Global Economics Paper No: 185

The Savings Glut, the Return on Capital and the Rise in Risk Aversion

- There is a growing body of opinion that macro imbalances played an important part in the formation of the financial crisis. According to this account, excessive saving in the emerging world held down real interest rates and facilitated a boom in credit.

- However, in the years preceding the crisis, the global economy was also characterised by rising returns on physical capital and increased equity risk premia, two features that the standard imbalances (or 'savings glut') story cannot easily account for.

- We argue not that the savings glut account is wrong but that, by neglecting EM portfolio preferences (the composition of that saving), it is incomplete.

- The integration of large, high-saving emerging markets resulted in (i) an increase in desired saving; (ii) an increase in the global effective labour supply (boosting the return on capital); and (iii) a rise in the 'effective' equity risk premium across the world.

- This analysis has important forward-looking implications for financial markets. Returns on capital remain high and it is not the case—as is often portrayed—that there was a generalised bubble in risky assets ahead of the crisis. Equity valuations had already fallen significantly prior to the crunch and look very cheap today. A fundamental reversal of global imbalances could result in a prolonged period of equity outperformance.

Important disclosures appear at the back of this document

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May 27, 2009

Summary

The coverage of the credit crunch has focused mainly on the failures of the financial system and of the regulations that governed it. But there is now a growing body of opinion that macroeconomic imbalances also played an important part. According to this account, excessive saving in the emerging world held down real interest rates in the developed economies, and low real interest rates facilitated the boom in credit that preceded the crunch.

In this paper, we argue not that the 'imbalances' account is wrong but that, by neglecting the mix of EM financing, it is incomplete. In particular, the evidence points to a preference for fixed-income over equity assets, one that had important effects on relative asset prices and economic behaviour in the developed world. We argue that this preference for fixed-income assets will continue to have important effects on relative yields going forward.

The standard imbalances story was prompted by the perverse flow of finance from the emerging to the developed world—perverse because it flowed from countries with high internal rates of return to those with lower returns—coupled with a sustained decline in real bond yields. But a complete hypothesis should be able to account for four stylised facts; the first two are well known, the second less so:
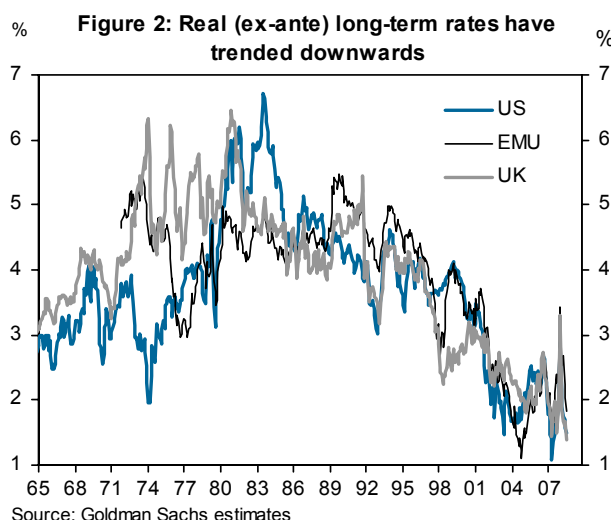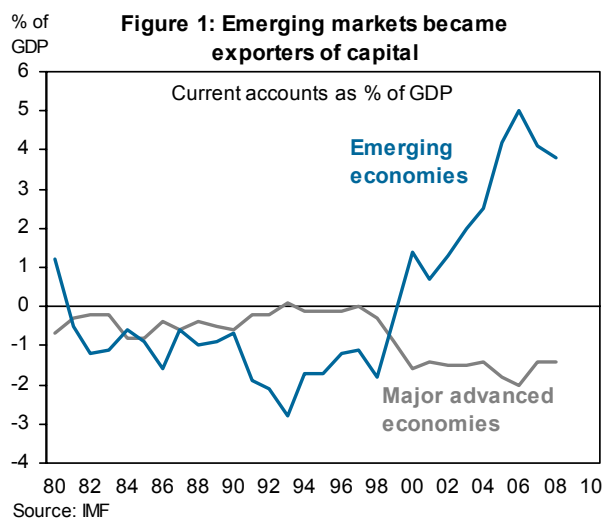
Fact 1: **Global current account imbalances increased sharply from the turn of the century until the onset of the crisis.** Figure 1 displays the current account balances for the major advanced and emerging economies, revealing both an increase in the absolute size of the imbalances, and a reversal of the typical pattern of emerging economy deficits and advanced economy surpluses.

Fact 2: **There was a global decline in yields on all forms of debt, including government bonds, corporate bonds and securitised debt.** Figure 2 displays 10-year ex-ante real bond yields for the US, the Euro-zone and the UK.

Fact 3: **There was an increase in the global rate of return on physical capital.** Using a new cross-country database of returns to physical capital across the 10 largest economies in the world and covering more than 75% of global GDP, we show that the global return on physical capital rose through the 2000s, reaching a record high in 2006 and that, even in the midst of the credit crunch, it remains relatively high (Figure 3). The high return on capital argues against the view that the 'savings glut' swamped the available investment opportunities in productive assets.

We do not argue that the 'savings glut' account of the crisis is wrong but that, by neglecting the mix of EM financing, it doesn't go far enough

In addition to a rise in imbalances and a decline in yields on all forms of debt, there was an increase in the global return on physical capital and a rise in the yield on quoted equity

Figure 1: Emerging markets became exporters of capital

Current accounts as % of GDP

Emerging economies

Major advanced economies

Source: IMF

Figure 2: Real (ex-ante) long-term rates have trended downwards

US
EMU
UK

Source: Goldman Sachs estimates

Fact 4: **There was a global increase in the yield on quoted equity; together with the decline in bond yields, this implied a sharp increase in the global Equity Risk Premium (ERP).** Reflecting the rise in the return on capital (ROC) and 10 'lost' years in which equity prices across most developed economies have declined, the earnings yield on global equities has risen to the highest level in more than a quarter of a century (Figure 4). The rise in equity yields and the concurrent decline in real bond yields imply a sharp rise in the global ERP—something we discussed in two recent *Global Economics Papers*.[1]
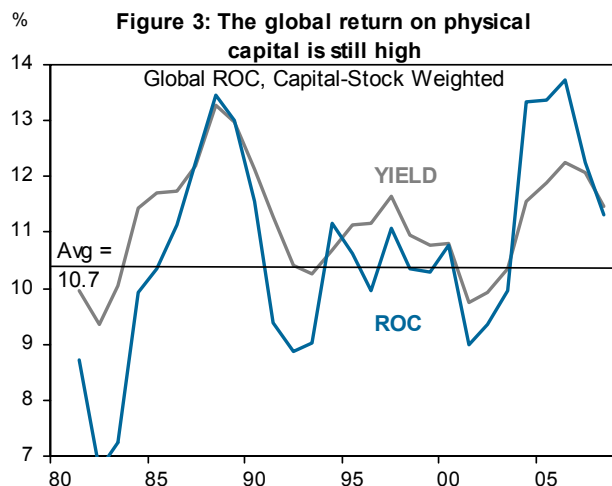
The standard imbalances story—in which too much saving chases too few net assets—cannot account for higher returns on capital and higher equity yields

The standard 'savings glut' hypothesis—in which too much saving chases too few net assets—accounts for Facts 1 and 2, but appears to be contravened by Facts 3 and 4. Our preferred explanation of these four stylised facts shares features of the 'savings glut' hypothesis but also contains other important elements. We argue that the economic integration of large, high-saving emerging markets resulted in three parallel developments:

■ The increase in desired saving contributed to lower yields on all forms of debt financing, including government bonds, corporate bonds and securitised debt (consistent with the savings glut hypothesis).

■ It increased the effective labour supply of the global economy and boosted global growth, which (given a capital stock that is relatively fixed in the short run) resulted in an increase in the return on physical capital.

