

## IN FOCUS: GLOBAL

Christian Broda  
 +1 212 526 8536  
 christian.broda@barcap.com

Eduardo Levy-Yeyati  
 +1 212 412 5963  
 eduardo.levyyeyati@barcap.com

Piero Ghezzi  
 +44 (0) 20 3134 2190  
 piero.ghezzi@barcap.com

*The decline in international flows is set to reverse the recent dollar rally and raise Treasury rates*

*Demand for higher returns is poised to make financing current account deficits more expensive*

*Appetite for American assets have decreased as shown by a reduction in capital inflows*

## The new global balance – Part I

**In the first part of a series, we argue that the flight to safe assets has masked a massive reduction in international capital flows. The return of the “home bias” is one of several factors that is set to put pressure on rates and currencies of debtor countries in 2009.**

During most of the 2000s, the next big financial crisis was supposed to come from the unwinding of the global imbalances associated with a sizable and persistent US current account deficit. Doomsayers depicted an apocalyptic scenario in which foreign official investors shifted away from US assets, leading to a spiral of dollar weakening and US rate steepening. As it turns out, the apocalypses came in a very different way: a negative risk premium benefited the USD (which strengthened 12% since the beginning of 2008) while the flight to quality drove Treasury rates to their historical lows, with no significant steepening in anticipation of mammoth fiscal needs (Figure 1).

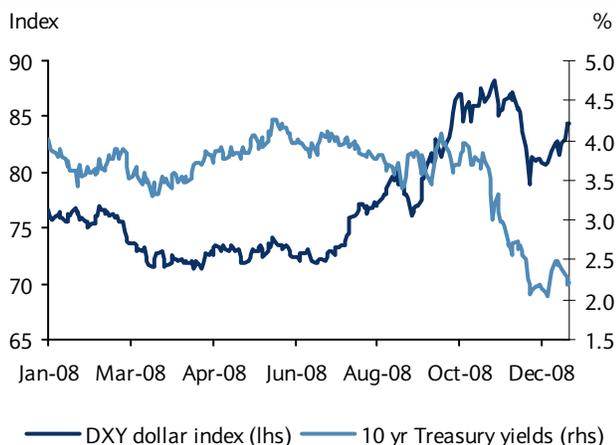
In a series of articles that explore what we see as a new, post-crisis global balance, we argue that this puzzling response of asset prices will only be temporary. Three factors point towards a reversal of the current pattern: 1) the decline in cross-border international flows; 2) the expected reduction in net savings from China and commodity exporting countries; 3) the massive supply of public assets that is expected in coming quarters. We begin this series by focusing on the first of these factors.

As the appetite for international assets falls around the world, foreign investors are likely to demand higher returns to finance a given current account deficit. In the case of the US (Figure 2), the smaller gross capital inflow implies that a much larger share of international portfolios will have to be allocated to US assets. This, in turn, is likely to put pressure on the US to finance its debt at current prices throughout 2009, potentially leading to a bear steepening of the US curve and a weakening of the USD.

### The return of the home bias

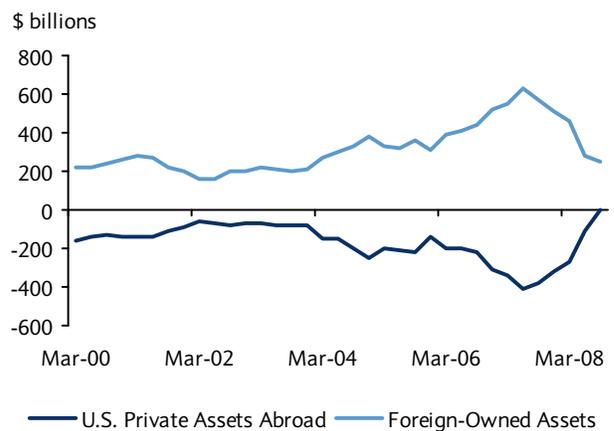
Whereas the “flight to safety” dimension of this crisis has been widely publicized, it has masked a potentially more important aspect: foreign investors’ willingness to buy American

**Figure 1: DXY Dollar index and 10 yr Treasury yields since January 1, 2008**



Source: Bloomberg.

**Figure 2: The undoing of financial globalization**



Source: Bloomberg.

assets has fallen dramatically. Figure 3 shows that, while the decline of capital inflows from central banks have remained stable (dark bars), private inflows to the US have reverted (light bars): foreign investors have *reduced* their holdings of American assets in the last two quarters by USD 115bn (whereas in a typical quarter between 2003 and 2007 private capital inflows were close to USD 300bn).

