U.S. Economic Policy in a Low-Interest Rate World

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Monetary policy rates in the major high-income countries have been at the zero bound since the 2008-09 recession, rendering the primary tool of policy makers largely ineffective, and creating major risks of a downward spiral of lower inflation, higher real interest rates, and further downward pressure on economic activity. The one-sided nature of the policy options has made us more aware of the risks of low interest rates for the global economy in both the short and long run. In the short run, a modest recovery in the United States and a substantial reduction in unemployment have encouraged some observers to push for interest rate increases and what they perceive to be the first step in a return to normality. That discussion might make our Japanese hosts nervous, given that country's frequently premature declarations that its own deflation problems were solved. But another group of economists, most notably Larry Summers, have raised the specter of secular stagnation and the potential for a more enduring condition of low interest rates and asymmetric risks to monetary policy. In this paper I would like to address two topics. The first is the current debate in the United States about the strength of the economic recovery and the timing of future policy rate increases. The second topic is a longer term question of exploring the reasons for the sustained decline in global interest and their durability.

I. Monetary Policy in the Near Term

Over the past year, an increase in the federal funds rate has been widely anticipated in the run-up to each monthly Open Market Committee meeting; but at the last minute policy makers have pulled back and opted to wait a bit longer. The hesitancy continued despite strong gains in employment and a decline in the unemployment rate to 5 percent. While there is certainly no immediate pressure to act, given the complete absence of any inflation pressures, there is a strong desire to raise the rate at least once before the end of the year as a symbolic step back toward normality. Anticipation of a rate increase has also become built into financial market expectations–US long-term interest rates are far above those of other high-income economies.

Why is the Fed so reluctant to pull the trigger? There are two major concerns pushing for caution from US policy makers: The continued shortfall of domestic inflation below its 2% target, and repeated downward revisions of the outlook for the global economy.

First, improvements in domestic resource utilization have not translated into any significant increase in inflation, which remains stubbornly low. The price index for personal consumption expenditures (PCE) increased by only 0.3 percent in the 12 months ending in August, and excluding food and energy it was still only 1.3 percent with no acceleration over prior periods (figure 1). An alternative inflation measure from the Dallas Federal Reserve yields a slightly higher estimate of the average inflation rate, but again with little evidence of acceleration. The employment cost index (ECI), the preferred measure of wage rate changes, also shows no quickening on a year-over-year basis. The labor market in particular appears to be much weaker than suggested by a singular focus on the standard unemployment rate, and some policymakers have adopted a wait and see approach dependent on concrete evidence as opposed to forecasts of a future pickup in inflation.

Second, the global economic outlook continues to weaken and the IMF and other observers have sharply scaled back their expectations for overall growth. The European outlook has remained relatively stable over the past year, but with a GDP growth rate below two percent and unemployment remaining above 10 percent. With inflation in the Euro area falling into negative territory, the ECB is expanding its bond purchase program. Furthermore, there is growing evidence that Abenomics has failed to achieve its goal of accelerating Japan's growth, and expectations have been scaled back to less than one percent for 2015-16. It also now apparent that the Chinese economy has entered a sustained period of more modest expansion in which it will struggle to maintain growth of GDP in the range of 5-7 percent. Finally, the global commodity boom has come to a crashing end, and it and the slowing of growth in the large countries will impact negatively on a wide range of emerging-market economies.

With this as a backdrop, U.S. policy makers must be increasingly concerned about the implications of a divergence of financial policy between the United States and the rest of the global economy. Financial tightening in the United States combined with continuing policy easing in other countries implies large and sustained appreciation of the dollar and significantly lower demand for American exports. This process is already well-underway: the dollar has appreciated by 13 percent over the past year alone and exports have fallen below year-earlier levels. Large trade deficits were manageable in the decade prior to the Great Recession when the U. S. economy was still strongly influenced by the boom in ICT capital; but expectations of future growth are far less ebullient, and no one wants to be faced with a need to reverse policy in the immediate aftermath of a decision to raise interest rates.

U.S. Economic Outlook

The United States has made substantial progress in its recovery from the Great Recession. The unemployment rate has fallen to 5.1 percent, well below the Congressional Budget Office estimate of the rate consistent with full employment. And, as show in figure 2, there has been a rapid narrowing of the gap between potential and actual GDP. However, much of the gap-closing has been the result of retrenchment on the supply side of the economy. Judged by the expected growth in potential GDP prior to the onset of the financial crisis, the gap is actually growing, but the CBO has progressively lowered its estimate of potential output.[1]

The disappointing growth in aggregate supply is evident in further declines in the labor force participation rate and very modest gains in labor productivity. The prior fall in the participation rate was widely attributed to demographic change, as the baby-boom generation entered the retirement years, and a temporary discouraged-worker effect of individuals leaving the labor force in the belief that no jobs were available. The latter group was expected to return to the labor market once overall conditions had improved. We can illustrate this phenomenon in figure 3 by separating the drop in the aggregate participation rate since 2000 into two components. The demographic element is measured by holding the participation rates within 5-year age categories constant at the values of 2000, and allowing the overall rate to change only with shifts in the age-sex composition of the population of labor force age. As shown in the figure, the demographic change is substantial and ongoing, but the surprise lies with the growing magnitude of the perceived discouraged worker component. There was substantial increase in the discouraged worker component in the 2000 recession, but it shrank during the recovery and

[1] The CBO compiles estimates of potential GDP on an annual basis, extending 10 years into the future. Thus, the 2007 estimates covered the period up to 2017. The measures are based on a production function framework that incorporates estimates of trend growth in the labor force, the capital stock and, total factor productivity. The recent revisions reflect changes in all three components (CBO, 2014).

appeared to have largely disappeared by 2007. However, something other than demographic change or cyclical influences must be at play today to account for the continuing fall in the participation rate.

The supply side concerns are also apparent in the slowing pace of productivity change in recent years (figure 4). There is growing evidence of a break in productivity performance around 2005, marking the end to the ITC boom of the late 1990s, and a return to the modest gains that dominated in the interval of 1972-95. In sum, we can anticipate a further downward revision in the CBO's estimates of potential GDP.

On the other hand, there has been a significant broadening of growth on the demand side of the economy. Measured as a share of GDP, business investment has largely recovered from the recession. Housing starts, at an annual rate of 1.2 million, are still below their estimated equilibrium level of 1.5 million, but the gap has narrowed substantially in recent years. State and local governments have seen a substantial improvement in their financial condition, and are a source of modest fiscal stimulus. Consumers are benefiting from strong job growth and the sharp fall in energy costs, and they continue to report an optimistic assessment of the outlook. Automotive sales have been particularly strong.

The downside risks are concentrated in U.S. economic relations with the rest of the world, and a significant worsening of the country's trade competitiveness over the past year. The trade-weighted U.S. real exchange rate, pictured in figure 5 has appreciated by 13 percent and the growth in major export markets has slowed substantially.[2] The trade sector has become a highly negative contributor to GDP growth, averaging a two-thirds of a percentage point subtraction from GDP over the past three quarters. With a further expansion of quantitative easing in the

[2] It is worth noting that the Chinese rate has appreciated more than that of the United States–27 percent since mid-2011. The Japanese rate has fallen a whopping 32 percent since mid-2012, and the Euro is down 11 percent in the past year.

Euro area, the Euro/dollar exchange rate is expected to fall below unity in early 2016. As evidenced by the latest IMF report, the forecasts of growth in emerging markets are still being reduced. We can anticipate further easing of their monetary policies and additional exchange rate depreciation. Given the long lags in the response to exchange rate changes, the trade sector will continue to be make a substantial negative contribution to growth over the next two years. Past research has suggested that a 10-percent change in the real exchange rate would reduce the trade balance by about 1½ percent of GDP, but with the effects stretching over 2-3 years.[3] While the United States is in a stronger position than other advanced economies, policymakers cannot afford to ignore the cumulative effects of exchange rate appreciation and lower expectations of global growth.

The Policy Dilemma

The continuing downgrade of the outlook for the global economy, low inflation, and the asymmetric position of current monetary policy have caused some divisions among policymakers. A few months ago, there was a strong consensus surrounding the desirability of an initial rate increase to signal the next step in the normalization of monetary policy. However, the weakening of the outlook in the emerging markets, and concerns about the persistence of inflation below the target rate has led to a preference by some for the postponement of a rate increase until the economic outlook strengthens.[4] It is relatively easy to react to a future strengthening of the economy by speeding up the process of raising the federal funds rate, but there are very limited options for responding to a significant economic downturn. While differing over the precise timing of the first rate increase, there is continued agreement that U.S. monetary

[3] A chapter of the October World Economic Report reviewed recent experience and found little evidence that the relationship between change in exchange rates and trade flows had weakened.

