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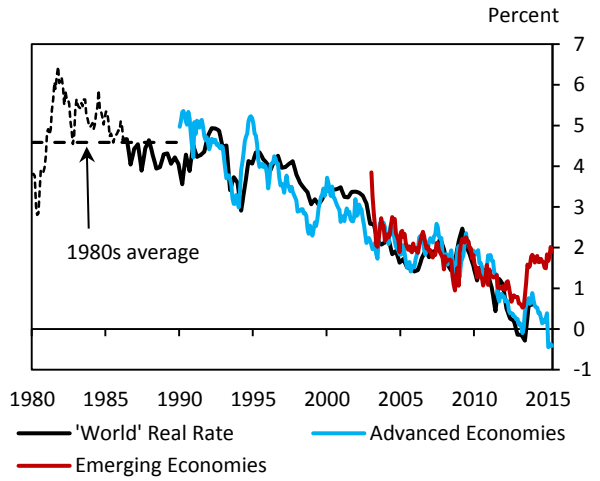
SECULAR DRIVERS OF GLOBAL REAL INTEREST RATES

Long-term real interest rates have fallen substantially over the past thirty years. The co-movement in rates across both advanced and emerging economies suggests a common driver – the global neutral real rate may have fallen. In this month's IEM we attempt to identify which secular trends could have driven such a fall. Although there is huge uncertainty, under plausible assumptions we think we can account for around 400bps of the 450bps fall in real rates seen since the 1980s. Our analysis highlights slowing global growth as one recent potential driver, though shifts in saving and investment preferences appear more important in explaining the long-term decline. We think the global saving schedule has shifted out due to demographic forces, higher inequality and to a lesser extent the global savings glut story. Meanwhile, desired levels of investment have fallen as a result of the falling relative price of capital, declines in public investment, and because of an increase in spreads between risk-free and actual interest rates. We expect most of these forces to persist and some may even build further, suggesting that the global neutral real rate may remain low, perhaps around 1%. Two boxes discuss data developments on the month and risks to the UK from a slowdown in China.

Figure 1: Real long-term rates in AEs and EMEs



Sources: IMF, DataStream, Consensus Economics & King & Low, 2014

Note: The black line is taken from King and Low (2014) and is based on the average 10-year yield on inflation-linked bonds in the G7 (ex. Italy) (data for 1980-1985 is an extension by Bank staff). The blue and red lines show a simple measure of real rates based on 10-year sovereign nominal yields minus one-year ahead inflation expectations. The blue line covers 20 AEs, the orange line 17 large EMEs. All lines are weighted together based on country GDP.

Figure 2: Mapping changes in growth to real rates

'Neoclassical' formulation: $r^* = q/\sigma + \theta + (\alpha \cdot n)$

Where:

- r^* Real interest rate consistent with inflation at target and zero output gap in the long-run
- σ Household's inter-temporal elasticity of substitution in consumption (preference for smoothed consumption)
- q Rate of labour-augmenting technological change
- θ Household's rate of time preference (patience)
- n Rate of population growth
- α Coefficient on the rate of population growth[(a)]

[(a)] *The infinite horizon representative agent Ramsey model does not include population growth in the steady state real rate formulation. But there may be good reasons to include it (e.g. see Baker, Delong and Krugman, 2005).*

A SECULAR DECLINE IN GLOBAL REAL RATES

Since the late 1980s, market measures of real interest rates have fallen by around 450bps (**Fig. 1**). Although there is variation across countries – reflecting different cyclical headwinds and stages of development – the generalised decline seen in both advanced and emerging markets suggests that global factors are at work. Much of the decline in market rates occurred before the crisis, largely against a backdrop of low and stable inflation, suggesting that the fall in real rates reflected a downward trend in long-term global neutral rate. More recently, both cyclical and structural forces may be at work. In this month's IEM we investigate which global, structural factors could have caused the protracted fall in real rates and discuss how likely such factors are to persist.[1] Our focus is on the global neutral rate, which acts as an anchor for individual countries' long-term equilibrium rates. We structure our analysis around two core drivers of neutral rates: **growth expectations** and **agents' preferences**. We look at growth first, then switch to a savings-investment setup, which allows us to analyse preference shifts alongside changes in growth expectations.

PART 1: DECLINE IN GLOBAL GROWTH

The most oft-cited driver of changes in real interest rates is changes in trend growth. Often we can implicitly assume a one-to-one mapping from changes in trend growth to the rate of return on capital and hence real rates. But the mapping is uncertain. Structural models offer a more nuanced view. In the Ramsey model real rates depend on time preferences, the pace of technological progress and, in some formulations, population growth (**Fig. 2**). The preference parameters are noteworthy, partly because they can change over time, but partly because they modify the link between growth and real rates. For example, estimates of σ (household preferences for smoothed consumption) lie between 0.5 and 1, suggesting a 1pp change in technical progress could cause up to a 2pp change in real rates.

[1] Previous work by [redacted] highlighted the importance of global factors in driving UK long-rates. Here, we build on that work by identifying a broader set of factors that drive global neutral rates and attempt to quantify the size of each effect.