*Americans are also liquidating foreign assets at a rapid pace*

How then can this foreign retrenchment be consistent with a strong dollar? One possible answer points to the behavior of Americans' investments abroad. As Figure 4 suggests, the repatriation of foreign assets by Americans has also been dramatic. In the last two quarters, Americans liquidated over USD 300bn in foreign assets. This repatriation started with the reduction by US banks of lines of credit to foreigners and continued in Q3 with the sale of foreign securities, generating a scramble for US dollars abroad. Interestingly, it is the Fed swap lines that are providing foreign central bankers with the dollar liquidity to cope with the dollar squeeze – thus avoiding additional dollar strength. The dark blue line in Figure 4 shows that in 3Q 08, the extent of the swap lines with foreign central bankers was almost the same as the extent of liquidation of foreign assets by Americans. One could cautiously suggest that the Fed, as international lender of last resort, has been financing the return home of Americans' wealth.

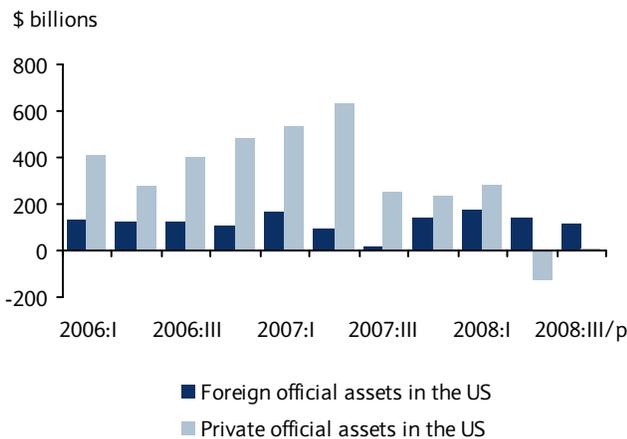
*Risk aversion should continue to fuel global retrenchment over the next few quarters*

How persistent is the return of the home bias? While it is too early to suggest that the recent patterns will have long-lasting effects, we believe that this retrenchment of cross-border flows may last throughout the next few quarters, precisely when debtor countries will need them the most. Various reasons triggered the repatriation of cross-border portfolio investments, including the post-Lehman deepening of the deleveraging process that led to liquidity shortages and asset liquidation, and increased risk aversion that favored cash substitutes at home over risky assets abroad. We believe it is unlikely that these factors will abate anytime soon.

*Although the decline in cross-border flows is sharp, foreign investors still prefer to hold US Treasuries*

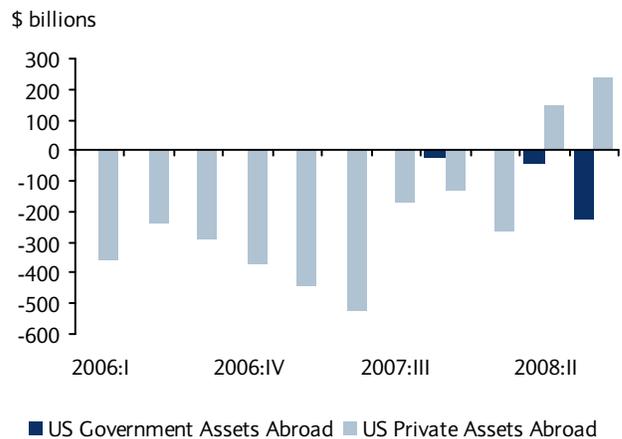
Concurrently with the decline in overall cross-border flows, the shift in the composition of foreign investors' portfolios towards US Treasuries has been notable. Figure 6 shows that despite total inflows by foreign investors declining sharply in recent quarters, the demand for Treasuries has increased at the expense of both agencies and corporate bonds. The flight to safety is an unmistakable pattern in the data.

Figure 3: Private foreign assets are leaving the US...



Source: BEA, Barclays Capital

Figure 4: ...and Americans are coming home even faster!



Source: BEA, Barclays Capital

*The large US current account deficit has been financed without the typical need for higher rates*

### Fewer foreigners, tougher terms

A notable feature of the period of financial globalization that started in 2002 is that, despite the heavy borrowing in recent years, the US has financed its large current account deficits without experiencing an unusual build-up in foreign investors' holdings of US assets.<sup>1</sup> A simple exercise should clarify this point. Assume country A has a current account deficit of USD 20 (and for simplification purposes, no foreign purchases of assets). If the gross investment abroad of all foreign countries other than A is USD 100, then to finance A's current account deficit, foreign investors need to devote 20% of their investment abroad. Instead, if gross investment flows were only USD 30, then 66% of the portfolio would need to be devoted to A's assets. Models of optimal portfolio theory would suggest that the latter case requires that investors be enticed with higher rates (or a lower value of the currency).