[4] The strongest case for delay has been advanced by Brainard (2015).

policy will remain highly accommodative well into 2016 and perhaps longer. In that context, it is difficult to attach much significance to a single 25-basis point change.

II. A Persistent Low-Interest-Rate Environment

Interest rates have declined on a sustained basis over the past quarter century. Initially, the downward trend was most evident in nominal interest rates and reflected the post-1980 success in slowing inflation. However, real rates of interest have also fallen and are now near zero for most of the G-7 economies. While the financial crisis was the most important cause of the current extreme of zero central bank policy rates, there are growing concerns that a low interest rate environment will persist for the foreseeable future. Sustained low levels of nominal and real interest rates are very worrisome in suggesting that monetary policy may be very limited in its ability to respond to negative shocks. The experience of Japan over the past two decades demonstrates that the failure to respond aggressively to adverse shocks can easily lead to a downward spiral of weak demand and persistent deflation expectations. An increasing number of observers have also highlighted the danger that low interest rates may lead to excessive risk-taking and greater financial instability. Looking ahead, understanding the reasons for today's low interest rates has become a dominant concern of policy makers.

Measures of global interest rates have been published by several researchers in recent years; and, while the methodologies vary, the resulting measures are very similar.[5] I have chosen to use an updated version of the data from Bosworth (2013). The coverage is limited to the 3-month and 10-year bond rates of G-7 countries, which account for nearly all of the market for

[5] Laubach and Williams (2003) developed an estimate of the natural rate of interest for the United States, which they define as a real fed funds rate consistent with real GDP equal to potential. They have continued to provide regular updates of their measure. The IMF (2014) computed real interest rates for a large number of countries at the 3-month and 10-year maturities using an autoregressive process to estimate inflation expectations. King and Low (2014) constructed a global long-term rate based on inflation-indexed bond yields that is heavily reliant on U.S. and U.K data in the early years.

tradable government debt.[6] The short-term rates use a Hodrick-Prescott filter of quarterly changes in the GDP deflator to adjust for inflation, and long term rates are based on a constructed measure of expected 10-year inflation.[7] The measures of the nominal and real rates are shown in figure 6. The real short-term rate (top panel) was negative in the 1970s and is again today, and the current nominal value is essentially zero. The long-term real rate remained relatively trend-free up to the mid-1990s, despite a substantial decline in the expected inflation rate; but there has been a large secular decline in both the nominal and real rate over the past two decades. Long-term inflation expectations are implied to have fallen from a peak near 8 percent in the early 1980s to only 1½ percent over the past ten years.[8]

The causes of the low interest rates remain controversial. In an equilibrium, full-employment economy, real rates of interest are going to reflect the balance of saving and investment. Thus, much of the analysis should revolve around perspectives on trends in saving and investment; and given the increasingly integrated world economy, the analysis will need to assess those trends on a global basis. Quite apart from the global balance of saving and investment, some authors have argued that the decline in the government bond rate can be traced to a shift in the mix of investment assets: a shortage of safe assets that drove up their price and lowered the yield relative to the yield on riskier assets (Caballero, 2006). Finally, we will explore the potential role of 'secular stagnation,' a hypothesis that puts greater weight on a persistent condition of deficient demand and high unemployment.

[6] China and other countries feed into the global market, but their own financial markets are largely closed and cannot be viewed as measures of a global interest rate.

[7] The United States has a survey-based measure of inflation expectations over a 10-year horizon. I regress that expectation on actual rates over the prior ten years, and use the lag structure to estimate comparable rates for the other countries. The estimate of UK expected inflation is very similar to the measure extracted from the return on inflation-indexed bonds.

[8] The G-7 average is particularly low because of an estimate of a negative rate of expected inflation for Japan.

Global Saving-Investment Balances

The decline in the real interest rate is consistent with excess saving or a shortfall of investment. A focus on saving-investment balances played an important role in the debate over global imbalances in the early 2000s. The issue gained momentum as the result of a speech by Ben Bernanke in 2005 in which he asserted that, rather than the United States saving too little, the rest of the world saves too much (Bernanke, 2005). It became fashionable to focus on the saving-investment balances of the surplus countries, rather than the alleged deficiency of saving in the United States. In effect, the United States was perceived as passively accommodating imbalances that originated in Asia after the 1997-98 financial crisis. The capital inflows in turn drove down real interest rates and enabled the excess consumption and speculative excesses in the U.S.

Given the accounting identity that global saving must match global investment, it is difficult to distinguish the influence of saving versus investment at the aggregate level. In addition, a focus on e*x post* saving and investment may be a poor guide to *a priori* plans. Still, it is interesting to note the extent to which the regional composition of investment has changed over the past 35 years (top panel of figure 7). Investment in the G-7 economies held steady at about 15 percent of total world GDP throughout the 1980s and 1990s, but it fell precipitously after 2000 before leveling out at a little more than 9 percent in 2010 and later years. Meanwhile, the importance of investment in China has grown exponentially and fully offsets the importance of investment in the G-7. Little has changed about the role of other advanced economies, and investment in developing economies outside China has grown modestly relative to world GDP. At the global level, investment appears to have recovered fully from the financial crisis, reaching its historical average of 24 percent of world GDP, but its regional composition has changed

substantially. The story is slightly different on the saving side because of a significant reduction in the size of the statistical discrepancy. Thus we observe what appears to be a modest upward trend in the global saving rate.

Saving and investment trends in major regions are shown in figure 8 for the period of 1980 to 2015. The investment-GDP ratio in the advanced economies (panel 1) shows a marked secular decline that accelerated after 2000. Until recently, the downward trend in the investment share could be fully accounted for by developments in the large G-7 economies (panel 2). It was also largely matched by a similar fall in the saving rate However, the unsettled economic conditions in Europe have prevented a cyclical recovery among the smaller states, and that is reflected in panel 3, with a sharp fall in the investment share, and the emergence of a substantial surplus of saving over investment.

The downtrend of the investment rate for the large G-7 economies might be related to a falling relative price of capital, requiring less expenditures for given physical quantity of capital. However, the decreasing relative price of capital was largely a phenomenon of the 1990s, with the high rate of investment in information and communications technologies, and it has slowed more recently. Alternatively, some suggest that the lower investment rate is a reflection of reduced profitability. Yet, in the United States the profit share has trended up since 2000, and the rate of return for nonfinancial corporations has risen slightly over the 1980-2014 period (figure 9). Lastly, Tobin's Q ratio, which is sometimes used as an indicator of the attractiveness of investment, is nearing it 2000 peak. It seems more reasonable to simply attribute the lower rate of investment as a normal result of lower growth in output and the equilibrium capital stock (slower population growth and TFP). To a large extent, similar forces have been at work to lower

saving, but it does appear that the decline in saving rates has been slightly less than that for investment, representing a net reduction in the demand for external funds.

The situation in the developing economies seems quite different. Overall, both investment and saving have been rising shares of GDP (panel 4 of figure 8). However, the data are dominated by the influence of China, and it is useful to analyze its situation separately, as is done in panel 5. In the years after 2000, China experienced a very rapid rise in its investment rate, but an even faster increase in saving. The excess of saving over investment reached a peak of 10 percent of GDP, and that spilled over into global financial markets in the form of a current account surplus. Capital flows of that magnitude must have had a significant effect on global interest rates, but the surplus dropped off in subsequent years as the investment rate surged and the saving rate fell. By 2010, the current account surplus was down to 4 percent of GDP and it is estimated at 2 percent in 2015.

When we exclude China, we observe that the investment rate in other developing economies has been largely free of any long-term trend. However, it was rising rapidly in the immediate years before the financial crises as a reflection of improving growth prospects. The increase in the saving rate was again even more rapid, and by the mid-2000s, the developing regions excluding China, were no longer net capital importers. China was never a significant demander of funds, but the overall shift in S-I balance from deficit to surplus is large for the developing economies as a whole, and it represents a significant change from the 1980s and 1990s. The oil-producing countries represent a third force; their surplus from high oil prices surged in the early 2000s, but the recent drop in energy prices will sharply lower saving rates and current account surpluses. That ought to represent a significant reduction in the supply of investible funds and upward pressure on interest rates.

