

Andrew G Haldane: Global imbalances in retrospect and prospect

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Global imbalances are colossal. At their high-water mark in 2006, imbalances of the G7 economies totalled around 5% of GDP. Like Colossus, global imbalances straddle many of today’s most important global public policy issues. These include the architecture of the international monetary system, the future of the international trading system and the design of the international financial system. These are high stakes.

This paper assembles some facts from the past on global imbalances. More speculatively, it also assesses some of the factors shaping the course of imbalances in the future. Those medium-term forces suggest that imbalances may get worse before they get better. If so, this global financial fault-line could cause further tremors to the international monetary, trading and financial system in the period ahead, the like of which we are currently experiencing.

Global imbalances – past

Global imbalances are a natural by-product of free trade in goods, services and capital. In other words, capital flows are a necessary ingredient of trade and capital liberalisation. In that sense, they are good cholesterol. But capital flows may also demonstrate an imbalance between demand and output in an economy, which must eventually correct if debt and wealth stocks are not to become unsustainable. Sharp corrections in rates of domestic absorption and/or capital flows could then result, with attendant output costs. In that sense, global imbalances may also be bad cholesterol.¹

So which are capital flows today? Historical evidence is illuminating. Chart 1 plots (the absolute value of) current account balances in thirteen countries, as a % of GDP, since 1880. Other than in wartime, global imbalances are at their highest in well over a century. They have surpassed levels which prevailed during the classical Gold Standard and are more than twice levels during the Bretton Woods period (Chart 2). For some individual countries, these capital flows look larger still, both absolutely and relative to historical norms (Chart 3).

It is not just the size of these global flows that is unusual. So too is their direction. Contrary to theory, capital is flowing from developing countries with a low capital stock, towards developed countries with a high capital stock (Lucas (1990)). In other words, capital is flowing “uphill”, away from countries where the marginal product of capital should be high and towards countries where it should be low. This makes the pattern of global capital flows doubly perplexing.

¹ Blanchard and Milesi-Ferretti (2009) discuss the causes of “good” and “bad” imbalances.

Chart 1: Current account balances

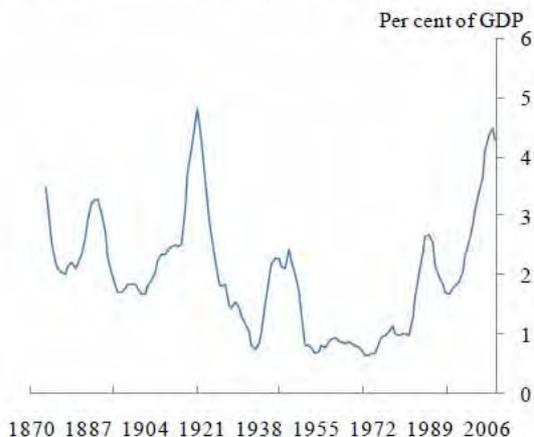


Chart 2: Average current account balances

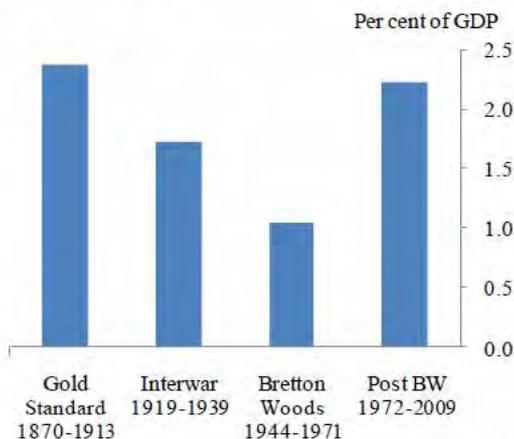
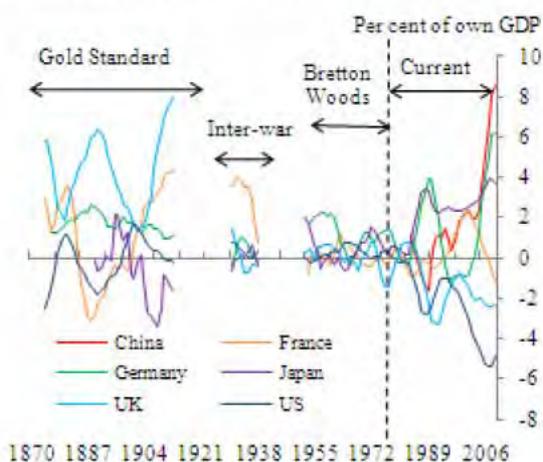


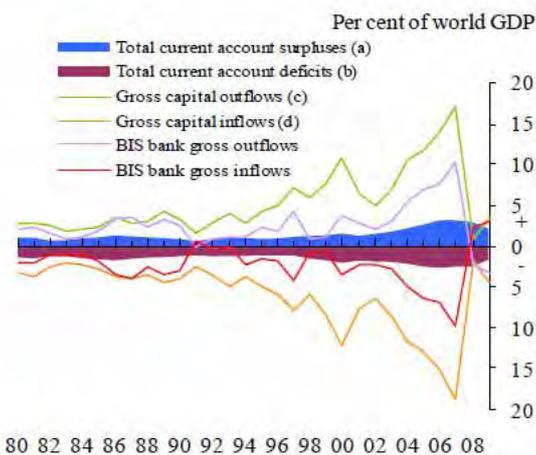
Chart 3: Current account balances for individual countries



Sources: IMF WEO, Taylor (2002) and Bank calculations.

^(a) 5-year moving average. Data prior to 1980 are from Taylor (2002). Data post 1980 are from the IMF WEO.

Chart 4: Gross and net capital flows



Sources: Bank for International Settlements, IMF WEO and Bank calculations.

- (a) Sum of global current account surpluses.
- (b) Sum of global current account deficits.
- (c) Sum of global net purchases of foreign assets by residents.
- (d) Sum of global net purchases of domestic assets by foreigners.