*External savings from the rest of the world previously moderated US borrowing needs...*

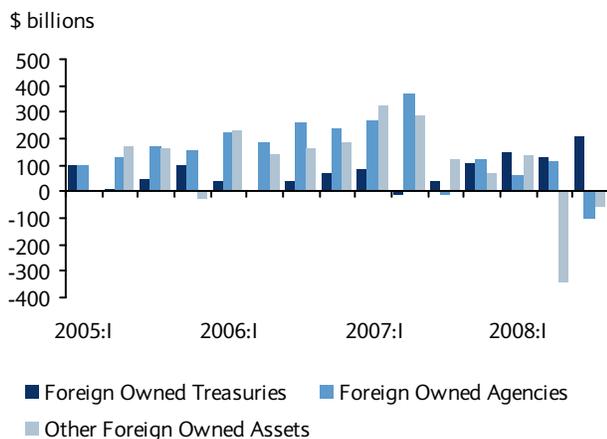
This illustration is representative of today's sharp decline in capital flows. It has long been highlighted that the US current account deficit has absorbed a large amount of the *net* external savings from the rest of the world. In the last five years, the cumulative US borrowing has been USD 3.4trn, which amounted to almost 60% of the *net* external surpluses. However, courtesy of the surge in financial globalization, US borrowing was only 23% of the assets that foreign investors were investing outside their countries, less than its estimated share in the global asset portfolio (Figure 5). Even debt securities, blessed by the flight to quality, captured 41% of 2007 cross-border debt flows, roughly in line with their 37% share at the beginning of the year. Under reduced global flows, the same funding would have stretched the share captured by the US – at a cost.

*...but the US and other debtor nations are set to feel considerable pressure in the months to come*

In sum, whereas the surge in financial globalization helped finance the US twin deficits in the past, its undoing may raise the cost of international capital for the US Treasury in 2009. In particular, the extent of the incipient “de-globalization” trend suggests that the impact on yields and currencies of highly indebted countries could be considerable. In the coming weeks, we will argue that these pressures for indebted countries are likely to be exacerbated by two additional aspects of the new global balance: the expected reduction in net external savings around the world, and the impact of the enormous supply of public bonds to finance fiscal stimulus around the world.

<sup>1</sup>For an illuminating explanation of these issues, please see *Financial Globalization and the U.S. Current Account Deficit*, T. Klitgaard and M. Higgins, New York Fed, Current Issues in Economics and Finance, December 2007.

**Figure 5: Out of agencies and corporates and into Treasuries**



Source: BEA, Other foreign owned assets: Liabilities reported by U.S banks not included elsewhere and liabilities to unaffiliated foreigners

**Figure 6: Is the US borrowing more than its share?**

	2007	Yearly avg. 2002-06	Yearly avg. 1997-2001
<b>All Investments (\$ trn)</b>	<b>2.06</b>	<b>1.30</b>	<b>0.74</b>
US share of global flows	19%	24%	24%
Us share of global stock	23%	38%	32%
<b>Portfolio Equity (\$ trn)</b>	<b>0.20</b>	<b>0.08</b>	<b>0.11</b>
US share of global flows	23%	15%	21%
Us share of global stock	44%	45%	39%
<b>Bonds and notes (\$ trn)</b>	<b>0.95</b>	<b>0.68</b>	<b>0.23</b>
US share of global flows	41%	36%	26%
Us share of global stock	37%	45%	39%

Note: FDI and banking shares proxied by the US share in the world dollar GDP. Source: BEA, IMF, Bloomberg, Barclays Capital

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 eduardo.levyyeyati@barcap.com

### The new global balance – Part II

**We argue that the decline in net external savings among global lenders, such as Japan, China and oil-exporting countries, will reduce the pool of funds available to global borrowers like the US, possibly contributing to higher US rates.**