The effort to identify underlying determinants of the trends in saving and investment has emphasized the influence of demographic changes on saving. Life-cycle models of saving behavior have emphasized the accumulation of saving prior to retirement and link that with the shifting age distribution of the population as measured by the proportion of working age versus retired. The populations of the advanced economies are aging and we might expect their saving rates to fall, whereas saving should rise in the younger populations of the developing economies. Some observers point to the development of social safety nets that tend to smooth out the demographic cycle of saving in advanced economies and argue that many developing countries–China, in particular–have only rudimentary social safety nets. The demographic explanation fits some of the rise in saving in Asia, and Japan is an example of an aging society where the saving rate has turned around and fallen substantially in recent years. The argument is of less relevance for the United States and some other similarly positioned countries where the saving rate fell sharply during the years when the large postwar baby-boom generation was of working age, and leveled out or even increased when they began to retire. Furthermore, changes in global saving are heavily influenced by the fiscal decisions of governments rather than households.

This overview of global saving and investment trends does not provide strong defining evidence of shifts in the balance that can explain the decline in real interest rates. In part, that is because there is not yet a fully integrated global capital market; and, while financial integration has increased, most developing countries operate as net sources of inflows and outflows rather than as integral to a single market. Still, the shift in the relative size and role of the advanced versus the developing economies is striking. Rates of saving and investment are both on a downward path in the advanced economies, and their problems in the aftermath of the financial crisis have accelerated the fall in the investment rate. Within Europe, many governments have

recently increased their saving in an effort to lower their debt obligations. However, the largest changes are with the developing countries, where there was evidence of a rise in rates of saving that have exceeded that of investment. The most recent evidence suggests that the excess of saving over investment is now falling for those economies.

Shortage of Safe Assets and Shifts in the Composition of Wealth

The common measure of a national or global real rate of interest is based on relatively riskless government bond yields, rather than all-encompassing measures of the real return to capital. While the fall in the return on bonds is a pervasive phenomenon, evidence of a significant decline in the return on capital is more mixed.[9] That has led some researchers to suggest that the problem is primarily one of shifting supplies and demand for safe versus safe financial assets. The argument was advanced before the financial crisis by Caballero (2006) and more recently in Caballero and Fahri (2014). Several reasons can be advanced for a change in investor preferences. First, in the aftermath of the Asian financial crisis of 1997-98, many developing countries, believing that they could no longer rely on the IMF to supply liquidity in a timely fashion, embarked on a rapid buildup of official reserve holdings. Those funds were overwhelmingly invested in safe government bonds of the United States and other advanced economies (IMF, 2014). Second, the dot-com bubble of the early 2000s and the financial crisis may have led many investors to re-evaluate their preferences for risky versus safe assets. Third, the response of regulators to the financial crisis was to push financial institutions–banks, in particular–to hold a large portion of their portfolios in safe assets.[10]

[9] The measure of the rate of return shown in figure 9 suggests a stable or rising return for the United States, and it is also rising in the U.K. According to the OECD, rates of return were rising within Europe prior to the financial crisis, but they have not yet returned to those pre-crisis levels. Rates of return remain low in Japan.

[10]The reliance on quantitative easing also led the monetary authorities themselves to become large demanders of safe government securities.

Some of the strongest support for the above argument is drawn from the contrasting performance of the return on bonds versus equity in the United States and the UK (Bean and others, 2015). They compare the rise in the corporate price-earnings ratio with the decline in price indexed bonds– a rising equity premium. However, there is little evidence of a similar increase in the risk spread between high-yield bonds and government bonds (figure 10). Nor can we detect an increase in the relative yield on emerging-market debt beyond its normal sensitivity to business cycles. Finally, it is hard to reconcile the notion of a shortage of safe assets with the explosion of government debt in countries such as the United States and Japan. Despite the ambiguity of these results, the IMF has asserted that about half of the reduction in real rates in the 2000-10 period can be attributed to an increase in the relative demand for bonds (IMF, 2014). The shortage-of-safe-assets hypothesis also attracted a lot of favorable attention in Bean and others (2015).

Secular Stagnation.

Continued weakness in the global economy has intensified concern that it may be entering a sustained period of weak demand growth or 'secular stagnation.' The term was originally made popular by Alvin Hansen in the late 1930s (Hansen, 1938) in the midst of the ongoing depression in the United States, and it was reintroduced by Larry Summers (2013, 2014) in a broader context referring to economic conditions in most of the high-income countries of Europe, Japan, and the United States. Hansen was focused on a situation of sustained weak demand (low investment-and high levels of unemployment), but in its reincarnation, some authors have broadened the concept to include supply-side causes of slow economic growth.[11] More commonly, secular stagnation is defined as a persistent tendency for aggregate demand to

[11] Hansen included factors, such as slowing population growth and a reduced rate of innovation, but he perceived them as operating through their effect on investment as the driving force on the demand side of the economy.

fall short of potential output. And, as with Hansen, there is a strong focus on excessive unemployment as the simplest measure of deficient demand.

Secular stagnation is an important part of the discussion of low real rates of interest because of its focus on a *disequilibrium* situation in which no achievable real interest rate can equate planned saving and planned investment at full employment. Given a zero bound on the nominal interest rate and the incorporation of a 2 percent inflation target into monetary policy, monetary policy may be ineffective in restoring balance. Thus, low or even negative inflation and low nominal interest rates are defining characteristics. The other potential explanations that we have examined, shifts in portfolio preferences and secular trends in saving and investment, could operate in economies at or close to full employment. The original address by Hansen and Summers' more recent discussion are formulated in the context of high unemployment and the persistent excess of planned saving over investment.[12]

The concept of secular stagnation is complicated by the inclusion of a supply-side perspective in which the notion of stagnation is expanded to include episodes of slow growth in the labor force and total factor productivity. That is a characteristic of the current U.S. economic situation and it does suggest a reduced investment demand, but it need not imply high levels of unemployment nor low rates of interest. Furthermore, in the context of a global economy excess capital can easily flow abroad. While slower rates of innovation may be a constraint on growth in economies at the technological frontier, it does not limit the expansion in emerging markets that rely on technology catchup as the primary driver of their growth. Thus, it may be a problem for the United States, but not necessarily the global economy. Reduced investment demand is a

[12] The argument of Rogoff (2015) that weak demand growth is the result of an excessive level of debt is similar in some respects to the notion of secular stagnation. It is more optimistic in suggesting that the situation is temporary.

critical part of the stagnation story, however, if it is not matched by an equivalent fall in the saving rate, and if monetary policy is ineffective in restoring balance.

In some respects, the United States no longer fits the secular stagnation model. The unemployment rate has recently declined substantially and is close to a rate that most would associate with full employment. Furthermore, business investment has recovered as a share of GDP to equal the average of the decade prior to the Great Recession. Similarly, Japan cannot be characterized as an economy of high unemployment–the primary problem that Hansen was trying to address. The situation is further complicated by noting that economies with an excess of saving should have depreciated exchange rates; yet the U.S. rate is appreciating, and that of Japan has declined. Instead, both the United States and Japan more closely characterize the issue of slow supply-side growth–a topic for which we have had a well-developed analytical framework since the writings of Solow and other contributors to the growth literature. On the other hand, low rates of unemployment have only been achievable with extraordinarily low interest rates and the effort to raise them may push the economy back into recession. The suggestion that the problems of deficient demand have been solved appears to be an overstatement.

The issue of the duration of the current condition is critical to the debate over secular stagnation. Ben Bernanke (2015b) and others have argued that any resemblance of the present situation to secular stagnation is temporary. However, rates of inflation are still falling across most advanced economies and there is some concern the excessive low inflation is an emerging problem in some developing economies. And as witnessed by the latest forecast of the IMF, the global economy continues to underperform relative to expectations.

The Case of Japan

A general theme of the earlier analysis is that the causes of low interest rates need to be approached from a global perspective that reflects the integrated state of today's financial markets. Yet, Japan is an interesting special case because it has been caught in a liquidity trap with interest rates at the lower bound for nearly a quarter century, well before its extension to the United States and Europe. The asset price bubble burst in 1990 and by 1996 the one-year bond rate was down to ½ percent, and it has remained at that level ever since. The 10-year bond rate declined more gradually, but it is also now below ½ percent. Meanwhile, the price level as measured by the GDP deflator has fallen by a cumulative 15 percent. Thus, by any measure, the low interest rate environment has been persistent in Japan.