But even with multipliers greater than one, it is difficult to account for much (if any) of the pre-crisis fall in real rates by just appealing to *past* changes in growth. Global growth rates were fairly steady in the pre-crisis decades – averaging 3 to 4% per year (**Fig 3**) – so other factors must be at work (see Part 2). However, the financial crisis may have triggered a wider reassessment of growth prospects *going forward*. Greater pessimism about future growth could be playing an important role in driving the decline in real rates we have seen most recently. There are three factors that might lead global growth to weaken over the future: 1) a reduction in labour supply growth; 2) a slower-rate of catch-up growth in emerging markets; and 3) weaker growth at the frontier. **Box A** runs through the arguments for each factor in turn. This is very uncertain but overall, we think we can come up with a reasonable case for why global growth could slow by up to 1pp in the decade ahead. Depending on the mapping (**Fig 2**), we think **weaker growth could account for circa 100bps of the post-crisis fall in real rates**.

BOX A: WEAKER GLOBAL GROWTH EXPECTATIONS

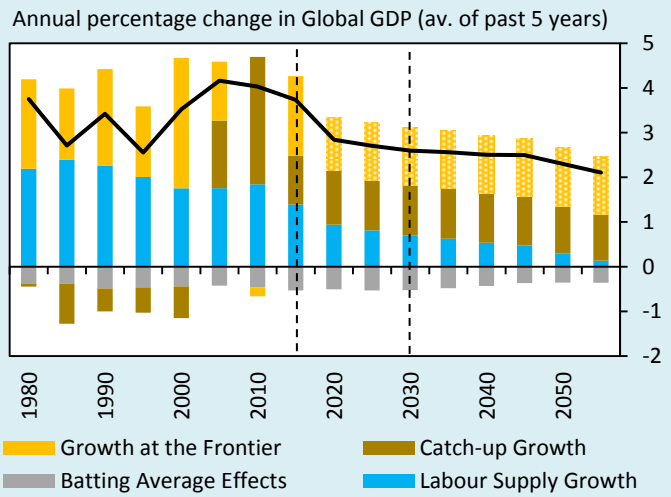
Labour Supply: Growth in global labour supply peaked at just over 2% in the 1980s as the demographic dividend from the post-war baby boom (and falling mortality rates in EMEs) fed through to the labour market. Since then, the pace of labour force growth has slowed by a third. The structure of the population means further falls are baked in the cake: global population growth slowed sharply in the mid-1990s and that effect is now feeding through to labour supply. This will mechanically reduce global growth by 0.5pp over the next decade (**blue bars, Fig. 3**). Weaker labour supply growth could also affect productivity: if population pressures had run up against resource constraints, then slower population growth would ease such constraints and raise productivity; but slower population growth could also be linked with lower returns to innovation. We assume a neutral effect.

Catch-Up Growth: The decline in labour supply growth has been offset by a sharp pickup in the rate of catch-up, particularly among Asian EMEs. For this trend to continue, EMEs will need to overcome the middle income trap and avoid geopolitical strife. Historical evidence is mixed as to whether this will occur - the rapid growth of EMEs early this century provides reason for optimism, while the more recent slowdown gives reason for pause. We take a neutral view and assume the pace of catch-up going forward is not as fast as the late-2000s, but not as slow as it was in the 1990s. This neutral assumption means we don't pin the decline in real rates on a slowdown in the pace of catch-up but clearly this judgement is open to debate (**gold bars, Fig. 3**).

Growth at the technological frontier: The other driver of global growth prospects is the pace of growth at the technological frontier (proxied by the US). Robert Gordon has championed the view that several structural headwinds will hold back US growth in the future, including: further falls in the pace of educational attainment; rising inequality; and fiscal drag. Gordon suggests these factors could drag down trend growth at the frontier by up to 1pp – either by directly affecting the supply side or via demand effects leading to hysteresis. Having interrogated his analysis, we accept the evidence on the educational plateau, but are less convinced by the headwinds from inequality and fiscal policy given uncertainties over fiscal multipliers and the overlap between the inequality and education arguments. So our judgement is that growth at the frontier could be 0.5pp weaker in the decade ahead. The other major uncertainty is over the pace of innovation. Gordon argues that the US's recent weak productivity performance is a longer-lived phenomenon stretching back to the 1980s, which will continue. Others, such as McAfee and Brynjolfsson see the recent slowdown as a blip – growing pains as a result of disruptive new digital technologies that will soon give way to rapid productivity gains. Gordon's view seems the more compelling given the recent weakness in productivity globally, but developments could change quickly suggesting substantial upside risks. Our estimates assume no further decline in TFP growth going forward, but no acceleration either (**yellow bars, Fig 3**).

