IS THE WORLD ECONOMY FACING 'SECULAR STAGNATION'?

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The historical background to the 'secular stagnation' hypothesis

The expression 'secular stagnation' was first popularized by Alvin Hansen (the co-creator with John Hicks of the IS-LM diagram which we all encountered in our undergraduate courses) in his 1938 Presidential Address to the American Economic Association (Hansen 1939).

Prompted by the US economy's slump back into recession between May 1937 and June 1938 after the withdrawal of the fiscal and monetary policy stimulus that had been (belatedly) put in place in response to the *dégringolade*[1] of the early 1930s, Hansen foreshadowed the possibility that slowing population growth, combined with the end (as he saw it) of capital-intensive technological change (and hence inadequate levels of business investment), could result in the economy settling at an equilibrium with less than full- employment – a situation to which he in passing gave the name 'secular stagnation'[2].

This was exactly the situation portrayed by Maynard Keynes in his *General Theory* (1936), which Hansen had initially dismissed as having failed to provide "a foundation for a 'new economics" (Hansen 1936, p. 686).

As Fogel (2004) puts it, "there was an explosion of articles on the topic [of 'secular stagnation'] from 1941 to 1960, most of which were written after the [Second World] War or in anticipation of the imminent end of the war" – which was "not surprising" given that "the country was demobilizing more than 11 million soldiers from the armed forces, and there were some 9 million or more workers in defence industries who were simultaneously being let go". What is more surprising, according to Fogel, is that "secular stagnation was a heated topic throughout the 1960s and was still lively in the 1970s and 1980s", and that "even a quarter of a century after the war there were still economists who believed that the United States could not have an economy with both growth and low unemployment unless there was a very big government sector".

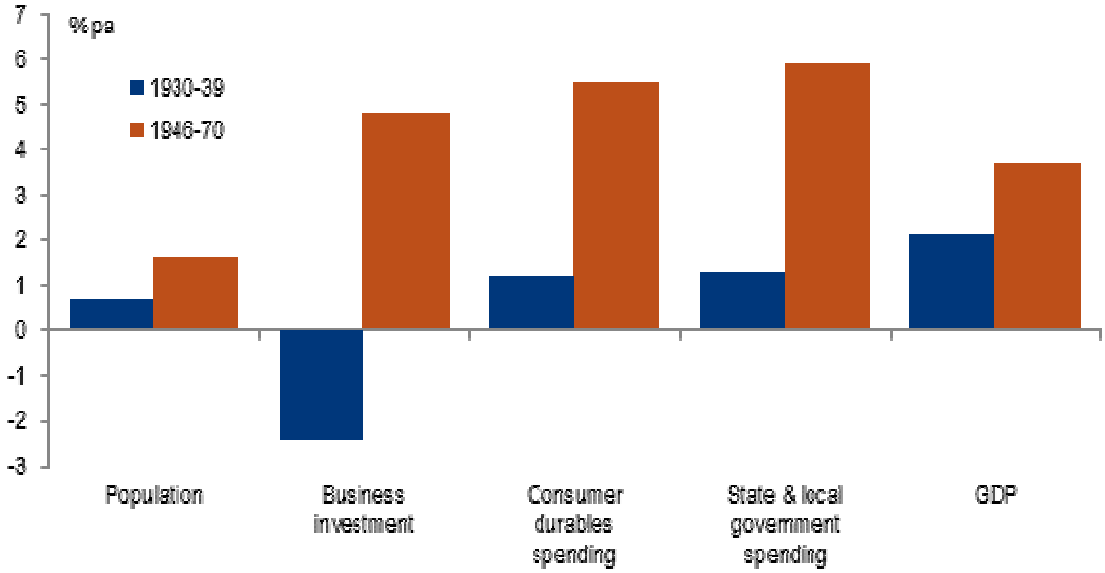
'Secular stagnation' failed to eventuate in the decades following the end of the Second World War because the assumptions underpinning Hansen's gloomy prognosis turned out to be wrong. In the United States:

- population growth accelerated as the 'baby boom' got under way – averaging 1.6% pa between 1946 and 1970, compared with 0.7% pa between 1930 and 1939;
- business investment didn't fall away, but instead grew at a 4.8% annual rate (in real terms) between 1946 and 1970, a dramatic turnaround from an average annual rate of decline of 2.4% during the 1930s;
- household spending on consumer durables grew at a 5.5% annual rate between 1946 and 1970, as households filled their houses with newly-invented appliances – and put cars in their garages – compared with just 1.2% pa during the 1930s; and
- state and local government spending grew at an average annual rate of 5.9% between 1946 and 1970, compared with just 1.3% pa during the 1930s, as sub-national governments built infrastructure and expanded mass education (see Chart 1 on page 2).

Behind all this was a bipartisan political commitment to the maintenance of full employment – which, at least until the late 1960s, was able to be maintained without giving rise to persistently rising inflation. As a result, real GDP growth averaged 3.7% pa between 1946 and 1970 – compared with 2.1% pa in the 1930s, while unemployment averaged 4.7%, compared with 16.2% in the 1930s.

[1] The title of the chapter on the Great Depression in Johnson (1983), pp. 230-260.
[2] Hansen appears to have borrowed the term from Gayer (1938).

Chart 1: 'Secular stagnation' didn't happen after World War II



Source: US Bureau of Economic Analysis.

In Western Europe and Japan, the effect of similar factors to those at work in the United States was amplified by post-war reconstruction of the public and private capital stock. Hence, real GDP in Western Europe rose at a 5.2% annual rate between 1946 and 1970 – or 6.0% pa excluding the UK, where the reconstruction task was not as large – compared with 1.8% pa during the 1930s (or 1.2% excluding Germany); while in Japan real GDP growth averaged 9.6% pa between 1946 and 1970[3].

Larry Summers' re-invention of the idea of 'secular stagnation'

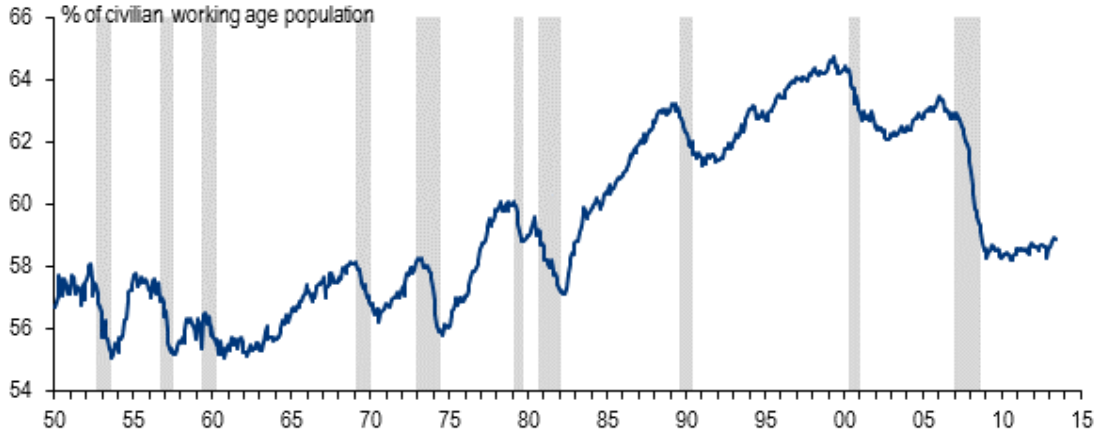
Late last year, Larry Summers – who had served as Treasury Secretary during the latter part of President Clinton's second term, and as Director of the National Economic Council during the first half of President Obama's first term – put the notion of 'secular stagnation' back on the agenda, initially in during a panel discussion at a session of the IMF's Annual Research conference in November (Summers 2013a), and subsequently in two op-ed pieces in the *Financial Times* (Summers 2013b and 2014).

In his remarks at the IMF Conference, after noting that "the share of … adults in the United States who are working today is essentially the same as it was four years ago" (Chart 2), Summers wondered whether "a set of older ideas … that went under the phrase 'secular stagnation' … may not be without relevance to America's experience", as well as to Japan's experience in the aftermath of its financial crises in the late 1980s and through the 1990s.

Summers' argument is, in essence, that because the easy monetary conditions in the period leading up to the crisis – and the 'bubbles' in asset markets which resulted – didn't produce any "excess in aggregate demand", and because the ultra-low interest rates which have persisted since the end of the crisis haven't resulted in "any excess demand", perhaps "natural and equilibrium interest rates" (the rates consistent with full employment) "have fallen significantly below zero" (Summers 2013a pp. 2-3).

[3] Figures quoted in this paragraph are derived from estimates of GDP in 1990 US dollars converted from local currencies at Geary-Khamis PPPs by Maddison (2007). Real GDP growth averaged 5.8% pa in Japan during the 1930s, in part because Japan was at war (with China) from 1934 onwards.

Chart 2: US employment has remained almost unchanged as a share of the US working-age population since the end of the last recession



Note: Shaded areas denote recessions as designated by the National Bureau of Economic Research. *Source:* US Bureau of Labor Statistics.

Or, put differently, "real rates may not be able to fall far enough to spur enough investment to lead to full employment" (Summers 2013b).

Summers hypothesizes that "investment demand may have been reduced due to slower growth of the labour force and perhaps slower productivity growth"; that "consumption may be lower due to a sharp increase in the share of income held by the very wealthy and the rising share of income accruing to capital"; that "risk aversion has risen as a result of the crisis", as has saving; that "declines in the cost of durable goods, especially those associated with IT, mean that the same level of saving purchases more capital every year"; and that "lower inflation means any interest rate translates into a higher after-tax rate than it did when inflation rates were higher" (Summers 2013b).

Summers acknowledges that the post-war fears of 'secular stagnation' were "proved wrong", and that in the contemporary context similar fears "should be viewed as a contingency to be insured against" rather than "a fate to which we ought to be resigned". It is in that context that Summers says "one has to be concerned about a policy agenda that is doing less with monetary policy than has been done before, doing less with fiscal policy than has been done before, and taking steps whose basic purpose is to cause there to be less lending, borrowing and inflated asset prices than there was before" (Summers 2013a). In other words, Larry Summers is counselling against what he would describe as premature withdrawal of ultra-easy monetary policy, premature 'fiscal austerity', and excessive concern about putting regulatory sand in the wheels of the banking system.

Notably, in his second *Financial Times* op-ed piece (Summers 2014), he argues that "the idea that regulation can allow the growth benefits of easy credit to come without the costs is a chimera". Instead, Summers is advocating "a commitment to raising the level of demand at any given level of interest rates, through policies that restore a situation where reasonable growth and reasonable interest rates can coincide" – which to him means "ending the disastrous trend towards ever less government spending and employment each year" and "taking advantage of the current period of economic slack to renew and build up our infrastructure"[4].

[4] He also advocates "regulation that requires more rapid replacement of coal-fired power plants" and (without going into any more detail as to what he might have in mind) ensuring "that a widening trade deficit does not excessively divert demand from the US economy".

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As was the case with Alvin Hansen's original portrayal of 'secular stagnation', Larry Summers' version has strong echoes of Maynard Keynes in *The General Theory*: "… it is an outstanding characteristic of the economic system in which we live that … it seems capable of remaining in a chronic condition of sub-normal activity for a considerable period" (Keynes 1936, p. 249).

And in a subsequent paper co-authored with Laurence Ball and Brad de Long, Summers acknowledges this more explicitly, arguing that "the appropriate new thinking is largely old thinking: traditional Keynesian ideas of the 1930s to 1960s that were largely downplayed in the wake of the stagflation of the 1970s and the accompanying 'New Classical' revolution in macroeconomic theory" (Ball, de Long and Summers 2014, p. 2).

Ball, de Long and Summers postulate that the US (and, by implication, Europe) may be in a 'liquidity trap' of the kind first described by John Hicks (1937), and which they and others argue has also afflicted Japan over the past two decades – that is, as Paul Krugman (1998) defined it, "that awkward condition in which monetary policy loses its grip because the nominal interest rate is essentially zero, in which the quantity of money becomes irrelevant because money and bonds are essentially perfect substitutes".

Summers and his co-authors argue that "in a liquidity trap environment like the one we are experiencing at present, properly designed fiscal stimulus is likely to reduce rather than increase the long-run debt burden" – because "interest rates will not be increased when a fiscal expansion raises the level of demand, thereby avoiding the crowding-out effects that normally arise from [expansionary] fiscal policies. Moreover, with a fixed nominal rate, if increases in demand raise the rate of inflation, real interest rates fall and investment is stimulated" (Ball, de Long and Summers 2014, p. 5).

