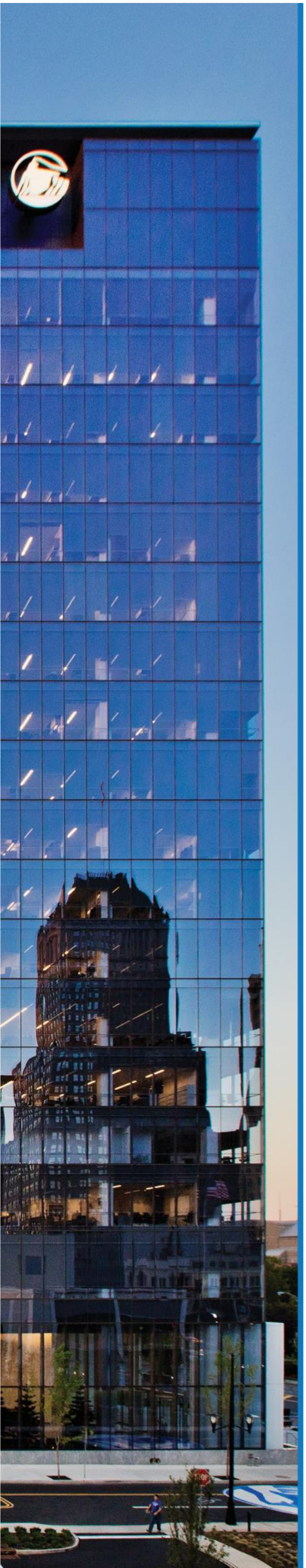

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December 2017

Following in Japan's Footsteps: Have the U.S. and Euro Area Seen a "Lost Decade"?

When the Japanese financial bubble burst in the early 1990s, the resulting developments in Japan looked idiosyncratic and unusual to analysts elsewhere in the world. This financial shock—which corresponded with a turning point in some key demographic indicators—was followed by slower Japanese economic activity and the onset of disinflationary and, eventually, deflationary pressures.

Many foreign analysts and policymakers confidently offered guidance to the Japanese authorities during the 1990s. This advice took a range of different forms, including the need for more stimulative monetary and fiscal policies, strong actions to "clean up the banking system" (including allowing uncompetitive institutions to fail), and reforms to address zombie firms and inefficiencies in the non-traded goods sector.

Now, more than 25 years after the bursting of the bubble, the Japanese experience looks much less idiosyncratic. The United States and Europe, in the aftermath of the global financial crisis, seem to be experiencing many of the same headwinds that Japan did two decades ago. This doesn't mean that economic and financial performance in these economies will necessarily track that of Japan in the years ahead. But Japan's experience offers a useful benchmark and point of comparison. One important advantage for the current generation of policymakers in the United States and Europe is the opportunity to learn from Japan's journey. Indeed, U.S. policymakers often looked to the Japanese experience in formulating responses during the global financial crisis.

In this essay, we briefly recount the experience of Japan in the decade after the bursting of the bubble. We then compare that experience with the performance of the United States and the euro area over the past decade. Our conclusion is that there are marked similarities, for example, in the behavior of demographics and the trajectory of per capita real GDP (where Japan actually outperformed the post-crisis United States and euro area). But there are also differences. Most important, neither the United States nor the euro area seems poised to fall into chronic deflation, given their vigorous monetary policy responses. Moreover, a central feature of Japan's economic challenges has been their extreme persistence, now lasting nearly three decades. The long-term trajectories of the United States and the euro area, in contrast, provide some reasons for optimism.

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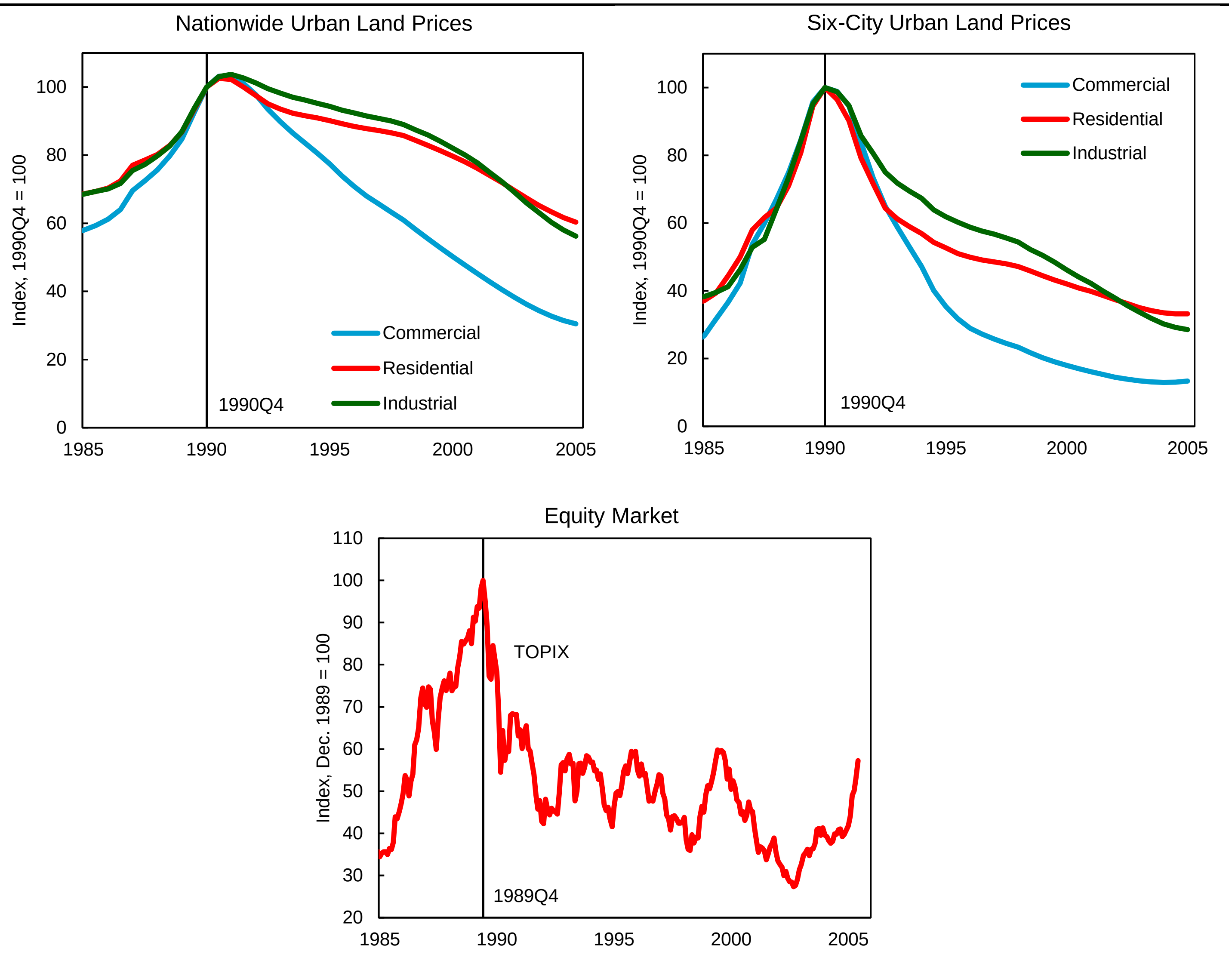
JAPAN'S "LOST DECADE": A BRIEF SUMMARY

The unwinding of Japan's financial bubble in the early 1990s had far-reaching effects on the Japanese economy, kicking off what is sometimes referred to as a "lost decade." The first figure provides some metrics regarding this shock. As shown in the top-left panel, nationwide land prices of all types surged through the late 1980s and peaked in the early 1990s. But the bubble subsequently burst, sending land prices down sharply through the 1990s. The impact in the large cities was even more severe, as shown in the right panel. In particular, commercial real estate prices in these cities tripled through the late 1980s but then plunged back below their mid-1980s starting point.