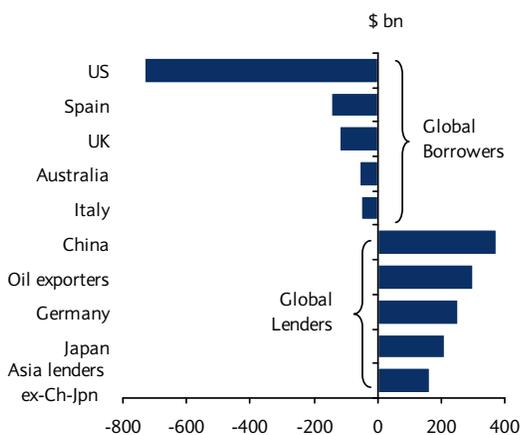
Last week we argued that, as investors' appetite for international assets falls and capital comes back home, countries with current account (CA) deficits are likely to face higher borrowing costs. In addition to this portfolio rebalancing, the crisis will likely accelerate the unwinding of global imbalances. The bursting of the oil bubble and China's shift towards domestic sources of growth, coupled with Japan's falling savings and a generalized collapse in international trade, are bound to lower external savings in CA surplus countries (global lenders). This reduced availability of funds is expected to worsen the terms under which countries with CA deficits (global borrowers) are likely to be able to fund themselves.<sup>1</sup> We expect this trend to be marked in countries where the fiscal stimulus is most successful in dampening the reduction in private consumption. In coming weeks, we will discuss how the differences in the size and efficacy of the fiscal stimulus – and the associated increase in the supply of public debt – may affect this story.

*The US tops the list of global borrowers, while China tops the global lenders' list*

#### The Chinese imbalance: A workhorse

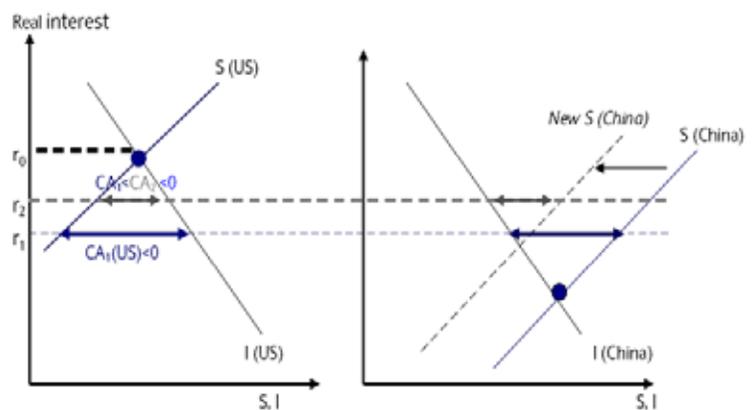
For decades, economists complained that, since domestic savings and investments moved in tandem, the world was not taking advantage of the gains from international risk sharing. In the last few years, the pendulum swung and concerns centered on the global imbalances that had become large and potentially unsustainable, especially since China joined the international arena with its accession to the WTO. Figure 1 provides a snapshot of the top players in today's global imbalance saga. In 2007, the US was running a CA deficit of around USD730bn, the largest among the top borrowers. Among the top five regions with the largest CA surpluses are China and the group of oil-exporting countries.

Figure 1: Global lenders and borrowers in 2007



Source: Barclays Capital. Note: CA = Savings – Investment. Asia lenders ex China Japan includes Singapore, Taiwan, Malaysia, Hong Kong, Thailand, Indonesia, Philippines, Laos, Nepal, Myanmar.

Figure 2: A framework to understand global imbalances



Source: Barclays

<sup>1</sup> Since the current account equals domestic savings minus investment, i.e.,  $CA = S - I$ , which is also how much a country spends over its income, we refer to deficit countries as "borrowing" from the rest of the world

Before addressing how this imbalance is expected to evolve over the next few years, it is useful to illustrate recent current account dynamics with a minimalist framework. Figure 2 shows the US and Chinese savings and investment profile as a function of real interest rates. Naturally, higher interest rates imply higher savings and lower investment (where the interest rate is the opportunity cost of investing). Figure 2 can account for two stages in recent years.

*In a world with less financial barriers, a lower interest rate cleared the market of funds*

*This led to a widening of imbalances (higher US deficit and Chinese surplus)*

*A change in China's "development" strategy may reduce the imbalance by 2010*

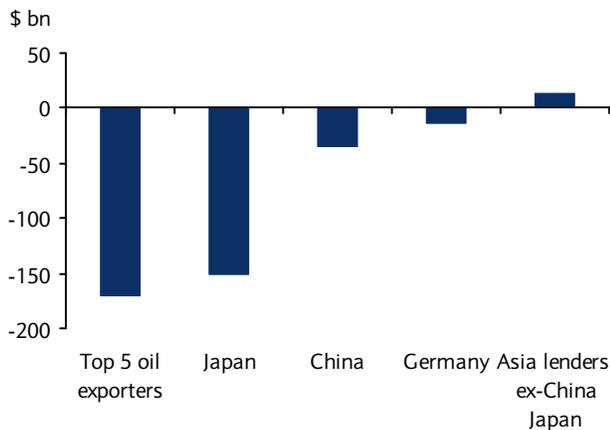
*This reduction in Chinese external savings would mean higher rates*