They assert, citing empirical work by IMF staff (Blanchard and Leigh 2013) and others, that "under current conditions the multiplier – the effect of a dollar of spending or of net tax cuts on GDP – appears likely to be not just positive but greater than 1.0".

More controversially, they then argue that given the costs to future tax revenue of the persistent losses of output and employment that history suggests typically follow from a financial crisis of the sort experienced in 2007-09 ('hysteresis'[5]), a fiscal expansion that succeeded in creating a persistent increase in output and employment would "pay for itself" – a proposition which they then seek to verify empirically using the Federal Reserve's FRB/US model.

Summers' diagnosis – and his suggested course of treatment – has gained support from, among others, Paul Krugman (2014), who describes the situation as depicted by Summers as "the kind of environment in which Keynes' hypothetical policy of burying currency in coalmines and letting the private sector dig it up – or my version, which involves faking a threat from non-existent space aliens – becomes a good thing; spending is good, and while productive spending is best, unproductive spending is still better than nothing".

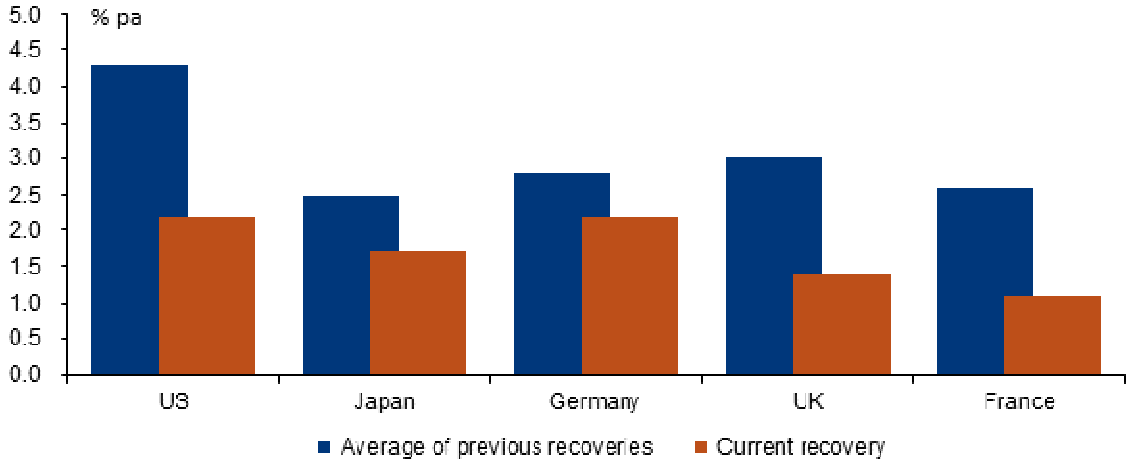
[5] A term which was first used by Summers in a paper co-authored with Olivier Blanchard in 1986 to describe the persistence of high unemployment in the 1980s.

From the other end of the spectrum of opinion among (American) economists, John Taylor – the inventor of the eponymous 'rule' for the setting of policy interest rates and who served as Under Secretary of the Treasury for International Affairs in the Administration of President George W Bush – argues (contrary to Summers) that the US economy did experience "boom-like conditions" in the years immediately before the onset of the financial crisis, noting that "the unemployment rate got as low as 4.4%" and that "the annual inflation rate for the GDP price index doubled to 3.4% from 1.7%" between 2003 and 2005; and that the most likely explanation for the continued reluctance of business to invest is "policy uncertainty" and "increased regulation" (Taylor 2014).

How unusual is the recovery from the global financial crisis?

It is difficult to argue against the proposition that the recovery from the global financial crisis of 2008-09 has been unusually slow, at least by comparison with recoveries from previous post-war recessions. Each of the five largest 'advanced' economies has experienced a significantly slower recovery from the recession which followed the financial crisis of 2008-09 than it has, on average, from previous post-war recessions (see Chart 3). Over the 17-19 quarters since their respective post-crisis troughs, these five economies have grown by an (unweighted) average of barely more than half the average growth rates recorded over the corresponding periods following all their other recession troughs since the end of World War II.

Chart 3: Real GDP growth over the period since the post-financial crisis trough, compared with average growth rates over the corresponding intervals following previous post-war recessions



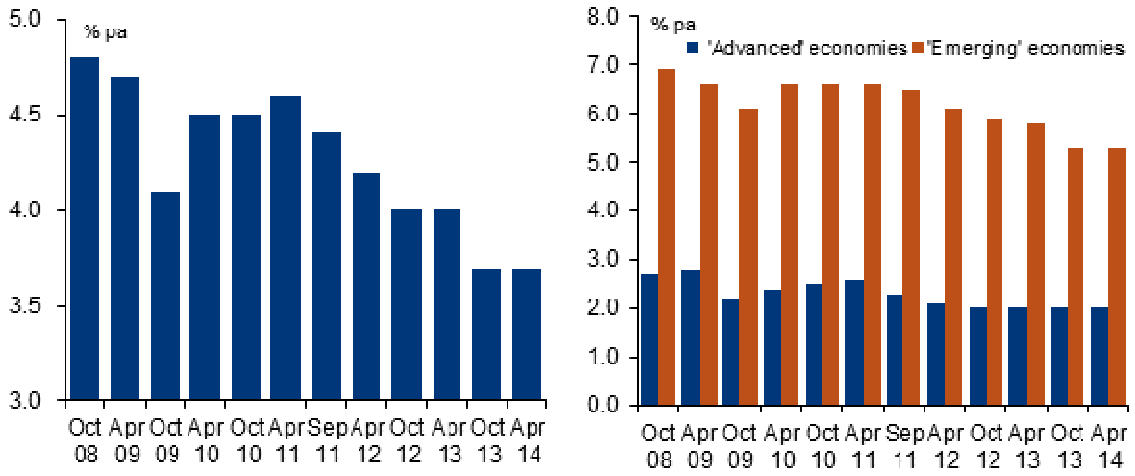
Note: Growth rates are over the period since the post-financial crisis recession trough in 2009, and the average of the corresponding periods following other recession troughs since 1945 (US), 1955 (UK) or 1960 (Japan, Germany and France). 'Recessions' delineated as periods of two or more consecutive quarterly contractions in real GDP.
Sources: US Bureau of Economic Analysis; Japan Economic & Social Research Institute; Statistiches Buncesamt; UK Office of National Statistics; Institut National de la Statistique et des Études Économiques; Global Financial Data.

Moreover, pessimism about the medium-to-longer term growth outlook is becoming more widespread. The IMF's semi-annual forecasts for global economic growth for the years 2011 and beyond have been progressively downgraded – from 4.8%pa (for the years 2011 through 2013) in the October 2008 issue (immediately after the collapse of Lehman Brothers) to 3.7% pa (for the years 2011 through 2019) in the most recent issue, published in April (see Chart 4 on page 6)[6].

[6] The forecast periods selected (ie, from 2011 onwards) have been chosen to abstract from forecast errors for the years 2009 and 2010. Obviously, the figures extracted from WEOs published in and after April 2012 include actuals as well as forecasts. But excluding the actuals doesn't materially alter the results: for example, the April 2014 WEO forecast for global growth over the period 2014-2019 is 3.9% pa, cf 3.7% for the period 2011-2019.

These downgrades have affected forecasts for both 'advanced' and 'emerging' economies – with long-run growth forecasts for the former being revised down from 2.7% pa in October 2008 to 2.0% pa in April 2014, and for the latter from 6.9% pa to 5.3% pa over the same interval.

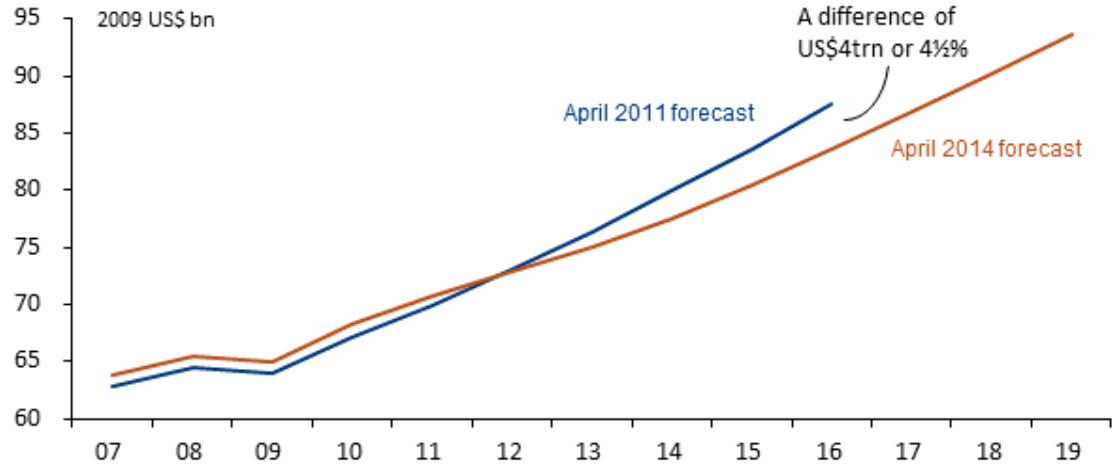
Chart 4: Successive IMF World Economic Outlook forecasts for world real GDP growth



Note: columns depict forecast average annual growth rates for real GDP (aggregated using PPPs) for the years 2011-13 (Oct 2008), 2011-14 (Apr and Oct 2009), 2011-15 (Apr and Oct 2010), 2011-16 (Apr and Oct 2011), 2011-17 (Apr and Oct 2012), 2011-18 (Apr and Oct 2013) and 2011-19 (Apr 2014).
Source: IMF, *World Economic Outlook*, successive issues, October 2008-April 2014.

These are not trivial differences. The downward revision to the forecast growth rate of global growth between the April 2011 and April 2014 WEOs amounts to a difference in the *level* of world GDP in 2016 (the last year of the April 2011 forecast) of almost US$4 trillion (in 2009 dollars) or 4½% of the level implied by the April 2011 forecast – equivalent to about US$550 per head of the world's expected population in 2016 (see Chart 5).

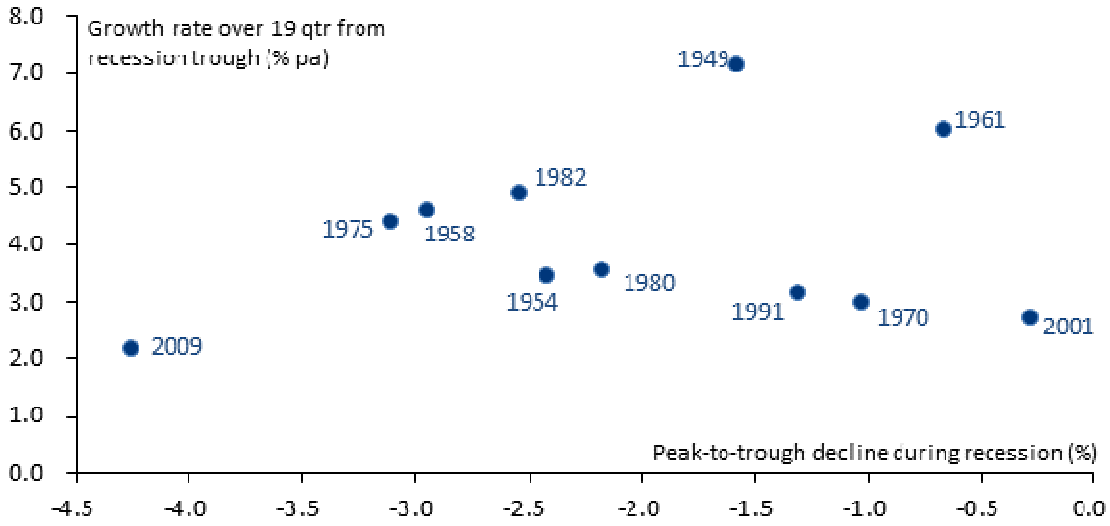
Chart 5: Impact of revisions to global growth forecasts on the* level *of global GDP



Source: IMF, *World Economic Outlook*, April 2011 and April 2014.

The slower recoveries experienced by the 'advanced' economies contradicts the hitherto widely-held expectation that unusually deep recessions are typically followed by stronger-than-normal recoveries. At least for the United States, that belief doesn't enjoy much support from the historical record, as depicted in Chart 6). A linear regression of the dot points depicted in chart 4 has the 'wrong' sign and an R^2 of 0.04. The 'fit' is much improved if the three 'outliers' (1949, 1961 and 2009) are removed – the co-efficient has the 'right' sign and an R^2 of 0.75. But that serves merely to demonstrate that the most recent experience *doesn't* fit this pattern.

