and demand factors, it is easy to see that the Chinese markets provide a lot of the latter and almost none of the former. The ability to make fundamental value decisions requires a great deal of confidence in the quality of economic data and in the predictability of corporate behavior, but in China today there is little such confidence.

How to develop the investor base

Furthermore, regulated interest rates and pricing inefficiencies make it nearly impossible to develop good discount rates. Finally, a very weak corporate governance framework makes it extremely difficult for investors to understand the incentive structure for managers and to be confident that managers are working to optimize enterprise or market value.

And yet, when it comes to technical information useful to speculators, China is too well endowed. Insider activity is very common in China, even when it is illegal. Corporate governance and ownership structures are opaque, which can cause sharp and unexpected fluctuations in corporate behavior. Markets are illiquid and fragmented, so determined traders can easily cause large price movements. In addition, the single most important player in the market, the government, is able—and very likely—to behave in ways that are not subject to economic analysis.

This has a very damaging effect on undermining value investment and strengthening speculation. In the first place, unpredictable government intervention causes discount rates to rise, because value investors must incorporate additional uncertainty of a type they have difficulty evaluating.

Second, it puts a high value on research directed at predicting and exploiting short-term government behavior, and thereby increases the profitability of speculators at the expense of other types of investors. Even credit decisions must become speculative, because when bankruptcy is a political decision and not an economic outcome, lending decisions are driven not by considerations of economic value but by political calculations.

China is attempting to improve the quality of financial information in order to encourage long-term

investing, and it is trying to make markets less fragmented and more liquid. But although these are important steps, they are not enough. Value investors need not just good economic and financial information, but also a predictable framework in which to derive reasonable discount rates. And here China has a problem.

There are several factors, besides the poor quality of information, that cause discount rates to be very high. These include market manipulation, insider behavior, opaque ownership and control structures, and the lack of a clear regulatory framework that limits the ability of the government to affect economic decisions in the long run. This forces investors to incorporate too much additional uncertainty into their discount rates.

Chinese value investors, consequently, use high discount rates to account for high levels of uncertainty. Some of this uncertainty represents normal business uncertainty. This is a necessary component of an economically efficient discount rate, since all projects have to be judged not just on their expected return but also on the riskiness of the outcome. But Chinese investors must incorporate two other, economically inefficient, sources of uncertainty. The first is the uncertainty surrounding the quality of economic and financial statement information. The second is the large variety of non-economic factors that can influence prices.

This is the crucial point. It is not just that it is hard to get good economic and financial information in China. The problem is that even when information is available, the variety of non-economic factors that affect value force the appropriate discount rate so high that value investors are priced out of the market.

Speculators, however, are much more confident about the value of the information they use. Furthermore, because their investment horizon tends to be very short, they can largely ignore the impact of high implicit discount rates. As a result, it is their behavior that drives the whole market. One consequence is that capital markets in China tend to respond to a very large variety of non-economic information and rarely, if ever, respond to estimates of economic value.

During the past decade, Beijing was betting that increasing foreign participation in the domestic markets would improve the functioning of the capital markets by reducing the bad habits of speculation and increasing the good habits of value investing and arbitrage. But it has become pretty clear that this faith was misplaced: the market is as speculative and inefficient as ever. This should not have been a surprise. The combination of very weak fundamental information and structural tendencies in the market—such as heavy-handed government interventions and market manipulation—reward speculative trading and undermine value investing. This forces all investors to focus on short-term technical information and to behave speculatively. In China even Warren Buffett would speculate.

Investors in Chinese markets must be speculators if they expect to be profitable. As long as this is the case, investors will not behave in a way that promotes the most productive capital allocation mechanism in the

market, and such efforts as bringing in foreigners will have no meaningful impact.

What China must do is something radically different. It must downgrade the importance of speculative trading by reducing the impact of non-economic behavior from government agencies, manipulators, and insiders. It must improve corporate transparency. It must continue efforts to raise the quality of both corporate reporting and national economic data. Finally, it must deregulate interest rates and open up local markets to permit arbitragers to enforce pricing consistency and to allow better estimates of appropriate discount rates.

If done correctly, these changes would be enough to spur a major transformation in the way Chinese investors behave by permitting them to make long-term investment decisions. It would reduce the profitability of speculative trading and increase the profitability of arbitrage and value investing, and so encourage a better mix of investors. If China follows this path, it would spontaneously develop the domestic investors that channel capital to the most productive enterprise. Until then, China's capital markets, like those of many countries in Latin America and Asia, will be poor at allocating capital.

When efficient markets become inefficient

But this is not just an issue for China. In the US there have been times when markets seemed efficient and rational, and times when they clearly were not. Of course this cannot be explained by the disappearance of the tools needed by value investors – for example the market for internet stocks seemed rational in the early 1990s and clearly became irrational by the late 1990s, but this did not occur, I would argue, because fundamental investors were suddenly deprived of their analytical tools.

What happened instead, I would argue, is that conditions that led to a too-rapid expansion of liquidity at excessively low interest rates changed the environment in which fundamental investors could operate. As excess liquidity forced up asset prices, the likes of Warren Buffet found themselves unable to justify buying assets and so they dropped out of the market. As they did, the mix of investment strategies shifted until the market became dominated by speculators, and when this happened what drove prices was no longer the capital allocation decision of value investors but rather than short-term expectations of changes in demand and supply factors that characterize a highly speculative market.

This, I would argue, made the US stock market of the late 1990s (and perhaps today, too) "irrational", not because they are fundamentally irrational or inefficient but rather because they can only function efficiently with the right mix of investment strategies. When the mix was altered – and this can happen when liquidity is too abundant, or when a sudden shock undermines the confidence value investors have in their ability to analyze data, or when a political event cause uncertainty to rise so high that value investors are priced out of the market, or for a number of other reasons – the markets stopped functioning as they should.

Perhaps what I am saying is intuitively obvious to most traders or investors, but it seems to me that it suggests that the argument about whether markets are efficient or not misses the point. There are certain conditions under which markets are efficient because the tools needed for each of the various investment strategies are widely available and are credible. When those conditions are not met, because the tools are not available, or when they are temporarily overwhelmed by exogenous events, perhaps because the credibility of those tools are temporarily undermined, or when excess liquidity causes fundamental investors to drop out, markets cannot be efficient.

This is an abbreviated version of the newsletter that went out three weeks ago. Academics, journalists, and government and NGO officials who want to subscribe to the newsletter should write to me atchinfinpettis@yahoo.com, stating your affiliation, please. Investors who want to buy a subscription should write to me, also at that address.

If we don’t understand both sides of China’s balance sheet, we understand neither [Week 10]

By Michael Pettis ·September 1, 2015 ·Balance sheet fragility, Market structure, Rebalancing ·532 Comments

With so much happening in China in the past month it seems that there are a number of very specific topics that any essay on China should focus. I worry, however, that we get so caught up staring at strange clumps of trees that we risk losing sight of the forest. What happened in July this year, and again in August, or in June 2013, or a number of other times, were not unexpected shocks and game changers. China is a dynamic and unbalanced economic system entering into something that we might grandly call a “phase shift”, or less grandly the rebalancing process, and that it is doing so with a great deal of debt structured in a highly inverted way. Anyone who sees China this way would have been able to predict not so much the specific shocks, panics, and credit crunches that we have experienced, but rather that we would of necessity experience a series of very similar shocks.

These debt-related shocks will occur regularly for many more years, and each shock will advance or retard the rebalancing process so that it affects the way future shocks occur. There are only a few broad paths along which the Chinese economy can rebalance, and if we can get some sense of the China’s institutional constraints and balance sheet structures, we can figure what these paths are and how likely we are to slip from one to another.

In order to get Chinas right I would argue that above all we must understand the dynamics of debt, and of balance sheet structures more generally. Four years ago one of my clients sent me a research report by Standard Chartered in which their China analyst warned that while Chinese debt levels were still negligible, there was a chance, small but no longer insignificant, that credit growth could speed up sharply and debt eventually become a significant constraint for policymakers. Things were fine for now, the analyst seemed to suggest, but it was possible that Beijing could mismanage its way into a debt problem.

The overwhelming consensus at the time was that China’s growth model was healthy and sustainable, and would generate GDP growth rates for the rest of the decade that were not much lower than the roughly 10% we had seen during the previous three decades. My client sent me the report along with the comment that the sell-side was finally recognizing that the Chinese economy was at risk. A leading analyst who had long been part of the overwhelming bull consensus was, he said, finally beginning to understand the Chinese economy and the problems it faced.

I wasn’t so sure. It seemed to me that those who understood the Chinese growth model would have also understood that its overreliance on investment to fuel growth, combined with the structure

of its credit markets, extremely low interest rates, and wide-spread moral hazard, made soaring debt almost inevitable, and that debt was already constraining policymaking.

To suggest that this might happen only if the new administration – that of Xi Jinping – mismanaged the process suggested to me that the analyst did not really understand the self-reinforcing relationship between rising debt and slowing growth, and was underestimating how difficult it would be for the new administration to break out of this process. It was going to happen almost no matter what Xi's administration did, and his administration would be very unfairly blamed for incompetence. At the time the research report was written there was an aura of invincibility about policymaking in China, so that warning about possible future policy mismanagement seemed like perfunctory prudence. But every "growth miracle" ends up follow the same credibility path, with what once seemed an unending stream of sophisticated and dedicated leaders at every level of policymaking suddenly and unexpectedly becoming an administration of clunky, incompetent bureaucrats, as foolish as the rest of us. When the miracle country outperforms expectations year after year during the expansion phase, we assume that brilliant policymaking is the cause, rather than– more appropriately, as I will explain– inverted balance sheets. When this same balance sheet inversion subsequently causes the economy sharply to underperform expectations during the contraction period, our admiration for policymakers quickly turns into contempt for their incompetence, usually tinged with bitterness that our forecasts turned out so magnificently wrong.

There is a very big difference between acknowledging that China has a lot of debt and understanding how debt and debt creation are embedded within the financial system, but the Standard Chartered economist, like most, assumed that the former implied the latter. In June the NBR's journal for Asian economic research, *Asia Policy*, put together a roundtable to review Nicholas Lardy's book, *Markets over Mao*. I was one of the five analysts who were asked to participate. Lardy is one of the best informed and most knowledgeable of the economists covering China. In my review I praised his book for the quality of its analysis, and it well deserves that praise.

But there was a fundamental disagreement in how he and I interpreted the data, and this disagreement extends to the majority of analysts covering China. Lardy believes China is in reasonably good shape economically and concludes with optimistic growth forecasts. Based on the same data and absorbing much of his analysis and interpretation of that data (I have been reading Lardy for many years) I expect growth to slow sharply. The current consensus for China's long-term growth, I think, is around 6-7%. Lardy has said "China could grow at roughly 8% a year for another 5 or 10 years." I believe, however, that without a massive and fairly unlikely transfer of wealth from the state sector to the household sector, the average Chinese GDP growth rate under Xi Jinping cannot exceed 3-4%.

So why do we disagree? I suspect that we disagree for the same reason I disagreed with the Standard Chartered analyst, who saw an unsustainable debt burden simply as an unlikely but possible result of policy mismanagement. We disagree, in other words, not on the fundamental data but rather in our understanding of debt dynamics and the constraints the balance sheet can place on an economy's "fundamental" operations.

As I see it there are at least two important disagreements here. The first is about the impact of balance sheet structures on exacerbating volatility. Neither Lardy nor the Standard Chartered analyst spent much time discussing how the balance sheet might affect growth. For me, however, this has been and continues to be a key component of the Chinese economic "miracle", and indeed also of every previous growth miracle. As I said in my review:

Rebalancing is often harder than expected, in other words, not just because of opposition by vested interests, but more importantly because highly inverted balance sheets cause policymakers to overestimate potential growth during the miracle years. But when growth during the rebalancing phase contracts more than expected, the same balance sheet inversion that exacerbated the expansion phase will also exacerbate the slowdown, especially as declining credit quality reinforces, and is reinforced by, slower growth.

I made a similar argument two weeks ago in a *Wall Street Journal* OpEd about why it is so important that Beijing maintain its credibility, which is the only way of ensuring that China's substantial balance sheet mismatches can be managed and rolled over:

History suggests that developing countries that have experienced growth "miracles" tend to develop risky financial systems and unstable national balance sheets. The longer the miracle, the greater the tendency. That's because in periods of rapid growth, riskier institutions do well. Soon balance sheets across the economy incorporate similar types of risk.

…Over time, this means the entire financial system is built around the same set of optimistic expectations. But when growth slows, balance sheets that did well during expansionary phases will now systematically fall short of expectations, and their disappointing performance will further reinforce the economic deceleration. This is when it suddenly becomes costlier to refinance the gap, and the practice of mismatching assets and liabilities causes debt, not profits, to rise.

Financial distress can be worse than a crisis

The second misunderstanding is about why "too much" debt matters. For most economists, the main and even only problem with too much debt is that it might lead to a financial crisis, and that

the fear of crisis undermines confidence and so can cause spending to drop. But while these are important problems, these analysts are mistaken in limiting their concerns to these two issues. While a financial crisis is certainly a risk, the damage debt does to an economy occurs long before any crisis, and for debt to be terribly damaging to an economy's long-term growth doesn't even require a crisis.

In fact one can easily make a case that while a financial crisis may be spectacular, it nonetheless limits the damage caused by excessive debt by forcing a recognition of the losses, only after which does the system begin to allocate capital efficiently. Until this happens, the adverse impact of debt on growth can persist for decades. A case in point is Japan. Japan never had a financial crisis or a banking sector collapse, but from 1990 to 2010 the amount by which its share of global GDP has declined, substantially more than 50%, far exceeds the damage caused to any other country by a financial crisis. Or consider the heavily indebted countries of Europe, like Spain, Italy and Portugal, who have avoided crises, but only in a way that makes it hard to believe that they are better off economically today than they might have been had they suffered a financial crisis in 2009 or 2010.

In my review of Lardy's book I try to explain why debt constrains growth, whether or not it leads to a crisis:

The second way liability structures can constrain growth, while often poorly understood by economists, is actually well understood in finance theory. An economic entity will suffer from "financial distress" if debt has risen so much faster than expected, or growth is so much lower than expected, that economic agents become uncertain about how higher debt-servicing costs will be assigned to different sectors of the economy. This uncertainty forces these agents to react in ways that unintentionally but automatically intensify balance sheet fragility and reduce growth. This uncertainty is intensified if the debt burden rises and falls inversely with debt-servicing capacity, which almost always happens when economic growth is highly credit-intensive, and which seems to be happening in China.

Because this seems so counter-intuitive for many people, it bears repeating. The problem with too much debt is not just that it might cause a crisis. The problem is, first, that debt may be "inverted", i.e. structured in a way that systematically enhances volatility, which means good times become better and bad times worse. This automatic leveraging-up of volatility has seriously adverse impacts on long-term growth. Second, when debt levels are higher than expected and growth lower (one of the nearly inevitable consequences of highly inverted balance sheets), if this divergence causes uncertainty about how the debt servicing will be resolved, the uncertainty itself forces agents to behave in ways that automatically reduce growth and increase balance sheet fragility further.

Lardy's response to my discussion of debt indicates, I think, just how much disagreement

there is here and how easy it is for most economists to misunderstand what I think are the relevant issues – although in fairness it should be noted that he is responding to five separate reviews, and so this is unlikely to be his full response:

Contrary to Michael Pettis's assertion, the book does give some attention to the liability side of the Chinese economy. I note the huge buildup of debt starting in the fourth quarter of 2008 and analyze the challenges this debt poses for financial stability. But in Markets over Mao *I point out that China differs in several critical respects from other countries where rapid debt buildups have precipitated financial crises.*

To begin with, China's national saving rate, reflecting the combined savings of households, corporations, and the government, approaches 50% of GDP, significantly higher than any other economy in recorded history. Like households, countries that save more can sustain higher debt burdens. Second, the vast majority of this debt is in domestic rather than in foreign currency…Thus, its debt does not involve any significant currency mismatch, a major contributor to many financial crises. Third, the majority of this debt has been extended by banks, and China's systemically important banks are financed entirely by deposits rather than through the wholesale market…Finally, the government has enormous scope to further increase bank liquidity should that become necessary. Other factors, too numerous to list here, also suggest that a banking crisis is far from certain in China.

Lardy is not actually disagreeing with anything I said. In fact I fully agree with him that a banking crisis is unlikely, and have written many times that while it is possible, and the risk of its happening should not be dismissed out of hand, I do not think China is likely to have a banking collapse, any more than Japan in the late 1980s and early 1990s was ever likely to have a banking collapse. This doesn't mean however that China's debt burden is irrelevant.

A system of interlocking balance sheets

Japanese GDP growth, after all, did indeed collapse as it was forced to rebalance its debt-laden economy, and this collapse in growth has lasted an astonishing 25 years, with, as I see it, still no end in sight. I would argue that Japan's debt structure explains the 25 years of low growth and will ensure many more years of low growth. During the first wave of excitement over "Abenomics", for example, I wrote on this blog and elsewhere that just trying arithmetically to work through the consequences on the country's debt burden of the success of Abenomics made it hard for me to see how Abenomics could possibly succeed in generating inflation and real growth without an explosion in its current account surplus that the world would not be able to absorb.

It was precisely because of China's debt dynamics that I began arguing in 2006-07, and

contrary to consensus, that China's growth model was unsustainable, that its debt was rising too quickly and could not be reined in without a significant drop in growth, and that China had urgently to rebalance. The same logic made me argue in 2008-09 that China's adjustment was going to be brutally difficult and would entail at least a decade of GDP growth that could not exceed 3-4% on average. And yet I have always also argued that China's banking system, because of an implicit guarantee by Beijing, is very unlikely to collapse, and if one excludes things like the credit crunch in June 2013 or this month's stock market panic, we are unlikely to see a financial crisis unless GDP growth – and with it credit growth – remains at current levels for another 3-4 years at most.

This, for some reason, has been very hard for most economists to grasp – for example the most common "refutation" of my argument and that of other skeptics by so-called "China bulls" is nearly always something along the lines of "He has been predicting a crisis for six years and it still hasn't happened". At first I assumed that these bulls were being – perhaps understandably given how poorly their forecasts had performed – defensively dishonest, but I quickly realized that the same argument was being made by people I respected a great deal who were incapable of such a defense.

It wasn't dishonesty, I realized, but a failure to understand the economy as a dynamic system in which a)imbalances could persist and grow for many years before eventually rebalancing, b)the more rigid the institutional structure of the economy, the deeper imbalances were likely to get, c)the longer they persisted, the more disruptive the rebalancing was likely to be, and the less significant the "trigger" that set it off, and d)there are many ways rebalancing can occur, and the way it actually occurs depends on institutional constraints and rigidities. These economists seem to find it difficult to understand that an economy can have a very unbalanced debt structure, with debt growing at an unsustainable rate, so that there will be a significant reduction in future growth, but a crisis is only one of the ways, and not the only way and certainly not imminent, that this reduction in future growth can happen. It is only when debt is subject to a "sudden stop" that a crisis can be inevitable, but in many if not most cases there is no crisis.

