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## Japan's Economic Performance "Lost Decade": Myth, Reality, or Role Model?

Richard G. Anderson\*

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### Abstract

Between 2010 and 2012, former Bank of Japan Governor Shirakawa argued, in series of speeches, that Japan's economic performance, when compared to that of other G7 nations, was stronger after 1990 than appreciated by the critics. In May 2012, Nobel prize-winning economist and Princeton University professor Paul Krugman echoed a similar sentiment in a Financial Times interview. This analysis expands on these assertions and asks to what extent they are supported by cross-section data for the G7. As reviewed below, to date, no idiosyncratic explanation has arisen to explain the Japanese slowdown—perhaps this is the correct explanation: the slowdown in Japan, once adjusted for demographics, is less severe than in other G7 countries and, as recently noted by Eichengreen, Park, and Shin (2015), TFP growth in a number of other nations followed similar patterns. Focused on labor productivity, far from a laggard, Japan's performance ranks near the best in the G7.

**Keywords:** Japan, Economic performance, Financial crisis, Lost decade.

**JEL Classification Codes:** E32, E52, E58

### 1. Introduction

*What we thought was that Japan was a cautionary tale. It has turned into Japan as almost a role model. They never had as big a slump as we have had. They managed to have growing per capita income through most of what we call their 'lost decade'. My running joke is that the group of us who were worried about Japan a dozen years ago ought to go to Tokyo and apologize to the emperor. We've done worse than they ever did. When people ask: might we become Japan? I say: I wish we could become Japan.*

– Paul Krugman, *Financial Times*, May 26, 2012 (Wolf, 2012)

*It's been one of the themes of my own work for a long time, including some of the work I did on the Bank of Japan, that central banks are not out of tools once the short-term interest rate hits zero. There are additional steps that can be taken, and we've demonstrated through both communications techniques, guidance about future policy, which is something the Japanese have done, as well, by the way, and through asset purchases, also something the Bank of Japan has done, that central banks do have some ability to provide financial accommodation, support the recovery, even when short-term interest rates are close to zero.*

– Federal Reserve Chairman Ben Bernanke, at his post-FOMC meeting press conference, June 20, 2012

*Facts are stubborn things; and whatever may be our wishes, our inclinations, or the dictates of our passion, they cannot alter the state of facts and evidence.*

– John Adams, 'Argument in Defense of the [British] Soldiers in the Boston Massacre Trials,' December 1770

Recent economic data suggest that Japan's economic growth has stalled, again, with real GDP during the first half of 2015 approximately the same level as the fourth quarter of 2013. Although growth initially accelerated during Prime Minister Shinzo Abe's "three-pronged" initiative—with real GDP during 2013's fourth quarter 2.3 percent greater than the comparable period in 2012—growth has not continued: current data suggest that real GDP during the fourth quarter of 2014 was approximately 0.8 percent below the comparable period in 2013. Such figures raise concern that Japan has not shaken the malaise of its so-called "Lost Decades."<sup>1</sup>

A number of analysts had predicted that the year 2013 would be a turning point; the year began with optimism. On April 4, 2013, newly appointed Bank of Japan Governor Haruhiko Kuroda announced "a new dimension in monetary easing," promising to double Japan's monetary base through purchases of government bonds and other assets. Earlier, in January, the Bank under its previous governor, Masaaki Shirakawa, had set a 2 percent annual inflation target; Governor Kuroda committed the Bank to achieving that target within two years. In remarks to the press as he stepped down on March 19, Governor

\* Senior Research Fellow, School of Business and Entrepreneurship, Lindenwood University. [209 South Kingshighway Street, St Charles, MO 63301 USA. Email: rganderson.stl@gmail.com]

1) E.g., Tabuchi (2014)

Shirakawa noted that he had presided during an "extreme time" for policy makers, and cautioned Mr. Kuroda that ending Japan's long-running deflation will not be so simple as increasing the size of the monetary base. He noted: "There is no link between the monetary base and growth in consumer prices. Monetary policy of course has a role, but it's necessary for a wide range of institutions to make efforts to boost competitiveness and growth potential."<sup>2)</sup>

Recent events reinforce the veracity of his comment.

This article explores an argument advanced by Governor Shirakawa in several speeches between 2010 and 2012. Specifically, he argued that Japan's economic performance since 1990 was significantly better than widely believed, and, in fact, comparable to the best of the other G-7 nations<sup>3)</sup>. Recently, a few other analysts (e.g., Krugman, 2012) have concurred, particularly when the analysis includes the U.S. economy's performance since the end of the real-estate price bubble in 2006 and the banking crisis in 2008. To the extent that Shirakawa's argument was correct, the inability of Prime Minister Abe's policies to ignite rapid growth in the Japanese economy is more easily understood: a large gap, to be filled by growth, did not exist.

Japan's rapid growth as it recovered from World War II is well-known: 9.5 percent annual average growth between 1955 (the earliest national income accounts data available from the Cabinet Office) and 1970, and 3.8 percent average growth between 1971 and 1990. Following the 1990 bursting of the property price bubble, between 1991 and 2012 aggregate growth averaged less than 1 percent per annum. Referring to the 1990s, some analysts have described Japan's economic performance as "the lost decade." The first use of the term "lost decade" appears to be Hayashi and Prescott (2002). They argued that slow growth cannot be attributed to a breakdown of the financial system because (1) investment relative to GNP was fairly stable, and (2) corporations large and small were able to finance desired investment despite sharp reductions in the share of investment funded by bank loans: "There is no evidence of profitable investment opportunities not being exploited due to lack of access to capital markets. The problem then and today is a low productivity growth rate." In their subsequent analysis, unfortunately, the growth rate of [total factor] productivity is an exogenous variable determined, at least in part, by unobservable expectations of higher future productivity that never occurred. Other shortcomings in their analysis are well-known, including their lack of adjustment for changes in the quality of labor and variations in capital utilization, their use real GNP rather than real GDP (in GNP, the rate of return on domestic capital is in gross terms, including capital depreciation), and their including Japan's net external assets in the capital stock. All of these factors tend to (improperly) overstate the slowdown in TFP growth; see Kyoji and Ug (2006).

Most studies have attempted to explain Japan's slowdown solely in terms of events within the Japanese economy. Caballero, Hoshi and Kashyap (2008), for example argue that

the actions of Japanese banks to keep "zombie" firms alive between 1991 and 1997 significantly affected productivity; Muto, Sudo and Yoneyama (2013) construct a DSGE model with such a mechanism. The argument is seriously flawed, however, as noted by a number of subsequent authors: bank lending was primarily to firms in real estate, services and related businesses, while the productivity slow down was largely in manufacturing (Kyoji and Ug, 2006). In short, the facts do not match. More recently, Eichengreen et al. (2011, 2015) have noted that the Japanese slowdown, at least after the banking reforms in 1998 and measured by TFP, is not unique to Japan but rather is mirrored in similar slowdowns in numerous other nations. A search for the "cause" of the slowdown must encompass a near worldwide slowdown during the same period<sup>4)</sup>. Eichengreen et al. (2015) conclude that the ultimate responsible factors have yet to be identified.

Others have asserted that Japan's large output gap and deflation are "self-inflicted wounds" caused largely by excessive fear of inflation and premature policy tightening each time the real economy rebounded<sup>5)</sup>. "Deflation" perhaps is the word most often associated with Japan since 1990. Prices, on average, have indeed decreased since 1990—despite real growth, nominal GDP in 2012 was approximately the same as in 1991<sup>6)</sup>. Contrary to the impression conveyed by some analysts, deflation does not *necessarily* generate weak economic performance—in the jargon of economists, deflation is an *endogenous* phenomenon, reflecting movements in aggregate demand and supply. Neoclassical economic models suggest that extended deflation indicates that an economy is operating below potential. For Japan, some analysts suggesting an output gap as large as 7 percent of potential output. Yet, the same neoclassical theory suggests that, absent a continuing series of negative shocks or very sticky wages and prices, a market economy will not remain below potential for long periods of time: in the long run, output and employment converge to potential levels. Posen (2010), for

4) For example, locate dates of TFP slowdown in Japan from 1967 to 1975, as the rebound from World War II matured, and 1990 to 1992, as the land bubble burst. Between the two periods, the opening of financial markets helped propel the economy.

5) E.g., Posen (2010). A recent literature introduces a second channel through which deflation might affect economic activity. Assuming that a central bank's inflation target is credible and widely believed, failure to achieve that target causes private-sector plans to be incorrect and, in turn, employment and output lower than anticipated. The analysis is innovative because modern macroeconomics generally does not allow for the circumstance wherein a central bank consistently fails to achieve its inflation objective (e.g., Ito and Mishkin, 2006). Svensson (2013) studies Sweden, Canada and the United States. Application of Svensson's analysis to Japan is a project in process by the current author: In Japan, expected inflation, as measured by Bank of Japan inflation surveys, has responded to policy announcements (see Figure 2) but actual inflation has continued to run below expectations.

6) As of May 2013, Japan's GDP in 2012 and 1991 was measured, respectively, as ¥475.7 trillion and ¥476.7 trillion. Real GDP, in chained 2005 yen, was ¥519.6 trillion and ¥445.3, a compound annual average growth rate of 0.7 percent.

2) Fujioka (2013).

3) Shirakawa (2010a, 2010b, 2011, 2012).

example, characterizes the pattern of Japanese economic activity since between 1992 and 2002 as "a series of recoveries aborted by policy errors." Echoing Governor Shirakawa, he notes the "under appreciated strength" of Japan's economy after new policies was introduced in 2002-2003. But deflation is more of a concern: "The surprise was the persistent steadiness of limited deflation, even after recovery took place." We further address these long-term patterns in what follows below.