Chart 6: Real GDP growth rates during and after post-war US recessions



Source: US Bureau of Economic Analysis.

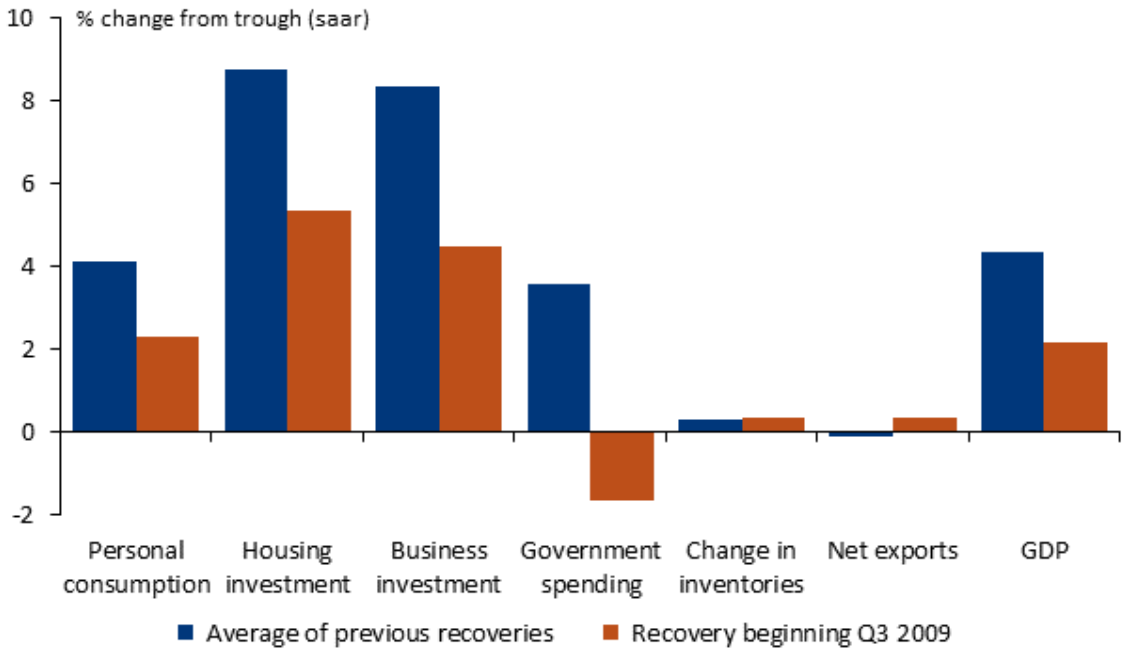
Another possible explanation is the one offered by Carmen Reinhart and Ken Rogoff, that recoveries from recessions induced by financial crises are slower and more protracted than those from other recessions – even though, as they also show, the recessions induced by financial crises are usually deeper and longer than those brought on by other factors (2009, pp. 216-221 and 238-9).

At first glance, this certainly seems plausible. However, a more detailed dissection of the differences in the pace of the recovery from the most recent recession in the United States with that of previous recoveries suggests that the Reinhart and Rogoff explanation is by no means a complete answer.

Chart 7 (on page 8) shows the average growth rates (or contributions to total GDP growth) of the major expenditure components of US GDP over the 19 quarters since the post-crisis trough in Q2 2009, compared with the corresponding averages for the 19 quarters after the ten previous recessions experienced in the US between 1949 and 2001:

- *Business investment* has grown at a 4.5% annual rate since Q2 2009, compared with an average annual rate of 8.3% over the 19 quarters following each of the previous post-war recession troughs.
- Note, however, that this is entirely due to pronounced weakness in *non-residential construction*, which has actually declined at a 1.2% annual pace since the end of the last recession, as against a growth rate averaging 6.9% pa over the 19 quarters following each of the previous ten recessions; by contrast, the growth rate of *plant and equipment investment*, of 8.9% per annum, has been almost exactly in line with the 9.0% average growth rate of this category of business investment over the corresponding period of previous post-war recessions, and actually stronger than that following each of the four previous recessions (between 1980 and 2001);

Chart 7: Growth rates of major expenditure components of US GDP over 19 quarters since Q3 2009 and on average over 19 quarters after previous post-war recessions



Source: US Bureau of Economic Analysis.

- *Government spending* (on goods and services) has contracted at a 1.6% average annual rate since Q2 2009, in marked contrast to a (positive) growth rate averaging 3.6% pa over the corresponding period of previous post-war recoveries. This partly reflects the unwinding of the larger-than-usual discretionary fiscal stimulus deployed during the recession brought on by the financial crisis: government spending increased by 5.3% (not annualized) during the most recent recession, compared with an average of 2.0% during the ten previous post-war recessions.
- *Net exports* have added 0.3 pc pts to the annualized growth rate of real GDP since Q2 2009, compared with an average subtraction of 0.1 pc pt from the growth rate of real GDP over the corresponding period of previous post-war recoveries. This reflects both faster growth in *exports* (at a 6.0% annual rate, cf. an average of 5.5% over the corresponding period after previous post-war recessions), and slower growth in *imports* (5.5% vs 7.7%).

An 'overhang' of debt would certainly constitute a plausible explanation as to why components of spending that are typically funded in part by borrowing – such as spending on consumer durables, housing and business investment – might have grown at a substantially slower rate in the aftermath of a recession induced by a financial crisis than during the corresponding period of other business cycles.

However, as the foregoing analysis indicates, of these components, it is only residential and non-residential construction spending whose growth rates since Q2 2009 have been markedly below their averages over the corresponding period of previous post-war cycles; while, by contrast, the growth rate of two others – household spending on consumer durables and business spending on plant and equipment – *hasn't* been conspicuously slower over the past 19 quarters than it has been, on average, over the corresponding period of previous recoveries.

And although the much weaker recovery in residential investment spending during the current recovery compared with its predecessors is self-evidently attributable in large part to the peculiar characteristics of the 2008-09 recession and its aftermath, it isn't similarly obvious that the weakness in non-residential construction by comparison with previous cycles is primarily attributable to any inability to access debt finance on the part of the business sector.

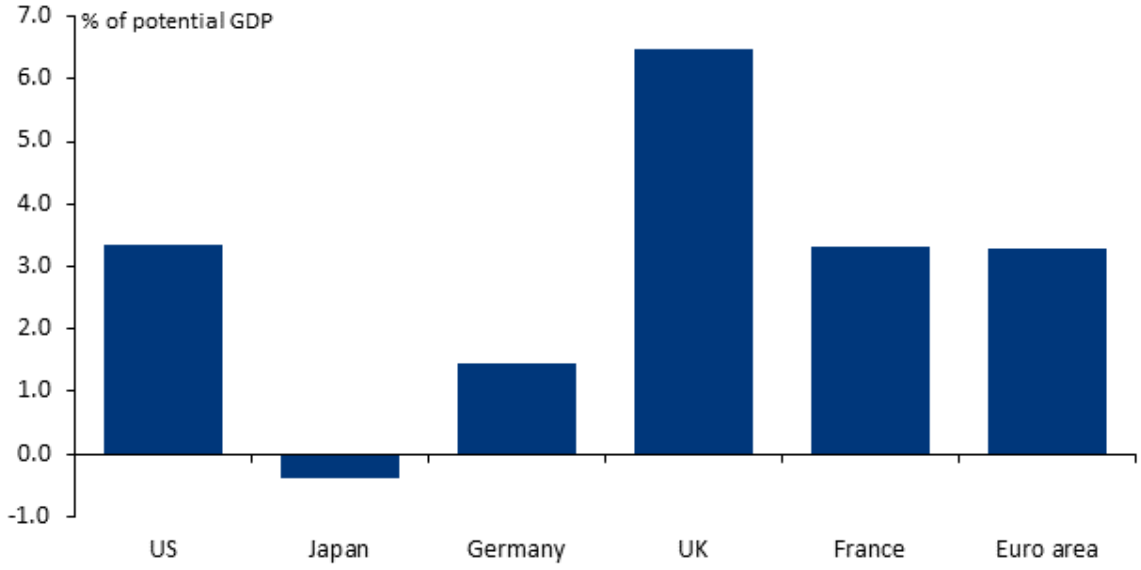
For most of the period since the end of the 2008-09 recession, after-tax corporate profits have grown at a faster rate than, on average, over the corresponding periods of previous post-war recessions. And non-financial corporate sector holdings of cash have ballooned by 40% in dollar terms – or from 7.9% of GDP to a record high 9.3% of GDP – over this period (although some of this cash appears to have been 'trapped' offshore in order to avoid being taxed in the United States).

Similarly, it's difficult to attribute the markedly weaker growth in household spending on non-durable goods or on services since Q2 2009, compared with that over the corresponding period of previous post-war cycles, to any unusual characteristics of the 2008-09 recession, other than (perhaps) to the fact that the growth rate of employment has also been unusually weak.

Finally, the marked contrast in the trajectory of government spending since the end of the last recession with that over the corresponding period of business cycles clearly reflects the different fiscal policy choices that have been made during this period compared with earlier episodes.

This difference is perhaps even more starkly apparent when the analysis is extended to European economies. Chart 8 shows the change in the general government structural balance (as estimated by the IMF) between 2009 and 2013 in the five largest 'advanced' economies.

Chart 8: Change in general government structural balance, 2009-2013



Source: IMF, *World Economic Outlook* database, April 2014.

Comparing Chart 6 with Chart 3 (on page 5) it seems clear that the economies which have experienced the largest shortfalls in real GDP growth since the end of the recessions induced by the global financial crisis (compared with their respective averages for the corresponding stages of previous cycles) have been those which effected the largest 'fiscal consolidations'. The comparison is especially striking for the UK, where (based on IMF estimates) the 'fiscal consolidation' amounted to 6½ pc pts of potential GDP between 2009 and 2013.

This is consistent with the results of the study by Olivier Blanchard and Daniel Leigh (2013), referred to earlier. In the particular circumstances of the past four years – with monetary policy interest rates at or close to the zero lower bound in all of the major 'advanced' economies, and with limited capacity for the currencies of any of the major 'advanced' economies to depreciate significantly against those of their peers – there was far less scope for the contractionary effects of any substantial fiscal consolidation to be ameliorated by some combination of lower interest and exchange rates than had been the case during earlier episodes of fiscal consolidation[7].

In other words, it is not at all clear that the sluggishness of the recovery in economic activity in the United States and other 'advanced' economies from the recession induced by the global financial crisis, by comparison with recoveries from previous recession, can be entirely explained by the fact that the most recent recession was induced by a severe financial crisis – even though that is obviously part of the explanation. Fiscal policy decisions have clearly played an independent role in this outcome.

And it would seem at least plausible that other factors, quite separate from those which obviously are a legacy of the financial crisis, have also played some role in constraining the pace of recovery to something below what history alone would have led one to expect. Those factors include demography – both the rate of growth of populations and their changing age structure (which in turn has an influence on work force participation rates independent of economic factors), and rates of productivity growth.

The 'Three Ps' approach to dissecting long-term economic growth trends

The Australian Treasury (Finance Ministry) has developed a useful framework for analysing the sources of long-term economic growth which it calls the "Three Ps" – after its principal components, *p*opulation*, p*articipation and *p*roductivity (Australian Treasury 2002, 2010). This framework is based on the observation that, for any period, GDP can be deconstructed as follows:

$$\text{GDP} = \text{Population} \times \frac{\text{Employment}}{\text{Population}} \times \frac{\text{Hours worked}}{\text{Employment}} \times \frac{\text{GDP}}{\text{Hours worked}}$$

(Note that the terms on the right hand side of this equation can be cancelled out, leaving the identity GDP = GDP).

Expressed in difference form, the above expression becomes:

$$\Delta \text{ GDP} = \Delta \text{ Population} + \Delta \text{ Participation rate} + \Delta \text{ Average hours worked} + \Delta \text{ Labour productivity}$$

This framework can be used in conjunction with, for example, the Total Economy Database published in January each year by the Conference Board, to ascertain the contribution that each of the factors on the right-hand side of the above expression have made to changes in the average growth rate of GDP between different periods.

[7] It is perhaps worth noting Blanchard and Leigh's concluding codicil that their results "do not imply that fiscal consolidation is undesirable. Virtually all advanced economies face the challenge of fiscal adjustment in response to elevated government debt levels and future pressures on public finances from demographic change. The short-term effects of fiscal policy on economic activity are only one of the many factors that need to be considered in determining the appropriate pace of fiscal consolidation for any single country" (p. 20).

