

SECULAR STAGNATION:

A review of the key arguments

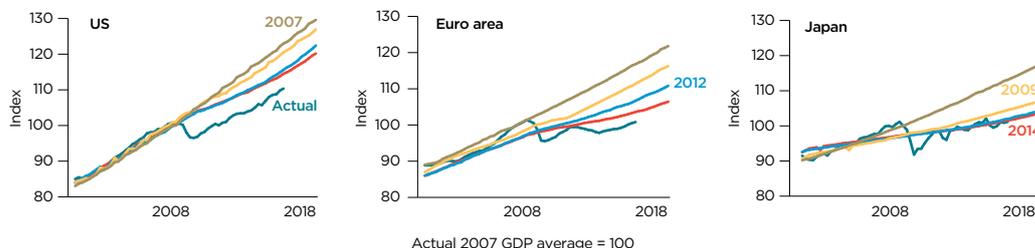
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This article provides an overview of the secular stagnation hypothesis, the debate that has surrounded it and some of the key alternative explanations for the relatively low growth in advanced economies over recent years.²

The economic recovery in the major advanced economies after the global financial crisis (GFC) has been slow. Real GDP growth has been a little under 2 per cent per annum since 2010, compared with growth of nearly 3 per cent in the decade before the crisis. Similarly, growth in GDP per capita in advanced economies has almost halved since the crisis to around 1 per cent per annum. As a result, after eight years, the level of output has only recently returned to around the pre-GFC peaks in the euro area and Japan. While US output is noticeably above its pre-GFC level, it is only slightly above its previous peak in per capita terms (Figure 1). The major weakness in economic output has come from business investment, particularly in the euro area and Japan where investment remains below its pre-GFC peak.³

This weak growth has occurred in an environment of unprecedented policy accommodation. Central bank policy rates have been effectively at zero in the United States since 2009 and in the euro area since 2013, and for a much longer period in Japan. Central banks' balance sheets have expanded significantly, first to manage the fallout from the GFC, and later to support the economic recovery. Fiscal policy was also expansionary during the GFC, although it has been close to neutral more recently after a few years of fiscal tightening.

FIGURE 1: Major Advanced Economies – Actual and Potential GDP*

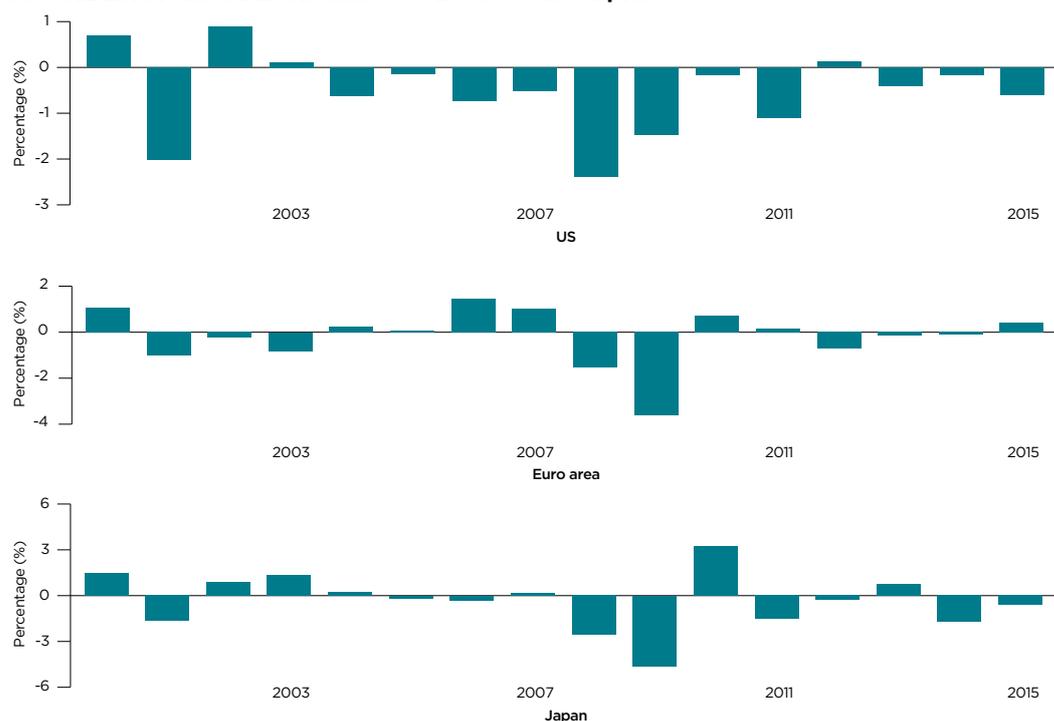


* Lines with year labels represent estimates of the level of potential GDP made in the respective year. For the euro area and Japan the 2007 vintage forecasts are at end 2006. The 2006 and 2009 vintages of the potential GDP forecast for the euro area and Japan are for the subsequent two years only, and beyond this horizon the potential GDP forecasts are based on long-run average GDP growth forecasts from Consensus Economics.

