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# Japan: Evaluating Aggressive Monetary Easing and Economic Performance

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June 2018

## *Abstract*

*Japan has had an outsized influence on global monetary policy. Avoiding becoming Japan has been a powerful force for Quantitative Easing. This paper argues, that despite popular perceptions, Japanese economic performance has not been a calamity; living standards have risen consistently over time and a full-fledged deflationary spiral avoided. These outcomes render making judgements about the Bank of Japan's (BOJ) track record challenging despite the failure to meet the inflation target. The BOJ's conceptual evolution on monetary policy and the various measures adopted over time are analysed for a fuller assessment of the effectiveness of monetary policy in Japan. The paper discusses the nascent, but increasingly influential academic research on the limitations of QE and its collateral effects on the economy, and what that portends for future BOJ policy.*

Keywords: Quantitative Easing, Bank of Japan, deflation.

JEL codes: E4, E5, F3

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Economic developments in Japan over the past two decades have had a profound impact on how macro policy has been conducted globally. Essentially, the focus of macro policy from both a practical and analytical perspective has been on how best to avoid replicating the Japanese experience. Aggressive monetary easing to combat the deflationary fallout from the Great Recession had its roots not only in

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the lessons of the Great Depression, but equally importantly, on trying to avoid becoming Japan.

The strongest proponent of the view that monetary policy has to be aggressive and pre-emptive in precluding a repeat of Japan's tryst with deflation is former Fed Chairman Ben Bernanke. His influential 2002 speech was in fact titled: "Deflation: making sure it doesn't happen here". This was followed by his 2003 paper, "Some Thoughts on Monetary Policy in Japan", which set out the aggressive case for large scale asset purchases, price level targeting and cooperation between the Bank of Japan and the Ministry of Finance to beat deflation<sup>1</sup>.

Other work in similar vein predating the Great Recession includes Krugman (1998) who argued that monetary expansion at the zero bound is a necessary but not sufficient condition to generate inflation. He made the case that the Bank of Japan (BOJ) had to convince the public that monetary expansion was permanent and allow for an inflation overshoot to escape the zero bound and liquidity trap. A more formal case for combining monetary expansion and forward guidance to combat deflation in Japan was made by Eggertsson and Woodford (2003). So, when the financial crisis struck the global economy in 2008, the Japanese experience implied that there had already been a significant amount of analytical work on zero interest rates, Quantitative Easing (QE) and forward guidance as tools for combating deflation.

This discussion raises some key issues from a policy perspective. First, how bad has Japanese economic experience been in the last two decades to warrant such a visceral policy reaction

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<sup>1</sup> A detailed documentation of Bernanke's views on Japan over time are sent out in his Brookings Paper of 2017.

function? How did policy respond to the entrenched disinflationary forces in Japan? Has that policy response been effective? How is policy likely to evolve in Japan and what are the broader lessons for other countries that have embarked on aggressive monetary easing.

A natural starting point is to look at trends in key economic indicators so that the data can be juxtaposed against perceptions. The surprising inference from the data, as documented in the next section, appears to be that Japanese economic performance is not as calamitous as is generally perceived when viewed from the totality of its circumstances. The key point is that Japan has managed to sustain reasonable per capita GDP growth and has not fallen into a deflationary spiral despite two decades of virtual price stability. The very low GDP growth and lack of inflation appear to be driven largely by structural factors.

The policy section of the paper documents the history of the BOJ's monetary policy response as the economy repeatedly slid into and out of mild deflation for more than two decades. It also traces the analytical evolution of the BOJ's views on aggressive monetary easing, particularly on QE. Aggressive monetary easing has failed to meet the BOJ's inflation targets in a sustained way, but the paper argues that making judgements about its success or failure is not straightforward. The BOJ had to combat structural disinflationary dynamics in Japan, along with the additional headwind of low global inflation over the last decade; the counterfactual—whether Japan would have slipped into a deflationary spiral in the absence of aggressive monetary easing—is argued to be particularly difficult to evaluate empirically. In any case, QE is shown to have had the effect of keeping bond yields low and stable amidst an exploding debt, even though that has never been a stated objective of QE in Japan. QE, therefore, provided an implicit backstop to the worrisome debt

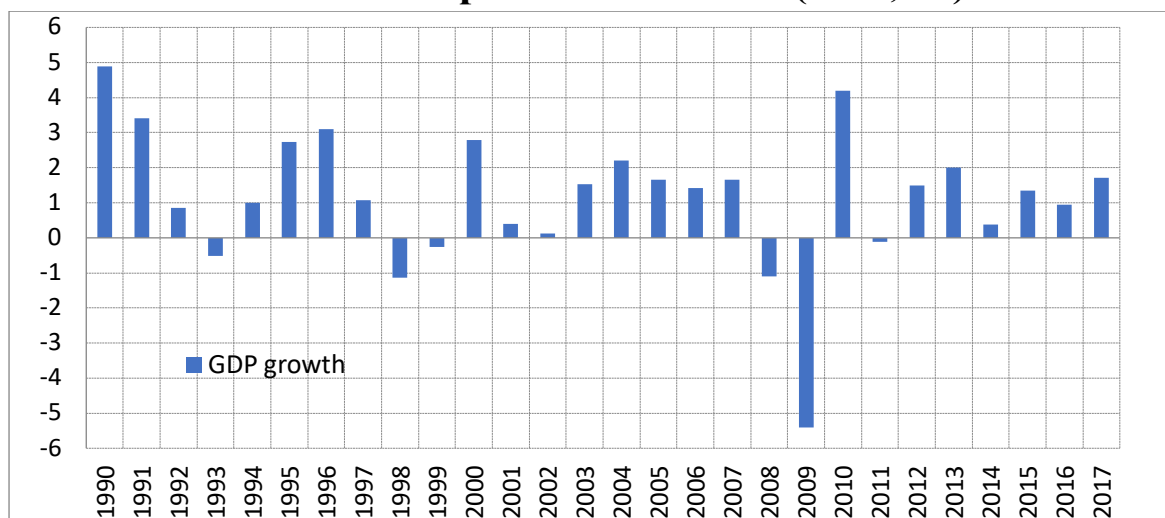
dynamics in Japan through spill-overs from the stated objective of pushing inflation higher.