Chart 9 (on page 12) shows the results of applying this 'Three Ps' framework to data for the largest 'advanced' economies. The time periods used in this analysis are unavoidably arbitrary, but they are meant to capture the 'golden era' (*les trente glorieuses*, as the French say) between the end of World War II and the global recession brought on by the first oil shock of 1973; the difficult period from the first oil shock through to the overlapping recessions of the early 1990s; the 'Great Moderation' which ran from the early 1990s until the onset of the global financial crisis; the 'Great Recession' (as the IMF calls it) of 2009 and the 'snap-back' of the following year; and finally the period since the end of that recession which is the primary focus of this paper.

The factor common to all four economies as a contributor to the slower rate of economic growth in the aftermath of the global financial crisis is *lower labour productivity growth*. Lower productivity growth more than accounts for the slowdown in real GDP growth between 1993-2008 and 2010-2013 in the United States and the United Kingdom: indeed in the UK labour productivity growth has been negative since the onset of the financial crisis (a corollary of the fact that the UK experienced the deepest contraction in real GDP of any of the major 'advanced' economies during and after the financial crisis, but a comparatively modest increase in unemployment). In the euro area, lower productivity growth accounts for about one-third of the difference in real GDP growth between the 1993-2008 period and the period since 2010.

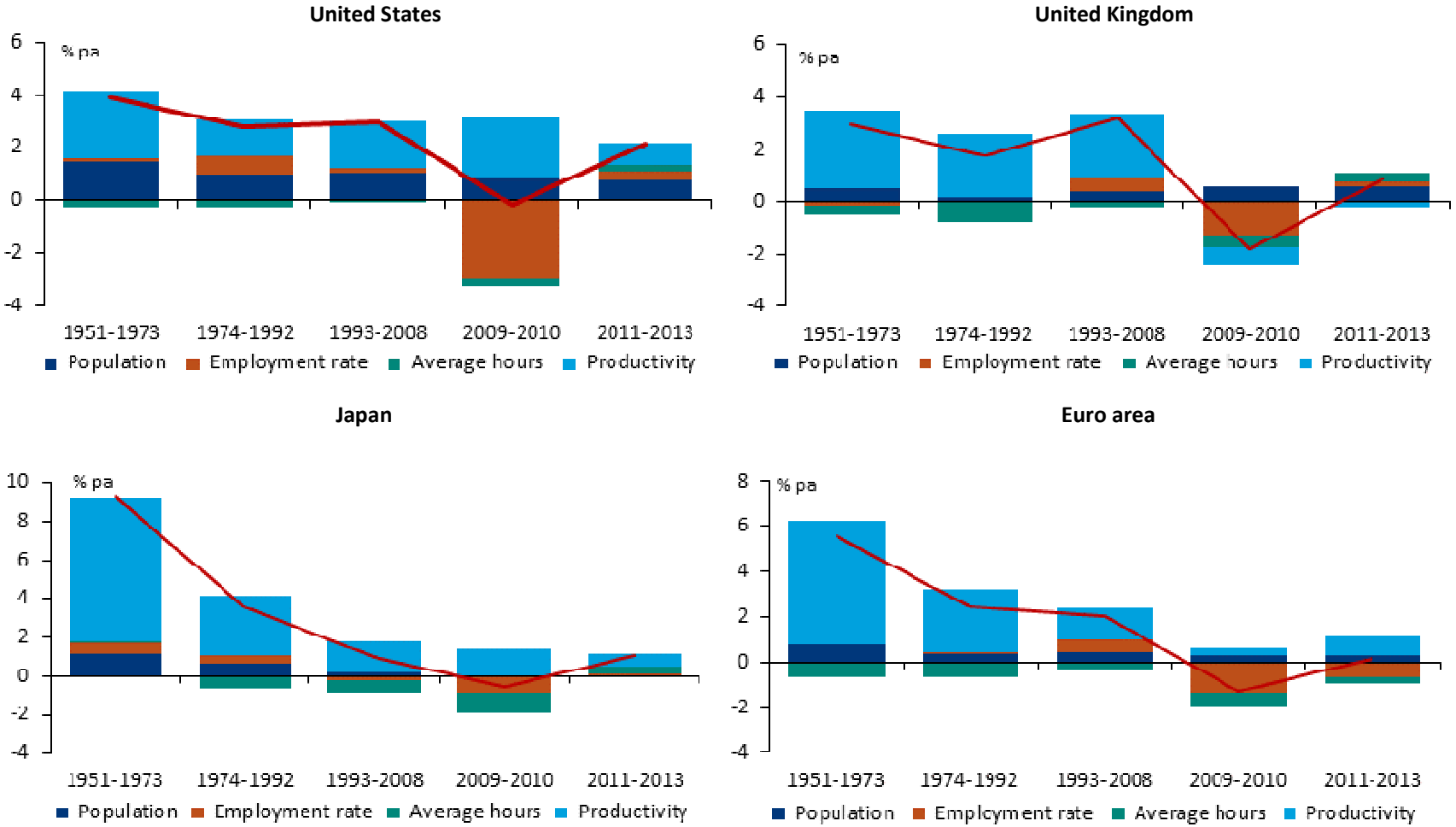
In Japan the story is a little more nuanced because the average real GDP growth rate since 2010 has been about the same as it was between 1993 and 2008: productivity growth has slowed by as much as it has in the United States between these two periods, but in Japan the effects of slower productivity growth have been offset by other factors. Of course for Japan, uniquely, the years between 1993 and 2008 were themselves the aftermath of a series of financial crises – which some, including Larry Summers, argue makes Japan's experience precursor for what other 'advanced' economies have experienced more recently. In that context, it is perhaps worth noting that labour productivity growth in Japan between 1993 and 2008 was barely more than half that recorded between 1974 and 1992.

Slower population growth has also detracted from overall economic growth in the US, Japan and the euro area – though not in the UK where, perhaps surprisingly, population growth has been faster since the onset of the financial crisis than at any time since 1973.

In the US and Japan, the impact on overall economic growth of the slowdown in population growth, and of part of the slowdown in productivity growth, has been offset by increases in *participation in employment* and in *average hours worked*. In the US, the increase in the employment-to-population ratio since 2011 has only slightly offset the enormous decline in this ratio during and immediately after the financial crisis – the proportion of the American population with a job is still lower than at any time since 1984, with the exception of the years 2010-2012. In Japan, by contrast, where labour force participation had been declining since 1992 (in the aftermath of the collapse of the 1980s Japanese 'bubble'), there seems to be an emerging trend of rising female labour force participation which is offsetting declining workforce participation among men. In both countries, average hours worked by those with jobs have increased since the financial crisis, reversing what had been a multi-decade trend.

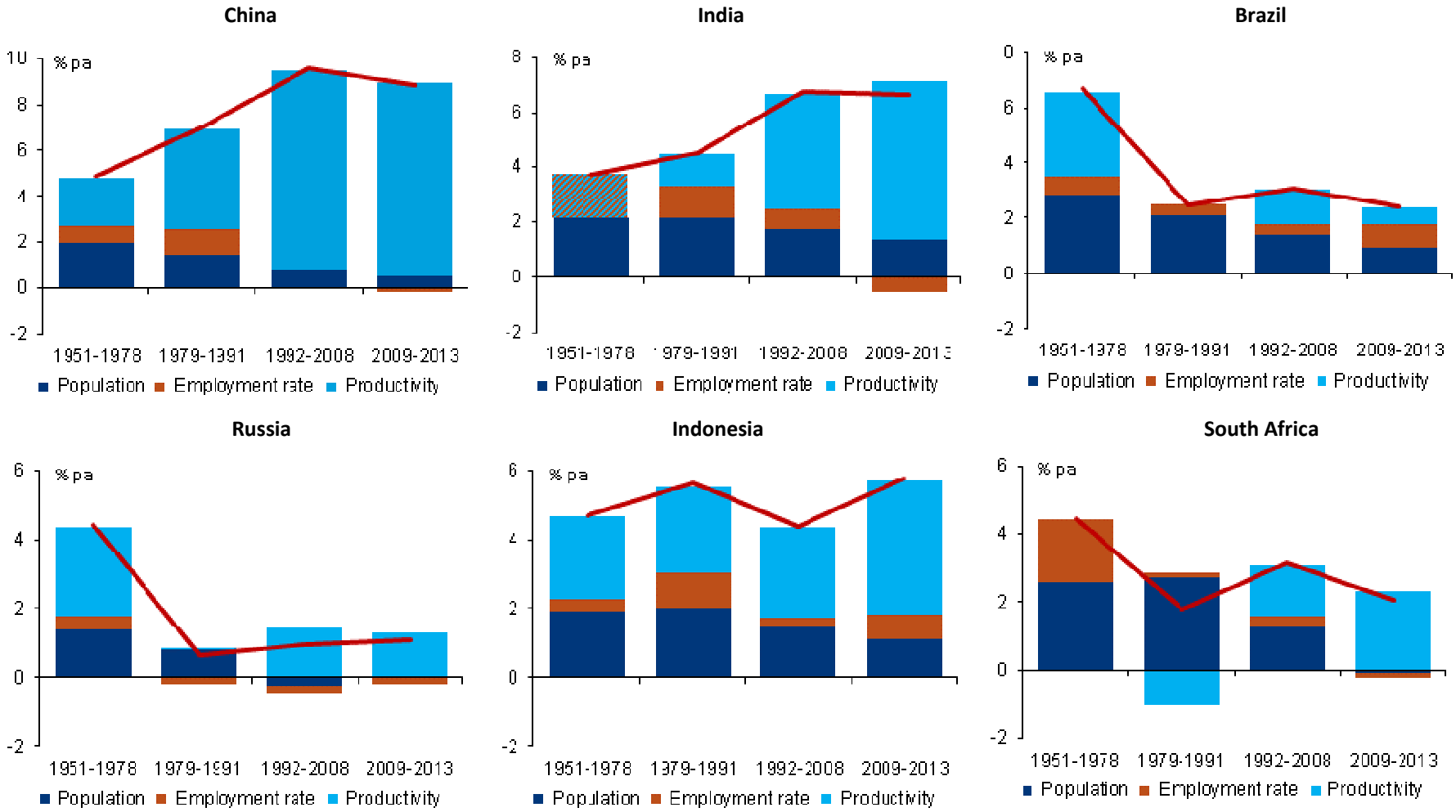
By contrast, falling employment participation has continued to detract from overall economic growth in the euro area since 2011 – albeit at a lesser rate than in 2009 and 2010. In fact declining employment participation has subtracted twice as much from euro area real GDP growth as has declining labour productivity growth – perhaps suggesting that the 'double dip' recession which the euro area experienced in 2012-13 had a more pronounced impact on the employment of low-productivity workers. Also unlike the US and Japan – or the UK – those with jobs in the euro area have continued to work fewer hours, on average, since 2011.

Chart 9: Contributions to real GDP growth in major 'advanced' economies, 1951-2013



Note: The solid red line in each chart denotes the growth rate of real GDP. Employment rate is employment / population; productivity is GDP / total hours worked. Euro area includes all of Germany (including East Germany before 1989) and all other current members except for Malta, Cyprus, Slovenia, Slovakia, Estonia and Latvia.. *Source:* The Conference Board (2014).

Chart 10: Contributions to real GDP growth in selected 'emerging' economies, 1951-2013



Note: The solid red line in each chart denotes real GDP growth. Figures for employment not available for India before 1960 so contributions of employment and productivity growth to real GDP growth in India 1951-78 are combined. Figures for Russia 1951-78 and 1979-91 are for former USSR. 'Productivity' is GDP per person. *Source:* The Conference Board (2014).

The 'Three Ps' framework can also be applied to data for 'emerging' economies, except that for many 'emerging' economies data for average hours worked is not available (at least not in the Conference Board's database used here), so that productivity must of necessity be defined as GDP per person employed rather than per hour worked. On this basis Chart 10 (on page 13) shows real GDP growth dissected by contributions from population growth, changes in the proportion of the population in employment, and productivity growth thus defined, for six large 'emerging' economies. Again the selection of periods is of necessity somewhat arbitrary, but is here intended to mark out the beginning of the 'reform eras' in China (1978) and India (1991) – the latter more or less co-inciding with the collapse of the Soviet Union – and to provide a further break at the onset of the financial crisis in 2008, although without the need to delineate 2009-10 as a separate period as for 'advanced' economies since most of the large 'emerging' economies did not experience unusually severe recessions as a result of the global financial crisis.