The drop of the Japanese stock market (lower panel) was equally dramatic. Through the late 1980s, Japanese equity prices soared, peaking at the end of 1989. Equity prices then fell sharply through the first six months of 1990 and continued to move down over the next several years.

FIGURE 1: JAPANESE LAND AND EQUITY PRICES



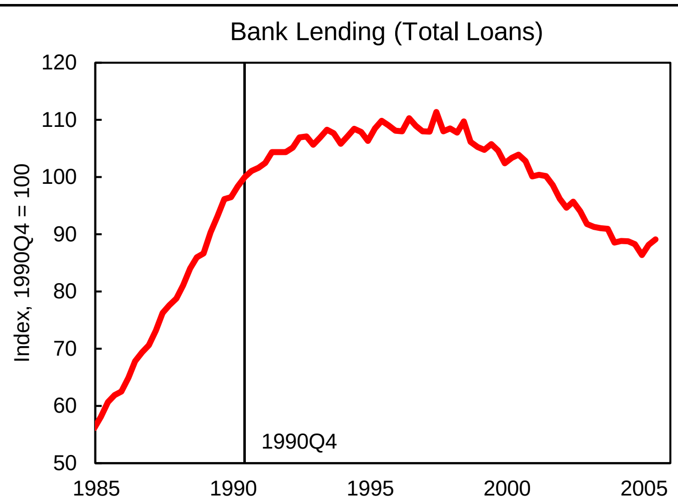
Source: Japan Real Estate Research Institute, Nikkei, Haver Analytics (Haver). Data sourced as of December 2017.

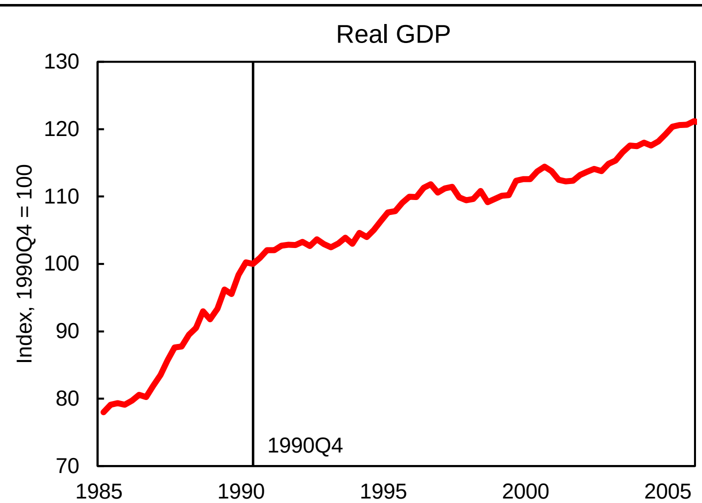
The joint effect of these price shocks was significant. They left a mass of bad loans on bank balance sheets. In addition, corporate balance sheets were deeply impaired, kicking off what Richard Koo has termed a "balance sheet" recession. Affected firms sought to pay down debts and restore their balance sheets to health. In tandem with this deleveraging effort, corporate spending on investment and other goods slowed.[1]

Even so, the imprint of the bubble bursting played out gradually in Japan's macro-economy. As shown in Figure 2, bank lending slowly flattened out, with the level of credit in the economy then frozen until late in the decade. Only beginning late in the 1990s did the authorities take vigorous actions to write off bad loans, consolidate the banking system, and implement other measures necessary to clean up the banking system and revive credit. One silver lining for Japan was that as a result of the extended delay in taking these actions the Japanese banking system was relatively unexposed to the global financial crisis, as intensive banking sector reform was completed just before the crisis erupted.

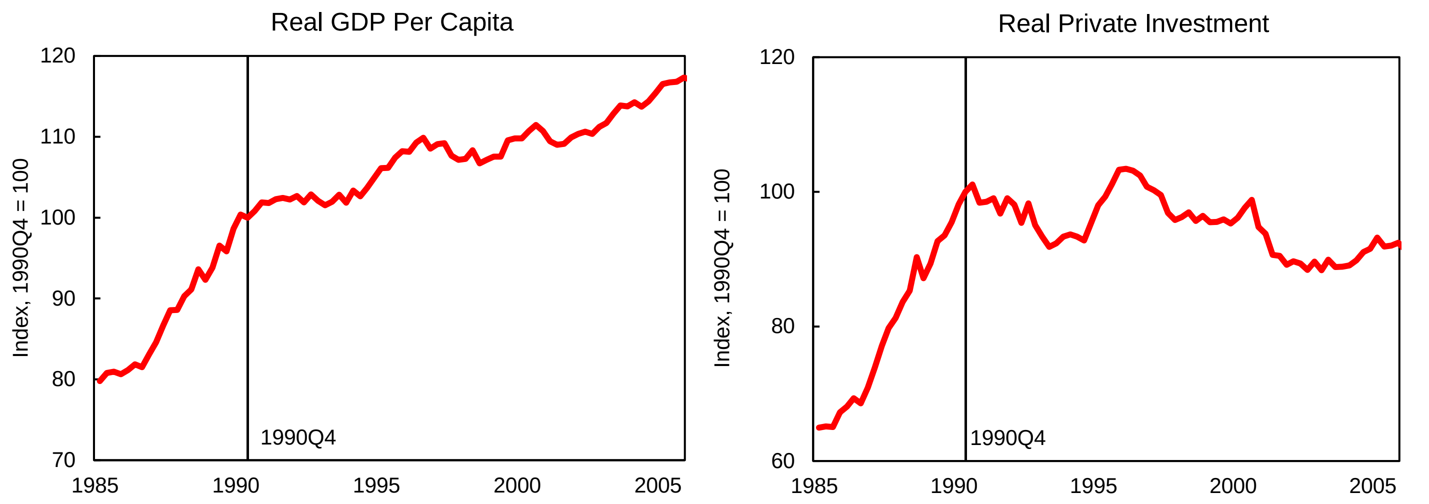
Similarly, as shown in the next panels, the expansion of real GDP and real GDP per capita softened distinctly as the asset bubble burst, but the economy did not contract. With the corporate sector in deleveraging mode, real private investment ceased its sharp rise and commenced a period of extended, albeit gradual, decline.

FIGURE 2: JAPANESE ECONOMIC INDICATORS





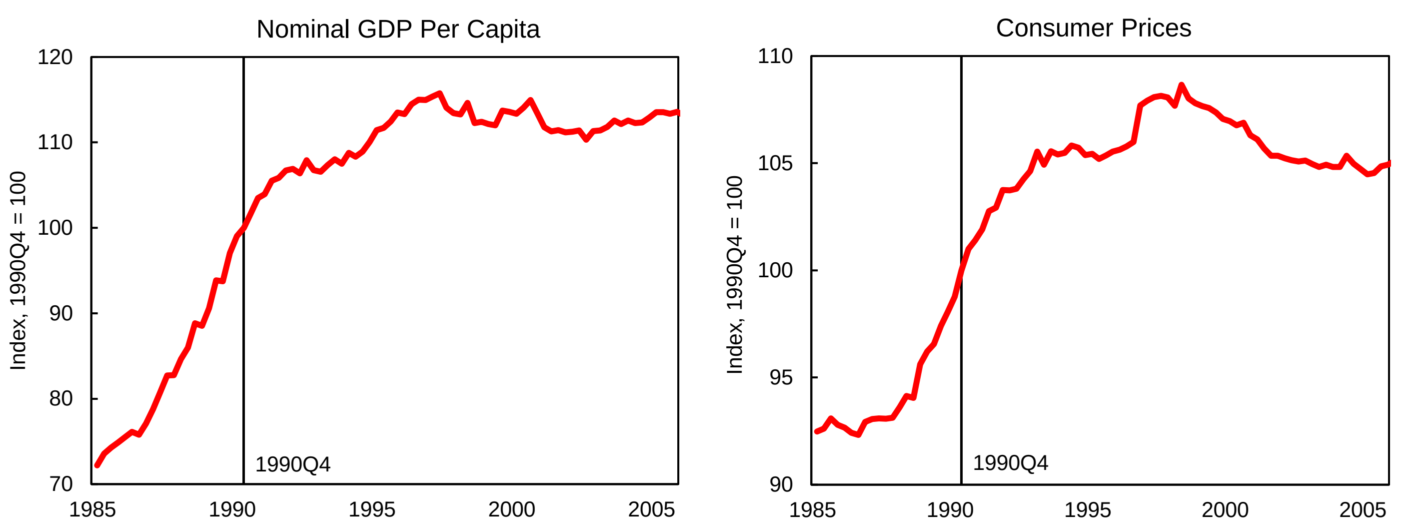
[1] *For more details see Richard Koo, The Holy Grail of Macroeconomics: Lessons from Japan's Great Recession, John Wiley & Sons, 2008.*