■ Reconciling these two trends—the rise in yields on risky capital and the decline in risk-free interest rates—was a rise in the global aversion to risk. Either because EM investors have been genuinely more risk averse (something that would normally be consistent with higher rates of saving), or because they were institutionally constrained in that way, a higher proportion of their ex-ante saving went into fixed-income assets, as opposed to equity. This had the result of raising the 'effective' ERP across the world.

The integration of large, high-saving emerging markets resulted in: (i) an increase in desired saving; (ii) an increase in the global effective labour supply; and (iii) a rise in the global ERP
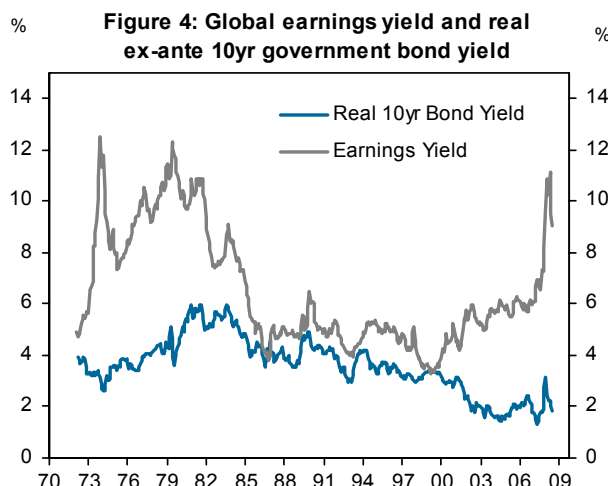
In addition to aiding our understanding of the crisis, this analysis has important forward-looking implications for financial markets—especially as global imbalances unwind. Operating profitability, as measured by the global ROC, remains high and it is not the case—as is often portrayed—that there was a generalised bubble in risky assets in the years leading up to the financial crisis. Equity valuations had already cheapened significantly between 2000 and the onset of the crisis, and, as we have argued in two recent *Global Economics Papers*, equities appear to be very cheap today. The reversal of global imbalances could result in a prolonged period of equity outperformance.

Figure 3: The global return on physical capital is still high

Global ROC, Capital-Stock Weighted

Source: Goldman Sachs estimates based on nat accts

Figure 4: Global earnings yield and real ex-ante 10yr government bond yield

Source: Goldman Sachs estimates

1. "Finding 'Fair Value' in Global Equities: Part I" *Goldman Sachs Global Economics Paper* No. 179, February 6, 2009 and "Finding 'Fair Value' in Global Equities: Part II—Forecasting Returns", *Goldman Sachs Global Economics Paper* No. 182, March 23, 2009.

Section 1: Four Key Global Macroeconomic Developments

Most coverage of the financial crisis has, unsurprisingly, focused on the financial system itself—the reckless oversupply of mortgage lending, the contribution of wholesale capital markets (including derivatives) to that process and the failure of regulators to curb it.

There is, however, an alternative—or at least a supplementary—view, which focuses instead on high saving in the emerging world. According to this account, the credit boom that preceded the bust was fuelled by a sustained period of low risk-free real interest rates, and these low rates were in turn the result of unusually high savings rates in the emerging world. In other words, we should think beyond the proximate source of mortgage lending and ask instead about the ultimate source of finance for developed-country borrowers.

The imbalances explanation of the credit crunch looks beyond the proximate source of mortgage lending and asks instead about the ultimate source of finance

This isn't a recent idea. Policymakers expressed concern about low risk-free rates, and their connection with macroeconomic imbalances, long before the credit crunch. In February 2005, former Fed Chairman Alan Greenspan first referred to the 'conundrum' of low bond yields, and only one month later current chairman Ben Bernanke suggested that an emerging-world 'savings glut' might be responsible.

But the role of imbalances has gained more currency since the crunch, and while it is probably too strong to say there is a broad consensus, the view that EM saving set the stage for the credit boom is now more widespread.[2]

We do not question this view in this paper. We think there is plenty of evidence that national saving rates have been surprisingly high in much of the emerging world and that this had important effects on behaviour in the developed world.

Appealing as it is, however, the account is incomplete, because it fails to distinguish between different kinds of assets or to explain the striking divergence in their yields. While bond yields have declined significantly over the past decade, actual returns on risky capital, and with them the (ex-ante) yield on quoted equity, have both risen significantly. This suggests that there was something important not just about the level of EM saving but about its composition (i.e., EM portfolio preferences) as well.

While bond yields have declined significantly over the past decade, actual returns on risky capital, and with them the (ex-ante) yield on quoted equity, have both risen

There are four key stylised facts about the behaviour of the world economy that any reasonably complete hypothesis should be able to account for. The first two are well known; the second two have received less attention.

Fact 1: **Global current account imbalances increased sharply from the turn of the century until the onset of the credit crunch.**
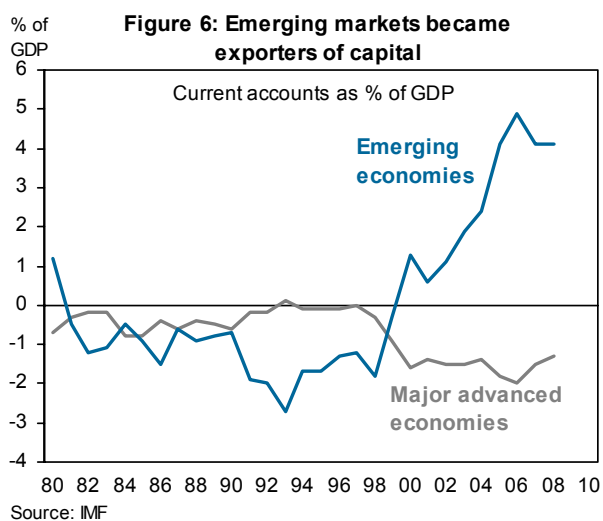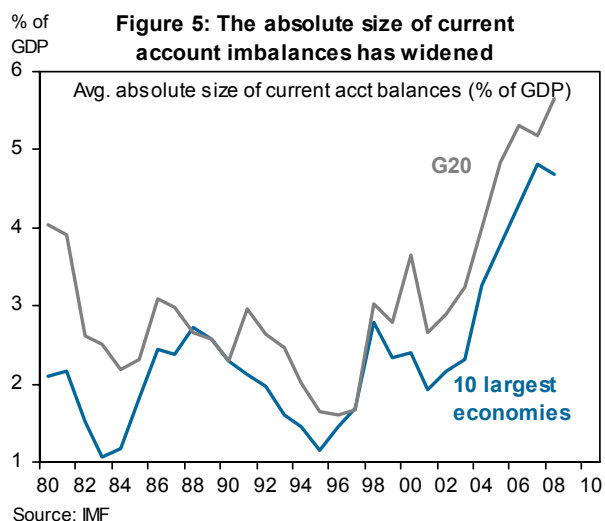
Figure 5 displays the average absolute current account imbalance for the 10 largest economies in the world and for the G20. During the 1990s, the average absolute current account imbalance for a G20 economy was 2.3% of GDP. In the three-year period from 2006-08, the average imbalance had risen to 5.4% of GDP.

However, not only has the size of the current account imbalances been unusual, the pattern of countries running deficits and those running surpluses is also the

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2. The link between imbalances and the credit crunch has been referred to several times in our own research—see, for example, "Effective Regulation Part 1: Avoiding Another Meltdown," *Goldman Sachs Global Markets Institute* (2009) and *Global Economics Paper* No. 181, "Some advice for the G20" (2009); in the academic literature, Caballero et al (2008a, 2008b) and Eichengreen (2004) have explored the idea, while Dooley et al (2003, 2009) argue that the re-cycling of Asian savings into US Treasuries was instrumental in driving US interest rates lower but not in causing the credit crunch; Martin Wolf, writing in the *Financial Times*, has long pushed the view; and, among policymakers, ECB Council member Lorenzo Bini Smaghi (2008) said recently that the credit crunch and the preceding imbalances were "two sides of the same coin".

