



Land of the Rising Inflation

**Is Japan's economic
resurgence here to stay?**

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EXECUTIVE SUMMARY

This paper analyzes Japan's macroeconomic evolution from the early 1990s asset bubble crash through the ongoing economic shifts of 2026. For decades, Japan's Lost Decades were characterized by a self-reinforcing deflationary norm, structural rigidities, and zero-bound interest rates. While the Abenomics regime deployed unprecedented monetary easing to combat this liquidity trap, recovery remained largely cyclical and reliant on external demand. However, recent exogenous supply shocks, stemming from the COVID-19 pandemic and geopolitical conflicts in Ukraine and the Middle East, have abruptly broken Japan's zero-inflation mindset, recently pushing nominal GDP past ¥600 trillion.

To ensure this cost-push inflation translates into a permanent resurgence rather than stagflation, the Japanese government must implement aggressive structural reforms. Using a Monte Carlo simulation alongside comparative analyses of China, South Korea, and Singapore, this paper demonstrates that monetary and fiscal interventions alone cannot overcome Japan's demographic decline. Instead, Japan must pivot toward a Hub Model of growth. By deregulating risk capital, enhancing labor fluidity, and transforming Tokyo into a highly globalized innovation center, Japan can generate the necessary Total Factor Productivity to abandon the deflationary norm and solidify a resilient, sustainable form of capitalism.

THE LOST DECADES

Japan's 'Lost Decades' refers to the prolonged economic stagnation following the early 1990s asset bubble crash. To understand why the stagnation lasted as long as it did, it is necessary to understand the nature of the bubble that preceded it. The leading cause of the Japanese asset bubble was the adoption of excessively loose monetary policy to counteract the appreciation of the yen following the Plaza Accord (Fukao, 2019) and to incentivize private investment as a way to deal with surplus savings (Fukao, 2010).

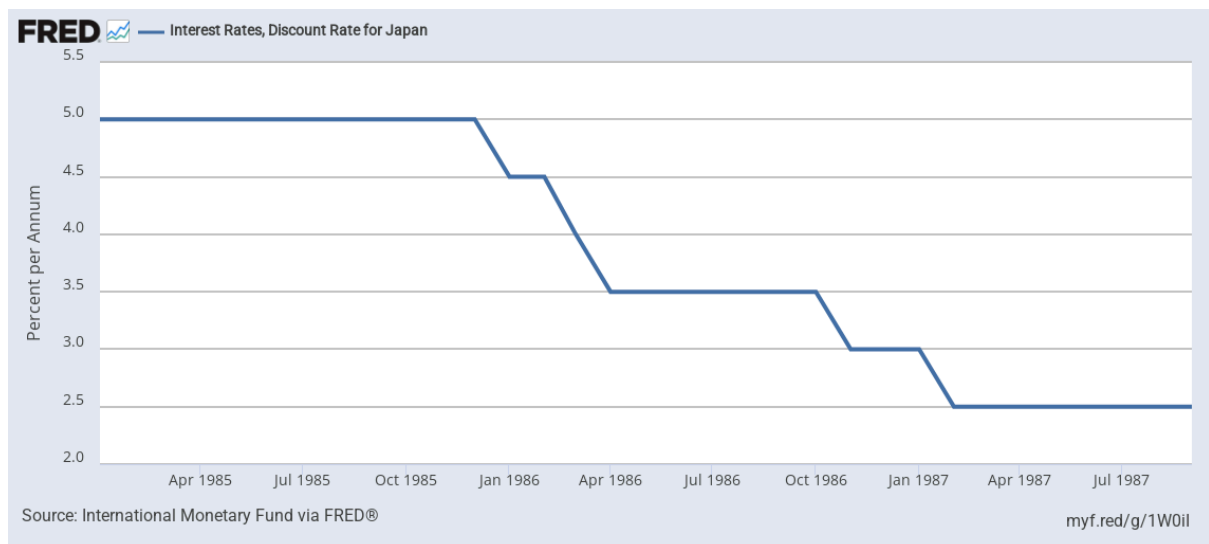


Figure 1: Bank of Japan Discount Rate, 1985-1987 (IMF via FRED)

As shown in Figure 1, the BOJ aggressively cut interest rates five times between 1986 and 1987 (Federal Reserve, 2026). By prioritizing the stability of the yen over domestic price control, the BOJ effectively **flooded the market with 'cheap money'** that was directed into speculative assets. Real estate became popular for investment due to tax distortions and a general perception that real estate prices would never fall (Fukao, 2019). The BOJ quickly tightened monetary policy in the early 1990s however, with the interest rate reaching **6% in August, 1990** (Federal Reserve, 2026). This was very impactful because banks had been using the expensive real estate as a safety net for their loans (Fukao, 2019). Due to the sudden tightening by the BOJ, that safety net vanished and this triggered a strong contraction in the ability of banks to provide credit.

This, naturally, had a wide ranging impact on the economy. The increase in interest rates caused private investment to decrease as well which shifted the aggregate demand curve inwards, reducing the output gap. One theory as to why the resulting economic slump lasted so long is inadequate policy response. Many policy makers regarded the downturn in activity as following a normal cyclical pattern (Bayoumi, 1999). Although the Japanese government unveiled a number of fiscal packages aimed at reviving the economy over the 1990s, most were ineffective. The September 1995 stimulus package was an exception since, initially, the economy responded vigorously until the recovery was derailed by a switch to fiscal contraction in early 1997 (Bayoumi, 1999). Consequently, the Japanese economy entered its first recession since the early 1970s in 1997, with the **output gap estimated to have fallen from +4.5% to -7.5% by early 1998** (Bayoumi, 1999).

THE MIDDLE ACT

The 2000s were the middle act of Japan's deflationary saga. The decade is bracketed by two external shocks: the dot-com bust in 2001 and the Global Financial Crisis in 2008 that were separated by a **73-month, export-led expansion** that would, on the official business-cycle chronology, become Japan's longest since 1945 (The Japan Institute for Labour Policy and Training [JILPT], 2015). **Cumulative real growth was roughly 8%** over the ten years, headline CPI averaged essentially zero, and the corporate sector remained a structural net saver throughout (Bank of Japan, 2024). The decade therefore produced neither escape from deflation nor a clean recession period. Japan remained on the sideways trajectory interrupted by two collapses and one unconvincing recovery. Over the same period, Japan implemented its full monetary policy repertoire: Quantitative Easing, Zero Lower Bound pinned rates, and asset purchases, that would then substantially affect the subsequent Japanese cycle.

Japan was already experiencing a liquidity trap as it entered the decade. The BOJ had reduced the call rate to effectively zero in February 1999. Then, despite significant opposition, the BOJ ended the original Zero Interest Rate Policy (ZIRP) in August 2000 and **raised the interest rate to 0.25%**. The dot-com bust arrived within six months. By early 2001 the economy was contracting, bank NPLs were climbing again, and the BOJ was forced not only to reverse its 2000 hike but to innovate. On 19 March 2001 the Policy Board introduced **Quantitative Easing**, abandoning the overnight call rate as its operating target in favour of the outstanding balance of commercial banks' current accounts at the BOJ, initially set at ¥5 trillion against required reserves of roughly ¥4 trillion (Bank of Japan, 2001). This was the first such programme deployed by any major central bank (only the Federal Reserve QE would follow seven years later).

The macro context justified the measures taken. The **all-banks NPL ratio peaked at 8.4%** in 2001 before the Takenaka Plan restored banking-system balance sheets. The quarterly output-gap series (Bank of Japan, 2026; team analysis) turns persistently negative from 2002-Q1 and remains negative for the entire remainder of the decade.

Mean Uncollateralized Call Rate	0.06%
Mean q/q CPI	-0.19%
Ex-post Real Rate	+0.25%
Estimated Natural Rate (r^*)	+0.12%

Consumer prices were falling on a sustained y/y basis, and the quarter-averaged data for 2000–02 reproduce the characteristic liquidity-trap pattern. The **mean ex-post real rate exceeded the estimated natural rate** indicating that policy was mildly restrictive in real terms (by roughly 12 basis points) even as the nominal instrument was pinned at the lower bound. The real-rate-versus- r^* restrictiveness measure remains positive in most quarters through the decade, which is the quantitative content of the **liquidity trap**: with the nominal rate floor binding and inflation negative, the Bank had no conventional instrument with which to deliver the stimulus the output gap required. QE was thus an attempt to ease along the quantity dimension once the price dimension had been exhausted.

A FRAGILE EXPANSION

The break came not through monetary policy but through balance-sheet repair. In October 2002, Financial Services Minister Heizō Takenaka announced the **Programme for Financial**

Revival (the Takenaka Plan), which set a target of halving the major banks' NPL ratio within two years, forced tougher asset-quality reviews, and culminated in the May 2003 injection of ¥1.96 trillion of public funds into Resona Holdings (one of the major banking groups at the time) constituting the event most observers treat as the end of the domestic banking crisis that had begun in 1997 (Nomura Connects, 2023). The NPL ratio fell from **8.4% in 2001 to 5.8% by end-2003 and below 2% by 2007**. The consequence is captured by the sectoral savings–investment balances for Japan.

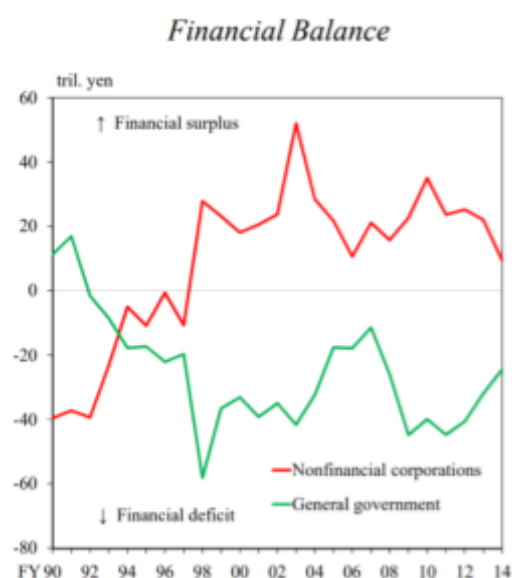


Figure 2: Japan's Financial Balance

The corporate-sector line crosses from net-borrower to net-saver territory in the late 1990s, remaining in surplus through the entirety of the 2000s. This is mirrored by the government plunging deeper into deficit over the same period (Kuroda, 2016). The corporate sector thus remained structurally in surplus even as the NPL cleanup completed meaning that the investment response to balance-sheet repair did not arrive.