It is, however, becoming increasingly apparent that there are growing costs in continuing with additional monetary easing. The initial focus of academic research on QE focused mainly on how asset purchase programmes can be effective in combating deflationary tendencies in the economy. That made sense given the deflationary problems that policy had to confront over the last decade. But as QE has become more mature and entrenched, with monetary policy being gradually normalised in the U.S, the focus of academic research has recently turned towards capturing some of the limitations of QE and its collateral effects on the economy. This paper discusses some of this research and examines how that is likely to have a bearing on the evolution of monetary policy in Japan.

## Key Economic Trends

Let us start with the most basic observation about the economy—Chart 1 plots GDP growth since the bursting of the asset bubble in Japan.

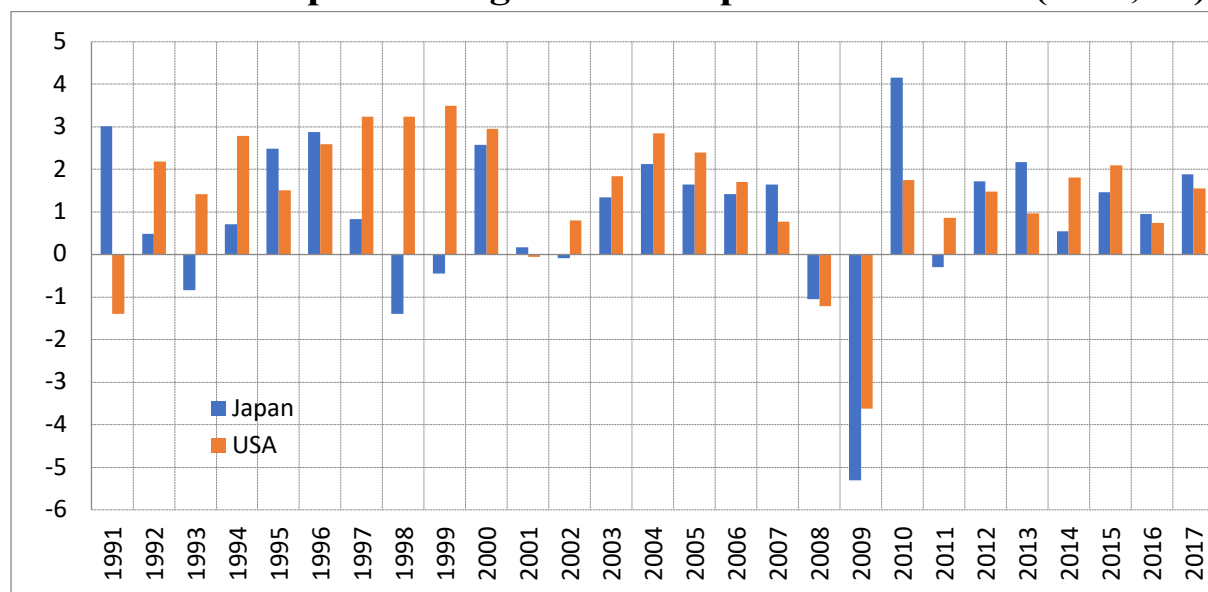
**Chart 1. Japan GDP Growth (YoY, %)**



Taking out the large fluctuations in growth associated with the financial crisis during 2008-10, GDP has grown on average around a relatively steady 1% pace in the last two decades. Potential growth in Japan is estimated at a 0.75-1% range. This makes Japan the slowest growing economy among the G7 countries, with the exception of Italy, which has averaged less than 1% growth in the last two decades.

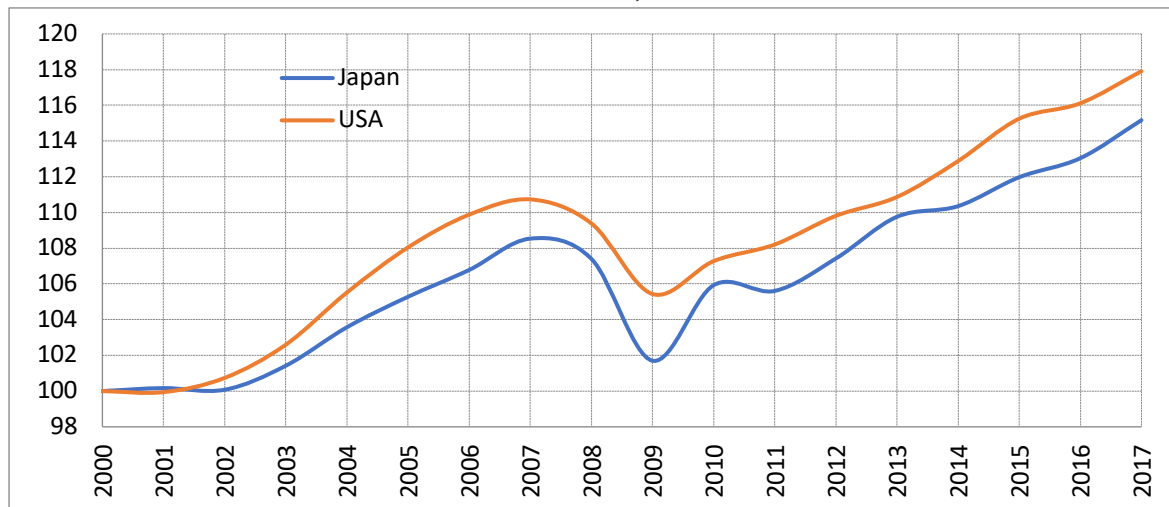
Slow growth in Japan appears to have been driven largely by stagnant population and rapid ageing. In fact, the Japanese population today is a little lower than it was in 2000. Moreover, the working age population in Japan has contracted by about 14% since 2000, while working age population increased by the same factor in this period in the U.S—a contrast striking in its magnitude. Charts 2 and 3 provide a perspective on the trends in per capita incomes in Japan and the U.S.