% of GDP

Figure 5: The absolute size of current account imbalances has widened

Avg. absolute size of current acct balances (% of GDP)

G20

10 largest economies

Source: IMF

% of GDP

Figure 6: Emerging markets became exporters of capital

Current accounts as % of GDP

Emerging economies

Major advanced economies

Source: IMF

opposite of what one would normally expect. Standard economic theory[3] predicts that emerging economies—with relatively low capital intensity, high rates of return and the prospect of higher income levels in the future—should save less than they invest and, therefore, run a current account deficit. Developed economies, meanwhile, with mature capital stocks and low internal rates of return, would typically be expected to save more than they invest and, therefore, to run a surplus.

Yet, from 2000 onwards, emerging economies collectively began to save significantly more than they invested, while the major advanced economies began to run large current account deficits (Figure 6). Part of this development can be explained by the effect of rising oil prices on resource-rich economies: the Saudi Arabian current account position, for instance, moved from being broadly in balance around the turn of the century to running a surplus worth more than 30% of GDP in 2008. If there were any hint that the rise in oil prices might not prove durable, it would make sense to save some of these gains.

But many non-resource-rich emerging economies also saw an improvement in their current account positions: China's surplus rose from 1½% of GDP in 2000 to 10% of GDP in 2008.

Among the major advanced economies, the US, Spain, France, Italy and Canada each experienced a sizeable deterioration in their current account balances between 2000 and 2008; the UK's current account balance remained stable (but in deficit); while Germany and Japan both bucked the trend with rising surpluses.
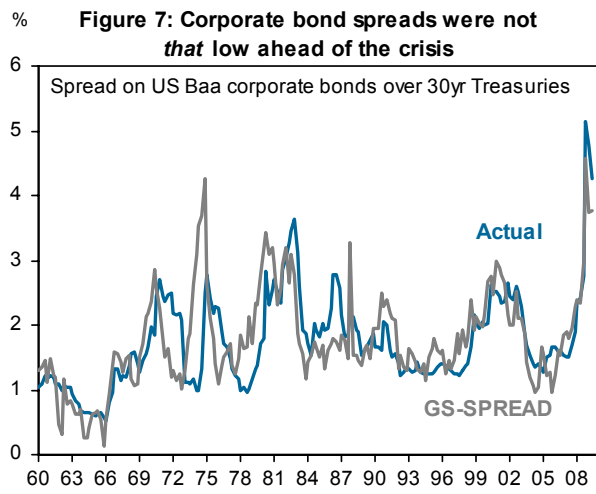
Fact 2: **There was a global decline in yields on all forms of debt, including government bonds, corporate bonds and securitised debt.**

Because they focus mainly on the role of the financial system itself, most accounts of the credit crunch point to the boom in private-sector credit instruments, and the narrowing of their spreads, ahead of the crisis. Seen over a longer-term perspective, however, spreads were not *that* low, at least in simple cash markets (Figure 7 displays the spread on US Baa corporate bonds vs. GS-SPREAD, an empirical model of bond spreads). The more important driver of
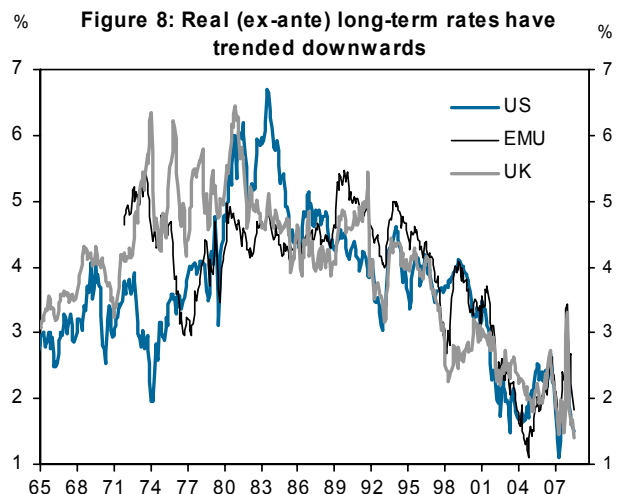
Fact 1: *Global current account imbalances increased sharply from the turn of the century until the onset of the credit crunch*

Fact 2: *There was a global decline in yields on all forms of debt, including government bonds, corporate bonds and securitised debt*

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3. By 'standard' we mean what economists call the *neoclassical* model, which assumes diminishing marginal returns to capital. The alternative view, embedded in so-called 'endogenous growth' models of economic development, is that marginal returns are constant. If returns don't diminish as an economy develops, there would be no reason to expect emerging economies either to grow faster or to attract capital from the rest of the world (run deficits). We will not go into detail here on the large empirical literature on this question; suffice it to say that (i) the observation that poorer countries tend to grow faster seems empirically robust, and (ii) where it offers comparisons, our dataset also suggests that average returns on capital are indeed higher in the emerging world.

Figure 7: Corporate bond spreads were not *that* low ahead of the crisis

Spread on US Baa corporate bonds over 30yr Treasuries

Actual

GS-SPREAD

Source: Moody's, Goldman Sachs

Figure 8: Real (ex-ante) long-term rates have trended downwards

US
EMU
UK

Source: Goldman Sachs estimates

low yields on risky fixed-income assets was the protracted fall in risk-free rates (Figure 8 plots 10-year real yields in the US, Euro-zone and UK).[4]

Many commentators have attributed low bond yields, and therefore the credit boom, to excessively easy monetary policy.[5] With the benefit of hindsight, central banks may well have acted differently in the years leading up to the crisis (which central bank, for instance, would not have maintained tighter policy in 2006 and 2007, and eased more aggressively during 2008?). But we see several problems with the idea that loose monetary policy was the principal cause of the boom (or the crisis that has followed).

- First, it would contradict basic principles about the long-run effects of policy. Monetary policy is generally thought to have only temporary effects on real quantities, including real interest rates. But the fall in real yields started too soon, has persisted for too long and has occurred too far out on the yield curve for monetary policy to be the primary cause.

- Second, the one thing that monetary policy can affect sustainably—inflation—didn't get out of control.

- Third, as we explain below, the asset boom, to the extent there was one, was extremely localised, contradicting the view that overly-loose monetary policy drove a *generalised* bubble in risky assets.
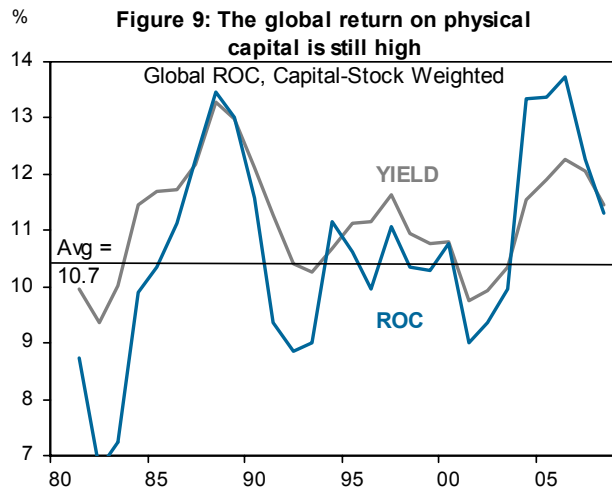
There may be something to a more subtle version of this argument, namely that bonds benefited from more stable and credible *regimes* for monetary policy. By reducing the prospective volatility of demand and short-term rates, it's possible that more credible policy helped to reduce the risk premium on longer-dated debt, including indexed debt.
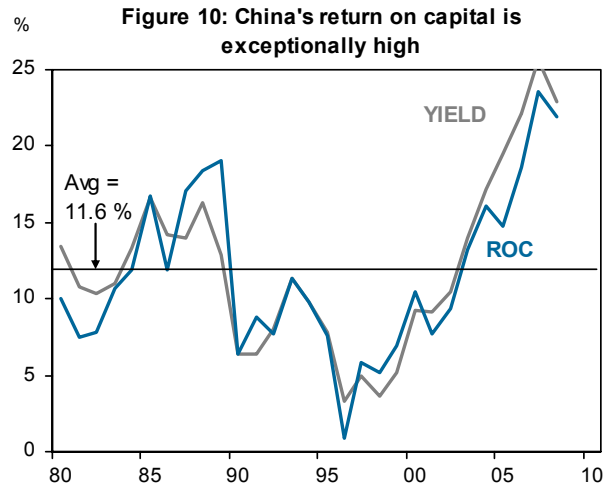
But even this doesn't really fit the sequence of events. Real yields continued to trend downwards during the 2000s, long after inflation expectations had stabilised, and even after central banks began to raise official interest rates from 2004. It was precisely this development that Alan Greenspan described as the 'bond conundrum'. It's one that, we think, demands a real, not a monetary,