Sources: Congressional Budget Office, Consensus Economics, OECD, RBA, Thomson Reuters.

Estimates of potential GDP, i.e. what the economy can produce by fully employing its labour and capital resources without causing inflation to deviate from the central bank's target, have been revised significantly lower since the GFC (Figure 1). Relative to published projections of potential GDP, actual GDP in the United States was around 11 per cent lower in 2015 than was expected in 2007. Similarly, GDP in the euro area was around 14 per cent below the projections of potential 2015 GDP made in 2007. The story is similar in Japan. Economic growth has generally surprised on the downside. In almost every year since the start of the GFC, output in the major advanced economies has ended below what had been expected by consensus forecasts at the start of the respective year (Figure 2).

FIGURE 2: Advanced Economies – GDP Growth Surprises*



* GDP growth surprise is measured by the difference between actual GDP growth and the Consensus Economics GDP growth forecast at the start of the corresponding year. For 2015, the surprise is measured by the change in the Consensus Economics forecast from the start of 2015 to November 2015.

Sources: Consensus Economics, Thomson Reuters.

Understanding why growth has been so disappointing is important because this may inform expectations about future GDP growth and consequently decisions by policy makers and financial market participants such as asset managers.

A number of explanations for the slowdown in growth have been proposed. Some argue that it reflects headwinds from the GFC (see, for example, Bernanke 2012; Hamilton et al. 2015) or the slow unwinding of the debt overhang (Rogoff and Lo 2015). Others believe that more secular forces have been at play. One hypothesis that has attracted significant attention over the past couple of years is that of (demand-side) secular stagnation, which was proposed by Larry Summers (Summers 2013) and emphasises as an explanation a persistent shortfall in demand that cannot be rectified by conventional, or even less conventional, monetary policy tools. Others focus on secular developments on the supply side that have reduced potential GDP growth (Gordon 2015).

The secular stagnation hypothesis

The demand-side view

The original idea of secular stagnation was proposed by Alvin Hansen in 1938 (and first published in Hansen 1939). He argued that the Great Depression might be the start of a new era of ongoing unemployment and economic stagnation without any natural force pushing the economy towards full employment. The main driving forces of this secular stagnation were the decline in the US birth rate at the time and insufficient aggregate demand. Hansen's fears of secular stagnation quickly passed into history. World War II led to a very large increase in government spending thus ending concerns of insufficient demand. The post-World War II pick up in the fertility rate, the so-called baby boom, drastically changed the population dynamics in the United States, erasing the problem of excess savings driven by an ageing population.

Larry Summers revived the idea of secular stagnation in late 2013 to explain the sluggish growth in the US economy after the GFC. This proposition, which has been further refined by Summers (2014a, 2014b), hypothesises that since a few years before the GFC, the United States and other advanced economies have been facing increasing difficulty achieving simultaneously 'adequate growth', full capacity utilisation and financial stability because of a substantial decline in the natural rate of interest.

The natural rate of interest (NRI) is defined as the real short term interest rate consistent with the economy operating at its full potential once transitory shocks to aggregate supply or demand have abated, and there being no upward or downward pressures on the inflation rate relative to its trend (Laubach and Williams 2015). Conceptually, a central bank can achieve full employment and price stability by setting its real policy rate, i.e. the nominal policy rate less inflation, above (below) the NRI when the economy is operating above (below) its potential. However, theory suggests that if the natural rate of interest has declined to a sufficiently low negative level, monetary policy will be less effective in restoring economic activity to its potential level because nominal interest rates cannot fall below zero.⁴

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With inflation targets of around 2 per cent in most advanced economies, Summers' exposition of the secular stagnation hypothesis suggests that the NRI is below minus 2 per cent. Although, in an environment where actual inflation is persistently below target, a NRI of above minus 2 per cent could be consistent with the hypothesis. The other key idea of this hypothesis is that the reasons for the negative NRI are secular, i.e. the situation is occurring for an indefinitely long period for non cyclical reasons that include (Summers 2014a, 2014b):

- > reduced demand for debt-financed investment as a result of: (1) the legacy of excessive leverage leading into the GFC; (2) restrictions on financial intermediation in the aftermath of the GFC; and (3) growth being increasingly led by technology companies that are less capital intensive than the companies that have traditionally led growth
- > declining rates of population growth
- > changes in income distribution increasing the propensity to save, including an increase in within country income inequality across households and the increase in retained corporate earnings
- > declining relative prices of capital goods.

More recently the global aspects of the secular stagnation hypothesis have received increased attention. Summers (2015) emphasises the importance of the increase in savings in emerging market economies since the late 1990s, the so-called 'global savings glut' formalised in Bernanke (2005) and further explored in Bernanke (2011), as a key factor contributing to the excess savings and decline in the NRI. In Summers' view the global savings glut is not a transitory phenomenon.