What arrived instead was an external boom. From February 2002 through February 2008 the 73 months were the longest post-war expansion to that point and subsequently dubbed the **Izanami boom**. The Japan Institute for Labour Policy records that "with exports rising due to a weakening yen and economic recovery in the US and Asia, and inventory adjustment coming to an

end, the Japanese economy bottomed out and began a gradual recovery," with growth over the cycle "not high" despite its duration (The Japan Institute for Labour Policy and Training [JILPT], 2015). Cumulative real GDP growth from 2002 through 2007 came to approximately 9%, or an average of roughly **1.5% per year** (World Bank, 2026), but it relied heavily on external demand from the United States and emerging Asia (Japan's trade surplus rose to a cyclical peak of ¥10.8 trillion in 2007), supported by a weak yen maintained by **persistent interest-rate differentials** (USD/JPY traded in a ¥110–¥124 range through most of 2004–07; Bank of Japan, 2026). The net-exports share of GDP rose from a 2000–02 average of **1.1%** to a peak of **2.08%** in 2004-Q1, while the investment share fell from **28.6%** (2000–02 average) to **26.9%** (2003–07 average) (Bank of Japan, 2026; team analysis), clearly signaling that the expansion was an international trade consequence, not an investment resurgence.

THE GLOBAL FINANCIAL CRISIS

Japan entered the crisis with no monetary room and an unconsolidated recovery behind it. The BOJ had read the Izanami expansion as sufficient evidence of returning health: **QE was terminated in March 2006**, the commitment to maintain the programme "until core CPI stably registered 0% or positive" having been technically satisfied by mid-2005, and the **call rate was raised from zero in July 2006 to 0.50% by February 2007** (Bank of Japan, 2024). In retrospect the exit was premature: core CPI ex-fresh-food averaged roughly **0.0%** across 2006–07, inflation expectations did not re-anchor, and the corporate net-saver

position did not reverse. Deputy Governor Uchida's 2024 retrospective frames this directly: the "deflationary norm" was never broken during the Izanami period (Uchida, 2024), the upswing had been cyclical and export-driven, unaccompanied by the wage dynamics that would have signalled a regime change. When Lehman fell, Japan therefore faced the shock with the policy rate already back at **0.50%**, no deflationary battle won, and an export-dependent expansion structurally vulnerable to a collapse in global demand.

The shock reached Japan first through the currency. The unwind of the yen carry trade drove the nominal exchange rate from **USD/JPY ¥114 in mid-2007 to ¥90 by December 2008**; in real effective terms, the yen stood at **106% of its 2007 average** in September 2008 and **reached 136% by January 2009: roughly 30% real appreciation** over four months (Fukao & Yuan, 2009).

Collapse in global trade eliminated the export-demand engine that had carried the 2002–07 expansion. Japanese **exports fell 12.5% year-on-year in Q4 2008, then 36.8% in Q1 2009**, with industrial production contracting by 15.0%, 34.0%, and 27.6% year-on-year across those same quarters (Kawai & Takagi, 2009); "the peak-to-trough fall in industrial production eventually reached 38%, compared with 17 percent in the U.S" (Abe, 2010). Fukao and Yuan (Fukao & Yuan, 2009) attribute Japan's Q4/2008 GDP contraction, being the worst in the G7, at 12.1% Seasonally Adjusted Annual Rate (nearly double the US figure of 6.3%), almost entirely to external demand: net exports subtracted 11.8 percentage points from headline GDP in that quarter alone, against just 0.15pp for the US. The mechanism was the **rapid contraction of "triangular trade"** in which Japan supplied high-value-added capital goods and components to emerging-Asian assemblers re-exporting finished goods to Western consumers; because Japan sat upstream in this supply chain rather than at the assembly stage, the collapse in US final demand propagated back to Japanese producers with amplified force.

The transmission is legible in a standard AS–AD frame. Inflation depends on what people expect future inflation to be, on how much the economy is actually producing relative to potential, and on any direct supply disturbances:

$$\pi_t = \pi_t^e + \kappa y_t + \varepsilon_t^s$$

where π^e is expected inflation, y the output gap, κ the slope of the SRAS (how strongly that gap passes through to prices), and ε^s a supply-shock term. Aggregate demand mirrors this: the output gap responds to how far the real policy rate sits above the natural rate, plus any autonomous shifts in spending:

$$y_t = -\sigma(r_t - r^*) + \eta_t^d$$

where r is the real policy rate, r^* the natural rate (the rate consistent with output at potential), σ the interest-sensitivity of output, and η^d collects autonomous demand shifts such as exports or fiscal impulse. **The global financial crisis shock transmitted through two reinforcing channels:**

1. The export collapse enters as a sharply negative autonomous demand shock ($\eta^d < 0$), pulling AD leftward.

2. The real yen appreciation drives a second leftward AD shift: Japanese goods became more expensive abroad, accompanied by a modest negative supply-side term ($\varepsilon^s < 0$) from cheaper imports.

Because **expected inflation** π^e **remained anchored near zero** and the slope κ of SRAS was small ("**deflationary norm**", that Deputy Governor Uchida's May 2024 speech (Uchida, 2024) would later characterise as a social belief that today's prices and wages would equal tomorrow's) the intersection of a sharply leftward-shifted AD with a nearly flat SRAS produced outcome of a very large output collapse with only modest additional deflation. Real GDP fell 5.7% in 2009 despite no domestic banking crisis (World Bank WDI), while mean quarterly CPI across 2008–10 was just -0.11%. On the policy side, the BOJ's rate was at 0.50% entering the crisis and cut back to the **effective ZLB** by October 2008; with mean real rates of +0.33% against an estimated r^* of +0.25% over 2008–10, policy was again mildly restrictive (by ~8bp) despite being pinned at the nominal lower bound the same quantitative-easing-as-substitute logic that was present in March 2001. The response, on 5 October 2010, was **Governor Shirakawa's Comprehensive Monetary Easing (CME)** framework: the call rate was cut to 0–0.1%, the BOJ committed to maintain the rate until CPI was "judged stably above 0%," and crucially the Bank authorized outright purchases of long-term JGBs, corporate bonds, commercial paper, exchange-traded funds, and J-REITs (Bank of Japan, 2024). The addition of equity-linked risk assets was the first such step by any major central bank and established the asset-class toolkit that QE would later scale.

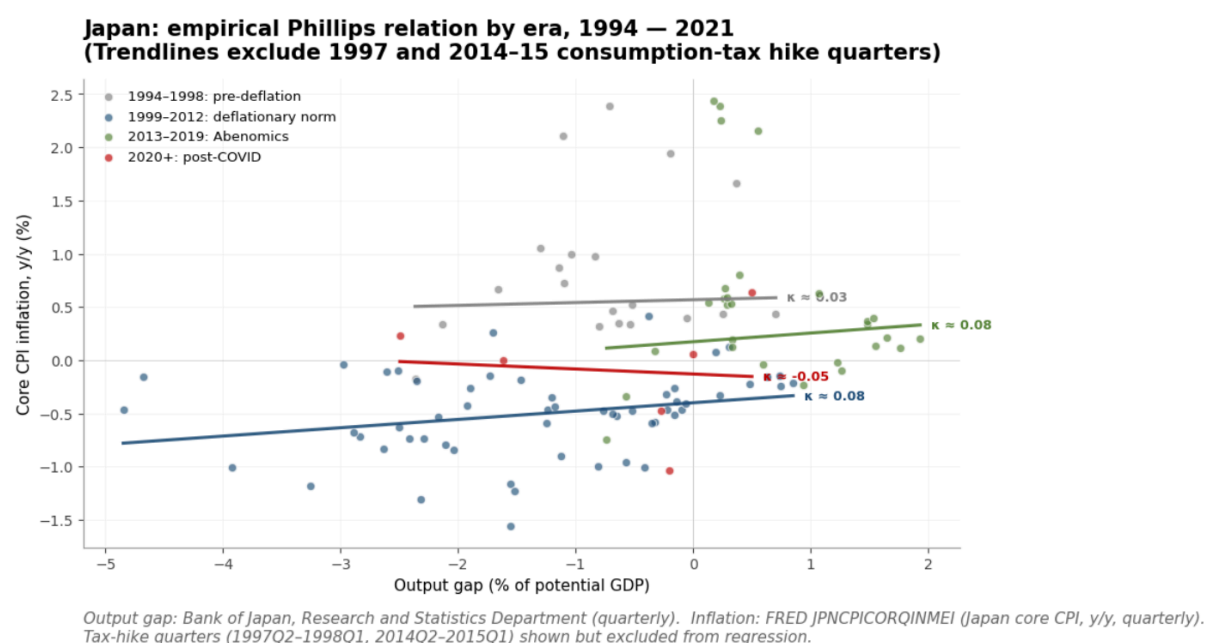


Figure 3: Empirical Phillips Relation for Japan by Era, 1994–2021 (BOJ Research and Statistics Department; FRED JPNCPICORQINMEI; team analysis)

The fiscal response matched the monetary one in scale. The Asō government's 2008–09 stimulus packages pushed the primary deficit from roughly **–3% of GDP in 2007 to –8.0% of GDP by 2010**, while gross general-government debt crossed 200% of GDP by end-2010, reaching 205.7% that year (from 135.6% in 2000). The output gap widened from an average of –2.2% in 2007 to a decade trough of –6.91% in 2010-Q2, with an intermediate sharp deterioration to –6.38% in 2009-Q2.