Perplexing need not mean bad. Current account imbalances are no more than the arithmetic difference between gross capital inflows and outflows. As these gross flows increase as a result of financial liberalisation, it is natural to expect the difference between them to become more volatile (Obstfeld (2010)). As Chart 4 shows, the growth of gross capital flows in the

years preceding the crisis was dramatic. At the start of the 1980s, gross capital flows were around 5% of world GDP. By 2007, they had risen to 7 times that.

This growth in capital flows and imbalances has been mirrored in the path of the external balance sheets of the major economies. These, too, have adjusted rapidly. In 1985, the US was a net external creditor. By 2009, it had become a net external debtor to the tune of around 20% of GDP. In 1999, China was a net external debtor. By 2008, it had become a net external creditor of around one third of GDP.

An interesting perspective on the drivers of imbalances is provided by looking at the gross saving and investment behaviour of surplus and deficit countries over this period. Chart 5 looks at these patterns. It suggests a couple of striking patterns.

First, the correlation between saving and investment rates appears to have weakened significantly over the past two decades, for both surplus and deficit countries. This is consistent with increasing capital mobility. Historically, there has been a high correlation between national saving and investment rates – the Feldstein-Horioka (1980) puzzle. Chart 6 plots the Feldstein-Horioka correlation coefficient alongside an index of financial liberalisation from Obstfeld and Taylor (2004).

Between 1930 and 1980, the Feldstein-Horioka coefficient was close to one – a puzzlingly high co-movement between saving and investment. But that pattern has shifted significantly over the past 30 years. Saving and investment correlations are no longer puzzlingly strong. Indeed, just ahead of crisis, saving/investment correlations had fallen to around zero. They are presently at their lowest levels in almost a century. On the face of it, this might point toward a rather benign interpretation of rising global imbalances: they may simply be the mirror image of rising capital liberalisation. This would be a good cholesterol story.

Even then, however, there may be risks associated with intermediating large global flows of funds. Gross flows can matter. As experience during 2008 illustrated (Chart 4), sharp reversals of these gross flows can disrupt the functioning of financial systems, in particular banking systems reliant on overseas funding. Large inflows may also cause indigestion problems for small domestic capital markets. The strong upward pressures on asset prices in a number of emerging market economies over the past few months are testament to that.

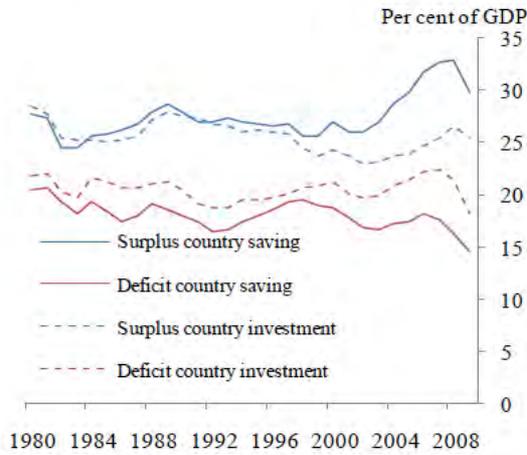
As Chart 5 also shows, most of the rise in global flows over the past decade is accounted for by changes in the saving rates of deficit and surplus countries, rather than in their investment rates. In other words, differential savings behaviour has been the prime mover behind rising global imbalances. It is unsurprising, then, that savings behaviour lies at the heart of the current debate among policymakers and academics on the causes of imbalances.

This, too, need not be bad news. For example, differential savings may simply be mirroring fundamentals, reflecting differences in rates of time preference among consumers or differential rates of technological progress among companies. Equally, it is possible to conceive of explanations for differential saving which are less well-rooted in fundamentals, such as lax monetary policy in the West or mercantilist trade policy in the East.² These latter explanations take us closer to a bad cholesterol story for global imbalances.

This is where much of the current debate on global imbalances is centred. Are they the result of surplus countries saving excessively – a “savings glut” explanation (Bernanke (2005))? Or is it instead the deficit countries saving too little – a “savings shortage” explanation (Taylor (2007)). Put differently, is the problem impatience in the West or excessive patience in the East?

² This can lead to a global co-ordination (or adding-up) problem, as countries seek individually to each run a current account surplus, so depressing global demand (King (2010)).

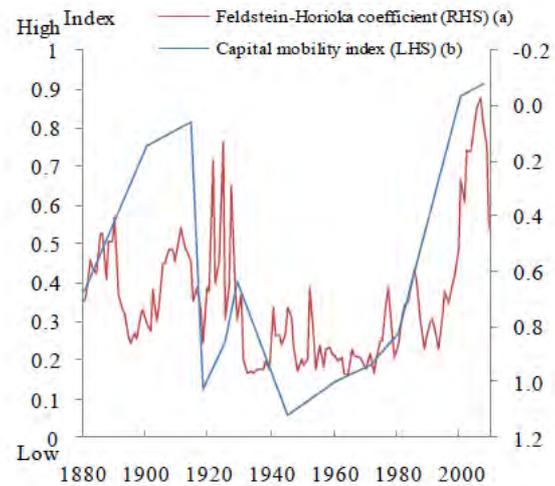
Chart 5: Saving and investment



Sources: IMF WEO and Bank calculations.

(a) Surplus and deficit countries defined based on their average current account balances between 2003 and 2007.

Chart 6: Capital mobility and Feldstein-Horioka coefficient



Sources: Taylor (2002), IMF WEO, Obstfeld and Taylor (2004) and Bank calculations.

(a) The Feldstein-Horioka coefficient is the correlation coefficient between savings and investment for 15 countries (the sample varies slightly over the period).