There are many inferences that can be drawn from Chart 10 – but for the purposes of this paper the most pertinent are the declining contributions to real GDP growth since the financial crisis of population growth, particularly in China, South Africa and Russia (in the latter case since the collapse of the Soviet Union); the detractions from real GDP growth resulting from falling employment participation in China, India, Russia and South Africa (in contrast to the positive contributions to growth from this source in Brazil and Indonesia); and the very large contribution which productivity growth is continuing to make to real GDP growth in China, India and Indonesia, and to a lesser extent in South Africa (in the latter case, by contrast with what occurred under the apartheid regime), compared with the much smaller contributions from productivity growth in Russia and especially Brazil.

An important part of any answer to the question of whether the world economy as a whole, or any important component of it (such as the 'advanced' economies as a group), is facing 'secular stagnation' is whether some or all of the trends suggested by the foregoing analysis will continue.

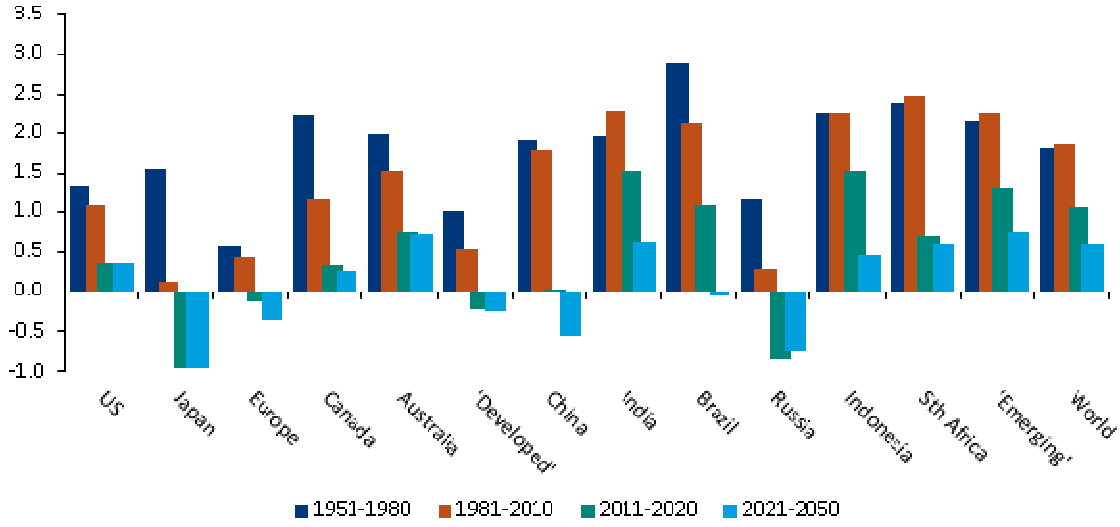
Demography and destiny

One of the distinguishing things about demography from the standpoint of its impact on economic trends is that it usually doesn't come as a surprise. Demographic changes, unless they are the result of wars or major pandemics, tend to unfold slowly, allowing them to be projected in ways that are less prone to error than long-term projections of economic variables often turn out to be.

Chart 11 (on page 15) shows the UN Department of Economic and Social Affairs Population Division's historical estimates and the 'medium variant' of its most recent projections of the growth rates of *working age* (that is, 15-64 year-old) populations of selected 'advanced' and 'emerging' economies, and the for the world as a whole, for the periods 1951-1980, 1981-2010, 2011-2020 and 2021-2050. The use of estimates and projections of the growth of the *working age* population in some respects more accurately captures the linkage between population and economic growth – because it incorporates one of the most important demographic influences on employment participation, something which is otherwise difficult to project.

The unambiguous message from Chart 11 is that the *growth rate* of the working-age population is set to decline just about everywhere (except Africa, which isn't shown in Chart 11). In some countries or regions – in particular, Europe, Russia, Japan, China and (also not shown in Chart 11, other higher-income Asian countries such as Korea, Taiwan and Singapore), the working age population is expected to decline *in absolute terms* (not just its rate of growth) over the next decade, and beyond. Indeed, although Chart 11 doesn't bring this out explicitly, these trends are already well under way in many countries:

Chart 11: Growth rates of the working age (15-64 years old) population



Note: Europe in this chart comprises what the source calls 'Western', 'Northern' and 'Southern' Europe, and as such includes the Baltic States, Albania and the successor states to the former Yugoslavia, but does not include Poland, the Czech Republic, Slovakia, Hungary, Bulgaria, Romania, Moldova or Ukraine. These countries plus Russia are however included in the 'developed' economies total. *Source:* United Nations Department of Economic and Social Affairs Population Division, *World Population Prospects: The 2012 Revision* (medium fertility variant).

- Japan's working age population peaked in the late 1990s and has already shrunk by more than 6%: by 2030 there will be 12.3 mn (15%) fewer Japanese of working age than there were in 2010, and 26mn (32%) fewer by 2050.
- Europe's working age population has peaked in the past few years: by 2030 there will be 14.5mn (5%) fewer Europeans of working age than there were in 2010, and 34.5mn (12%) fewer by 2050 (with 'Europe' defined as in the footnote to Chart 9);
- China's working age population will peak in a year or so: by 2030 there will be 27mn (3%) fewer Chinese of working age than there will be in 2015, and by 2030 there will be 165mn (16%) fewer than there will be next year.

Western countries which are more welcoming of immigrants – such as the United States, Canada and Australia – will not (on these projections) experience declines in the *absolute size* of their working-age populations until the closing decades of the 21st century, but their working age population *growth rates* are just beginning to decline as their post-war 'baby boom' generation starts to reach the traditional retirement age, and will decline significantly over the coming decade. For example, the growth rate of the US working age population as between the periods 1981-2000 and 2001-2010 was unchanged at 1.1% pa – in marked contrast to Japan, where it turned around from +0.5% pa to -0.5% pa between these two periods, or Western Europe (as defined by the UN), where it slowed from 0.5% pa to 0.2% pa); but it will slow to less than 0.4% pa during the current decade.

Across the 'developed' world as a whole, the growth rate of the working-age population is expected to decline, on these projections, from an average of 0.4% pa over the first decade of the 21st century to -0.2% pa over the current decade, and to an average of -0.3% pa over the following three decades.

All else being equal, therefore, the growth rate of real GDP in 'developed' economies as a group will slow by an average of 0.6 pc pts pa in the current decade, compared with the previous one.

For the 'emerging' world as a whole, the growth rate of the working –age population is expected to decline from 2.0% pa over the first decade of the 21st century to an average of 1.3% pa during the current decade, and to an average of 0.7% pa over the following three decades.

All else being equal, this implies that the growth rate of real GDP in 'emerging' economies as a group will slow by an average of 0.6 pc pts pa during the current decade, and by a further 0.6 pc pts pa over the following three decades. Excluding China, the *ceteris paribus* decline in real GDP growth in prospect is 0.4 pc pts pa in the current decade, and an average of 0.7 pc pts pa over the following three decades.

At this juncture, it is worth recalling that stagnating population growth was one of the principal reasons for Alvin Hansen's original promulgation of the notion of 'secular stagnation': indeed, 'declining population growth' was in the title of his American Economic Association Presidential Address (1939) in which he first used that phrase. It is also worth recalling that one of the main reasons that Hansen turned out to be wrong was because population growth *didn't* decline after World War II (which of course hadn't commenced when he gave his address), but on the contrary, accelerated sharply.

By contrast, while there is certainly room for conjecture about the extent to which the population projections used in this discussion will turn out to be accurate (and the UN Population Projections themselves contain 'high' and 'low' fertility variants, as well as different assumptions about migration), there is no credible demographer of whom the author is aware who suggests that the world is on the cusp of another 'baby boom'.

Productivity growth to the rescue?

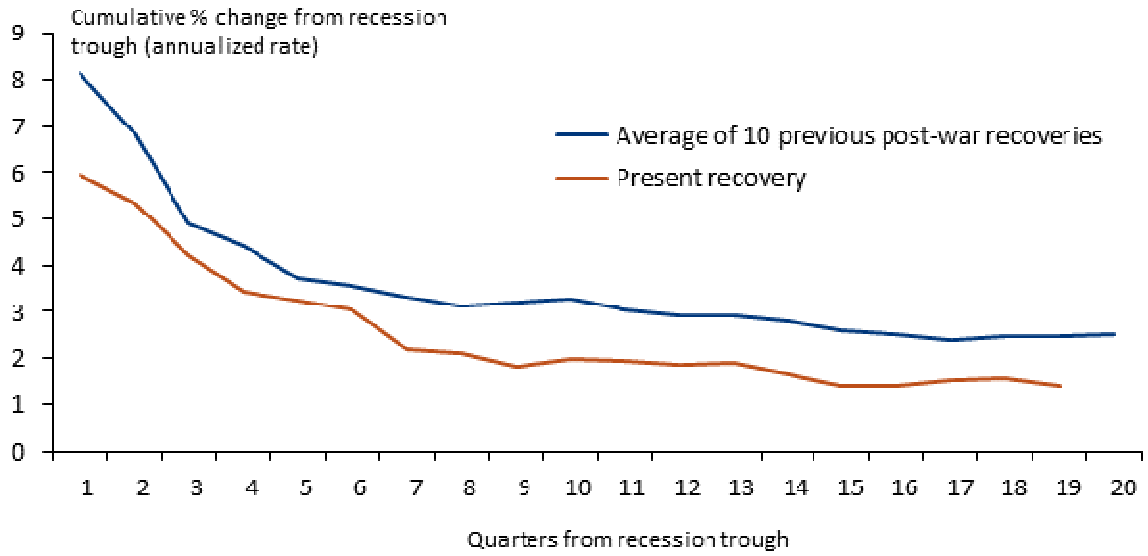
While the 'Three Ps' framework makes it clear that slower population growth inevitably means slower growth in real GDP if all else remains equal, that isn't, of itself, necessarily a Bad Thing if some combination of higher employment and faster productivity growth enables *per capita* GDP to continue to increase at a rate that a majority of a nation's citizens finds satisfactory.

Real GDP growth that is entirely attributable to population growth does *not* improve people's living standards. To take an extreme example, Madagascar's real GDP has grown at twice the rate of Japan's since 1989, but because Madagascar's population has doubled over this period, while Japan's has increased by just 3.4%, Madagascar's per capita GDP has actually fallen by 15.5% over this period, whereas Japan's has risen by 27%. Japan's per capita GDP growth rate over this period has hardly been stellar by 'advanced' economy standards – it has slipped from 14th to 23rd among the 123 countries included in The Conference Board's (2014) database: but poor Madagascar has gone from 110th to 119th over the same period, ahead of only Malawi, Niger, the 'Democratic' Republic of the Congo and Zimbabwe.

The slowdown in the growth rate of the working age populations of most of the 'advanced', and many of the 'developing', economies will be less troubling if it can be ameliorated or offset by an acceleration in productivity growth: as Paul Krugman once famously wrote, 'productivity isn't everything, but in the long run it's nearly everything' (1992, p. 9).

Labour productivity growth is typically strongest in the early stages of a recovery from recession – when employers unwind whatever 'labour hoarding' they undertook during the preceding downturn, and before they are sufficiently confident about the durability of the nascent upswing to begin increased hiring. In the United States, labour productivity growth has averaged 4.4% over the first year of the ten previous post-war recoveries, but then fallen away to an average of 1.9% pa over the following three years (Chart 12).

Chart 12: US labour productivity growth, average of previous cycles compared with present



Source: US Bureau of Economic Analysis, Bureau of Labor Statistics.

The only cycle in which labour productivity growth was stronger in a year subsequent to the first year after the preceding recession trough was the one which began in Q4 1970 (not, as one might have guessed, the one beginning in Q1 1991).

It's therefore particularly discouraging, from the perspective of this paper, that labour productivity growth has been consistently slower during the recovery from the recession induced by the global financial crisis than the average of previous post-war recoveries – indeed slower than in *any* previous post-war recovery with the exception of the one beginning in Q2 1958.

Referring back to Chart 9 (on page 12), labour productivity growth since 2010 appears to have been slower than during the period 1993-2008 in all of the major 'advanced' economies. By contrast, Chart 10 (on page 14) suggests that labour productivity growth has held up in all of the major 'emerging' economies.

There is a wide spectrum of opinion on the prospects for productivity growth over the medium-to-long term At one end are economists like Robert Gordon and Tyler Cowen. Gordon argues that the 'third industrial revolution' – based on computers, the internet and mobile (cell) phones[8] – "created only a short-lived growth revival between 1996 and 2004 … the rapid development of the web and e-commerce after 1995 [was] largely completed by 2005" and that innovation since the turn of the century has "centred on entertainment and communication devices that are smaller, smarter and more capable, but do not fundamentally change labour productivity or the standard of living in the way that electric light, motor cars or indoor plumbing changed it", and which "provide new opportunities for consumption on the job and in leisure hours rather than a continuation of the historical tradition of replacing human labour with machines" (Gordon 2012, pp. 11, 2 and 14).