Lardy of course is far more sophisticated than most economists covering China, but while he says that he "does give some attention to the liability side of the Chinese economy", he mostly notes that there is a significant amount of debt, before going on to explain why he thinks a banking crisis is unlikely. He misses what I think are the most important aspects of China's liability side, however, for example: the extent and nature of the balance sheet inversion and how it will exacerbate the economic contraction and convert refinancing risk into unexpected increases in debt, rather than unexpected increases in profits, as occurred during the expansion phase; or whether the reinforcing relationship between unexpectedly high debt and unexpectedly low growth will create enough uncertainty about how debt servicing costs will be allocated that it forces financial distress costs onto the economy.

These are the reasons debt matters, not just whether or not debt must lead to crisis, and the failure to address these reasons is, I think, typical of the kind of attention most economists give to debt, in China and elsewhere. It perhaps explains why economists have such a poor track record in predicting economic reversals – the models they implicitly use make it hard to understand and quantify a dynamic rebalancing process.

It is neither enough to note the amount of debt a country has or to speculate on the probability of a debt crisis. What matters is the systemic role of debt in generating economic activity, the feedback processes that are embedded in debt structures, and the uncertainty that may arise about the resolution of debt-servicing costs. To summarize, there are at least four important issues to consider:

1. It is possible to structure an economy in such a way that excessive debt creation is not a "choice", not even a bad choice, but is instead the automatic consequence of institutional constraints within the economy, and in fact it is very rare that a country experiencing many years of "miracle" growth hasn't created such constraints. This is why it should have been possible to see well over a decade ago that China's excessive indebtedness was inevitable. Economists who warned of the possibility of a deterioration in the balance sheet, but who thought nonetheless that China could avoid this outcome without a major restructuring of its growth model and a significant reduction of its growth rate, were always fundamentally mistaken. Excessive debt levels were never a "possibility". They were a necessity as long as the growth model had not been fundamentally transformed.
2. The structure of the balance sheet, by which I mean the types of mismatches between assets and liabilities when debt levels are high enough, can systematically enhance volatility, so that periods of expansion, real productivity growth, or benign global conditions can result in many years of growth that exceed expectations. This comes however at a cost. First, the same balance sheet structures that enhance growth during the expansion phases will cause growth to slow much faster than expected during the contraction phases, and second, enhanced volatility always reduces value, although not always perceptibly at first, because it increases gapping risk. This process is perhaps counterintuitive to those who think all economic activity is driven by fundamentals, but is well understood by traders and investors, who know how it works in margin buying, leveraged positions, and derivatives that directly quantify leverage and gapping risk.
3. Apart from enhancing volatility, high debt levels can adversely affect growth any time there is uncertainty about how debt servicing costs will be resolved, i.e. to which sectors or groups they will be explicitly or implicitly allocated. This uncertainty will affect the behavior of any sector of the economy to whom the costs might be allocated, in the form of either direct taxes, indirect taxes (e.g. inflation or depreciation), appropriation or expropriation, or wage and consumption suppression.

These sectors, all of whom will alter their behavior in order to protect themselves from bearing the costs of debt, comprise most of the economy, including foreign creditors, small business owners, savers within the banking system or in other forms of monetary assets, workers, wealthy owners of financial and non-financial assets, the agricultural sector, importers and exporters, the mining sector, and many others. The wealthy might take their money out of the country, for example, and creditors might shorten maturities and raise interest rates, business owners might disinvest, the middle class might dis-intermediate savings, workers might organize, local policymakers may engage in protectionist activity, borrowers might invest in riskier projects, banks might reduce the scope of their lending to the most protected sectors, etc. The point is that it is a mistake to assume that the only or main cost of excess indebtedness is a financial crisis.

4. The balance sheet can embed strong feedback mechanisms within the economy that make it almost impossible to predict the growth of debt. The balance sheet mismatches that during the expansion phase could be refinanced in ways that created unexpected profit, can easily lead to rising debt instead as the mismatches become harder to refinance or require government guarantees.

This is why I would argue that once a country's balance sheet reaches a certain critical point, any analysis is fundamentally mistaken if it simply acknowledges the existence of a great deal of debt, or sees a debt buildup as unlikely, or as the consequence of bad policy, when already institutional constraints make it a necessary corollary of growth.

Debt was already a problem in the Chinese growth model more than ten years ago (and is a problem in several advanced economies too, who are going to find it nearly impossible to grow out of their debt burdens without implicit or explicit debt forgiveness). Those analysts who do not understand why this is the case probably do not understand why the balance sheet will continue to be a heavy constraint on Chinese growth and will underestimate the difficulty of the challenge facing Xi Jinping and his administration, which means among other things that they will be too quick to criticize Beijing for failed policies when growth drops below their projections.

But to understand this requires probably a fundamentally different way of understanding economics. The economy is a dynamic system made up, as Minsky said, of interlocking balance sheets, and the way economic growth, exogenous shocks, debt dynamics, income distribution, and ever other dynamic process is intermediated from balance sheet to balance sheet depends both on the structures of the balance sheets and on other institutional constraints that characterize each economy. For those doing "empirical" economics, multiple regression and various kinds of multivariate analysis will no longer march down the royal road of mathematics but will rather be relegated to one of the side-streets, for occasions in which the economy is expected to be heavenly, and in which, as David

Byrnes sang, nothing ever happens.

Instead when we do math we will prefer to think in terms of options, probability theory, and lots of simple algebra, all of which are well suited to understanding both how debt can disrupt an economy in a predictable way and how the threat of that disruption can itself also disrupt the economy in a predictable way. Unfortunately this will make forecasting very difficult – at least the current variety of forecasting, as in: China's GDP will grow by 6.84% in 2016, 5.93% in 2017, 5.77% in 2018, and 5.02% thereafter.

But losing these types of forecasts is not much of a loss. When nothing happens, these forecasts are often quite accurate. When something happens, however, they are always wholly useless, an obvious such case being growth forecasts for China both during the unexpectedly large fiscal stimulus in 2009 and 2010, and later, just as it reached the end of its period of growing imbalances and began the reversal process, around 2011-12.

Inverted balance sheets and doubling the financial bet [Week 10]

By Michael Pettis · January 21, 2015 · Uncategorized · 55 Comments

On Tuesday the National Bureau of Statistics released China's 2014 GDP growth numbers and reported growth consistent with what the government has been widely promoting as the "new normal".

According to the preliminary estimation, the gross domestic product (GDP) of China was 63,646.3 billion yuan in 2014, an increase of 7.4 percent at comparable prices. Specifically, the year-on-year growth of the first quarter was 7.4 percent, the second quarter 7.5 percent, the third quarter 7.3 percent, and the fourth quarter 7.3 percent.

As nearly every news article has pointed out, GDP growth of 7.4% slightly exceeded consensus expectations of around 7.3%, setting off a flutter in the Shanghai Stock Exchange that reversed nearly a quarter of Monday's disastrous drop of almost 8%. But although it exceeded expectations 2014 still turned in the lowest reported GDP growth since 1990, presenting only the second time since growth targeting began in 1985 that the reported number came in below the official target (the first time was in 1989). We will undoubtedly be swamped in the coming days with analyses of the implications, but I read the data as telling us more about the state of politics than about the economic health of the country.

Over the medium term I have little doubt that growth will continue to slow, and that at best we have only completed about one third of the journey from peak GDP growth to the trough. As long as it has debt capacity Beijing, or indeed any other government, can pretty much get as much growth as it wants, in China's case simply by making banks fund local government infrastructure spending.

Most economic analyses of the Chinese economy tend to base their forecasts on the sequence and pace of economic reforms aimed at rebalancing the economy, and on the impact these reforms are likely to have on productivity growth. It may seem contrarian, then, that I forecast Chinese near term growth largely in terms of balance sheet constraints. I am not implying that the reforms do not matter to the Chinese economy. The extent to which the reforms Beijing proposes to implement reduce legal and institutional distortions in business efficiency, eliminate implicit subsidies for non-productive behavior, reorient incentives in the capital allocation process, undermine the ability of powerful groups to extract rent, and otherwise liberalize the economy, will unquestionably affect China's long-term growth prospects.

But I expect that any significant impact of these reforms on short-term growth will largely be the consequence of two things. The first is how reforms will affect the amount, structure, and growth

of credit. The second is how successfully Beijing can create sustainable sources of demand that do not force up the debt burden — the most obvious being to increase the household income share of GDP and to increase the share of credit allocated to small and medium enterprises relative to SOEs.

To put it a little abstractly, and using a corporate finance model to understand macroeconomics, I would say that most economists believe that China's growth in the near term is a function of changes in the way the *asset side* of the economy is managed. If Beijing can implement reforms that are aimed at making workers and businesses utilize assets more productively, then productivity will rise and, with it, GDP.

This sounds reasonable, even almost true by definition, but in fact it is an incomplete explanation of what drives growth. In corporate finance theory we understand that although growth can often or even usually be explained as a direct consequence of how productively assets are managed, it is not always the case that policies or exogenous variables that normally change the productivity of operations will have the expected impact on productivity growth. When debt levels are low or when the liability structure of an economic entity is stable, then it is indeed the case that growth is largely an asset-side affair. In that case for GDP growth to improve (or for operating earnings to rise), managers should focus on policies aimed at improving productivity.

But when debt levels are high enough to affect credibility, or when liabilities are structured in ways that distort incentives or magnify exogenous shocks, growth can be as much a consequence of changes in the liability side of an economy as it is on changes in the asset side. At the extreme, for example when a company or a country has a debt burden that might be considered "crisis-level", almost all growth, or lack of growth, is a consequence of changes in the liability structure. For a country facing a debt crisis, for example, policymakers may work ferociously on implementing productivity-enhancing reforms aimed at helping the country "grow" its way out of the debt crisis, but none of these reforms will succeed.

When liabilities constrain assets

That both orthodox economic theory and government policy-making ignore the way liability structure can overwhelm the impact of asset-side management is surprising given how strong the historical confirmation. There is a long history of countries either facing debt crises or struggling with dangerous debt burdens — including many countries today both in the developed world and the developing world — in which policymakers have promised to implement dramatic policies that will improve productivity and return the economy to "normalcy". But just as today growth stubbornly stagnates or decelerates in Europe, Japan, China, and a number of over-indebted countries, it is hard to find a single case in modern history in which a country struggling with debt has been able to reform

and grow its way out of its debt burden until there has been explicit or implicit debt forgiveness. It is no accident that growth in Japan, China and Europe keep disappointing analysts, and on Tuesday the IMF yet again cut its global growthforecast by 0.3% — to 3.5% and 3.7% in 2015 and 2016. It will almost certainly continue to cut it over the next few years.

In the book I plan to write this year I hope to explore the conditions under which the structure of liabilities matter to growth, and to show how sometimes it is even the only factor that determines growth rates. It is not just as a constraint that a country's liability structure affects growth, however. There are times when it can actually reinforce growth. There are in fact many ways in which a country's balance sheet can significantly affect growth rates, both during growth acceleration and growth deceleration, and China demonstrates just such a case.

In fact as far as I can tell, in every case in modern history of very rapid, investment-driven growth, at least part of the growth was caused by self-reinforcing credit structures embedded in the balance sheet. One way is by encouraging additional investment to expand manufacturing and infrastructure capacity. Rapid growth raises expectations about future growth, making it easy to fund projects that expand capacity even further, and these projects themselves result in faster growth, which then justifies even higher growth expectations. Another way is by improving credit perceptions. When loans are backed by assets, rapid growth increases the value of these assets, so that the riskiness of the existing loan portfolio seems to decline, allowing the lender to increase his risky loans and the borrower to increase his purchase of assets, which of course puts further upward pressure on asset values.

There is nothing surprising about either process — we all understand how it works. But what we sometimes forget is that when this happens economic activity can easily exceed the increase in real economic value-creation, and more importantly, the same balance sheet structure can cause growth to decelerate far faster than we had expected during the subsequent adjustment period. The balance sheet causes growth to be higher than it would have otherwise been during the growth phase and slower when growth begins to decelerate. It is not just coincidence that nearly every case in modern history of a growth miracle has been followed by a brutally and unexpectedly difficult adjustment. The same balance sheet that turned healthy growth into astonishing growth turned a slowdown into a collapse.

My 2001 book, *The Volatility Machine*, was about the history and structure of financial crises in developing countries, and in the book I discuss some of these balance sheet structures that exacerbate both accelerating and decelerating growth. In this essay I want to discuss concrete examples of such structures and show how they impact growth. In the book I distinguish between

“inverted” and “hedged” balance sheets, and it is worth explaining the distinction. A hedged balance sheet is simply one that is structured to minimise the overall volatility of the economic entity, whether it is a business or a country.

When the balance sheet is fully hedged, the only thing that changes its overall value is a real increase in productivity. Any exogenous shock that affects the value of liabilities and assets, or that affects income and expenditure, will have opposite effects on the various assets and liabilities, and together these will add to zero. Of course the closer an economic entity is to having a perfectly hedged balance sheet, the lower the cost of capital, the lower the rate at which expected earnings or growth is discounted over time, the easier it is for businesses to maximize operating earnings without worrying about unexpected shocks, and the longer the time horizon available for both policymakers and businesses in planning.

An inverted balance sheet is the opposite of a “hedged” balance sheet, and involves liabilities whose values are inversely correlated with asset values. These embed a kind of pro-cyclical mechanism that reinforces external shocks by automatically causing values or behavior to change in ways that exacerbate the impact of the shock. When asset values rise, in other words, the value of liabilities falls (or, to put it differently, the cost of the liabilities rise), and vice versa.

Balance sheet inversion

A business or country with an inverted balance sheet benefits doubly in good times as its assets, or its earnings, rise in value and its liabilities, or its financial expenses, fall. The process is often self-reinforcing, especially when the inverted entity is a country, in which case the economy can be described as being in a virtuous circle. When Brazil began to reform its economy and instituted a new currency regime in 1994, for example, one of its greatest vulnerabilities was its extremely high fiscal deficit, more than 100% of which was explained by debt servicing costs. Most Brazilian government debt was of less than six months maturity, and nearly all of it matured within one year (short-term debt is extremely inverted). As Brazilian reforms associated with the 1994 currency regime increased overall confidence, short-term interest rates declined, and within months the fiscal deficit followed suit. This caused confidence to rise sharply, and interest rates to fall further. In Brazil interest rates fell steadily from well over 50% in the early 1994-95 to around 20% by the summer of 1998.

Of course, in bad times the opposite happens – the value of assets fall while the value of liabilities rise, and the virtuous circle quickly becomes a vicious circle. Financial distress costs are not linear, and so it is not surprising that conditions usually deteriorate much more quickly than they improve. When the Russian crisis in 1998 shook confidence in emerging markets, Brazilian interest rates suddenly began rising, which caused the fiscal deficit to shoot up and so undermined confidence

further, locking the country into an extremely vicious circle that took interest rates back to over 40% within two or three months. In January of the following year Brazil was forced into a currency crisis.

Inverted balance sheets, in other words, automatically exacerbate both good times and bad. Among other things this often leads to confusion about the sources of growth and value creation and the quality of management. When an economy is doing well the short-term gains for the economy that are simply a consequence of balance sheet inversion are often treated in the same way as ordinary productivity gains caused by better management when we try to judge the effectiveness of the underlying economic policies. In reality, however, they are just forms of speculative profits.

This may seem a surprising statement, but in the Brazilian case described above, for example, while part of the decline in the fiscal deficit before the summer of 1998 can be explained by better policies, at least part of the decline came about simply because of the very short debt maturities. If the Brazilian government had funded itself with longer-term debt — which would have been much more appropriate and far less risky — the fiscal deficit would not have declined nearly as quickly as it did. Part of the improvement in the fiscal deficit, in other words, was simply the consequence of what was effectively a speculative bet on declining rates, and did not reflect better fiscal policies. One unfortunate consequence, however, was that analysts and policymakers overvalued the quality and impact of government policies.

Of course, when conditions turn, inverted balance sheets also provide short-term losses, although, perhaps not surprisingly, managers or policymakers almost always recognize the component of "bad luck" in their weakened performance. In 1998 I had many conversations with Brazilian central bankers, including the president of the central bank, Gustavo Franco, about taking advantage of high confidence in Brazil to borrow long-term at rates actually below the then-current 1-year rate of 20% (we were prepared to raise $1 billion of five-year money at 19%). The central bank decided against doing so at least in part because they were confident that the market was responding mainly to the quality of their monetary policies, and that as they were determined to maintain these policies, they felt it did not make sense to extend maturities until interest rates had dropped by far more. My carefully worded suggestions that at least part of their success was the result of an implicitly speculative balance sheet, and that it might make sense to reduce that risk, were not well-received.

Of course, when interest rates shot up, no one doubted the role of balance sheet structures in the subsequent crisis. My point here is not a cynical one about the vanity of policymakers. It is that when a country responds very positively to policy reforms it is genuinely difficult for most economists to distinguish between growth caused by the reforms and growth caused by the self-reinforcing nature of inverted balance sheets, and the more highly inverted a country's balance sheet, the more

dramatically will good policies seem to be rewarded. Over the long term, however, because the same virtuous circle can become an equally powerful vicious circle, inverted balance sheets always automatically increase financial distress costs because for any level of debt it increases the probability of default.

Along with short-term debt as described above, external currency debt is a very typical kind of inverted borrowing because when the borrowing country is growing rapidly, the tendency is for its currency to appreciate in real terms, and this reduces its debt servicing costs as interest and principle has to be repaid in cheaper foreign currency. Of course the opposite happens when the economy stagnates, and in a crisis a rapid depreciation of the currency can cause debt-servicing costs to soar exactly when it is hardest to repay the debt. The self-reinforcing combination of rapid GDP growth in the 1990s, reinforced by rapidly rising external debt, set the stage for the Asian Crisis of 1997, during which Asian borrowers were devastated as high levels of external debt caused growth to slow and currencies to weaken, both of which caused the debt burden to soar even faster.

Other types of inverted liabilities can include inventory financing, floating-rate debt, asset-based lending, margin lending, wide-spread use of derivatives, commodity financing, and real estate leverage (in countries in which the real estate sector has a major impact on GDP growth). High concentrations of debt in important sectors of the economy, even when in the aggregate debt levels are low, can also be important (and typical) forms of balance sheet inversion.