**Chart 2. Per Capita GDP growth in Japan and the U.S. (YoY, %)**



Source: IMF data base

**Chart 3. Index of Per Capita GDP for Japan and the U.S. (2000 = 100)**

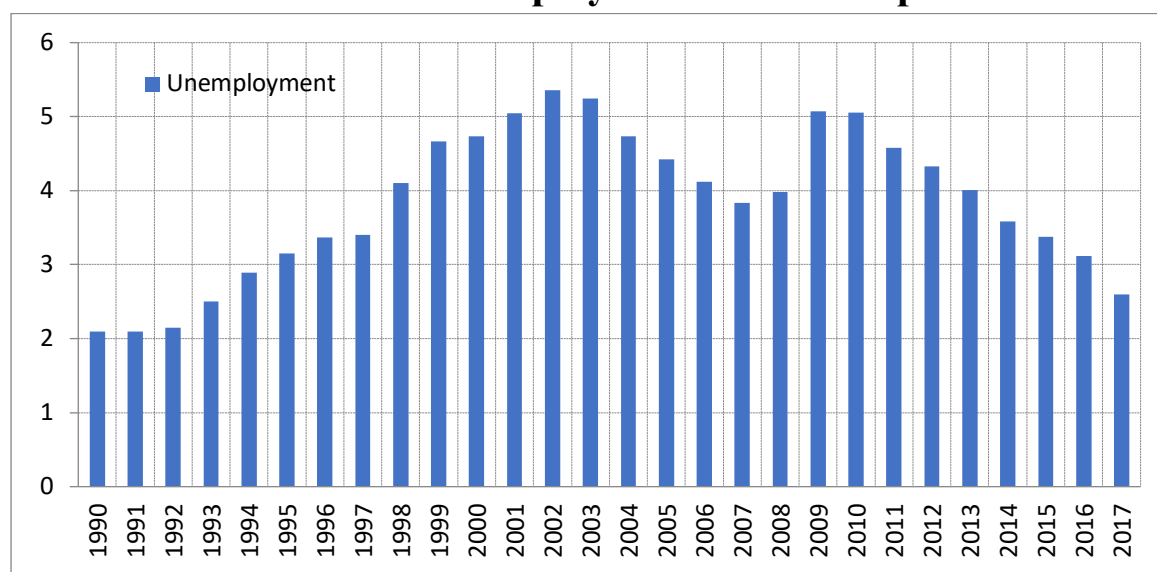


Source: IMF data base

That is, measured on a per capita GDP basis, Japan has not performed all that badly. It has underperformed the U.S. economy by a cumulative 3 percentage points since 2000—hardly a calamity. Since discussions about growth comparisons tend to focus mainly on GDP, and Japan is an outlier in terms of population growth and ageing population, Japanese economic performance tends to be viewed in a far more negative light than it really should be.

The tightness of the labour market—unemployment is currently at around 2.5% (Chart 4), close to the lows reached during 1990—implies that the growth performance has been far from deplorable; in fact, the Japanese economy will find it difficult to support much higher growth.

### Chart 4. Unemployment Rate in Japan



Source: IMF data base

It is not just that unemployment is very low; participation rates have been rising and the ratio of job offers to job seekers is at 1.6, close to an all-time high. However, despite a historically tight labour market, and the political pressure on employers to boost wages, wage earnings has on average grown by less than 1% in the last 10 years. There has been an active debate for some time now about why such a tight labour market has failed to generate any wage inflation. The arguments stretch from life-time employment policies which favour employment rather than wages, to the ingrained low and stable inflation expectations in Japan; but it is not necessary to get into that debate for the purposes of this paper<sup>2</sup>.