The supply-side view

An alternative supply-side explanation for the sluggish growth in recent years also emphasises secular factors. In this view, growth outcomes have been shaped by the decline in the potential GDP growth rate since the mid-2000s. Focusing on the United States, Gordon (2015) argues that the key factors are:

- > slowing productivity growth, because the information and communications technology (ICT) revolution has begun to encounter diminishing returns since the mid-2000s
- > slowing labour input growth due to slowing population growth and the decline in the labour force participation rate because of ageing demographics.⁵

Some of these factors are common to both views of secular stagnation. For example, demographic changes can increase desired savings when the population is initially younger and subsequently lower labour supply as the population ages, while persistent demand shortfall can reinforce a supply-side slowdown in productivity due to hysteresis effects.

The next sections address the key ideas of secular stagnation: how the natural rate of interest, and other interest rates that are likely to be closely related to it, have evolved since the 1980s; how potential GDP growth has evolved since the 2000s; and what factors may account for these developments.

Has the natural rate of interest fallen?

A large number of factors can influence the NRI, including productivity growth, demographics and the evolution of the global economy (Laubach and Williams 2003). The NRI is not directly observable and hence needs to be estimated. Most estimates suggest that the NRI has been around or slightly below zero in the United States since the GFC, and that a large part of the decline in the NRI occurred during the GFC. Evidence from market-based 'risk-free' interest rates, which can be expected to be closely related to the NRI, also point to a prolonged decline in real interest rates since at least the 1990s, with a significant decline occurring during the GFC. However, interpreting these estimates and observations in light of the secular stagnation hypothesis requires caution because different methods yield different results.

The model developed by Laubach and Williams (2003) has become one of the seminal approaches to estimating the NRI.⁶ This estimate of the US NRI displays two periods of significant decline since 1980: a moderate secular decline to around 2 per cent over the two and a half decades preceding the GFC; and a second, substantial and sharp decline during the GFC (Figure 3). Most of the gradual decline in the 1990 to 2007 period is attributed to factors other than changes in the estimated growth rate of potential GDP; in contrast, around half of the decline in the 2007 to 2015 period is due to the decline in the estimated potential GDP growth rate and half to other factors (Laubach and Williams 2015).

FIGURE 3: US – Natural Rate of Interest*



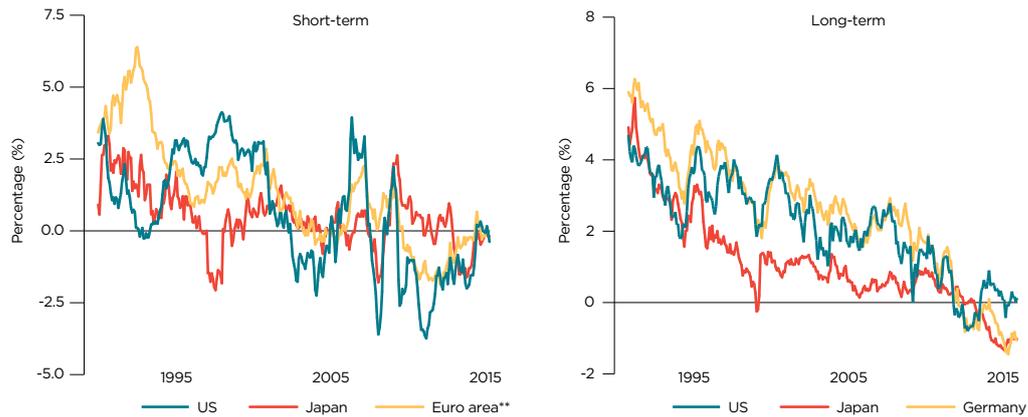
* One-sided estimate from Laubach and Williams (2003)

Source: [Laubach and Williams \(2003\)](#).

On one hand, the estimated low, and slightly negative, level of the NRI since 2007 provides some support for the demand-side secular stagnation hypothesis. On the other hand, given a positive inflation rate, albeit one that may be below the US Federal Reserve's inflation goal, the NRI has remained above the real policy rate since 2007. Moreover, the speed and timing of the estimated fall in the NRI during the GFC suggests cyclical factors have been more important than the longer-term forces emphasised in the secular stagnation hypothesis.

While estimates of the NRI are subject to uncertainty, other measures of interest rates closely related to the NRI, such as real risk-free rates (i.e. short term policy rates and yields on long-term bonds issued by the governments of the major advanced economies), have also declined substantially since the 1990s (Figure 4). Indeed, Summers (2014a) argues that this decline in market interest rates has been the outward sign of a declining NRI. Nonetheless, a large part of the decline, especially in the longer-term real interest rates, also occurred during the GFC.

FIGURE 4: Advanced Economies – Real Interest Rates*



* The short-term real interest rate is calculated as the policy rate less headline inflation. The long-term real interest rate is calculated as the 10-year nominal government bond yield less expected 10-year inflation from Consensus Economics.