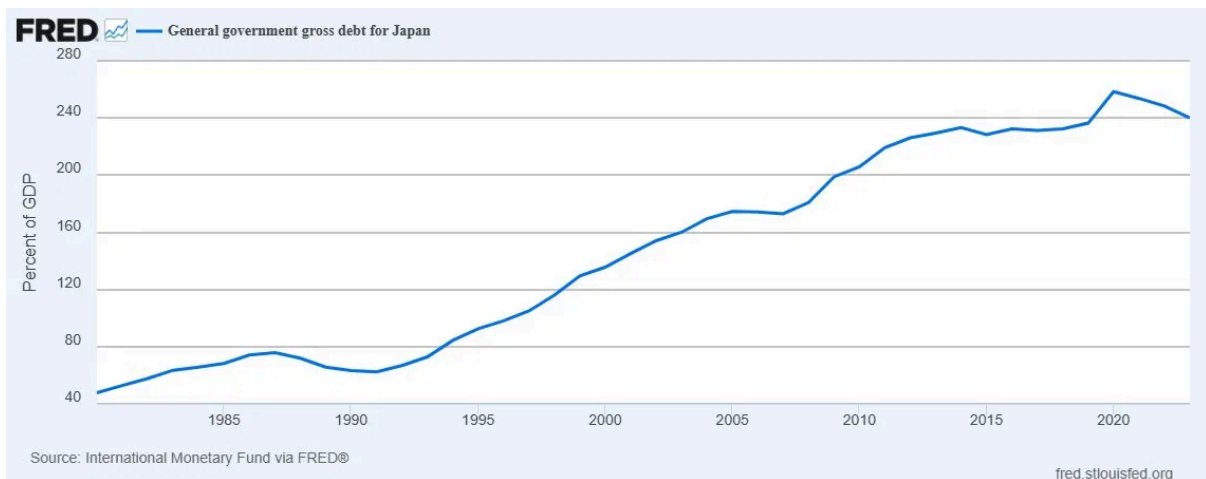


Figure 4: Japan General Government Gross Debt as % of GDP, 1980–2023 (IMF via FRED)

ADOPTING ABENOMICS

The election of Shinzo Abe as Japan's prime minister in 2012 marked a turning point in Japan's implementation of the ideas guiding its fiscal and monetary policy. The government adopted a policy regime, dubbed "Abenomics", which was composed of a mix of reflation, government spending, and a growth strategy designed to jolt the economy (The Economist, 2013). After two decades of stagnation, deflation, and rising public debt the core ambition of "Abenomics" was to break the self-reinforcing pessimism that kept Japan's economy in a depressed state. Now, more than 10 years after its implementation, questions remain regarding the extent to which "Abenomics" succeeded in closing the output gap and restoring sustainable growth.

One of the key monetary policy issues that "Abenomics" worked to address was poor expectation management. Prior to the appointment of Haruhiko Kuroda as the director of the BOJ, the central bank's official position was that the cause of Japan's deflation was driven largely by **a declining demographic position reducing Japan's real potential growth**. The BOJ did not believe that deflation was due to insufficiently aggressive monetary policy and, thus, did not believe that they could fix the issue using monetary policy (Sheard, 2013). If we assume adaptive expectations, the expected inflation is equal to the rate of inflation in the previous year, π_{t-1} (Jones, 2024). Thus, the Bank of Japan's aforementioned official position had the consequence of dampening inflation expectations, worsening the crisis.

THE BANK OF JAPAN'S MONETARY POLICY SHIFT

Following the adoption of "Abenomics" the BOJ noticeably changed its approach to tackling the deflation crisis. Firstly, the BOJ changed their communication strategy. In 2013, the central bank adopted an **explicit 2 percent inflation target**. This was a break from previous BOJ procedure since, prior to 2012, they targeted an implicit target estimated to be around 1 percent (Nakata, 2020). Furthermore, as director of the BOJ, Mr. Kuroda abandoned the previous official position that overcoming deflation was dependent on the government's implementation of structural reform and fully supported the new inflation target announcing a new phase of quantitative easing (Sheard, 2013). Theoretically, these actions would contribute to a reduction in the real interest rate shifting the aggregate demand curve outwards through increased investment, thereby closing the output gap. This can be

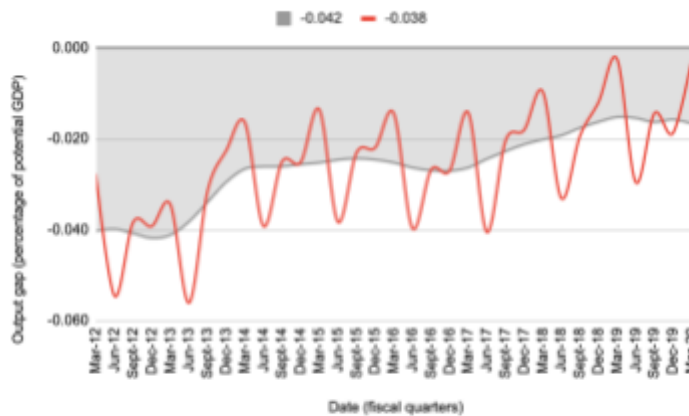


Figure 5: Japan's Output Gap from 2012-2020

observed in Figure 5, where our trend-cycle estimate of the output gap shifts visible upward between 2013 and 2014, moving from approximately -4% to -2.6% of potential GDP. The figure also shows that the output gap remained substantially negative following 2013 which reflects the fact that it would take time to convince key stakeholders that there was going to be a sustained increase in inflation.

Quantitative and Qualitative Easing (QQE) represented another key tool through which the BOJ sought to close the output gap. The BOJ's QQE is similar to quantitative easing in that it aims to reduce long-term interest rates through purchases of government bonds but QQE has a second element: to change the deflationary mindset that had taken hold in Japan. This second element was the key to implementing the QQE transmission mechanism (Kuroda, 2015). The BOJ announced that they wanted to double the **monetary base** by the end of 2014 to around 54% of GDP. It also changed the composition of the assets that it purchased, with a greater emphasis on longer-dated government securities and larger purchases of risk assets such as commercial paper, corporate bonds, ETFs, and Japanese real investment trusts (Arslanalp and Botman, 2015).

The transmission mechanism for this intervention is different from the earlier reforms regarding communication strategy. As a result of the BOJ reducing the yield of Japanese government bonds, investors and financial institutions needed to rebalance their portfolios and invest in higher-yielding assets, such as foreign bonds, stocks, and loans (Arslanalp and Botman, 2015). The intuition behind how this would impact the output gap is that the higher returns would be reinvested or spent in the local economy, thus increasing aggregate demand curve. What is important to note here is that this channel operated largely through behaviour rather than expectations. It did not require firms and households to believe in higher future inflation, only that investors respond rationally to compressed domestic yields. In that sense, QQE's **portfolio rebalancing channel** was a more mechanical transmission mechanism than the expectations channel, though as the evidence suggests, not necessarily a more effective one.

The effectiveness of QQE in achieving its principal aim is contested. A 2017 article from VoxEU, which is run by the Center for Economic Policy Research, states that Japan's already low loan-deposit ratio dropped even further, contrary to what would be expected from the portfolio rebalancing channel, deposits increased, and the ratio of foreign investment did not show a rising trend from 2013 to 2017. This revealed that the portfolio rebalancing channel, while successful in lowering the lending rate, **had not been as strong as the BOJ expected** (Shirai, 2017).

EMPLOYING FISCAL STIMULUS

In addition to monetary policy, the Abe government also used fiscal policy and introduced regulatory changes in its attempt to close the output gap. Economic stimulus packages were a common fixture of Japanese fiscal policy in the 2013 to 2019 period. In January 2013, the government formulated an economic stimulus package with an additional budget of 10 trillion yen. The major areas of expenditure were the reconstruction of Tohoku and other disaster prevention measures as well as growth measures to promote investment and innovation (Prime Minister's Office, 2013). However, the success of these expansionary fiscal policies was undercut a year later in 2014 when the Japanese government implemented a tax hike that raised the consumption tax from **5% to 8%** (Jij Press, 2024). Private consumption demand fell around 1.5 percentage points of GDP immediately after the **consumption tax hike**, and hadn't recovered as of 2016 (Setser, 2016). One of the reasons that the tax had such a large impact on the Japanese economy was the fact that it couldn't be offset by relaxing monetary policy since the central bank was already at the zero lower bound. The government attempted to address this with another fiscal stimulus package of around \$50 billion (ABC News, 2014). This was evidently insufficient to address the contraction in aggregate demand.

REFORMING THE LABOR FORCE AND WIDER ECONOMY

The Abe government was arguably more successful with regards to their structural reforms. A central pillar of this reform agenda was labor market reform, aimed at addressing Japan's longstanding structural rigidities. They sought to drastically shift the policy focus from encouraging the maintenance of employment within single companies, to stimulating mobility in the labor market, work to attract more immigrants, and to establish a social infrastructure that supported active participation by women in the labor force (Prime Minister's Office, 2013). They were successful in this regard with **unemployment falling to 2.7% in 2018**, the lowest level in 23 years (Merler, 2018). This suggests that Abe's reforms had a tangible effect on labor market outcomes, though it is worth noting that this could have arisen as a consequence of Japan's demographic decline rather than the reforms alone. Moreover, Japan has consistently struggled with low productivity. Since at least 2007, Japan has had productivity below the OECD average. Abe's structural reforms aimed to address this gap. The effect of the policies was marginal and no large increase in productivity was observed during Abe's tenure, and after his tenure **the productivity situation got worse** with the gap between Japan and the OECD average widening (OECD Data Explorer, 2024). With Japan's trade relationships, the government's record was more clearly attributable to deliberate policy choices. The government also engaged in numerous negotiations over the 2013-2019 period culminating in the ratification of several bilateral and multilateral trade agreements. Examples of trade agreements that came into effect for Japan between 2018 and 2020 include; the Comprehensive and Progressive Agreement for Trans-Pacific Partnership, the EU-Japan Economic Partnership Agreement, and a Japan-U.S. trade agreement (Okina, 2020). Whether these structural reforms were sufficient in scale and ambition to sustainably close the output gap remains debatable, but they represented a more coherent and sustained policy effort than the fiscal interventions, which were repeatedly compromised.