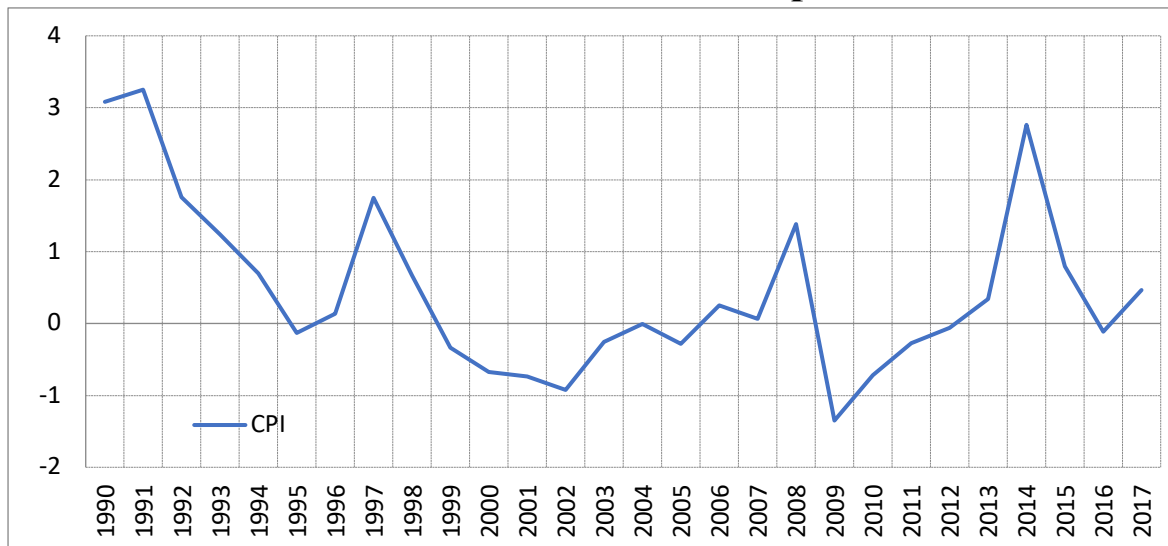
Japan has essentially experienced price stability on average during the last 20 years. Chart 5 shows that consumer price inflation has basically been alternating in ranges between +1/-1% in the last 20 years with the result that prices have barely changed on average during this period—another remarkable outcome.

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<sup>2</sup> A good discussion of these issues can be found in Bank of Japan (2016). See also Porcellacchia (2016).



**Chart 5. Inflation in Japan**



Source: IMF data base

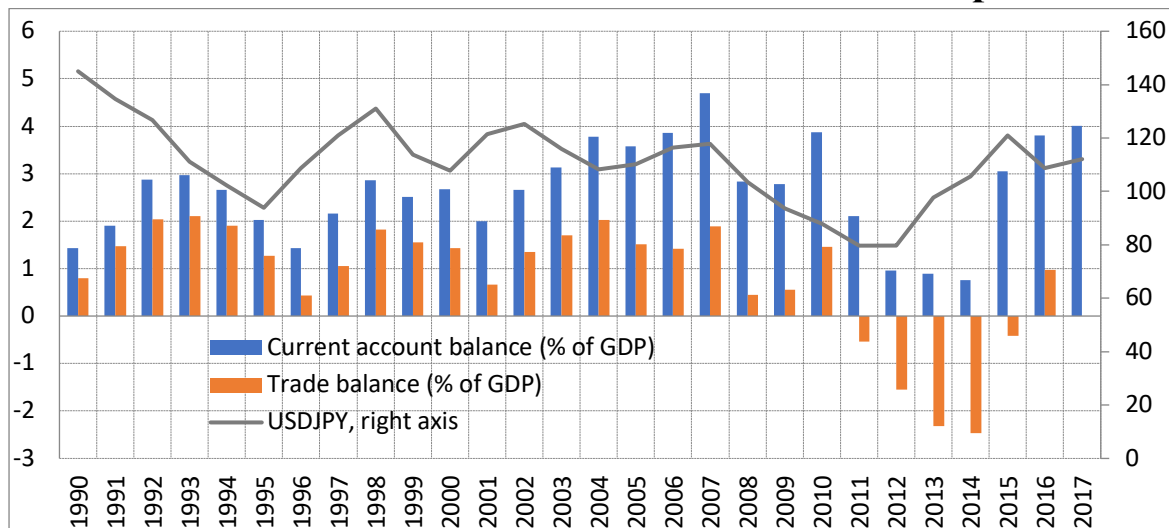
The critical point to note here is that despite the various shocks that the Japanese economy has been subject to over the last 20 years, it never really fell into sustained deflation. This is particularly important because the macro consensus has maintained that a sustained period of very low inflation leads to deflationary expectations and eventual deflation. It has, in fact, been one of the strongest arguments given by central bankers around the world for the need to combat low inflation with aggressive monetary easing. But that just does not seem to have happened in Japan—it appears that nominal rigidities not only capped inflation on the upside in Japan, but also capped the magnitude of deflation.

In surveys conducted by the Bank of Japan about what consumers expect inflation on average to be in the next 5 years, the median expectation has consistently been in the 2-3% range during the last 12 years. The Bank of Japan itself does not put much store on this Survey; but even if one does not take these expectations literally, the point to take away is that it is not easy to identify strong deflationary expectations among Japanese consumers. This lack of

deflationary expectations is consistent with Japan not falling into a contractionary spiral—in fact its per capita GDP has grown at around the average pace for the G7 countries over the past two decades. The Japanese economic performance in the last couple of decades is a world apart from the economic and political traumas associated with the Great Depression. Japan has, contrary to popular perceptions, managed to provide for gradual but consistent increases in living standards for its population.

That the Japanese economy is pretty much close to its potential is reflected not just in the tightness of the labour market, but also partly in its trade in goods and services moving close to balance. The evolution of the current account is of course driven by valuation and exchange rate effects associated with Japan’s large holdings of external assets (Chart 6).