There is an extraordinary literature discussing Japanese economic policies since the early 1980s—a complete bibliography, alone, likely would exceed the length of this article. Early discussions by New Keynesian economists (Krugman and Bernanke, among others) chastised Japanese policy makers for timidity. President Obama echoed such criticism at a February 2009 press conference:

"If you delay acting...you create a negative spiral that becomes more difficult... to get out of. We saw this happen in Japan in the 1990s... and as a consequence they suffered what was called the 'lost decade' where essentially for the entire '90s they did not see any significant economic growth."

Older macroeconomic spoke of liquidity traps, which are periods when interest rates were so low that almost everyone expected them to increase, thereby imposing losses on the holders of assets other than cash. More recent macroeconomic analyses stress the possibility of multiple equilibria in rational expectations models: If pessimism is pervasive and if policy makers are unable to move the economy quickly away from an undesirable equilibrium (e.g., low capital investment, slow growth, and near-zero short-term interest rates), then forward-looking households and firms might accept that equilibrium as the normal state of the economy, creating and executing plans consistent with the bad equilibrium (e.g. Benhabib, Schmitt-Grohe, and Uribe, 2002; Schmitt-Grohe and Uribe, 2010). Because households and firms do learn, however, they might come to realize that the concerted economic policy actions can cause the economy to escape the bad equilibrium and move to a superior one—Schmitt-Grohe and Uribe (2010) suggest that such an escape is more likely to be successful the sooner policy actions begin.

## 2. Background: Events and Monetary Policy during the 1980s and 1990s

The historical path taken by Japan prior to the 1992 recession and its "lost decade" has been widely described<sup>7)</sup>. Growth was rapid prior to the 1980s, but inflation, at times, was uncomfortably high particularly around oil price shocks. Inflation reached 12 percent during 1974. During the 1980s, booms in both equity and land prices followed after the 1982 financial market liberalization. Between 1986 and 1989, interest rates and

inflation were low, banks loaned freely, capital investment was strong, and productivity growth was rapid. Shirakawa (2010a) describes the policy dilemma that faced the strict-inflation-targeting Bank of Japan during the latter half of the 1980s(p.19):

At that time, there was a debate about the necessity of exiting extremely accommodative monetary policy in Japan. In fact, all the macroeconomic indicators except for one showed the necessity of withdrawing monetary easing: high economic growth, tight labor market conditions, rapidly growing bank lending, and bloated asset prices. The outlier indicator, however, was exactly CPI inflation. As a result, low inflation stood against the Bank of Japan, and delayed the policy reversal toward tightening. What happened later on was the expansion and burst of an asset-price and credit bubble and the subsequent financial crisis. Since then, many countries had the same experience that price stability would not automatically ensure macroeconomic stability.

In early 1989, seeking to temper equity and real estate price increases, the Bank started increasing its policy rate. The stock market collapsed at the beginning of 1990, and GDP growth slowed to a 2.5 percent pace (1991 Q4 vs. 1990 Q4). Land price appreciation slowed during 1990 and eventually ended in 1992. The end of land price appreciation saddled Japanese banks with loans collateralized with land and equity. A resumption of normal economic activity was delayed during the 1990s by the long period of time before the nation gained the political will to resolve problems in the banking sector during 1997-1998<sup>8)</sup>.

Empirical studies disagree regarding the appropriateness of Bank of Japan policies during the 1980s and 1990s. Some studies have suggested that the Bank was too slow to raise its target during the late 1980s and too slow to reduce its target during the 1990s. Others have concluded the choices were reasonable. During the late 1980s, interest rates were lower than predicted by Taylor rules in part due to attempts to implement the Louvre Accord and prevent appreciation of the yen. Differences among studies depend, in part, on the assumed ability of households and firms to anticipate changes in equity and land prices. Okina and Shiratsuka (2002, 2003), for example, compare and contrast Taylor-rule models proposed by Bernanke and Gertler (1999, 2001). Bernanke and Gertler (1999, 2001) examined a forward-looking Taylor Rule for Japan that assumed perfect foresight of year-ahead inflation, including changes in asset prices. The rule suggests, relative to the Bank's choices, a higher target rate during 1988-1990, a lower target 1991-1995, a sharply higher target during 1996, and a lower target during 1997-1999. McCallum (2001) examined a (perhaps) more realistic backward-looking Taylor rule where changes in equity and land prices were not foreseen. For the years prior to the onset of significant economic weakness in

8) A useful survey reference is the economy section of the Statistical Handbook of Japan:  
<http://www.stat.go.jp/english/data/handbook/c03cont.htm>

7) A number of these studies are reviewed below.

1992, McCallum's Taylor rule suggests a target rate extremely close to that chosen by the Bank. For the years 1992 and later, McCallum's Taylor rule recommends a lower target during 1992-1995, a sharply higher target during 1996-1997, and a lower target thereafter.

Noting that asset bubbles are difficult to recognize in real time, Okina and Shiratsuka (2002, 2003) conclude that the inclusion of asset prices into policy deliberations would not have materially changed monetary policy decisions, on balance, because the differences are small between the Bank's chosen target rates and those recommended by alternative linear (Taylor-style) policy rules. Approximately the same conclusion is found by Ahearn et al. (2002), who examine a dynamic, forward-looking, partial-adjustment policy that contains forecasts as right-hand side variables<sup>9</sup>.

Recently, Kim and Mizen (2010) have shown that truncation bias (the policy rate cannot be negative), combined with highly non-normal densities, causes a significant upward bias in coefficient estimates of estimated Taylor rules for Japan<sup>10</sup>. The inflation coefficient, in particular, might easily be biased upward by 50 percent or more relative to the true value.

As is explained below, Japan's growth since that resolution has been among the best of all developed economies.

### 3. Banking Paralysis Delayed Growth

An important feature of the Japanese economy beginning in 1982 was financial market deregulation. Low interest rates during the 1980s boosted asset prices and credit expansion. After the 1982 financial liberalization, banks lost many larger customers to direct finance. Banks, as an offset, increased lending to small and medium businesses, and households. Rapidly increasing equity and land values provided collateral. Takeda and Turner (1992) summarize the issue (p. 58):

[Personal sector] debt increased from 68 percent of disposable income at the end of 1985 to 96 percent at the end of 1990. Remarkable was the impact of the land price boom, which increased the value of the personal sector's land holdings from about twice annual GNP in 1980 to more than 3.5 times by 1989. With the value of land rising so steeply, the overall balance-sheet position of the personal sector strengthened enormously, a development that provided much of the stimulus for consumer demand and for housing investment.

The effect on land prices was unreasonable and

unsustainable. By 1989, the aggregate value of the land in Japan exceeded the aggregate value of the land of the United States (Takeda & Turner, 1992). The ratio of aggregate land value to GDP was five times annual GNP in Japan, but only 0.7 times in the United States. Hoshi and Kashyap (1999) cite inept deregulation of the Japanese banking system following 1982's "Big Bang" as the primary cause of the dysfunctional and handicapped condition of the system during the 1990s (p. 196):<sup>11</sup>

We have argued that the disequilibrium created by the gradual and lopsided deregulation in the Japanese financial system [beginning 1982] played an important role in the current banking crisis. The deregulation allowed large bank customers to quickly shift from bank financing to capital-market funding. Meanwhile, the deregulation did relatively little for savers, so banks continued to attract deposits. However, the deregulation of bank powers also was slow and gradual. This meant that if the banks were to keep lending they would need to seek out new customers. The banks did take on many new small customers. They also expanded their real estate lending. Ultimately these bets proved to be unprofitable.

There is substantial evidence that Japanese banks, to avoid further capital impairment following recognition of loan losses, continued lending to less-than-creditworthy extant customers during the 1990s, prior to 1998. By so doing, the banks deprived credit-worthy firms of needed capital and slowed economic activity below its potential pace<sup>12</sup>.

Evidence suggests that both regulators and the public were slow to recognize the extent of the problem. As a result, actions by regulators were met with fierce public criticism that increased the difficulty of subsequent actions. During the 1990s, regulators were forced to resolve failing credit unions, housing finance-oriented bank subsidiaries (*jusen*), major investment banks, and a number of the largest banks in Japan<sup>13</sup>. Early on, a number of small banks failed after the 1991 financial crisis. Their failure did not raise alarm because the firms were regarded as idiosyncratic and isolated. Views changed in late 1994 when two urban credit cooperatives, Tokyo Kyowa and Anzen, failed. The Bank of Japan's assistance to them during resolution was harshly criticized—as a result, resolution activity at insolvent banks was largely on hold during 1995 and 1996. In early 1997, the Bank of Japan assisted new government entities that had been created to resolve failed *jusen*, special-purpose firms focused on housing finance but often associated with banks. Again, the Bank was severely criticized. Criticism, however, did not hold back the financial avalanche.

9) Their rule is similar to Clarida, Gali and Gertler (1998). Other analyses include Clarida et al (1998), Kuttner and Posen (2001), and Oda and Nagahata (2007).

10) Kim and Mizen (2010), of course, are not the first to estimate policy reaction functions for Japan that recognize the role of the zero lower bound. See for example Kamada and Sugo (2006), who also use sign restrictions and Bayesian-based tests for structural shifts.

11) See also Hoshi (2001) for an extended analysis of real estate lending.

12) See for example Ahearn and Shinada (2005), Peek and Rosengren (2005), Caballero, Hoshi and Kashyap (2008), and Hoshi and Kashyap (2010).

13) See for example Nakaso (2001), Hoshi and Kashyap (2010), and Cargill, Hutchison and Ito (2000).