Source: Cabinet Office of Japan, Japanese Ministry of Internal Affairs and Communication, OECD, Haver. Data sourced as of December 2017.

As highlighted in Figure 3, nominal variables—such as nominal GDP per capita and consumer prices—inflected as the bubble burst, but continued to rise through most of the decade. Only toward the end of the 1990s, when the economy faced a second round of shocks from the Asian crisis and the collapse of several large domestic financial institutions, did nominal GDP and consumer prices begin to decline. This second set of shocks clearly compounded and amplified many of the contractionary impulses from the bursting of the bubble, which were still slowly working their way through the economy.

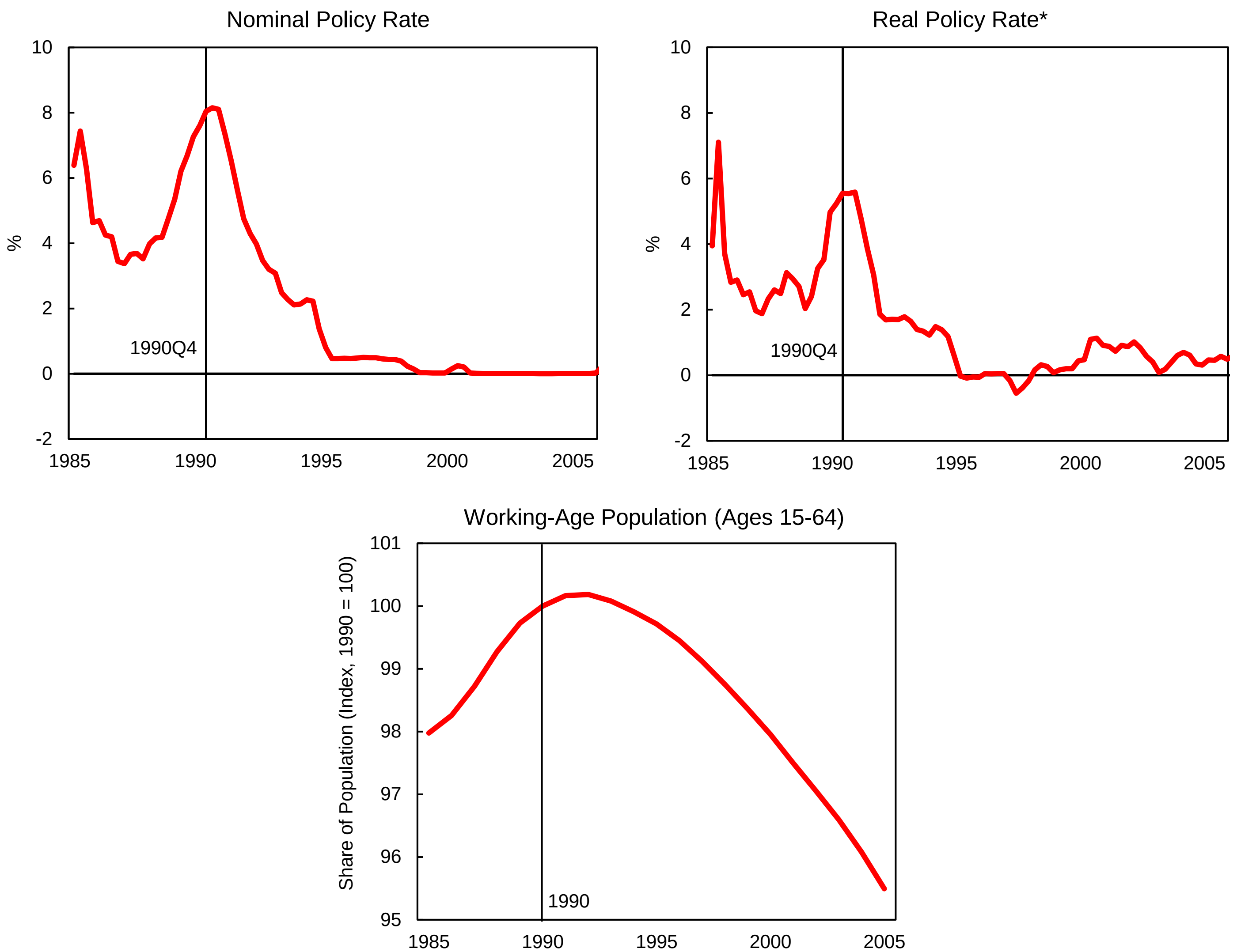
FIGURE 3: JAPANESE NOMINAL INDICATORS



Source: Cabinet Office of Japan, Japanese Ministry of Internal Affairs and Communication, Haver. Data sourced as of December 2017.

The Bank of Japan (BoJ) cut policy rates significantly in the aftermath of the bubble bursting (Figure 4), but it took many years before the policy rate reached the zero lower bound. Some observers have hypothesized that had the authorities responded more aggressively in the early years after the bubble burst—both with monetary policy tools and steps to clean up the banking system and revive credit—such action would have prevented inflation expectations from sagging. This, in turn, might have unlocked stronger economic performance over the subsequent decades.[2] Indeed, this perception of Japan's experience was an influential factor guiding U.S. policy responses as the global financial crisis unfolded.

FIGURE 4: JAPANESE MONETARY POLICY AND DEMOGRAPHICS



*Source: Association of Call & Discount Companies, Nikkei, United Nations, Haver. *Nominal rate minus trailing 12-month core inflation. Data sourced as of December 2017.*

That said, it strains credulity that Japan's entrenched challenges over the past decades are largely or fundamentally the result of the BoJ not being quick enough on the trigger in the early 1990s. Other factors must also be in play. Moreover, as highlighted by the figures above, the BoJ felt that its responses were vigorous and were well aligned with the observed performance of inflation, real GDP growth, and other key measures of economic activity through the first half of the 1990s.[3] It was only over time that the deeper problems in the economy became apparent.

The bursting of Japan's asset bubble was a major balance sheet shock, but it did not immediately translate into a crisis for the real economy. It was an inflection point—but not an outright turning point for many real variables. Part of this outcome no doubt

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[2] *A seminal articulation of this view is found in Alan Ahearne, et al., "Preventing Deflation: Lessons from Japan's Experience in the 1990s," International Finance Discussion Papers, No. 729, Board of Governors of the Federal Reserve System, June 2002.*
[3] *Senior BoJ officials emphasized during the decade that policy rates had been reduced to historically low levels.*

reflects the economy's exceptional momentum as the bubble burst and, as a result, spending behavior adjusted only gradually. And regardless of whether the extent and timing of monetary stimulus fell short of the optimal policy prescription, the economy undoubtedly did benefit from the BoJ's sizable rate cuts.