Real bond yields continued to trend downwards during the 2000s, long after inflation expectations had stabilised

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4. The development of inflation-linked markets enables the direct observation of real, ex-ante government bond yields but the duration of the historical time series data is mixed: the UK market for index-linked bonds dates back to the early-1980s but Japan's market only got under way this decade. Where the data is not directly observable, we have back-dated the series based on an estimated relation with nominal bond yields, inflation and real, ex-ante bond yields in other markets.
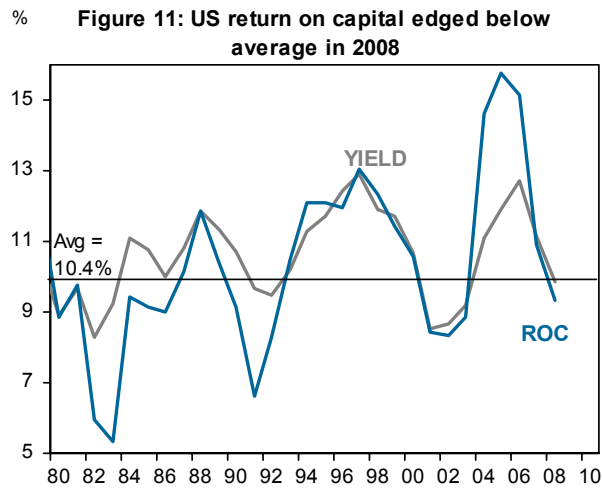
5. William White, the former Chief Economist of the BIS, has been a long-term advocate of the view that monetary policy remained too loose in the US and Europe following the deflation scare of the early 2000s and, more generally, that central banks should use monetary policy to tackle asset bubbles. See, for instance, "Is price stability enough?", BIS Working Papers No. 205, April 2006.
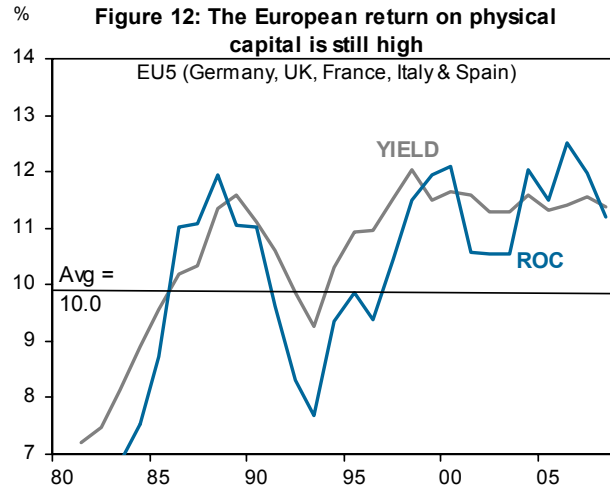
Figure 9: The global return on physical capital is still high

Global ROC, Capital-Stock Weighted

YIELD

Avg = 10.7

ROC

Source: Goldman Sachs estimates based on nat accts

Figure 10: China's return on capital is exceptionally high

YIELD

Avg = 11.6 %

ROC

Source: Goldman Sachs estimates based on nat. accts.

Figure 11: US return on capital edged below average in 2008

YIELD

Avg = 10.4%

ROC

Source: Goldman Sachs estimates based on nat accts

Figure 12: The European return on physical capital is still high

EU5 (Germany, UK, France, Italy & Spain)

YIELD

Avg = 10.0

ROC

Source: Goldman Sachs estimates based on nat accts

explanation. And, foremost among those explanations, the high savings rates in key parts of the emerging world seem the most plausible.

Fact 3: **The 2000s saw a sharp increase in the global return on physical capital.**

At this stage the 'savings glut' hypothesis comes to an end. Because it fails to distinguish between different kinds of assets, the savings story at its simplest would predict lower yields on everything—underlying productive capital and the securities that finance it (bonds and equities alike).

What actually occurred was something very different. We have compiled a new cross-country database of returns on physical capital across the 10 largest economies in the world. The database (which is described in more detail in Box 1) covers more than 75% of global economic output and more than a quarter of a century of returns. The return on capital measures for the world, China, the US and Europe are displayed in Figures 9-12. Two clear things emerge:

■ First, far from declining, in line with real bond yields, the global return on capital (Figure 9) has trended up over the past decade or so. Even in 2008, by which stage the financial crisis had begun to hit profits materially, the global ROC remained above its long-term average.

Fact 3: *The 2000s saw a sharp increase in the global return on physical capital*

Box 1: Measuring the Global Return on Capital

Using national accounts data, we have derived a database of the return on physical capital, r_t^K, that is:

- Comparable across economies.

- Covers the 10 largest economies in the world and more than three-quarters of the world's economy.

- Covers more than a quarter of a century of data in every case (with significantly earlier starting dates for some economies).

The economies covered (in decreasing order of size) are: the US, Japan, Germany, China, the UK, France, Italy, Canada, Spain and South Korea.

Although previous studies have calculated the return on capital for individual countries or small groups of countries, there is little or no pre-existing work in deriving comparable rates of return for all of the major economies. Given a broad and comparable dataset, we can combine individual country ROC results into an estimate of the Global ROC for the first time.

The ROC measures calculated are based on data sourced directly from the 10 national statistical agencies. As a number of these countries have no official capital stock measures, we have constructed capital stock estimates based on investment flow and investment price data.

We have taken a number of steps to ensure comparability of the ROC measures across countries. For example, we focus on Non-Financial Corporations where the measurement of profits and capital stocks is most accurate; we have adjusted for differences in the treatment of imputed labour income of the self-employed across countries; and, we adjust for differences across countries in depreciation assumptions.

The return on capital measure, r_t^K, that we estimate is composed of yield on capital (net of depreciation) and the capital gain, and it takes the following structure:

$$r_t^K = \frac{\pi_t}{P_{t-1}^K K_{t-1}} + \left(\frac{P_t^K P_{t-1}^C}{P_{t-1}^K P_t^C} - 1 \right) \qquad (1)$$

where r_t^K is the return on capital in period t, $\frac{\pi_t}{P_{t-1}^K K_{t-1}}$ is the operating surplus net of depreciation in period t expressed as a ratio of $P_{t-1}^K K_{t-1}$, the nominal net capital stock at the end of period t-1, which is given by the product of the real capital stock, K_{t-1}, and the capital stock (at replacement cost) deflator, P_{t-1}^K. P_t^C is household consumption deflator

at time t. The first term in the RHS of equation (1) represents the net yield on capital, while the second term represents the real capital gain (loss) from holding a representative piece of capital from the start to the end of period t. r_t^K is expressed in percentage terms.

To understand why the calculation takes this form, consider a representative household in period t-1 facing the choice of consuming $P_{t-1}^K K_{t-1}$ or investing it in period t. If the household chooses to invest, it forgoes the consumption of $P_{t-1}^K K_{t-1}$. But the ex-post, additional return from doing so is given by $\frac{\pi_t}{P_{t-1}^K K_{t-1}}$, the profits in period t as a fraction of the capital invested in period t-1, plus $\frac{P_t^K P_{t-1}^C}{P_{t-1}^K P_t^C} - 1$, the fractional change in real capital prices during the period t (as measured by the capital stock deflator deflated by the household consumption deflator).