Figure 3: Global growth accounting

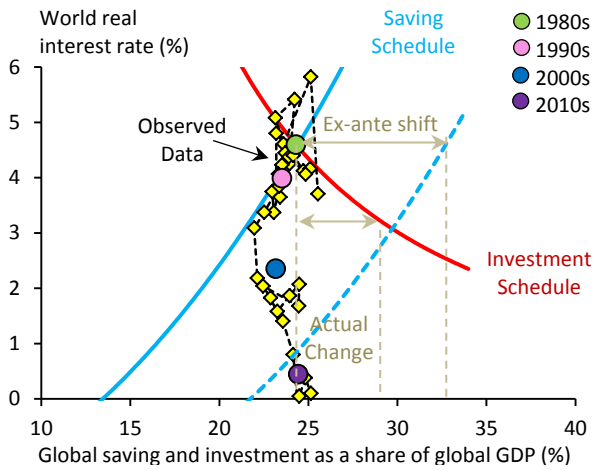
	1980 to 2015	2015 to 2030
Change in Global Growth	0.0pp	0 to -1.5pp
Labour Supply Growth	-0.8	0 to -0.5
Catch-Up Growth:	+1.0	-
Growth at the frontier:	-0.2	0 to -1.0
Educational plateau	-0.2	0 to -0.2
Inequality	0.0	0 to -0.6
Fiscal	+0.2	0 to -0.2
Technological progress	-0.2	-



Sources: TED, US Conference Board, IMF, UN and Bank Calculations

Notes: Global growth is expressed in constant PPP-weighted 1990 dollars. Data for 1980-2013 are from the Conference Board's Total Economy Database. Labour force projections are based on the UN's population projections. The grey 'batting average effect' bars in the chart show the impact on average global per capita incomes of having high population growth in low-income countries. Forecasts for catch-up growth are based on a convergence model where GDP per worker converges to the frontier at the average rate of the past twenty years. This equates to full convergence after 120 years. Projections for growth at the frontier are based on growth of annual income per worker of 1.3% – 0.5pp weaker than recently, due to some of the headwinds in Gordon's US analysis. The bottom line results are broadly comparable to previous work on long-run global growth has analysis of UK-weighted world GDP 6-10 years out).

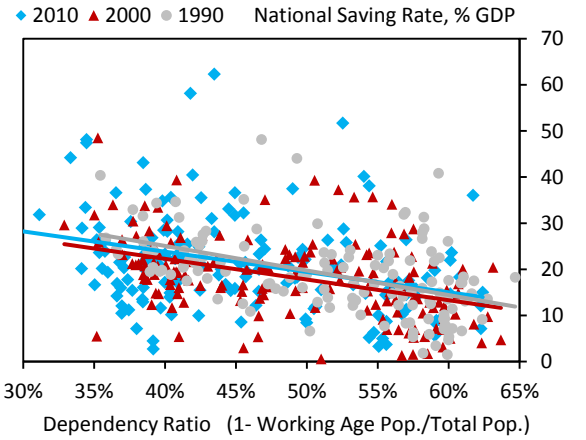
Figure 4: The IS framework



Sources: IMF and King & Low, 2014

Note: Global saving and investment rate are reported by the IMF. The 'world real rate' is taken from King and Low. There are a wide range of empirical estimates for the slopes of the curves from the literature. We select -0.5 for the investment schedule and +0.5 for the saving schedule, which is close to the average. But specific calibrations of neoclassical or OLG models can deliver very different results.

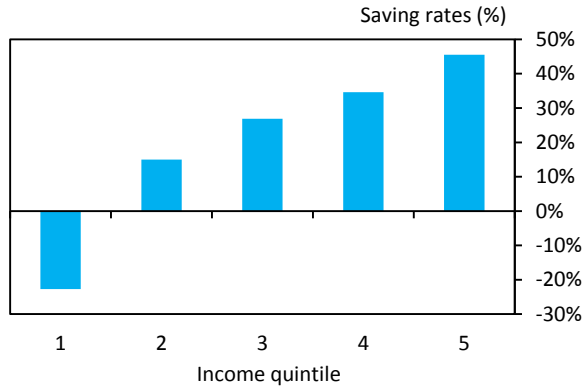
Figure 5: Saving rates and dependency ratios



Sources: IMF WEO and UN Population Statistics

Note: Scatter plots cross-country values of dependency ratios and saving rates for the three different decades.

Figure 6: Saving rates by income quintile



Source: Dynan et al. (2004)

Note: Data are for the US.

PART 2: SHIFTS IN DESIRED SAVINGS AND INVESTMENT

Given growth expectations, the neutral rate will also depend on agents' preferences for desired savings and investment. Intuitively, desired savings will tend to rise as real rates increase because higher real rates generate higher returns and yield higher future consumption. By contrast, desired investment will tend to fall as real rates rise as it becomes more costly to invest. These two relationships describe the familiar Investment-Savings (IS) curves, which we use to frame this section. Neither curve is observable of course – global saving must, by identity, equal global investment - we only observe the points at which the curves intersect. As it happens, despite the 450bps fall in global real rates, global savings and investment have remained fairly stable as a share of global GDP over the past 30 years (**yellow diamonds Fig. 4**). This vertical pattern could suggest that either savings or investment is insensitive to changes in real rates (one of the curves is vertical). While mindful of this possibility, we assume the slopes of the curves match empirical estimates in the literature, which implies that *both* curves must have shifted. Various factors have been put forward to explain such shifts. We run through them in turn and try to quantify the size of the each effect on real rates.[2] We start with three factors that could have shifted the savings schedule and then turn to five factors related to investment:

1 Demographics

Over the past 30 years the proportion of dependents (those aged 0-19 and 65+), has fallen from 50% of the global population to 42%. There is a stable negative relationship between dependency ratios and saving rates across countries over time (**Fig. 5**). Every 1pp fall in the dependency ratio translates to around a 0.5pp rise in national saving rates. So the 8pp fall in the global dependency ratio should equate to a 4pp increase in desired savings as a share of world GDP i.e. a 4pp right-shift in the saving schedule (ex-ante). Using the slopes of the I-S curves in **Figure 4**, this translates into an actual fall in real rates of around 90bps. Looking ahead, dependency ratios are expected to remain low this decade and then increase gradually as population ageing starts to bite. We think this will result in a gradual decline in global saving in the future, but not for some time (after 2020). Others, for example Goodhart (2015), expect a quicker turnaround.

Impact on R*: 90bps – likely to remain stable, then reverse slowly

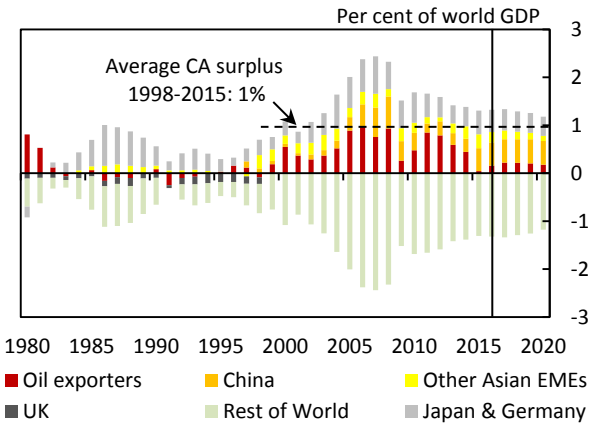
2 Rising Inequality

Since the 1980s, rising income inequality within countries has been a common trend across most of the major advanced and emerging economies (Piketty 2014). Rising inequality shifts the proportion of global income to the rich who have a higher propensity to save. We use Dynan et al (2004) estimates of saving rates by income quintile (**Fig. 6**) to estimate what impact this shift in the global income distribution has had on global saving. We also try to account for the global decline in the labour share that is linked to rising inequality. Overall we judge this channel has shifted the saving schedule out by

[2] Three caveats are particularly worth noting here and suggest avenues for future work:

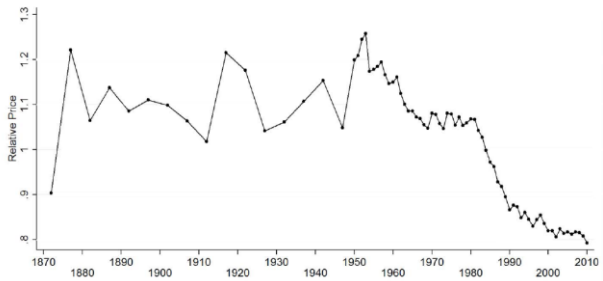
- Balkanised capital markets – By analysing savings and investment at the global level we are implicitly assuming that savings can flow freely around the world. But financial frictions may prevent this. One useful cross-check on our analysis would be repeat it for different country blocks where such frictions may apply. Comparing advanced economies with emerging economies would be particularly instructive given divergent trends in saving rates in each block.
- Expanding global liquidity – One factor not captured in the above analysis is the long-term expansion of global liquidity, linked to financial globalisation. Analysis of how financial (as opposed to economic) saving affects global real rates could shed further light on the topic (the LM curve analogue to the IS analysis above).
- Longer-term analysis – The assessment here focuses on explaining the decline in real rates since the mid-1980s. But real rates were unusually high then – having risen gradually during the 1960s and 1970s. Longer-term analysis that tries to explain the post-war rise in real rates could also help explain the fall.

Figure 7: Current account surpluses as an indicator of a structural rise in saving by EMEs



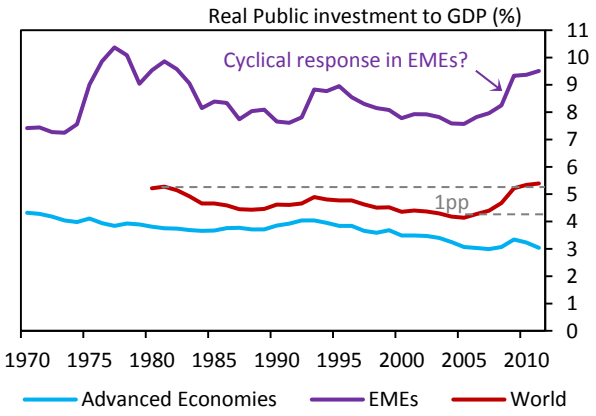
Source: IMF World Economic Outlook, April 2015.