**Chart 6. Trade and Current Accounts in Japan.**

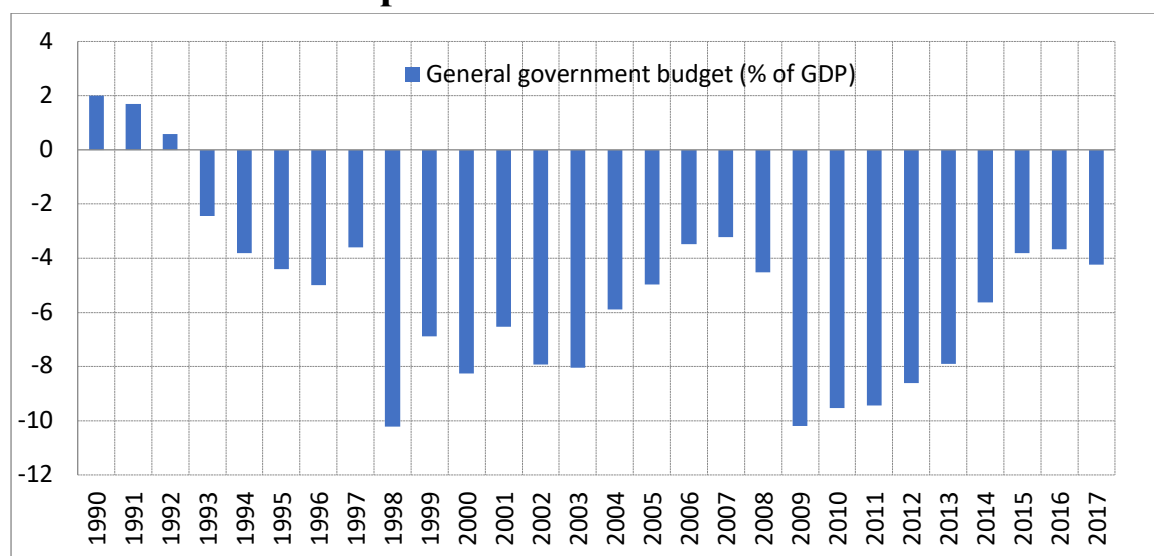


Source: IMF data base

The external balances for Japan are thus of a very different order of magnitude from that of Germany, and the argument therefore for boosting macro policies to reduce external imbalances is just not as compelling for Japan.

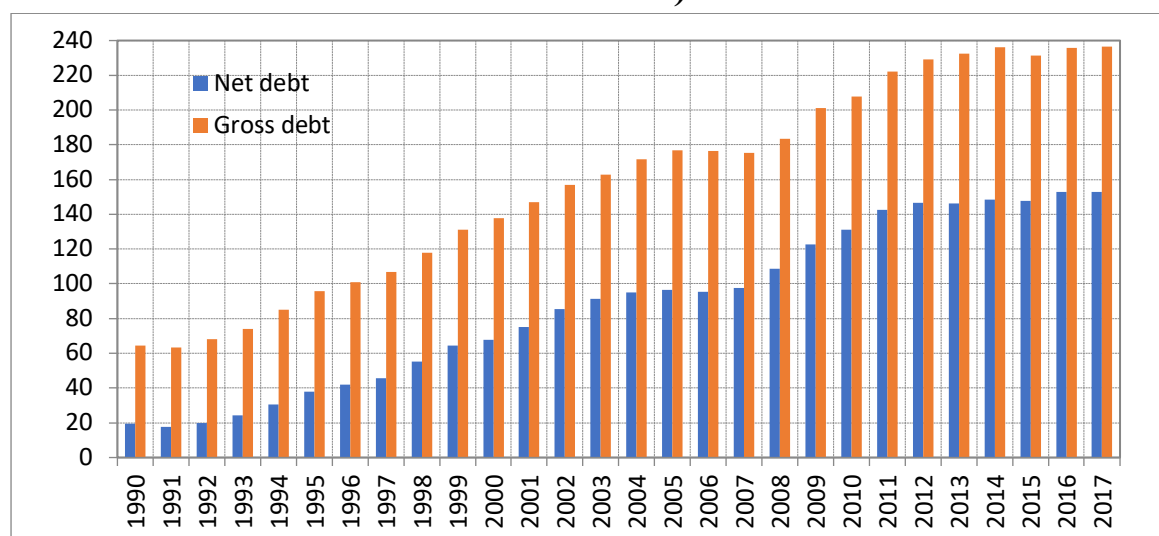
The stand-alone imbalances in Japan are clearly in the fiscal sphere. Repeated attempts to boost the economy through fiscal policy and the lack of tax and structural reforms to make debt sustainable have left fiscal balances in dire shape (Charts 7 and 8).

**Chart 7. Japan—General Government Balances**



Source: IMF data base

**Chart 8. Japan—General Government Gross and Net Debts (% of GDP)**



Source: IMF data base

Japan's fiscal situation certainly appears dire from these charts. The deficits have never been brought under control since the bursting of the asset price bubble and debt has exploded. Gross debt is close to 240% of GDP, a magnitude unprecedented by that of any other country. Nevertheless, QE has fundamentally changed the perception of debt sustainability, at least in terms of risk-premia associated with long-term yields. The fact that net-debt is 130% of GDP, the BOJ holds assets equal to almost 100% of GDP, and almost all of the debt is in local currency and held by local entities has made it virtually impossible for the market to assign a meaningful risk-premium to Japanese debt.

## **Macro Policies in Japan**

Up until the Abe administration took over in December 2012, economic policies can be broadly encapsulated as being driven by the perception, or an implicit framework along the following lines. The Ministry of Finance consistently pushed for fiscal consolidation—their world view was that feckless politicians were pushing Japan to the cusp of a slow moving fiscal crisis. The Bank of Japan used to view low inflation as being largely structural, and took the view that monetary policy could only have a limited impact in pushing inflation higher. Moreover, they were sceptical about zero interest rates, which was perceived as encouraging moral hazard, and asset purchases by the central bank, which was seen as giving a free ride to politicians who did not have sufficient incentives to grapple with long-term fiscal issues.