During the first half of 1997, the smallest of the nation's three long-term credit banks (Nippon Credit Bank) failed. New capital was injected in April, ¥211 billion from private sources and ¥80 billion from the Bank of Japan (in the form of a purchase of preferred equity)<sup>14</sup>. Nakaso (2001) describes the onset of crisis (p. 8):

The crisis began in October 1997 when the authorities stepped in to take action against troubled banks in the Kansai area (western Japan). This was followed by successive failures in November of Sanyo Securities, Hokkaido Takushoku, Yamaichi Securities, and Tokuyo City Bank. Major financial institutions collapsed almost on a weekly basis in the month of November 1997. The Bank of Japan played its role in the crisis management as the lender of last resort on an unprecedented basis.

Regulators, unfortunately, were learning on the job, having only limited experience in deregulated financial markets. The concept of counter party risk fell like snow from an avalanche with the sequential failures of Sanyo and Yamaichi Securities, two investment banks outside the federal deposit insurance scheme. The first firm, Sanyo Securities filed on November 3, 1997, for reorganization with the Tokyo District Court. Immediately, the court suspended Sanyo's business, the standard approach for any firm under Japan's insolvency [that is, bankruptcy] law. Sanyo, by virtue of the court order, defaulted on repayment of ¥8.3B. Immediately the money market began to shut down as perceived counter party risk increased among all financial firms. (Nakaso, 2001, p. 9) describes the chaos:

The Bank of Japan injected massive liquidity into the market via purchases of eligible bills, repos and bilateral lending to banks against eligible collateral. At the same time, the Bank absorbed liquidity from foreign banks by drawing bills for sale. Such two-way operation by the Bank was in effect an exercise of the function of market-maker of last resort. The interbank market managed to continue functioning but the outstanding credit supply by the Bank through money market operations reached as much as ¥22T in December 1997.

The central point is that a small default paralyzed the entire interbank market. This was evidence that, when the overall financial system is fragile, a default by one financial institution, whether a bank or a non-bank, could develop into a major disruption.

Regulators learned a valuable lesson. When Yamaichi Securities, a ¥22 trillion financial conglomerate with subsidiaries in the United Kingdom, Germany, the Netherlands and Switzerland, failed three weeks after Sanyo Securities, it was placed on hospice care and wound down by regulators in an orderly fashion (Nakaso, 2001, p. 10):

The direct cause of the collapse was the revelation of Yamaichi's off-the-book liabilities amounting to more than

¥200 billion.

The major difference compared to the Sanyo case was that, while Sanyo was ordered to suspend business immediately under the insolvency regime, Yamaichi was allowed to continue its operations to settle existing contracts. The authorities recognized that default by Yamaichi would have a devastating effect on both domestic and overseas markets given the size and complexity of the firm. Although Yamaichi was a securities house, its problems were recognized to be a potential source of systemic crisis in the increasingly fragile Japanese financial system.

Despite these failures, political will to tackle the insolvent banking system was absent. The failure of the Long-Term Credit Bank (LTCB) was the largest failure of the 1990s, with assets of ¥26 trillion but ¥50 trillion in outstanding derivative contracts. Problems had become known during June 1998 but, at that time, regulators had neither the resources nor authority to resolve the bank—and feared a systemic crisis if the bank was forced into bankruptcy and ceased operations. Nakaso (2001, p.13) notes: "One of the concerns of the Bank of Japan in dealing with the LTCB problem was the latter's derivatives portfolio. Substantial portions of LTCB's derivatives were interest rate and currency swaps. The counter parties were major foreign and domestic players." The bank sustained itself during the summer of 1998, in part, by asset sales, while the Bank of Japan refrained from providing direct support. The Japanese Diet in the summer of 1998 passed legislation (the Financial Reconstruction Law) permitting temporary nationalization. The LTCB was nationalized October 23, 1998. In December, Nippon Credit Bank also was nationalized.

Subsequently, the Financial Reconstruction Law supported resolution of Japan's numerous insolvent banks. See examples of Hoshi and Kashyap (1999, 2010).

#### 4. The Successful Monetary Policy Fight against Stagnation

Contrary to much "conventional wisdom," monetary authorities in Japan actively adopted policies to combat stagnant growth and deflation; we illustrate below the successful outcome for the economy (when of course combined with aggressive fiscal policy). Such policies were particularly aggressive after the Bank of Japan (BOJ) gained independence from the Ministry of Finance in 1998<sup>15</sup>. In September 1998, it reduced its policy target rate (the uncollateralized overnight call rate) to near 0.25 percent, from just below 0.5 percent<sup>16</sup>. In February 1999, it adopted the

15) On independence and the 1997 Bank of Japan act, see Cargill et al (1997, 2000), Ito (2006), or Ito and Mishkin (2006).

There are many surveys of Bank of Japan policy. For the 1980s and 1990s, see for example See for example Yamaguchi (1999), Maeda et al. (2005), Ito (2006), Oda and Ueda (2007), Humpage and Shenk (2008), Shiratsuka (2010), and Anderson, Gascon and Liu (2010).

16) Ito (2006, p. 107), notes that the Bank was "more tentative than decisive" and that Governor Hayami "repeatedly suggested that he

14) In December 1998, the bank failed again and was nationalized.

zero interest rate policy (ZIRP) in which it sought to "encourage the uncollateralized call rate to move as low as possible. "As economic activity strengthened, the ZIRP ended on August 11, 2000, when the policy rate target was increased to 0.25 percent. A number of analysts have concluded that this decision was a mistake born of excessive caution regarding inflation—the year 2000 was one with little growth and a decrease in the prices<sup>17</sup>).

The BOJ continued to push against weak economic activity during early 2001. It reduced its lending (discount) rate to 0.25 percent; began lending unlimited amounts against good collateral; and reduced its policy rate target to 0.10 percent. In March, it moved toward a formal "quantitative easing" (QE) regime. Prior to that date, it had sought to sustain its balance sheet at a level only sufficient to maintain the overnight call rate at zero, but no larger. Now, via open-market security purchases, it pro-actively pushed an increased amount of Bank of Japan deposits onto bank balance sheets<sup>18</sup>). The Bank pledged that it would maintain the overnight call rate at zero "until the consumer price index (excluding perishables, on a nationwide basis) registers stably zero percent or an increase year-on-year."

Figure 1 traces changes in the Bank of Japan's balance sheet as it pursued the QE policy. Holdings of long-term Japanese government debt (JGBs) more than doubled, from ¥27.3 trillion at year-end 2000 to ¥63.1 trillion at year-end 2005 (peaking at ¥65.4 at year-end 2004, and bills purchased increased from ¥29 trillion year-end 2000 to ¥44.1 trillion at year-end 2005<sup>19</sup>). Holdings of short-term government securities, however, decreased from ¥37.5 trillion at year-end 1999 to ¥26.9 trillion at year-end 2001. The monetary base increased by more than half, from ¥74.4 at year-end 2000 to ¥115.6 at year-end 2005<sup>20</sup>). Declaring success, the Bank on March 9, 2006, changed from the QE policy to an interest-rate targeting policy. Initially, the policy rate target was set at zero percent; on July 14, 2006, it was increased to 0.25 percent, and on February 21, 2007, to 0.5 percent<sup>21</sup>).

regarded deflation as not necessarily a bad thing."

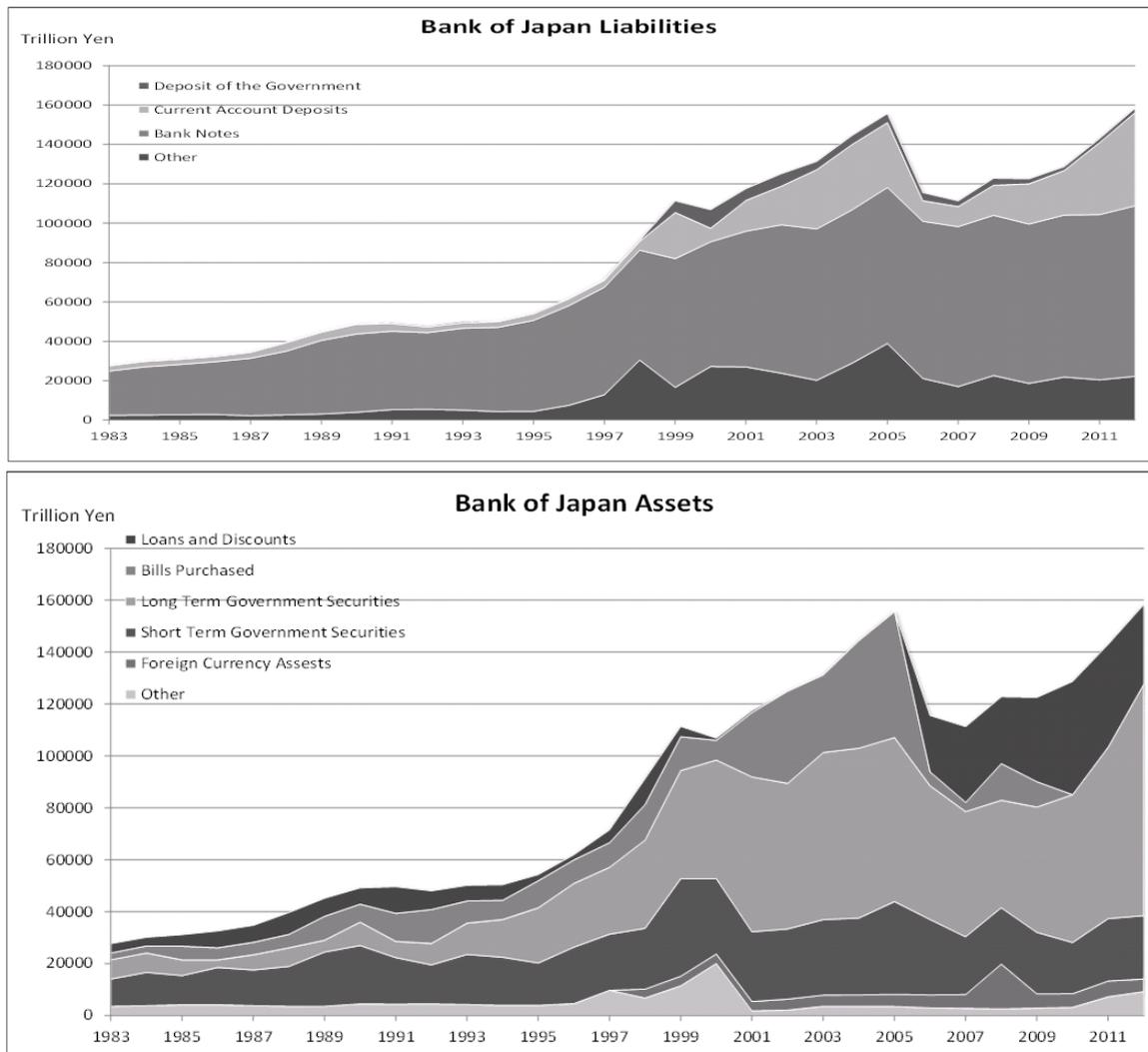
- 17) Ito (2006) writes, after discussing both his Taylor Rule experiments and those of Kamada (2005), that: "In sum, there is little question that the decision to terminate ZIRP was a mistake ex post, since the economy turned into recession only two months later, and deflation got much worse in the following months."
- 18) Ito (2006) notes that required reserve balances were approximately ¥4 trillion at the time and the target for excess was approximately ¥1 trillion, resulting in a total reserve balance (current account) target of ¥5 trillion. The target level of current account balances subsequently was increased several times, reaching ¥35 trillion in January/February 2004.
- 19) Bills purchased data from May 1989 to March 2001 include commercial paper purchased.
- 20) BOJ holdings of all Japanese government securities increased from ¥562.9 year-end 2000 to ¥989.2 year-end 2005. Source: Bank of Japan, workbook boj13sta.xls, worksheets 17 and 30. Downloaded from BOJ web site May 7, 2013.
- 21) Ito (2006, pp. 121-124), surveys the debate within the policy committee prior to the March 2006 announcement. In the event,