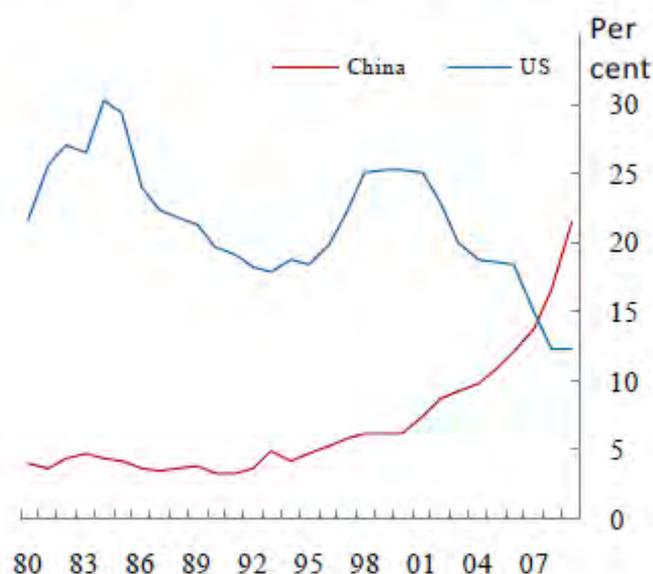
(b) Obstfeld and Taylor's capital mobility index is judgemental and takes values between 0 and 1.

Global imbalances – present

To begin to answer those questions, consider recent saving behaviour in two archetypical surplus and deficit countries – China and the US. Chart 7 looks at the respective contributions of China and the US to global savings since 1980. In 1980, the US contributed around a quarter of global saving. Today, it contributes around a tenth. China has been the mirror image. Having contributed less than 5% in 1980, today China is the single largest source of global saving, contributing around one fifth.

It has been argued by some that these trends could simply reflect different cultural attitudes towards saving among US and Chinese citizens. In the US, it is often said that there is a culture of spending rather than saving – neurologically, the impatience gene may be dominant (Haldane (2010)). In China, by contrast, the culture may be biased towards saving rather than spending, with the patience gene dominant. In other words, differences in agents' rate of time preference, or degree of patience, might account for savings imbalances (Buiter (1981)).

Chart 7: China and US share of world saving



Source: IMF WEO and Bank calculations.

But a recent survey of time preferences in 45 countries suggests cultural differences are not the full story (Wang, Rieger and Hens (2010)). Asked to choose between a payoff this month and a larger payoff next month, 68% of US students choose to wait; they exhibit patience. Facing the same trade-off, 62% of Chinese students made the same choice. These differences are small.³ They are also the “wrong way around” to explain imbalances.

So if cultural factors are not the explanation, what is? Charts 8 and 9 plot national saving rates in China and the US, broken down on a sectoral basis. There are striking differences in saving behaviour across the government, household and corporate sectors in the two countries.

Around two-thirds of the rise in Chinese savings since the early 1990s derives from the corporate sector.⁴ This reflects two things. First, rapidly rising corporate profitability, against a backdrop of strong growth and rising productivity (Ma and Yi (2010)). Since 2000, profits among Chinese industrial companies have risen around 30% per year.

Second, more significantly still, most of these profits have been retained within Chinese companies rather than distributed to shareholders (Qiao and Song (2009)). These differences in US/Chinese corporate savings behaviour show up dramatically in dividend payouts. The average dividend payout ratio among US corporations in 2009 was 40%, with less than a quarter of companies failing to pay a dividend. The average dividend payout ratio among listed Chinese corporations in 2009 was around 18%. Among these, more than half paid no dividend whatsoever.

³ Among the 45 countries, Germany ranked as the most patient (almost 90% of students waited), Nigeria the least patient (less than 10%).

⁴ Using firm-level data, Bayoumi, Tong and Wei (2010) argue that Chinese listed firms’ corporate savings rates are neither especially high compared to listed firms in other countries and the gross savings rate for a typical listed Chinese firm has declined, albeit insignificantly, between 2002–2007.

Charts 10 and 11 consider the distribution of changes in dividend payout ratios among global and Chinese companies. Among global companies, payout ratios rarely fall. More than half of the time they increase. Impatient investors demand immediate dividend gratification, leading to large and rising distributions. This dividend ratchet is a puzzle in empirical finance (Black (1976)). If anything, it is one which is growing over time.

The payout pattern among Chinese quoted firms could not be more different. Increases and decreases in payout ratios are roughly evenly split. The high proportion of “unchanged” payout ratios simply reflects the zero payout policy of more than half of quoted Chinese companies. There is no distribution ratchet. Profits are largely ploughed back. In this respect, Chinese payout behaviour today is not dissimilar to that among US companies during its rapid growth phase in the 19th century (Chart 12).

There is more than one explanation for this behaviour among Chinese firms. A benign interpretation is that it reflects the high option value of Chinese companies retaining funds given future growth prospects, as with US firms in the 19th century. A less benign interpretation is that it reflects an absence of external sources of company finance and shortfalls in corporate governance, with insufficient discipline on companies by outside investors. In practice, both factors are likely to have been important over recent years.

Turning to US and Chinese households, during this century household gross saving as a fraction of GDP has averaged less than 5% in the US. In China, it has averaged around 20%.

In China, the constancy in high household saving rates masks two striking, but broadly offsetting, factors: a 10 percentage point fall in household’s income share; and a 10 percentage point rise in household’s saving propensity (Ma and Yi (2010)). Much of the rise in saving propensities appears to be precautionary. Facing “three mountains” in the future – education, pensions and health care – Chinese consumers have taken the high (saving) road.

In the US, the fall in the household financial balance correlates strongly with the path of household net worth (McKelvey (2010), Chart 13). This correlation emerged strongly during the 1980s, with the simultaneous rise in net wealth and fall in saving. This correlation has remained strong as net worth has reversed recently due to falling house and equity prices.