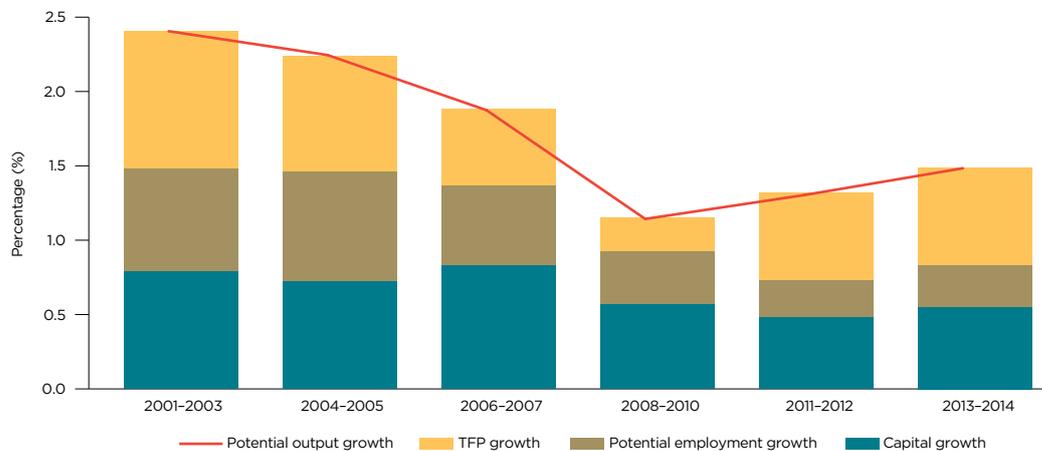
** Euro area before 2000 is Germany.

Sources: Bloomberg, RBA, Thomson Reuters.

Has potential GDP growth declined?

As shown in Figure 1, estimates of potential GDP have been revised significantly lower over the past 10 or so years for the United States, euro area and Japan. The estimated growth rate of potential GDP has also declined. A recent study by the International Monetary Fund (IMF 2015a) found that the persistent slowdown in potential GDP growth for advanced economies predates the GFC. Applying a production function approach to estimating potential GDP growth, the study separated growth into its three key components: labour input; capital input; and productivity. Potential output growth in advanced economies appears to have declined due to a decline in productivity growth, both before and after the GFC, and a decline in labour input as a result of demographic factors, which has played a bigger role after the GFC (Figure 5).⁷

FIGURE 5: Advanced Economies – Potential Output Growth



Source: IMF.

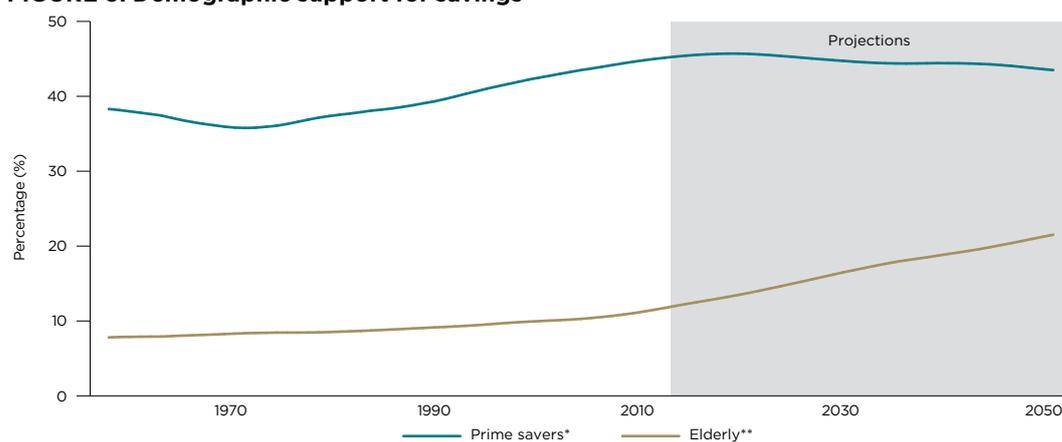
Examining the key factors behind secular stagnation

The natural rate of interest is determined by the balance of savings and investment preferences. By definition, global savings and global investment should equal each other. An excess supply of desired savings relative to the demand for desired investment will result in a lower NRI to achieve this balance.

Both the demand-side and supply-side versions of the secular stagnation hypothesis highlight changing demographic trends, particularly the declining rate of population growth, as a key factor behind the decline in the NRI and the decline in potential GDP growth.⁸

On the savings side, the life-cycle theory of savings and consumption suggests that an individual's propensity to save varies over their lifetime, such that their savings rate is lower when they are young, increases as they approach the end of their working life, and declines again following retirement. This implies that the age structure of the population is likely to affect the overall level of savings in an economy. The share of prime age savers (those aged between 25 and 60) in the global population has been increasing steadily since the early 1970s (Figure 6). This increase has been faster than the increase in the elderly (those aged over 60) share of the population. As a result, the difference between the two age groups, which should determine the pressure on savings supply, has been increasing steadily over the past 25 years and has been projected to peak in 2015.⁹

FIGURE 6: Demographic support for savings



* Population aged between 25 and 59. Data from the National Transfer Accounts indicates that this is approximately the age group among which labour income exceeds consumption.