Empirical studies have supported the efficacy of the Bank's actions, concluding that the policies reduced longer-term rates, flattened the yield curve, and had a positive, but small, effect on economic growth (e.g., Ugai, 2007)<sup>22</sup>). Inflation expectations moved upward, as measured by survey data collected by the Bank, shown in Figure 2. To the extent that ends to deflation required an increase in inflation expectations, policy appeared to be working: The proportion of households expecting deflation fell steadily during the QE program's life, to near-zero in mid-2006. Indeed, by mid-2008, nearly 9 of 10 surveyed households anticipated that prices on average would increase during the coming year.

International events overtook the Bank's policy—and the economic recovery—in 2008<sup>23</sup>). All the gains would quickly be lost. The Bank reduced its policy rate target to 0.3 percent on October 31, and to 0.1 percent on December 19. Although the Bank also initiated or expanded a number of credit easing programs to provide funds to the market, the data displayed Figure 1 confirm that the size of these actions was modest at best<sup>24</sup>).

these voices did delay termination from 2005 to early 2006.

- 22) It is interesting to note that the Bank of Japan did not adopt inflation targeting (strict or flexible) during this period. Ito (2006, p. 118), notes that although policy committee members were committed to avoiding situations both inflation and deflation, they refused to set a numerical target for a specific price index. By so doing, he argues, the committee conveyed the impression of being timid in trying unconventional policies, and hence their policies were less effective than they might have been. The Bank's March 19, 2001, announcement of quantitative easing did specify an index, the CPI less perishables (fresh food). In October 2003, the Bank issued a clarification that a necessary condition for exit from quantitative easing was that the forecast for this index, by the majority of board members, had to be at zero or above. Ito (2006, p. 122) notes that: "The Bank of Japan rejects the interpretation that the March 2001 condition was inflation targeting or that the October 2003 clarification was a form of inflation targeting... important ingredients were still missing... it is far-fetched to interpret these conditions as constituting inflation targeting."
- 23) Almost all central banks also are concerned with financial stability and the health of the nation's payment system, regardless of whether there is an explicit remit. Kobayashi, Spiegel and Yamori (2006) argue that the QE program also strengthened Japanese banks, with the weaker banks benefiting the most. Bernanke, Reinhart and Sack (2004) fail to reject the hypothesis that the QE policy reduced long-term interest rates and likely boosted economic activity.
- 24) During 2009, approximately ¥5.6 trillion in commercial paper was purchased outright and under repo, approximately ¥400 billion in corporate bonds were purchased, and approximately ¥6 trillion in "special funds" was provided to banks as advances against corporate debt collateral. The Bank's actions are well-summarized in "The Bank of Japan's Policy Measures in the Current Financial Crisis" (<http://www.boj.or.jp/en/mopo/outline/cfc.htm/>). See also Shiratsuka's (2010) discussion of all Bank of Japan quantitative easing policies since 2001 in relation to those of other central banks and the post-September 2008 financial crisis.



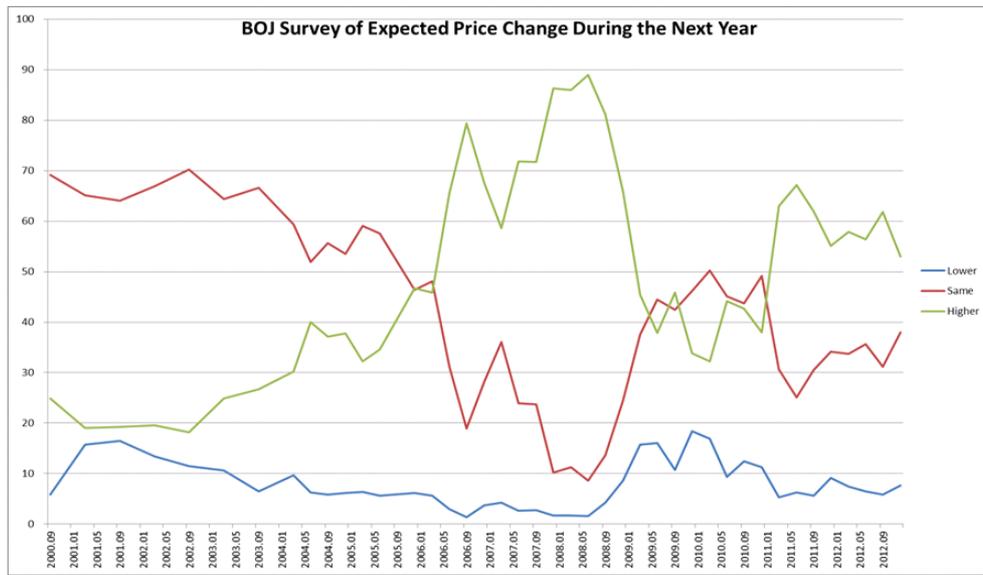
<Figure 1> Bank of Japan Balance Sheet

In November 2009, responding to a year-over-year decrease in the CPI, the Bank declared that the economy had officially entered a period of deflation. On December 1, 2009, it announced a new liquidity supply initiative to furnish up to ¥10 trillion in 3-month loans to banks, at the 0.1 percent policy-rate target level, against a variety of collateral, including JGBs, corporate bonds, and commercial paper. The BOJ said the program should "further enhance easy monetary conditions" and "encourage a further decline in longer term interest rates." Again, however, the data displayed in Figure 1 confirm that the size was modest at best. Deflation continued, with a pace of -1 percent per year as of April 2010. The percentage of households surveyed by the Bank that anticipated prices during the next year to remain the same or decrease reached 70 percent in early 2010 (Figure 2).

On October 5, 2010, the Bank announced its "Comprehensive Monetary Easing" scheme, with three components: a near-zero policy rate target of 0.1 percent; a commitment to maintain the

policy rate target near zero until the Bank projects price stability in the medium- to long-run; and establishment of an asset purchase program "as a temporary measure." By setting a policy rate target greater than zero, the Bank hoped to signal that it was not returning to QE. Seeking to influence expectations, the Bank announced an explicit exit criterion: that all members of the Policy Board regarded medium- to long-run price stability as a year-over-year CPI increase of no more than 2 percent, and most members' "midpoints" were "around" 1 percent.

Was this new scheme well designed? After all, it did share two characteristics with previous less-than-fully-successful ones. First, it was explicitly forward-looking, contingent on inflation forecasts. Second, the scheme was explicitly temporary, with increases in the Bank's balance sheet to be promptly reversed when the perceived risk of deflation abates. To the extent that the Bank sought an increase in inflation and inflation expectations, such cautious statements likely signaled to the public



Source: Bank of Japan

<Figure 2> Bank of Japan Survey of Inflation Expectations

that it was not fully committed to the project. The Bank very visibly reinforced the temporary nature of the program by the recording the program's assets separately from the Bank's other assets<sup>25</sup>).

Assessing the success of the Comprehensive Monetary Easing scheme is difficult due to other events during 2011—including the March Great East Japan earthquake, slowing world-wide economic growth, and a rising yen exchange rate. Nevertheless, using an event-study technique, Lam (2011) describes the scheme as innovative because it included risky private-sector assets among those purchased and powerful because it significantly moved asset prices and risk premia. He notes, however, that (as of his writing) the scheme appeared not to have moved inflation or inflation expectations<sup>26</sup>).

On October 30, 2012, the Bank's Policy Board adopted changes to make the Comprehensive Scheme more aggressive:

25) Hence, some care must be exercised in citing the size of the Bank's asset holdings. Compare, for example, sheets 17-19 and sheet 33 in the Excel workbook *bojst13a.xls*, available at the Bank of Japan Statistics data compilation web page: [http://www.boj.or.jp/en/statistics/pub/boj\\_st/index.htm/](http://www.boj.or.jp/en/statistics/pub/boj_st/index.htm/).