Finally, as seen in the lower panel of Figure 4, Japanese demographics shifted in the early 1990s. After rising through the 1980s, the share of the working-age population (ages 15-64) peaked and moved sharply downward thereafter. Examining all the channels through which this development affected Japan's economic performance is beyond the scope of this essay, but there is little doubt that deteriorating demographics have been a sustained headwind for the economy. This is an issue that we will return to below.

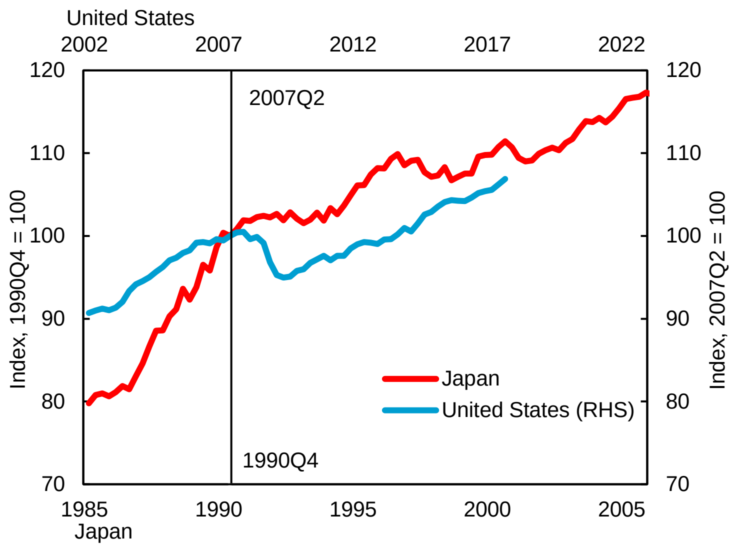
Our bottom line is that a set of complex factors was at work in Japan during the 1990s. First, the bursting of the asset bubble, along with the Asian crisis later in the decade, were sizable financial shocks for the Japanese economy. Second, the policy of forbearance vis-à-vis the banking system meant that the banks were unable to support economic growth until well into the next decade. This, coupled with the corporate sector's retrenchment, prolonged the adjustment. Third, against this backdrop, monetary policy eased, but not sufficiently to support inflation and inflation expectations, given the other headwinds that the economy faced. Fourth, in parallel with all of this, Japan was seeing a marked deterioration in its demographics. Any one or two of these factors would have likely been manageable. But together, these four factors proved overwhelming. Even so, the Japanese economy showed resilience in the initial years after the bubble burst, and the combined effects of these shocks only took hold slowly over time.

HOW DOES RECENT U.S. PERFORMANCE COMPARE?

How does U.S. performance over the past decade compare to that of Japan after its bubble burst? We start this section with a remarkable observation. As shown in the next figure, U.S. real GDP per capita contracted through the financial crisis, but has since trended upward. Even so, the U.S. recovery over the past decade still meaningfully trails that of Japan at the end of its "lost decade."

This result highlights the slowing U.S. activity over the past ten years. But equally, it underscores that viewed through the prism of the years since the global financial crisis, Japan's "lost decade" seems much less "lost" and, rather, the vanguard of what other advanced economies have experienced more recently. As such, an important question emerges: "What happens to U.S. performance going forward—i.e. to what extent is Japan's ongoing experience a harbinger of the road ahead?" The evidence bearing on this issue is mixed but, on balance, provides reasons for cautious optimism regarding the future path of the U.S. economy.

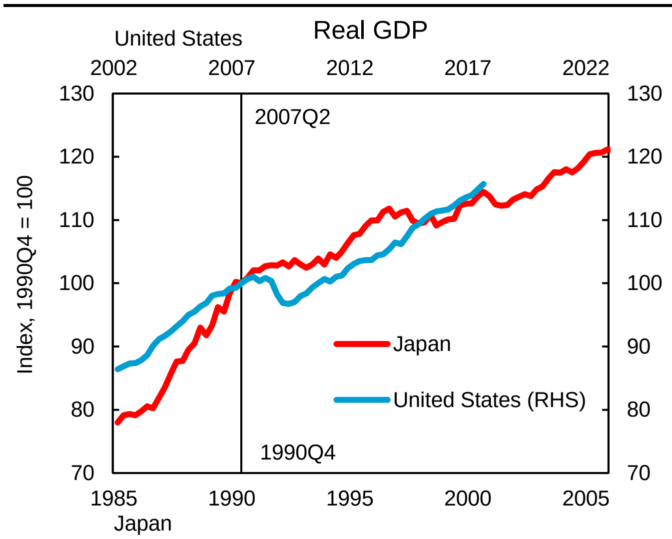
FIGURE 5: REAL GDP PER CAPITA

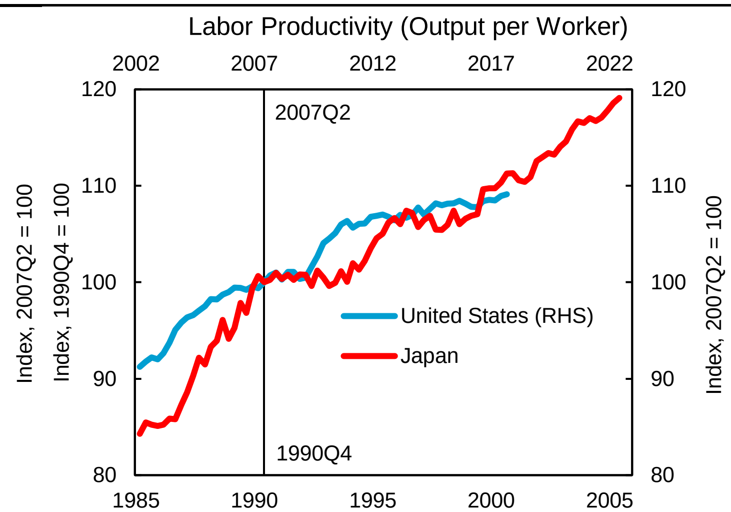


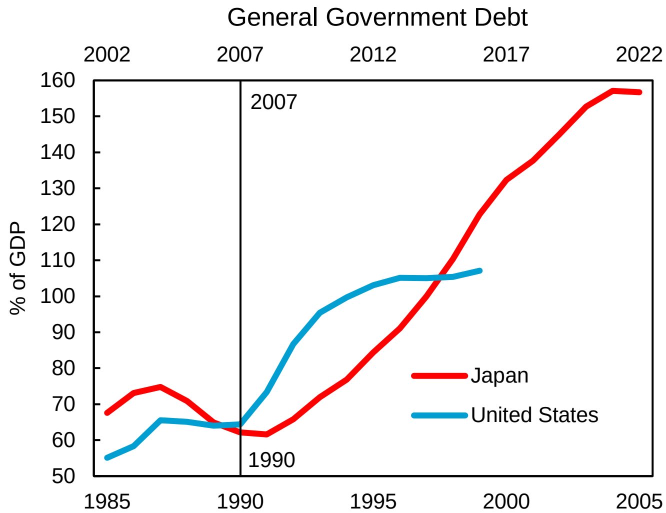
Source: BEA, Census, Cabinet Office of Japan, Japanese Ministry of Internal Affairs and Communication, Have. Data sourced as of December 2017. r