The evidence examined across Abenomics' different policies presents a mixed but cautiously optimistic picture of the regime's effectiveness. What the output gap data from figure 5 ultimately reveals is not a complete and rapid transformation but a slow recovery from a

decades-long trap. The trend-cycle estimate of the **output gap rose from approximately -4% of potential GDP in 2012 to a bit above -2% in 2019**. Furthermore, if we look at the cyclical component, in the first quarters of both 2019 and 2020 the output gap was approximately 0% of potential GDP. This indicates meaningful progress, but the trajectory is important: it took seven years of sustained, large-scale intervention to achieve what Abe and the other architects of Abenomics wanted to achieve in a much shorter time frame. Moreover, questions remain regarding whether Japan's economy would have converged toward potential output anyway, as a consequence of broader global expansion during the 2010s. What can be said about Abenomics, is that it changed the perspective of Japan's leaders in how they approached their own stagnation. This shift in itself was very valuable, even if the economic transformation it promised remained incomplete.

A POST-ABE JAPAN

In late 2019 as the UK prepared to exit the EU, Japan faced a potential heavy threat of having one of their main trade partners cut. To prevent a sudden contraction in trade, Japan and the UK rapidly established the **CEPA in 2021** (Ministry of Foreign Affairs of Japan, 2020).

By replicating the benefits of the original EU deal, the CEPA ensured that the flow of goods and capital remained frictionless. This continuity proved crucial when the COVID-19 pandemic struck shortly after. While other nations saw their trade relationships crumble under the weight of logistics and lockdowns, Japan's **dual agreements with the EU and the UK** provided a vital macroeconomic buffer, keeping the country's trade trajectory moving upward despite the global slowdown (Ministry of Foreign Affairs of Japan, 2020).

COVID AND ITS REPERCUSSIONS FOR JAPAN

For nearly thirty years, Japan's total economic value remained practically stagnant. Measured in Yen, the country's output consistently hovered within a narrow band between **¥500 trillion and ¥550 trillion** (Macrotrends, 2026). This long-term plateau was reinforced by a societal standard where neither prices nor wages would rise. However, the dramatic global events between 2020 and 2022 broke this stalemate, establishing a new trajectory that has since propelled Japan's economy past the symbolic and psychological threshold of **¥600 trillion** (CEIC Data, 2026).



Figure 6: Japan Gross Domestic Product, 1994–2025 (Cabinet Office of Japan via FRED)

The pivot began with a severe shock. In the second quarter of 2020, as the pandemic global lockdowns effectively paralyzed international trade and domestic spending, Japan's economy shrank by a record **8.004%** (Cabinet Office, Government of Japan, 2020).

This collapse was caused because the primary drivers of growth, ordinary consumer spending and sales to other countries, simultaneously vaporized. In response, the Japanese government stepped in to fill the void. Abandoning decades of spending caution, the government authorized **three massive emergency budgets**. Japan used brute force spending to prop up the economy, deliberately allowing the gap between government spending and revenue (the deficit) to balloon from **2.4%** of total economic value in 2019 to **8.3%** in 2020 (OECD, 2023). This unprecedented infusion of capital acted as a floor,

preventing a temporary health crisis from deteriorating into a permanent economic depression.

By late 2021, the recovery took an unexpected turn. Unlike previous economic rebounds that were sluggish and did not result in higher costs, this recovery was marked by the return of inflation, a phenomenon that Japan had not experienced in a generation (Statistics Bureau of Japan, 2026).

This change wasn't caused by overwhelming consumer demand, but rather by global problems. As the world reopened, global energy prices surged and international supply chains buckled under the strain. This meant the cost to produce and ship everything skyrocketed. While paying more for fuel and food is a burden, it provided a vital psychological service: it broke Japan's **zero-inflation mindset** (Uchida, 2024). For the first time in thirty years, businesses felt they had permission to raise prices, and consumers, seeing the global context, began to expect to pay more. This shift successfully unstuck Japan from the low-price paralysis that had gripped it since the early 1990s.

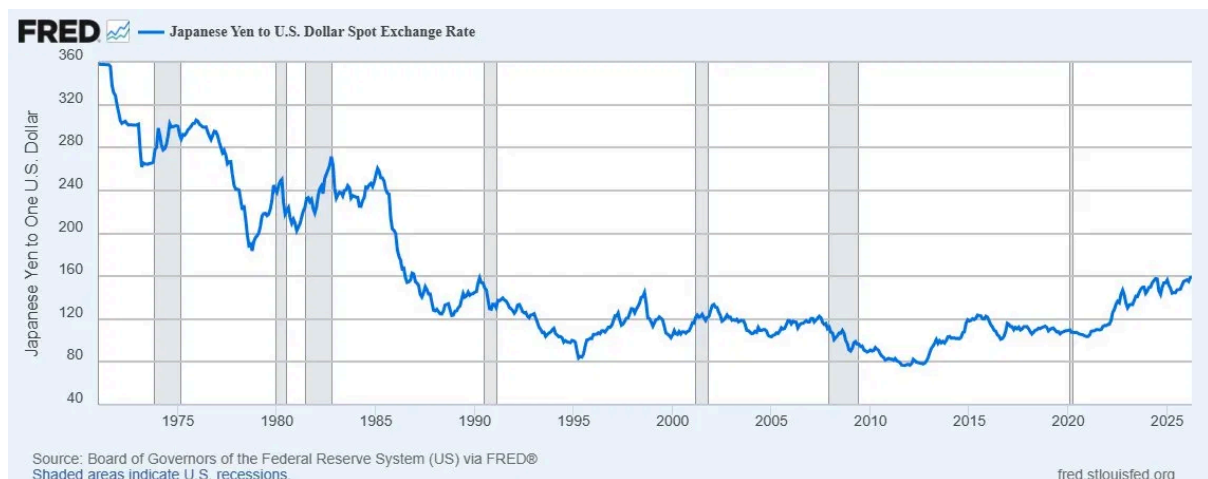
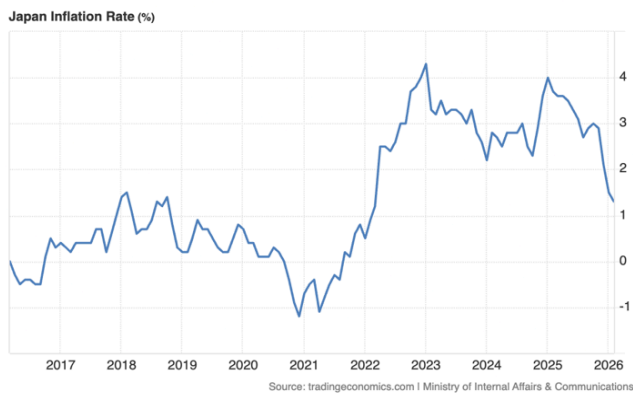


Figure 7: Japanese Yen to U.S. Dollar Spot Exchange Rate, 1971–2026 (Federal Reserve Board via FRED)

An interesting detail during this period is the apparent contradiction in the data: even as the internal Japanese economy grew, its value looked smaller when measured in US dollars (Macrotrends, 2026). This was a classic outcome of Japan's policy choices. Because Japan maintained low interest rates to support the recovery while the rest of the world (led by the US) raised rates, the Japanese Yen became much weaker (Bank of Japan, 2026). While this currency weakness made the total economy appear less valuable on the global stage in dollar terms, it provided a hidden booster shot to Japanese exporters, whose products suddenly became much cheaper for foreign buyers. This dynamic further fueled the domestic recovery, helping solidify the push toward the new **¥600 trillion** milestone (Economy.com, 2026).

HOW THE UKRAINE-RUSSIA WAR IMPACTS JAPAN

Russia's invasion of Ukraine resulted in many **international sanctions**, including ones made by Japan. Spillover effects from the sanctions related to Russia's **oil exports** caused global supply issues through **supply chain disruptions** (Ozili P. 2024). On top of this, Russia had initially blocked all Ukrainian exports through the Black Sea, and due to Ukraine's critical position as a **major agricultural exporter** through these blocked ports,



food security was at risk on a global scale (Diaz E. et al. 2024). The price of food inflated, and a shortage in fuel supplies similarly resulted in **rising fuel and energy costs**, leading to global inflation where Japan was not left unscathed. The most important category in Japan's CPI calculations is namely food, accounting for **26% of total weight**. The inflationary effects of the invasion can be noted in the

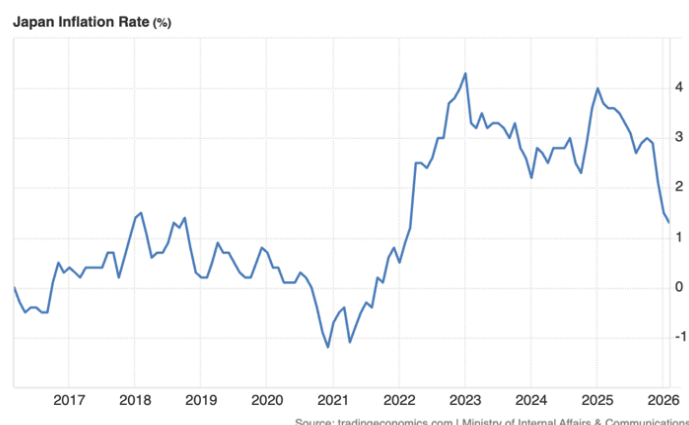
figure between 2021 and 2023 (Trading Economics 2026). Eventually, through an agreement in 2023, the "Black Sea Grain Initiative", Russia's blockade on Ukraine's export routes through the Black Sea was heaved, partially **restabilizing their exports** and in turn causing the inflation caused by the food prices to slow down (European Council 2025). Although Russia later ended the agreement, the export routes remain self-sustained.