Figure 8: Relative price of investment goods



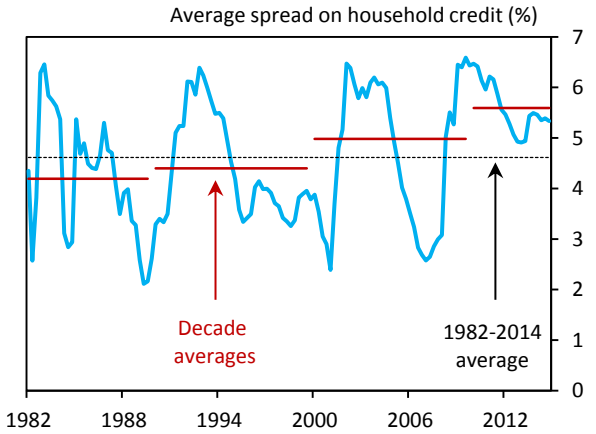
Source: Eichengreen (2015)
Note: Data show the relative price of investment goods for 11 now-advanced countries from Collins & Williamson (2001).

Figure 9: Public investment trends



Source: IMF World Economic Outlook Oct 2014, Chapter 3

Figure 10: Household credit spread in the US



Source: DataStream and Bank Calculations
Notes: Chart shows the spread between the weighted-average of consumer borrowing rates and the Federal Funds Rate.

around 2pp of world GDP, though the scale of this effect could be bigger and may rise in the future if inequality continues to worsen.
Impact on R*: 45bps – may remain stable or build further

3 Global Savings Glut

Following the Asian crisis many EMEs significantly increased their FX reserves. The era of high oil prices also prompted an increase in saving among oil producers. This preference shift resulted in an increase in desired savings globally. On average, the current account surplus of Asian EMEs and oil exporters has been 1% of world GDP since the late 1990s (**Fig. 7**). Using this as a guide suggests a 1pp right-shift in the desired saving schedule. This could reverse as countries, particularly China, rebalance; but for now the IMF predict it to persist.
Impact on R*: 25bps – likely to remain stable or reverse slowly

4 Falling Relative Price of Capital

A fall in the price of capital reduces nominal investment expenditure required for any given project. But cheaper capital also incentivises more projects. The net effect of these two forces depends on the substitutability between capital and labour. Most studies suggest the first effect dominates, so desired investment falls with the price of capital. Since the 1980s, the price of capital has fallen by 30% (**Fig. 8**). Thwaites (2015) models this effect in an OLG framework and, using his model, we estimate that the fall in the price of capital has shifted the investment schedule inwards by 1pp of world GDP and pivoted the curve - making investment less sensitive to interest rates. Looking ahead, continued innovation should mean the relative price of capital should continue to fall, albeit at slower pace (Byrne et al, 2014).
Impact on R*: 50bps – likely to build further, but more slowly

5 Lower Public Investment

Public investment has been on a declining trend since the 1980s (see IMF 2014), possibly linked to a preference shift toward smaller governments, particularly in advanced economies. Before the crisis, this trend had reduced the global investment-to-GDP ratio by 1pp, but EMEs have ramped up spending since (**Fig. 9**). We assume the cyclical rise by EMEs will abate and the structural decline will reassert itself.
Impact on R*: 20bps – likely to remain stable

6 Rising Credit Spreads

A systematic rise in spreads will shift the investment schedule down. Evidence is patchy, but some indicators suggest a rise in spreads over time, particularly since the crisis (**Fig. 10** shows one metric). Our calibration is judgement-based but matches MASD work on the steady state Credit Spread Adjustment and is consistent with tighter regulation post-crisis.
Impact on R*: 70bps – likely to remain stable

7 Rising short-termism

There is some evidence that short-termism among investors and managers has risen since the 1980s (Haldane 2011), which could have reduced investment (Asker et al, 2014). But more data and further work is needed to assess the size of this effect.
Impact on R*: Not yet possible to quantify

8 Falling Capital Intensity of Production

Some commentators, such as Larry Summers, have also highlighted the shifting structure of the economy – toward high-value, low capital intensity firms (such as WhatsApp) as an anecdotal sign of a reduction in the need for investment. But calibrating the size of this effect remains a challenge as data are currently sparse.

Impact on R*: Not yet possible to quantify

BRINGING IT ALL TOGETHER: EXPLAINING THE SECULAR DECLINE IN GLOBAL REAL RATES

Figure 11 brings together all the shifts in the savings and investment schedules we can quantify from Part 2. We also include an additional shift in the desired investment schedule to account for weakening global growth prospects identified in Part 1 (labelled 'g' in the diagram). The shifts are arranged broadly in chronological order. We add the growth effect as the final shift in the diagram so as to link it with the most recent fall in real rates since the crisis. By contrast, the preference shifts we identified in Part 2 are more closely linked with the longer-term decline in real rates we have seen.