Developing inversion

Developing countries historically have been very prone to creating inverted balance sheets during their growth phases, which is an important reason for their much greater economic volatility. This may simply be because often the least risky way of lending involves pushing the risk onto the borrower, for example by keeping maturities very short, or by denominating the debt in a more credible foreign currency. Because many developing countries are capital constrained, they often have no choice but to borrow in risky ways. In a 1999 paper, Barry Eichengreen and Ricardo Hausmann referred to this type of borrowing, "in which the domestic currency cannot be used to borrow abroad or to borrow long term even domestically", as "original sin".

Not included in the concept of original sin, but closely related, is the historical tendency of risk appetite to be highly correlated across the global economy. Foreign and local investors are most willing to lend to a risky developing country at a time when the whole world is benefitting from the easy availability of risk capital, and global growth is consequently high. Of course foreign capital dries up and local flight capital expands just as the world slows down and the economy begins to stagnate.

But there are other reasons developing countries typically build up inverted balance sheets. One reason may have to do with the ability of very powerful elites, in countries with limited separation of powers, low government accountability, and low transparency, to arrange that profits are privatized and losses are socialized. In that case it makes sense to maximize volatility, and inverted balance sheets do just that. Another reason may be the economic importance of commodity extraction to growth in many developing countries, and the tendency for capital to be available only when commodity prices are high and rising.

The confusion about whether rapid growth during reform periods has been driven more by virtuous circles or by virtuous policymaking of course also reinforces the tendency to increase inversion, especially in the late stages of a growth period when the economy reaches the limits of the growth model and begins naturally to slow. If at least part of the growth is the consequence of virtuous circles, as it usually is especially in a heavily credit-dependent economy, balance sheet inversion can be a bad short-term trading strategy because it increases the costs of an economic slowdown. If the growth is the consequence mainly of virtuous policymaking, as it is always believed to be, balance sheet inversion is a good short-term trading strategy because virtuous policymakers presumably will continue to put into place virtuous policies.

Whatever the source of growth, the already high economic volatility typical of developing countries is exacerbated by balance sheet structures that magnify this volatility. One consequence is that we are continually surprised by much more rapid growth than expected during good times and very rapid and unexpected economic deterioration just as things start to go bad.

We often see developing countries in the late, strained stage of a growth miracle rapidly build up inverted balance sheets even more quickly than earlier in the growth cycle. I am not sure why this is so often the case, but it could be that after many years of growth, reinforced by inverted balance sheets, economic agents become convinced that recent trends are permanent. They assume, for example, that interest rates must always drop, or that the currency always appreciates, or that real estate prices always rise, or that demand always catches up with capacity, so that it makes sense to bet that the future will look like the past.

There is also a natural sorting mechanism in a rapidly growing volatile economy in which business managers who tend, for whatever reason (including the ability of powerful vested interests to create asymmetrical distributions of profits and losses) to take on too much risk will systematically outperform and take market share from more prudent business managers. Anyone who is familiar with Hyman Minsky's explanation of how attempts by regulators to reduce risk in the financial system will cause bankers to engage in riskier behavior fully understands the mechanism.

There are several points that I think are useful when we think about how sensitivity to balance sheet structures might help us in forecasting growth, especially in countries that have a lot of debt and other institutional distortions:

All balance sheets are not the same. Liabilities can be structured in such a way that the performance of the asset side (or of operations) can be significantly affected. One of the ways in which this can happen is when liabilities exacerbate or reinforce operations or changes in the value of assets. These kinds of balance sheets are inverted, and they can embed highly pro-cyclical mechanisms into an economy.

There are many forms of inverted balance sheet structures, some of which are very easy to identify (external currency debt, margin financing, short-term debt) and others much more difficult to identify (an economy's over-reliance on any single agent or industrial sector can create a kind of balance sheet inversion, for example, that is difficult to explain). The key consideration is when factors or policies that change underlying productivity are correlated, causally or not, with other parts of the balance sheet that affect the economy's overall performance in the same direction.

Highly inverted economies are more likely to experience periods of exceptionally high growth or exceptionally deep stagnation, and the latter almost always follow the former. As far as I can tell, most growth miracles in modern history are at least partly the result of highly inverted balance sheets. This probably why they often seemed to grow far faster than anyone originally thought possible, and why most growth miracle economies subsequently experienced unexpectedly difficult adjustments.

It is often difficult to tell the difference between growth caused by fundamental changes in productivity and growth caused by pro-cyclical balance sheet structures — i.e. between virtuous polices and virtuous circles. This often causes analysts to overvalue the quality of policymaking or the underlying economic fundamentals during a period of rapid growth. As an aside, in my experience on Wall Street I can say that it can be very difficult to explain balance sheet inversion to the policymakers that preside over very rapidly growing economies, and it is never a good marketing strategy for a banker.

In the late stages of a period of rapid growth, as the economy is beginning to slow as it adjusts from the imbalances generated during the growth period, it seems to me that there is a systematic tendency to increase balance sheet inversion as a way of maintaining growth or of slowing the deceleration process.

Inventory can increase volatility

The last point of course is especially important in the Chinese context. The Chinese economy is clearly slowing, and debt is clearly rising. There is increasing evidence of highly inverted balance sheet structures within the Chinese economy, but I do not know if this is because balance sheet inversion is increasing or because a slowing economy causes pressure to build within the financial sector, and this makes visible risky structures that had been in place all along.

At any rate, it makes sense both for policymakers and for investors to try to get some sense of the extent of inversion in the economy. Most economists now expect that China's economy will continue slowing, with most economists considering an eventual decline in GDP growth to 6% as the lower limit. Others, myself included, expect growth to slow much more than that. Of course, the more inverted the Chinese balance sheet, the more any fundamental slowdown will be exacerbated by automatic changes in the country's balance sheet.

This makes it very useful to get a sense of how balance sheet inversion can occur in China. Last Tuesday I saw three articles, two on *Bloomberg* and one in the *Financial Times* that struck me as interesting examples of different kinds of balance sheet inversions. The first article reported that China was, according to *Bloomberg,* importing record amounts of crude oil as prices collapsed:

China's crude imports surged to a record in December after a buying spree in Singapore by a state-owned trader and as the government in Beijing accelerated stockpiling amid the collapse in global oil prices.

…Chinese demand is shoring up the global oil market as the country expands emergency stockpiles amid crude's slump to the lowest level in more than five years. The Asian nation's consumption is forecast to climb by 5 percent in 2015, while the government is set to hoard about 7 million tons of crude in strategic reserves by the middle of this year, predicts ICIS-C1 Energy, a Shanghai-based commodities researcher.

Stockpiling oil in this case has a complex relationship within the balance sheet. On the one had it can be described as a kind of hedge. China is naturally short oil because it is a net importer. In that sense China benefits when the price of oil declines, and suffers when the price of oil rises.

Stockpiling oil, then, is a way of hedging. If oil prices continue to drop, China will lose value on its inventory position, but because the Chinese economy will be better off anyway, the losses China suffers from its stockpile simply reduce the overall benefit to China of lower prices. Meanwhile if oil prices should rise, China will suffer in the same way that all energy-importing countries suffer, but it will profit from its stockpile, and this profit will reduce the total loss. In that sense oil stockpiles reduce overall volatility in the Chinese economy, just as they do for any country that is a net importer

of energy.

If China were a small country whose economic performance was largely uncorrelated with the economic performance of the world, this would be the end of the story. But China is not. Given how important the external sector is to China's economy, growth in China is likely to be highly correlated with growth in the global economy.

This changes the picture. When the world is doing poorly, it is likely that oil prices will decline further and that China's economy will do worse than expected. In that case, the more China stockpiles oil, the greater its losses. Oil prices in other words can be positively correlated with China's economic performance, and stockpiling oil actually increases volatility because China profits on the stockpile when growth is higher than expected, and loses when it is lower than expected.

The second article, also in *Bloomberg*, told a similar story about iron ore:

Iron ore imports by China rebounded to an all-time high last month, capping record annual purchases, as slumping prices boosted demand for overseas supplies in the biggest user and some local mines were shuttered over winter.

China is by far the world's largest consumer of iron ore, taking up very recently as much as 60% of all the iron ore produced in the world. What drives China's voracious demand for iron, of course, is its extraordinarily high investment growth rate. For nearly five years I have warned that because I expected Chinese growth rates to drop significantly, I also expected the price of iron ore to collapse (and I have always added that in this context the word "collapse" was wholly appropriate). Clearly this has happened. There is a very high positive correlation between Chinese GDP growth and the price of iron ore, and so iron and steel inventory necessarily increases balance sheet inversion. If China slows further, it will take additional losses on its inventory as iron ore pries drop further. If Chinese growth picks up, China benefits from its stockpiling strategy.

Stockpiling iron ore might seem like a good idea for China if iron ore is so cheap that its price can no longer decline. In that case stockpiling iron or steel creates a hugely convex trade that more than compensates for the additional volatility that it adds to the Chinese economy. There are many investors, especially in China, who believe that iron ore prices have fallen so dramatically in the past two years that we have effectively reached the point at which the downside is minimal compared to the upside.

What to watch for

This may be true, but I think we have to be very skeptical about such arguments. Iron ore

currently trades in the mid $60s, roughly one third of its peak in the $190s in late 2010 and early 2011, if I remember correctly. Many analysts believe that this decline has been so dramatic and astonishing that it cannot possibly continue. I disagree. At the turn of the century I think iron ore traded below $20, and it seemed at the time that prices could only decline even further. Current prices, in other words, only seem astonishingly low compared to their peak prices, which were driven by a surge in demand from China that was completely unprecedented in history. By historical standards, iron ore is not cheap at all. I have been arguing for years that a collapse in iron ore prices was inevitable, and iron would actually drop below $50 by 2016-17, perhaps even to $30-40 before the end of the decade, and I see no reason to assume that we are anywhere near the bottom.

Whether or not I am right about iron ore, the main point is that hard commodity prices have been driven to historically high levels largely because of China's disproportionate share of global demand, with both prices and Chinese demand beginning to surge in 2003-04. Prices are highly positively correlated with Chinese growth, in other words, and stockpiling necessarily exacerbates both growth acceleration and deceleration.

Finally the third article, in the *Financial Times*, told what at first seemed to be a very different story:

Local governments in some of China's smallest cities are snapping up an increasing amount of their own land at auctions, in a destructive cycle designed to prop up property prices but which is ravaging their own finances.

Local government financing vehicles in at least one wealthy province, Jiangsu, which borders Shanghai, accounted for more land purchases than property developers did in 2013 — the last year for which data were available — according to research collated by Deutsche Bank. The data signal that already cash-strapped local governments are switching money from one pocket to another rather than booking real sales.

Clearly it is extremely risky for local governments, who are highly dependent on land prices for their revenues, to increase their exposure to land prices by buying up land at auctions. This is an obvious case of balance sheet inversion at the local government level. Some economist might argue that while it may increase risk at the local level, it does not do so at the national level. It simply represents a transfer of wealth from one group of economic agents to another. If real estate prices fall, for example, local governments will be even worse off than ever, but property developers will be better off because they are less exposed than they otherwise would have been.

There are at least two reasons why this may be totally mistaken. The first reason is that by

propping up real estate prices local government may be helping powerful local interests who only want to sell their real estate in order to fund disinvestment or flight capital. The second, and far more important, reason has to do with the fact that financial distress costs are concave, not linear. If there is a transfer of wealth from one indebted entity to another, the latter benefits at the former's expense. But the reduction of financial distress costs for the latter must necessarily be less than the increase for the former. Taken together, there must be a net increase in financial distress costs for China and a net increase in volatility within China. This is not the place to explain exactly why this must happen (I will do so in my upcoming book), but if it were not true, then it would not be the case that a country could suffer from excessive domestic debt.

My main point is that orthodox economists have traditionally ignored the impact of balance sheet structure on rapid growth, but liability structures can explain both very rapid growth and very rapid growth deceleration. It is unclear to what extent balance sheet inversion explains part of the Chinese growth miracle of the past decade, but it would be unreasonable to discount its impact altogether, and I suspect it's impact may actually be quite high. To the extent that it has boosted underlying growth in the past, for exactly the same reason it must depress underlying growth in the future.

What is more, because we are in the late stages of China's growth miracle, we should recognize that historical precedents suggest that balance sheet inversion will have increased in the past few years, and may continue to do so for the next few years, which implies that a greater share of growth than ever is explained not by fundamental improvements in the underlying economy but rather by what are effectively speculative bets embedded into the national balance sheet. Besides commodity stockpiling and real estate purchases by local governments, we have clearly seen an increase in speculative financial transactions by large Chinese companies (the so called "arbitrage", for example, in which SPEs have borrowed money in the Hong Kong markets and lent the money domestically to pick up the interest rate differential as well as any currency appreciation), which is the Chinese version of what in the late stages of the Japanese growth bubble of the 1980s was referred to as zaitech.

We have also seen growth in external financing, which is the classic form of inverted debt for developing countries. The main thing to watch for, I think, is one of the most dangerous kinds of balance sheet inversion, and is especially common when growth has been driven by leverage, and that is the tendency for borrowers to respond to credit and liquidity strains by effectively doubling up the bet and shortening maturities. I don't know if this is happening to any worrying extent, but when we start to see a dramatic shortening of real maturities, it should be a warning signal.

Appendix

Four months after publishing this entry I read a speech Paul Volcker gave in 1978 at NYU. Included in his speech is the following very appropriate comment on how periods of prosperity can cause balance sheets to shift in a direction that can make the subsequent adjustment much more painful:

A long period of prosperity breeds confidence, and confidence breeds new standards of what is prudent and what is risky. For a while, the process is self-reinforcing, sustaining investment and risk-taking. But it may also contain some of the seeds of its own demise: eventually natural limits to some of the trends supporting the advances are reached and the advance cannot be sustained so easily…Financial positions are extended and the economy has become more vulnerable to adverse and unexpected developments.

I explained why this matter to China in a July 14 OpEd piece for the *Wall Street Journal* on why Beijing's reaction to the July stock market panic might simply increase volatility:

Last week's stock-market panic in China was never likely to trigger a financial crisis at home. The reason is not, as many argue, because the losses were narrowly dispersed and small relative to the size of the economy. Greece, after all, constitutes less than 2% of Europe's gross domestic product, yet it clearly matters to the health and stability of the European financial system. And the small amount of the subprime mortgages relative to the U.S. economy wasn't enough to prevent them from triggering a crisis back in 2008.

China has so far managed to escape a financial crisis because its relatively closed capital account, its high level of reserves, and above all its reliance on domestic financing means that any mismatch between assets and liabilities can be resolved within the system by the regulators. And because Beijing's credibility—the perception that it can do what it says it will—is very high, regulators are able to manage this mismatch by using implicit or explicit guarantees to bridge financing gaps.

In many ways, China is primed for an economic crisis. As the economy performs below expectations quarter after quarter while the debt burden surges, slow growth and rising debt are being tied together in a mutually self-reinforcing process—almost the definition of an unstable balance sheet. There is so much pressure within the financial system right now that twice in the past two years attempts at deregulation have been followed by market disruptions.

We shouldn't have expected otherwise. History suggests that developing countries that have experienced growth "miracles" tend to develop risky financial systems and unstable national balance

sheets. The longer the miracle, the greater the tendency. That's because in periods of rapid growth, riskier institutions do well. Soon balance sheets across the economy incorporate similar types of risk.

Long-term infrastructure projects might be funded with short-term debt, or domestic assets funded with external debt. In both cases, rapid growth reduces debt costs in real terms, sharply boosting the borrower's profitability while reinforcing the economy's already-rapid growth. The financing gap—the gap between cash flows generated by a project over the long term and the debt-servicing costs of short-term or foreign-currency debt—can easily be refinanced by eager bankers, who have themselves learned that optimism is rewarded.

To take another example, because China's economic growth caused metal prices to surge, the industry soon learned that companies that allowed debt to grow as they stockpiled inventory profited enormously. The more aggressive these companies were with inventory, the more likely they were to perform well and displace the more prudent among their competitors.

Over time, this means the entire financial system is built around the same set of optimistic expectations. But when growth slows, balance sheets that did well during expansionary phases will now systematically fall short of expectations, and their disappointing performance will further reinforce the economic deceleration. This is when it suddenly becomes costlier to refinance the gap, and the practice of mismatching assets and liabilities causes debt, not profits, to rise.

The more successful the growth miracle, the more likely a country will be to build balance sheets that reinforce growth, making it more vulnerable to crisis and external shocks. This is exactly what we've seen in China. After more than three decades of extraordinary expansion, President Xi Jinping's administration has inherited an economy with surging debt and a highly pro-cyclical financial system.

China's GDP growth will almost certainly continue to decline by more than consensus expectations, and debt will continue to rise faster. But so long as Beijing's credibility remains very high, China will nonetheless be protected from the risk of financial crisis. This credibility allows China to manage a financial system designed for credit expansion that has left the country with what would otherwise be an extraordinarily vulnerable balance sheet.

Policy makers must ensure that protecting Beijing's credibility is a priority. Many countries have taken their credibility for granted during the growth phase, only to see it erode and even collapse during the subsequent adjustment as regulators, underestimating how difficult it would be, overextended themselves in the early stages of adjustment.

While last week's stock-market panic is probably over and the market will revive, Beijing seems to have followed the historical pattern. It risked its credibility unnecessarily during the rally by appearing to guarantee investor profits, and afterwards it irrevocably committed itself to stabilizing the market.

But the more that Beijing is seen to guarantee, the less pressure there is among Chinese institutions to pay the cost of repairing their balance sheets, raising the chance that Beijing will take on excessive risk. This makes China itself increasingly vulnerable to destabilizing shocks.

The next two to three years are vitally important. In the best case scenario, Beijing will continue to rebalance its economy and to restructure the country's balance sheet and financial system. Yet this cannot happen except under much slower growth. Because the debt will burden will continue to rise for at least another four or five years, Beijing will be tested more than ever. To defend itself from crisis, it must become increasingly stingy with its protection.

When do we decide that Europe must restructure much of its debt? [Week 11]

By Michael Pettis · February 25, 2015 · Balance sheet fragility, Europe · 125 Comments

It is hard to watch the Greek drama unfold without a sense of foreboding. If it is possible for the Greek economy partially to revive in spite of its tremendous debt burden, with a lot of hard work and even more good luck we can posit scenarios that don't involve a painful social and political breakdown, but I am pretty convinced that the Greek balance sheet itself makes growth all but impossible for many more years.

The history is, to me pretty convincing. Countries with this level of debt and this level of uncertainty associated with the resolution of the debt are never able too grow out of their debt burdens, no matter how determined and how forcefully they implement the "correct" set of orthodox reforms, until the debt is resolved and the costs assigned. Greece and Europe, in other words, have a choice. They can choose to restructure Greek debt explicitly, with substantial real debt forgiveness and with the costs optimally allocated in a way that maximizes value for all stakeholders, or Greece can continue to struggle for many more years as the debt is resolved implicitly, with the costs allocated as the outcome of an uncertain political struggle.