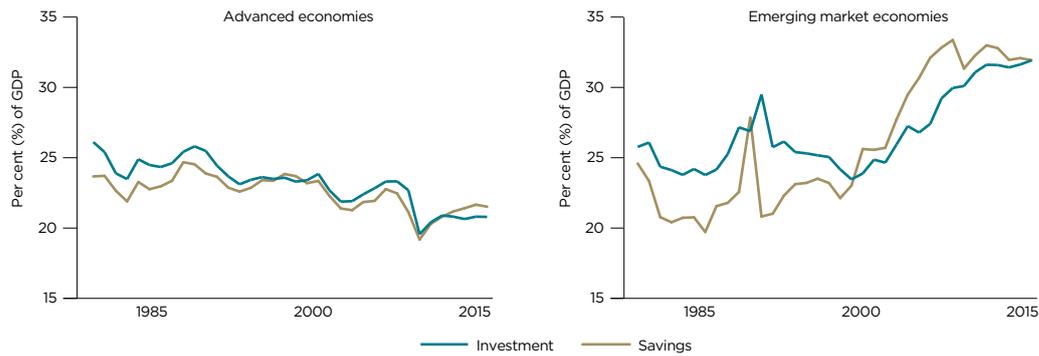
** Population aged 60 and over.

Source: UN Population Division.

Most of the growth in the working-age population has occurred in emerging market economies, and this goes some way towards explaining the excess savings in these economies (Figure 7).¹⁰ The increase in emerging market savings came mainly from China and oil-exporting countries. The IMF suggests that the key drivers of this have been the erosion of the family based safety net and the underdeveloped social safety net in China, financial constraints, demographic factors, the desire to accumulate substantial buffers of official reserves, and, in particular, the steady increase in their growth rate (IMF 2014).

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FIGURE 7: Savings and investment

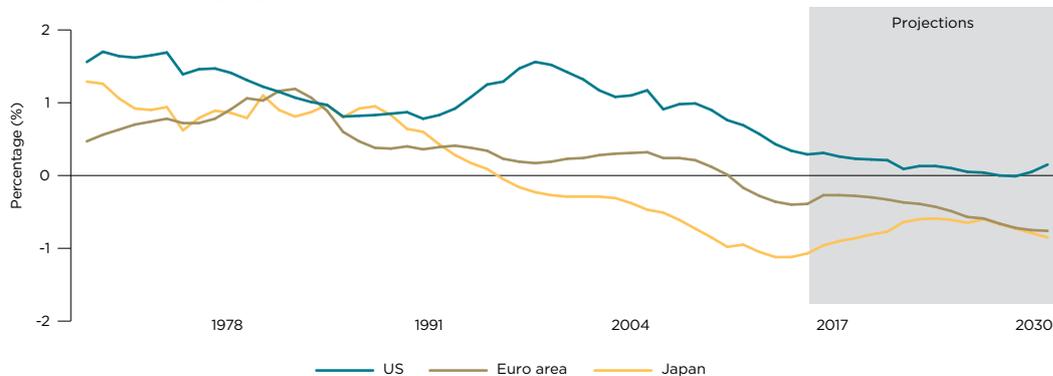


Source: IMF.

Some of these emerging market savings found their way to advanced economies. In particular, savings have flowed to advanced economies in the form of purchases of ‘risk-free’ assets such as advanced economies’ government bonds or closely rated assets, through the accumulation of large foreign exchange reserves (Bernanke 2005, 2011). A number of studies have concluded that the decline in real government bond yields in advanced economies before the GFC largely reflects the build-up in emerging market savings between the late 1990s and 2007 (see, for example, IMF 2014). Pescatori and Turunen (2015) found that the increase in excess global savings, measured by the current account surpluses of emerging market economies, explains a significant part of the decline in the US NRI since the early 2000s.

In most advanced economies, the growth rate of the working age population, defined here as those aged between 15 and 64, has been slowing (Figure 8). In the case of Japan, the working-age population has been declining since 1995, and it has been declining in the euro area since 2010. While the working age population is still growing in the United States, the growth rate is quite low relative to its history and is projected to decline further. The slower growth in the working age population translates into slower growth of the labour force assuming that age-specific and gender-specific participation rates do not increase to offset the decline.

FIGURE 8: Working Age Population Growth*



* Working age population is 15 to 64 years old.