Moving the decision on by one period, the sum that the representative household can choose to invest or consume at the end of period t is then given by $\left(1 + r_t^K\right) K_{t-1}$, while the sum at the end of period t+1 is given by $1 + r_{t+1}^K \left(\left(1 + r_t^K\right) K_{t-1} \right)$ and so forth.

Previous studies that have compared the return on capital across countries have typically ignored the capital gain element of the return on capital calculation, reporting instead the yield on capital as being the 'return on capital'. One important innovation of this database is that we have combined the yield and the capital gain (loss) to report correctly the national-accounts-based return on capital data.

The national accounts inputs are inserted into this structure as follows. The net yield on capital is given by:

$$\frac{\pi_t}{P_{t-1}^K K_{t-1}} = \frac{NetOperatingSurplus_t^{PNFC}}{NomCapital_{t-1}^{PNFC}}$$

$$= \frac{(GVA_t^{PNFC} - L_t^{PNFC} - TP_t^{PNFC} - Kcons_t^{PNFC})}{NomCapital_{t-1}^{PNFC}} \qquad (2)$$
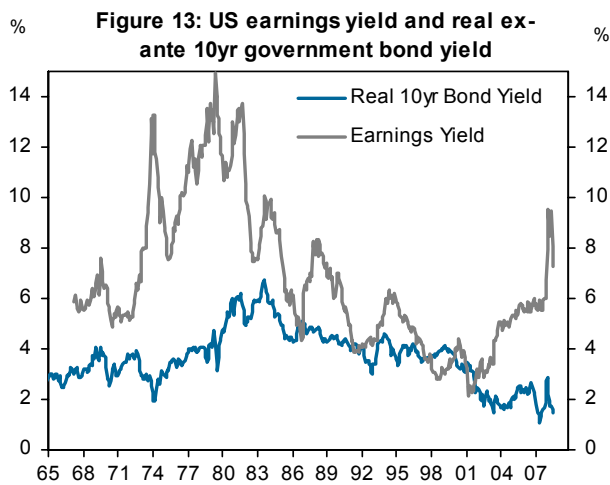
Where GVA = Gross Value Added or total resources, L = total compensation of employees, TP = taxes (less subsidies) on production, and $Kcons$ = capital consumption. The capital stock measure includes all physical, reproducible capital. The measure is net of past depreciation and is calculated at replacement cost. The real capital gain (loss) is calculated using the deflators for the capital stock and household consumption deflator as discussed previously.

■ Second, rates of return in the key emerging economies are indeed higher than in the developed world. These are not risk-adjusted returns, of course. But it confirms that the net savings coming from China, for example (Figure 10), were indeed 'uphill'[6]—perversely, on the face of it, they came from an economy with high internal rates of return and went to fund capital on which returns were significantly lower (Figures 11 & 12 are for the US and Europe, respectively).
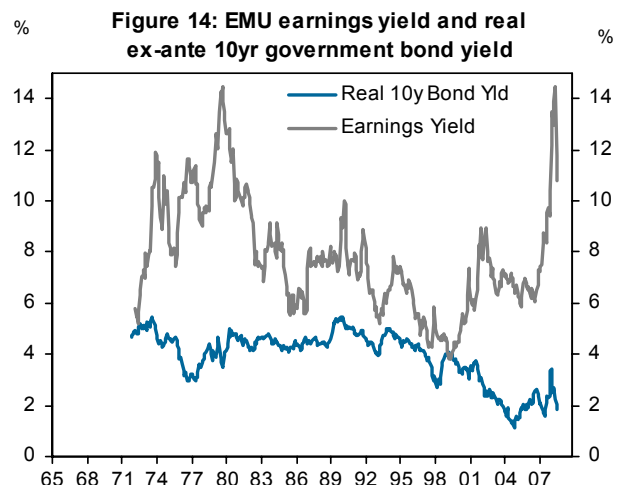
Fact 4: **There was an increase in global equity yields which, together with the decline in bond yields, resulted in a sharp increase in the global Equity Risk Premium.**

Reflecting the rise in the return on capital and 10 'lost' years in which nominal equity prices in most developed economies have declined, the earnings yield on equities has risen sharply since the turn of the century, even while bond yields have been falling. Figures 13 to 16 display, for the US, the Euro-zone, Japan and the UK, the earnings yield on equities (the inverse of the P/E ratio), and estimated real, ex-ante 10-year bond yields from 1970 onwards. The broad pattern across markets is that the yields on equities and bonds declined together from the mid-1980s until the turn of the century. Thereafter, real bond yields

Fact 4: *An increase in global equity yields, together with the decline in bond yields, resulted in a sharp increase in the global Equity Risk Premium*
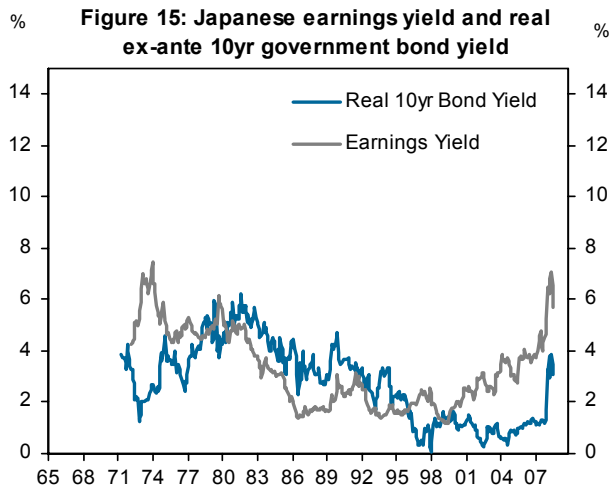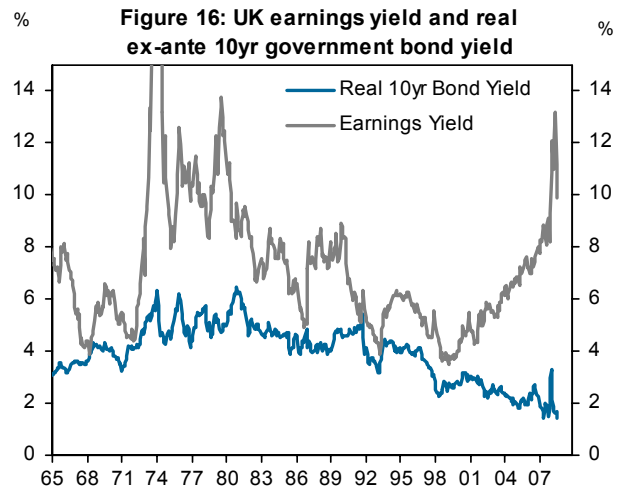