Until one or the other outcome, the country is not a viable creditor and it will not grow. There is no way to get the numbers to work. If Europe policymakers who oppose a rapid resolution of its debt crisis continue to prove as intransigent over the next few months as they have been in the past week, I suspect that they will only be able to pull off one of their goals, which is to embarrass Syriza and get it thrown out of office.

But I suspect that many European policymakers incorrectly think Syriza is as radical as it gets, and once Syriza is discredited, almost any alternative leadership would be better. I disagree. If Syriza is discredited, and the Greek economy continues to stagnate as I expect, the alternative could very easily be Golden Dawn or some other group of radical nationalists determined to blame foreigners for their problems, and Germany will have set itself up for much of the blame. It is ironic, because in my opinion Angela Merkel is not and has never been the bully that she is made out to be, and the main reason Germany seems to be running the show is that no one else has ever dared to disagree with her or to take any position of real leadership. For that reason she and Germany are being seen as far worse than they actually are.

And this is clearly not just about Greece. Everyone understands that Greece has already restructured its debt once before and received partial forgiveness — in fact once coupon reductions are correctly accounted for Greece's debt ratio is probably much lower than the roughly 180% of GDP the official numbers suggest. Most people also understand that the Greek debate is not just about

Greece but also about whether or not several other countries — Spain, Portugal and Italy among them, and perhaps even France — will also have to restructure their debts with partial debt forgiveness.

What few people realize, however, is these countries have effectively already done so once. This happened two and a half years ago at the Global Investment Conference in London when, on July 26, 2012, Mario Draghi, President of the European Central Bank, made the following statement:

When people talk about the fragility of the euro and the increasing fragility of the euro, and perhaps the crisis of the euro, very often non-euro area member states or leaders, underestimate the amount of political capital that is being invested in the euro. And so we view this, and I do not think we are unbiased observers, we think the euro is irreversible. And it's not an empty word now, because I preceded saying exactly what actions have been made, are being made to make it irreversible.

But there is another message I want to tell you. Within our mandate, the ECB is ready to do whatever it takes to preserve the euro. And believe me, it will be enough.

As soon as Draghi made the statement to do "whatever it takes", markets recognized that the ECB was in effect guaranteeing the bonds of EU member states whose credibility was in question, and yields immediately dropped. It is important to understand why this was effectively a kind of debt restructuring. With Draghi's statement, there was an immediate transfer of wealth from the ECB — or, more appropriately from the group of countries behind whom the credibility of the ECB is maintained, and this means Germany above all — to the governments whose creditworthiness was in doubt.

Not only was their debt effectively restructured, in other words, but they were also granted partial debt forgiveness. I will explain this later, but I want to start off by making two points. First, Draghi's promise was far from an optimal resolution of the European debt crisis, in part because it does not address the key issue of uncertainty, to which I will return. Second, there is an enormous amount of confusion about debt restructuring, especially at the sovereign level.

Many people believe that any sovereign debt restructuring, and its accompanying implicit or explicit debt forgiveness, is already an admission of failure, with moral and nationalist overtones. But as the implicit restructuring that occurred with Draghi's promise to do "whatever it takes" suggests, debt restructuring is actually a process that involves increasing the value of the obligations and operations of the restructuring entity. It can be done well, it can be done badly, and it can be done disastrously, but it is a financial operation with a clearly defined goal of improving the overall wealth of stakeholders, and while it is reasonable that stakeholders negotiate the ways in which this additional wealth will be allocated, the negotiation should not prevent the restructuring.

In order to understand the differences between optimal and suboptimal sovereign debt restructuring it is necessary that we understand the relationship between the asset and liability sides of a balance sheets and how the interaction between the two create or destroy value. In this blog entry I hope to address the relevant issues. It will be divided roughly into three parts in which I want progressively to describe what an optimal debt restructuring should accomplish.

1. Why must Europe restructure much of its debt? The purpose of a debt restructuring is to make all parties better off by increasing the value of the associated instruments and improving future growth prospects for all the relevant stakeholders. Once the existing debt structure adversely affects future growth prospects and reduces the current wealth of the relevant stakeholders, it makes sense to consider ways in which the debt can be restructured so as to improve both current value and future growth prospects.
2. For most economists, debt is the way operations are funded, and the best debt is the cheapest. I am not suggesting that economists are unaware that certain debt structures are riskier than others, but for the most part they ignore the structure of the balance sheet and focus primarily on the way assets are managed. The moment debt levels become high, however, or create institutional distortions, they begin to affect, and usually constrain, value creation. Debt has four very separate and very important functions, and it is important to understand what they are before deciding what an optimal balance sheet looks like.
3. Once we understand the role and impact of the structure of the balance sheets, it becomes possible to describe what an optimal debt restructuring should accomplish.

Debt can be thought of as a moral obligation when a loan is extended from one individual to another, especially if there is no interest on the loan. But loans to businesses or to sovereign entities are business transactions, and they should be managed as such. The only moral obligation in restructuring sovereign debt, it seems to me, is for policymakers to fulfill their political responsibilities to do what is in the best interests of their citizens and to participate in a responsible way in the global community. The debt restructuring process is, in other words, morally neutral.

The decision to restructure debt

Normally the relevant characteristics of a bond issued by government are very clear. Needless to say most borrowing agreements specify a series of payments to be made in a specified currency on a specified date, but this is not what I mean when I say the relevant characteristics of a bond issued by a government are very clear. The clarity that matters is in the resolution of the debt.

Let me step back for a moment. Debt is always “resolved”, in the sense that either the obligor makes the contracted payments as expected and without difficulty or, in the case where it is unable to

make the contracted payments, there will either be an equivalent payment absorbed by the creditor, in the form of losses and a write down, or some other entity will step in and directly or indirectly make the payment. Put differently, debt is always "paid", if not by the borrower, then by someone else. The resolution of debt can be explicit, transparent and certain, or it can be non-transparent and uncertain, but however it occurs, debt is always resolved in a way that requires implicit or explicit wealth transfers from one or more entities.

This is true of both private debt and sovereign debt, and it is true whether the debt arises directly or in the form of contingent liabilities. However in the case of sovereign debt, all the costs associated with servicing and paying down the debt are ultimately assigned to different groups of stakeholders. These include workers and ordinary households, small and medium-sized companies, large companies and multinationals, wealthy households, or, especially in the case of countries with very large public sectors, local and central governments through asset liquidation and land sales. Stakeholders can even include foreigners, so in the case where a country's external debt is restructured with partial debt forgiveness, the debt is "resolved" in part by wealth transfers from foreign creditors.

When I say that "normally" the relevant characteristics of a bond issued by a government are very clear, I mean that "normally" there is no uncertainty associated with how these payments will be resolved. The government runs a budget, in which expenditures are funded in a fairly explicit manner by tax collection and by borrowing, or sometimes by asset sales, and there is an assumption that the costs associated with servicing the government's outstanding bond obligations will be met through normal budge operations. Governments also sometimes resolve debt by hidden means, by monetizing the debt or through financial repression, in which case it is usually middle class savers, most of whose savings are in the form of monetary assets, who end up paying for the debt.

As long as debt levels are not "excessive" and the government is believed to be solvent — which in the context of sovereign debt always refers to the ability of the government to service its contractual obligations at a cost that is politically acceptable — there is very little uncertainty associated with the resolution of debt servicing costs. Payments will be made out of ordinary budget operations and none of the stakeholders worry that the high debt-servicing cost will force unexpected changes in the way in which costs are allocated and the debt resolved.

Once debt levels are excessive, however, questions arise about the country's solvency and about the steps the government will take to resolve the debt. This is the difference between a fully creditworthy borrower and one that is not – in the former case there is no uncertainty about how the cost of resolving the debt will be allocated and in the latter there is. As I will explain later, this

uncertainty forces stakeholders to alter their behavior, and they do so in ways that always automatically either increase balance sheet fragility further, reduce growth, or both.

What makes matter worse is that when debt levels are excessive it is not just how the costs will be allocated that is uncertain. In most cases the amount of the obligation itself becomes uncertain. This is because depending on how economic circumstances evolve, additional contingent liabilities may be forced explicitly or implicitly onto the sovereign credit. When the government loses credibility, it is almost always the case that total debt ends up being even higher than originally contracted, and there are many reasons why this happens. A slowing economy, for example, may increase the number of bankruptcies that the banking system has to absorb, and because in many cases the banking system is already effectively insolvent, and must be explicitly or implicitly bailed out by the government, already high levels of sovereign debt will rise even further. If the country is forced to devalue the currency, to take another example, the value of external debt will soar, or if slower growth causes fiscal revenues to be less than expected and fiscal expenditures greater, debt will rise further.

This creates by the way a problem that is not sufficiently recognized in the debate about the European debt crisis. A debt crisis must be resolved quickly because there is a self-reinforcing component within the process that can be extraordinarily harmful. High levels of sovereign debt create uncertainty about how the costs of resolving the debt will ultimately be assigned. This uncertainty causes growth to slow by adversely changing the behavior of a wide variety of stakeholders in the economy (as I will describe later). As the economy slows, contingent liabilities within the banking system rise, tax revenues decline and fiscal expenditures rise, all of which push up sovereign debt levels even further and increase both the cost of resolving the debt and the uncertainty about how the costs will be assigned. The consequence of this self-reinforcing deterioration in the sovereign balance sheet is, at first, a slow grinding away of the economy until the market reaches some point, after which the process accelerates and debt can spiral out of control.

But long before things spiral out of control, when debt levels are excessive — and debt levels are excessive as soon as there is wide-spread uncertainty about the amount of the costs and the sectors to whom they are going to be assigned — the economy is being damaged and, with it, political, economic and social institutions are being degraded. With very high levels of debt the decision Europeans face is whether to move quickly to reduce uncertainty and assign the losses to sectors best able to absorb the losses, and in ways that maximize future value creation, or to allow these losses to be assigned implicitly, over many years, and in ways that are hard to control.

This is the heart of the matter. The point of a debt restructuring is to eliminate or reduce the uncertainty associated with the resolution of the debt so that the total value of the debt increases and

future growth is not constrained. To summarize:

1. Under “normal” conditions, the obligations associated with debt are explicit and there is very little uncertainty about how the debt will be resolved. The revenues sources needed to service the debt are clearly identified.
2. When debt levels become “excessive”, that is when the existing revenues sources are no longer sufficient easily to service the debt, uncertainty arises about how the debt will be resolved and even about the amount of the debt to be resolved. This is exacerbated by the highly reflexive relationship between rising uncertainty and rising debt, so that rising uncertainty associated with the resolution of the debt forces adverse stakeholder behavior, which causes the uncertainty associated with the resolution of the debt to rise further.
3. How do we know when debt levels have become “excessive”? Debt levels are excessive when the uncertainty associated with the resolution of the debt is high enough to change the behavior of stakeholders. To put it in terms guaranteed to infuriate policymakers, a country has too much debt whenever the market believes it has too much debt. Anyone who does not understand why it is as simple as this does not understand the economic impact of debt.
4. The purpose of a debt restructuring, then, is to reduce or eliminate the uncertainty associated with the resolution of the debt because this uncertainty automatically reduces value and future growth. If done correctly, a debt restructuring increases the wealth of stakeholders and improves future growth prospects.

Mario Draghi and the 2012 European debt restructuring

This is why I argue that by promising to do whatever it takes, Mario Draghi and the ECB effectively engineered a debt restructuring with implicit debt forgiveness. They changed the contractual terms of peripheral European sovereign debt by implicitly allowing bondholders to put their bonds to the ECB whenever the ECB determined that bond prices had fallen enough to damage Europe more than was tolerable. The fact that both the legal obligation of the ECB to purchase the bonds and the effective purchase price are uncertain does not change the underlying dynamics of the restructuring, and the proof is that Draghi’s statement has caused bond yields to drop to levels that imply a miniscule probability of default.

Notice how the process worked. Draghi’s promised immediately reduced a larger part of the uncertainty associated with the resolution of the debt. The collapse in uncertainty reversed the reflexive process in which rising uncertainty caused declining economic expectations, which caused rising uncertainty. The reversal immediately put the affected sovereign borrowers in a virtuous circle in which declining uncertainty led to improving performance which caused uncertainty to decline

further, and while this move by Draghi to reverse the downward spiral was probably necessary, it should reinforce recognition of how intensely pro-cyclical is the dynamic process into within these countries are locked. If it reverses, it will reverse in exactly the same way, and precisely because all market participants know this, even a partial reversal could very quickly intensify.

Ignoring legal and political issues, there are at least two important reasons why Draghi's promise was far from an optimal resolution of the European debt crisis. First, and most obviously, it reduced the enormous uncertainty that existed at the time, and this is very important because by then it was clear several countries were well along the process in which the debt spirals out of control, but there still remains an enormous amount of uncertainty associated with the debt resolution. Not only are the terms of the implicit "restructuring" uncertain, but in nearly every country in Europe debt is growing faster than debt servicing capacity, most economies are struggling, unemployment is high, the political atmosphere is tense and unstable, and as if all of this were not enough, uncertainty in every country in Europe is linked tightly together so that an increase in uncertainty in any one country automatically causes uncertainty to rise in all countries, in a process often referred to as contagion.

Contagion is often presented as if it were "merely" a psychological problem that can be defused by popular faith, but contagion is far more mechanical than this. One of the imbalances within Europe before the crisis, for example, was the imbalance between deficient demand in Germany and excess demand in peripheral Europe, the balance of which determined the level of the euro. This imbalance has become more complex since the crisis, but it should be clear that if any country on one side of the imbalance were to defect, or were to engineer a rapid adjustment (for example if a peripheral European country were to secede from the currency union), the amount of the imbalance would remain the same but it would be absorbed within a smaller group of countries. If Portugal were to leave the euro, for example, Spain would immediately suffer from having to absorb part of the imbalance that Portugal had absorbed, so that a Portuguese defection automatically has a contagion effect on Spain. The contagion also exists through the banking system (problems in one country cause bank portfolios in others to deteriorate, thus increasing contingent liabilities that must be absorbed by the government) and through the value of the Draghi put itself.

This is the second important reason why Draghi's promise was far from an optimal resolution of the European debt crisis. European debt is locked into an intensely reflexive process in which the value of the Draghi put is a function of the creditworthiness of the ECB, and the creditworthiness of the ECB is a function of the value of its total obligations, including its implicit guarantees. Any deterioration in the creditworthiness of the ECB undermines the value of the Draghi put, and the resulting increase in the uncertainty associated with the resolution of, say, Spanish debt automatically forces up the Spanish debt burden and so further weakens the ECB's creditworthiness.

We could perhaps ignore this process and hope that it is never set off except for the fact that in every important country in Europe, the debt burden is worsening (debt is growing faster than debt servicing capacity), so that the ECB's implicit obligations are rising faster than its debt-servicing ability. The recent McKinsey study of global debt has terribly alarming figures for Europe – of the thirteen countries whose debt has risen by more than fifty percentage points in the past seven years, ten of them are members of the European Union, and the top six include Ireland, Greece, Portugal and Spain, all of whose debt has grown by more than 70 percentage points. The ECB's creditworthiness, in other words, is deteriorating on a daily basis.

Some analysts deny the possibility of credit deterioration in the ECB because of its ability to create unlimited amounts of currency and fully monetize its obligations. Monetizing debt, however, is not the same as resolving it. It simply involves a transfer of wealth from those who are long monetary assets to those who are short — or, to simplify, from Germany to Spain. If the ability of the central bank to force through these wealth transfers were fully credible, as would be the case of the Fed in the US, the PBoC in China, the BoJ in Tokyo, or the BoE in London, these analysts might be right and the question would never arise.

But because sovereignty is not centralized, the ECB does not operate in the same way as these central banks do. Monetizing the debt involves wealth transfers in the same that gold transfers might have done in Europe in the late 19th century. German's willingness to allow the ECB to guarantee increasing amount of Spanish debt is probably analogous to the willingness of the Bank of France to lend gold to the Bank of England during a British liquidity crisis if it fully expected the crisis to be resolved and the gold to be returned. It would certainly be willing to take some risk because an English financial crisis would have an adverse impact on the French economy, but there is a limit to the amount of risk it is willing to take, and everyone fully understand this.

In fact I see the credibility of the ECB put as one of the biggest "tail risks" in the market. From the early days of the European Union Germany has traditionally picked up the bill for many of the costs of the European Union, including the costs of some fairly petty European grandstanding, and Germany did it again in a major way during reunification, even though we tend to forget the latter because it involved fiscal and sovereign centralization. This history makes it tempting to assume that the determination of the ECB to monetize the sovereign obligations of all member countries, which is based on the willingness of Germany to allow unlimited wealth transfers, is itself unlimited. But this history should also alert us to the likelihood that Germans are unhappy with this arrangement and might at some point refuse to continue writing checks.

In my February 4 blog entry I argued that while German institutions and policymakers are as

responsible as those in peripheral Europe for the debt crisis, in fact it was German and peripheral European workers who ultimately bear the cost of the distortions, and it will be German households who will pay to clean up German banks as, one after another, the debts of peripheral European countries are explicitly or implicitly written down. The overwhelming, and overwhelmingly favorable, response I received makes it clear to me that far more Europeans understand this than perhaps their political leaders want to believe. Among other things this suggests that it does not require lack of solidarity with their fellow Europeans to drive ordinary Germans to refuse to pay for the worsening crisis. It could just as easily be their unwillingness to continue to participate in a process in which workers and middle class households in Europe are being forced to pay to maintain policy mistakes that have benefitted mainly wealthy owners of European assets.

With sovereign debt levels rising month after month in Europe, and with several opportunities for adverse shocks any of which could cause a surge in uncertainty, I don't think we can simply assume infinite German patience, and so the value of the Draghi put must be eroding, however slowly. I am not saying that I think there is currently any question of ECB credibility, but no institution has infinite debt capacity, and none can support a steadily deteriorating debt burden without risking the possibility of an erosion in credibility. Of course if doubt were ever to emerge about the credibility of the Draghi put, conditions would almost certainly deteriorate much faster than anyone expected simply because of the intensity of the self-reinforcing process that caused bond yields to collapse after July 26, 2012. A system that works powerfully in one direction can work just as powerfully in the other.

What are the functions of the liability side of the balance sheet?

It should be clear for the reasons I discuss above that debt levels in Europe are excessive and that there is a great deal of uncertainty about the resolution of sovereign debt. In order to explain why this uncertainty requires that Europe move to restructure its debt, or, to use a perhaps less politically loaded phrase, to reduce the uncertainty associated with debt resolution, it is necessary to understand how debt — and the balance sheet, more generally, by which I mean not just outstanding government debt but the entire financial system and the financial operations of the economy — affects growth. Balance sheets can exacerbate growth in both directions, so that just as financial crises are always balance sheet crises, there is also almost always an important balance sheet component to every growth miracle.