Figure 11: Quantifying shifts in savings & investment

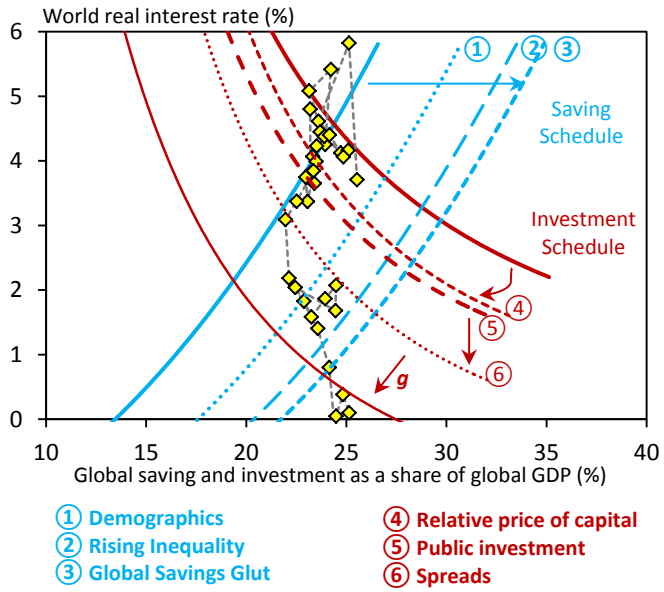
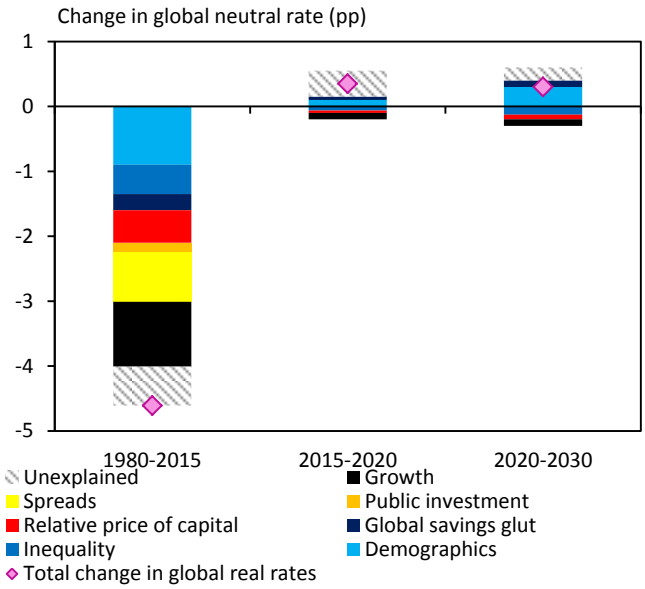


Figure 12: Secular drivers of global real interest rates



Overall, this savings-investment framework provides a broad-brush description of the relative sizes of the different forces at play. Our confidence interval must be very wide, but we think shifts in preferences can explain around 300bps of the decline in real rates since the 1980s, on top of the 100bps explained by the deterioration in the outlook for trend growth. In other words, we think we can account for most of the decline in global real rates using evidence independent of the decline itself.

Around 50bps of the fall in real rates remains unexplained by this accounting. This could perhaps reflect the structural effects from rising short-termism and falling capital intensity that we have not yet been able to quantify. Or, some of the trends we have identified could be having bigger effects than we have estimated. Alternatively, the unexplained component could reflect cyclical headwinds linked to the financial crisis and the effects of deleveraging. Finally, one other explanation is that the market measures of real rates we are using, which are derived from government bond yields, are being distorted. Post-crisis regulatory changes may have increased demand for safe government assets by financial institutions, while central bank QE is also temporarily boosting the demand for government bonds, perhaps forcing risk premia negative.

Even more difficult than accounting for the past is predicting what happens from here. **Figure 12** provides a summary of our findings, together with our best judgements about the direction of travel. The big picture message is that the trends we have analysed are likely to persist at their current level: we do not predict a big further drag, or a rapid unwind of any of these forces. Some are likely to drag a little further (global growth is set to decline further out, and we assume this will feed into slightly lower rates in anticipation; the relative price of capital is likely to continue to fall, albeit at a slower pace; and inequality may continue to rise); but this will be broadly offset by a rebound in other forces (particularly demographics). What happens to the unexplained component depends on what's driving it. In Figure 12 we illustrate the implications of assuming it is pretty much all cyclical. Despite that, this would still imply global neutral rates staying low, perhaps around 1% in real terms over the next 5 years.

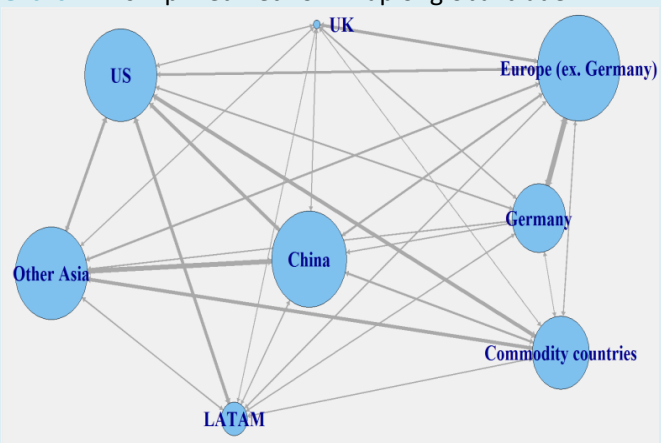
Risks to the UK from a slowdown in China

China has been a major driving force of world growth and trade since its accession to the WTO in 2001 and, despite the recent slowdown, we continue to believe that policy makers have sufficient policy space to maintain growth close to target. However, the risks to China still appear to be firmly to the downside: China faces a major challenge to rebalance the economy away from investment and exports towards domestic consumption; and the de facto peg of the RMB to the US dollar is likely to cause a further headwind from net trade this year. In a response to a request from Andy Haldane, this box provides some metrics to help assess how important China is for the UK relative to the US and EA.