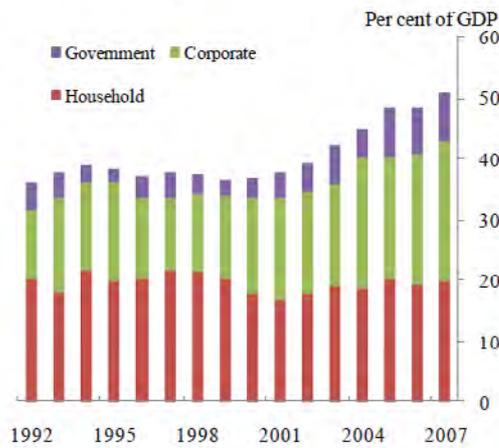
What lies behind these movements? Lax monetary policy has been suggested by some (Taylor (2007)). Financial liberalisation is a second plausible candidate. This had the effect of loosening constraints on the supply of housing credit and thereby boosting housing demand and prices in the US. It also enabled households to mobilise and withdraw the accrued equity in their property to finance spending. Estimates of housing equity withdrawal for spending rose from under 2% of personal disposable income in 2000 to around 4% at the peak in 2005 (Greenspan and Kennedy (2007), Chart 14).

Micro-level data support this story. They show that home equity withdrawal was driven primarily by households with low credit scores and high credit card utilisation rates, who are most likely to have been credit-constrained in the past (Mian and Sufi (2009)). As these constraints loosened, spending rose and saving fell. Liberalisation fed impatience.

These patterns are also consistent with an inequality-based explanation for lower saving (Rajan (2010)). Rising inequality may generate an increased desire to “keep up with the Jones’s”. That, in turn, may have led to higher borrowing, and lower net saving, by the poor.

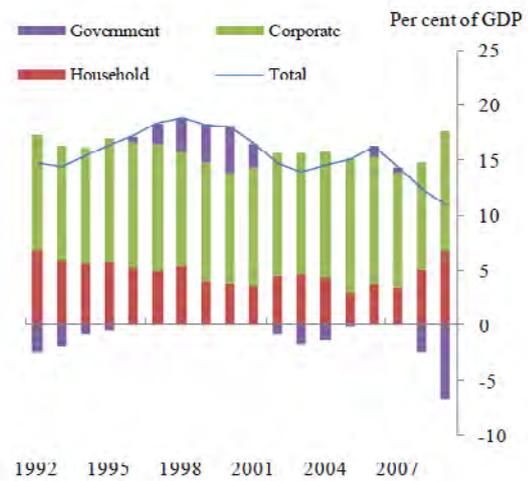
And what applies within countries appears also to apply across them. Among advanced countries, there is a significant negative relationship between within-country measures of inequality and the current account position (Chart 15). Rising inequality, by lowering savings rates among the poor, appears to be deficit-inducing. Rising imbalances may have important social, as well as economic, roots.

Chart 8: China gross national saving



Source: People's Bank of China.

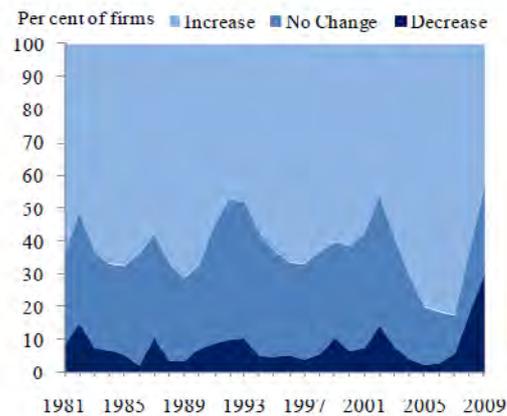
Chart 9: US gross national saving



Sources : Bureau of Economic Analysis and Bank calculations

(a) Total excludes statistical discrepancy

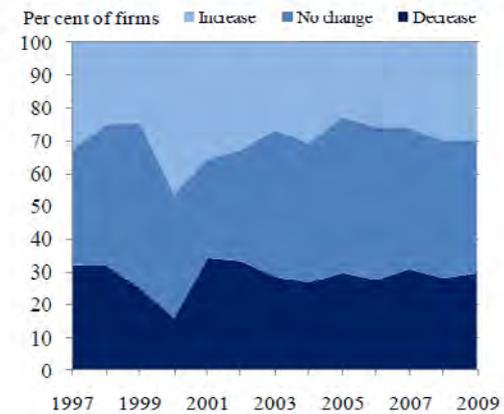
Chart 10: Dividend payouts: global companies



Source: Datastream and Bank calculations.

(a) The chart shows year on year changes in dividend payments at 215 of the largest firms on the FTSE, S&P500, Topix, CAC and DAX indexes.

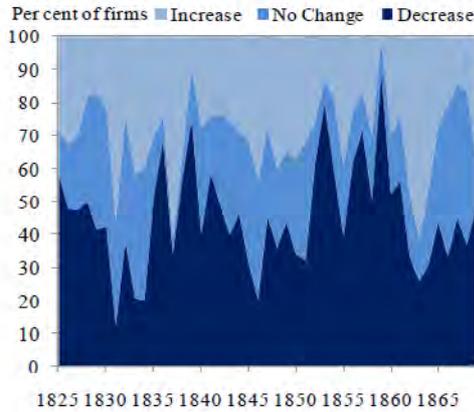
Chart 11: Dividend payout ratios: Chinese companies



Sources: Worldscope, Bank calculations.

(a) The chart shows year on year changes in dividend payout ratios for a rolling sample of listed Chinese firms. The sample covers firms in the Worldscope database as of 8 November, 2010.

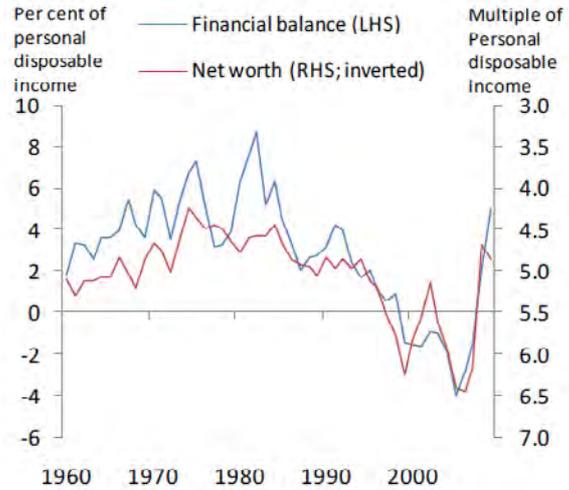
Chart 12: Dividend payout ratios: US firms in 19th century



Source: Yale School of Management, reprinted in De Angelo, De Angelo and Skinner (2009).