This needs explaining. For most academic economists, "growth" occurs primarily as a function of the way the asset side of the balance sheet is managed. If assets are managed well, their value increases, and the better they are managed the greater the increase in value, so that the growth of the

business or the economy is largely a function of the how productively assets are managed. Policymakers who want to increase economic growth, according to this view, would do so by improving the quality of infrastructure, removing legal and regulatory constraints for businesses, better aligning incentives to encourage productive investment and behavior, and so on, in order to improve the productivity with which the country's assets and resources are utilized.

Finance specialists, however, understand that the optimal management of assets only provides the upper limit of growth for a business. This is because under certain conditions the liability structure of a business can act as a constraint on growth. If its debt level is high enough that either it distorts incentives by distorting the way value is distributed, or it causes stakeholders to respond to uncertainty by undermining value creation, or it exacerbates the impact of adverse external shocks, not only will growth in the value of the business entity be much lower than it could be, but in fact it can easily become negative. Financial specialists refer to the process — in which the rising probability of default forces stakeholders to alter their behavior in ways that undermine growth — as the incurring of "financial distress" costs.

What financial specialists often don't understand, however, is that the liability structure of a business can also goose growth above its "natural" level. When it reinforces behavior or exacerbates shocks, periods of growth are often periods of very high growth. This becomes obvious from the observation that it is often the highest of flyers during boom periods that are most likely to collapse or get into trouble as soon as a boom period reverses. At least part of their growth during the boom was not sustainable, but was instead the consequence of a distorted balance sheet that exacerbated the positive shocks typical of a "boom".

The same process occurs within any economic entity, including a national economy. It is not an accident that in nearly every case in history in which countries have excessively high debt levels or have undergone debt crises, policymakers have never been able to keep their promise that, with forbearance from creditors and the implementation of the right reforms, the country can grow its way back into full solvency. Historical precedents are pretty clear on this point. Countries suffering from debt crises never regain growth until debt has been partially forgiven — explicitly or implicitly — and the uncertainty associated with its resolution has either been sharply reduced or eliminated.[1]

Debt matters. For most orthodox economists debt is simply the way operations are funded, and what matters mainly is the cost of the debt, or at best the cash flows associated with debt servicing. But in fact the liability structure of the balance sheet of any economic entity has several functions that significantly affect economic behavior. This is as true of small economic entities, like households and businesses, as of large, like countries or even the global economy. The main functions

are:

1. The liability structure is the sum of the way assets and operations are funded, and debt can be used either to fund investment or to reallocate consumption over time.
2. The liability structure affects the ways in which operating earnings and economic growth are distributed. For a business entity, the various ways in which the debt servicing agreements are indexed and their levels of seniority determine how operating earnings after taxes are distributed, with the residual going to owners. It is a little more complicated when we are dealing with a national economy, but the principle is the same. What matters for a national economy is that the government is a hugely important player, and the ways in which it collects taxes, both direct and indirect, the investment decisions it makes, and the policies it implements to enhance or undermine certain kinds of economic activity, whether explicit or implicit, collectively act as the primary determinant of how growth in the economy is distributed among different stakeholders. As a consequence all stakeholders will adjust their behavior in response to their perceptions of how government policies will affect them.
3. The liability structure also determines how exogenous volatility and external shocks are absorbed, and here is that the concept of balance sheet "inversion" can be especially useful. As I explain in mybook, *The Volatility Machine*, an inverted balance sheet is one in which borrowings are structured pro-cyclically so that they reinforce external shocks by automatically causing behavior to change in ways that exacerbate the impact of the shock (unlike a "hedged" balance sheet, which automatically dissipates shocks). External currency debt, inventory financing, short-term or floating-rate debt, asset-based lending, and margin lending in the stock market, can all be highly inverted forms of borrowing because a rising market allows investors to increase their purchases, which pushes prices up further, and a declining market forces investors to sell, which pushes prices down further.

The structure of a country's banking and financial system can also either exacerbate or dissipate external volatility, in the former case by imbedding pro-cyclical mechanisms into the economy. In China, for example, because its rapid growth was driven primarily by investment, which tends to be heavily commodity intensive, rapid growth pushed up global commodity prices nearly tenfold during the first decade of this century. Of course business entities that ran the largest commodity inventories profited heavily at the expense of their more prudent competitors, and this caused a "Minskyite" shift in the composition of industry towards greater speculative risk-taking by rewarding commodity speculation heavily. This process of course caused the financial system to become increasingly exposed to commodity price risk, so that the faster China grew, the more rapidly Chinese banks were able to expand credit, which itself caused the economy to grow even more rapidly and commodity prices to rise further. Of course the whole process went into reverse once Beijing,

recognizing the deep imbalances that were building up within China, moved to slow investment growth, and we are only now seeing what will turn out to be a long, drawn-out process of pro-cyclical adjustment.

In economies with highly inverted balance sheets, shocks can be so self-reinforcing that periods of rapid growth become growth "miracles" but, as happened in nearly every growth miracle case in history, the subsequent periods of decelerating growth can swiftly degenerate into collapse or lost decades of unexpectedly low growth. In Europe's case, the intensively reflexive relationship between sovereign creditworthiness and the domestic banking system may be he most worrying form of inversion. For the banks in peripheral Europe a substantial share of liquid assets consists of their government bonds, so that any deterioration in sovereign creditworthiness would cause enormous losses for the banks, but because the main source of contingent liabilities for the government is the banking system, losses in the banking system would immediately cause the sovereign creditworthiness to deteriorate. Balance sheet inversion is the single most important reason for sovereign financial crises, as I explain in my book, but policymakers are not nearly as terrified by it as they should be.

4. Finally, expansion or contraction in the liability side, which occurs most easily in the form of expansion or contraction in credit, can speed up or reduce expected growth in operating earnings or GDP.

How does a badly structured balance sheet constrain growth?

There is an enormous difference in the level of sophistication between corporate debt restructuring and sovereign debt restructuring. In the discussions in Europe, most of which are dominated by discussions about Greece, there have been suggestions by Finance Minister Yanis Varoufakis as well as analysts like Martin Wolf and Wolfgang Münchau, both at the *Financial Times*, about aligning debt servicing payments with the Greek ability to pay, for example in the form of GDP-linked bonds. But aside these few, much of the focus seems to be on determining what combination of coupon and principle will lead to the maximum annual payment Greece can manage over the next two or three years.

This is a very bad way to decide on how to restructure the sovereign obligations of Greece or that of any of the peripheral European countries that are likely to follow. The debt restructuring should be designed to maximize stakeholder value so that all players are better off after the restructuring than before. Key to a successful restructuring is the elimination, or at least the substantial reduction, of the uncertainty surrounding the resolution of the debt. I would argue that there are at least five components to a good restructuring and these can best be understood by

recognizing the ways in which a badly structured balance sheet can constrain growth:

1. *High borrowing costs.*

Obviously, the higher the real borrowing costs, the greater the growth constraint, but there is a very important point that is missed in the discussion. It is always easy for a borrower to reduce its borrowing cost by taking on risk. So, for example, short-term borrowing, debt denominated in a major currency rather than the borrower's currency, or debt that grants optionality to the lender (for example, by allowing the lender to put the bond back to the issuer on a specified date before its final maturity) will always involve a lower interest rate for the borrower.

This is almost never a good strategy for a borrower that needs to restructure its debt. The biggest risk of lending money to higher-grade borrowers tends to be interest rate or currency risk. To lower-grade borrowers, of course, it is the risk of default, and the pricing of its obligations is very sensitive to changes in the perception of default risk. This means that any reduction in borrowing costs that comes about by the borrower's taking on additional risk is usually less than the direct or indirect cost of the additional risk on the rest of the borrower's obligations. A country that is forced to restructure its debt should never agree to lower borrowing costs if this means that it has to assume additional default risk.

But this doesn't mean that restructuring countries cannot benefit from granting optionality to their lenders. If the optionality results in an overall reduction in balance sheet inversion, the borrower benefits in two ways: it reduces the borrowing costs on the specific debt instrument and, by reducing the probability of default, it reduces the direct or indirect cost of the rest of the borrower's obligations. How could this work in the case of a Greek restructuring?

1. It could issue a dual currency bond. Borrowers understand that there is some probability that Greece will exit from the euro, either permanently or temporarily. By allowing buyers of this bond to choose at some point in the future between payment in euros at the contracted rate or payment in the new currency at some rate, either specified today or linked today to some index. Investors would only switch payment options under optimal conditions for Greece, when its currency is expected to do well and interest rates fall, allowing Athens both to reduce its borrowing cost and to stabilize its balance sheet. After the 1994 peso crisis. Mexico issued a dual currency bond whose final payment was linked, at the investor's option, either to dollars or to pesos. The offering was hugely successful and palpably changed expectations about the Mexican outlook.
2. It could allow investors to index payments to an asset whose performance is positively linked to economic performance — oil, for example, in the case of Venezuela — so that investors receive a higher-then-contracted payment only in the case that Greece's economic performance is

better than expected. Options linked to GDP or to real estate prices or to the Athens stock market (perhaps even to olive oil or to the number of foreign tourists?) accomplish this purpose.

3. Because Greece imports a number of commodities, it can also share the benefits of any fall in commodity prices by agreeing to pay a higher coupon if the price of a specific commodity falls below a certain price.

One of the great advantage of these structures is also too little appreciated by issuers, investors, and bankers. Even if the expected payment of an instrument with optionality is identical to that of an instrument without optionality, simple arithmetic makes the former more valuable for the investor even as it is more valuable. This is because there is an asymmetry in the discount rate such that higher expected payments are discounted at lower rates and lower discounted payments at higher rates. If the optionality is linked to a liquid asset and detachable, the investor can immediately capture this value directly.

2. Financial distress costs.

Earlier on I pointed out that all the costs associated with servicing and paying down the debt are ultimately assigned to different groups of stakeholders. These include workers and ordinary households, small and medium-sized companies, large companies and multinationals, wealthy households, or, especially in the case of countries with very large public sectors, local and central governments through asset liquidation and land sales. Stakeholders can even include foreigners. When uncertainty arises about how sovereign debt is likely to be resolved, all of these stakeholders must alter their behavior to protect themselves from bearing a disproportionate share of the costs. Their effect in reducing growth is what is referred to in finance theory as financial distress costs.

The process is both automatic and straightforward. The ways in which a country incurs financial distress costs include:

1. Workers understand that unemployment is likely to rise and remain high and so they tend to cut back on spending. They also tend to unionize, and their unions become more militant in their relationship with business.
2. Ordinary households worry about future income or consumption tax increases, and so they too cut back on spending, and because they also worry that their savings will be confiscated to pay the debt, most usually in the form of inflation, financial repression, currency depreciation, or frozen deposits, they often withdraw their savings from the domestic financial system.
3. The best educated, the young, and people with the most valuable skills emigrate as the excess debt weighs down future growth prospects.

4. Small and medium-sized companies, fully aware that during crises wealthy businesspeople often bear the brunt of public anger, worry about being expropriated or forced to pay higher taxes, and so they disinvest and become reluctant to hire additional workers even in the exceptional cases when they need them.

5. Large companies and multinationals also worry about expropriation and taxation and so disinvest or move operations abroad.

6. Banks worry about deteriorating collateral values and cut back on risky lending.

7. Exporters worry about currency depreciation or confiscatory rules on foreign currency, and so they drive down inventory and reduce the amount of earnings they repatriate.

8. Wealthy households move money abroad to avoid higher income or asset taxes.

9. Foreign and local creditors reduce loan maturities and raise interest rates.

10. Policymakers respond to the increase in social and political instability by shortening their time horizons.

These changes in behavior in response to rising uncertainty about how debt will be resolved are probably the most damaging impact of a debt crisis because they erode not just economic institutions but also social and political institutions. They can also be intensely self-reinforcing, so that as stakeholders respond to rising uncertainty, their responses collectively increase debt, reduce growth, and exacerbate balance sheet fragility (by shortening debt maturities, for example), all of which only increase uncertainty. One of the saddest aspects of this process, historically, has been that typically the most sophisticated, who are often the wealthiest, are the first to protect themselves, and the least sophisticated are the last, with the result that the distribution of losses is asymmetrical in a way that maximizes the social damage.

3. Misaligned incentives

High debt levels often create disincentives for business entities to behave in line with the interests of the economy overall. The most obvious example of this is in countries that have currency and balance of payments crises. The urgent need for foreign currency often results in short-term policies that penalize businesses with foreign currency, including businesses that generate foreign currency. The result is that instead of encouraging businesses that increase the available pool of foreign currency, these policies discourage them. Latin America in the 1980s suffered from this misalignment of interests.

The same occurs when debt restructurings involve complex currency or debt repayment regulations, the rationing of credit, or significant distortions in the price of credit. In these cases business managers are more heavily rewarded not for innovation and productivity growth but rather

for managing their way through the regulatory process. For example, when Venezuela had multiple foreign exchange rates during the late 1980s, a significant amount of resources was expended by business managers to allow them access to favorable treatment. In China, until about 3-4 years, to take another example, interest rates for bank loans were so heavily repressed that it was widely admitted that companies that had preferential access to bank loans spent more time trying to justify taking on more loans than they did looking for the most productive ways in which to invest the proceeds. With such low interest rates, almost any investment generated returns that exceeded the cost of funding it.

In Europe the determination to remove any possibility of flexibility in the use of the euro may be creating misaligned incentives. If countries like Spain were permitted temporarily to leave the euro, it would be possible to create agreements in which Spanish incentives were very strongly aligned with European interests. Assume for example, that Spain were permitted to reintroduce the peseta with an agreement that it would return to the euro five years later at a rate that implied a 20% depreciation in the currency, and this agreement was supported by debt extensions and the credibility of the ECB. This would immediately provide short-term relief for the Spanish economy while at the same time creating very strong incentives for Madrid to put into place the productivity-enhancing reforms that would make the currency fully viable once it rejoined the euro.

4. Exacerbating of default probabilities.

Highly inverted balance sheets exacerbate the impact of external shocks. While positive shocks reduce the probability of default and negative shocks increase the probability of default, the impact is not symmetrical and in fact is highly concave. The result is that the probability of default is always higher when balance sheets are more inverted, and so the return that investors require is automatically higher too.

5. The impact of deleveraging on growth.

Except in the case where all resources, including labor, are fully and efficiently utilized, and frictional costs are low or negligible, increasing leverage usually results in faster growth and deleveraging in slower growth. Highly indebted countries must urgently reduce their default probabilities, and the easiest and most obvious way to do so is to use free cashflow to pay down debt as rapidly as possible.

What must a good debt restructuring do?

Once we understand why distorted balance sheets and excessive debt burdens raise costs, undermine social, political and economic institutions, and constrain growth, and the various ways in

which they do so, there are a number of fairly automatic lessons that can be drawn:

1. *Debt restructuring should not be delayed.* This is the first and most common mistake made throughout the modern history of financial crises. The costs associated with an excessive debt burden begin to accrue immediately and include the undermining of social, political and economic institutions necessary for economic recovery. The longer the crisis persists, in other words, the greater the long-term cost to the country. Historically in the case of an external debt crisis there has always been strong pressure from the creditor governments to delay recognition of insolvency if this recognition could force the creditor banks into insolvency themselves. In that case the creditor banks need time to recapitalize before they can acknowledge the losses, and it is only after the banks are recapitalized that creditors finally "discover" that the borrower is insolvent. Given the potential size of the European losses, however, it may take many years of unnecessary economic destruction before German and other European banks are finally healthy enough. [2]

2. *Debt restructuring must address short-term liquidity constraints.* This point is generally well understood and is often resolved in the form of ad hoc institutions, for example the Draghi put in the case of Europe.

3. *The debt restructuring should be designed not to reduce the value to creditors but rather to maximize value to stakeholders.* The exchange of fixed payment instruments for equity-like or variable-payment instruments in which payments are indexed to economic well-being, for example GDP-linked bonds or coco bonds, can raise the total value of debt instruments significantly while boosting growth.

4. *It must assign the costs to those best able to bear them and whose reduced income will have the least negative impact on future growth.* In most cases the resolution of debt is done implicitly over a long time, and usually in the form of financial repression or explicit taxes, so that the costs are effectively assigned to middle class households. This tends to worsen income inequality and weaken consumption. One of the goals of a debt restructuring should be to ensure that the costs are assigned in a way that is least damaging to the economy over the longer term.

5. *It must reduce the impact of external shocks, mainly by indexing payments to revenues and wealth creation, so that the probability of payment difficulties declines.*

6. *More generally it must reduce uncertainty about resolving the debt.* This is the main reason for a rapid and explicit debt restructuring because it is the uncertainty that undermines the economy.

7. *It must line up incentives so that foreign and domestic stakeholders are rewarded for productive behavior and policymakers are rewarded for long-term policies*.

These are not necessarily easy or obvious things to do, but the important point to understand that is that with or without an explicit restructuring, the cost of resolving the debt is going to be borne

by different sectors of the economy. The main difference is whether this happens explicitly or implicitly and whether it happens quickly, or it is allowed to drag on for many years, creating conditions of low growth and high unemployment and causing damage to the social, political and economic institutions that will generate growth over the future.

In many countries in Europe there is tremendous uncertainty about how debt is going to be resolved. This uncertainty has an economic cost, and the cost only grows over time. But because most policymakers stubbornly refuse to consider what seems to have become obvious to most Europeans, there is a very good chance that Europe is going to repeat the history of most debt crises. After many years of denying that they are insolvent, and many years of promises that reforms will be implemented that will set off enough growth to resolve the debt, policymakers in countries like Spain will be forced either to change their positions or they will be forced out by voters – simply because economic conditions will have deteriorated so drastically that a restructuring can no longer be put off.

Monetary policy is as much about politics as it is economics. It is about some of the ways in which wealth is created, allocated, and retained. Debt restructuring involves allocating wealth in the most efficient way. It does necessarily not mean, however, defaulting on payments. The only goal of a debt restructuring is to reduce the uncertainty associated with the resolution of the excessive and growing debt burden. There are many ways to do so, and in many cases they require significant debt forgiveness, but pretending that all will be fine if we only grit our teeth and wait longer has almost never turned out to be true.

For now I would argue that the biggest constraint to the EU's survival is debt. Economists are notoriously inept at understanding how balance sheets function in a dynamic system, and it is precisely for this reason that we haven't put the resolution of the European debt crisis at the center of the debate. But Europe will not grow, the reforms will not "work", and unemployment will not drop until the costs of the excessive debt burdens are addressed.