Despite this latent resistance to monetary and fiscal expansion from the policy experts, Japan witnessed plenty of both as the economy was buffeted, first by the bursting of the asset-price bubble in the early 1990s, and then by the Asian crisis and the domestic banking crisis during 1997-2000. The BOJ's policy rate had already

been reduced to 50bps by the mid-1990s, and closer to zero in the late 1990s as the disinflationary effects of the financial crisis spread across the economy. The BOJ was forced to move into Quantitative Easing in 2001 as the bursting of the global technology bubble intensified the disinflationary forces in the economy. This was essentially the first full-fledged QE in the post-war period for an industrial country; it, however, targeted the current account reserves (required reserves + excess reserves) with the central bank, rather than the quantity of assets to be purchased by the central bank. Reaching the targeted current account balances, of course, involved asset purchases by the BOJ, but these purchases were seen as the means to reach the targeted current account balances with the central bank.<sup>3</sup>

Targeting current account balances with the central bank was perceived as the primary transmission channel to combat deflation. The underlying theory behind this was that banks were more important than capital markets for financial intermediation in Japan compared to the United States; consequently, the conjecture was that commercial banks when flooded with excess reserves would be driven to lend some of that to the real economy. This, in turn, was expected to offset deflationary tendencies. That is, the first stage of QE in Japan was structured to work more through unlocking the bank lending channel than through the portfolio balance effect<sup>4</sup>.

Inflation did rise gradually during this phase of QE in Japan during 2001-05. However, that was truncated by the financial crisis in 2008, and Japan slipped back into deflation. When the BOJ

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<sup>3</sup> Shirai (2018) provides a detailed documentation about the various phases of QE in Japan.

<sup>4</sup> An interesting discussion of the conceptual differences between the portfolio balance channel and the excess reserves channel can be found in Christensen and Krogstrup (2018)

launched its second round of QE in 2010, it was neither novel nor unique; Japan was just part of the aggressive global monetary easing involving QE.

The unstated technical consensus in Japan—i.e. that structural low inflation was difficult to offset with monetary policy, and that fiscal consolidation was needed for the long-term viability of the economy—was broken when Shinzo Abe won a landslide victory in November 2012 and launched Abenomics in December 2012. The essence of Abenomics was to break out of the low inflation trap through aggressive monetary and fiscal policies and sustain growth through structural policies that reduced labour and product market rigidities.

The transformative moment for monetary policy in Japan was the appointment of Haruhiko Kuroda as the Governor of the BOJ in March 2013. Kuroda had been a long standing critique of the BOJ for not taking aggressive actions to combat low inflation. In his very first monetary policy meeting in April 2013 he introduced Quantitative and Qualitative Monetary easing (QQE) to achieve an inflation target of 2% in 2 years.

The essence of QQE was to double the monetary base in two years, by increasing the purchase of JGBs to an annual pace of about ¥50 trillion in order to increase the monetary base at an annual pace of ¥60-70 trillion. Asset purchases were structured to double the average remaining maturity of JGBs held by the BOJ from 3 to 7 years. The BOJ also moved its policy target from the uncollateralised overnight call rate to the monetary base.

This monetary easing associated with the first round of QQE weakened the exchange rate significantly, ratcheted up asset prices and pushed inflation up. With consumption taxes being raised from 5

to 8% in April 2014, headline inflation briefly breached 2%. However, with the economy slowing as the consumption tax bit into spending and with base-effects coming off, headline inflation slid back again in the second half of 2014.

The BOJ responded aggressively to the decline in inflation and inflation expectations in the second half of 2014. At its meeting on 31 October 2014, JGB purchases were announced to be increased at an annual pace of ¥80 trillion—about ¥30 trillion higher than before. The average maturity of BOJ holdings of JGBs were to increase from about 7 years to about 10 years. ETF and JREIT purchases were increased from an annual pace of ¥1 trillion to 3 trillion. The BOJ was essentially signalling to the market that it would do whatever it takes to push inflation to its target.

With the yen stabilising and then appreciating rapidly at the end of 2015 in response to a bout of risk-aversion connected with vulnerabilities in China, the BOJ came up with further easing measures. At its meeting on January 29, 2016 the BOJ introduced what it called QQE with negative rates. While JGB purchases were to continue at an annualized rate of ¥80 trillion and ETF and JREIT purchases at ¥3 trillion, a segment of the current accounts held by financial institutions at the BOJ were to be charged 10 bps. That is, the BOJ made its first foray into negative rates. The impact of negative rates on banks was partially mitigated by not applying the negative rates on required reserves and applying the negative rate only to those balances in excess of the reserves held at the end of 2015.

In November 2016, the BOJ made further changes to monetary policy, introducing yield curve control to the menu of QQE with negative interest rates. The BOJ indicated that it would purchase JGBs in quantities that ensured 10-year yields would remain around

0%. The JGB purchases were forecast to continue at around an annual pace of ¥80 trillion, but that number was clearly not binding given the yield target. ETF and JREIT purchases were doubled from an annual pace of ¥3 to 6 trillion. The BOJ presented the adoption of yield curve control as further monetary easing that was compatible with an inflation overshooting commitment. Yield curve control was also presented as monetary easing that was sustainable, as the growing stocks of JGB's held by the BOJ made it possible to lower yields to target levels even with gradually declining additional purchases of JGBs. That is, the BOJ argued that as the stocks of JGBs held by it crossed a certain threshold, the stocks had a more powerful impact on monetary conditions than flows<sup>5</sup>.