- Stage 0: Pre-WTO accession, both the US and Chinese economies could be treated as essentially closed, where  $CA=0$  (ie,  $S=I$ ), and two different interest rates could be sustained worldwide as there were no opportunity to arbitrage between these closed markets. In the US, the prevailing interest rate in this stage was  $r_0$ .
- Stage 1: The incorporation of China into world markets changed the picture substantially. For illustrative purposes, we assume the integration is complete, with no barriers to investment between the US and China (although we are clearly not there yet, barriers have been falling dramatically recently). This integration means that the equilibrium interest rate is one that makes *world* savings equal to *world* investment (no longer  $S=I$  on a country-by-country basis). Because of the existence of high Chinese savings, US interest rates fell to  $r_1$  from  $r_0$  during this stage. This drop in rates happened concomitantly with growing global imbalances (in Figure 2, we highlight the US CA deficit by the arrows above " $CA_1 < 0$ "). These were key characteristics of the 2001-07 period.

The Chinese side of the global imbalance has been the subject of a lively debate in recent years, fuelled by concerns about a growth path increasingly dependent on exports and investment. This path has resulted in the ratio of private consumption to GDP falling to 40% from 60% over the last 25 years. We believe the crisis has prompted a more proactive set of policies that place the near-term burden of the recovery on public investment for the sake of expediency, but gear the long-term strategy to boosting domestic consumption on a more permanent basis. We expect this combination of policies to become increasingly apparent in external accounts. We expect China's CA surplus to be 6.9% of GDP in 2010, down from 11.3% in 2007.

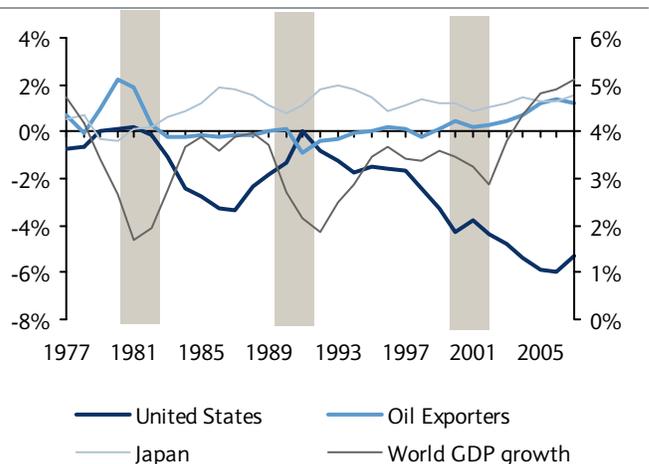
Figure 2 also helps us understand the implications of these changes in China for the US current account and world interest rates. The right hand side of Figure 2 shows the inward shift of external savings. With lower savings, interest rates would naturally rise, and the US

Figure 3: Expected fall in global lenders' external savings (2008 vs. 2009)



Note: Asia lenders ex-China and Japan includes countries with a CA surplus in 2007. Source: Haver Analytics, Barclays Capital

Figure 4: The balancing act of global recessions



Source: Barclays Capital

CA should be reduced, as it now becomes more expensive to borrow. In the figure this can be traced to a rise in rates to  $r_2$  from  $r_1$  and a decline in the CA imbalances (marked in the case of the US as  $CA_1 < CA_2 < 0$ ).

### Reduced external savings: Beyond China

*The decrease in savings is common to other world lenders like Japan and oil exporters*

As Figure 3 highlights, the fixation with China should not mask the general nature of the decline of CA surplus countries. Indeed, the expected fall in China's external surplus is not even the largest among global lenders in 2009. The collapse in oil prices immediately implies lower savings for oil-exporting countries. Likewise, Japan has been running trade deficits since August 2008. Part of it may be directly related to the crisis (the 35% y/y decline in Japanese exports is a reflection of the global downturn and JPY appreciation), but there is an underlying structural decline in the Japanese savings rate that suggests more deficits to come<sup>2</sup>. The current fall in external surpluses from Japan and oil exporting countries have the same effect as the reduction in Chinese savings in Figure 2. These are forces that complement the tendencies for lower imbalances and higher rates worldwide.

*Global downturns are typically linked to CA balance contractions*

While the current situation is unprecedented, one can find – with slightly different players – a similar pattern of compression of external imbalances associated with past global downturns. In the shaded areas in Figure 4, we highlight periods of tightening of major current accounts, which are concurrent with global slowdowns. The milder 2001 episode is an exception, possibly explained by the emergence of large Chinese savings in the international arena (as explained in Stage 1 above). But the figure highlights that, in light of the dismal 2008 global GDP growth and the outlook for 2009-10, we are likely to see a tightening of BoPs around the world in coming quarters.