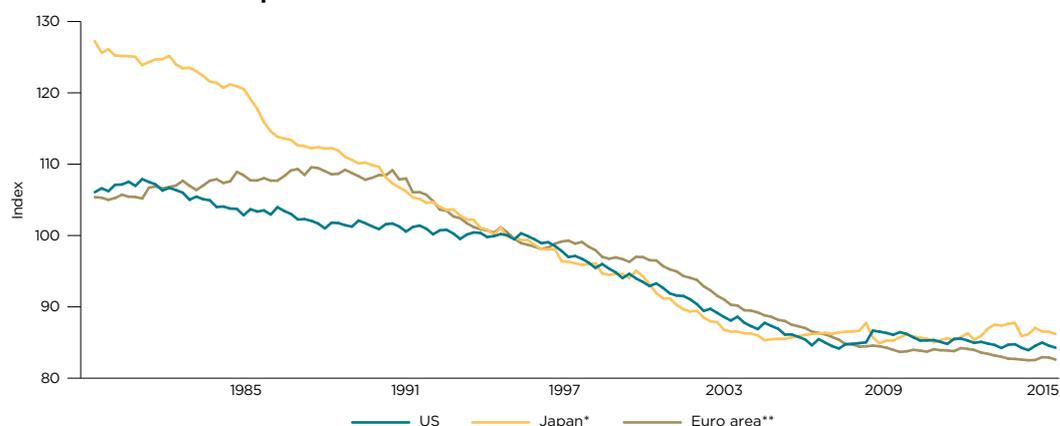
Source: UN Population Division.

These trends in advanced economies could be expected to lead to lower investment demand because a slower growing, or even declining, workforce requires less machinery and other equipment if the capital-to-labour ratio remains constant. However, if production processes become more capital intensive in response to the slowing labour force growth, the effect on investment is ambiguous.

Another secular factor affecting desired investment growth is the decline in the relative price of capital goods. Between 1980 and 2007, the prices of capital goods relative to overall prices in the largest advanced economies declined by between 20 and 30 per cent, which means that a given level of nominal savings can purchase more physical capital than was previously the case, leading to a fall in nominal investment spending. While the effect of lower prices of capital goods could be offset by an increased volume of investment, the price effect appears to have been more important thus contributing to a decline in investment demand (IMF 2014).

The GFC is also likely to have had a significant and long-lasting effect on private investment. A number of studies find such hysteresis effects after a financial crisis (see, for example, IMF 2014), however, the extent to which the post-GFC experience is consistent with prior episodes remains an area of debate. The IMF (2015b) argues that the overall weakness in economic activity has been the primary reason for the weakness in business investment, and that business investment has deviated little from what can be expected based on historical precedent. Other studies support this view although they emphasise the importance of tighter financial conditions and heightened uncertainty (see, for example, Lewis et al. 2014).

FIGURE 9: Ratio of Capital Goods Price Index and GDP deflator



* Uses domestic capital goods index.

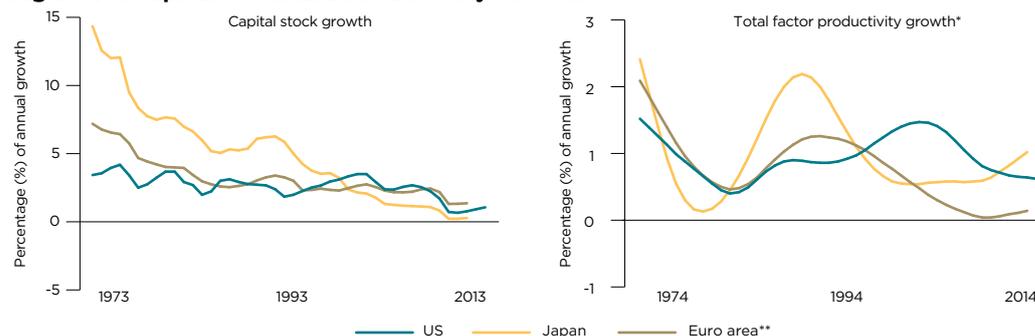
** Euro area data is available from 1995 onwards. For earlier periods, data for Germany is used instead.

Source: Thomson Reuters.

As a result of the lower investment growth, whatever its cause, the growth of the capital stock in advanced economies has declined since the GFC (Figure 10). In some of these economies, notably Japan but also the euro area, the slowing in the capital stock growth started much earlier. The IMF (2015a) also attributes some of the decline in potential growth in advanced economies in recent years to the effect of the GFC on investment, and therefore capital growth.

Another important consideration for the secular stagnation hypothesis is that total factor productivity (TFP) growth has been declining in some of the largest advanced economies for over a decade, substantially subtracting from their potential GDP growth rate (Figure 10). According to Gordon (2012, 2015) the ICT revolution, unlike earlier technological advances, provided only a short-lived boost to productivity growth. Fernald (2014) also argues that the exceptional boost to US productivity growth from the ICT revolution in the late 1990s and early 2000s had vanished by the mid-2000s. He notes that the decline in productivity growth predated the GFC and that the productivity slowdown was in sectors producing or intensively using information technology.

Figure 10: Capital Stock and Productivity Growth



* HP filtered, with smoothing parameter set to 100.

** Euro area capital stock growth is growth in the aggregate capital stock in France, Germany, Italy and Spain. Total factor productivity growth in the euro area is the simple average of the growth rates in France, Germany, Italy and Spain.