26) In empirical studies, the impacts of Bank of Japan policies on the economy often are difficult to uncover. Oda and Ueda (2007) cannot reject the hypothesis that increases in banks' current account balances at the Bank reduced long-term yields on JGBs by small amounts, but do reject the hypothesis that Bank purchases of JGBs affected yields. Berkmen (2012), using SVAR techniques, judges that the combined effects of policy between 1998 and 2010 likely modestly boosted economic activity but had little impact on inflation. He also suggests that policy actions adopted after 2006, relative to those adopted earlier, might have more strongly affected the economy due to a stronger banking sector.

the rate target of 0.1 percent was changed to an interval of 0.0 to 0.1 percent; the total amount of assets to be purchased was increased to ¥91 trillion, from ¥80 trillion, to be attained by year-end 2013; and the "Stimulating Bank Lending Facility" was initiated. The facility is to provide funds to banks in unlimited amounts against acceptable collateral, at the uncollateralized overnight call rate at the time of the loan, up to the increases in the banks' net lending to the nonfinancial private sector (either yen or foreign-currency denominated). Loan duration, at the request of the borrower, may be 1, 2 or 3 years; loans may be rolled over up to 4 years

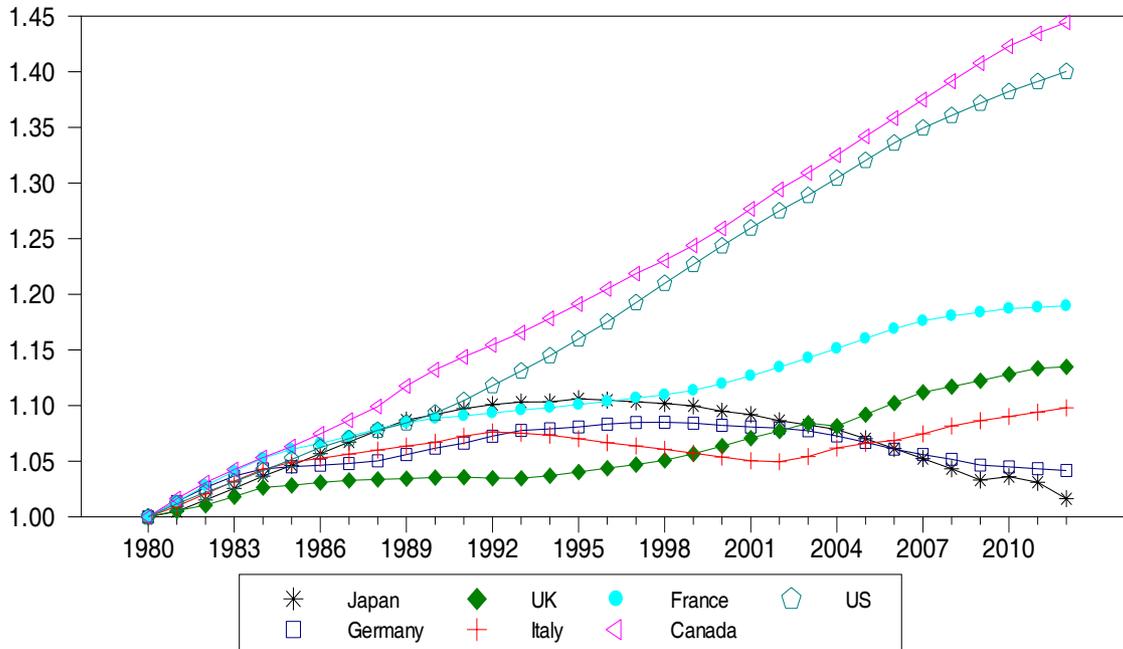
Implementation of the program has sharply expanded the Bank's balance sheet (Figure 1): total assets increased 23 percent, to ¥158.4 trillion at year-end 2012 from ¥128.7 trillion year-end 2010, and current account deposits increased 90 percent, to ¥42.7 trillion year-end 2012 from ¥22.7 trillion year-end 2010. Holdings of long-term government securities (JGBs) increased to ¥89.2 trillion at year-end 2012 from ¥56.9 year-end 2010, and holdings of short-term government securities increased to ¥24.5 trillion year-end 2012 from ¥19.8 year-end 2010. As of year-end 2012, the Bank had purchased via the program ¥67.1 trillion in assets, including ¥24.1 JGBs, ¥9.6 Treasury bills, and ¥5.0 trillion commercial paper and corporate bonds. As of year-end 2012, ¥24.1 trillion had been loaned to banks via the stimulating lending facility.

## 5. Japan and the G7: Long-Term Trends 1981-2012

This section compares Japanese economic performance during the three decades 1982 (the year of financial liberalization)

## Working Age Population

age 15-64, normalized 1980=1.00



Source: OECD; Haver Analytics; author's projection

<Figure 3> Working Age (15-64) Population in G7 Countries, 1981-2012

and 2012. Long-run trends are compared via a series of charts for real GDP; for real GDP minus government expenditure; and for real GDP per working-age person. The adjustment for government expenditures is motivated by the massive deficit-financed spending, large enough to move GDP even without consideration of multiplier effects, if any. The adjustment for the size of the working-age population is motivated by the unusual aging of the Japanese population, and reflects the assertion by Governor Shirakawa that long-term Japanese growth appears more robust, relative to other G7 nations, after allowing for the aging population.

Table 1 compares Japan's aggregate real GDP growth to other G7 countries. During the 1980s, Japan's growth was the most rapid among the G7 (row 1), exceeding the United States and the U.K. by more than 1 percentage point per year. For the decade of the 1990s (row), Japan's growth was the slowest among the G7—although during<sup>27)</sup>. During the decade of the 2000s, average annual growth lagged Germany by one-quarter of a percentage point.

<Table 1> Real GDP Growth, 1981-2012

(average annual change, compound annual rate, percent)

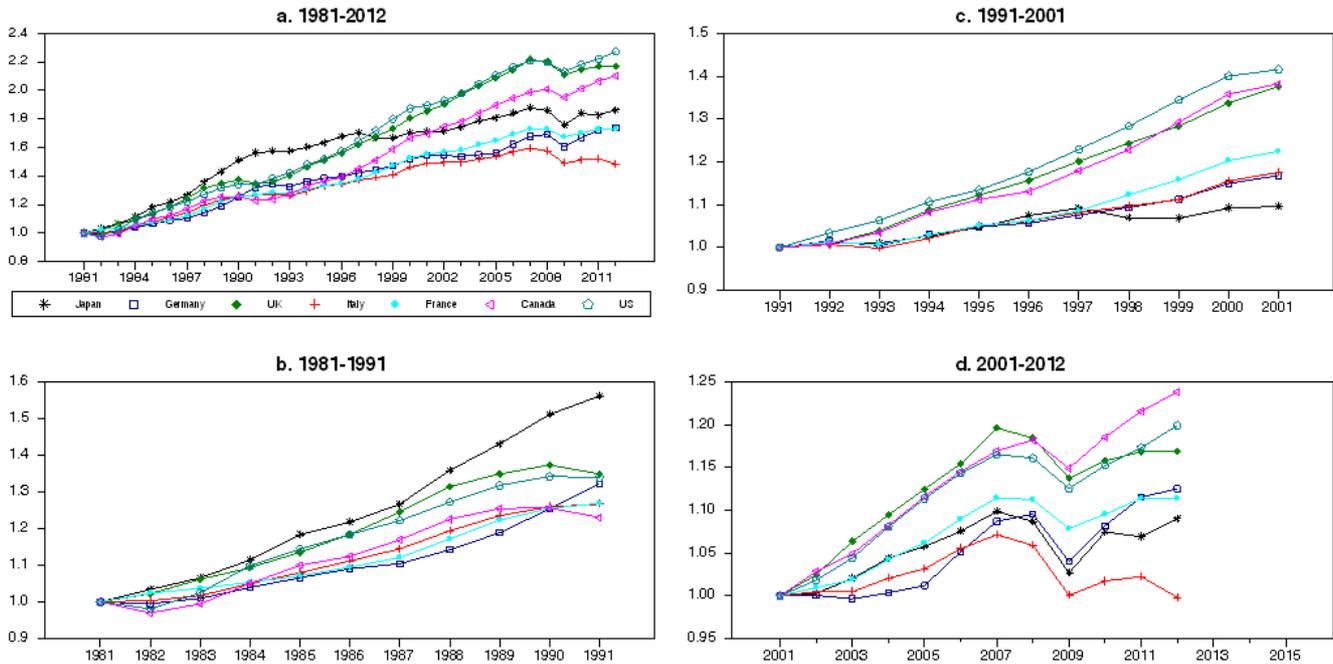
	Canada	France	Germany	Italy	Japan	United Kingdom	United States
1981 – 1990	2.57	2.55	2.54	2.59	4.69	3.59	3.32
1991 – 2000	3.46	2.07	1.56	1.62	0.98	3.28	3.81
2001 – 2012	1.96	0.98	1.08	-0.02	0.79	1.43	1.66
1981 – 2012	2.43	1.78	1.80	1.28	2.03	2.53	2.68

Figure extends Table 1 by displaying the year-by-year detail:

- For the complete period 1982-2012 (panel A), Japan's aggregate real GDP growth is solidly in the center of the G7, less than the U.S., the U.K., and Canada but more than Germany, France, and Italy.
- Growth during the 1980s (panel B), Japan's cumulative nearly 60 percent growth exceeded all other G7 countries; an acceleration after 1982's financial reform is apparent.
- During the 1990s (panel C), Japan's growth parallels

27) Germany was reunified in 1990.