Academics, journalists, and government officials who want to subscribe to my newsletter, which sometimes includes portions of this blog and sometimes (as in this case) does not, should write to me atchinfinpettis@yahoo.com, stating your affiliation, please. Investors who want to buy a subscription should write to me, also at that address.

[1] In Carmen Reinhart's "A Distant Mirror of Debt, Default, and Relief" (NBER Working Paper No. 20577, October 2014) the author looks at 42 default and restructuring episodes in the 20th Century and finds that "the post final debt reduction landscape is characterized by higher income

levels and growth, lower debt servicing burdens, lower external debt, sovereign credit ratings and capital flows behaved differently in the interwar and modern periods; in the latter case ratings recover markedly." It is only after the debt forgiveness, they find, that growth picks up.

[2] In the case of the LDC Debt Crisis of the 1980s, American banks spent most of 1982-88 rebuilding their capital, in part thanks to large hidden transfers from American households spurred by a steep yield curve. It is not a coincidence that two years Citibank announced its reserve position, in May 1987 (within a year of which the weakest of the top ten US banks were also sufficiently reserved) that the first formal debt forgiveness was negotiated, for Mexico, with the issuance of the first Brady bond in 1990. In the German case I expect that part of the debt will be gradually nationalized (as is already happening) while Berlin will take steps to boost bank profitability at the expense of middle class German savers in order than banks can write down the remainder. It is only then that we will see widespread political support of debt restructuring and partial forgiveness, if history is any guide.

How Much Investment is Optimal [Recommended]

By Michael Pettis · June 2, 2016 · Balance sheet fragility, Credit expansion · 58 Comments

A few years ago I wrote an essay on my blog that received a lot of attention and in which I tried to explain what the underlying assumption was for analysts who considered that China's low level of investment relative to that of, say, the US proved that China could not possibly have reached the point of investment saturation. I then argued that there were two very different models that explained what made advanced economies advanced. One model assumed that there is an optimal capital frontier appropriate to all countries, and that the further a country is from that frontier, the more profitable and productive would be any increase in investment. The other model assumes that each country has a different optimal capital frontier based on its level of what I called "social capital". Poor countries are usually countries with low levels of social capital and, therefore, a low optimal capital frontier, and any investment past that frontier is likely to be non-productive.

I have found myself discussing this essay a lot recently, both with analysts who had read it back then and wanted to discuss it and with analysts who hadn't read it and wanted to know why I assumed that investment in China had long ago reached its saturation point. I am working on a new essay on trade for my blog, but I thought it might be worthwhile to some of my readers, especially new readers, to re-post the essay. I made a few changes, mainly because I was not able to reproduce two graphs and a table that come in the original.

In a May, 2013, entry on my blog I referred to a very interesting IMF paper written by Il Houng Lee, Murtaza Syed, and Liu Xueyan. The study, "China's Path to Consumer-Based Growth: Reorienting Investment and Enhancing Efficiency", attempts among other things to evaluate the efficiency of investment in various provinces within China. I argued in the newsletter that the paper supported my contention that China has overinvested beyond its capacity to absorb capital.

This argument is in opposition to claims made by many analysts that China has not overinvested systematically, and that in fact, with much less capital stock per worker than advanced countries like the US or Japan, China has a long ways to go before it begins to bump up against the productive limits of investment. For example in a September 3, 2012, issue of *Asia Economics Analyst*, Goldman Sachs makes the following point:

China is often criticized for investing too much and too inefficiently, and for consuming too little…However, focus on the investment/GDP ratio risks confusing flows and stocks and we believe is not the right metric for assessing whether a country has invested too much. For that, we also care about the capital stock rather than the investment flow—on this metric, on a top-down approach, China still has a long way to go—its capital stock/worker is only 6% of Japan's level and 16% of Korea's.

The *Economist* has also made a similar argument. This, for example, was published about a year ago:

The IMF says so. Academics and Western governments agree. China invests too much. It is an article of faith that China needs to rebalance its economy by investing less and consuming more. Otherwise, it is argued, diminishing returns on capital will cramp future growth; or, worse still, massive overcapacity will cause a slump in investment, bringing the economy crashing down. So where exactly is all this excessive investment?

…The level of fixed-capital formation does look unusually high, at an estimated 48% of GDP in 2011 (see left-hand chart). By comparison, the ratio peaked at just under 40% in Japan and South Korea. In most developed countries it is now around 20% or less. But an annual investment-to-GDP ratio does not actually reveal whether there has been too much investment.

To determine that you need to look at the size of the total capital stock—the value of all past investment, adjusted for depreciation. Qu Hongbin, chief China economist at HSBC, estimates that China's capital stock per person is less than 8% of America's and 17% of South Korea's (see right-hand chart). Another study, by Andrew Batson and Janet Zhang at GKDragonomics, a Beijing-based research firm, finds that China still has less than one-quarter as much capital per person as America had achieved in 1930, when it was at roughly the same level of development as China today.

Leaving aside the rather strange claim that China today is at roughly the same level of development as the US in 1930, because China's capital stock per capita is so much lower than that of much richer countries, claim Goldman Sachs, the *Economist*, and many others, Chinese investment levels overall are still much lower than they optimally ought to be. While it is of course always possible for China to misallocate individual investments, which everyone agrees is a bad for growth, these analysts strongly disagree with the claim that China has overinvested systematically.

Since the newsletter came out I have had a number of conversations with clients who wanted to pursue a little further the issue of how to think about an optimal level of capital stock per capita. In my central bank seminar at Peking University we recently spent a couple of sessions hashing this out in a way that we found very useful, and I thought it might be helpful to summarize those discussions in order to explain a little more schematically how I think about this issue.

The two models of investment

To begin this discussion it is worth remembering what the IMF paper suggested about investment in China. The abstract of the paper is:

This paper proposes a possible framework for identifying excessive investment. Based on this method, it finds evidence that some types of investment are becoming excessive in China, particularly in inland provinces. In these regions, private consumption has on average become more dependent on investment (rather than vice versa) and the impact is relatively short-lived, necessitating ever higher levels of investment to maintain economic activity. By contrast, private consumption has become more self-sustaining in coastal provinces, in large part because investment here tends to benefit household incomes more than corporates.

If existing trends continue, valuable resources could be wasted at a time when China's ability to finance investment is facing increasing constraints due to dwindling land, labor, and government resources and becoming more reliant on liquidity expansion, with attendant risks of financial instability and asset bubbles. Thus, investment should not be indiscriminately directed toward urbanization or industrialization of Western regions but shifted toward sectors with greater and more lasting spillovers to household income and consumption. In this context, investment in agriculture and services is found to be superior to that in manufacturing and real estate. Financial reform would facilitate such a reorientation, helping China to enhance capital efficiency and keep growth buoyant even as aggregate investment is lowered to sustainable levels.

In contrast to claims cited above suggesting that Chinese investment levels are too low, among other things the paper argues that although investment levels as measured by capital stock per capita are obviously lower in the poor inland provinces in China than they are in the richer coastal regions, in fact investment in the former areas may be less productive than investment in the latter areas. This implies that the regions with less capital are also less able to absorb additional capital efficiently.

Should this be a surprise? For those who argue that China is poor because capital stock per worker in China is much lower than in the advanced countries, and that China should aggressively increase investment to close the gap, the findings in this paper ought to be surprising. If the further an economy is from US levels of capital stock the more appropriate it is to increase investment, then investment in the poor inland regions should have a higher return than investment in the richer coastal regions.

But whether or not the findings of this and other similar studies should surprise us depends on how we decide what the optimal level of capital is for any economy. I would argue that there are basically two different models for thinking about how much investment is optimal:

1 The capital frontier constraint. One model suggests that the most advanced and capital-rich countries have developed, perhaps through trial and error, the appropriate level of capital investment given the state of technology, trade, and managerial organization, and they effectively represent the frontier for investment.

According to this model it is pretty easy to figure out what an appropriate investment strategy is for a developing country – more investment is almost always good. Because in this model what separates poor countries from rich countries is primarily the amount of capital stock per worker, poor countries should always increase their capital stock until they begin to approach the frontier. Until they do, an increase in capital stock automatically causes an increase in workers' productivity that exceeds the cost of creating the capital stock, and so the country is economically better off because the benefit of investment exceeds the cost of investment. This model implicitly underlies claims made by many analysts that because China's capital stock is much lower than that of the US, Japan or other rich countries, it is meaningless to say that China is overinvesting in the aggregate.

2 The social capital constraint. The other model suggests that for any economy there is an appropriate level of investment or capital stock per worker that depends on the ability of workers and businesses in that economy to absorb additional capital stock. I am going to call this ability to absorb capital stock "social capital".

The implication is, then, that the higher a country's social capital, the higher the optimal amount of capital stock per worker. The fundamental difference between rich countries and poor countries, in this case, is not the amount of capital stock

per worker but rather the institutional framework that gives workers and businesses the ability to absorb additional capital productively. Advanced economies are understood simply to be those economies that are able to absorb high levels of investment productively. Backward economies are constrained in their abilities to do so.

What determines the level of social capital? Lots of things do. The right institutions matter tremendously, but because there is no easy way to quantify what the "right" institutions are, we tend to ignore their importance in favor of more easily measurable factors, such as broad measures of capital stock. I would argue, however, that economies are much better at absorbing and exploiting capital if they operate under an institutional framework that

- creates incentives and rewards for managerial or technological innovation (which probably must include clear and enforceable legal and property rights),
- encourages the creation of new businesses and penalizes less efficient businesses, perhaps at least in part by institutionalizing methods by which capital can quickly be transferred from less efficient to more efficient businesses, and
- maximizes participation in economic activity by the whole population while minimizing distortions in that participation.

Measuring social capital

Perhaps in the early stages of what Alexander Gershenkron called "economic backwardness" these institutions matter less if the there are clear and obvious steps that need to be taken to increase productivity rapidly – if manufacturing capacity and infrastructure levels are non-existent, for example. As economies become large and complex, however, economies with greater flexibility, higher levels of participation, and correctly aligned incentive structures seem to be much better at squeezing value out of investment.

I should point out that the term "social capital" already has a meaning. The World Bank defines it this way:

Social capital refers to the institutions, relationships, and norms that shape the quality and quantity of a society's social interactions. Increasing evidence shows that social cohesion is critical for societies to prosper economically and for development to be sustainable. Social capital is not just the sum of the institutions which underpin a society – it is the glue that holds them together.

The term was apparently first used in 1916, by the American Progressive Era educational reformer, LJ Hanifan, and he described it in terms of social relationships:

The tangible substances [that] count for most in the daily lives of people: namely good will, fellowship, sympathy, and social intercourse among the individuals and families who make up a social unit. . .. The individual is helpless socially, if left to himself. If he comes into contact with his neighbor, and they with other neighbors, there will be an accumulation of social capital, which may immediately satisfy his social needs and which may bear a social potentiality sufficient to the substantial improvement of living conditions in the whole community. The community as a whole will benefit by the cooperation of all its parts, while the individual will find in his associations the advantages of the help, the sympathy, and the fellowship of his neighbors.

I am using the term much more broadly than either Hanifan or the World Bank, to mean the constellation not just of social relationships that affect the economy but also the full range of legal, institutional, and economic relationships that can make an economy more or less productive. It is this complex mix of institutions, I would argue, and which I call social capital, that drives advanced economic growth, and not simply additional labor or capital.

This is not to say that labor and capital inputs are not part of growth. Of course they are. I am simply arguing that an economy requires both the inputs and the ability efficiently to absorb and exploit those inputs for it to grow. If its level of inputs is too low, as Chinese infrastructure almost certainly was twenty years ago, then the easiest way to achieve growth is to increase the necessary inputs – airports, bridges, roads, factories, office space, and so on in the case of China twenty years ago.

But if social capital is too low or, to put it another way, if capital stock exceeds the ability of an economy to absorb it efficiently, then the best way to achieve growth may be to focus not on increasing inputs, which may end up being wasted and so may actually reduce wealth, but in improving the ability of the economy to absorb the existing inputs. The point is not whether we can easily define these institutions but rather whether there is evidence that they matter to economic growth.

In a sense what I mean by social capital is what William Easterly and Ross Levine might call “something else”. “The central problem in understanding economic development and growth,” they say, “is not to understand the process

by which an economy raises its savings rate and increases the rate of physical capital accumulation."

Although many development practitioners and researchers continue to target capital accumulation as the driving force in economic growth, this paper presents evidence regarding the sources of economic growth, the patterns of economic growth, the patterns of factor flows, and the impact of national policies on economic growth that suggest that "something else" besides capital accumulation is critical for understanding differences in economic growth and income across countries.

T*he paper does not argue that factor accumulation is unimportant in general, nor do we deny that factor accumulation is critically important for some countries at specific junctures. The paper's more limited point is that when comparing growth experiences across many countries, "something else" – besides factor accumulation – plays a prominent role in explaining differences in economic performance.*

They go on to argue in their paper that

While specific countries at specific points in their development processes fit different models of growth, the big picture emerging from cross-country growth comparisons is the simple observation that creating the incentives for productive factor accumulation is more important for growth than factor accumulation per se.

It is these various institutional and social "incentives" for productive factor accumulation that I am calling "social capital". Daron Acemoglu and James Robinson, the authors of *Why Nations Fail*, believe that there is very strong evidence in favor of the importance of social (i.e. economic and political) institutions and on their blog they write:

Our theory isn't that political institutions directly determine economic prosperity. Rather, we claim that economic institutions determine economic prosperity, and explain why the link is between inclusive economic institutions and sustained economic growth — not necessarily short-run economic growth. We then argue that inclusive economic institutions can only survive in the long run if they are supported by inclusive political institutions. On the way, we provide explanations and examples for why for extended periods of time economic institutions with fairly important inclusive elements can coexist with extractive political institutions.

This is all brought together under our discussion of extractive growth under the auspices of extractive political institutions. This is either because, as in the Soviet Union or the Caribbean plantation economies, extractive political and economic institutions can reallocate resources in a way that brings economic growth — typically when the elite expects to be the main beneficiary from such growth. Or because as in South Korea or Taiwan, extractive political institutions permit a certain degree of inclusivity to develop. In both cases the logic is clear: the elite, all else equal, would prefer more output, more revenue and more growth. It is the fear of creative destruction that often prevents it from adopting economic arrangements favoring growth or even blocking new technologies. When it feels secure or deems that it doesn't have any other option, the elite will encourage economic growth.

Clear rules

To me one of the most obvious pieces of evidence that it takes a lot more than increases in capital stock to achieve sustainable wealth is the experience of previously advanced economies that have been laid low by war. It is noteworthy that – excluding trading entrepôts like Hong Kong and Singapore or small, commodity-rich entities like Kuwait or 18th Century Haiti – very few poor and undeveloped economies have made the transition from poor to rich. The exceptions may be South Korea and Taiwan, both under very favorable circumstances during the Cold War. "Poor" but advanced countries, however, like Belgium and Germany after WW1, or Germany and Japan after WW2, saw their GDP per capital soar after devastating wars as they made the transition from newly poor to rich with relative ease.

The reason, it seems to me, is that although war may have destroyed physical capital in these countries, because it did not destroy social capital these countries were able sustainably to increase investment at a rapid pace after the war and see their per capita incomes soar permanently. Why is this so easy for advanced economies made poor by physical destruction of their capital base but so hard for developing economies?

The most plausible reason I can think of is that the advanced economies already had in place the institutions that allowed them to exploit investment fully, and so once they were able to increase capital stock, they quickly became rich again. This argument is reinforced, I think, by the well-known fact that most cross-border capital flows (over 90%, I think) are to rich countries, not to poor ones. This wouldn't make sense at all if rich countries didn't have a greater

ability to absorb new capital efficiently and profitably than poor countries. If what mattered on the other hand was distance from the capital frontier, the further a country was from that frontier, the more profitable it would be to invest there, and so more capital would flow to poor countries rather than to rich countries. The opposite is true.

So what kinds of institutions might matter? Economies with clear and enforceable legal systems, to take one factor, tend to have higher levels of social capital because it is much easier for entrepreneurs to take advantage of conditions and infrastructure to build profitable businesses. Without a clear legal framework, business opportunities tend to be monopolized by entities that have the political clout to take advantage of the legal system, and not only is it not obvious that more powerful entities are more economically efficient, but in fact the opposite may be true – these are what Acemoglu and Robinson call "extractive" elites.

Very powerful entities tend to support the status quo, to undermine disruptive new technologies and business organizations, and otherwise often to favor the less efficient (themselves) over the more efficient. As part of social capital, clear ownership rules for land and other assets matter. Here are Acemoglu and Robinson on the subject:

Key to our argument in Why Nations Fail is the idea that elites, when sufficiently political powerful, will often support economic institutions and policies inimical to sustained economic growth. Sometimes they will block new technologies; sometimes they will create a non-level playing field preventing the rest of society from realizing their economic potential; sometimes they will simply violate others' rights destroying investment and innovation incentives.

I would also argue that the institutional framework around the writing down of overvalued assets, and the liquidation process itself, is an important part of how efficiently an economy is able to absorb the benefits of capital stock. A formalized bankruptcy process that takes assets away from inefficient users, writes them down to a fair market value, and reintroduces them into the economy, creates a much more efficient economic system than one in which bad loans are not recognized, effectively bankrupt companies are allowed to continue in value-destroying activity, and the use of assets is not systematically transferred from the less efficient to the more efficient user.

In fact an efficient and relatively rapid bankruptcy process is, I would argue, of fundamental importance to the ability of an economy to exploit capital stock

efficiently. Even very advanced countries without a formal process to transfer resources quickly can have a hard time exploiting its capital and labor factors, especially after a period in which a great deal of labor and capital were directed into unproductive uses. I think Japan's twenty years of nearly zero growth may be explained in part by the very slow process in Japan by which resources were transferred from "losers" to "winners" after the investment orgy of the 1980s. In fact more generally the sophistication and flexibility of financial systems are an important component of social capital because these determine the capital allocation process. Financial system capable of taking risk and supporting new and disruptive technologies or organization structures tend to result in a greater ability by a society to absorb capital. In that light, and as an aside, I would suggest that the country that sees the most change in the list of its largest companies from decade to decade – because this list creates a simple way of determining how quickly companies can be created and destroyed as their level of efficiency changes – is probably better at absorbing capital than a country whose largest companies are the same decade after decade.

Crony capitalism

These are probably the most important components of social capital, but I would include a lot more in my definition than just the relative strength of extractive elites and well-functioning legal, ownership, financial and bankruptcy frameworks. The extent of corruption, nepotism, or the importance of what the Chinese call "guanxi", erodes social capital because in a society in which corruption or guanxi is more important, the winners in business competition are, in the aggregate, not the most efficient but rather the most connected, and in fact they are often the least efficient for the reasons already noted (they profit not from improving efficiency but rather from improving their access to transfers of resources).