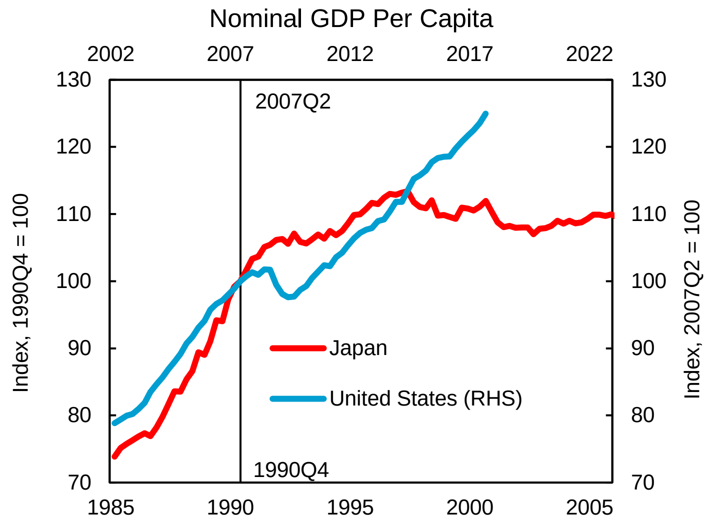
The remainder of this section compares the U.S. and Japanese experiences in more detail. As displayed on the top-left panel of Figure 6, in absolute terms, the level of U.S. real GDP is now running a bit above Japan's a decade after the bubble burst, reflecting comparatively rapid U.S. population growth. As shown in the next panel, both countries saw periods of flatness in labor productivity (output per hour), punctuated by step increases. For the United States, the increase occurred a few years after the onset of the financial crisis, as the level of GDP held up relatively well compared with plunging levels of employment. In Japan, labor productivity increased in the middle of the decade as the economy achieved a period of stronger performance and seemed to be shaking off its malaise. On balance, Japanese labor productivity after the bubble slightly outpaced that of the United States.

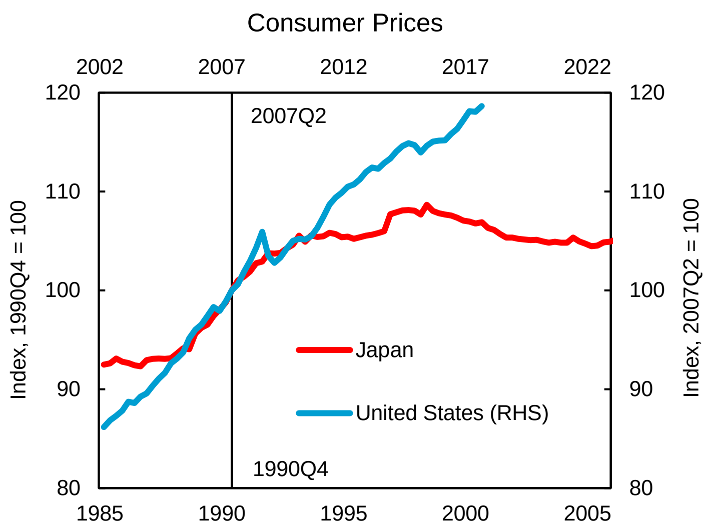
FIGURE 6: COMPARING THE TWO EPISODES











Source: Bureau of Economic Analysis, Bureau of Labor Statistics, Cabinet Office of Japan, Japanese Ministry of Internal Affairs and Communication, Organization for Economic Co-operation and Development, Haver. Data sourced as of December 2017.

The performance of general government debt offers a cautionary tale. U.S. debt levels are now high, hovering just under 110 percent of GDP. The good news for U.S. policymakers, however, is that this ratio has leveled off in recent years. In contrast, Japanese debt was increasing sharply at the end of the 1990s as the government attempted to counter deflationary pressures with fiscal stimulus.[4] Even so, Japanese debt at that time was only a bit above current U.S. levels. Hence, the bad news for policymakers in the United States is that a recessionary shock, or policy mistake, would move the trajectory of the debt even closer to Japan's trajectory. With deficits in entitlement programs slated to rise sharply, the United States must get its fiscal policy right.[5] We see this as a looming risk for the U.S. economy over the medium to long term.

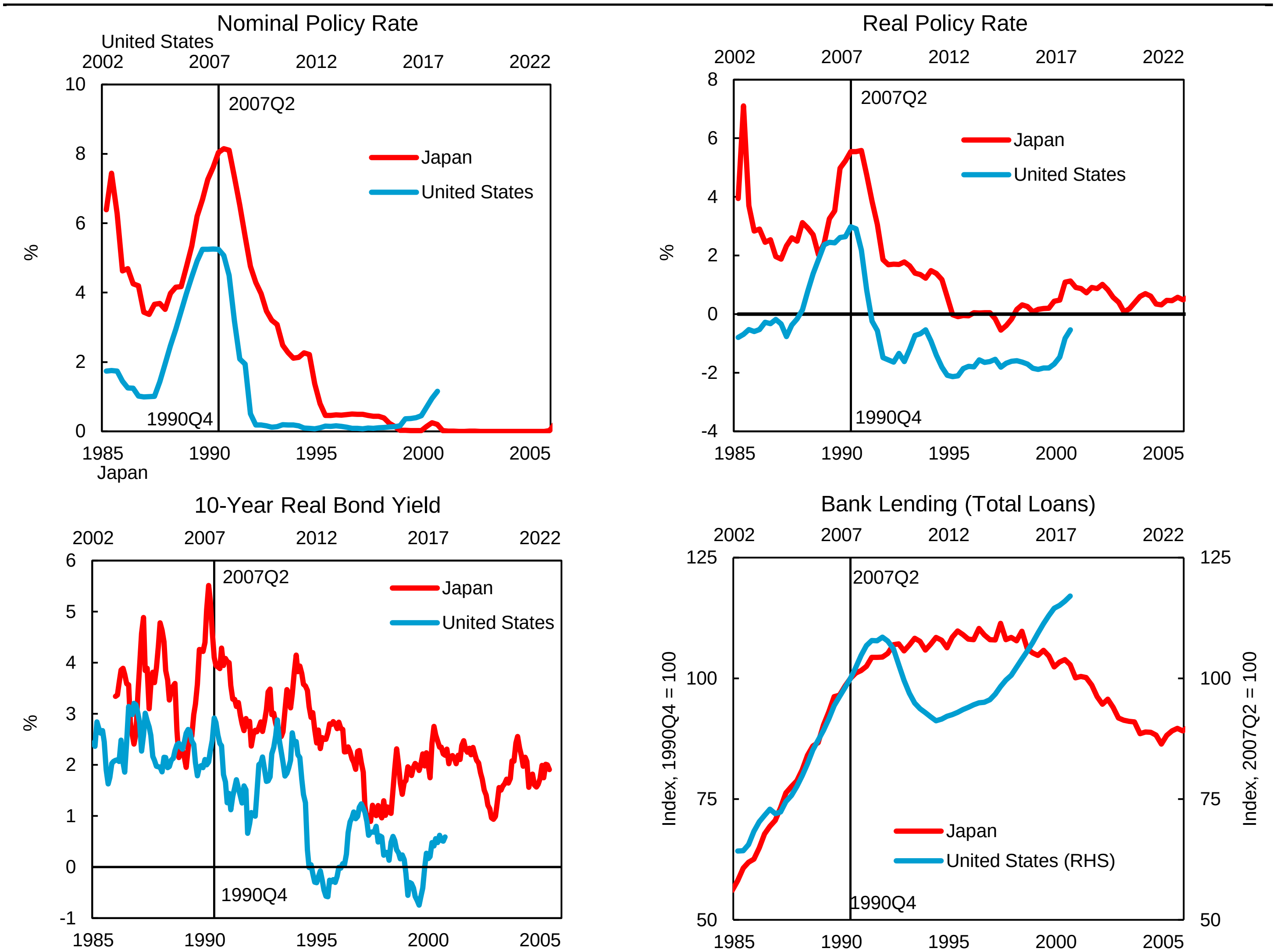
Where the United States has performed better than post-bubble Japan is in the performance of nominal variables. Notably, after dipping in the early years of the financial crisis, U.S. nominal GDP per capita turned up decisively and is now well above that of Japan a decade after its bubble burst. Given the underlying trends, this gap is likely to widen further going forward. Similarly,

[4] *Japanese debt levels reached nearly 160% of GDP by 2005 and rose substantially further, to well over 200% of GDP, in the years after the global financial crisis.*
[5] *For a discussion of the fiscal challenges facing the U.S. Federal Government, see "The 2017 Long-Term Budget Outlook," Congressional Budget Office, March 30, 2017.*

for consumer prices, the United States is clearly on an upward trajectory, while Japanese consumer prices at a comparable point were flat to lower. U.S. inflation is running weaker than the Fed would like, but policymakers have been successful in blunting the deflationary pressures that became entrenched in Japan.