### Afterthought: US savings and the fallacy of composition

*In a scenario of an extended US crisis, US savings can substitute for Chinese and Japanese surpluses...*

The shrinkage of external surpluses and deficits during recessions can be superficially dismissed as mechanical. Clearly, the narrowing of CA surpluses around the world is not an exogenous shock that comes from nowhere. One could indeed argue that the reduction in external surpluses is caused by weakening demand from borrowing countries – likely the result of the massively negative wealth effects associated with the fall in housing and equity prices, especially in the US. In that case, the unwinding of the global imbalances could, in the end, be achieved by the seamless substitution of higher savings in a more frugal US for reduced Japanese and Chinese external savings. If so, interest rates would not be required to change in the transition to the new world balance (for those who followed Figure 2, this means that the outward shift in the US S-curve perfectly offsets the inward shift in Chinese savings, leaving rates at current levels). However, this scenario would be consistent with a protracted US recession – one in which, curiously enough, the reluctance of global lenders to lend would play a negligible role.

*... but if policy works (as we expect), it should lead to pressure on rates*

But while the above scenario is a possibility, we tend to assign more than a marginal probability to a successful implementation of the fiscal and monetary policies in the US. This “optimistic” view requires that the US Treasury mitigates significantly the surge in private savings, bringing US external borrowing halfway back to pre-crisis levels and testing the drier waters of international capital markets. This implies that, in our view, the unwinding of global imbalances, while not dramatic, will likely contribute to stress US rates. Ultimately, the net effect will depend on where we see US savings during 2009-10, a critical aspect that we address in the next installment of this series.

<sup>2</sup> See *Japan Economic Commentary: December trade data – Net exports to weigh heavily on real GDP*, 22 January 2008, for a more thorough explanation of the structural factors behind this change.

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Christian Broda  
 +1 212 526 8536  
 christian.broda@barcap.com

Piero Ghezzi  
 +44 (0) 20 3134 2190  
 piero.ghezzi@barcap.com

Eduardo Levy-Yeyati  
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*We suggest that fiscal policies in the US and China will lead to tighter terms for US borrowing*

*The crisis can be interpreted as a positive savings shock in the US*

The new global balance – Part III

**We argue that US and Chinese policies are key to understanding why US interest rates may rise even as the US CA deficit falls and the US need for external financing declines.**

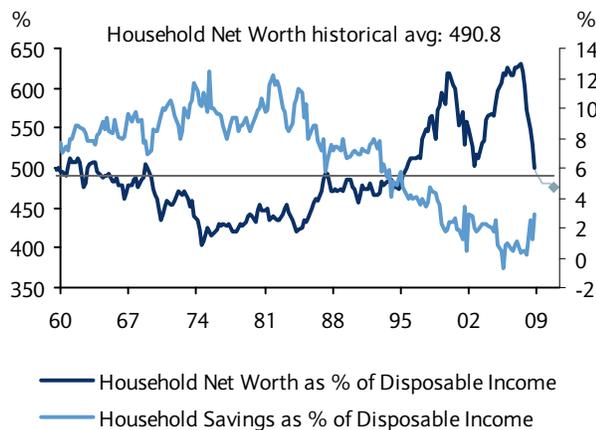
In previous articles we have argued that the fast pace of financial “de-globalization” under way and the fall in external savings of global lenders (e.g., oil exporters, Japan, and China) will put pressure on rates and currencies of debtor countries such as the US. In this piece, we add a third factor that we expect to shape the new global balance in a similar way: the effect of the expansionary policies of the US and China. We suggest that fiscal policies in the US and China will lead to tighter terms for US borrowing.

We build our case in two steps. First, we argue that the financial crisis could be interpreted as a positive shock to US savings that will tend to lower the US CA deficit. In the absence of policy, this fall in the US CA deficit could “balance” with the lower CA surplus of global lenders discussed in part II. Second, we suggest that the magnitude and efficacy of fiscal policies in the US and China will distort this balance by dampening the rise in US savings (and increasing the US CA deficit) and further lowering China’s CA surplus. This means that as the US funds its fiscal deficit by issuing Treasuries and China funds its own stimulus by selling them, the terms at which the US will be able to finance itself are likely to tighten.