The extent of monopoly power or the extent of significant subsidies to favored sectors and companies also limits social capital for the same reasons. Monopolists and the subsidized tend to be more interested in protecting and extending their power to expropriate national resources than in accelerating efficiency – the rewards for the former far exceed the rewards for the latter which, in many cases, may even be negative.

There are many social and political reasons to be concerned about the various characteristics of what is often called crony capitalism – corruption, guanxi, nepotism, limiting access to credit to powerful insiders, protecting national

champions from more efficient competitors, etc. – but the important point in our context is that because they limit the ability of economic agents to take advantage of the benefits of capital stock by heavily tilting rewards towards agents that can play the political game better rather than towards those that can play the economic game better, they undermine the economy's ability to absorb high levels of investment. The purpose of investment, in countries with high levels of crony capitalism, is often not to maximize productivity but rather to reward political access, and so agents that can exploit capital stock more efficiently are undermined in their ability to do so.

This is not to say that crony capitalism cannot deliver growth. Clearly it can. But I would argue that it can deliver growth only when the interests of the elite are correctly lined up with growth. So, for example, I would argue that in the early stages of reform, especially in countries that have suffered many years of terrible economies and weak investment, crony capitalism can be consistent with high levels of growth because the kinds of programs that lead to growth – mostly massive investment programs in countries in which capital stock is excessively low – benefit the elites directly. Once there is a divergence in interests, however, crony capitalism can become inconsistent with rapid growth.

Beyond these measures, which are basically measures of the ability of elites to distort participation in the economy, I would argue that educational levels also matter. More educated societies and, perhaps even more so, societies in which there is limited ability by the elite to block participation by the non-elite, tend to be better at exploiting economic opportunities because they benefit from economies of scale in accessing talent and ideas.

Social trust matters too, as this can sharply reduce frictional costs. It is not an accident, I would argue, that many of the wealthy industrialists in Britain during the first industrial revolution were Quakers. Because their religion forced them to be honest at all times, even in business dealings, they were generally associated with trust and were eager targets for business relationships, which lowered their frictional costs substantially.

The relative lack of bureaucracy matters too, partly because more bureaucratic systems are more open to corruption and to interference by powerful players, and partly because more bureaucratic systems, by imposing higher costs on starting new businesses, tend to favor the richer and more powerful, who have the ability to pay these frictional costs, at the expense of the poorer and less powerful. Even

cultural attitudes to business can matter. Recently I read the following about the how doing business in the US is different from elsewhere:

Having essentially run the same company from both countries, Mr Kelleher has found the most important difference to be the attitude. "From the moment I arrived, I knew it to be different. People are more open to hearing about your business idea; they won't make themselves hard to reach, or dismiss proposals or ideas because they haven't come through the right channels" he says.

I can go on but I think my point is relatively clear. The social capital model suggests that there is some amount of investment that is wealth enhancing for any economy, depending on its ability to absorb and exploit the benefits of that investment. Beyond this amount, however, it can be difficult for an economy that scores lower in social capital to take full advantage of investment, in which case the additional productivity generated by higher levels of investment are low, and are more likely to be exceeded by the cost of the investment.

Raising the amount of investment, in this case, is wealth enhancing up to some point, beyond which it can become wealth destroying. At that point it is far more efficient to improve the institutional ability to absorb investment than to increase investment itself (although, because this is intimately caught up in social and political power structures, it can be brutally difficult to do so).

The "Doing Business" report

One attempt at measuring social capital as I define it is the World Bank's "Doing Business Report", which tries to score countries according to the ease with which businesses can operate. In the latest report China ranks in the middle – number 91 out of the 185 countries ranked, just below Barbados, Uruguay and Jamaica and just above the Solomon Islands, Guatemala and Zambia. In the report China ranks differently according to various sub-rankings, some of which I think are more important (starting a business, protecting investors, resolving insolvency) and some less (paying taxes, trading across borders).

Social capital is a tough measure to score, and I do not want to suggest that the World Bank rankings are a good or even adequate measure. They are merely a rough proxy, and some analysts, for example those associated with labor unions, argue that because labor regulations have a negative impact on the World Bank ranking, these rankings are at least in some cases driven more by ideology than by objective requirements. China itself is opposed to these rankings and is apparently trying to get the World Bank to discontinue them. According to a recent *Financial Times* *article*:

China is leading an effort to water down the World Bank's most popular research report in a test of the development institution's new president, Jim Yong Kim. According to people close to the matter, China wants to eliminate the ranking of countries in the Doing Business report, which compares business regulations – such as the difficulty of starting a company – in 185 different nations.

...Pushed by China and other critics – including trade unions, international aid charities and some other developing countries – last year Mr Kim set up an independent review of the report chaired by Trevor Manuel, South Africa's planning minister. But a number of people involved in the process complain that Mr Manuel has appointed two longstanding critics of the report as advisers to the panel, raising doubts about its impartiality.

I do not want to get into the debate about the usefulness of this particular set of rankings because it is not relevant to whether or not there is such a thing as a level of social capital that constrains the ability of a country to take advantage of investment. What is more, in large countries like China or the US, there may be significant variations in social capital even within a country. The key point is that this model presents a very different argument about what an appropriate level of investment is for any country.

I am not going to insist that one model is obviously better than the other at describing reality. This is clearly a subject of reasonable debate and there is nothing approaching unanimity on the subject. My main point here is just to suggest that there are implicitly two very different ways of looking at the world, and they have very different implications for continued investment in China. I of course believe the social capital model is the appropriate one, and I will try to explain why, but I don't want to suggest that mine is the only reasonable and consistent point of view.

Where this disagreement about what is an optimal level of capital stock comes out most clearly is in the debate about China's decision aggressively to pursue investment growth in the poorer inland provinces. The inland provinces in China are generally much poorer than the coastal provinces and much more backward economically (and in fact this has been true for centuries). If you believe in the capital frontier constraint, then the policy implications are obvious beyond much dispute: Beijing must encourage as much investment as possible in the poor inland provinces, even to the extent of diverting investment from the richer coastal areas.

If you believe in the social capital constraint, the implications are more complex. It makes sense, in this case, to encourage some investment into the inland regions, but only up to a point. Because these poorer inland regions are almost certainly much less able efficiently to absorb the benefits of investment and capital stock, we are also likely to reach the productive limits of investment much earlier. This means we are also likely to waste capital at much lower levels of capital stock per worker.

So which model does a better job of describing reality in China today? The capital frontier constraint implies that because all of mainland China operates more or less under a single legal and political system, every part of China is as likely to benefit from any given level of capital stock per worker as any other part. Very poor Guizhou, in other words, is just as able to exploit Shanghai levels of investment efficiently as comparatively rich and advanced Shanghai. The closer we can bring capital stock per worker in Guizhou to Shanghai levels, according to this way of thinking, the better off China is and the less income inequality there is likely to be.

The social capital constraint suggests that Guizhou should optimally have much less capital stock per worker than Shanghai because it is less able to take advantage for a variety of reasons having to do with local institutions, political and social conditions, and so on. It implies that investment in the poorer parts of China would have been lower absent a government strategy to raise investment levels in the poor regions.

Which way should investment go in China? If you believe in the capital frontier constraint, then clearly we are better off diverting resources from Shanghai to Guizhou. Not only will this reduce inequality within China, but it will increase China's overall wealth because the total returns to China, including hard-to-record externalities, will be much higher for investment inGuizhou than for investments in Shanghai.

Of course if you believe in the social capital constraint, then you would not want to divert resources from Shanghai to Guizhou. You would in fact want to do the opposite. Diverting resources from Guizhou to Shanghai might increase income inequality but it will make China richer overall. To address the inequality, this model would suggest, either we should keep investing in Shanghai and simply transfer income from Shanghai to Guizhou, or we should work especially hard to reform the social, political, financial and economic institutions in Guizhou so that

it can grow not so much by increasing investment but rather by increasing its ability to transform existing investment into more productive uses.

The IMF paper with which I started this newsletter, and other similar analyses, comes out implicitly quite strongly in favor of the social capital constraint. Here is what it says:

This paper reviews trends in investment at the provincial level in China and finds evidence that some types of investment is becoming excessive, especially in inland regions. In these regions, investment Granger-causes consumption on average. By contrast, in coastal provinces, private consumption has on average become more self-sustaining and less dependent on investment. Moreover, in relative terms, investment is more closely associated with higher household income in coastal provinces while in inland provinces it seems to influence corporate income more. This suggests that the share of investment contributing to the productive capital stock in coastal areas is larger than in inland provinces. If this trend is continued, valuable resources are likely to be wasted.

If investment in the inland regions is indeed less productive than investment in the coastal regions, it is hard to justify the capital frontier constraint model. Since Guizhou is much further from the frontier than is Shanghai, investment in Guizhou, according to the model, should in the aggregate be more productive than investment in Shanghai. The IMF says it isn't. Of course the social capital constraint model would have no problem with the IMF's findings.

I leave it to my readers to decide which model they think is a better description of reality. One way of thinking about this is to consider why historically some countries that have "gone west" and invested in poorer regions were successful (the US in the 19th Century, for example) and some were not (Brazil in the 1950-80 period and the USSR in the 1930-1960 period, for example). One possible explanation may be that in the successful cases, higher investment followed increases in social capital, and in the unsuccessful ones they preceded them.

But whichever model one finds more congenial, I would insist that whenever anyone discusses the appropriate level of investment in China, he is implicitly using one model or the other to value investment. He should however do so explicitly, since the implications are so radically different.

The capital frontier constraint model says we should continue to increase investment in China as quickly as we can and we should especially direct this increase to the poorest and most backward parts of China. The social capital

constraint model says we should slow overall investment growth as much as possible, especially in the poorer inland regions, because they result in a huge cost to China's economic wealth – although the resulting losses are as of yet unrecognized because capital stock is not being written down to its "correct" value and losses are simply buried in the debt which is continuously rolled forward.

The social capital model also suggests that the most powerful way of increasing Chinese wealth in the next few years is to implement the political, economic, financial and social reforms needed to allow China to increase its ability to absorb and exploit its already too-high level of capital stock. These are the kinds of reforms Beijing may in fact be discussing.

Can convergence be imposed?

Before discussing Beijing's attitude, I want to digress a little. One sell-side analyst, traditionally a lot more bullish than I am about medium term growth prospects for China, and a lot less concerned about rising debt, recently made a proposal that plays up the very big differences between the two models. According to an article in *People's Daily*, there is indeed scope for rapid catch up among the poorest provinces:

China's regional disparity could bring vast potential for economic growth, a top economist from Standard Chartered Bank said Wednesday. "In the next five years, China's economy will maintain a growth rate of 7 to 8 percent thanks to the growth opportunities offered by the regional disparity," said Stephen Green, Standard Chartered's chief economist for China. China's economic growth ticked down to 7.7 percent in the first quarter, falling short of market expectations and suggesting a tepid rebound for the economy.

Green said those worried about China's economic slowdown are overreacting, as the differences in economic development between China's regions could provide a strong engine for economic growth. Green used data acquired through the bank's research to categorize Chinese cities into three tiers according to their GDP per capita. Beijing, Shanghai and Tianjin are first-tier cities, with an annual GDP per capita of nearly 80,000 yuan (about 12,903 U.S. dollars), he said.

He described second- and third-tier cities as those with an annual GDP per capita of 50,000 yuan and less than 30,000 yuan, respectively. Green said the research indicates that if second-tier cities reach first-tier GDP levels, the

economy will maintain an annual growth rate of at least 7 percent for the next five years.

Green's points are that there is a large difference between the richer and poorer provinces, and that the same set of policies that drove up income levels in the richer provinces can, presumably, be applied to the poorer provinces in the same way and for the same effect as their income levels converge with those of the richer provinces. This convergence alone will guarantee that China will grow by 7-8% for many more years.

Green may be right, but I think it is worth pointing out under what conditions he would be right and under what conditions he would be wrong. If the difference in wealth between the richer and poorer provinces is indeed caused mainly by the difference in capital stock per worker, and if otherwise there are no significant institutional differences between the two that prevent the poorer regions from catching up, then it is probably true that the policies that worked in the coastal regions can be successfully applied to the inland regions with much the same economic impact. Beijing can turn all of China into Guangdong and Zhejiang. But if the poorer regions are poorer not because they lack investment but rather because they are institutionally more "backward" and so lack the ability to absorb investment efficiently, then it is not so clear that their income levels can converge with those of the richer regions within China except under conditions of significant social and political change. As an aside I am struck by the fact that the disparity between richer and poorer regions in China has existed in very much the same way for many centuries, and wonder if this isn't due at least in part to dramatic differences in what I am calling social capital.

If social capital is indeed much lower in the poor regions than in the rich, then it isn't at clear to me that we can expect much further convergence except at a huge cost to China's economy overall. Resources, in other words, can simply be transferred wholesale from the rich to the poor regions, so that convergence is achieved not by speeding up growth in the poor areas but rather by reducing it in the rich. At any rate, depending on which model is correct, we will see over the next five years if there is indeed significant convergence and at what cost.

What does Beijing believe?

It is pretty obvious if you consider China's track record and the statement of government officials that for many years Beijing has implicitly believed in the capital frontier model (although the kinds of reforms pushed in the 1980s by Deng Xiaoping, who seemed to understand intuitively the importance of

institutional constraints, were more in the form of institutional reforms than increases in investment). Since the early 1990s the solution to every social or economic problem or crisis has been to increase investment, and in recent years there has been an especially strong push to increase investment in the poorer regions. In my November 7, 2012, piece for *Foreign Policy* I put it this way:

China's spectacular growth over the past 30 years, like that of the USSR and Brazil before it, was made possible mainly by the ability of policymakers to control credit and unleash waves of investment when needed. This allowed Beijing to keep growth rates high regardless of the circumstances and no matter how the leadership managed domestic problems.

It was able to avoid a surge in unemployment when it restructured the hugely inefficient state-owned industries in the 1990s by sharply increasing infrastructure investment. Investment spending helped it smooth over the social dislocations caused by its rigid and antiquated political structure. It eased political conflicts and factional fighting by directing billions of dollars into pet projects, much of which the politically connected have since siphoned off. China grew vigorously through the Asian crisis of 1997, the Chinese banking crisis a few years later, and, the collapse of the global economy in 2007-08. In each case, unrestricted access to savings allowed China to power growth by pouring cash into the projects of its choice.

The only way to justify this astonishing increase in investment in the medium term is to argue that even though Chinese investment levels are extraordinarily high (comparing them not to the US or Japan but rather to other developing countries like Brazil, whose per capita income and worker productivity levels are low but still higher than those of China), they are so far from the optimal level determined by the capital frontier that China is always made richer in the aggregate because of the increase in investment.

But attitudes in Beijing may be changing. Consider Premier Li's statements last week, which some people are claiming (a little prematurely, perhaps) represents a major shift in policy. According to an article in last week's *Xinhua*:

China will allow the market to play a bigger role in economic innovation, Premier Li Keqiang said on Monday at a State Council meeting on the reform of government. As more power is delegated to lower levels, the government should shift its focus to three areas — improving the policy environment for development, providing high-quality public service, and upholding social fairness and justice, he said.

There should be a better balance between the government and the market, and between the government and society, the premier said during a videophone conference to launch a new round in transforming the functions of the cabinet and its branch agencies. The reform of government functions is a major effort to help the nation maintain growth, control inflation, reduce risks, and enjoy healthy and sustainable economic development.

According to the premier, the reform will minimize government approval needed to authorize general investment projects and general qualification certificates. It will contribute to fair competition in the market, and to corporate-level efforts to upgrade management and technology. It will ultimately expand employment opportunities, through speeding up the registration of industrial and commercial enterprises, and give more latitude to small and medium-sized enterprises and to service industries. It will also inject greater vitality to development initiatives at local level.

Li stressed that more effective administration should be in place on matters of deep public concern, including food safety alarms, the environment and work safety. Justice should be meted out in a timely manner when the law has been broken in such cases. More should be done to cut redundant capacity in industries that suffer such problems, he said.

The *South China Morning Post* has him adding "If there in an over-reliance on government-led and policy driven measures to stimulate growth, not only is this unsustainable, it would even create new problems and risks." Li, in other words, is not suggesting that China should increase investment. On the contrary he wants to slow investment growth. He is instead implicitly suggesting that China should take steps to change the way in which it absorbs investment.

And it is not just Premier Li. The *South China Morning Post* has an article claiming that President Xi is also very much on board with the need to change the underlying growth model:

Chinese President Xi Jinping has taken charge of drawing up ambitious reform plans to revitalise the economy, sources close to the government said, shunning policy stimulus for fear it could worsen local government debt and inflate property prices. A consensus had been reached among top leaders that reforms would be the only way to put the world's second-largest economy on a more sustainable footing, said the sources, who are familiar with the plans and Xi's involvement.

China's economic growth is at its weakest in 13 years, although still the envy of any major economy. Xi will present the reforms at a key meeting of the ruling Communist Party later this year that will set the agenda for the next decade, signalling his seriousness to see breakthroughs, the sources told Reuters. Some of the sources cautioned that the reforms could face resistance from vested interests, especially state firms.

Broadly, the measures would liberalise interest rates and overhaul the fiscal system for local governments to ensure they had a steady stream of tax revenues rather than relying on volatile land sales to raise funds. The reforms would also free up China's rigid residence registration, or hukou, system that precludes people from access to basic welfare services outside their official residence area, the sources said.

Notice the direction of these polices. Rather than resolve the problem of slowing growth simply by increasing investment – which is what was always done in the past, and which would "work" again if the capital frontier model is the valid one from which to consider the impact of higher investment – Beijing seems to be going out of its way to preclude this way of dealing with slowing growth. Instead it will try to change other factors, factors that I would argue affect social capital by determining China's ability to absorb existing investment levels.

The market seems to agree with this new approach. According to an article in *Xinhua*:

Chinese shares jumped on Friday after the State Council announced fewer economic and investment activities would be subject to central authorities' approval, extending the rally to three consecutive trading days.

A major change

I believe that in the past two to three years there has been a significant and welcome shift in Beijing's attitude towards maintaining growth, and that this shift implicitly represents a shift from the capital frontier model of optimal investment levels to the social capital model. Keynes famously reminded us that "even the most practical man of affairs is usually in the thrall of the ideas of some long-dead economist," and I would argue that in this sense models do matter. The economic model that we implicitly use to justify policy can result in hugely different policies with hugely different outcomes.

The surge in debt of the past few years has created tremendous concern, but I would argue that this concern would not be justified if investment levels in China were still too low. In that case any credit-fueled increase in investment would

likely have resulted in a net improvement in China's debt servicing capacity, in which case, with government debt at well below 25% of GDP, rising debt would not be a concern.