This stronger performance of nominal variables for the United States reflects, at least in part, the aggressive response of U.S. monetary policy. As highlighted in the next figure, within 18 months of the onset of the financial crisis, by December 2008, the Fed had taken its policy rate to zero. In addition, within two years of the onset of the crisis, the Fed was aggressively engaged in large-scale asset purchases and other extraordinary measures to support the economy. Later, the Fed also used innovative forward guidance. Stimulative measures were simply rolled out more quickly than was the case for Japan in the early 1990s. On the flip side, the comparative success of these measures has allowed the Federal Reserve to take gradual steps to bring monetary policy back to a more neutral stance. The more rapid path of monetary easing also allowed long-term real interest rates in the United States, although noisy, to stay lower after the financial crisis than those in Japan after its bubble burst.

FIGURE 7: MONETARY POLICY AND INTEREST RATES

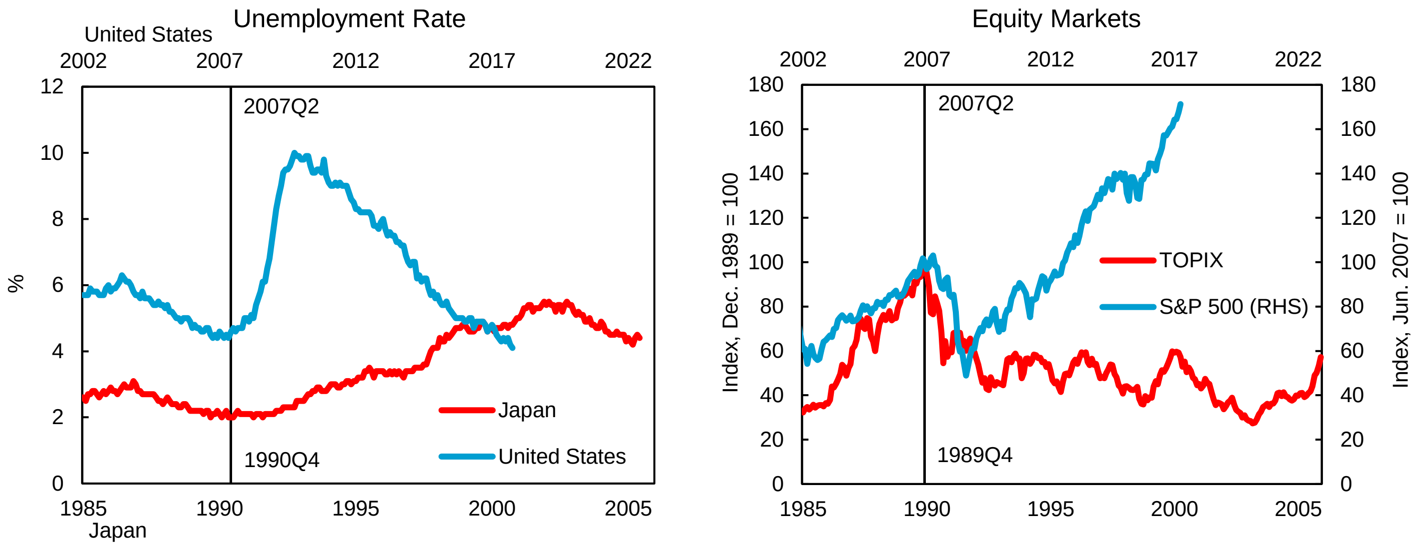


Source: Federal Reserve Board, BLS, Bank of Japan, ACDC, Cabinet Office of Japan, Haver. Data sourced as of December 2017.

Similarly, U.S. regulators swiftly moved to address problems in the banking sector. Early on, U.S. institutions were pressed to declare and write-off bad loans, and banks were recapitalized. The upshot was a period of tightening credit and contracting balance sheets. However, the situation bottomed out over the course of several years. The level of bank credit is now running above that of Japan after its bubble burst and exceeds the pre-crisis peak. The U.S. banking system is well-positioned to serve as a growth engine for the economy. This differs markedly from the Japanese experience. A decade after the bubble burst, the policy of forbearance meant that the regulators still faced the challenge of cleaning up the banks, and the necessary actions weighed on credit and economic growth through the first half of the 2000s.

Two other consequential areas where the United States has diverged from Japan are the behavior of the unemployment rate and the evolution of equity prices (Figure 8). Following the bursting of the bubble, Japan saw only a gradual rise in its unemployment rate—consistent with the relatively gradual slowing in overall real economic activity. Through the 1990s, unemployment crawled up from 2% to over 4½%. In contrast, the U.S. unemployment rate surged upward in the years after the financial crisis erupted, but it peaked in 2010 and has since recorded a sustained decline, to just over 4%.

FIGURE 8: LABOR AND EQUITY MARKETS

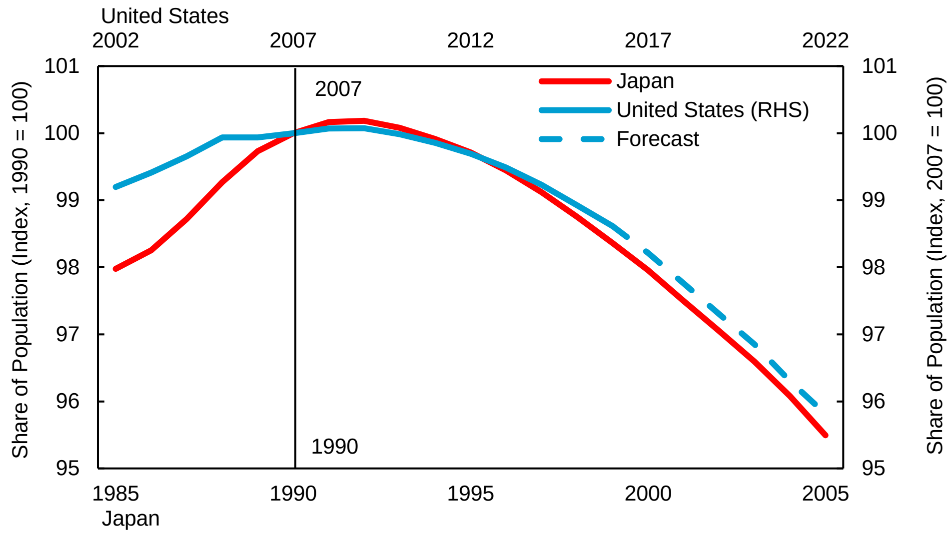


Source: Nikkei, S&P, Japanese Ministry of Internal Affairs and Communication, BLS. Data sourced as of December 2017.

As for equity prices, the two stock markets saw almost identical 50% upfront declines. For Japan, equity prices moved essentially sideways for over a decade thereafter. In contrast, U.S. equity prices recovered briskly and are now a hefty 75% above their pre-crisis peak. Part of this divergence reflects that the U.S. corporate sector was relatively strong going into the financial crisis. In contrast, in Japan, debt and leverage in the corporate sector built up in the years before the bubble burst. Thus, the sharp drop in commercial land prices damaged balance sheets in the sector, and the efforts to dig out proceeded only slowly. The Fed's comparatively rapid adoption of full-scale quantitative easing measures might also have been a factor supporting the rebound in U.S. equity prices, especially in the early years of the recovery.