Inflation rates remained high above the **BOJ's 2%** rate for a long period after March 2022. It only recently fell below the 2% target and reached the **lowest inflation rates** seen since **March 2022**. Such commodity price shocks as the ones tied to the invasion have been the main drivers of Japanese inflation since after the COVID pandemic. These **cost-push** inflations related to supply chain disruptions can increase the risk of **stagflation**, which can be argued for in Japan's case as economic growth remained low even as inflation increased.

KISHIDA'S INAUGURATION AND HIS NEW FORM OF CAPITALISM

The notable **trend in nominal GDP** and the subsequent economic resurgence can be traced back to a specific political and macroeconomic pivot. The most prominent event defining this trend was the **inauguration of Fumio Kishida** as Prime Minister in October 2021, followed by the formalization of his New Form of Capitalism economic agenda. This was designed to move beyond the "cost-cutting economy" that had prioritized **short-term corporate efficiency** and asset management over human capital and distribution. This event was a critical catalyst as it redefined the government's primary benchmark for success: creating a **virtuous cycle of growth and distribution** where wage increases and social problem-solving drive economic **expansion**.

Among Kishida's policies was a focus on the middle-class and bolstering their economic resilience and purchasing power (Prime Minister's Office of Japan, N.D). Through labour market reforms and different support systems, Kishida



was able to **push unemployment rates down** and stimulate the labour market. Kishida's agenda was intended to create growth through investments. By fostering a collaborative-growth oriented competitive environment that promoted start-up growth and open innovation, **sustained growth** would be achieved as investments into science, technology and innovations increased. The decreasing unemployment rates (*Trading Economics 2026*) and the strengthened middle-class bundled with the new focus on growth through investments **strengthened Japan's GDP** as Kishida intended, while also **pushing inflation upwards**.

As the **yen continued to depreciate** and **inflation was at its highest** the past decade, consumer **confidence** in the economy and Kishida faltered. Bundled with the LPD (Liberal Democratic Party) slush fund scandal, public trust depressed further (*Takemoto Y. & Katsumura M.*). Eventually, Kishida resigned.

PRIME MINISTER SANAE TAKAICHI AND HER PROACTIVE AGENDA

Sanae Takaichi is Japan's current and first female Prime Minister. Her economic agenda is pre-emptive and has a **large focus on growth**. Through "responsible fiscal activism", intends to stimulate **economic activity**. The general idea is to nurture growth through domestic private-sector investments, targeting **two specific strategic areas** (*Prime Minister's Office of Japan, 2026*):

(1) "**Crisis-management**" investments that take necessary precautions to ensure economic and food security. These consist of pre-emptive investments that mitigate risks and create resilience against said crises. These investments do not only mitigate crises and risks, they simultaneously work to address social issues.

(2) The second investment type is tied to Japan's **growth strategy**. Through investments into **promising industries** where high growth is anticipated, Japan supports innovation in the private sector while **assuring Japan's position** in these emerging markets. Takaichi's agenda also intends to boost private investment by shifting their budget formulation from relying on supplementary budgets, to multi-year budget allocation which ensures predictability and further encourages private-sector investments.

The **public's attitude toward consumption** had been **negative** for a long time due to the period of inflation and the depreciating yen, which is why Takaichi underlines the importance of creating a sense of **security** through her fiscal policies and increasing income. Shifts in food and beverage taxes can help with the reduction of prices and establishing food security (*Harutaka T., 2026*). Other fiscal factors such as the possible introduction of refundable tax credits would further increase the take-home pay (*Prime Minister's Office of Japan, 2026*).

Takaichi's economic policy reminds us of the New Form of Capitalism that Kishida pushed, with similar ideas regarding **growth** and the **government's role** regarding investments that nurture growth and mitigate risks and social issues.

Japan's Government currently holds **352** of **456** seats in the House of Representatives (lower house of the National Diet of Japan), a powerful **119** seat **majority** which grants

Takaichi the ability to push through her economic policies due to her support in numbers. Even as the government does not hold such a majority in the House of Councillors (upper house in the National Diet of Japan), the House of Representatives can override any disagreements by passing a two-thirds majority bill. (*Jiji*, 2026)

THE MIDDLE-EAST WAR – INFLATION SHOCKS AND ENERGY CRISES

The US-Israeli war on Iran has not been without effect on Japan. Similar to the previous war in Ukraine, one of the largest effects of this war has been the **surging oil prices** which increase fuel and energy costs on a global level. It has once again created **inflationary pressures** that could risk pushing Japanese inflation past their targeted **2%**.

The BOJ was **initially** hinting towards interest **rate hikes** to mitigate the rising inflation pressures and the **depreciation** of the yen. As the war prolongs further and the market and economy remains unstable, the BOJ's Governor Kazuo Ueda signaled that the previous **projections may not be realized** and that the BOJ must remain **vigilant and responsive**, monitoring the changes. Ueda also stated in his speech that a gradual economic recovery was however keeping inflation in check. (*Kihara L.*, 2026)

The yen has been on a constant **depreciating trend** since late February when Iran was first invaded. The Japanese yen is **sensitive to the shocks** of the war due to their heavy reliance on Middle-Eastern oil imports, in 2024 **approximately 95%** of Japan's crude oil imports were through the Middle-East (*Statista* 2026). The depreciation of the Yen has reached alarming levels, nearing the **160-yen per-dollar** threshold, a psychological barrier set by the BOJ which signals a need for intervention. Most recently it has strengthened as peace negotiations continue and oil prices seemingly decrease. (*Samonte J.*, 2026) The continued uncertainty of the situation remains risky however. The BOJ's **delaying of rate hikes** can pose a **threat** to the currency, impacting the import costs and strengthening mounting inflation (*Kihara L.*, 2026).

The trade ministry stated that Japan was not facing immediate oil shortage risks, through their **large reserves** and the potential to source oil through alternatives other than the Strait of Hormuz. Further protraction of the war can however have **detrimental** effects in the **longer-run** (*Kihara L.*, 2026). Prime minister Sanae Takaichi has also stated that Japan will provide **\$10bn** in financial support to countries in Southeast Asia to assist their coping with the surging prices to mitigate the risk of supply chain disruptions that impact Japan. Takaichi stated that Japan relies on said countries for e.g. medical supplies, which is why disruptions can be detrimental both economically and on a societal level (*Nohara Y. & Oda S.*, 2026)

A PERMANENT RESURGENCE

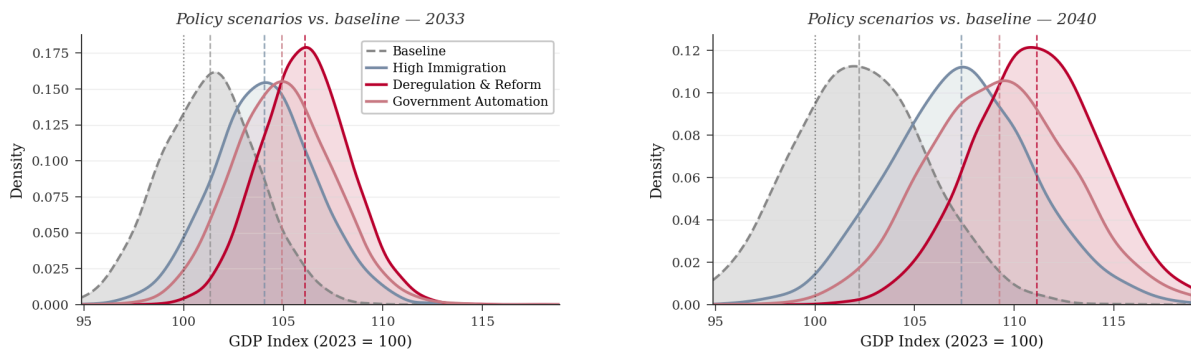
Reflecting on points that were discussed in the preceding sections, there is a pattern that appears. Each of Japan's apparent recoveries has shared a common character: **they were all episodes of cyclical uplift**. Japan's recent nominal GDP expansion risks being the same. We identified that Japan's inflation was largely cost-push, driven by energy shocks and supply chain disruptions, rather than a result of the economies expanding production or demand. The Izanami Boom of the 2000s was in a similar situation, where the expansion was driven by external export-related factors rather than internal growth through Japan's domestic initiatives. To break this externally *reactive* trend previously seen, the government must actively support and pursue growth initiatives. Prime Minister Takaichi has, as stated previously, proclaimed her willingness to take the steps required to sustain real economic growth. To do so, Japan must address two structural issues simultaneously; demographic decline and productivity issues.

To model various policies the Japanese government could implement to achieve real GDP growth, we performed a Monte Carlo simulation using the following **augmented Cobb-Douglas production function**:

$$Y_t = \left(A_0 \prod_{s=1}^t (1 + \varepsilon_s^A) \right) \cdot ((1 - \delta)K_{t-1} + s_K Y_{t-1})^{a_t} \cdot \left(L_0 \prod_{s=1}^t (1 + \varepsilon_s^L) \right)^{1-a_t}$$

The three terms are the same components of the regular Cobb-Douglas. The first term represents the total factor productivity (TFP) compounded by every random productivity shock up to year t . The product is the cumulative TFP multiplier, where each shock, ε_s^A , is distributed normally. The second term is the capital stock with the new investments added to the last period's surviving capital all raised to a_t . The third term is labor compounded by every demographic shock up to year t , raised to $1-a_t$. All the state variables are normalised to unity in 2023, with capital set to the Solow steady-state capital-output ratio. The shocks are distributed normally with the mean and standard deviations being determined by historical Japanese data from 2010 to 2023. The capital share of income, a_t , is 0.36, calibrated using information from Hayashi and Prescott (2002) and consistent with Penn World Tables estimates for Japan. In the automation scenario, a_t increases linearly to approximately 0.372 over the course of the 17 years but otherwise remains constant. Running this simulation 10,000 times gave the following distribution:

Simulated Distribution of Japan's Real GDP Index Under Alternative Policy Scenarios



Dashed verticals indicate scenario medians. Dotted line at 100 marks 2023 baseline. Distributions from 10,000 Monte Carlo simulations.