During this period, there has been a dramatic transformation of the balance of Japanese saving and investment. Prior to the 1990s, Japan was one of the world's highest saving rate countries. It is now among the lowest (table 1). Saving has plummeted in the household sector, but the fall is even larger for government. The major surprise is in the surge of saving in the corporate sector. In fact, the pattern of financial intermediation is largely reversed, as corporations are now net suppliers of funds to the rest of the economy. The falloff in investment has been equally dramatic, and by 2013 net investment (ex depreciation) turned negative. The extent of imbalance between the decline in saving and investment is most notable in the largely unchanged current account surplus, as Japan continues to be a net exporter of capital.

The decline in household saving may be a reaction to demographic factors, but the dissaving by government is clearly a reflection of fiscal stimulus measures responding to weak investment demand. In that sense, the low-interest rate environment has been more a reflection of emerging trends in investment than saving. Furthermore, it is difficult to attribute the low

interest rates to a shortage of safe assets given the ongoing rise in the government debt to GDP ratio. Instead, despite its current full-employment status, Japan continues to suffer from weak demand, and every attempt to reduce the budget deficit or raise the monetary policy rate is met with negative GDP growth.

Conclusion

A convincing explanation of today's low interest rates remains a conundrum. Perhaps there is no single cause. There is no uniform pattern of change in saving and investment balances, although rates of investment and saving are trending down in the largest advanced economies and until recently they were rising in China. The notion of reduced investment demand is also conflicted by strong profit growth and rising or at least stable rates of return on capital. Perhaps, the most convincing view is that the global economy is still marked by deficient aggregate demand, and low interest rates are simply an indicator of the underutilization of resources. It is an extended, but still temporary, underemployment disequilibrium. However, in some respects the era of low interest rates predates the great recession, and reliance on cyclical factors may be overly comforting.

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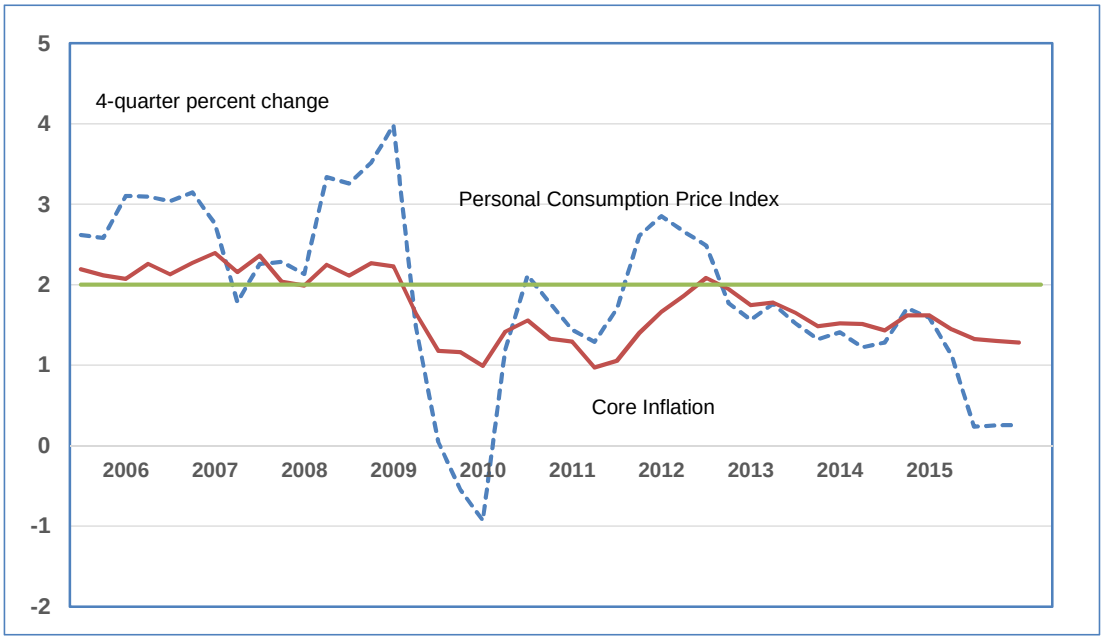
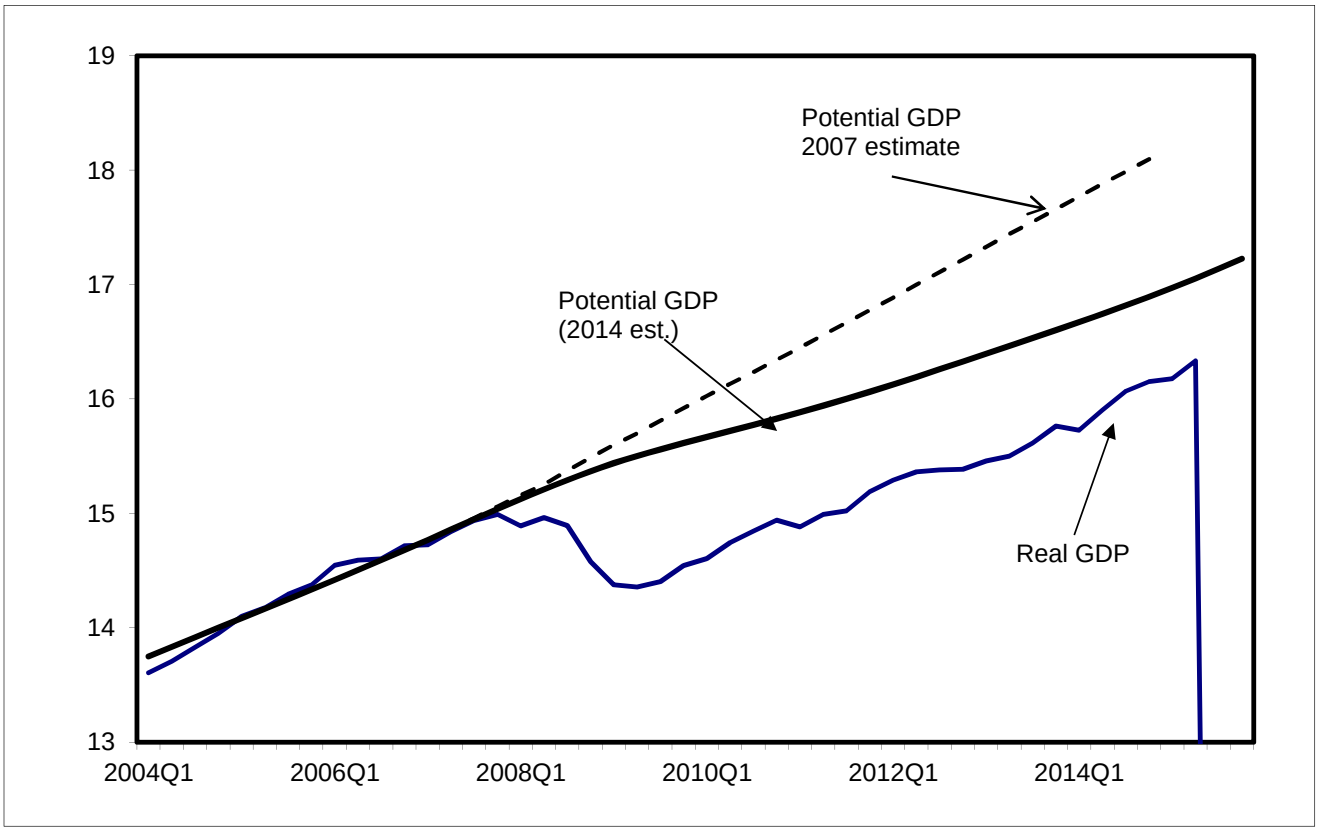
Figure 1. Alternative Inflation Measures Relative to Target, 2005-15



Source: BEA, National Account, Personal Consumption Deflator, total and excluding food and energy

Figure 2. Actual and Potential GDP, 2004-2015
trillions of 2009 dollars



Source: Congressional Budget Office

Figure 3. Labor Force Participation, Actual and Demographically-Adjusted,2000-2015