Figure 13: US earnings yield and real ex-ante 10yr government bond yield

Source: Goldman Sachs estimates

Figure 14: EMU earnings yield and real ex-ante 10yr government bond yield

Source: Goldman Sachs estimates

Figure 15: Japanese earnings yield and real ex-ante 10yr government bond yield

Source: Goldman Sachs estimates

Figure 16: UK earnings yield and real ex-ante 10yr government bond yield
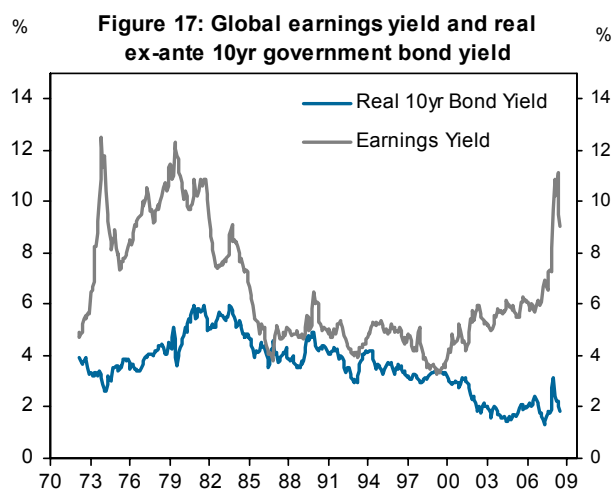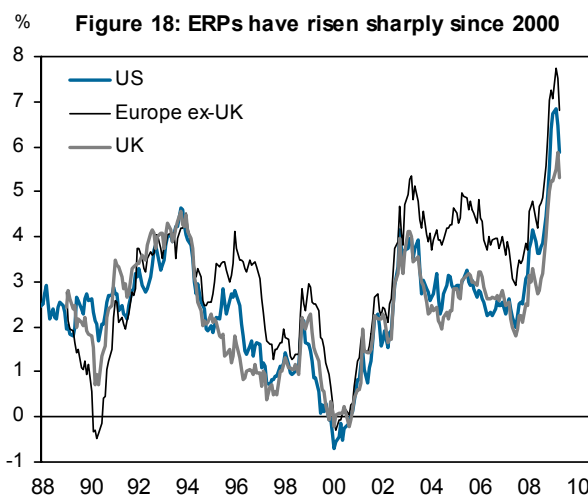
Source: Goldman Sachs estimates

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6. See also "China's Investment Strength is Sustainable", *Goldman Sachs Global Economics Paper* No. 150, October 3, 2006.

Figure 17: Global earnings yield and real ex-ante 10yr government bond yield

Source: Goldman Sachs estimates

Figure 18: ERPs have risen sharply since 2000

Source: GS Global ECS Research

continued to decline but the yield on equities began to rise. There have also been idiosyncratic differences across markets: the rise in the spread between equity and bond yields has been especially marked in the Euro-zone and UK relative to the US and Japan. But the pattern of diverging bond and equity yields since 2000 has been common to all markets and, as Figure 17 illustrates, it is very clear at a global level.

There is a close link in finance theory between the yields on equities and bonds that operates via the Equity Risk Premium (ERP).[7] The rise in global equity yields together with the concurrent decline in real bond yields imply a sharp rise in the ERP. In a recent paper, we looked in detail at the evolution of the pricing of risk over time and one of our findings was that the ex-ante ERPs across many markets have risen to record highs (Figure 18).[8]

Of course, the rise in the ERP could reflect a genuine rise in the riskiness of corporate earnings, not just a higher degree of aversion to risk. The credit crunch has itself increased the uncertainty about future global growth. Long before that, it is interesting that the outperformance of bonds over equities was particularly marked immediately following the terrorist attacks of September 2001.

But it is unlikely to account for everything. It's hard to see why, if it were purely the effect of 9/11, equity underperformance should have been drawn out for so long, or why—as has been the case—it should have been more marked in Europe than in the US. A more likely explanation, it seems to us, is a shift in global risk preference, directly related to the rise in the quantity of finance coming from the emerging world.[9]

The rise in the global return on physical capital and the global ERP defies any straightforward explanation provided by the 'savings glut' hypothesis —indeed, it appears directly to contravene the view that excess saving drove down the yield on everything, risky assets included.

The rise in the global return on physical capital and the global ERP directly contravenes the view that excess saving drove down the yield on all risky assets

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7. The ERP is the expected excess return, or the additional return, that investors expect over the risk free rate in return for the additional risk of investing in equities. A common formulation is *ERP = Dividend yield + Expected[Real dividend growth] – Real risk free rate.* Expected future growth stems from reinvested dividends and, under some specific conditions, the ERP approximates to: *ERP = Earnings yield – Real risk free rate.*

8. "Finding 'Fair Value' in Global Equities: Part II—Forecasting Returns", *Goldman Sachs Global Economics Paper* No. 182, March 23, 2009.

9. Another suggestion is that the rise in the ERP may have reflected a higher perceived risk of equities due to increased financial leverage. Our equity strategists have considered this possibility using a Dupont framework for disaggregating returns on bottom up data. They found that—outside of the financial sector—there was no evidence of increased leverage and that the rise in ROE was a function of rising margins (consistent with our finding of a higher return on physical capital). The rise in the ERP, meanwhile, was common to all sectors.

Section 2: The Savings Glut, Investment Preferences and the Equity Risk Premium

A shift in global profits (and saving) from the developed to the developing world

Section 1 documented four key trends in global financial flows and asset yields, and argued that high *ex-ante* savings rates in the emerging world cannot, on their own, account for all of them. They would explain why yields in general might have fallen, but not the divergence between bond yields and the return on risky capital. In this section, we offer an alternative—or supplementary—explanation of these trends.

We emphasise two points, in particular: first, the rise of the emerging economies, with low capital:labour ratios and high natural growth rates, would normally be expected to push yields up, not down. Seen in that light, the rise in the global rate of return is unsurprising, and the decline in bond yields even more of a 'conundrum'. Second, you can jointly explain both phenomena if you're prepared to accept that high propensities to save also meant a high aversion to risk (and to equities in particular). Thus, the 'savings glut' went hand-in-hand with a rise in the effective global ERP.

Specifically, we argue that the emergence of the BRICs and other large emerging economies had three relevant effects on the global economy:

- The integration of the BRICs into the global economy resulted in a sharp increase in the world's effective labour supply and, with it, an increase in global growth. Given that capital stocks are relatively fixed in the short run, this had the effect of boosting the global return on physical capital.

- Consistent with the 'savings glut' hypothesis, the increase in desired saving from large emerging economies contributed to lower yields on all fixed-income assets, including government bonds, corporate bonds and securitised debt.

- Reconciling these two trends—the rise in yields on risky capital and the decline in risk-free interest rates—was an effective shift in the global aversion to risk. Either because EM investors have been genuinely more risk averse (something that would normally be consistent with higher rates of saving), or because they were institutionally constrained in that way, a higher proportion of their ex-ante saving went into fixed-income assets, as opposed to equity. This had the result of raising the 'effective' ERP across the world.

Labour-intensive, high-saving emerging markets and their effect on global profitability and interest rates

Imagine you'd been told, in the early-to-mid-1990s, that the world was about to see two big structural shifts: first, a period of rapid productivity growth in the emerging world, newly unshackled from central planning but still with low levels of invested capital, relative to its workforce; and, second, the opening up of capital markets between these fast-growing new markets and the capital-rich economies of the developed world.

Because faster productivity growth and scarcer capital (relative to labour) both raise investment demand, one would normally expect the general level of yields and (ex-ante) asset returns to rise. In the simple and stylised graphs in Box 2 (page 13), this is represented by an outward shift in the 'I' schedule.[10]

Our preferred explanation shares features of the 'savings glut' hypothesis but it also emphasises two additional elements: an increase in the global effective labour supply and a rise in the ERP

Simple economic theory would predict that the increase in the world's effective labour supply should depress the returns to labour and increase the return on capital

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10. Many of these issues were discussed by our colleague Dominic Wilson in his 2007 piece "China Twist". That piece emphasised the 'trade integration' aspect of the emergence of the BRICs, whereas we focus more on the effect of increased labour supply. While both models are consistent with the main 'stylised facts' we have set out in this paper, there is one subtle but important difference: the trade integration model implies higher global profitability but lower Chinese profitability, while a rise in the effective labour supply model implies higher profitability in both.

In time, as investment responded, and the capital:output ratio rose again, yields would eventually decline. But, like economic development itself, that process would presumably take some time. And, in the meantime, the underlying return on capital, and the ex-ante yields on all securities used to finance that capital, would be driven higher.

In fact, as we documented in Section 1, and as many others have pointed out, bond yields went down, not up. It was this that prompted the idea of a 'glut' of saving, represented in Box 2 by an outwards shift in the 'S' schedule; and the 'savings glut' hypothesis, essentially, is that this outweighed any increase in investment demand.