This showcases the effects of the three policies relative to the baseline case and presents a clear hierarchy. Immigration is the most direct solution to Japan's demographic crisis, but it is also the most politically contentious policy option. There is conflicting evidence regarding the economic impacts of immigration as the effects are dependent on both the amount of immigration and the period of time over which immigrants move to a country. Researchers at Sweden's Riksbank found that a sudden increase in Sweden's refugee immigrant population produced a demographic dividend that came from a reduction in the age-dependence ratio. This demographic dividend became more pronounced over time but the positive effect of this demographic dividend was dwarfed by the negative effect of the lower employment rates of the refugees (Olovsson et al., 2024). If Japan properly crafts its immigration policies, it can try to benefit from the demographic dividend without the associated negative effects. The fact that these **positive effects become more pronounced over time** is particularly important in the case of Japan due to its high dependence ratio which is only going to increase as the population continues to age.

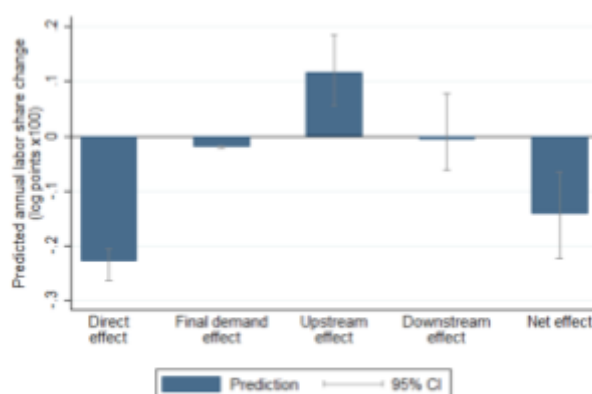


Figure 9: Predicted Effect of TFP Growth on Aggregate Labor Share (1970-2007)

Immigration remains deeply unpopular in Japan however, which has caused the government to avoid large-scale efforts to increase immigration levels (Green, 2017). Thus, this strategy is unlikely to be implemented in the foreseeable future. According to our simulation, while increasing immigration such that it offsets the decline in population provides a necessary demographic floor, it is insufficient to significantly increase and sustain growth on its own.

The government could also mitigate the economic impact of a shrinking labor force by incentivizing increased automation. This policy shifts the focus from stemming population decline to **increasing the capital share of income and increasing the productivity of remaining labor**. The effects on growth of increased automation are clearer than immigration. Autor and Salomons (2018) find that productivity growth consistently raises value-added and real output across industries and countries. Their findings suggest that a one percent rise in TFP predicts roughly a half-percent rise in nominal value-added and a 0.84 percent rise in real output. Particularly pertinent to the case of Japan, the authors also find that while automation reduces labor hours within the industries where it occurs, these direct employment losses are more than offset by induced gains elsewhere. This is echoed by McKinsey's scenario modeling, which suggests that global automation could bolster annual productivity growth by 0.8% to 1.4% (McKinsey Global Institute, 2017). In our Monte Carlo simulation, government support for automation generated higher real growth than immigration-focused policies. However, the impact of this policy is more volatile as represented by the lower peak and wider spread in the distribution's estimates for growth in 2040.

The most promising policy at the Japanese government's disposal is continued deregulation and promotion of competition. The streamlining of red tape, opening protected sectors, and

other reforms that liberalize entry tend to raise real GDP by boosting investment (Alesina et al. 2003), productivity and the efficient allocation of resources (CMA, 2015). Japan's own history illustrates both the potential and limits of this lever. In the mid-1990s, Japan experienced deregulation in all areas of the non-trading industries and as a result, labor productivity growth in the 2000s increased but the effects began to wear off in the 2010s. There are still many areas where deregulation has not progressed, and **Japan has not been evaluated as having made progress in deregulation** compared to other developed countries (Fukunaga et al. 2024). Thus, the fact that the initial gains faded could be due to the incomplete nature of the reforms that were implemented. The reforms were wide enough to generate a cyclical productivity uplift, but too shallow and selective to alter the structural incentives that suppress competition.

The growth benefits of deregulation that prompt increased competition and productivity growth in services are prone to **spillover effects** since reforms would not only generate efficiency gains in the directly affected sectors, but also have positive spillover on sectors that use the affected services as input (Danninger, 2015). Our Monte Carlo simulation reflects the large potential gains for Japan since deregulation and structural reform has the highest likelihood of its impact in both 2033 and 2040. According to the simulation, deregulation is expected to have a 4-5x impact on growth relative to the baseline case. By focusing on reform, the Japanese government will be able to achieve predictable real growth centered around 0.6% according to the model.

Focusing on only one of the policies however is insufficient and a combination of all three policies is likely the best option. While the 0.6% real growth is structurally sounder than anything Japan has achieved in recent decades, it remains modest for an economy with Japan's demographic trajectory and debt burden. The deeper problem is that the three policies that we model are, by themselves, **treatments of symptoms**. None of them directly generates the new ideas and industries that are, in the Romer framework, the ultimate source of long-run growth. What Japan requires, therefore, is to attract and concentrate deregulated, high-skilled talent and capital. We believe that, in order to achieve this, the Japanese government should focus on making Tokyo into a **hub of innovation**, designed to attract the entrepreneurs and innovators who can drive its future growth.

Bringing this plan to life means looking at the bigger global picture. This next section works as a two-way street. On one side, Japan's decades of economic struggle offer a powerful survival guide for the rest of the world. Countries like China and South Korea can look at Japan's past to learn exactly what mistakes to avoid when their own growth slows down. On the other hand, Japan can't fix its shrinking workforce and massive debt completely on its own. To secure its future, it needs to borrow successful strategies from its neighbors, like Singapore's clever ways of managing national wealth and bringing in skilled foreign workers. By looking at both sides, we can see what the world can take away from Japan's history, and what Japan needs to take from the world to finally move forward.

GENERAL APPLICATIONS

The Japanese economic experience provides a **dual-phased precedent** for global macroeconomics, functioning as a model for both the prevention of systemic stagnation and the remediation of established deflationary cycles. For advanced economies, the prevention phase requires **identifying structural growth constraints** before they become embedded in the national economy.

The **1990 asset bubble crash** serves as a primary case study in the risks of aggressive, broad-based monetary tightening. When the Bank of Japan rapidly increased the discount rate to **6%**, it triggered a systemic contraction in credit supply by devaluing the real estate assets used as bank collateral (Bank of Japan, 2010). This suggests that other nations should prioritize **macroprudential regulation**, such as sector-specific lending caps and loan-to-value ratios, over blunt interest rate hikes to manage asset bubbles without destabilizing the broader financial system (FSA, 2002). Furthermore, Japan's history with the **1997 and 2014 consumption tax hikes** demonstrates that premature fiscal consolidation can derail a cyclical recovery. When the state prioritizes debt ratios over the output gap, it risks shrinking the tax base and cementing a deflationary norm (Uchida, 2024). Prevention therefore requires proactive communication to ensure inflation expectations remain anchored in a **growth regime** rather than at the zero lower bound.

If an economy has already entered a **liquidity trap**, the Japanese remediation strategy suggests a transition to a discontinuous policy shift to influence long-term expectations. As seen during the Abenomics era, breaking long-term stagnation requires a regime change in monetary communication. Tools such as **Quantitative and Qualitative Easing (QQE)** are utilized to lower real interest rates by raising inflation expectations, forcing a portfolio rebalance from safe-haven assets toward domestic investment (Bank of Japan, 2010). However, monetary expansion serves only as a temporary stabilizer. A sustainable exit depends on structural reforms that address labor market rigidities and the supply side. The recent shift toward a **New Form of Capitalism** emphasizes that long-term recovery is contingent upon a virtuous cycle where human capital investment and labor mobility drive productivity, transforming temporary cost-push inflation into a sustained, wage-led expansion (Cabinet Office of Japan, 2021).

CHINA'S SOLUTION BASED ON JAPANESE EMPIRICAL

China currently faces a structural alignment that mirrors Japan's position in the early 1990s, characterized by a cooling property sector and a potential transition toward a balance-sheet recession (Koo, 2008). In this state, private firms and households prioritize **debt minimization** over **profit maximization**, leading to a persistent decline in aggregate demand. As of 2026, the primary parallel lies in the composition of national wealth: with approximately **70%** of Chinese household wealth tied to real estate, a figure higher than Japan's at its 1990 peak, the ongoing price correction creates a significant negative wealth effect that suppresses **domestic consumption** (Bloomberg Economics, 2025).

The **zombie firm phenomenon** that plagued Japan's Lost Decades is a growing risk for China. Data from 2025 indicates that credit growth in China has increasingly been used to evergreen the debts of insolvent property developers *and* **local government financing**

vehicles (LGFVs) (Kawai & Takagi, 2009). This process of rolling over non-performing loans prevents the efficient allocation of capital toward high-growth sectors, mirroring the zombie lending that reduced Japanese productivity in the late 1990s (FSA, 2002).

Demographically, China's **working-age population began contracting in the mid-2010s**, a shift that occurred at a much lower level of per-capita income than in Japan (World Bank, 2024). This **getting old before getting rich** dynamic means China has a smaller financial buffer to support its aging population. The aging trend exerts downward pressure on the natural rate of interest and potential GDP growth, making the economy more susceptible to the liquidity trap mechanics that defined Japan's 2000s (Shirakawa, 2010).

To resolve the structural issues currently weighing on China's economy, the most urgent step is a decisive, state-led cleanup of the financial system. In 1990s Japan, banks were allowed to **evergreen their bad debt**, essentially handing out new loans just so failing companies could pay the interest on old ones. This created zombie companies that ate up capital but produced nothing. China must avoid this by forcing its property sector to admit its losses now. This ensures that new money actually flows toward productive, healthy businesses rather than being swallowed by a black hole of unpaid property debt (IMF, 2025).