There are two interesting features to the monetary policy conducted under Kuroda. First, the BOJ was willing at every stage to ramp up its already aggressive monetary easing when inflation failed to reach its target. This reflected the analytical shift that inflation is ultimately a monetary phenomenon and that an unwavering central bank will provide the credibility to push inflation expectations up and ultimately inflation. In that sense, it was consistent with the frameworks of Krugman (1998), Eggertson and Woodford (2003). However, following the implementation of QQE with negative rates and yield curve control, the BOJ has been less sanguine about any further ramping up of monetary easing. In that sense, it is now more in tune with the theoretical framework of McKay, Nakamura and Steinsson (2016) that, in the absence of complete markets, the power of forward guidance to push up inflation is likely to be limited.

The other aspect of monetary policy and forward guidance under Kuroda has been its unwavering belief, reflected in its forecast, that inflation will reach its 2% target. While the target has been

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<sup>5</sup> See Kuroda's speech of December 7, 2017.



repeatedly missed, the BOJ has simply rolled forward the time when inflation meets the target. Why has the BOJ stuck so firmly by its forecasts? A BOJ research paper by Hattori, Kong, Packer and Sekine (2016) provides the analytical thinking behind the central bank's sticky inflation forecasts. They argue that forward guidance is an important part of monetary easing and that the central bank's inflation forecast is a critical part of forward guidance. Moreover, their empirical estimations show that even if the BOJ forecasts do not dominate the private sector forecasts in terms of accuracy, they nevertheless had a significant influence on private sector forecasts, and through that on inflation expectations. That is, there appears to be an underlying theoretical rationale for the BOJ to stick by its inflation forecast despite the credibility of those forecasts becoming increasingly challenged.

### **Effectiveness of Monetary Policy**

Despite the BOJ throwing everything it could to ease monetary conditions, inflation has failed to reach its target. Moreover, it does not look likely that it will reach the target of 2% in the time horizon relevant for monetary policy—i.e. the next 2 years.

This raises two related issues. First, to what extent can monetary policy combat the structural forces driving low inflation in Japan. And, more importantly, are there rising costs from increasingly aggressive monetary easing to overcome structural low inflation.

The effectiveness of aggressive monetary easing in Japan, like in other jurisdictions, is a hard one to quantify. The fact that inflation has failed to reach its target is presumably a signal of the lack of success of aggressive and sustained monetary easing. In other words, the structural disinflationary forces in Japan appear to be too strong

for monetary policy to combat fully. However, it is always possible to justify the success of QE in terms of counterfactuals. That is, in the absence of aggressive QE, Japan might have slipped into deflationary territory. It is hard to provide evidence based arguments for or against counterfactuals, but the fact that Japan experienced 8 quarters of continuous positive growth until the last quarter of 2017—the first time that has happened in two decades—perhaps attests to the positive role played by QE. In any case, QE had the effect of keeping bond yields low and stable amidst an exploding debt, even though that has never been a stated objective of QE in Japan.

It is hard to provide an unambiguous verdict on the success of QE in Japan—inflation did not reach the target, but it did not fall into a deflationary spiral either, and it took the risk-premium out of an exploding debt market. But have there been significant adverse spillovers from aggressive monetary policy? And are these costs likely to increase over time? More radically, could further monetary easing turn out to have the perverse effect of having a contractionary impact on the economy?

There is a strand of literature that argues that monetary policy is structurally less powerful in Japan compared with that in the U.S. or even in the Eurozone<sup>6</sup>. Low Household debt and large cash holdings in Japan (currency and demand deposits held by Japanese households constitute over 50% of financial assets compared to about 14% in the United States), imply that monetary easing will be less powerful in Japan than in other countries. The positive effects of low interest rates on household liabilities are likely to be offset by the negative effects of low interest rates on large cash holdings<sup>7</sup>. At worst,

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<sup>6</sup> See Muelbauer and Murata (2011) and Shirai (2018).

<sup>7</sup> A VAR model of the Japanese economy by Ramaswamy and Rendu (2000) provides some supporting evidence for this hypothesis by showing that the

negative rates are even argued to have the perverse effect of reducing household spending. Similar effects are also seen as holding true for Japanese corporates which have large cash holdings compared to international peers. That is, the structural transmission of monetary policy is seen as operating largely through the exchange rate with diminishing returns to additional easing. The yield curve control, targeting a zero 10-year yield, is seen as being particularly damaging for pension funds, insurance companies and banks.

How is the BOJ's policy stance likely to evolve given this debate and the inflation and growth outcomes so far? It will be difficult for the BOJ to play the role of a dispassionate academic bystander in evaluating monetary policy under current circumstances. The BOJ is a credible central bank with a strong research department and will clearly be cognisant of the objective conditions under which monetary policy operates and its limitations. However, given that its forward guidance is a powerful part of its monetary kit, it would be difficult for the BOJ to simply call it a day at this stage and state that the limits to monetary policy have been reached, even if its analytical work were to point in that direction. It would surely have to contend with the impact on the yen, the equity markets and inflation expectations from making any such an assessment explicit.