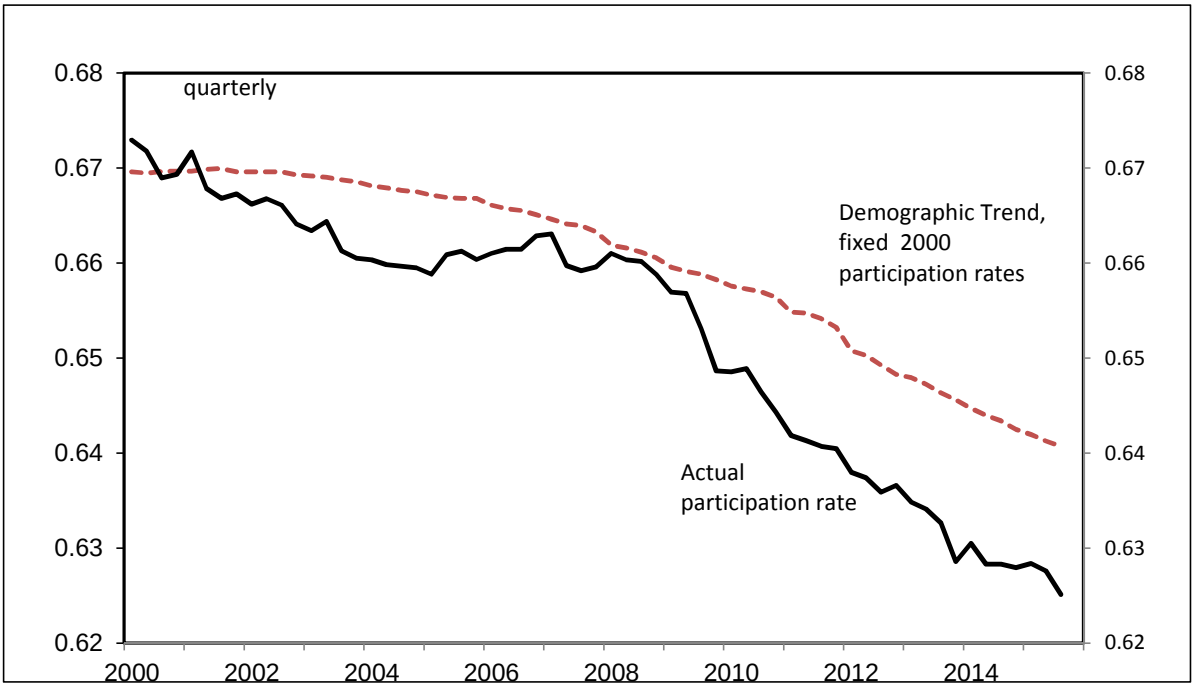
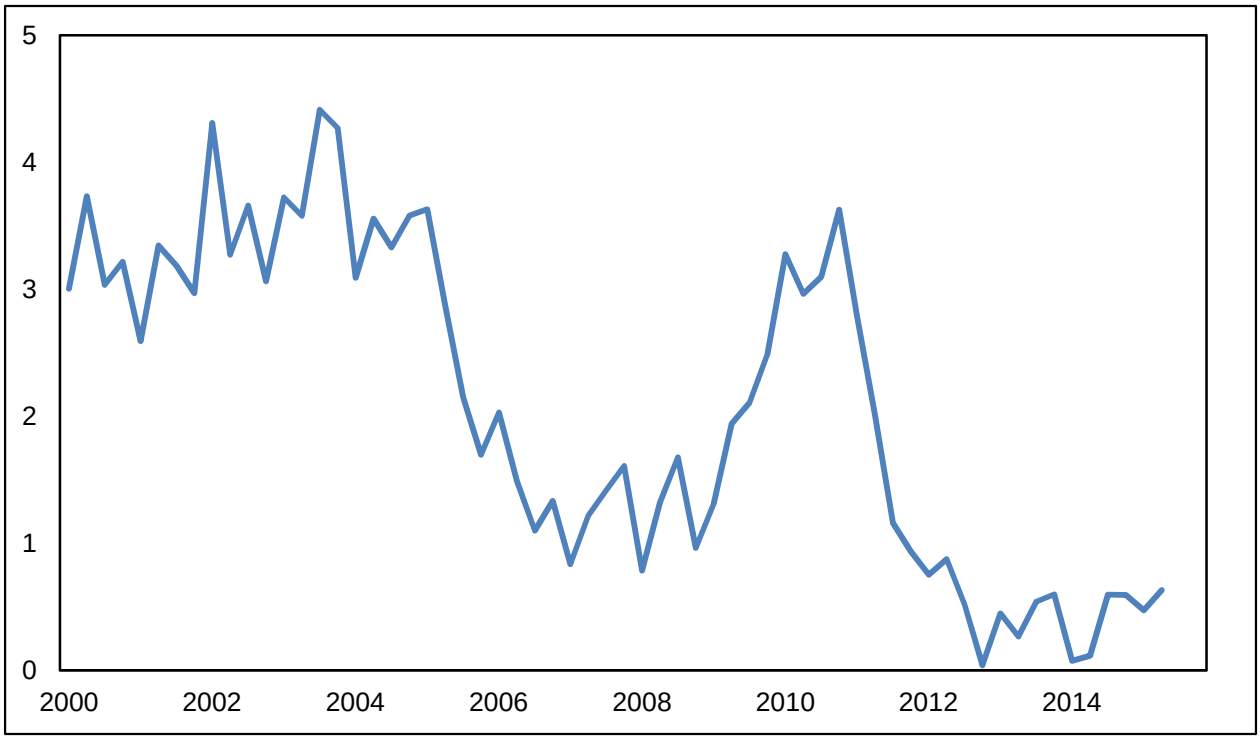


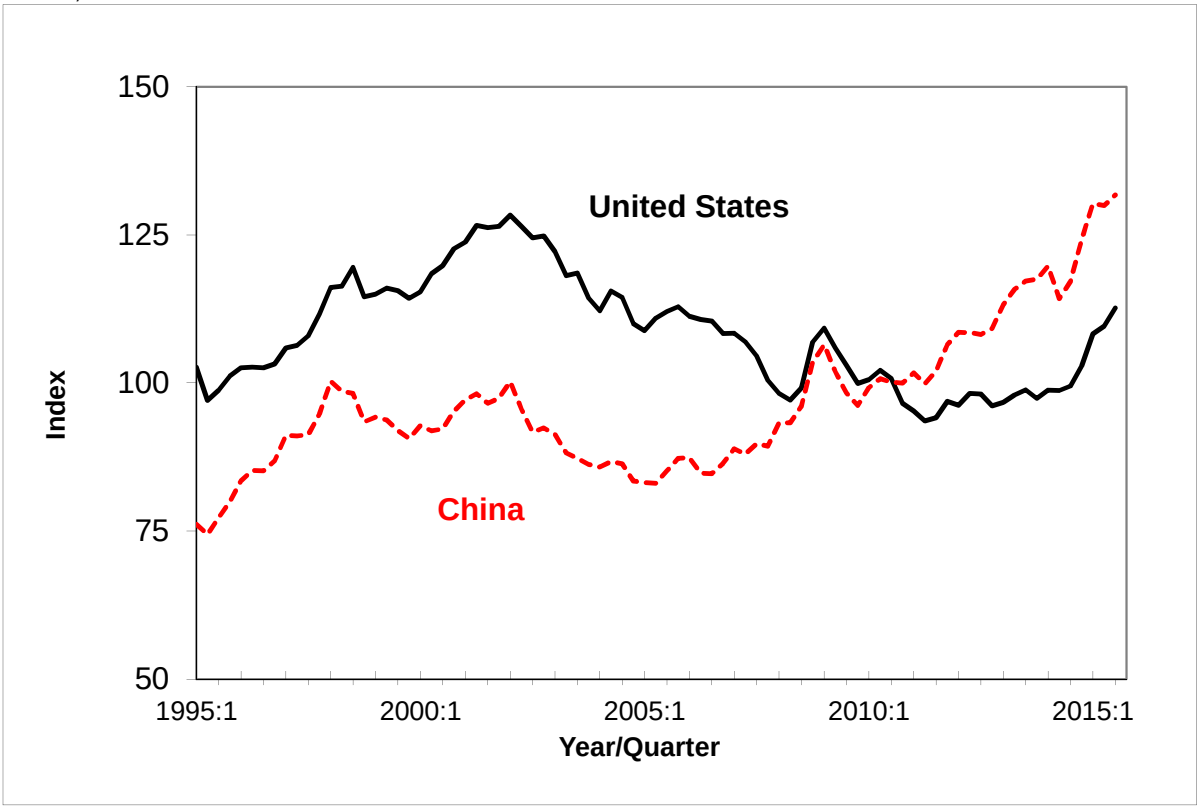
Figure 4. Labor Productivity Growth, Nonfarm Business Sector, 2000-2015