# Real GDP



<Figure 4> Real GDP, index, normalized to unity in first period shown

France, Italy and Germany (after reunification) prior to the 1998 Japanese banking crisis; Japan ends the decade as the clear laggard.

- During the early years of the 2000s (panel D), Japan, Germany and Italy followed approximately the same path; it is clear that the worldwide financial crisis of 2008-9 strongly affected Japan, perhaps more than other G7 countries.

Table 2 compares real GDP growth among the G7 countries per working age person (ages 15-64). Scaled by working-age population, Japan's average annual growth rate remains the most rapid during the 1980s and slowest during the decade of the 1990s. During the 2000s, however, Japan is tied for the most rapid growth with Germany and the U.K. Figure 3 shows working age population for the G7. Highly disparate across countries, Japan's working age population peaked in 1995.

Figure 5 the analysis of Table 2. Adjusted for the size of the working-age population (ages 14-64), Japan's long-term growth 1982-2012 (panel A) is only slightly less than the leader among the G7, the UK. The data shown in panel B tempers Japan's stellar 1980s growth: Japan's growth was matched through 1985 by the United States and through 1989 by the U.K. During the 1990s, the rebound that followed the banking resolution is evident; between 2001 and 2012, Japan emerges as the growth leader.

<Table 2> Real GDP Growth per working-age person, 1981-2012 (average annual change, compound annual rate, percent)

	Canada	France	Germany	Italy	Japan	United Kingdom	United States
1981 – 1990	1.34	1.75	2.02	1.97	3.73	3.25	2.44
1991 – 2000	2.36	1.78	1.39	1.82	1.01	2.98	2.46
2001 – 2012	0.82	0.49	1.42	-0.42	1.45	0.89	0.69
1981 – 2012	1.27	1.26	1.71	1.01	1.99	2.13	1.61

In summary: Japan's real GDP growth, when adjusted for the size of the working age population: (i) during the 1980s far outstripped other G7 nations, (ii) during the 1990s was slower than but not greatly distant from Europe (Germany, France), and (iii) during the 2000s was tied with the leaders among the G7. A "lost" decade? Hardly!

Finally, Table 3 and Figure 6 display inflation—and the dreaded "deflation"—for the G7 countries since 1979. During all three decades—the 1980s, 1990s, and 2000s—Japan's inflation rate was the lowest among the G7. During the third decade, it was negative. Figure provides important detail. In panel A, Germany and Japan have the same price level path during the 1980s, with minor differences that are economically unimportant. In panel B, Japan, France and Canada begin the

decade along the same path but the slope of Japan's path decreases with recession in 1992. Smoothing through Japan's slight boost in 1998, the price level is approximately unchanged for the remainder of the decade. The most dramatic is panel C: renormalized to begin together in 1999, Japan's price level path is consistently negative through 2005 and, smoothing through 2008, the price level is lower in 2011 than in 2005: a decade of deflation.

**<Table 3>** Increase in the Headline CPI, 1981-2012  
(average annual change, compound annual rate, percent)

	Canada	France	Germany	Italy	Japan	United Kingdom	United States
1981 – 1990	5.23	5.55	2.20	8.76	1.73	5.98	4.11
1991 – 2000	1.59	1.55	2.24	3.44	0.56	2.74	2.64
2001 – 2012	2.01	1.78	1.60	2.25	-0.20	3.11	2.39
1981 – 2012	2.94	2.83	2.05	4.59	0.67	3.87	3.03

Note that the data display a conspicuous lack of correlation between medium-term economic growth and modest changes in the price level, up or down, for the G7 countries. During the decade of the 1980s, Japan's growth far exceeded that of other G7 countries including Germany, which was the laggard — yet, the decadal increase in its price level was the lowest among the G7, and nearly identical to Germany. During the 1990s, Japan's real GDP displayed modest growth early, slowed in 1992, and then decreased — during the same decade, Japan's price level increased modestly early in the decade, slowed in 1992, and remained approximately unchanged for the remainder of the decade: among the G7<sup>28</sup>). During the 2000s, apparently extraordinary events happened: when adjusted for the falling size of its working age population, Japan's real growth rate is equal to the most rapid in the G7 despite its price level decreasing over the decade.

## 6. Japan and the G7: A Comparison across Financial Crisis

Beyond comparisons of longer-run growth, Shirakawa (2012) suggests a second metric for assessing the efficacy of its policies: the performance of the economy, relative to other G7 economies, before and after two recent negative macroeconomic shocks: (1) the end of property price appreciation, which oc-

curred during 1990 in Japan and during 2006 in the United States (2006); and (2) the 1998 banking crisis in Japan and the 2008 financial crisis in the United States<sup>29</sup>).

*The End of Property Price Appreciation:* Property price appreciation ended in 1990 in Japan and in 2006 in the United States. Panel A of Table 4 compares average annual real GDP growth during the six years "before" (rows 1 and 2, 1984-1990 for Japan, 2000-2006 for the other G7 countries) and the five years "after" (rows 3 and 4, 1990-1995 for Japan, 2007-2010 for the other G7) the ends of property price appreciation. During the "before" period, Japan's average annual growth rate of 5.2 percent was approximately double that of the United States, U.K., and Canada. During the "after" period, Japan's growth rate again exceeded the other six members of the G7 — and was approximately five times that of the United States. While activity slowed in all the G7 after the shock, Japan — when judged by the growth rate of real GDP — performed relatively better after 1990 than the other G7 performed after 2006.

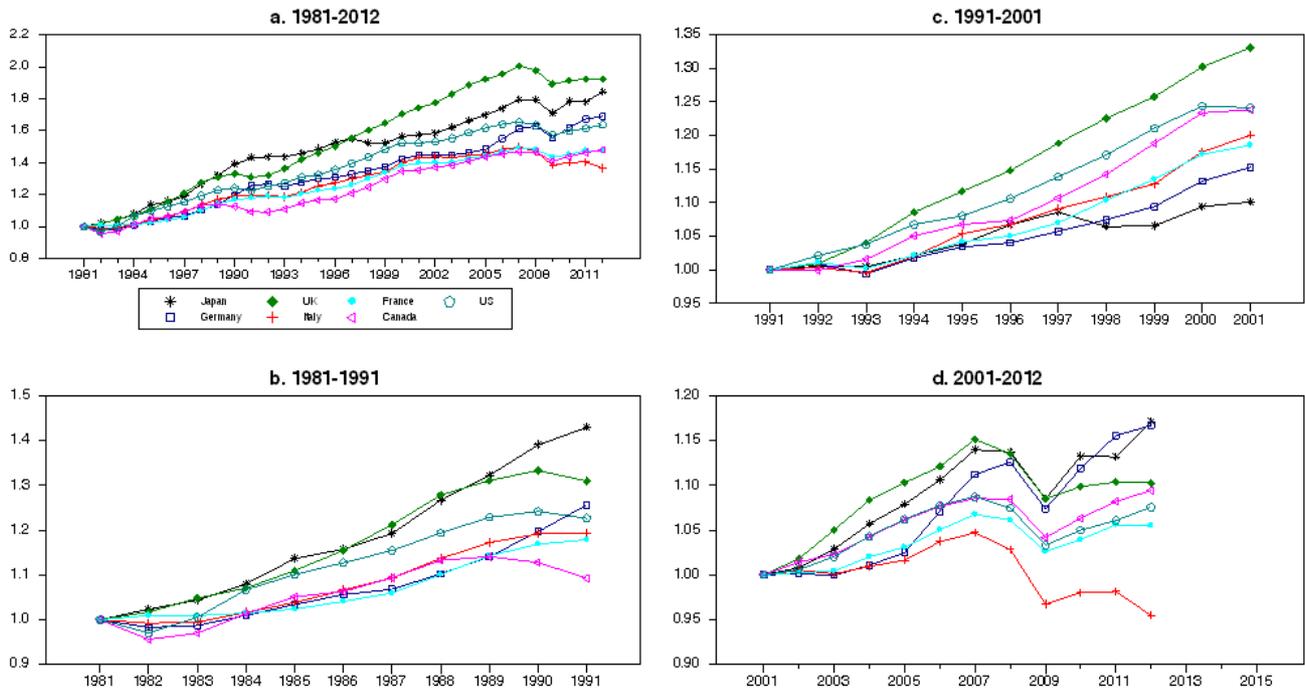
**<Table 4>** Real GDP Growth in the G7, Before and After Financial Crises (SAAR, percent)

A. "Before" and "After" the End of U.S. (2006) and Japanese (1990) Property Price Bubbles							
	US.	U.K.	France	Italy	Germany	Canada	Japan
"Before" 2001-2006	2.4	2.8	1.7	1.1	1.1	2.6	--
1985-1990	--	--	--	--	--	--	5.2
"After" 2007-2010	0.25	-0.02	0.2	-1.03	0.6	0.8	--
1990-1995	--	--	--	--	--	--	1.3
B. "Before" and "After" the U.S. (2008) and Japanese (1998) Banking Crises							
	U.S.	U.K.	France	Italy	Germany	Canada	Japan
"Before" 2001-2008	2.0	2.4	1.6	0.8	1.4	2.3	--
1990-1997	--	--	--	--	--	--	2.1
"After" 2009-2011	-0.3	-1.2	-0.6	-2.1	-0.9	0.2	--
1998-2000	--	--	--	--	--	--	-1.1

28) Some econometric studies seek to adjust the CPI at the dates when the 3 percent VAT was introduced (1989Q2) and when it was increased to a 5 percent rate (1997Q2). Ahearn et al. (2002, p. 45), for example, subtract 1.3 percent and 1.6 percent, respectively, from the inflation rates in these quarters. Data shown in Figure 4 are not so adjusted.