(a) The chart shows year on year changes in dividend payments at a sample of 515 NYSE listed firms

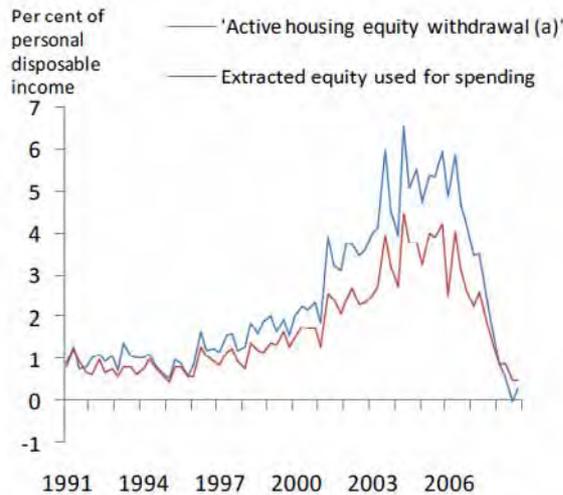
Chart 13: US household net worth and financial balance



Sources: Bureau of Economic Analysis; Federal Reserve and Bank calculations

(a) Includes non-profit organisations

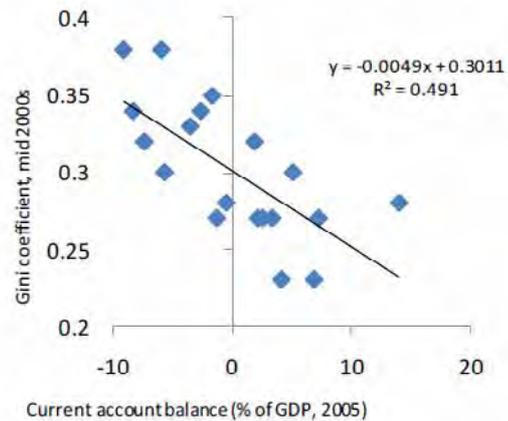
Chart 14: US housing equity withdrawal



Sources: Bureau of Economic Analysis, Greenspan and Kennedy (2007), and Bank calculations

(a) Defined by Greenspan and Kennedy (2007) as the change in home equity mortgage debt plus gross cash out.

Chart 15: Inequality and current account balances in advanced economies



Sources: OECD, IMF WEO and Bank calculations.
Note: Chart includes advanced economies (IMF definition) excluding major oil exporters and reserve accumulators.

Global imbalances – future

So what will be the key forces driving global imbalances in the period ahead? Judging from the recent past, two factors have been important:

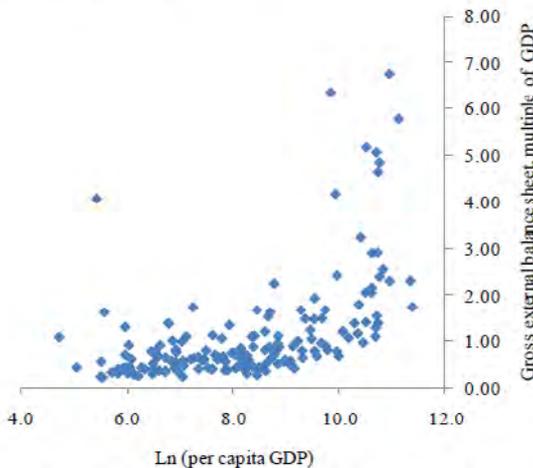
- Global financial integration;
- Differential savings behaviour.

Consider in turn their likely evolution.

Global financial integration. In the period ahead, this will be shaped by a number of medium-term structural factors. One key such factor is cross-country GDP convergence. Over time, we would expect countries' income levels to converge, as currently low income countries catch-up with their high income trading neighbours (Solow (1956)). This convergence process is a well-established empirical phenomenon (Barro (1991) and Mankiw, Romer and Weil (1992)).

Accompanying this GDP convergence is likely to be catch-up in gross external balance sheet positions. As countries develop, so too does their integration into global capital markets, with higher levels of gross external assets and liabilities. Cross-country evidence bears this out. There is a well-defined empirical relationship between a country's GDP per head and its gross external balance sheet position (Chart 16).

Chart 16: Per capita GDP and gross external balance sheets, 2007

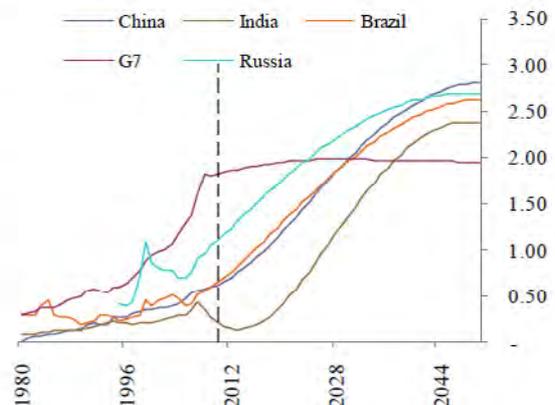


Source: Updated and extended version of the External Wealth of Nations Mark II database developed by Lane and Milesi-Ferretti (2007), US Census Bureau and Bank calculations.

(a) Includes all countries in the Lane and Milesi-Ferretti database, except Luxembourg, Bahrain, Hong Kong, Ireland, Kiribati and Timor-Leste.

(b) External balance sheet is defined as the average of external assets and external liabilities.

Chart 17: Ratio of external balance sheet to GDP



Sources: Updated and extended version of the External Wealth of Nations Mark II database developed by Lane and Milesi-Ferretti (2007), IMF, US Census Bureau, Penn World Table and Bank calculations.

(a) Measured as the average of external assets and external liabilities.