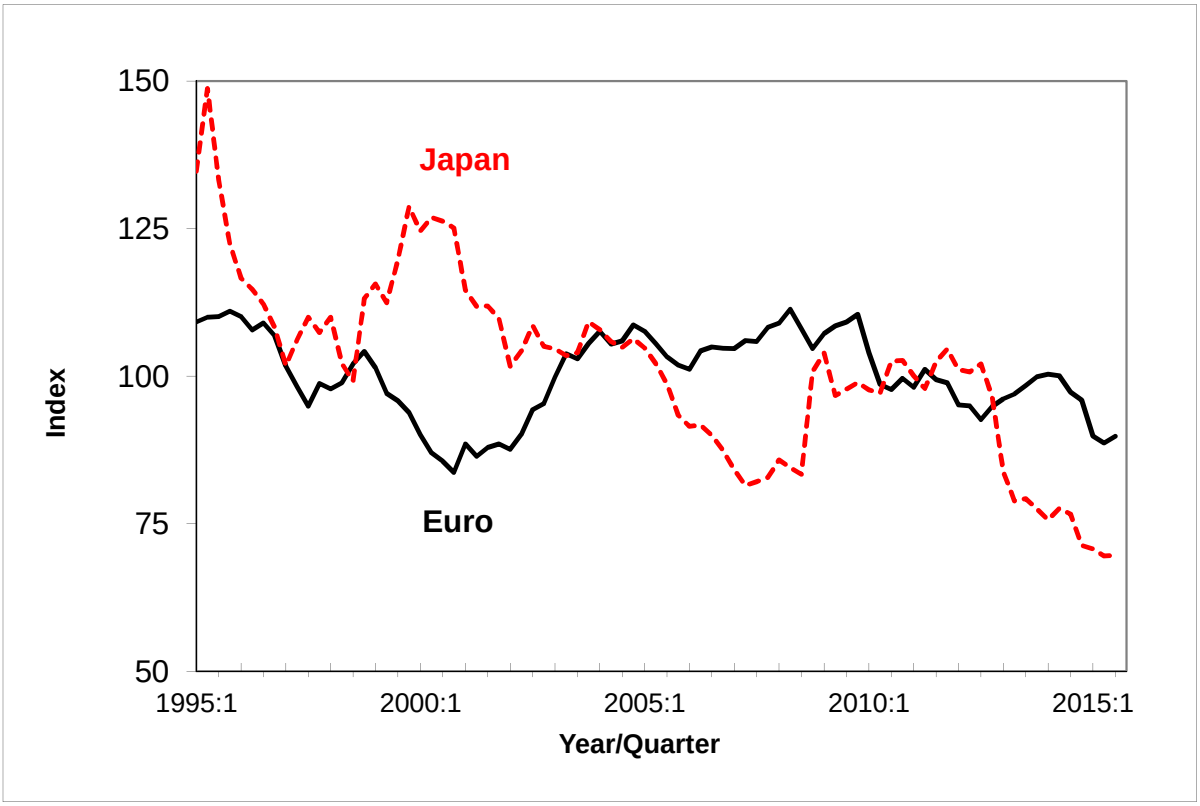
8-Quarter Average Annual Rate of Change



Source: BLS. Annual rate of change over 8 quarters. Nonfarm Business Sector

Figure 5_. Trade-weighted Real Exchange Rates, 1995-2005
index, 2010=100

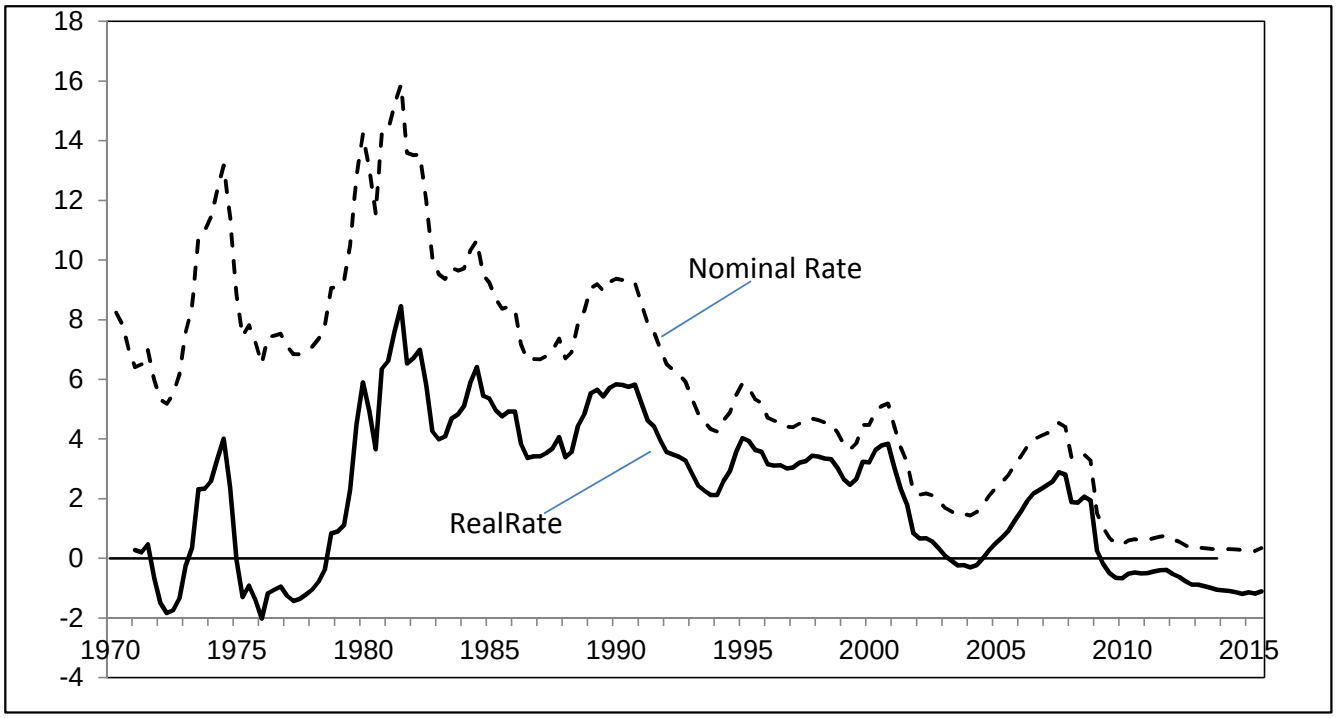




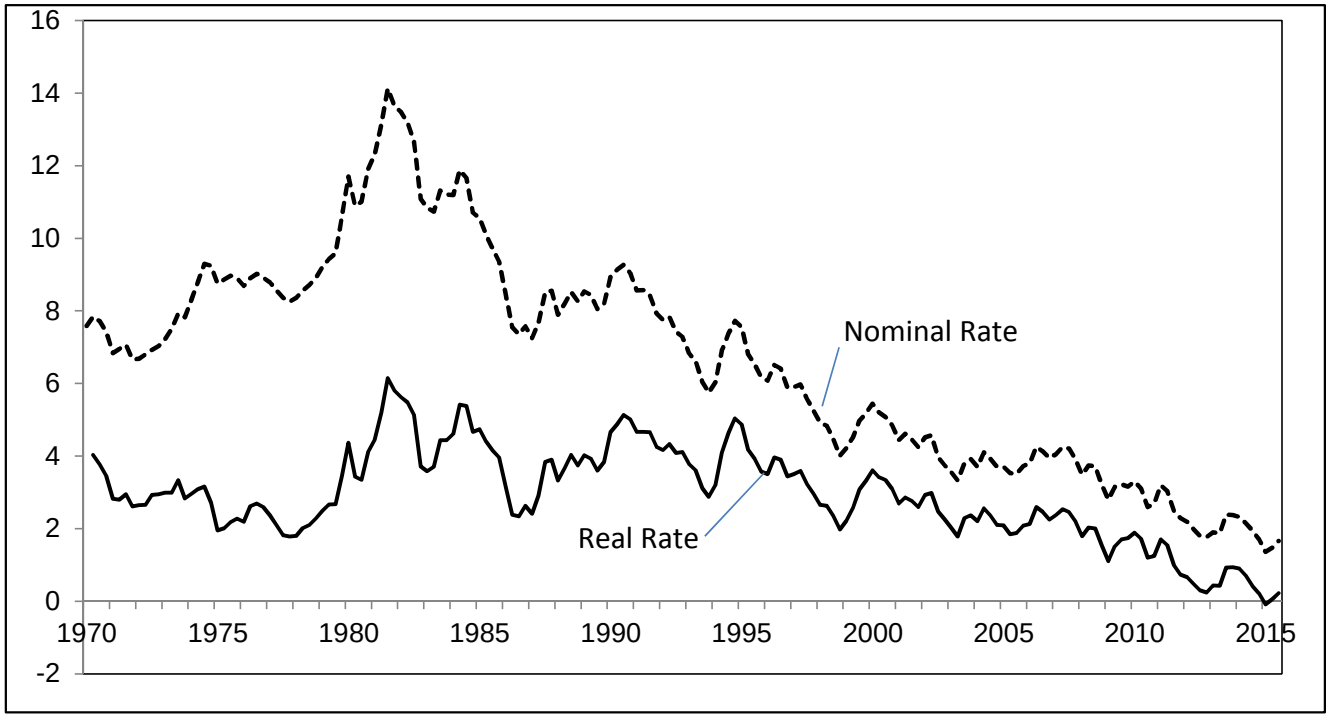
Source: Bank for International Settlements. 2010 = 100. Consumer Price Indexes.