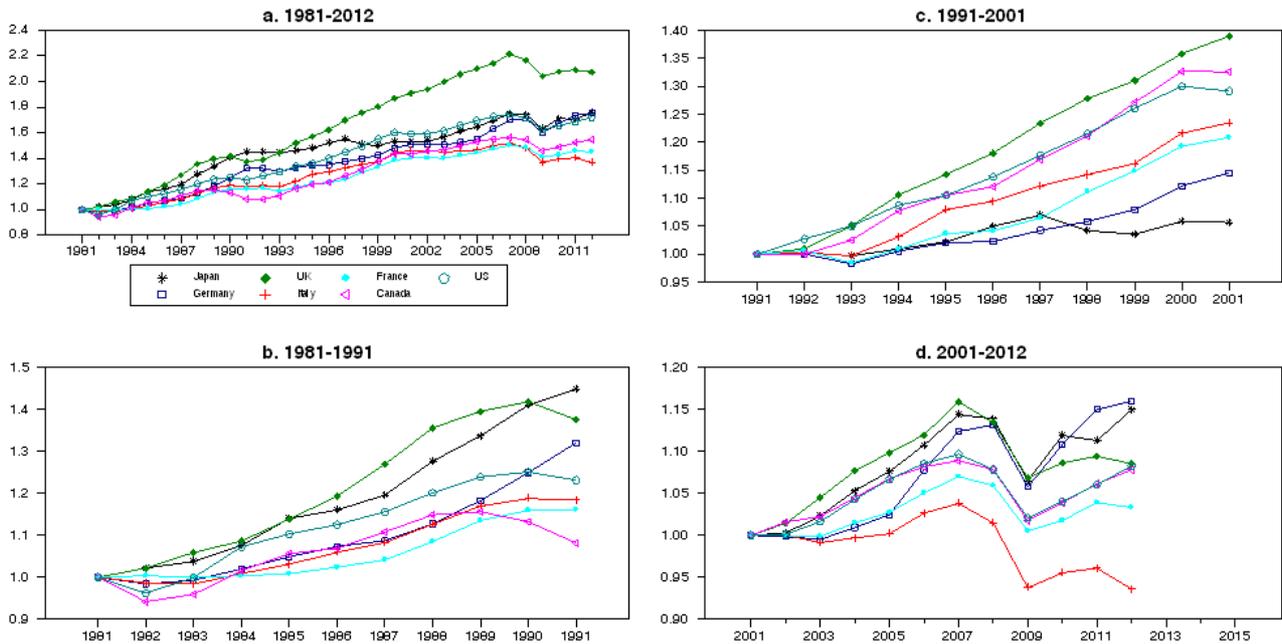
29) Macroeconomists might wince at labeling these two events as shocks because the events almost surely are not purely exogenous. A more satisfactory analysis would separate the exogenous and endogenous components, and study the impulse response functions under alternative policies. This task is left for future research. See also the next section of the article.

## Real GDP per working-age person



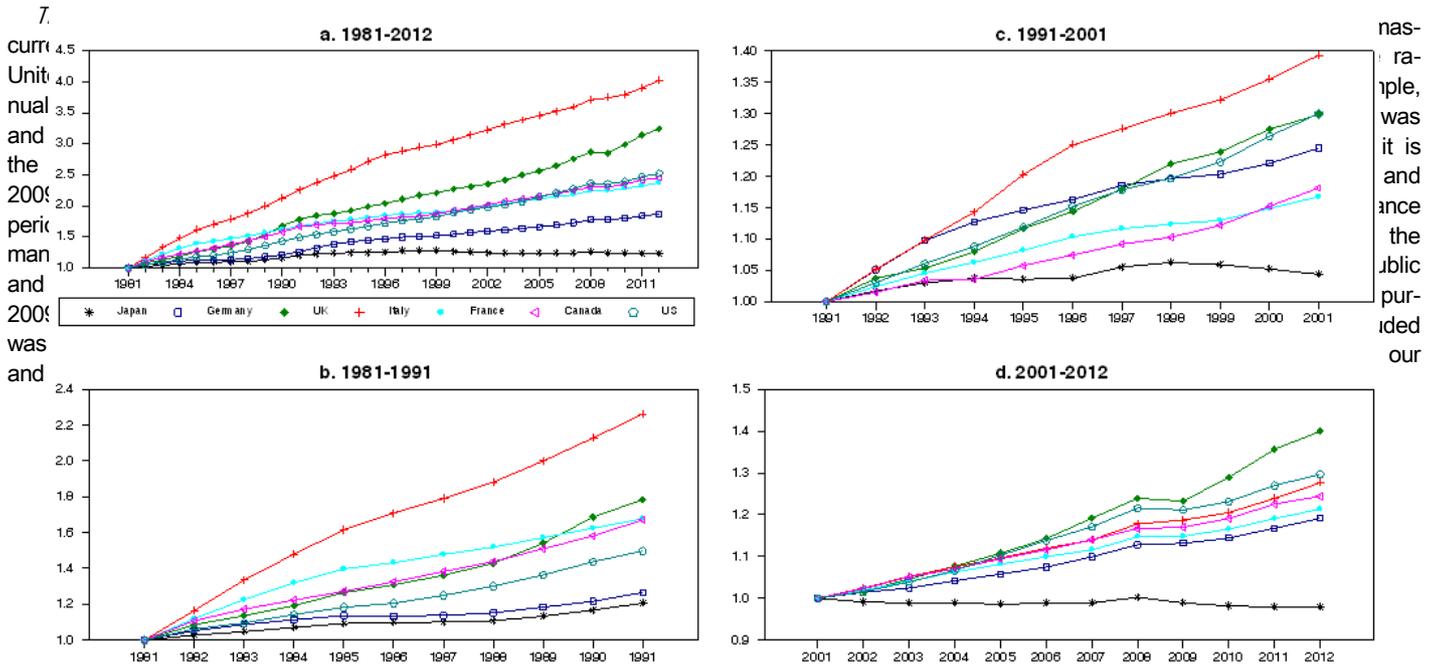
<Figure 5> Real GDP per working-age person, index, normalized to unity in first period shown

## Real GDP less government consumption, per working age person



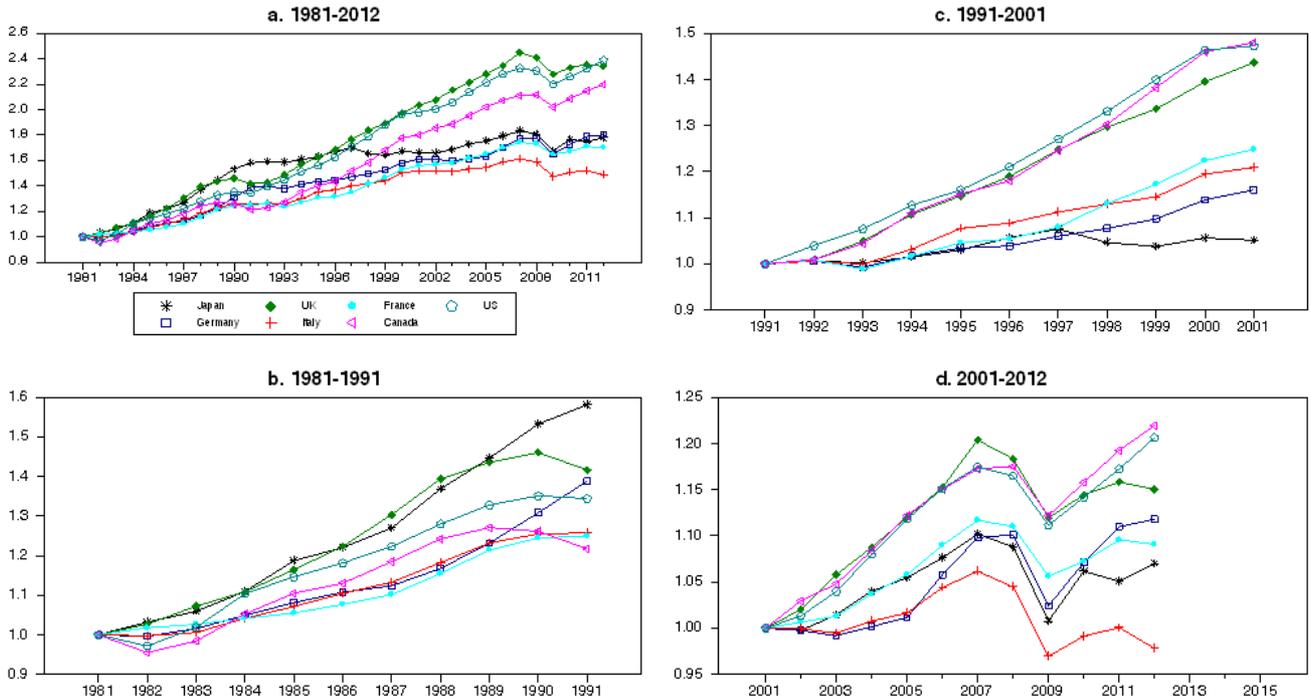
<Figure 8> Real GDP less government consumption, per working age person, index

## Consumer Price Index



<Figure 6> Price Level, G7 Countries (headline CPI), index

## Real GDP less government consumption



<Figure 7> Real GDP less government, index

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Figures 7 and 8 examine the robustness of the analysis in Figures 4 and 5 by removing government expenditure from real GDP. It is incorrect (and naïve) to make such an adjustment by simple subtraction of government purchases—real GDP is an index number and correct index number methods must be used. A new chained index-number measure of real output is constructed from the published components of real GDP omitting government. For aggregate real output (figures 7 and 4) the effect is small: Long-term growth during 1982-2012 remains near the center of the G7, albeit slightly less than Germany. Japan's relative performance during the 1980s and 1990s is largely unchanged. For aggregate output per working age person, the effect is larger (figures 5 and 8): for 1982-2012, Japan is indistinguishable from the US and Germany, albeit all three significantly are less than the UK.