The 'savings glut' view was prompted by the decline in fixed-income yields and a perverse 'uphill' flow of capital from the high-yielding EM countries to the low-yielding OECD

But, as we also documented earlier, the rate of return on capital, unlike bond yields, did in fact go up. This suggests, instead, that the increase in the world's effective labour supply was the predominant influence.

Emerging economies' investment skewed towards fixed income

Reconciling the two trends requires, at the least, a distinction between different kinds of assets, something that the simple 'savings glut' hypothesis is silent on. More specifically it requires something that explains why the spread between the underlying return on capital and the return on bonds—the premium on risky capital—rose so strongly.

Our suggestion is that EM portfolio preference may be part of the answer. The hypothesis we put forward here is that, either because EM investors had a fundamental preference for debt over equity, or because institutional constraints amounted to the same, the rise of the BRICs shifted global portfolio preference away from equity and towards debt. In effect, the marginal investor became more risk-averse.[11]

Certainly, that would explain the broad trends in financial market prices over recent years. But there is also independent evidence of these differing portfolio preferences. In a detailed analysis of the net asset positions of China and India, for example, economists Lane and Schmuckler (2006) show that the net investment positions of both are essentially 'short equity, long debt'. To some extent, these asymmetries are a normal by-product of their relatively undeveloped domestic financial markets (and, in particular, the absence of developed debt capital markets).[12] This will probably diminish over time with financial development. But, even allowing for this, there appears to be an explicit preference for debt over equity, suggesting something else is at work.

Either because EM investors had a fundamental preference for debt over equity, or because institutional constraints amounted to the same, the rise of the BRICs shifted global portfolio preference away from equity and towards debt

We are reluctant to conclude that this 'something' is an irreversible fact of nature—that individuals are simply more risk-averse in China and India than elsewhere. Apart from anything else, much of the saving of emerging economies is done not by households but by corporates and government entities (Figure 23 provides an 'above the line' sectoral breakdown of gross Chinese savings). We would make two points in this regard:

- **Particularly following the Asian crisis, an increasing share of emerging economies' savings were channelled into foreign exchange reserves.** The process of accumulating foreign-currency-denominated deposits and bonds was driven by the dual goals of: (i) 'self-insuring' against any future currency crisis by amassing foreign currency that could be used to defend

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11. The economics of 'portfolio choice theory', in which investors have heterogeneous risk appetite and investment opportunities, provides important insights in this regard. When wealth is redistributed around the world, it changes the price of assets because people in different countries have different preferences and different investment opportunities. This analysis provides results that are different in some respects from the standard 'representative agent' models on which most finance theory is based.

12. Garzarelli et al (2006) argue that China's debt capital market (DCM) maturation has not matched the country's economic performance over the past decade. Mendoza et al (2007) argue that global imbalances and the skew towards debt in the portfolios of emerging markets are the result of international financial integration among countries with heterogeneous financial markets.

Box 2: The Effect of Stronger Global Growth and the 'Savings Glut'

The Savings-Investment diagrams set out in Figures 19-21 provide a simple stylised representation of the effect on global returns of (1) an increase in the demand for capital following a rise in effective labour supply and (2) an increase in desired saving. Importantly, they abstract from risk and assume there's only one asset (productive capital). So, in this simple world, the risk-free real bond yield and the return on capital are the same.

- The saving function, S, is upward-sloping as a higher real interest rate raises desired savings, all else equal.

- Higher interest rates deter investment demand, so the investment function, I, is downward-sloping. A given 'I' line holds constant anything else that might affect investment demand, including the supply of labour.

- Investment can only be funded out of saving (the global economy is closed) so, in equilibrium, R moves to the point at which $I = S$ (depicted in Figure 19 by the combination I^1, S^1 and R^1).
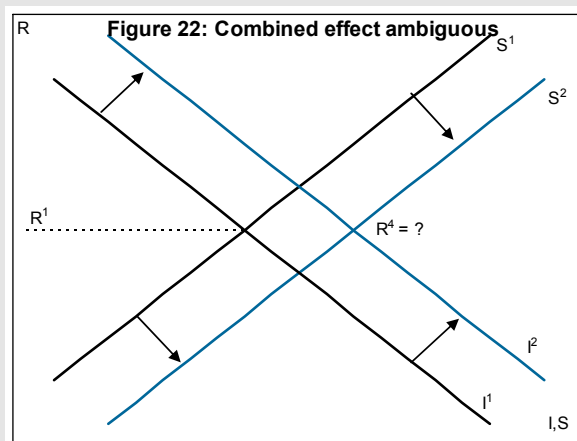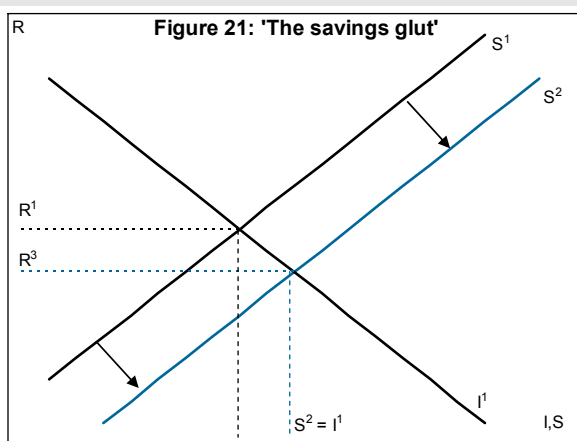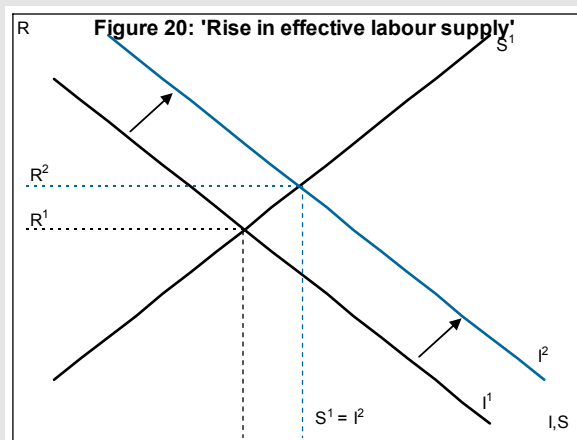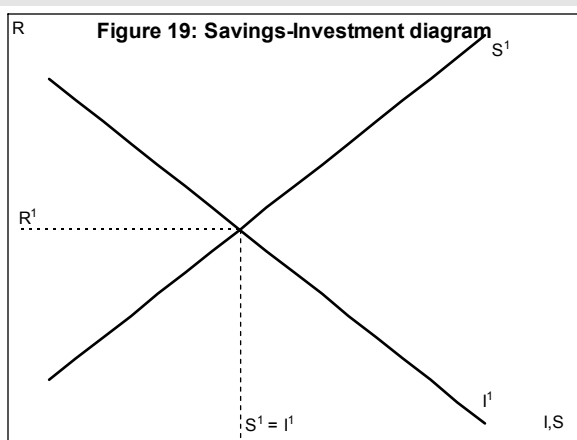
An increase in the global economy's effective labour supply has the effect of increasing the number of profitable investment opportunities at a given interest rate, shifting the investment function in a north-west direction (Figure 20). If nothing else happens, this would raise the global market-clearing interest rate (from R^1 to R^2). One way to think about this is in terms of relative

quantities: increase the supply of labour and, at least until investment has a chance to 'catch up', capital becomes relatively scarcer (the capital:labour ratio declines). This pushes up the rate of return, the very thing that, in principle, encourages more investment.

A 'savings glut'—an exogenous increase in desired saving—has the opposite effect, driving down interest rates to a point where the additional funds are matched by higher investment (represented in Figure 21 by a fall from R^1 to R^3).

And, unsurprisingly, the effect of simultaneous increases labour supply and ex-ante desired saving is ambiguous (Figure 22).