Taken together, these two factors imply a pattern of steadily rising gross capital flows over time, with growth strongest among countries catching up with their high-income trading neighbours. It is possible to calibrate these integration trends and project them forward to simulate future external balance sheets positions among the major economies.

These simulations take as initial conditions cross-country GDP per capita, projected forward using a calibrated rate of growth convergence drawn from previous empirical studies and adjusted for known future changes in population growth. This gives a set of cross-country projections for GDP per capita. These are then translated into gross external balance sheet positions using historical relationships with per capita GDP.

Chart 17 plots some projections of (the average of) gross external assets and liabilities relative to GDP for the G7 countries, China, India, Brazil and Russia. These projections go out to 2050. Among the G7 economies, external balance sheet ratios are broadly flat at around twice nominal GDP. This flatness is driven in large part by assumption, as it is assumed the highest-income countries maintain a flat ratio of external assets to GDP.

This is almost certainly too extreme an assumption. Although smaller than in the past, there remain strong home biases in the investment portfolios of developed countries' institutional investors (Obstfeld and Rogoff (2000) and IMF (2010)). As liberalisation progresses, these biases would be expected to unwind, boosting gross external assets in relation to GDP in developed countries. For that reason, the calibration here can be thought of as a limiting case of the likely adjustments in the pattern of global capital flows.

Subject to that important caveat, the growth in the non-G7 economies' contribution to global capital markets is still striking. Among the BRICs, external balance sheets as a fraction of GDP exceed G7 levels by around 2035. By 2050, they are around 2.5 times nominal GDP. These patterns are even more striking when expressed as a share of global external assets. By 2050, over half of all G20 external assets are associated with the BRICs, up from around 9% currently (Chart 18). Among the non-G7, non-BRIC G20 countries, their share trebles from 5% to around 15%.

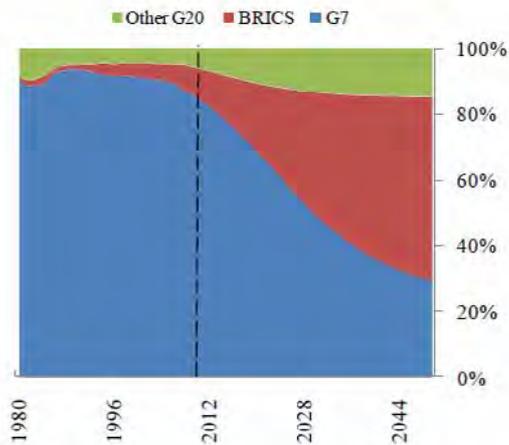
Within this, some countries' share of global assets sky-rocket. China's share of global finance rises to around 30% by 2050, roughly that of the entire G7. India rises to almost 20%, from less than 0.5% currently (Chart 19). The US share falls from 28% to around 12%.

The flow counterpart to these external stock positions is no less dramatic (Chart 20). By 2020, gross capital flows of the non-G7 countries are projected to exceed those of the G7 economies. By 2030, non-G7 flows are more than three times G7 flows. And by 2040, they are almost four times G7 flows.

Even if these calibrations represent an extreme case, they are indicative of a striking power shift in the pattern of global financial flows. If this path were to be even broadly followed, it would have implications for the scale of global imbalances, which will tend to rise as gross capital flows outpace GDP growth. It would have implications for financial stability, as the scale of gross capital surges (fuelling bubbles) and reversals (fuelling crises) increases. And it may also have implications for the dollar's reserve currency status.

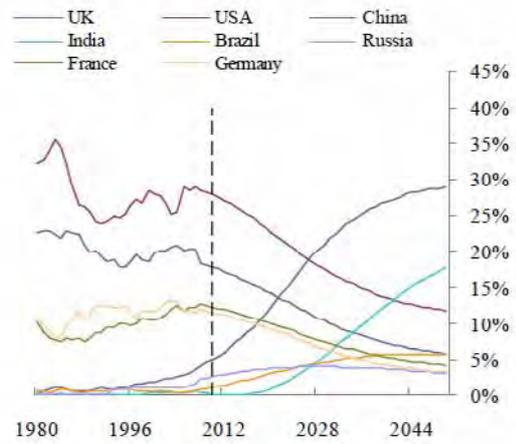
Differential savings behaviour. Consider next the possible future path of savings behaviour across the world's major economies. There are likely to be many factors affecting cross-country saving rates in the period ahead. Predicting these is fraught with uncertainty. But one key medium-term determinant of saving is demographics (Wilson and Ahmed (2010)). And demographic trends are something about which there is little uncertainty in the period ahead.

Chart 18: Share of G20 total external assets, by region



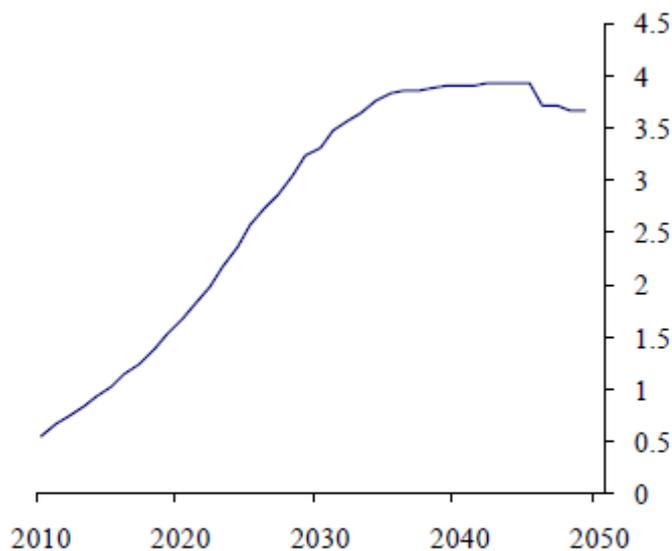
Sources: IMF, US Census Bureau, Penn World Table and Bank calculations.

Chart 19: Share of G20 total external assets, by country



Sources: IMF, US Census Bureau, Penn World Table and Bank calculations.