[8] Gordon identifies two other 'industrial revolutions' – the first, running from 1750 to 1830, based on the invention of the steam engine and railways; and the second, running from 1870 to 1900, based on electricity, the internal combustion engine, running water, indoor toilets, the telegraph and the telephone, mass entertainment, chemicals and petroleum. In Gordon's account, the second industrial revolution was "more important than the others and largely responsible for 80 years of relatively rapid growth between 1890 and 1972".

Tyler Cowen (2011) argues that "the modern United States was built at five forms of low-hanging fruit, and at most only two of those are still with us" – the first three being the ease of cultivating "free and unused" land [sic], inventions and innovations based on the scientific breakthroughs of the 18th and 19th centuries, and the large returns from attaining widespread secondary and post-secondary education, and the remaining two being cheap fossil fuels and "the strength [sic] of the American constitution". Like Gordon, Cowen argues that the productivity benefits of the most recent innovations in information and communications technologies have been minor compared with those of previous periods: "Of course, the personal computer and its cousin, the smartphone, have brought about some big changes. And many goods and services are now more plentiful and of better quality. But compared with what my grandmother witnessed, the basic accoutrements of life have remained broadly the same".

Technological pessimism of this sort is by no means unprecedented. Five years before his *General Theory* was published, Keynes wrote: "It is common to hear people say that the epoch of enormous economic progress which characterised the 19th century is over; that the rapid improvement in the standard of life is now going to slow down" (Keynes 1931 p. 385).

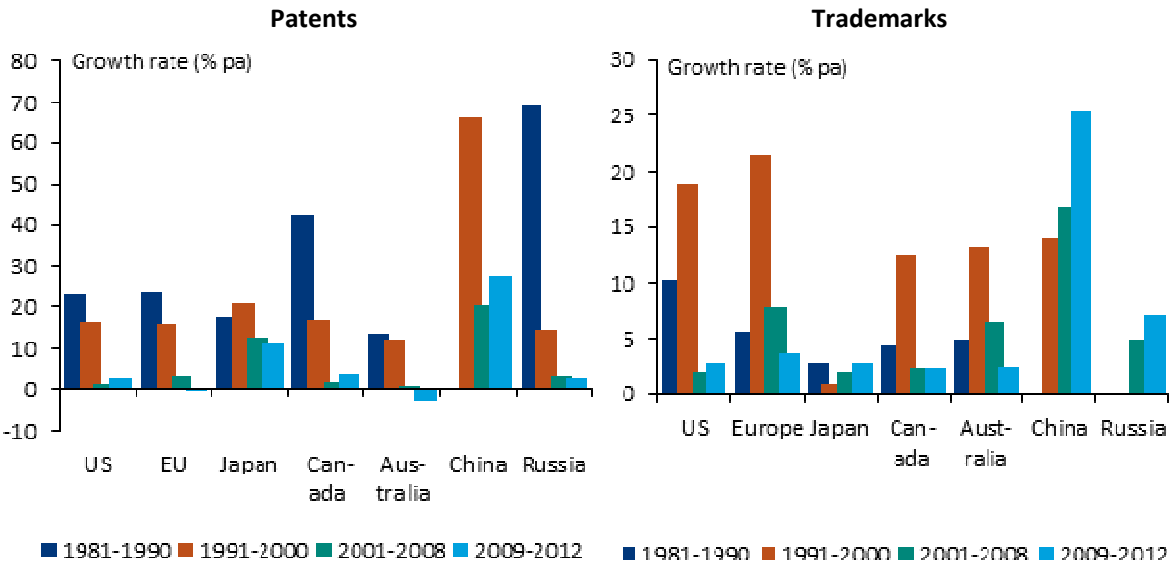
And Gordon's and Cowen's views have been widely contested. Perhaps not surprisingly, Bill Gates asserts that "the idea that innovation is slowing down is one of the stupidest things that anybody ever said" (Friedman 2014). Gordon's Northwestern University colleague Joel Mokyr agrees, saying "the rate of innovation is just getting faster and faster" (Aeppel 2014). Former Federal Reserve Board Chairman Ben Bernanke thinks that both humanity's capacity to innovate and the incentives to innovate are greater today than at any other time in history" (Bernanke 2013). The McKinsey Global Institute points to the potential productivity-enhancing impact of 3D printing, 'big data', the 'Internet of Things' (the capacity to connect devices through low-cost sensors), robotics, 'fracking' and advances in life sciences, and to "the tremendous scope to improve productivity in industries such as health care, education and government that have lagged behind historically" (Baily et al 2013). A more forthright (and breathless) view along the same lines comes from Erik Brynjolfsson and Andrew McAfee (2011).

To the extent that patent or trademark applications can be interpreted as 'leading indicators' of the pace of innovation – something the *Economist* (2013) finds 'unconvincing' – the trends in the 'advanced' economies since the turn of the century are not at all encouraging (see Chart 13 on page 19). The rate of growth in patent and trademark has slowed significantly in 'advanced' economies since the turn of the century. By contrast, although the rate of patent applications has slowed in both China and Russia (two 'emerging' economies for which comparable data are available), in China's case it remains well above that for the 'advanced' economies; while the rate of growth in trademark applications has increased in both countries.

David O'Byrne of the US Federal Reserve Board's research staff, together with Stephen Oliner and Dan Sichel (who undertook a lot of pioneering research on the effects of the 1990s 'IT revolution') agree that "the contribution from IT is no longer providing the boost to growth in labour productivity that it did during the years of the productivity resurgence from 1995 to 2004", and provide a 'baseline' estimate of future US labour productivity growth of 1.8% pa which is "better than recent history but still below the long-run average of 2¼%" (O'Byrne et al 2013 p. 22).

One other factor that could detract from the potential for a revival in productivity growth – indeed, something which in this writer's opinion has already detracted from productivity growth – is the increased costs and regulatory burdens arising from the desire for increased 'security' – not merely from terrorist attacks, but, it often seems, from an ever-growing share of the risks associated with being alive in the early part of the 21st century.

Chart 11: Growth rates of patent and trademark applications, 1980-2012



Sources: OECD, *Main Science and Technology Indicators* (2013); World Intellectual Property Organization database. These charts are updates of earlier versions in Carmody (2013).

Without detracting from the enormity of the events of 11th September 2001 and subsequent terrorist attacks, or the existence of an ongoing threat, a good deal of what has been done by governments, and by others at the behest of governments, with the purported aim of countering those threats, appears to have been undertaken without any assessment of the probability attaching to them, or to the costs associated with reducing them relative to the benefits thereby derived.

John Mueller and Mark Stewart (2011) have calculated that the US governments and agencies spent US$580bn, and the private sector $110bn on 'homeland security' (not including the cost of the wars in Iraq and Afghanistan), in addition to which 'opportunity costs' (arising eg from passenger delays caused by airport screening, and increased road facilities arising from people using roads to avoid airport delays) summing to $417bn – a total of $1.1trn – between 2002 and 2011 (p.4) to counter something that has resulted in fewer deaths than peanut allergies or drownings in bathtubs (p. 52). And they show that these expenditures have *never* been subject to any kind of probability assessment, or cost-benefit analysis – and that that few of them would pass one if they ever were (p. 159). As they put it, "homeland security has become, in venerable Washington parlance, a self-licking ice cream cone … conventional, unexceptionable and self-perpetuating" (p. 185).

This issue is important in this context not so much because of the specific burdens imposed by the 'war on terror' in isolation, substantial though they are – but because they are just one example of a growing burden of regulation and legislation created by the quest for a wide variety of forms of 'security' – including 'food security', 'water security', 'energy security' and the like. The trade-offs between 'security' and productivity appear to be either unperceived, or wilfully ignored, by governments and, in many cases, citizens.

Phil Lowe, the Deputy Governor of the Reserve Bank of Australia, suggests that this 'quest for security' without regard to costs may be another by-product of demographic change – so that "if ageing societies do become inherently more risk averse and less supportive of innovation – as I suspect they might – then we are likely to face a greater challenge than we have to date in generating productivity growth" (Lowe 2013). He notes that:

> "There has been a subtle, but important, shift in the way we think about risk and innovation … our preferences appear to have shifted in such a way that we increasingly focus on risk mitigation and risk control. There are examples of this in a whole range of activities in our society – from the nature of the legislation that parliaments pass, to the increase in compliance activities in the nation's boardrooms, to the amount of money we are prepared to spend to limit the probability of blackouts and even to our attitudes about the design of children's playgrounds. In each of these areas, our society has been prepared to limit options or to spend more of our scarce resources to reduce risk …
>
> Reducing risks is not always cost free – resources need to be devoted to the task and this means that these resources cannot be used for other tasks. And perhaps even more importantly, it might also be the case that a more risk-averse society is naturally less inclined to support and finance innovation, to implement new processes and to apply new technologies. If this is indeed the case, it has implications for future productivity growth" (Lowe 2013).

Gordon's and Cowen's view is, in this author's view, too pessimistic. But there do appear to be solid grounds for being sceptical of the prospects of a sustained acceleration in productivity growth over the next couple of decades from that experienced over the decade prior to the onset of the financial crisis.

Implications for future long-term trend growth rates

The discussion in the preceding two sections can be brought together to generate projections of long-run economic growth rates for the 'advanced' and 'emerging' economies that have been used as examples (or, for that matter, for any other economies of interest).

Table 1 (on page 21) sets out some estimates for selected 'advanced' economies. The population projections are taken directly from the United Nations *World Population Prospects* (2014); the remaining projections are the author's, and are intentionally conjectural, rather than the outcome of any formal model. The participation projections have regard to the likely impact of population ageing on labour force participation rates (greater for Japan than for Europe or the US), to the potential for a reversal of the recent declines in labour force participation (greater for the US) and to the potential for a decline in unemployment (greater for Europe). The hours worked projections allow for both demographic factors and for the potential to reverse recent cyclical declines in average working hours. The productivity projections are based partly on trends since 2000 but also have regard for the potential impact of productivity-enhancing structural reforms (for example, in Japan).

Needless to say, there is plenty of scope for alternative assumptions to be made about each of these variables: in particular, there is probably more downside than upside risk to the assumptions made here about participation rates and average hours worked. However, using the numbers set out in Table 1 – and under a variety of other plausible scenarios – the clear conclusion is that real GDP growth rates are likely to be lower over the next two decades than they were between the first oil shock and the onset of the global financial crisis, by between ½ and 1½ pc pts per annum, on average, and that per capital real GDP growth rates will likely be between ¼ and ½ pc pt per annum lower, on average, than over the three decades before the financial crisis.

The productivity growth projections could also be used as a basis for thinking about the improvements in productivity growth required to offset the otherwise inexorable impact of demographic change on the rate at which material living standards (as proxied by real per capita GDP) can be expected to improve over the decades ahead, a topic to which we will return in the final section of this paper.

Table 1: Historical and projected Long-run real GDP growth in selected 'advanced' economies

Annualized growth rates (% pa)

	Population	*Partici-pation (a)*	*Average hours worked*	*Labour productivity*	*GDP*	*Per capita GDP*
United States						
1974-2008	1.1	0.5	-0.2	1.6	3.0	1.9
2010-2030 (p)	0.8	0.2	-0.2	1.5	2.3	1.5
Japan						
1974-2008	0.5	0.1	-0.6	2.5	2.5	2.0
2010-2030 (p)	-0.3	0.1	-0.7	1.8	0.9	1.2
Europe						
1974-2008	0.4	0.3	-0.6	2.2	2.3	1.9
2010-2030 (p)	0.2	0.2	-0.2	1.5	1.7	1.5
Australia						
1974-2008	1.3	0.5	-0.2	1.7	3.4	2.0
2010-2030 (p)	1.2	0.0	-0.2	1.8	2.8	1.6

Notes: (a) Employment as a p.c. of total population. (p) Projection.
Sources: The Conference Board (2014); United Nations Department of Economic and Social Affairs (2014); author's estimates.

Table 2 (on page 22) sets out similar estimates and projections for selected 'emerging' economies, with the qualification noted above that data on hours worked is not available for most of these countries, so that 'labour productivity' in this table is real GDP per person employed rather than per hour worked. As with Table 1, the population projections are derived from the UN (2014), but the projections for participation and productivity are entirely conjectural.

There is a greater diversity of outcomes among this group than for the 'advanced' economies shown in Table 1, reflecting both the greater disparity between the population growth projections (although all of these countries are expected to experience slower population growth over the next two decades than over the three decades prior to the onset of the financial crisis), and more divergent assumptions about participation and productivity growth.