Figure 6. Short and Long Term World Interest Rates, 1970-2015

Short-term Rate



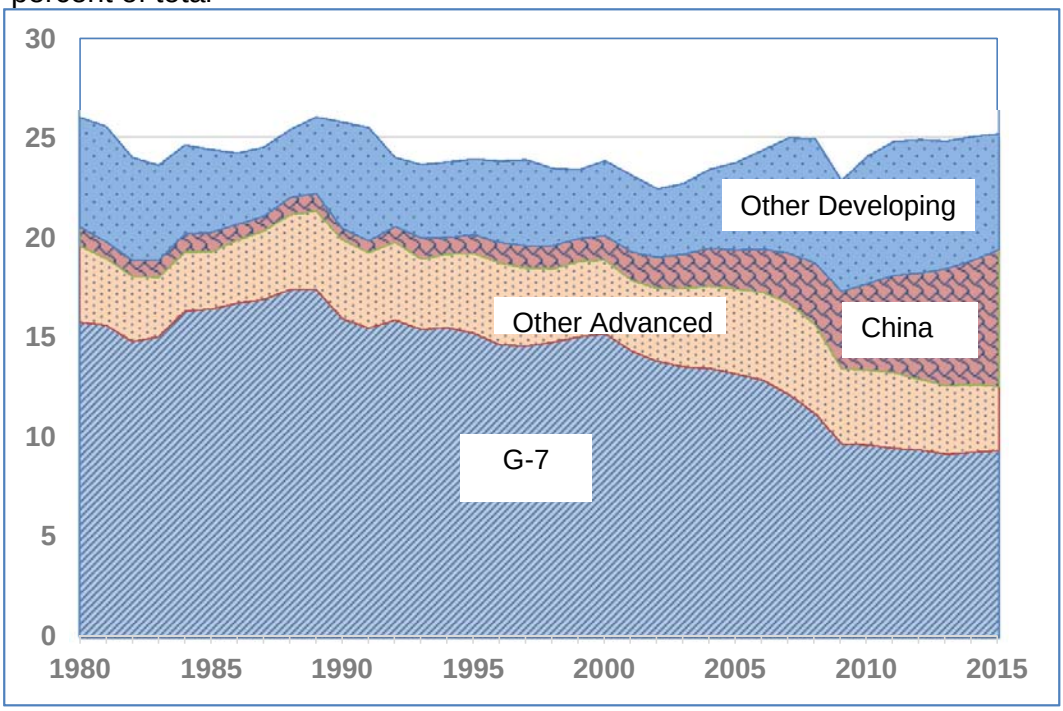
Long-term Rate



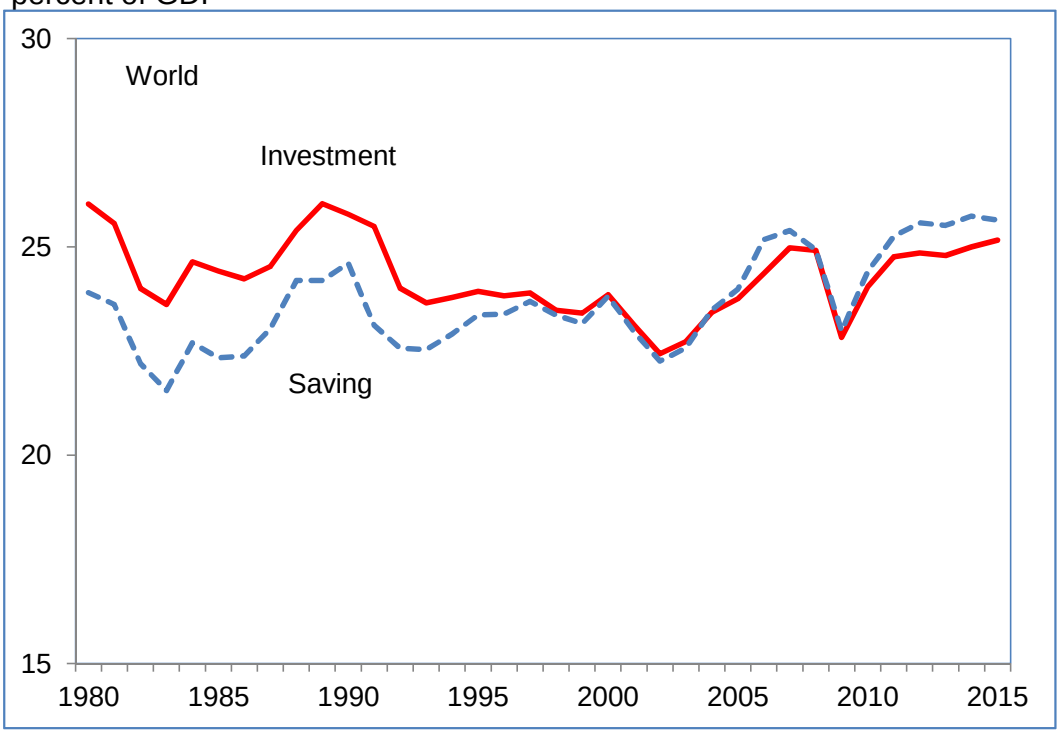
Source: Author's calculations as described in Bosworth (2013). The gobal interest rate is a GDP-weighted average of the rates in the G7 countries. The short and long-run iterest rates are those reported in the datafile for the OECD Economic Outlook, and adjusted for inflation as described in the text.