Chart 20: Ratio of non-G7 capital outflows to G7 capital outflows

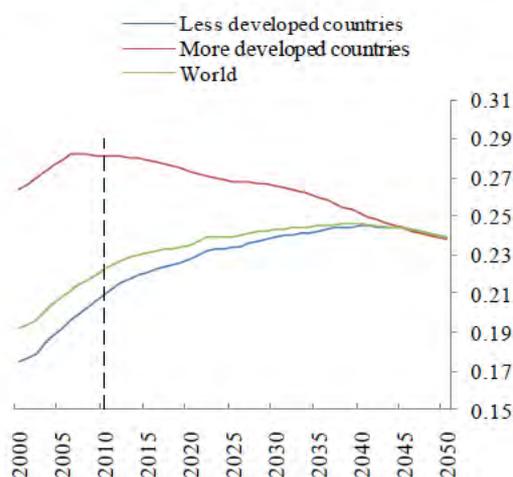


Source: Updated and extended version of the External Wealth of Nations Mark II database developed by Lane and Milesi-Ferretti (2007), IMF, US Census Bureau, Penn World Tables and Bank calculations.

Chart 21 looks at projected changes in the fraction of adults in the age range 40 to 59 in developed and emerging countries – the “prime savings” cohort. It suggests a sharp bifurcation in demographic trends in developed and emerging economies. Among advanced countries, an ageing population results in a decline in the middle-aged share, from a peak today of almost 30% to around 25% by 2050. For developing economies the reverse is true, with a continuing rise in the fraction of middle-aged individuals from 20% today to around 25% by 2050.

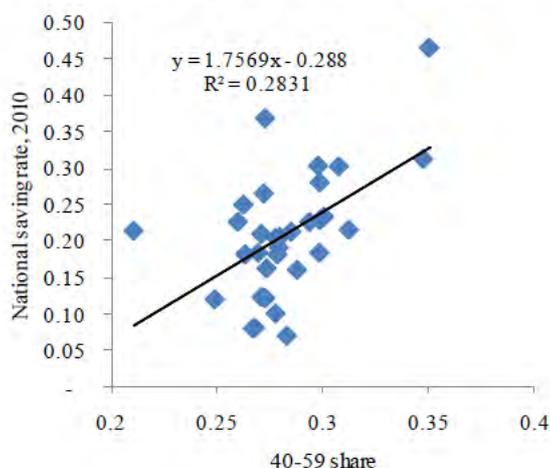
Cross-country correlations suggest a relationship between this prime-saving cohort and saving behaviour. Chart 22 suggest that every 1 percentage point rise in the middle-aged population share raises the national savings rate by around 1.75 percentage points.⁵ Taken together with emerging population trends, this suggests some potentially important life-cycle pressures on the global pattern of savings in the period ahead.

Chart 21: Share of population aged 40-59



Sources: US Census Bureau and Bank calculations.

Chart 22: Savings rate and population



Sources: IMF, UN and Bank calculations.

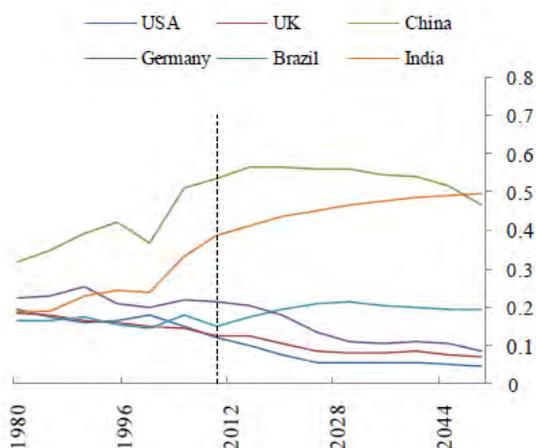
(a) National saving rates for advanced economies

To bring these pressures to life, Chart 23 projects saving rates in a selection of countries out to 2050 based on population and GDP projections. This is plainly a gross over-simplification. These projections take no account of a whole host of other factors that may push in the other direction, including later retirement dates which may boost saving in countries with an ageing population, and falls in saving rates in emerging countries as the social safety net is widened.

But based on demographic and convergence trends alone, saving rates in the BRICS, already high, are projected to continue their ascent. For example, in India they lead to an increase in saving of around 10 percentage points of GDP, raising the saving ratio to 50% by 2050, as demographics push a larger fraction of the population into the high savings cohort. Among developed countries, meanwhile, these trends are reversed with further demography-induced falls in savings rates.

⁵ See also the evidence in Wilson and Ahmed (2010).

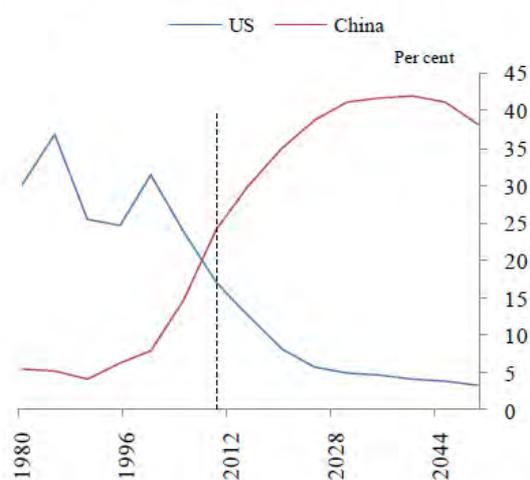
Chart 23: Saving rate by country^(a)



Sources: IMF, US Census Bureau, UN, Penn World Table and Bank calculations.

(a) National saving rate.

Chart 24: Share of total G20 savings^(a) savings



Sources: IMF, US Census Bureau, UN, Penn World Table and Bank calculations.

(a) Russia is not included prior to 1995 due to data availability.

Given the rising income share of the BRIC countries, these patterns are even more dramatic when we consider country shares of future global savings. China rises to represent around 40% of global savings by 2050. Over the same period, the US share of global savings continues its descent, stabilising at around 5%.