For example, Table 2 assumes that labour productivity growth will slow in China, as a result of a decline in investment as a share of GDP (from an exceptionally high level) and a shift in the composition of output from manufacturing to services; whereas by contrast productivity growth in India is assumed to accelerate as a result of the pursuit of a more reformist policy agenda by the new government elected last month. Productivity growth is also assumed to increase more rapidly in Indonesia and South Africa than in Brazil and Russia.

The net result of the assumptions made here is that 'trend' growth will slow significantly in China, and to a lesser extent in Brazil; accelerate somewhat in South Africa and Indonesia; and remain unchanged at India and Russia (albeit at relatively high and relatively low rates, respectively).

All of these economies, with the exception of China, should experience faster per capita real GDP growth over the next two decades than they did over the past three, although that is heavily dependent on the assumptions about productivity growth shown in Table 2 being realized.

Table 2: Historical and projected long-run real GDP growth in selected 'emerging' economies

Annualized growth rates (% pa)

	Population	*Participation (a)*	*Labour productivity (b)*	*GDP*	*Per capita GDP*
China					
1979-2008	1.1	0.5	6.7	8.5	7.3
2010-2030 (p)	0.3	-0.1	5.0	5.2	4.9
India					
1979-2008	1.9	0.9	2.8	5.8	3.8
2010-2030 (p)	1.0	0.4	4.5	5.9	4.9
Brazil					
1979-2008	1.7	0.4	0.7	2.8	1.1
2010-2030 (p)	0.7	0.3	1.5	2.4	1.8
Russia (c)					
1979-2008	0.1	-0.3	0.8	0.9	0.6
2010-2030 (p)	-0.4	-0.2	1.5	0.9	1.3
South Africa					
1979-2008	1.9	0.2	0.4	2.5	0.6
2010-2030 (p)	0.6	0.2	2.0	2.8	2.2
Indonesia					
1979-2008	1.7	0.6	2.6	4.9	3.2
2010-2030 (p)	1.0	0.7	3.5	5.2	4.2

Notes: (a) Employment as a p.c. of total population. (b) Employment per person employed. (c) Former USSR and successor states. (p) projection. *Sources:* The Conference Board (2014); United Nations Department of Economic and Social Affairs (2014); author's estimates.

What does all this mean for financial markets?

The foregoing discussion suggests that, in the absence of a 'shock' such as that provided by the Second World War (which of course no-one in his or her right mind would wish for), or a wide-ranging suite of policy initiatives, the 'trend' rate of growth in the major 'advanced' economies over the next two decades will be slower than it was over the three-and-a-half decades prior to the onset of the global financial crisis.

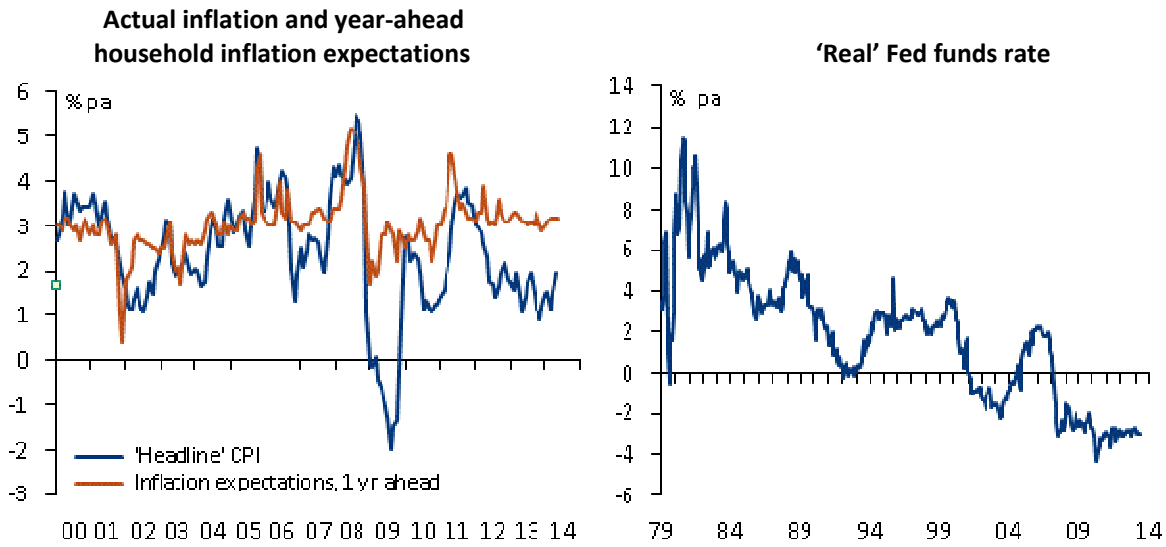
This doesn't necessarily amount to 'secular stagnation' in the sense foretold three-quarters of a century ago by Alvin Hansen, or more recently by Larry Summers. In particular, it doesn't mean that there aren't things that policy-makers could do to alter this seemingly gloomy outlook – a point which, as noted earlier, has been made by Summers himself.

Specifically, the 'three Ps' analysis presented here does not, of itself, support the proposition that either the US or Europe is already in, or cannot avoid falling into, a 'liquidity trap' in which it is no longer possible to reduce real interest rates below the level required to induce the growth rates required to restore and maintain full employment.

That assertion takes no account of the effect that fiscal policy has had, in recent years, in countering at least part of the intended effects of easy monetary policy settings (including the 'unorthodox' policies pursued by the central banks of all of the major 'advanced' economies).

It also takes no account of the role of inflation expectations – which, in the US at least, have not come down nearly as much as measured inflation, so that real interest rates (as perceived by consumers) have actually been more negative since the onset of the financial crisis than at any time since the late 1970s (Chart 14). Hence, unless one believes that real interest rates need to be *substantially* lower than previously in order to promote whatever growth rate of real GDP is required to achieve and then maintain full employment, there seems to be little basis for concluding that the US has reached a position where monetary policy can no longer make a meaningful contribution to that objective – although it is probably unreasonable to expect monetary policy to achieve it unaided.

Chart 14: US inflation expectations and real interest rates



Note: 'Real' Fed funds rate is the nominal rate deflated by 1-year-ahead household inflation expectations.
Sources: US Bureau of Labour Statistics; Michigan University Survey Research Center; US Federal Reserve Board.

However, as Japan's experience over the past 15 years demonstrates, if deflationary expectations become entrenched, then the possibility of becoming mired in a 'liquidity trap' is quite genuine. This would appear to be an increasing risk for the euro zone as well. This underscores the importance of avoiding falling into a deflationary situation in the first place.

An entirely separate, but no less important, question is whether the 'neutral' or 'natural' interest rate – the rate consistent with stable inflation and full employment – may have changed as a result of whatever decline in the long-run sustainable growth rate may be occurring.

One useful theoretical perspective that has its origins in the work of Knut Wicksell (1898) posits that this rate is equal to the 'trend' rate of real GDP growth plus the central bank's inflation target[9].

Using the estimates set out in Table 1 (on page 21) and (importantly) assuming that there is no change in central banks' inflation targets, the 'neutral' interest rate in the United States would be ¾ pc pt pa lower in the United States, 1½ pc pts pa lower in Japan, and ½ pc pt pa lower in Europe, over the next two decades than it was over the 35 years prior to the onset of the financial crisis.

[9] This is also the short-term conclusion implied by the so-called 'Taylor Rule' when the output gap is zero and inflation is running at the rate targeted by the central bank: see Taylor (1993).

In other words, if the 'neutral rate' in the US over the past 35 years was thought to be 5% pa (derived as 3% 'trend' real growth plus 2% inflation), then over the next two decades it is likely to be 4¼%; and if the 'neutral' rate in Europe was thought to be 4¼% pa, over the next two decades it is likely to be 3¾%. In Japan, with the BoJ having adopted an inflation target of 2%, the 'neutral' interest rate over the next two decades would be 3%; given the lack of clarity around the BoJ's inflation target in the past, it is difficult to say what the 'neutral' rate would have been over the past three decades.

It is perhaps worth emphasizing that any specification of the 'neutral' rate does *not* amount to a prescription as to what 'the' interest rate should be at any particular point in time, still less to an estimate of what the 'terminal' rate will be at the end of a policy tightening (or easing) cycle. In the circumstances prevailing in each of the US, the euro zone and Japan – with a large positive output gap and inflation well below the central bank's target – 'the' interest rate *should* be well below the 'neutral' rate; at the opposite end of the business cycle, 'the' interest rate will be well above the 'neutral' rate.

Implications for economic policy

As noted earlier (on page 2), Larry Summers has argued that 'secular stagnation' "should be viewed as a contingency to be insured against" rather than "a fate to which we ought to be resigned" (Summers 2013b). While the conclusion of this paper is that 'secular stagnation' in the specific sense intended by Summers is not a threat to which a high probability should be attached, we have also concluded that demographic change will, all else being equal, result in significantly lower 'trend' rates of economic growth in the major 'advanced' economies, and in a number of 'emerging' economies, over the next two decades compared with those prevailing in the three decades before the onset of the financial crisis.

As was also noted earlier, Summers is, in essence, counselling against what he would describe as premature withdrawal of ultra-easy monetary policy, premature 'fiscal austerity', and excessive concern about putting regulatory sand in the wheels of the banking system – which, to this author, seems like sensible, pragmatic advice.

G20 Finance Ministers and central bank governors, at their most recent meeting in Sydney earlier this year, committed themselves to "concrete actions … including to increase investment, lift employment and participation, enhance trade and competition, in addition to macro-economic policies", with a view to boosting the world economy by "over US$2 trillion … over the coming five years". Under this year's Australian presidency, the G20 will be looking to "create a climate that facilitates higher investment, particularly in infrastructure … along with other actions to promote long-term private sector investment [and to] maximize the impact of public sector capital expenditure" (Hockey 2014).

Increased investment in economic infrastructure could potentially play an important role in promoting stronger economic growth, both directly and (on the assumption that infrastructure investments are well chosen) indirectly by boosting productivity. The McKinsey Global Institute has suggested that "just keeping pace with global GDP growth will require an estimated US$57 trillion in infrastructure investment between now and 2030", of which $17bn is in roads, $12bn each in power and water, $10bn in telecoms, $4½bn in rail and $3bn in air and sea ports" (McKinsey 2013).

In many countries (particularly in 'advanced' economies) governments' fiscal positions may preclude them from being able to contemplate any significant increase in their own levels of investment in infrastructure.

But governments, and others, are increasingly recognizing that, notwithstanding past traditions and customs, governments do not necessarily need to construct, own and operate every piece of economic infrastructure in order to ensure that it is provided.

By their very nature, many infrastructure assets are ideally suited to the investment objectives and time horizons of long-term investors such as insurance companies, pension funds, endowments and sovereign wealth funds. Yet less than 1% of these institutions' is invested in infrastructure projects (OECD 2013). This isn't because of a lack of interest in infrastructure investment on the part of these institutions: according to one recent survey, 60% of infrastructure investors are below their target allocations (Preqin 2013). There has also been a significant increase in capital-raising by dedicated infrastructure funds over the past two years.

One issue which remains fraught in many jurisdictions is that of charging for the use of infrastructure, particularly when existing infrastructure originally built by governments is transferred to private owners, and charges are imposed for the use of assets which was previously "free". Another is the challenge of devising regulatory arrangements which achieve an allocation of risks acceptable to governments and private investors.

Governments could respond to these challenges by pro-actively addressing political risk; being willing to sell existing infrastructure assets in order to fund investment in new ones; reducing the costs and time delays incurred in infrastructure investments; and developing a pipeline of investment opportunities that will encourage the accumulation of internal capabilities and expertise.

A second set of priorities is, as it has long been, the implementation of pro-growth structural reforms – such as reducing barriers to entry and competition in professional and other services markets, retailing and 'network' industries, reforming wage bargaining processes and employment protection legislation, enhancing labour mobility, improving vocational education and training and reducing the unevenness of educational outcomes, reducing agricultural protection and other forms of trade liberalization.