How large could spillovers from China to the UK be?

On the face of it, we may not expect any slowing in China to be particularly important for the UK, as only 4% of our exports go directly there (**Table A**). The UK's direct financial exposures to China, although larger, are also small compared to those to the US and EA, and China is still relatively closed financially. What's more, China has been the biggest contributor to oil demand growth in recent years. So we might expect a drag from weaker Chinese demand to be offset by the boost from lower oil prices.

Chart A: A simplified network map of global trade*



*Size of bubble indicates regions relative export share in global goods trade. Thickness of the lines shows bilateral trade. Source: IMF DOTS and Bank calculation

But China is now the world's largest goods exporter and the indirect trade links are potentially sizeable. While China only accounts for a small share of UK exports, it is a far more important source of export demand for some of our key trading partners, such as the euro area and US: exports to China make up just under 10% of total exports for both the US and euro area. And around 2/3 of the euro-area's exports go to other Asian economies, who are in turn heavily reliant on Chinese demand. These connections are illustrated in **Chart A** (bubble size denotes the share of global goods exports and the thickness of the lines bilateral trade).

In addition, given China's size in the global economy, we might expect a shock to Chinese growth to have significant spillovers through non-trade channels, despite China's financial system remaining relatively closed. On a PPP-weighted basis, China is now the largest economy in the world, accounting for 16% of world GDP. If it grows in line with the May IR forecast China will contribute nearly twice as much to PPP-weighted world GDP growth as the US and EA combined by the forecast horizon. Hence, even though direct links to China are fairly modest any shock to the Chinese growth outlook might still affect the UK and other countries through global sentiment and risk aversion.

In order to assess the likely impact of a shock to Chinese GDP on the UK, we have previously used a Global VAR model. We believe it is a good way to summarise spillovers from China as the model captures a combination of financial and confidence effects, trade linkages (both indirect and via third countries) and offsets from commodities. [3]

The GVAR suggests that a 1% negative shock to Chinese GDP is likely to lower UK GDP by 0.1%. That is significantly larger than direct trade links alone would suggest, despite the boost from lower commodity prices (the oil price falls by 4% in response). By way of comparison (**Table A**), the GVAR suggests this impact would be around 1/3 of the size of an equivalent slowing in the euro area, where our direct trade links are 10 times larger, or the US, where our financial links are much stronger. This result is due to the strong indirect links to China via the UK's traditional trading partners, such as the US and euro area, and the fact that this model includes a broader set of transmission channels than just trade.

How has China been treated in the forecast?

Over the past year we have revised down the level of Chinese GDP over the forecast by around 2.5%. On its own, that would have pulled down on the level of UK GDP by around 0.1%, some way short of the ¼% drag implied by the GVAR. But in order to ensure that the weaker outlook weighs on global and UK activity sufficiently we have allowed this to feed through to growth in other economies. For example, at the same time as revising down Chinese GDP, we have also made significant downwards revisions to the rest of developing Asia, who have strong trade links to China. That is in line with the recent revisions to the IMF forecasts, which note that weaker Chinese demand should weigh on activity throughout the region. And these have in turn been allowed to feed through into weaker external demand for our main trading partners, thus feeding back to the UK indirectly.

Table A: Measures of direct linkages to the UK and estimated impacts of GDP shocks on the UK from the GVAR

	US	Euro area	China
Share of UK-wtd world GDP	18%	40%	4%
Share of PPP -wtd world GDP	16%	13%	16%
Total foreign claims for UK-owned banks (% CT1)*	232	183	49
UK bank liabilities by region as % of total**	15	24	1
Share of world oil consumption	25%	12%	11%
GVAR: effect on UK GDP of a -1% shock to GDP**	-0.3	-0.3	-0.1

*On ultimate risk basis. For China, the number excludes Hong Kong. Including Hong Kong, claims would be 133%.
**Residence basis. Including Hong Kong increases liabilities to only 2%.
*** This is the estimated long-run effect on the level.