A move to cap monetary easing at current levels or to even move away from negative rates or extreme yield curve control would depend upon two factors. First, on global economic and market developments, particularly the extent to which normalisation of monetary policy proceeds in the U.S. A stronger than expected U.S. economy which leads to interest rates normalising at higher than expected levels is likely to weaken the yen and provide more leeway

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response of private consumption to the significant monetary easing in the 1990s was muted.

for the BOJ to move away from some of the aggressive monetary easing measures. Clearly, a stronger Japanese economy will also allow the BOJ to move away from negative rates and extreme yield curve control to targeting somewhat higher levels of 10 year yields that could be more supportive of the financial system.

Second, as more research and data become available on QE, providing a deeper understanding of the implications of aggressive monetary easing, this will have a bearing on the changing perceptions of QE by central banks and will influence how QE programmes are modified. The focus of academic research and innovations related to QE have so far largely focused on how the asset purchase programmes can be effective in combating deflationary tendencies in the economy. That made sense given the deflationary problems that policy had to confront over the last decade. But as QE has become more mature and ingrained, with monetary policy being normalised in the U.S, and the discussion turning towards possible exit strategies in other jurisdictions, the focus of academic research has recently turned gradually towards capturing some of the limitations of QE and its collateral effects on the economy.

Two influential papers have addressed the limitations and collateral effects from QE. The arguments themselves are not new, but Eggertson, Juelsrud and Wold(2017) provide a formal framework to argue that standard macroeconomic models used to analyse monetary policy overstate the stimulative impact of zero interest rates. The standard models assume that there is just one interest rate controlled directly by the central bank; that is, they implicitly assume that the lending rate is independent of the deposit rate. However, there is a zero lower bound on deposit rates—i.e. the negative policy rate is not passed through to households and firms. This lower bound on deposit rates will constrain the extent to which lending rates can be slashed without seriously denting bank profitability and hence zero or

negative rates do not flow through into the economy and therefore are much less stimulative than what the models assume. While the stimulus does not fully flow through, the collateral effect is passed on in the form of lower bank profits

This argument is pushed a level further by Brunnermeier and Koby (2018). They argue that under QE there can actually be interest rate reversals. That is, at a certain low interest rate, accommodative monetary policy reverses its intended effect and actually becomes contractionary for the economy. To put it differently, monetary policy under QE becomes non-linear in interest rates—lowering interest rates is stimulative up to a certain level of interest rate, and below that threshold, lowering rates further becomes contractionary. That threshold does not necessarily have to be negative, but can even be somewhat above zero under certain circumstances. Without going into a lot of detail about the model and its simulations, the main thrust of the argument is that the banks' recapitalization gains from lower interest rates are one-off and are offset by the multi-period decline in interest rate margins as interest rates get closer to zero. In fact, as QE removes bonds from the balance sheets of banks, it can lead to a creeping up of the “reversal” interest rate by limiting the capital gains accruing from lower interest rates. The policy implication of the Brunnermeier and Koby paper is that the combination of QE and zero interest rates has to be carefully sequenced so that monetary policy is not overwhelmed by the negative collateral effects. In any case, the analysis implies that there are clear limits to aggressive monetary easing.

These studies provide a flavour of how the academic arguments for QE are evolving as we get more history regarding its operation and its collateral effects become more apparent. The evolving academic research will clearly influence the thinking and operations of central banks going forward. This is particularly true of the Bank

of Japan, where aggressive monetary easing is more advanced, structural factors exert a relatively stronger impact in keeping inflation low and the negative collateral impact on the financial system becomes increasingly apparent.

## **Conclusions**

The Japanese experience has had an outsized influence on the way that aggressive monetary easing has been incorporated into other advanced economies following the financial crisis. The urge to not replicate the Japanese experience has been a powerful driving force of zero interest rates and QE elsewhere. The detailed data analysis, however, indicates that Japanese economic performance has not been the calamity of popular perception. Japan has managed to deliver reasonable increases in living standards for its population (per capita GDP growth was just a cumulative 3 percentage points lower than that of the U.S. in the last two decades). Contrary to conventional wisdom, two decades of price stability did not push Japan into a deflationary spiral and deep economic contraction. Public debt has, however, exploded; but risk premia have been contained as the debt is primarily in local currency, held mainly by local entities and the BOJ's asset purchases are now close to a cumulative 100% of GDP.

The BOJ started off as a reluctant proponent of aggressive monetary easing in the late 1990s and into the Great Recession. It worried about the moral hazard associated with zero interest rates and disincentives for fiscal consolidation that a QE programme would entail. Moreover, low inflation was perceived as being largely structural. Nevertheless, despite this conceptual hesitancy, the BOJ delivered substantial monetary stimulus in the form of zero interest rates and embarked on the first foray into QE in 2001. The election of the Abe administration and the appointment of Kuroda to head the BOJ marked an important conceptual break for the central bank. The

BOJ became an analytical proponent for aggressive monetary policy in lifting inflation higher; and theory was put into practice by launching one of the most aggressive monetary easing policies in 2013.

However, inflation has failed to meet the target in a sustained way despite the BOJ throwing everything in its arsenal to get it higher. Evaluating the success of aggressive monetary easing in Japan is a tough one. The structural disinflationary forces in the Japanese economy could simply be much stronger than what has been presumed. And aggressive monetary easing can always be validated through the counterfactual of having precluded a bout of deflation. In any case, as QE has matured globally, a nascent but growing academic literature has shifted the focus increasingly to the negative collateral effects from negative interest rates and the extreme flatness of yield curves from QE programmes. These analytical developments will influence how the BOJ evaluates further monetary easing; it may perhaps nudge it towards the search for appropriate exit strategies.

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