US consumer on the ropes

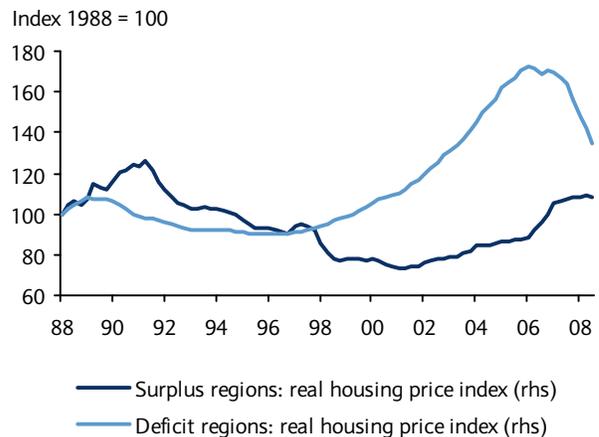
The fall in oil prices and the collapse of household’s net worth are strong forces that will likely boost US private savings for some time. The financial crisis has significantly accelerated the decline in US households’ net wealth that started in mid-2006. It is likely that consumption will fall as wealth declines. Consumption responds positively to lifetime wealth and as wealth falls credit constraints get tightened. So a decline in wealth induces both a rise in the saving rate and an improvement in the CA (=Savings - Investment). Figure 1 shows the relationship between net worth and savings rate since the 1960s, which suggests some role for these factors in understanding US trends in savings (for an interesting analysis of the US household savings rate see *Neither a borrower nor a spender be*, *Global Economics Weekly*, 6 February, 2009, p9).

Figure 1: Households’ net worth and savings rate



Source: Haver Analytics, Barclays Capital

Figure 2: Housing prices of surplus and deficit countries



Source: Haver Analytics, Barclays Capital

An indication that the increase in net worth is linked to the external imbalances is provided in Figure 2. The figure shows that the real house price increases for countries running CA deficits differ systematically to those in surplus countries. Although the source of causality in the figure is unclear (it could also be that an omitted factor – such as low world interest rates – could explain the empirical pattern), we believe it is likely that the burst of the world housing bubble will partially reverse the downtrend in US savings and the global imbalance.<sup>1</sup> In particular, if governments were to stay in the sidelines, then the decline in wealth in deficit countries coupled with the decline in surpluses of oil-exporting countries could lead to a new world balance without large price changes (see *The New Global Balance – Part II, Global Economics Weekly, 30 January, 2009, p5*).

*Governments are decidedly stepping in, and we strongly believe that fiscal policy has the ability to boost aggregate demand*

But this is clearly not the case: governments are decidedly stepping in, and we strongly believe that fiscal policy has the ability to boost aggregate demand (see the next section for details). In the US, the more stimulative is policy, the smaller the increase in US national savings (public + private) as fiscal policy leads to public dis-saving and dampens the decline in private consumption. In China, absent the initial shock on private savings, public policy is likely to lead unambiguously to a fall in national savings. The extent of the US and Chinese policy response make this a critical element to understanding the pricing implications of a new global balance with lower external imbalances.

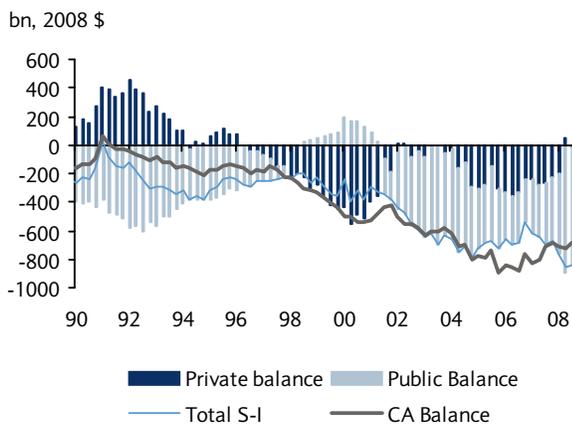
**The crux of the crowding out argument**

*This section provides a review of the theory behind the effects of a fiscal expansion*

Few topics are presently more controversial than the efficacy of fiscal policies. Because this issue is key to understanding the asymmetric reduction in global imbalances, we summarize the main arguments behind this debate. Three factors are essential in determining the degree of fiscal effectiveness:

- 1) **Permanent income:** Classical economists argue that as consumers respond only to changes in their permanent income, any change in public policy would be immediately reversed by private behavior. For instance, as the government reduces taxes today, households anticipate that future taxes have to rise to pay for the higher fiscal deficits and thus their permanent income is unchanged. As a result, private savings increase 1 to 1 with the fall in taxes, leaving aggregate demand unchanged.<sup>2</sup>
- 2) **Higher interest rates:** a partial crowding out of private consumption by public expenditure can also occur through the effect that increased public borrowing has on

**Figure 3: A common (but misleading) decomposition of the US CA deficit**



Source: Haver Analytics, Barclays Capital

**Figure 4: Propensities to consume**

Oil Importers		
Propensity to consume	(c+g)/y	m/(c+g)
United Kingdom	0.83	0.33
United States	0.83	0.15
Japan	0.71	0.14
China	0.61	0.31
Group Average	0.74	0.23
Oil Exporters		
Propensity to consume	(c+g)/y	m/(c+g)
Saudi Arabia	0.63	0.51
United Arab Emirates	0.56	0.87
Qatar	0.53	0.65
Oman	0.67	0.54
Iran	0.71	0.28
Group Average	0.62	0.57

Source: Barclays Capital

<sup>1</sup> For a model that links housing markets and current account dynamics see Gete (2009) "Housing Markets and CA dynamics" mimeo University of Chicago.