This is, of course, a highly simplified representation of the effect that the rapid emergence of the BRICs and other emerging markets has had on global interest rates. But it does at least illustrate that to focus exclusively on the impact of the 'savings glut', neglecting the effect of higher investment demand, misses an important force operating in the opposite direction. Moreover, the upward force on global rates outlined in this model is no mere 'theoretical illustration': as we illustrated in Section 1, the yields on many assets did increase during the 2000s, even while bond yields were falling. But to explain that divergence, we need to distinguish between different kinds of assets and to allow for risk premia.

Figure 19: Savings-Investment diagram

Figure 20: 'Rise in effective labour supply'

Figure 21: 'The savings glut'


Figure 22: Combined effect ambiguous

the exchange rate, fund imports and repay foreign borrowing; and (ii) supporting export growth through the maintenance of a relatively weak real exchange rate. In two influential papers, Dooley et al (2003, 2009) emphasise the exchange-rate management motive of Asian foreign reserve accumulation, arguing that it represents a revival of the Bretton Woods system. The authors draw a distinction between themselves and those who emphasise the self-protection motive of FX reserves accumulation, including Feldstein (1999) and Greenspan (1999). Our own view is that the two motives are complementary and that both are likely to have played a role.[13]

■ **There is segmentation in the market for global capital:** One reason why returns on capital remained high and variable across the global economy is that private investors—and, in particular, foreign private investors—are often restricted from accessing the return on capital produced.[14] This segmentation operates in both directions: restrictions and conditions are imposed on foreign direct investment from the developed world into emerging economies and there are also restrictions on the investments made by emerging economies into the developed world. Because much of the saving of emerging economies is channelled through government entities, and because these are often restricted from making large equity investments in developed economies, the savings of emerging economies are effectively constrained from being invested in overseas equity.

Figure 24 provides a 'below the line' breakdown of net capital flows from emerging economies from 2000 to 2008. The accumulation of net overseas assets has been entirely accounted for by public-sector acquisitions—the private sector has witnessed capital inflows—and has been principally channelled into reserves. By far the largest part of this outflow is accounted for by Asian reserves accumulation. In the years immediately preceding the financial crisis (2006-07), commodity producers played a more important (but still secondary) role.

Particularly following the Asian crisis, an increasing share of emerging economies' savings were channelled into foreign exchange reserves

The EM preference for debt over equity reflects a number of institutional constraints

Figure 23: China - corporates and govt increased saving

Figure 24: Breakdown of net capital flows (2000-2008)

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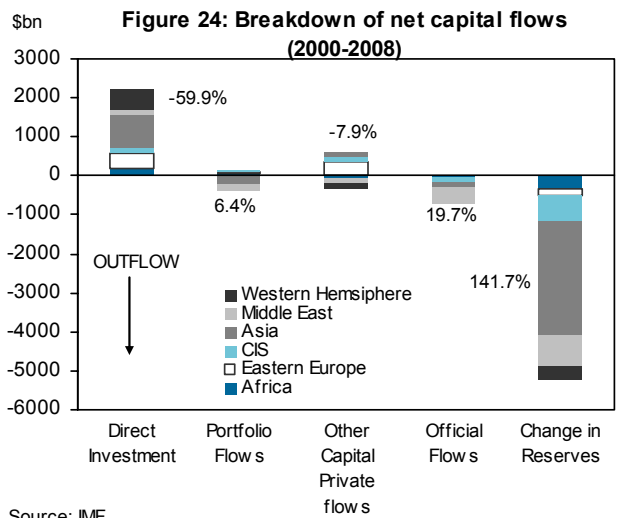
13. To aid the exposition we have separated the analysis of where the savings 'came from' from how those savings were spent. In practice, it is not clear the two are so easily separable: in order to suppress the real exchange rate, one must go further than establishing a nominal fix, it is necessary to depress real domestic demand (i.e., sustain high saving rates) as well. If savings rates are not also influenced by policy, then fixing the nominal rate would quickly lead to higher inflation.

14. The difference between the social return on capital and the return on capital available to private investors is emphasised by development economist Dani Rodrik (2004a, 2004b). This distinction is important in understanding why an economy, such as China, has both a high return on capital and significant capital outflows.

Conclusion: Imbalances, the credit crunch and equity returns

This paper argues that EM economies have been key drivers of developed country returns. Their low capital intensity and high growth rates pushed up underlying rates of return on capital; but the scale and composition of their saving kept *ex-ante* yields on bonds, though not equities, relatively low. If there's any truth to this account, it has implications for how we see the credit boom, and the crunch that has followed. It also has implications for relative asset returns in the future.

As far as the credit boom is concerned, the link is straightforward: if high EM saving drove bond yields lower, and low bond yields were an important driver of the credit boom that preceded the crunch, it follows that high EM saving was an important precursor of the financial crisis. According to this view, the supply of developed-country credit grew not from some arbitrary whim of the financial system, but because increasing numbers of investors were willing to buy low-yielding fixed-income assets. The financial system merely intermediated between that demand and borrowers in the developed world keen to meet it.

It is not the case—as is often portrayed—that there was a general bubble in risky assets before the credit crunch. Equities were not expensive then and they look very cheap today

This may sound objectionable to some, as it seems to let the financial system off the hook. If international finance did no more than match patient EM savers with impatient OECD borrowers, that would seem to leave no room for the excesses and regulatory laxness that, for many, were at the heart of the crisis.

But it's worth pointing out that there are direct parallels between the skewness of EM saving we've discussed in this paper and the pattern of the boom that preceded the crisis. It was housing, the sector most dependent on fixed-income funding, that saw the biggest boom; corporate investment, more dependent on equity finance, was relatively subdued.

And, in any case, it is possible (if not likely) that both factors were important— that faults in the developed-country financial system and high EM saving were both necessary components of the credit boom, even if neither was sufficient on its own. The experience of many emerging economies is that capital inflows and financial distortions can be strong complements in the formation of a financial crisis.[15] There is no reason why developed economies should be different in this regard, with large inflows of capital and deficiencies in regulation combining to produce resource misallocation and accumulation of financial risk.

Capital inflows and financial distortions can be strong complements in the formation of a financial crisis

The implications for relative asset returns are more nuanced, and depend on how much longer the preference for fixed-income assets continues. And this, in turn, depends on what has caused it. One possibility is that the preference for bonds is 'cultural', and therefore unlikely to change anytime soon. After all, it's true among individuals that those with a high propensity to save tend also to exhibit a higher degree of risk aversion. So, perhaps the same is true of countries.

But even this wouldn't lead to a permanent underperformance of equities— once the adjustment in relative prices was complete, and the risk premium had risen sufficiently, equities would again start to return more than bonds.

And we're reluctant to accept that differences in savings and portfolio behaviour are 'cultural' anyway. Another possibility, one we find more persuasive, is that both the propensity to save and the apparent risk aversion are

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15. See, for instance, McKinnon and Pill (1997) and Wilson (2001).

the result of less-well-developed financial markets, a trend amplified by the reaction of reserves managers to the EM financial crisis of the late 1990s. These preferences are unlikely to change suddenly and the demand for the insurance provided by foreign exchange reserves may even have been reinforced by the recent crisis. Nevertheless, if these effects were to wane over time with financial development (and, in particular, the expansion of debt capital markets in China and other emerging economies), the prospective outperformance of equities would be that much greater.

Global re-balancing: Positive for equities, negative for bonds

If the balance of saving swings back to the (typically) less risk-averse developed economy saver, or if emerging market savers themselves become less risk-averse, then the implication would be positive for global equities but negative for global bonds.

A rebalancing of global saving away from emerging markets and towards developed economies is likely to be positive for equities and negative for bonds

The latest balance of payments data suggest that global current account imbalances are in decline: the US current account deficit has fallen by more than a third from its peak and China's surplus has also fallen. The financial crisis complicates the interpretation of this data and, at this stage, it is difficult to know whether the reduction in imbalances is being driven by higher ex-ante saving in advanced economies or lower ex-ante saving in emerging markets. But, at a minimum, the latest data hold out the possibility that the process (of a more fundamental rebalancing of the global economy) may already be underway.

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