Finally, the two episodes show some notable demographic parallels. As shown in Figure 9, Japan's working-age population share peaked and turned down in the early 1990s following the bursting of the asset bubble. Similarly, this measure for the United States peaked around the time of the global financial crisis. Japan's experience highlights that demographic pressures can create severe challenges for growth, but demographics are not necessarily destiny. There is scope for policy to respond, in the sphere of savvy immigration policy, for example, but in both countries such actions face strong political headwinds.

FIGURE 9: WORKING-AGE POPULATION (AGES 15-64)



Source: United Nations, Haver. Data sourced as of December 2017.

Early in this section, we posed the question of whether Japan's experience is a harbinger of the road ahead for the United States. The similarities between the recent U.S. experience and Japan through the 1990s include the behavior of important economic variables, such as per capita real GDP, productivity, and demographics. But the differences are also striking. The United States today is much better positioned than Japan at the end of the 1990s in terms of banking system strength, prospects for sustained inflation (rather than deflation), and the trajectory of the unemployment rate. Perhaps for these reasons, U.S. equity prices—a key forward-looking indicator—have outperformed by a wide margin. These indicators point to relative strength in the U.S. economy going forward. An important caveat is that a policy error (e.g., a marked further increase in the trajectory of the debt) could yet blunt confidence and jeopardize U.S. performance.

WHAT ABOUT THE EURO AREA?

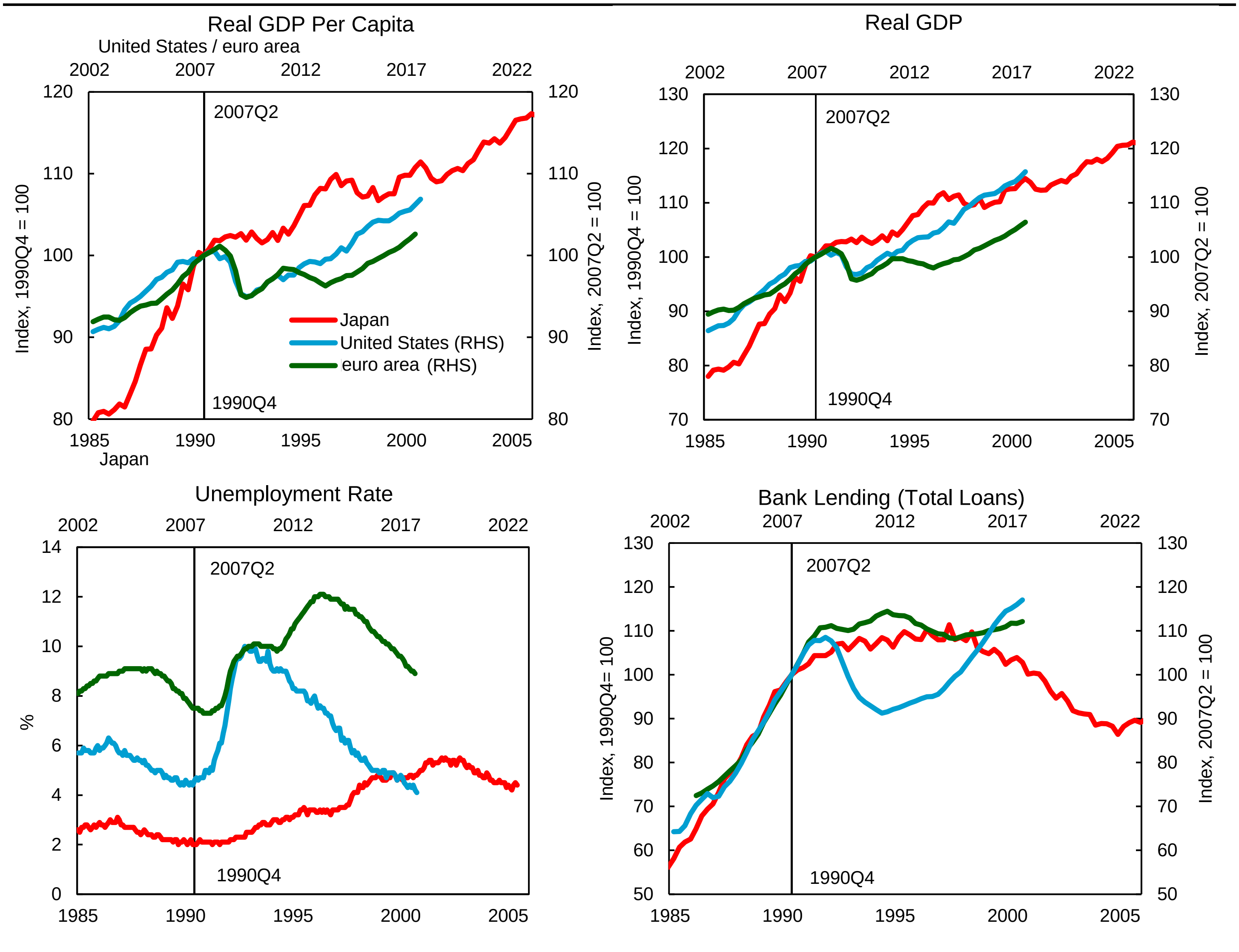
This section appraises performance in the euro area through a similar lens. The euro-area data bear the imprint of the global financial crisis but also, significantly, of the subsequent crisis among the European peripheral countries. In essence, there were two chapters in the euro-area's crisis experience and, accordingly, the region is still at a comparatively early stage in its healing process.

In terms of real GDP per capita, the euro area lags the two other economies, with the data now just surpassing their pre-crisis level (see Figure 10). The United States and the euro area registered similar initial drops, but the U.S. economy recovered thereafter, while the euro area saw renewed declines in 2011 and 2012. Data on the level of real GDP (the right panel) manifest this pattern even more clearly, with the euro area showing a distinct "W" shape and activity running well below the other two countries. The good news, however, is that euro-area real GDP now appears to be on a solid upward trajectory.

The euro area's unemployment rate also saw a two-step rise, moving up to 10% during the global financial crisis and then rising further, to 12%, during the peripherals crisis. In recent years, the euro-area unemployment rate has declined to a bit below 9%, but it remains well above its pre-crisis level. The aggregate unemployment rate for the euro area masks significant cross-country diversity, with Germany's unemployment rate (on a harmonized basis) now at 3.6%, while Spanish unemployment stands at 16.7%.

The data on European bank lending tell an important story. To date, the reduction in outstanding loans in the euro area has been limited, with the series largely moving sideways. Thus, euro-area performance is more reminiscent of Japan in the 1990s when the latter pursued a policy of forbearance, than the United States after the financial crisis. But this conclusion is likely too strong. In recent years, a number of euro-area countries have taken steps to strengthen and recapitalize their banking systems, and bank credit has begun to slowly flow again. In addition, the Single Supervisory Mechanism (SSM) at the ECB is gaining traction and credibility. While the data in this graph do give pause, a case can be made that the European banking system is slowly being set aright. Even so, it remains to be seen whether these banks are now healthy enough to support growth. This issue is of great importance given the euro area's bank-dominated financial system.

FIGURE 10: HOW DOES THE EURO AREA EXPERIENCE COMPARE?