<sup>2</sup> Recent commentary by University of Chicago professors Fama and Cochrane would fall under this category.

rising interest rates – especially in countries with high levels of debt. The higher rates lead consumers to postpone part of their planned consumption to the future.

- 3) **Liquidity constraints and openness:** Even for “permanent income” consumers, when liquidity constraints are binding, they are likely to increase their spending when taxes fall. Moreover, for a given level of stimulus, the larger is the propensity to consume abroad, the lower is the boost to domestic aggregate demand.

*The empirical evidence indicates that fiscal policy can stimulate domestic demand*

Unlike theory, the empirical evidence *unequivocally* indicates that fiscal policy can stimulate domestic demand. First, consumers act like grasshoppers (myopic and Keynesian spenders) rather than ants (forward-looking “permanent income” consumers).<sup>3</sup> Second, there is strong evidence that liquidity constrained (low-income and low-asset) consumers spend a higher share of their tax savings (Broda and Parker, 2008). Third, because of the countercyclical, “leaning-against-the-wind” nature of fiscal policy, it is *wrong* to interpret a negative correlation between private and public savings (which is -0.5 for quarterly US data) as an indication of causality (from public to private consumption) and “crowding out.” Blanchard and Perotti’s (2002) careful empirical work tries to avoid this problem by focusing in “exogenous” changes in public policy (i.e., excluding those that can be predicted from the past or as an automatic policy response to economic activity), and finds that “exogenous” stimulative policy *does* boost GDP (albeit by less than 1 to 1, see *Profligacy is the new prudence*).<sup>4</sup> Blog wars may spice up the debate, but careful empirical work can provide us with much needed guidance.

### An important aside: The wealth reshuffling effect

*As commodity prices fall, total external savings fall*

A distinct but related mechanism can also lead to a reduced pool of international capital. As commodity prices fall, income gets transferred from commodity exporters to commodity importers. Oil is a case in point. As a net importer, the US sees its income increase as oil prices fall. By contrast, Saudi Arabia sees its income fall as a result. But what happens to total external savings as a result of the change in the price of oil? Figure 4 suggests that oil-exporters save a larger fraction of their income than oil importers (China being an exception). Thus, the reshuffling of income from oil exporters to importers reduces savings in oil-exporting countries more than the increase in savings in oil-importing countries.

This means that assuming all else is held constant this reshuffling of income should signify tougher terms for deficit countries to finance their net borrowing in environments of low oil prices. Specifically, it indicates that commodity-driven external savings accumulated in sovereign wealth funds and international reserves (largely allocated to Treasuries) will build up more slowly, and the higher income from lower gas or food prices in commodity importers (the other side of the equation) would be mostly spent.

### Wrapping up

*Paradoxically, the policy response could inhibit the undoing of the global imbalances*

In Part II we argued that the fall in external savings from global lenders would likely dry up international capital markets in 2009-2010 (the effect of reshuffling wealth to oil importers adds to this trend). We also suggested that without policy responses, the unwinding of the global imbalances could be achieved at existing prices as a more frugal US would not suffer from the lower external savings of global lenders. However, in this article we suggest that the extent and expected efficacy of the US and China fiscal packages are likely to put pressure on US rates. Thus, paradoxically, the policy response could inhibit the undoing of the global imbalances. Why? Because such undoing would require a contraction of the US and Chinese economies that the respective authorities appear unwilling to tolerate.

<sup>3</sup> For a careful test of these theories we refer the reader to “Grasshoppers, Ants and Pre-Retirement Wealth: A Test of Permanent Income Consumers” by Erik Hurst, mimeo University of Chicago.

<sup>4</sup> Blanchard and Perotti (2002) “An Empirical Characterization of the Dynamic Effects of Changes in Government Spending and Taxes on Output” *QJE*, November; Broda and Parker (2008), “The Impact of the 2008 Tax Rebate on Consumer Spending: Preliminary Evidence”, mimeo University of Chicago, GSB, July.