## 8. Thoughts on Japan's Success Relative to the Its Critics

Arguing that Japan's economic performance has been "quite good" since 1998 runs counter to the accepted wisdom in much of the relevant literature. Here, for the convenience of the reader, we review a number of these—now incorrect—arguments.

It is a widely accepted opinion that Japanese policymakers during the early 1990s missed an opportunity to temper the downturn. Krugman (1998) noted that Bank of Japan announcements of expansionary monetary policy were accompanied with assurances that the Bank's commitment to price stability had not weakened and that the policies would be promptly removed at economic recovery. Modern macroeconomic models (that is, forward-looking models, in contrast to the "timeless" IS-LM model) suggested that such pairs of messages will induce little increase in economic activity. He urged policymakers to recognize the "upside-down" nature of the theory of optimal monetary when the output gap is large and the policy rate is near zero. When the policy rate is not near zero and stimulus is desired, it is important that the public accepts the policymaker's assurance that the stimulus is temporary and that the long-run commitment to price stability has not weakened—if it does not, models predict that inflation will jump when the expansive policy is announced and the desired stimulation of economic activity will dissipate into inflation<sup>30</sup>). But the policy rate is pressed against the zero lower bound, an increase in expected inflation is desired so as to reduce expected real interest rates. Only the policymaker's commitment to sustain the expansionary policy permanently (or at least for a "considerable period") will increase expected future inflation and, in turn, reduce real interest rates. Secondly, with respect to the Japanese banking sector,

Krugman(1998) argued that "banking woes" had not been an important part of the downturn nor were they a significant drag on economic recovery, a point later sustained by the more complete analyses of Hayashi & Prescott (2002), Okina & Shiratsuka (2002, 2003) and Nakaso's (2001) elegant personal history<sup>31</sup>).

In a well-cited presentation at the 1999 American Economic Association meeting, Bernanke (2000) broadly criticized Japanese policy:

"I tend to agree with the conventional wisdom that attributes much of Japan's current dilemma to exceptionally poor monetary policy-making over the past fifteen years (see Bernanke and Gertler, 1999, for a formal econometric analysis). Among the more important monetary-policy mistakes were 1) the failure to tighten policy during 1987-89, despite evidence of growing inflationary pressures, a failure that contributed to the development of the "bubble economy" 2) the apparent attempt to "prick" the stock market bubble in 1989-91, which helped to induce an asset-price crash; and 3) the failure to ease adequately during the 1991-94 period, as asset prices, the banking system, and the economy declined."

Speaking in Japan in 2003, Bernanke (2003) criticized policymakers for committing to withdraw monetary stimulus as soon as measured inflation rises to zero. Drawing on Eggertsson and Woodford's (2003) New Keynesian analysis, he that commitments to price stability sharply attenuates monetary policy's expansionary impact when short-term nominal rates are near zero and there is a significant output gap. Negative real rates are called for and that requires positive anticipated inflation. He proposes that monetary policy (credibly) commit to a price-level path, not an inflation path, because shortfalls of the price level below the accepted path automatically generate expectations of the more rapid inflation necessary to rejoin the path. Commitment to low, steady inflation must be placed on hold until the output gap is closed and short-term nominal rates are sustainably positive.

Reforms that liberalized financial and the banking sector were central to Japan's economic boom and malaise. Takeda and Turner (1992) provide a highly-detailed, authoritative discussion of the 1980s; see also Borio, Kennedy and Prowse (1994), Hoshi (2001), and Hoshi and Kashyup (2010). Prior to World War II, larger Japanese firms tended to obtain funding directly in money and capital markets. During wartime and post-war reconstruction, the government encouraged a shift to bank borrowing because bank lending was more readily controlled by the government. In the early 1980s, financial liberalization allowed large firms to shift borrowing from banks to markets, both domestic and foreign<sup>32</sup>). Nonfinancial firms invested heavily in cor-

30) Ironically, this same conclusion arises in (non-Keynesian) models of quantitative easing. Goodfriend and King (1981) develop this result in a rational-expectations model. Berentsen and Waller (2011) develop the same result in a dynamic general equilibrium model. Anderson, Gascon and Liu (2010) apply the result to study large-scale stimulus programs since 1990 in a dozen countries.

31) Okina and Shiratsuka (2002, 2003) note that banks, after the economic slowdown in 1991-1992, continued to lend strongly to their traditionally favored customers, including construction companies, the real estate sector and various non-bank financial intermediaries, while loans to manufacturing decreased. See, for example, Figures 10 and 14 in Okina and Shiratsuka (2002).

32) Takeda and Turner (1992) note that sometimes it is difficult to distinguish domestic and foreign funding because Japanese

porate equities, and banks turned to real estate lending. Subsequent increases in equity values and land prices furnished new collateral for further borrowing, a process that Takeda and Turner (1992) labeled "cumulative causation," Bernanke, Gertler and Gilchrist labeled the "financial accelerator" and the "balance sheet channel" (Bernanke, Gertler, & Gilchrist, 1999), and references therein) and Kiyotaki and Moore (1997) studied as the "credit cycle." Land prices peaked in 1990. Recession followed in 1992. Cecchetti (2008) examines cross-country to assess the size of macroeconomic shocks that follow asset price booms<sup>33</sup>).

In an analysis that apparently coined the term "lost decade," Hayashi and Prescott (2002) asserted that the cause of the 1990s malaise was a large exogenous, unobservable, negative productivity shock<sup>34</sup>). They rejected the alternative hypothesis of a banking shock because banking data suggested, to them, little role for financial factors of type cited by Japanese researchers (e.g., Mori, Shiratsuka, & Taguchi, 2001).

Kuttner and Posen (2001) labeled Japan during the 1990s "... the longest period of below-potential growth for any developed economy since World War II." More recently, while ascribing a different label to the initial shock, Posen (2010) reiterates his opinion of a decade earlier, arguing that in Japan 1992 to 2002 was "a decade of unprecedented stagnation" which "was largely avoidable once the initial shock from the bubble busting had passed" and "is best seen as a series of recoveries aborted by policy errors—a sawtooth, not a flat line."<sup>35</sup>) Posen discards theories that Japan's problems were due to massive over-investment due to excessive monetary ease, or to huge bubbles in real estate, or to excessive balance sheet leverage by firms and households. Rather, he argues that "macroeconomic policy mistakes" cut off recovery each time it started:

"By common ascent [across a wide ideological spectrum], Bank of Japan policy was too late and too timid in loosening monetary conditions and too reluctant to take up unconventional measures when the zero lower bound on nominal interest rates was reached." (Posen, 2010, page 8)

A review of the extensive literatures regarding Japan's "lost

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government banking regulations provided incentives for Japanese banks to lend to Japanese firms by raising funds and booking loans offshore.

33) Research on the macroeconomic role of asset prices must confront the fact that asset prices are endogenous variables within general equilibrium models. As such, it is questionable whether they are able to provide information useful to policymakers beyond any other variable, consistent with the general identification and control condition that the number of monitored variables should equal the number of shocks. Bernanke and Gertler (1999) note that some degree of "exogeneity" must be inferred, some departure from rationality, for asset prices to fuel irrationally large booms and busts. See Cecchetti et al. (2000) for an extended analysis of the Bernanke and Gertler model.

34) See also for Kehoe and Prescott's (2007) explanation of the causes of great depressions.

35) Leigh (2010) appears to disagree, attributing disappointing economic performance to "adverse economic shocks rather than extraordinary policy errors." See also the extensive references in Posen (2010).

decade" is beyond the scope of this paper. Significant other commentaries include Svensson (2001) and Saxonhouse and Stern (2002).

## 9. Conclusions

The election of Prime Minister Shinzo Abe kindled great hope in Japan that years of deflation and "weak" economic growth would soon end. Such hopes were grounded, however, in two facts, now questioned: (1) that a large output gap existed in Japan, and (2) "deflation" had seriously harmed economic growth, albeit through a process not clearly articulated. A careful analysis of Japan prior to 2013 suggests that both these assumptions—and the hope they kindled—were either exaggerated or, perhaps, false.

Eight years after the end of the American property appreciation bubble in 2006 and four years after the onset of the worst international financial crisis since the Great Depression, world economies have yet to return to robust, sustained economic growth. Central bank policy rates remain near zero—and policymakers, including the Federal Open Market Committee—promise that they will remain low for the foreseeable future. So, what lessons can be gleaned from the Japanese experience? Did the Japanese choose policy settings wisely? And, if they did, are slow rebounds inevitable after a major financial crisis?

Bank of Japan Governor Shirakawa, more forcefully than others, examined this issue in a number of speeches between 2010 and 2012. He contrasted the Japanese experience during the 1990s and early 2000s to the experience of other G7 nations before and after the 2006 end of property price appreciation in the United States and the 2008 international financial crisis. Such a comparison suggests two conclusions. First, Japan's growth both before and after the 1990 end of its property price "bubble" was superior to growth of other G7 nations before and after the 2006 end of the U.S. property price bubble. Second, Japan's growth performance before and after its 1998 banking crisis closely resembles the growth experience of the other G7 countries before and after the 2008 banking crisis in the United States. A review of extant academic research supports the conclusion that the BOJ's policy choices during the late 1980s and 1990s, judged in terms of a linear (Taylor) policy rule concept, were appropriately drawn from historical experience. If Japan's chosen policies during 1992-2006 were largely appropriate, and if other nations today are following similar policies, then perhaps the economic performance of Japan during the last 20 years is an upper bound on the economic performance that these nations can expect. To quote Krugman: "I wish we could become Japan."

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