Sources: BLS, OECD, Penn World Tables.

The future evolution of productivity remains a key uncertainty in the outlook for potential growth and for understanding whether its decline has been secular. ‘Techno-pessimists’ expect the productivity slowdown to be persistent, arguing that future innovations will not boost productivity growth as much as previous innovations did (see, for example, Gordon 2012). On the other hand, ‘techno-optimists’ argue that technological advances in such fields as computing, medical technology and robotics will outpace the declining contributions of capital and labour to potential output growth (Mokyr 2014).

Conclusion

Secular stagnation, either demand-side or supply-side, is one possible explanation for the recent economic performance in advanced economies. However, there are a number of alternative explanations that emphasise less secular developments. For example, building on extensive work on the pattern of economic recoveries after deep systemic financial crisis, Rogoff and Lo (2015) argue that debt overhang explains the sluggish growth since the end of the GFC. In their view, the remaining post-GFC debt overhang (including public, household, corporate, financial and external debt) might be continuing to impede the recovery through a prolonged negative feedback loop between debt overhang, deleveraging and growth.

Ultimately, it is too early to be conclusive about whether the major advanced economies are experiencing secular stagnation. Estimates suggest that the natural rate of interest has fallen, particularly through the GFC period, but it is not clear that this is acting as a binding constraint on monetary policy. The long-term forces of demographic change are consistent with an increase in desired savings relative to desired investment in the lead-up to the GFC but, as the global population ages, it is likely that these forces will work in the opposite direction. The nature of technological progress and its implications for desired investment and productivity growth will also play an important role in determining whether lower growth is cyclical or more structural.

Ben Bernanke has also argued that US economic recovery had been held back by severe headwinds from the GFC that had precluded what could have otherwise been a stronger cyclical recovery (see, for example, Bernanke 2012). These included: the slow recovery in the housing market due to tightening in credit standards, high incidence of negative housing equity, and the substantial overhang of foreclosed properties; tighter credit conditions and increased risk aversion as a result of the GFC; and the tightening in fiscal policy after the expansionary impulse during the GFC. Similarly, Hamilton et al. (2015) argue that the disappointing post-2008 recovery is better explained by protracted but ultimately temporary headwinds from the housing supply overhang, household and bank deleveraging, and fiscal retrenchment, and, as these headwinds abated in early 2014, US growth has picked up to above its potential rate. Moreover, they argue that the evidence of demand-side secular stagnation was occurring before the GFC is not consistent with the US unemployment rate falling below its neutral level.

Ultimately, it is too early to be conclusive about whether the major advanced economies are experiencing secular stagnation. Estimates suggest that the natural rate of interest has fallen, particularly through the GFC period, but it is not clear that this is acting as a binding constraint on monetary policy. The long-term forces of demographic change are consistent with an increase in desired savings relative to desired investment in the lead-up to the GFC but, as the global population ages, it is likely that these forces will work in the opposite direction. The nature of technological progress and its implications for desired investment and productivity growth will also play an important role in determining whether lower growth is cyclical or more structural.

Notes

1. The authors of this article are Ivailo Arsov and Ashvini Ravimohan, who work in the Economic Analysis Department at the Reserve Bank of Australia. Views expressed here are those of the authors and do not necessarily represent the views of the Reserve Bank of Australia.
2. Teulings and Baldwin (2014) provide an extensive collection of original articles on secular stagnation. This article draws heavily on that work.
3. Haldane (2015) provides a comprehensive review of economic growth, placing the recent performance in the context of the historical experience.
4. The zero lower bound may be less binding in practice. A number of central banks – including in Sweden, Switzerland, the euro area and Japan – have recently introduced negative interest rates on central bank deposits.
5. The labour force participation rate in the United States declined from around 66 per cent in 2007 to around 63 per cent in 2015. Most analysis of this decline finds that it is primarily due to the population ageing and other structural factors (Aaronson et al 2014). Population aging has been exerting even greater downward pressure over this period on the participation rates in Japan and euro area.
6. The Laubach and Williams (2003) model imposes relatively few restrictions. It specifies the NRI as a linear function of potential GDP growth and other unobserved but persistent determinants (modelled as a random walk). It also models the output gap (the difference between actual and potential GDP growth) as a function of: the lagged output gap; the lagged rate gap (the difference between actual real policy rate and the NRI); and a Phillips curve that relates inflation to its own lags, the lagged output gap and imported price inflation. The coefficients of these equations, the NRI and the potential GDP growth rate are estimated simultaneously using a multivariate Kalman filter. The results reported here are from the one-sided estimates from the model.
7. In contrast, the same IMF study found that potential output growth in emerging market economies only declined after the GFC, and is expected to fall further in the medium term as these countries approach the technological frontier.
8. Some, including Summers (2014a, 2014b), have argued that increasing income inequality in advanced economies may have increased desired savings as higher-income households tend to have higher saving rates (for example, on the empirical relationship between relative household income and savings rates, see Dynan et al. (2004)).
9. Increased life expectancy would also lead to an increase in desired savings as households need to accumulate wealth to fund a longer retirement period. For example, since 1960, worldwide average life expectancy at birth has increased by around 20 years.
10. Working-age population growth has slowed in some of the larger emerging Asian economies more recently. In the case of China, where the decline in working-age population growth has been very steep, there may be further scope for urbanisation to offset some of these effects.