The second solution requires a fundamental shift in what drives the economy. For decades, China has relied on investment, building bridges, apartments, and factories, to grow. Today, this investment accounts for about **42% of its economy**, nearly double the global average. However, building the tenth bridge in a city doesn't help the economy as much as building the first one did; the returns are shrinking. To keep growing, China must shift toward a consumption model, where the people, not the state, drive demand.

The basic math of an economy is represented by the formula:

$$Y = C + I + G + (X - M)$$

(Where Y is total growth, C is consumer spending, I is investment, G is government spending, and X-M is net exports.)

As the workforce shrinks, China can no longer rely on having more workers and more machines (I). It must rely on C. By strengthening the social safety net, meaning better healthcare and pensions, the government can convince households they don't need to save every cent for an emergency. If China can raise consumer spending from **38% of its GDP** toward the global average of **60%**, it creates a built-in engine for growth that doesn't depend on building more empty apartments (IMF, 2025).

On the money side, China's central bank must tackle a psychological trap. Even if the bank lowers interest rates, it won't help if people expect prices to fall. This is explained by the Fisher Equation:

$$r = i - \pi^e$$

(Where r is the real cost of a loan, i is the bank's interest rate, and π^e is the price increase people expect.)

If the bank sets the rate (i) at **2%**, but people expect prices to drop by 2% due to deflation, the real cost of the loan (r) is actually **4%**. This makes borrowing expensive even when it looks cheap. To fix this, China needs to shock the public into believing that prices *will* rise by at least 2% every year. When people expect prices to go up, they are more likely to spend now and borrow for the future, kickstarting the economy. Without this reset, printing more money is useless because nobody wants to spend it.

Finally, China must address its **shrinking population**. In a traditional view of growth, you need more people and more tools to produce more stuff. But as the number of workers (L) falls, the economy will naturally slow down unless those workers become much more efficient. This efficiency comes from Total Factor Productivity (A), or simply put: better technology and smarter ideas.

The Ideas model suggests that growth doesn't have to come from just having more people; it can come from how those people are used. The formula for tech growth is:

$$\Delta A = \delta \cdot L_A \cdot A$$

(Where δ is how productive researchers are, and L_A is the number of people working on new ideas, while A is the knowledge base/TFP)

The genius of an idea is that it is non-rival. If one person invents a new AI tool or a better way to automate a factory, every factory in the country can use that same idea at the same time without using it up. By shifting workers away from low-end construction and into high-tech research, China can make every remaining worker much more productive. This intensive growth is the only way to break the stagnation seen in Japan. If the workforce shrinks by **0.5%** but technology improves by **3%**, the average person still gets richer. By focusing on **AI and automation**, China can move toward a future where a smaller population enjoys a higher standard of living, successfully bypassing the decades of sideways growth that trapped Japan.

SOUTH KOREA TODAY AND JAPANESE PARALLELS

South Korea is currently in a period of uncertainty regarding the future. A clear parallel to the Japanese **asset bubble** can be drawn in the Korean real estate & property market today, with President Lee Jae Myung signaling the **risk of “ending up like Japan”** (Goh G. & Um J., 2025). It has reached a level where housing is near unattainable especially in urban areas. The prices have skyrocketed as a result of the limited supply, bundled with the high demand and lower interest rates, resulting in households taking on **unnaturally high debt** to pay for housing (**around 100% of GDP**) and creating sensitivity towards interest rate changes. The Korean bubble may even be more sensitive than the Japanese bubble in the '90s due to a far larger share of their private debt (approximately half) being held by households, while in the Japanese crash, a third of private debt was household debt (Kim J. et al. 2025)

Another possible bubble threatens the economy, the South Korean **stock bubble**. This is made clear through the fact that just in the past year, the **KOSPI** index (Korea Composite Stock Price index) has grown more than **2.6 times** (Matsuraa N. 2026). The main driving

force behind this perceived sudden boom in the stocks' prices is **AI** and South Korea's position within the AI industry, which will be described further later. Samsung and SK Hynix are the two companies in the spotlight of this "asset bubble", with rapidly growing market shares and profits, which additionally increases the markets' dependence on the companies and heightens the risks related to an asset bubble crash. (Frost R. 2026).

Yet another noteworthy point regarding Korea today is the continued **depreciation** of the Korean won, which has been ongoing since 2021. It has recently reached levels last seen in the global financial crisis of 2008 (albeit over a longer depreciative period) and even temporarily surpassed their own psychologically important threshold of **1,500 KRW/USD**. The source of this depreciation is tied to an **eroded perception of domestic assets** and an ever-increasing reallocation of capital towards **foreign-denominated** ones (Jun Yeon Park, 2026). US assets and the US dollar is in especially high-demand, offering a hedge against Korea's domestic uncertainties. This pattern is not exclusive to households and is even reflected in the asset portfolios of Korean **government officials** such as the recently inaugurated Bank of Korea governor Shin Hyun Song (Lee S., 2026). This can send negative signals to the public and in turn further diminish public perception of domestic assets, causing a spiraling effect that sustains the won's depreciation. Additionally, the **inflationary pressures** created due to the surging energy prices and Korea's position as an energy importer risks pushing the currency even lower (Ordonez E., 2026), as seen with the Japanese yen.

South Korea is one of the global powerhouses in the global **semiconductor market** which has surged in demand and grown quickly over the past years due to the advancements within and normalization of AI. Semiconductors have quickly become South Korea's main export-driver, accounting for approximately **21% of their exports** in 2024, which establishes the semi-conductor industry as one of the **key drivers** of the economy as well (Ko J. 2025). The global-scale interest has developed South Korea into a **hub** for semiconductors, attracting many foreign companies that invest in the country to claim their spot. The semiconductor industry has also been supported by the government through different initiatives and regulatory changes (Ko J., 2025) that create incentives and private investments and in turn result in growth for the economy.

The two South Korean asset bubbles are *by definition* to burst eventually. The government is attempting to handle the situation and cool prices down by expanding housing and tackling debt-related issues. It is simultaneously critical for the government to take on an **active fiscal policy** to mitigate the consequences of said burst, unlike historically in Japan where the period of stagnation following the asset bubble crash was perceived to be cyclical and in turn prolonged. Another critical point of failure of the Japanese government in the '90s bubble was their **interest rate policies** which suffocated the economy that was highly vulnerable to hikes. As the South Korean economy may currently be even more sensitive to such rate changes, the government must act with high **precaution** and learn from the previous bubble crash to ensure the consequences are not as severe as they were in Japan.

Relying on **growth** can be a way to steer away from the debt-heavy position households find themselves in. Among the **greatest growth-tools is their semiconductor industry** and developing interest in South Korea as a hub for foreign companies, creating a powerful channel of which investments and growth is a result. Tying it back to the previously

described ideas model, the development of such a hub fosters the development of new ideas by bringing people with an innovative mindset together. Through their collective R&D, new innovations and *ideas* are created and accumulate exponentially, all that remains being reaping the benefits of these developments and growing the economy.

Relying on the semiconductor industry does not come without **risks** for South Korea however, as the semiconductor industry is tied to the AI-related stock bubble South Korea is also exposed to, and working to mitigate the property-bubble threat in this way could result in escalating the threat of another.

The rapid depreciation of their currency is a perception-based problem and solving it could be done by transforming the existing confidence in domestic assets. Currently, utilizing their foreign reserves is South Korea's preferred strategy, their massive reserves can act as a buffer (Yonhap, 2026). To actually shift the perception of domestic assets, restabilizing the economy (and the currency) is critical, as a depreciating currency would only further deter investments into domestic assets. Thus, the stabilization of the currency through the use of foreign reserves is not only a short-term reactive buffer, but can help with the general confidence in the economy as well.

SINGAPORE AS A PROXY FOR JAPANESE EVOLUTION

Singapore presents a structural macroeconomic profile that overlaps Japan's at multiple binding margins: rapid population ageing, a chronic current-account surplus driven by a corporate sector in net-saver position, a household balance sheet concentrated in real estate, and a deep export-orientation. Singapore's **resident total fertility rate sat at 0.97 in both 2023 and 2024**, below Japan's level and **well under the 2.1 replacement rate** (National Population and Talent Division [NPTD], 2025). Despite these similarities, **Singapore avoided the deflationary trap that defined Japan's 1990–2012 macro outcome**: MAS Core Inflation has averaged near **2%** over the long run, the policy framework has never reached a zero lower bound, and **Singapore's GDP grew 5.0% in 2025** with a positive output gap (Monetary Authority of Singapore [MAS], 2026).

Most central banks set a short-term interest rate to manage inflation; the Bank of Japan, the Federal Reserve, and the ECB all work this way. Since 1981, Singapore has done something different. This is the **"basket-band-crawl"** or BBC framework: a basket of trade-weighted currencies as the reference, an undisclosed band within which the rate floats, and a crawling target path that MAS adjusts based on the inflation outlook (Khor et al., 2004). Because Singapore is a small, very open economy where roughly 40 cents of every dollar spent domestically goes to imported goods, exchange-rate movements pass through to consumer prices much faster and more predictably than interest-rate movements would, which is the empirical basis for choosing the exchange rate as the policy instrument (MAS, 2026). When MAS expects inflation to rise above target, it tightens by steepening the appreciation path of the band; when inflation pressures soften, it flattens or, in extreme cases such as October 2008 and April 2020, recentres the band lower. The framework is in effect a **Taylor-rule analogue** to the same forward-looking response to inflation deviations and the output gap that the Fed or BOJ implements through the policy rate, but transmitted through the currency rather than the bond market.