But if investment is being misallocated, if investment levels are higher than China's ability to absorb and exploit capital stock, then it should not be surprising at all that debt capacity is becoming a problem. In fact, as I have argued for many years, this is simply an automatic consequence of additional investment in the investment-driven growth model. Debt, in this case, must be rising faster than debt servicing capacity, in which case Beijing's true debt level is not the nominal debt level but rather the nominal debt level plus estimates of contingent liabilities likely to rise as a consequence of wasted investment.

Let me not overstate my case. The fact that China's debt is rising much more quickly than China's debt servicing capacity is consistent with my implicit model – which claims that the optimal amount of capital stock in China is a function of China's relatively low level of social capital, and that Chinese investment has far exceeded its optimal level – but it doesn't prove it. The fact that debt may be rising faster than debt servicing capacity is not necessarily inconsistent with the capital frontier model. After all, as the US amply proved in the 19th Century, even countries in which additional investment is economically justified can still run into debt problems and even crises.

Neither model has been proved. China may have too much capital stock, or it might not have enough, in which the current debt worries may simply reflect bubble conditions in the credit market. The policy implications of the two models, however, could not be more different.

If you believe that China can and should continue to increase investment until capital stock per capita approaches US or Japanese levels, then clearly China should continue to invest, and it should invest more in the poorer regions than in the richer ones. Everyone, even among the remaining China bulls, agrees now that Beijing must change some of its credit allocation conditions, but the old growth model will continue to be the right one according to the capital frontier model. There is no need to change the capital allocation process significantly and there is no need to liberalize interest rates.

What is more, according to this model, China's very low consumption share of GDP mainly reflects the extraordinary growth in GDP. As high investment levels are maintained, it will simply be a question of time, and probably a short time at that, before the household income share of GDP, and with it the household

consumption share, begins to surge. GDP growth can remain at 7-10% for at least another decade.

If you believe, however, that China's very low level of social capital has long ago made its investment strategy obsolete, the consequences and implications are radically different. It suggests that China has overinvested beyond its capacity to utilize these investments economically, and so there are hidden losses on bank balance sheets created by the failure to write down physical capital to its true value. In this case Chinese growth cannot help but drop significantly as these losses are finally recognized and as investment levels are sharply curtailed. What Beijing must do, in this case, is to ignore GDP growth rates and focus on household income growth rates, which anyway are what should really matter. Rather than continue to increase investment in manufacturing capacity, infrastructure, and real estate, Beijing should find ways to curtail investment growth sharply and to allocate what capital is invested to small and medium enterprises, to service industries, and to the agricultural sector, all of which are sectors whose growth at the expense of the current beneficiaries of high investment growth (SOEs, local and municipal governments, national champions, etc.) are likely to imply improvement in China's social capital. Doing this will also require significant changes in the legal, social, financial and political institutions that constrain China's ability to absorb capital efficiently.

What to do?

The real challenges for China, if you believe in the social capital constraint, are not about maintaining high rates of growth in the short term but rather of raising the levels of social capital in China. This is much more difficult and much more likely to be virulently opposed by the elites whose ability to constrain economic efficiency is precisely at the heart of their wealth – which consists of appropriating resources rather than creating resources – and of their power. It is, however, the only real way to sustain growth over the medium and long terms. In fact, the social capital model suggests that the famous "middle income trap" might just be a social capital trap. Countries can force up economic growth rates (actual the growth rate of economic activity) simply by mobilizing savings and forcing up investment rates, but ultimately their inability to absorb continuously the higher levels of capital mean that they cannot push real wealth per capita beyond some fairly hard constraint represented by their institutional inability to absorb investment.

This hard constraint, in other words, is the "middle income trap". Reforming social, political, financial and economic institutions in ways that raise social capital quickly would be, in this view, the only sure way to avoid the dreaded middle-income trap. The two sets of policy implications, as I see them, are the following:

The implications of the capital frontier constraint:

- Beijing should not abandon the investment-driven growth strategy, but it should adjust the credit allocation process to slow the growth in "bad" debt, which is a separate issue and not fundamental to the economy. The seemingly unsustainable rise in debt, in other words, is not a systemic problem reflecting a combination of the need to keep investment high with a systemic inability to invest productively. It is simply an accidental result of distorted incentive structures within the financial system and so can be administratively resolved.
- China's economic growth rate might slow a little, but this is simply the consequence of China's having gotten much closer to the capital frontier, in which case a lower return on investment should be accepted. Chinese growth will stay in the 7-10% region for many years.

The implications of the social capital constraint:

- China has invested far more than its ability to absorb the investment, which means that for many years GDP growth has been overstated and that this overstatement is hidden in the form of unrecognized bad debt. Rising bad debt is, in other words, a systemic problem and cannot be resolved within the current system. Beijing must constrain investment growth sharply, redirect a much lower level of investment into areas that improve social capital (SMEs, agriculture, services), and engage in significant social, political, economic and financial reforms to force up China's ability to absorb additional investment.
- Not only will China's real GDP growth drop as China shifts towards a different growth engine, but it will drop even more as China is forced to recognize the hidden losses buried in its debt levels.

Before closing, I want to mention a seminal 2002 paper by Daron Acemoglu and James Robinson ("Economic Backwardness in Political Perspective"). The paper is important not just because of its explanation of development but also because of its attempt to understand the political implications of technological and institutional changes that promote development. The authors conclude:

In this paper, we constructed a simple model where political elites may block technological and institutional development, because of a "political replacement effect". Innovations often erode political elites' incumbency advantage, increasing the likelihood that they will be replaced. Fearing replacement, political elites are unwilling to initiate economic and institutional change. We show that elites are unlikely to block developments when there is a high degree of political competition, or when they are highly entrenched. It is only when political competition is limited and also the elites' power is threatened that they will block development. We also show that such blocking is more likely to arise when political stakes are higher, and in the absence of external threats.

China:Choosing More Debt,More Unemployment,Or Transfers[Recommended]

Michael Pettis, November 20, 2016

China’s success will depend Beijing’s ability to centralize power, to begin to sell off government assets, to rein in credit growth, and to accept much lower GDP growth rates.

Summary

•I have often written in this blog and elsewhere about the three policy choices Beijing faces as it tries to manage through the adjustment process.

•My argument is that subject to two very plausible assumptions, every economic policy Beijing implements ultimately can be abstracted to one choice among three options.

•China's success will depend on the extent to which Beijing in 2016 is able to centralize power, to begin to sell off government assets (probably local and provincial, and not central, government assets), to rein in credit growth, and to accept much lower GDP growth rates while keeping household income growth from dropping too sharply.

Pettis, an expert on China’s economy, is professor of finance at Peking University’s Guanghua School of Management, where he specializes in Chinese financial markets.

I have often written in this blog and elsewhere about the three policy choices Beijing faces as it tries to manage through the adjustment process. My argument is that subject to two very plausible assumptions, every economic policy Beijing implements ultimately can be abstracted to one choice among three options. These two assumptions are:

1.China has overinvested in infrastructure and manufacturing capacity to such an extent that in the aggregate the cost of additional public sector investment exceeds the present value of future increases in productivity generated by the investment. China's public-sector investment, in other words, is value destroying, and because it is funded by debt, additional investment causes China's real debt servicing costs to rise faster than its real debt servicing capacity.

2.China's long-term sustainable growth rate is substantially below the economy's current GDP growth target, and so the economy is only able to meet the growth target by increasing its debt burden.

I was discussing this earlier today with a friend of mine who asked if I would post on my blog a piece I wrote last year for my clients. I am not able to post the full piece, but I decided to post the following edited abstract. I have not had time to read though it to remove incongruities or anachronisms:

Since 2010-11, and even more so in the past year or two, it has often been difficult to evaluate the consistency of Beijing's policies within China's economic rebalancing. This shouldn't be surprising. For

one thing, as I have tried to show many times before, rebalancing is an intensely political process and almost by definition it must undermine the so-called "vested interests" who were previously the great beneficiaries of decades of unbalanced growth. For this reason it must be driven by the constant give-and-take of the political process.

For another thing, there continues to be a lot of confusion about just what it is that Beijing must do, and there are still far too many economists who believe that certain types of reforms will allow Beijing to sidestep some of the politically difficult decisions involved in rebalancing. For example many economists still argue that the right combination of interest rate reforms and reforms to financial-sector corporate governance can transform the Chinese banking system quickly enough and radically enough that Beijing can allow investment growth to remain high without a commensurate growth in the country's debt burden.

This is almost absurd. Many countries under easier circumstances - in which interest-rate distortions were less extreme, for example, as was moral hazard, or the links between parts of the banking system and the political distribution of power - have tried to do just that, and none has succeeded nearly quickly enough, if it has succeeded at all, to matter.

A country's financial system, after all, can only change in ways that are consistent with changes in the political system and with the distribution of political and economic power, and it is hard to imagine how this would happen in China quickly enough to break the link soon enough between investment growth and growth in the debt burden. Among other things a reform of this nature would require the elimination of moral hazard, but moral hazard has become so fundamental to the stability of the Chinese banking system and to the way credit, and with it wealth and political influence, has been distributed during the past two or three decades, that it is hard to believe that its rapid elimination would not be too disruptive for Beijing to allow.

For these reasons it isn't at all surprising that Beijing's policies will appear inconsistent from time to time. To make it easier to evaluate policymaking amidst this confusion, however, I have said a number of times that any policy Beijing chooses must involve, usually implicitly, some combination of three outcomes. In every case, in other words, we will see as a consequence of the policy one or more of the following:

•Higher unemployment, the limit of which is largely a political issue involving social instability, with the added wrinkle that certain types of unemployment are likely to be perceived as more politically costly than others - e.g. because returning to family farms acts as a kind of safety valve, even though a significant fall in living standards, unemployment among migrant workers is likely to be less costly, or

because university graduates are presumably more communicative and have higher expectations, their unemployment might be more costly.

•Higher debt, by which I really mean a higher debt burden, or an increase in debt relative to debt-servicing capacity, and this can rise until credit growth can no longer be forced up to the point where it can be used to roll over existing debt with enough margin fully to fund as much new economic activity that Beijing targets.

•Higher wealth transfers, in which governments - and because the Xi administration is seeking to centralize power this is most likely to involve local governments rather than central government entities - must liquidate assets and use the proceeds directly or indirectly either to increase household wealth or to pay down debt, with the main constraint on Beijing's ability to direct this process likely to be the tremendous political opposition of the so-called "vested interests", for whom government control of these assets is an important source of power, patronage, and wealth.

The trade-offs between a higher debt burden, higher unemployment and greater wealth transfers to the household sector may come into sharper relief in 2016 because although unemployment still seems to be fairly low, in spite of much lower growth in the past three years, there is now reason to worry that any additional reduction in growth may begin to show up in the unemployment numbers.

Although I have explained this framework many times before, I don't think all of my clients understand what I mean by it. I recently met with a senior European official who is a long-time subscriber to my newsletter, and although he has always been very supportive of my work, even when my analysis of the Chinese economy was widely considered outrageously contrarian, he confessed that he was a little skeptical that something so simple could provide much value in describing something as complex as the Chinese economy.

I explained to him that the unemployment-debt-transfer framework was not so much "simple" as it was "flexible", and to show him what I meant, I went on to describe a series of recent adverse shocks to show how the framework clarified the various scenarios. The exercise seems to have worked. After I had finished he seemed to be much less skeptical and in fact seemed pretty ready to embrace the framework I had recommended.

Working through the scenarios

I thought it might be useful if I replicated the exercise by positing some adverse event, and then working through the consequences. No matter what the adverse event or policy decision, it is almost always easy to show that except for a very limited number of easily-specified and highly improbable

scenarios, every response Beijing chooses, including that of no response, must result in some combination of higher unemployment, higher debt, and higher wealth transfers.

To move from the abstract to something specific, I will assume, as occurred in 2009-10 as a consequence of the global crisis, that for reasons external to China there is a sharp contraction in its current account surplus, mainly caused by a sharp fall in exports. I will the try to list every logically possible outcome, even those that seem obvious or obviously implausible, to show how flexible this framework and how useful in allowing us to evaluate policymaking:

1.Let us assume, then, that a sharp fall in exports causes a reduction in demand relative to the quantity of goods and services China produces. Either Beijing responds to the sharp fall in exports or it does not. In the latter case one or more of three things must happen. First, exporters can close down production facilities and fire workers. Second, they can close down production facilities and retain the workers. And third, they can keep production facilities running. There is no other possible outcome if Beijing does not respond to the sharp fall in exports.

2.We can work through these three outcomes. In the first of the three cases, if exporters close down production facilities and fire the workers, then clearly unemployment rises. Second, if they close down production facilities and retain the workers, because they can no longer pay the workers out of the revenues they generated they must borrow, sell assets, or draw down savings, in all of which cases effectively the debt burden rises (in the latter two cases because assets decline with no change in debt). And finally, third, if they do not close down production facilities, they must finance rising unsold inventory and, again, the debt burden rises.

3.These are the three possible outcomes if Beijing does nothing in response to as sharp fall in exports. It is far more likely however that Beijing would respond to counter the decline in demand. Any economy has three sources of demand, consisting of net exports, consumption and investment, and Beijing can respond with policies that counter the fall in demand by promoting each of these sources of demand. First, it can attempt to rebuild exports by becoming more competitive - most likely by devaluing the RMB, by forcing down wages, or by reducing interest rates. Second, Beijing can also counter the impact of lower net exports on demand by boosting government consumption, which causes the debt burden to rise because it must be financed, or by implementing policies that boost household consumption. Finally, Beijing can counter the impact of lower net exports on demand by boosting investment.

4.Rebuilding exports by devaluing the RMB, by forcing down wages, by reducing interest rates, or by any other subsidy of production costs effectively reverse the rebalancing process, and it is precisely because of the deep imbalances that Beijing is in the position of being forced to choose among the three outcomes. These policies ultimately boost exports by indirectly transferring wealth from households to subsidize the tradable goods sector. The result, of course, of reversing the rebalancing

process is that contrary to Beijing's explicit goals Chinese demand relies less on household consumption and more on investment, and because the financial sector misallocates capital systematically. Unless China is able, very improbably as I have argued, to reform the financial sector deeply enough and quickly enough, the cost of a more competitive (i.e. more highly subsidized) export sector is ultimately a rise in the debt burden, unless of course Beijing is willing to tolerate higher unemployment or to implement greater wealth transfers from the state to the household sector. I have discussed this many times before in other issues of this newsletter so I will not explain why again beyond the above, but it should be quite obvious.

5.If rather than make exports more competitive Beijing chooses instead to boost household consumption, there are two ways it can do so. The sustainable way is to boost household income or household wealth. Less sustainably it can also encourage households to increase consumer debt, the result of which, of course, is a rising debt burden. If however Beijing wants to boost household consumption by boosting household income or household wealth, even as export growth is falling sharply, it can only do so by transferring wealth directly or indirectly - in the latter case, for example, by improving the social safety net or by socializing transportation, medical or other costs - from local or central governments. The impact this will have on China's overall rebalancing depends on how the wealth transfer is funded. If these costs are funded by government borrowing, the debt burden rises. If they are funded by the sale of assets, there is a transfer of wealth from the government to households.

6.Finally, as it did in 2009-10, Beijing can counterbalance the sharp fall in exports by initiating a major investment program. Again, needless to say, the impact this will have on China's overall rebalancing depends on how the wealth transfer is funded. If these costs are funded by government borrowing, as they were in 2009-10, the debt burden rises. If they are funded by the sale of assets, there is a transfer of wealth from the government to households.

This rather simple exercise can easily be repeated for any other set of conditions, and it shows what it means to say that every adverse economic event and every set of policy choices Beijing might implement ultimately boils down to choosing among these three options. I have used a fall in exports to show how constrained Beijing's policy choices are, but I could just have easily done the same using as an example any change in the currency regime, the reform of the hukou system, the de-industrialization of the bankrupt northeast provinces, the development of the OBOR and Silk Road projects, changes in interest rates or minimum reserves, protecting the stock market from crashing, the provincial bond swaps, changes in the tax regime, improving energy and environmental policies, and so on. In every case Beijing is implicitly forced to choose among these three options.

Many research pieces and analyses, and perhaps Beijing policymakers themselves, implicitly assume that there are other possible outcomes. But because they do not specify these alternatives, except

vaguely and unrealistically, they conceal more than they reveal. In fact there are only two other outcomes that are logically and practically possible, but neither is highly plausible or sustainable.

The first alternative assumption is that there is a sharp drop in the household savings rate, so that household consumption rises as a share of household income. Proposals to rebalance the economy by improving retail distribution, for example, implicitly assume that this will happen. But it can happen only if either Chinese households on average decide to become less thrifty, which is unlikely in a period of rising economic uncertainty (and anyway most likely requires rising consumer debt), or if there is a significant redistribution of wealth from the higher-saving rich to the higher-consuming poor, which might be politically very difficult to accomplish in a short enough time period.

The second possible alternative assumption buried in most analyses - but which again is neither highly plausible nor sustainable - is for a radical reform of the financial sector and a major re-channeling of capital away from its existing uses and into productive uses that do not entail a faster rise in debt than in debt-servicing capacity. Aside from the fact that the most productive users of capital are actually reducing their demand for capital in the face of weak Chinese and global conditions, the type of transformation required in the financial sector, and the transformation in the political institutions needed to accommodate this financial-sector transformation, are far more radical than any country has ever been able to manage. I have explained why I believe this outcome is extremely implausible several times in other issues of this newsletter.

Clearly, from an economic point of view it is easy to see that Beijing should always prefer policies that transfer wealth from the state sector to the household sector, because every other policy implicitly or explicitly involves something which is either unsustainable, like rising debt, or politically unacceptable, like rising unemployment. In fact it does. The most widely praised economic reforms proposed during the Third Plenum in 2013 do exactly that.

The problem, of course, is that local and provincial "vested interests" strongly oppose the concrete steps needed to achieve this transfer in large part because their economic and political power depends directly or indirectly on control of local government assets, or on their abilities to transfer wealth from the household sector into their own projects. The alternative to rising debt or rising unemployment, in other words, requires that power be sufficiently centralized in the Xi Jinping administration that it is able to overcome these vested interests.

This suggests very clearly what we should be watching for in 2016 as the most important indicator of whether or not Beijing will be able to manage a successful economic adjustment, with growth slowing

sharply but gradually and in a non-disruptive way. China's success will depend on the extent to which Beijing in 2016 is able to centralize power, to begin to sell off government assets (probably local and provincial, and not central, government assets), to rein in credit growth, and to accept much lower GDP growth rates while keeping household income growth from dropping too sharply. If it cannot do this, China's adjustment is likely to be much more difficult, much longer lasting, and perhaps much more disruptive.