References

- Aaronson S, Cajner, T, Fallick, B, Felix, G-R, Smith, C and Washer, W 2014, 'Labour force participation: Recent developments and future prospects', *Brookings Papers on Economic Activity*, Fall, pp. 197–275.
- Bernanke, B 2012, '[The Economic Recovery and Economic Policy](#)', address to the Economic Club of New York, New York, 20 November.
- Bernanke, B 2011, 'International capital flows and the returns to safe assets in the United States, 2003–2007', *Board of Governors of the Federal Reserve System International Finance Discussion Papers*, no. 1014.
- Bernanke, B 2005, '[The Global Saving Glut and the U.S. Current Account Deficit](#)', Sandridge Lecture, Virginia Association of Economics, Richmond, Virginia, 14 April.
- Dynan, KE, Skinner, J and Zeldes, S 2004, 'Do the rich save more?', *Journal of Political Economy*, vol. 112, no. 2, April, pp. 397–444.
- Fernald, J 2014, '[Productivity and potential output](#)', *National Bureau of Economic Research Working Paper*, no. 20248.
- Gordon, R 2015, 'Secular stagnation: A supply-side view', *American Economic Review*, vol. 105, no. 5, pp. 54–9.
- Gordon, R 2012, '[Is U.S. economic growth over? Faltering innovation confronts the six headwinds](#)', *National Bureau of Economic Research Working Paper Series*, no. 18315.
- Haldane, AG 2015, '[Growing, Fast and Slow](#)', University of East Anglia, 17 February.
- Hamilton, J, Harris, E, Hatzius, J and West, K 2015, 'The equilibrium real funds rate: Past, present and future', *National Bureau of Economic Research Working Paper*, no. 21476.
- Hansen, A 1939, 'Economic progress and declining population growth', *American Economic Review*, vol. 29, no. 1, pp. 1–15.
- International Monetary Fund (IMF) 2015a, 'Where are we headed? Perspectives on potential output', *World Economic Outlook: Short- and Long-Term Factors*, *World Economic and Financial Surveys*, IMF, Washington DC, pp. 69–108.
- IMF 2015b, 'Private investment: What's the holdup?', *World Economic Outlook: Short- and Long Term Factors*, *World Economic and Financial Surveys*, IMF, Washington DC, pp. 111–43.
- IMF 2014, 'Perspectives on global real interest rates', *World Economic Outlook: Recovery Strengthens, Remains Uneven*, *World Economic and Financial Surveys*, IMF, Washington DC, pp. 81–112.
- Laubach, T and Williams, J 2015, '[Measuring the natural rate of interest redux](#)', *Federal Reserve Bank of San Francisco Working Paper 2015–16*.
- Laubach, T and Williams, J 2003, 'Measuring the natural rate of interest', *The Review of Economics and Statistics*, vol. 85, no. 4, pp. 1063–70.
- Lewis C, Pain, N, Strasky, J and Menkyna, F 2014, 'Investment gaps after the crisis', *OECD Economics Department Working Paper*, no. 1168.
- Mokyr, J 2014, 'Secular Stagnation? Not in Your Life', in *Secular Stagnation: Facts, Causes, and Cures*, eds C Teulings and R Baldwin, VoxEU.org, pp. 83–9.
- Pescatori, A and Turunen, J 2015, '[Lower for longer: Neutral rates in the United States](#)', *International Monetary Fund Working Paper*, vol. 15, no. 135.
- Rogoff, K and Lo, S 2015, 'Secular stagnation, debt overhang and other rationales for sluggish growth, six years on', *Bank for International Settlements Working Papers*, no. 479.
- Summers, L 2015, '[Rethinking Secular Stagnation After Seventeen Months](#)', IMF Rethinking Macro III Conference, Washington, D.C., 16 April.
- Summers, L 2014a, 'U.S. Economic Prospects: Secular Stagnation, Hysteresis, and the Zero Lower Bound', *Business Economics*, vol. 49, no. 2, pp. 65–73.
- Summers, L 2014b, 'Reflections on the 'New Secular Stagnation Hypothesis'', in *Secular Stagnation: Facts, Causes, and Cures*, eds C Teulings and R Baldwin, VoxEU.org, pp. 27–38.
- Summers, L 2013, '[Address at IMF Fourteenth Annual Research Conference in Honor of Stanley Fischer](#)', Washington, D.C., 24 November.
- Teulings, C and Baldwin, R (eds) 2014, *Secular Stagnation: Facts, Causes and Cures*, CEPR Press, London.