Figure 7. Composition of Global Investment, 1980 2015

percent of total



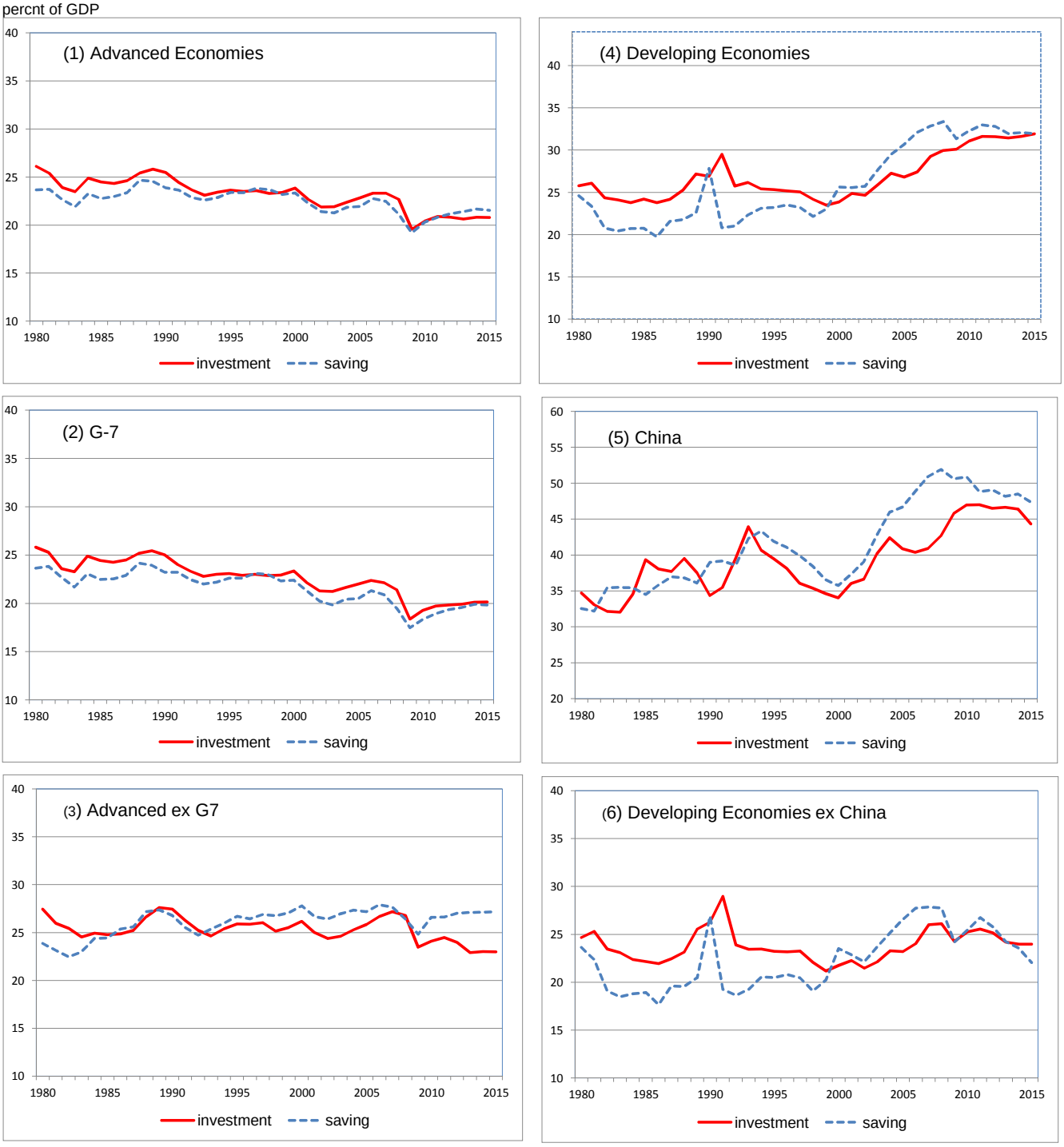
percent of GDP



Source: IMF, WEO Database, and author's calculations

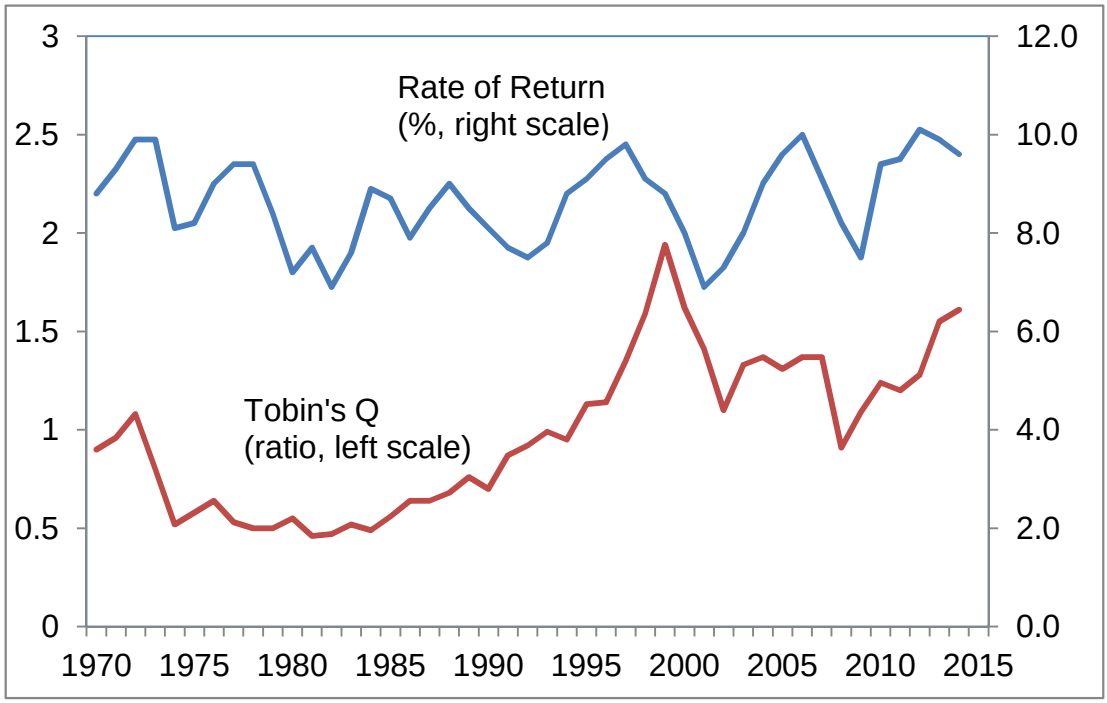
Figure 8. Rates of Saving and Investment By Major Region, 1980-2015

percnt of GDP



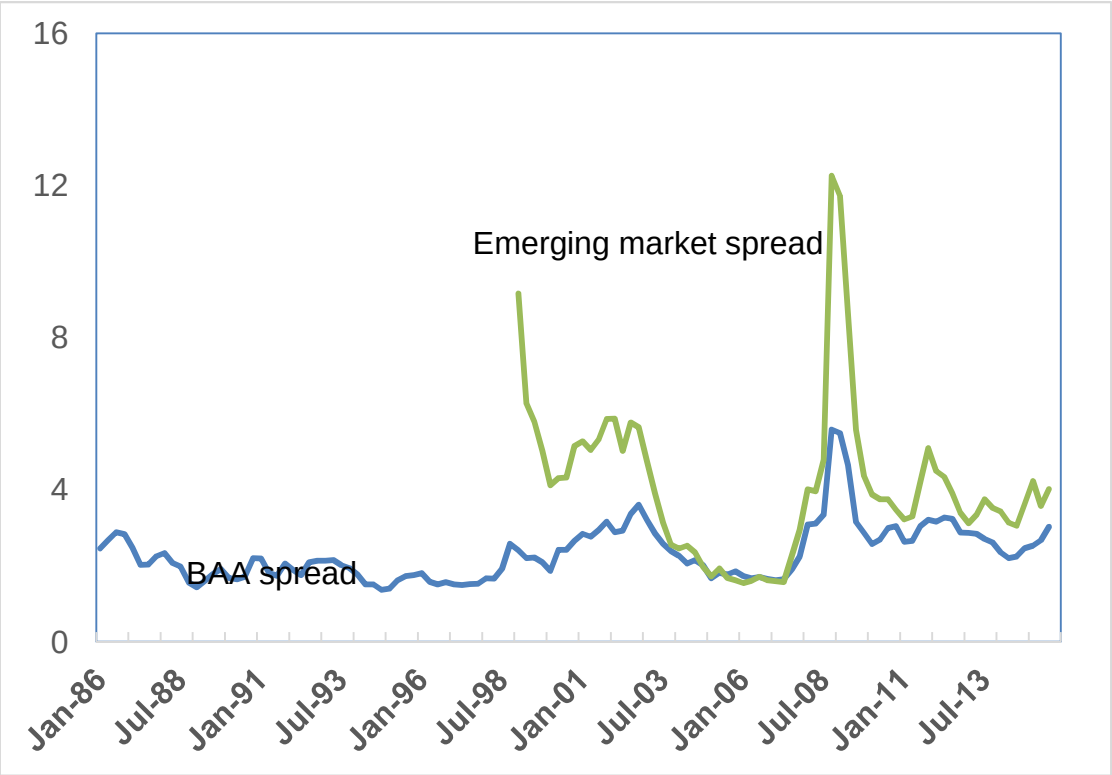
Source: IMF, WEO Database, and author's calculations

Figure 9. Rate of Return and Q-Ratio for U.S. Nonfinancial Corporations, 1970
ratio and percent



Source: Corea and Retus (2015)
Note:The Q ratio is the market value of outstanding equity plus market value of outstanding corporate bonds divided by the net stock of produced assets valued at current cost.

Figure 10. Yield Spreads for Alternative Bonds and the10-Treasury quarterly average



Source: St Louis FRB. The BAA yield spread is Moody's BAA yield less the 10-year treasury. The emerging market measure is the option-adjusted spread of Merrill-Lynch.

Table 1. Japan Net Saving and Investment by Sector, 1980- 2013

Percent of National Disposable Income

	1980-89	1990-99	2000-09	2010-13
Saving	16.6	13.4	6.1	1.2
Corporate	3.6	2.6	9.0	9.8
Household	10.9	8.6	1.9	1.2
Government	2.1	2.2	-4.9	-9.7
Investment	14.1	11.1	2.5	-1.1
Corporate	8.3	5.4	1.3	-0.3
Household	2.4	1.6	-0.3	-1.1
Government	3.4	4.1	1.5	0.3
Current account	2.5	2.8	3.9	2.2
Statistical discrepancy	0.0	0.7	0.5	0.0

Source: Standard National Accounts of Japan. Saving and investment reported net of depreciation measured on a replacement-cost basis.