Assessment of data and policy news on the month

Region	Judgement on the month	GDP growth forecasts*		June MPC	May MPC
Euro area	GDP growth in Q1 was 0.4% qoq, in line with our forecast, with growth strengthening in France and Italy but weakening in Germany. HICP inflation was 0.0% oya in April.	EA	Q4	0.3%	0.3%
			Q1	0.4%	0.4%
			Q2	0.5%	0.5%
US	Weak nominal retail sales (0.0% mom) and IP growth (-0.3%) in April highlight the downside risks to Q2 growth. But strength in the labour market and continued solid wage growth show tentative signs of cost pressures.	US	Q4	0.5%	0.5%
			Q1	0.1%	0.1%
			Q2	0.7%	0.7%
Asia/EMEs	In China, FAI and retail sales growth fell back in April, and IP failed to rebound. Elsewhere, Japanese Q1 GDP came out at 0.6% oqa.	China	Q4	1.7%	1.7%
			Q1	1.5%	1.5%
			Q2	1.6%	1.6%
World activity	The global composite PMI fell in April (54.2, -0.6) as the rate of expansion in the manufacturing sector slowed. CPB net world trade remained weak in February -0.9% mom (-1.6% in January).				
Commodities	Since the May IR, the oil spot price has fallen 4%, and 1% across the futures curve. Oil prices now stand at $64pb. The S&P industrial metals prices have fallen 5% since the May IR, agricultural prices were unchanged.				

*Data in red

EURO AREA:

Euro-area GDP grew by 0.4% oqa in Q1, in line with our forecast and 0.1pp higher than Q4. Activity growth in France (0.6%) and Italy (0.3%) was stronger than expected and also stronger than in the previous quarter, while growth in Germany (0.3%) was weaker than forecast. Spain again grew strongly (0.9%). The limited information available for France and Germany shows growth was driven by domestic demand and, in particular, private consumption, with net trade making a negative contribution.

In terms of higher frequency data, confidence indicators fell back a little and the flash composite PMI for May was 53.4, down from 53.9 in April. We continue to expect 0.5% growth in Q2, though we now see downside risks. Inflation rose slightly in April to 0.0% oya, 0.1pp below our forecast, reflecting unexpected weakness in both core and energy prices. We now expect inflation to rise to 0.2% in May, due to higher oil prices.

The Greek government looks very close to running out of money, with the next payment to the IMF (€312m) due on 5 June. Negotiations are progressing but differences remain, particularly on labour market and pension reforms.

UNITED STATES:

In the US, the end of the port shutdown caused the nominal trade balance to widen by $15bn in March. This was led by a surge in real goods imports which increased by 10.3% on the month, compared to the more modest 1.1% increase in real goods exports. Commentators now expect Q1 growth to be revised to between -0.1% and -0.2% qoq.

Although we believe a number of transitory factors held back activity in Q1, growth does not appear to have been much stronger in April. Nominal retail sales growth remained flat and IP growth fell for a fifth successive month (-0.3% in April). Within this, manufacturing IP was flat, although mining (-0.8%) and utilities (-1.3%) both fell substantially. Still, our Q2 nowcast remains at 0.7%.

Labour market data provided some relief as annual average hourly earnings growth remained at 1.9% in April, while the Q1 W&S ECI grew by 2.6% and the NFIB survey of firms' intent to increase worker compensation remained strong, at 13%.

The unemployment rate now rounds to 5.4%, as non-farm payrolls increased by 223k in April and the participation rate ticked up to 62.8%. But a robust labour market was not enough to prevent consumer sentiment falling in May, as the preliminary estimate from the UMichigan survey fell by 7.6%, to 88.6.

ASIA / EMEs

In China, the growth outlook still appears subdued. FAI growth fell to 12% yoy, while IP remains well below rates seen at the end of last year, even as it ticked up to 5.9% oya in April (5.6% in March). Within that, cement production fell by 7.3% oya, reflecting continued weakness in the property sector. On the month, the property market showed further tentative signs of stabilisation, with the 70-city price index falling by 0.1% mom, the slowest pace of decline since May 2014. Consumption indicators also remained soft in April, as retail sales growth fell to 13.6% oya (14.8% in March). Taking this together, our Q2 nowcast stands at 1.6% oqa, in line with the May *IR* forecast.

Fears of disinflation abated somewhat as CPI inflation ticked up in April to 1.5% (+0.1pp). But, reflecting the weaker than expected activity data, the PBoC cut benchmark rates by 0.25pp, while raising the interest rate ceiling on deposits. The finance ministry, CBRC and PBoC announced joint support to help the shift away from LGFV finance towards the development of a municipal bond market - the Chinese province of Jiangsu completed a landmark bond sale reducing its interest burden by half. Q1 saw marked pressures on the exchange rate and the PBoC sold $80bn of reserves to keep the exchange rate stable.

Elsewhere, in Japan, GDP rose by 0.6% oqa in Q1, driven primarily by a large contribution from inventories. IP growth was solid in Q1. The unemployment rate fell to 3.4% in March.

COMMODITIES

Brent now stands at $64pb. The fall in prices over the month is mainly explained by world oil supply outstripping global demand. The futures curve has flattened, as the market responded to changes in OPEC's reaction function and anticipated increased Iranian supply once the sanctions are lifted. Also, April OPEC crude supply rose about 0.2mbpd (mom), the highest since September 2012. In contrast, non-OPEC crude supply growth fell during the same period.