On the face of it, these partial equilibrium projections of future savings rates suggest that medium-term pressures on global imbalances could intensify, with saving rates rising among surplus countries and falling in deficit countries. To bring this intuition to life, assume for simplicity's sake that investment rates as a fraction of GDP remain fixed at 2010 levels across countries, but that saving rates evolve as in Chart 23. The result would be a trebling of global imbalances from current elevated levels over the next twenty years.

Of course, these projections only look at the marginal impact on imbalances of medium-term demographic and GDP trends. They take no account of a host of other factors that may defuse pressures on imbalances, including adjustments in real exchange rates, lower investment ratios as the marginal product of capital reduces in emerging markets and falls in saving rates in emerging markets as the social safety net is widened and deepened. These offsetting factors will need to be very significant, however, if they are to counterbalance medium-term upward pressures on global imbalances from demographics and convergence.

Conclusion

So where does this leave us? With a potentially dramatic change in the future international financial landscape. With a potentially decisive shift in the pattern of global capital flows. With potential pressures for a further widening in global imbalances. And, if so, with a likely intensification of pressures on international monetary, financial and trading systems. The impetus to reform these global systems is strong today. It may be stronger still tomorrow.

References

- Barro, R J (1991)**, “Economic Growth in a Cross Section of Countries”, *The Quarterly Journal of Economics*, 106(2), pp 407–443.
- Bayoumi, T, Tong, H and S-J Wei (2010)**, “The Chinese Corporate Savings Puzzle: A Firm Level Cross-country Perspective” *NBER Working Paper*, No. 16432.
- Bernanke, B (2010)**, “Monetary Policy and the Housing Bubble”, *Speech at the Annual Meeting of the American Economic Association, Atlanta, Georgia*.
- Black, F (1976)**, “The Dividend Puzzle”, *Journal of Portfolio Management*, 2(2), pp 5–8.
- Blanchard, O and G M Milesi-Feretti (2009)**, “Global Imbalances: In Midstream?”, *IMF Staff Position Note* 09/29.
- Buiter, W H (1981)**, “Time Preference and International Lending and Borrowing in an Overlapping-generations Model” *Journal of Political Economy*, 89(4) pp 769–797.
- Feldstein, M and C Horioka (1980)**, “Domestic Saving and International Capital Flows” *Economic Journal*, XC, pp 314–29.
- Greenspan, A and J Kennedy (2008)**, “Sources and Uses of Equity Extracted from Homes” *Oxford Review of Economic Policy*, 24(1), pp 120–44.
- Haldane, A G (2010)**, “Patience and Finance” Remarks at the Oxford China Business Forum, Beijing, available at <http://www.bankofengland.co.uk/publications/speeches/2010/speech445.pdf>
- International Monetary Fund (2010)**, *Global Financial Stability Report*, October 2010.
- King, M (2010)**, speech to the University of Exeter Business Leaders’ Forum, available at <http://www.bankofengland.co.uk/publications/speeches/2010/speech419.pdf>
- Kuijs, L (2006)**, “How Will China’s Saving-investment Balance Evolve?” *World Bank Policy Research Working Paper*, No. 3958.
- Lane, P R and G M Milesi-Ferretti (2007)**, “The External Wealth of Nations Mark II: Revised and Extended Estimates of Foreign Assets and Liabilities, 1970–2004” *Journal of International Economics*, 73(2), pp 223–50.
- Lucas, R E, Jr. (1990)**, “Why Doesn’t Capital Flow from Rich to Poor Countries?”, *American Economic Review* 80(2), pp 92–96.
- Ma, G, and W Yi (2010)**, “China’s High Saving Rate: Myth and Reality” *BIS Working Papers*, No. 312.
- Mankiw, N G, Romer, D and D N Weil (1992)**, “A Contribution to the Empirics of Economic Growth”, *The Quarterly Journal of Economics*, (107)2, pp 407–437.
- McKelvey, E (2010)**, “Housing Holds the Key to the Consumer Conundrum”, *Goldman Sachs US Economic Analyst*, Issue No: 10/14.
- Mian, A and A Sufi (2010)**, “House Prices, Home-equity Based Borrowing, and the US Household Leverage Crisis” *American Economic Review*, forthcoming.
- Obstfeld, M (2010)**, “Expanding Gross Asset Positions and the International Monetary System” *Remarks at the Federal Reserve Bank of Kansas City symposium on “Macroeconomic Challenges: The Decade Ahead”, Jackson Hole, Wyoming*.
- Obstfeld, M and K Rogoff (2000)**, “The Six Major Puzzles in International Macroeconomics: Is There a Common Cause?”, *NBER Working Paper* 777.
- Obstfeld, M and A Taylor (2004)**, *Global Capital Markets: Integration, Crisis, and Growth*, Cambridge University Press.

Qiao, H and Y Song (2009), “China’s Savings Rate and Its Long-term Outlook” *Goldman Sachs Global Economics Paper*, No. 191.

Rajan, R (2010), *Fault Lines: How Hidden Fractures Still Threaten the World Economy*, Princeton University Press.

Reinhart, C M and K Rogoff (2009), *This Time Is Different: Eight Centuries of Financial Folly*, Princeton University Press.

Solow, R M (1956), “A Contribution to the Theory of Economic Growth”, *The Quarterly Journal of Economics*, 70(1), pp 65–94.

Taylor, A M (2002), “A Century of Current Account Dynamics” *Journal of International Money and Finance*, 21(6) pp 725–748.

Taylor, J (2007), “Housing and Monetary Policy”, *NBER Working Paper*, No. 13682.

Wang, M, Rieger M O and T Hens (2010), “How Time Preferences Differ: Evidence from 45 Countries”, *Swiss Finance Institute Research Paper*, No. 09–47.

Wilson, D and S Ahmed (2010), “Current Accounts and Demographics: The Road Ahead”, *Goldman Sachs Global Economics Paper*, No. 202.