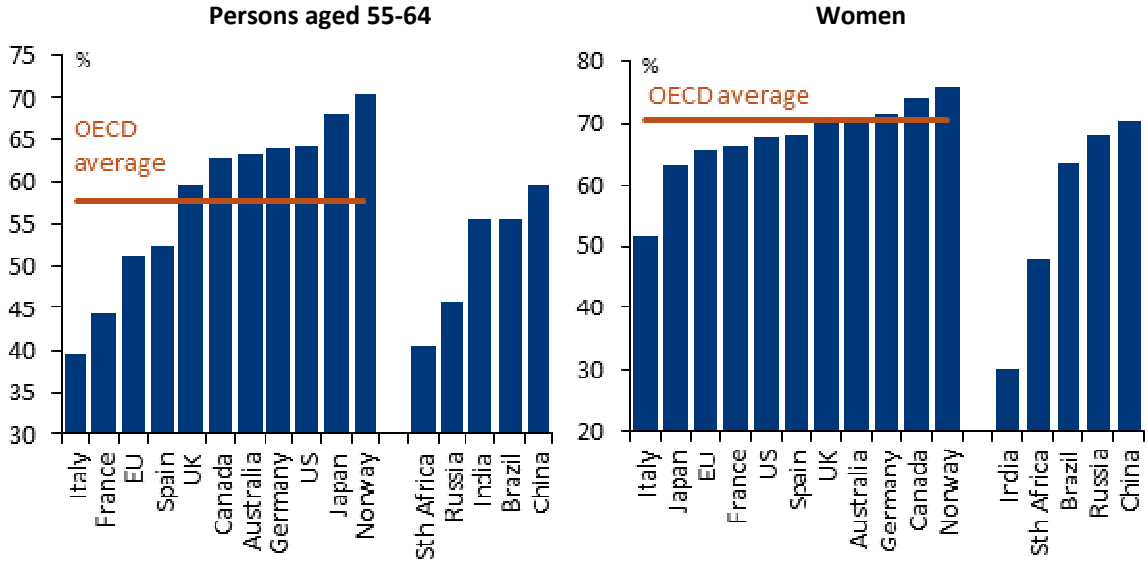
The OECD's most recent *Going for Growth* Interim Report laments that "the process of reform can be characterized as piecemeal and incremental" and that "actions taken are unlikely to fully address the related performance challenge", despite the fact that "the structural reform agenda is as important as ever to make the weak recovery a far more sustained one and for countries to escape the low trend growth prospects plaguing many advanced economies (OECD 2014, pages 14 and 45).

A third set of policy priorities for ameliorating the slowdown in 'trend' growth is around lifting the labour force participation rates of those segments of the population whose participation rates are unusually low.

Chart 15 (on page 26) indicates that there is considerable scope for lifting the participation rates of women and older people in many countries, both 'advanced' and 'emerging' – not only by challenging entrenched attitudes about the appropriate role or capabilities of women and seniors, but also by encouraging the provision of affordable child care, reducing high effective marginal tax rates which arise from the interaction between income tax scales and the abatement rates of family benefit payments, and raising statutory retirement or pension eligibility ages (as some, but by no means all, countries have already begun to do).

The scope for improvements in these areas is particularly striking in 'emerging' economies: for example, one of the largest reasons for the differences in real GDP growth between China and India over the last 25 years is the much higher participation in employment of women in the former than the latter.

Chart 15: Labour force participation rates of older people and women, 2011



Note: Data for Brazil are for 2009, and for China & India 2010.
Source: OECD, *Economic Policy Reforms: Going for Growth*, 2013.

One final issue worth noting here is the possible connection between slower trend growth and increasing inequality. This is a key theme in Thomas Picketty's recent book (Picketty 2014). Using the same UN demographic projections as this paper, and a view of the potential for productivity growth which is closer to Robert Gordon's than (for example) Bill Gates' or Ben Bernanke's, Picketty believes that "the twenty first century may see a return to a low-growth regime" (p. 72), and hence that "it is fairly plausible that the rate of return on capital will be substantially higher than the growth rate [of real GDP]" (p. 84). One of Picketty's recurring propositions is that "if … the rate of return on capital remains significantly above the growth rate for an extended period of time (which is more likely when the growth rate is low, though not automatic), then the risk of divergence in the distribution of wealth is very high" (p. 25); or, as he puts it later, "in a quasi-stagnant society, wealth accumulated in the past will inevitably acquire disproportionate importance (p. 166).

There is a wide range of opinions as to the extent to which increasing inequality is a problem requiring a concerted response from governments (something which is canvassed in another paper to be presented at this conference). However, one conclusion from Picketty's work – albeit one which Picketty does not draw himself – is that policies which promote faster economic growth may also help to ameliorate increasing inequality.

Ultimately, whether the world economy, and the 'advanced economies' in particular, are faced with the prospect of significantly slower economic growth, and in the material living standards of their populations, depends on the extent to which their political leaders are able to advocate the case for reforms such as those noted here (and elsewhere), and on the extent to which their citizens are willing to respond positively to that kind of advocacy. An important influence on the latter may well be whether citizens believe not only that such reforms will actually lead to improved material living standards (and other aspects of 'well being'), but also whether they believe that the overall outcomes accord with widely-held notions of fairness.

References

Aeppel, Timothy (2014), 'Has All the Important Stuff Already Been Invented?', *The Wall Street Journal*, 16th June, pp. 1 & 12.

Australian Treasury (2002), *Intergenerational Report*, 2002-03 Budget Paper No. 5, Canberra, May; available at www.budget.gov.au/2002-03/bp5/html/index.html.

——— (2010), *Australian to 2050: Future Challenges*, Canberra, January, available at http://archive.treasury.gov.au/igr/igr2010/report/pdf/IGR_2010.pdf.

Baily, Martin Neil, James Manyika and Shalabh Gupta (2013), 'US Productivity Growth: An Optimistic Perspective', Canadian Centre for the Study of Living Standards, *International Productivity Monitor*, No, 25, pp. 5-12; available at www.csls.ca/ipm/25/IPM-25-Baily-Manyika-Gupta.pdf.

Ball, Laurence, Brad de Long and Larry Summers (2014), 'Fiscal Policy and Full Employment', Center on Budget and Policy Priorities, 2nd April, available at www.pathtofullemployment.org/wp-content/uploads/2014/04/delong_summers_ball.pdf.

Bernanke, Ben (2013), 'Economic Prospects in the Long Run', Speech at Bard College at Simon's Rock, Great Barrington, Massachusetts, 18th May, available at www.federalreserve.gov/newsevents/speech/bernanke20130518a.htm#f3.

Blanchard, Olivier J. and Daniel Leigh (2013), 'Growth Forecast Errors and Fiscal Multipliers', IMF *Working Paper No. 13/1*; available at www.imf.org/external/pubs/ft/wp/2013/wp1301.pdf.

——— and Larry Summers (1986), 'Hysteresis and the European Unemployment Problem', in Stanley Fischer (ed.), *NBER Macroeconomics Annual*, Volume 1, National Bureau of Economic Research, pp. 15-90, available at www.nber.org/chapters/c4245.pdf.

Brown, E. Cary (1989), *Alvin H Hansen's Contributions to Business Cycle Analysis*, Massachusetts Institute of Technology Department of Economics Working Paper No. 515, March.

Brynjolfsson, Erik, and Andrew McAfee (2011), *Race Against the Machine: How the Digital Revolution is Accelerating Innovation, Driving Productivity and Irreversibly Transforming Employment and the Economy* , Digital Frontier Press.

Byrne, David M, Stephen D Oliner and Daniel E Sichel (2013), 'Is the Information Technology Revolution Over?', Canadian Centre for the Study of Living Standards, *International Productivity Monitor*, No, 25, pp. 20-36; available at www.csls.ca/ipm/25/IPM-25-Byrne-Oliner-Sichel.pdf.

Carmody, Christine (2013), 'Slowing productivity growth – a developed economy comparison', *Round-up*, Australian Treasury, Canberra, December, pp. 55-75.

Conference Board, The (2014), *Total Economy Database – Output, Labor and Labor Productivity Country Details*, January; available at www.conference-board.org/data/economydatabase/.

Cowen, Tyler (2011), *The Great Stagnation: How America Ate All the Low-Hanging Fruit of Modern History, Got Sick, and Will (Eventually) Feel Better*, Dutton.

Eatwell, John, Murray Milgate and Peter Newman (eds) (1987), *The New Palgrave: A Dictionary of Economics*, Volume 2 E-J, Macmillan, London.

Economist, The (2013), 'Has the ideas machine broken down?', 12th January.

Fogel, Robert W. (2005), 'Reconsidering Expectations of Economic Growth After World War II From the Perspective of 2004', *IMF Staff Papers* Vol. 52 , pp. 6-14.

Friedman, Uri (2014), "Bill Gates: 'The Idea That Innovation is Slowing Down is … Stupid'", *The Atlantic*, 12th March; available at www.theatlantic.com/international/archive/2014/03/bill-gates-the-idea-that-innovation-is-slowing-down-is-stupid/284392/.

Gayer, Arthur D. (1938), 'Fiscal Policies', *Papers and Proceedings of the American Economic Association*, March 1938, pp. 90-112.

Gordon, Robert J. (2012), 'Is US Economic Growth Over: Faltering Innovation Confronts the Six Headwinds', NBET Working Paper No. 18315, August; available at http://www.nber.org/papers/w18315.

Hansen, Alvin H. (1936), 'Mr Keynes on Underemployment Equilibrium', *Journal of Political Economy* Vol. 44, pp. 667-686.
——— (1939), 'Economic Progress and Declining Population Growth', American Economic Review, Vol. 29, No. 1, pp. 1-15.
——— (1964), *Fiscal Policy and Business Cycles*, Norton, New York.
Hicks, John R. (1937), 'Mr Keynes and the Classics', *Econometrica*, Vol. 5, No. 2, pp. 147-59.
Hockey, the Hon. Joe, MP, Treasurer of Australia (2014), 'Conclusion of G20 Finance Ministers and Central Bank Governors Meeting in Sydney', 23rd February, available at http://jbh.ministers.treasury.gov.au/media-release/006-2014/.
Johnson, Paul (1983), *A History of the Modern World*, Weidenfeld & Nicholson, London.
Keynes, John Maynard (1931), *Economic Possibilities for our Grandchildren*, Macmillan, London.
——— (1936), *The General Theory of Employment, Interest and Money*, Macmillan, London.
Krugman, Paul (1992), *The Age of Diminished Expectations: US Economic Policy in the 1980s*, MIT Press, Cambridge.
——— (1998), 'It's Baaack: Japan's Slump and the Return of the Liquidity Trap', *Brookings Papers on Economic Activity*, Vol. 2, pp. 137-205.
——— (2013), 'Secular Stagnation, Coalmines, Bubbles and Larry Summers', *The New York Times*, 16th November.
Lowe, Philip (2014), 'Demographics, Productivity and Innovation', Speech to the Sydney Institute, 12th March; available at www.rba.gov.au/speeches/2014/sp-dg-120314.html.
Maddison, Angus (2007), *Historical Statistics of the World Economy: 1-2006 AD*, Groningen University; available at www.worldeconomics.com/Data/MadisonHistoricalGDP/Madison%20Historical%20GDP%20Data.efp.
McKinsey Global Institute (2013), *Infrastructure Productivity: How to Save $1 trillion a Year*, January.
Mueller, John, and Mark G Stewart (2011), *Terror, Security and Money*, Oxford University Press, New York.
Musgrave, Richard A. (1987), 'Alvin Hansen' in Eatwell et al (1987), pp. 591-2.
OECD (2012), *Economic Policy Reforms: Going for Growth*, Paris, February.
——— (2013), *Annual Survey of Large Pension Funds and Public Pension Reserve Funds*, Paris, October.
——— (2014), *Economic Policy Reforms: Going for Growth Interim Report*, Paris, February.
Picketty, Thomas (2014), *Capital in the Twenty-First Century*, Harvard University Press, Cambridge.
Preqin (2013), *Preqin Investor Outlook: Alternative Assets H2 2013*, London, September; available at www.preqin.com/docs/reports/Preqin_Investor_Outlook_Alternative_Assets_H2_2013.pdf.
Reinhart, Carmen M. and Kenneth S. Rogoff (2009), *This Time is Different: Eight Centuries of Financial Folly*, Princeton University Press, Princeton.
Summers, Larry H. (2013a), 'Remarks at the IMF Annual Research Conference, 8 November, available at www.fulcrumasset.com/files/summersstagnation.pdf.
——— (2013b), 'Why Stagnation may prove to be the New Normal', *Financial Times*, 15th December.
——— (2014), 'Washington must not settle for Secular Stagnation', *Financial Times*, 5th January.
Taylor, John (1993), 'Discretion versus Policy Rules in Practice' *Carnegie-Rochester Conference Series on Public Policy*, Vol. 39, pp. 195-214.
——— (2014), "The Economic Hokum of 'Secular Stagnation'", *The Wall Street Journal*, 1st January.
United Nations Department of Economic and Social Affairs, Population Division (2014), *World Population Prospects: the 2012 Revision*, New York; available at http://esa.un.org/wpp/index.htm.
Wicksell, Knut (1898), *Interest and Prices*, Stockholm.