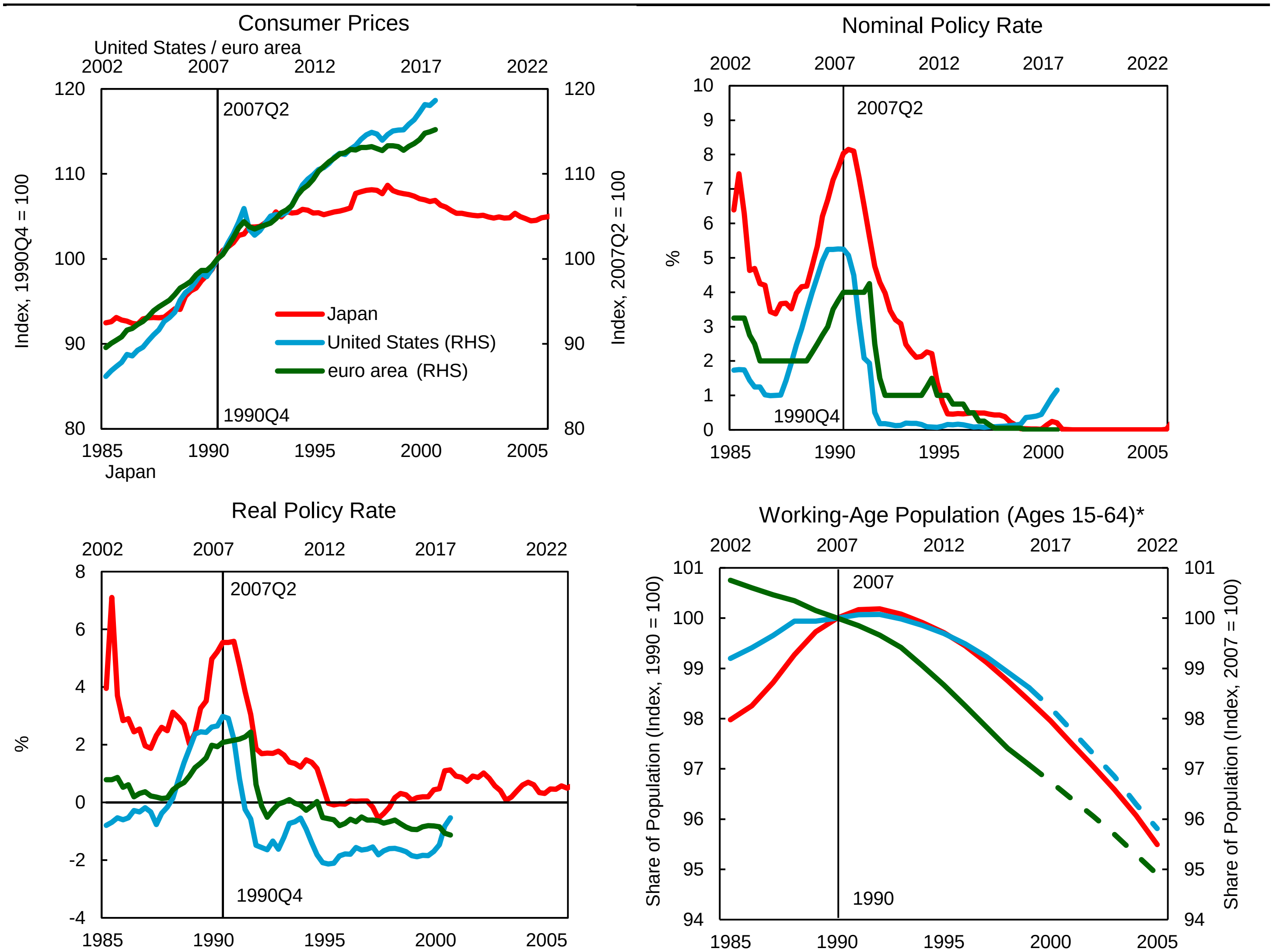
Source: BEA, BLS, Cabinet Office of Japan, Japanese Ministry of Internal Affairs and Communication, FRB, BOJ, ECB, Eurostat, Haver. Data sourced as of December 2017.

As shown in the next figure, the trajectory of the euro area's CPI is encouraging. Although performance has slightly lagged the United States in recent years, deflationary outcomes have been avoided. This in large part reflects that the ECB moved aggressively following the onset of the global financial crisis, albeit not as fast as the Federal Reserve. The ECB quickly pushed real policy rates into negative territory as a mechanism for fighting the crisis. In addition, as deflationary pressures mounted in the midst of Europe's subsequent fiscal crisis, the ECB took further aggressive actions to support the economy. That said, the

ECB's response also included some notable mis-steps—such as aborted efforts to hike the policy rate in mid-2008 and again in 2011. In Japan, real policy rates did not become negative until five or six years after the bubble burst.

Finally, another common factor is that the euro area's working-age population share is on a sustained downward trajectory, and like the United States and post-bubble Japan, this is projected to persist for some time to come.

FIGURE 11: HOW DOES THE EURO AREA EXPERIENCE COMPARE?



Source: BLS, Eurostat, Japanese Ministry of Internal Affairs and Communication, FRB, BOJ, ECB, United Nations, Haver. Data sourced as of December 2017. *Dotted line indicates projection.

CONCLUDING THOUGHTS

This discussion has unearthed some important similarities between Japan's experience after its bubble burst and the recent experience in the United States and the euro area. Given that the euro area appears to be in a much earlier stage of recovery, following its dual crises, the conclusions will focus on the U.S. experience. The conclusions, however, are generally applicable to the euro area as well.

Our work has shown that Japanese per capita GDP and labor productivity during the 1990s actually outpaced that of the United States in the decade after the financial crisis. The two episodes also saw a turning point and subsequent deterioration in key demographic indicators. In both countries, the responses necessary to mitigate the demographic shock face political obstacles, with immigration policies a prominent example.

We have also found uncomfortable similarities between the United States and Japan in terms of fiscal performance. For the United States, the general government's debt-to-GDP ratio has flattened out in recent years, while Japan's was inflecting upward by the end of the 1990s. But the United States is arguably just one recessionary shock (or policy error) away from qualitatively similar challenges, especially given the precarious path of future spending on entitlement programs.

Where the United States has benefited relative to Japan is in the immediacy and intensity of the policy response once the shock hit. In particular, U.S. monetary policy responded with greater vigor to slay deflationary pressures, and the authorities took strong action on the banks. The U.S. response, however, drew heavily on Japan's experience through the 1990s. Ben Bernanke, Tim Geithner, and other U.S. officials were deeply immersed in Japan's lessons from the previous decades. Japanese officials were not fortunate enough to have a similar playbook as they negotiated the challenges of the 1990s. They were negotiating largely uncharted territory.

A related point is that U.S. officials were formulating policy in an environment of severe global crisis, while the international environment for Japan during the early 1990s was more stable. This had two important implications. First, the severity of the global situation increased the sense of urgency. U.S. policymakers felt the burden of responding rapidly to protect the U.S. economy directly, but also to offset debilitating feedback effects through global economic and financial channels. Such incentives were heightened because of the United States' role as issuer of the world's reserve currency. Second, these exigencies mobilized political support for aggressive actions, including providing resources to recapitalize banks and backstop the financial system, which probably would not have come together otherwise. In short, the aggressive U.S. policy response very much reflected the intense global pressures that existed.

In contrast, Japan faced calmer global waters as its bubble burst. This meant that the world economy was not posing the same risks and could, at least in principle, serve as a stabilizing factor. But it also meant that the Japanese authorities were responding to a shock that was domestic in nature. This, coupled with the fact that Japanese growth initially slowed but did not contract, meant that the situation had fewer hallmarks of urgency than during the global financial crisis.

Overall, the balance of our work suggests that the prospects for growth over the next decade in the United States are more favorable than those that Japan faced in 2000, a decade after its bubble burst. Deflationary pressures seem to be blunted, the banking system is stronger, and the labor market has largely healed. In addition, equity prices—to the extent that they provide reliable forward-looking information—support this judgment. However, as we have highlighted, U.S. policymakers face critical challenges in the years ahead. And unwelcome shocks from the economic and financial environment are possible, if not inevitable. Thus, actually delivering on these comparatively favorable prospects will require ongoing dexterity.

NOTICE: IMPORTANT INFORMATION

Source(s) of data (unless otherwise noted): PGIM Fixed Income as of December 2017

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