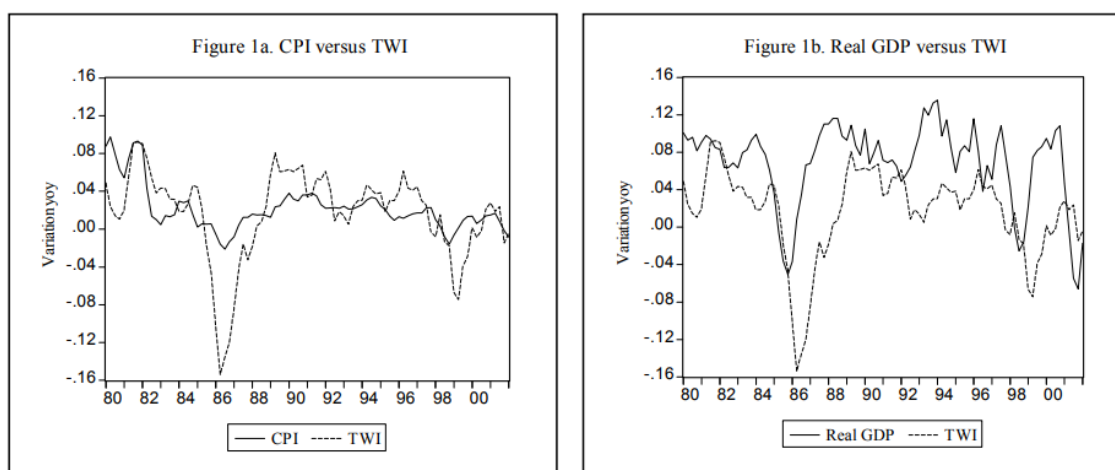


Figure 10: Singapore CPI and Real GDP Growth versus the Trade-Weighted Exchange Rate (TWI), 1980–2001 (Parrado, IMF Working Paper WP/04/10, 2004)

This logic does not transfer fully to Japan, as its **gross trade is around 37% of GDP versus Singapore's 320%** (World Bank, 2026), the JGB market is priced off the BOJ policy rate, and consumer prices respond more to domestic wage and demand dynamics than to the yen. What does transfer is the property the framework delivers: a forward-looking policy rule with a stable, well-understood instrument-target relationship. McCallum, in a paper commissioned by the BOJ's Institute for Monetary and Economic Studies, models exactly this property finding that what makes the MAS framework durable is rule coherence rather than the specific instrument, and that the same coherence is what Japan's monetary framework had lost by the early 2000s (McCallum, 2007). Two prescriptive lessons follow for the BOJ's post-YCC framework. First, the BOJ should publish a forward-looking, parameterised reaction function: the analytical anchor the MAS framework has provided since 1981 and the analogue of which the Fed and ECB have moved closer to since the GFC, and which **Kuroda's 2013 explicit 2% target** was a first, partial step toward. Second, communication should commit explicitly to the rule rather than to discrete policy moves, addressing the same credibility shortfall Uchida identifies as the residue of the deflationary norm (Uchida, 2024).

Singapore's three reserve managers: the Monetary Authority of Singapore, GIC, and Temasek together **hold publicly disclosed assets of approximately US\$1.6 trillion**. The architecture allows **up to 50% of the long-term expected real returns from these reserves to flow into the annual government budget** through a mechanism called the Net Investment Returns Contribution (NIRC) (Ministry of Finance [MOF], 2026; Government of Singapore Investment Corporation [GIC], 2026). GIC alone has **delivered an annualised real return of 3.8% over the 20 years to March 2025** (GIC, 2026). **NIRC contributed S\$23.5 billion to the FY2024 Budget**: roughly 17% of total revenue and the second-largest single revenue source after corporate income tax (MOF, 2024).

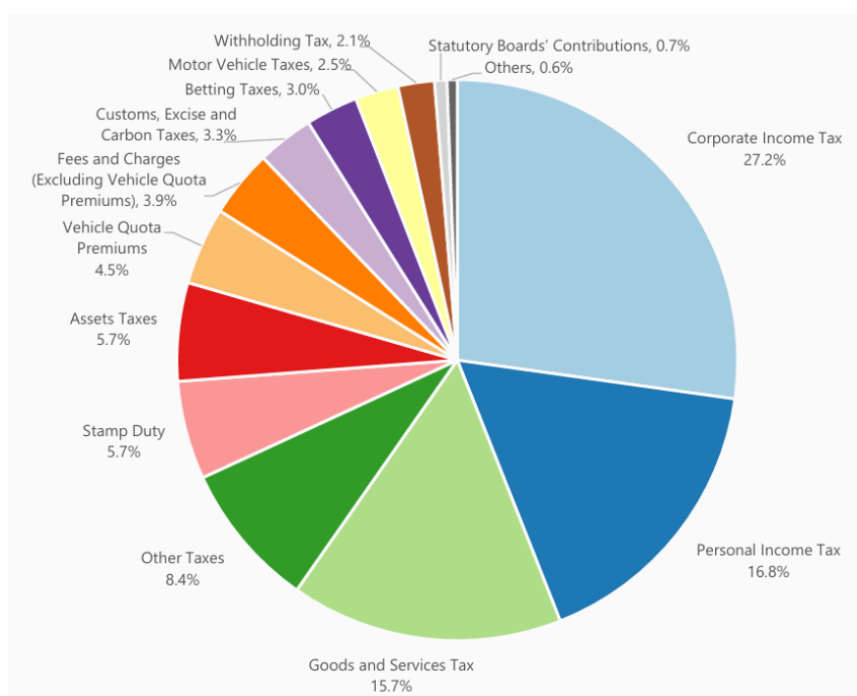


Figure 11: Composition of Singapore Government Operating Revenue, FY2023 (Singapore Ministry of Finance, Analysis of Revenue and Expenditure)

The mechanism solves the same intertemporal-budget problem Japan currently faces. **With gross general-government debt around 250% of GDP and primary deficits running near –4% to –5% of GDP**, Japan can stabilise its debt-to-GDP ratio in three ways: by running large primary surpluses (politically very difficult), by sustaining nominal GDP growth above the effective interest rate on government debt (something the BOJ's recent exit from yield-curve control makes harder), or by introducing a non-tax revenue stream large enough to substitute for a primary surplus. Singapore's NIRC is precisely the third option, institutionalised. Japan already have the Government Pension Investment Fund which is the **world's largest pension fund at over ¥250 trillion in assets** (Government Pension Investment Fund [GPIF], 2024), but GPIF's mandate is liability-matching for the public pension, with returns retained inside the pension system rather than flowing to general revenue. Restructuring even a portion of Japan's public-sector financial assets along NIRC lines would create a structural revenue stream of the kind the IMF has documented in Singapore's case: averaging 3.1% of GDP annually over the past decade and "reducing the tax burden" accordingly (IMF, 2024), which is directly relevant given that Japan's own consumption-tax history: the 1997 and 2014 hikes documented before is the case of cyclical contraction caused by raising consumption taxes when a non-tax revenue alternative was unavailable.

Singapore's foreign workforce constitutes roughly two-thirds of its 1.91 million non-residents, with **non-residents at over 31% of total population** (NPTD, 2025); operationally this is administered through a tiered work-pass system (Work Permit / S Pass / Employment Pass) differentiated by salary and skill thresholds. **Japan's foreign workforce has quadrupled to 2.3 million between 2008 and 2024** but represents only about 3% of total population and labour force (ASEAN+3 Macroeconomic Research Office [AMRO], 2024). Under PM Takaichi's December 2025 framework, the Specified Skilled Worker programme combined with the new Employment for Skill Development scheme will cap foreign-worker intake at 1.23 million

through fiscal 2028 (The Japan Times, 2025) an order-of-magnitude shortfall against Singapore's foreign-employment share even at the new ceiling.

From the perspective of a standard Solow growth decomposition:

$$\Delta Y/Y = \Delta A/A + \alpha \cdot \Delta K/K + (1 - \alpha) \cdot \Delta L/L$$

The economic logic is straightforward: output grows from increases in productivity (think of this as "ideas and technology", denoted A), capital (K), and labour (L): Japan's labour input is structurally negative under any fertility scenario consistent with current demographics, and its capital-deepening returns are diminishing. **That leaves only productivity (A) and immigration (a positive shock to L) as paths to positive output growth.** Japan has limited room on productivity in the short run; on labour, Singapore's tiered work-pass system is the operational template that Japan's post-2027 Specified Skilled Worker / Employment for Skill Development architecture increasingly resembles, just at a fraction of Singapore's effective intake share. This empirically substantiates the Monte Carlo finding above: immigration provides a necessary demographic floor but is insufficient on its own, and works only alongside the rule-bound monetary framework and the NIRC-style fiscal channel.

Property-market regulation is the policy area where Singapore's experience and Japan's intersect directly. Singapore's macroprudential regime, including the Additional Buyer's Stamp Duty (a transaction tax of up to 60% on foreign buyers and up to 30% on Singapore citizens' second-and-subsequent homes), tightened loan-to-value caps, and the Total Debt Servicing Ratio framework, was built up from 2009 onward in explicit recognition that an unmanaged **property bubble can produce the kind of balance-sheet recession Japan suffered after 1990** (Inland Revenue Authority of Singapore [IRAS], 2026). The crucial timing detail is that Singapore began tightening in 2009-2011 *while prices were still rising* (Q2 2011 was the cyclical peak), whereas the **BOJ's 1989-1990 discount-rate increases reached 6.0% only after nationwide land prices had quadrupled from 1985 levels**, too late for sectoral tools to substitute for monetary tightening. The general principle the comparison establishes is that sectoral macroprudential tools deployed *before* asset-price dynamics destabilise are cheaper than economy-wide monetary tightening deployed *after*, which is now part of the standard IMF and BIS macroprudential framework (IMF, 2013). The prescriptive translation for Japan is not retrospective but forward-looking: any future episode of asset-price acceleration, most plausibly in commercial real estate as the BOJ continues normalising rates, should be met with sectoral stamp duties and LTV caps before, not after, the BOJ adjusts the policy rate, on the Singapore template rather than on Japan's own 1989-1990 template.

THE HUB MODEL

Historically, the most explosive periods of growth in cities such as Paris in the second half of the 19th century, or San Francisco from the 90s until current times, were not driven by simple increases in labor or capital, but by a **radical spike in Total Factor Productivity**. This was achieved through what we note as the **hub effect**: the dense concentration of diverse talent that fosters rapid information spillover and intellectual cross-pollination (Glaeser, 2011).

Actively positioning Tokyo as a **localized innovation hub** offers a dual-channel expansion of the macroeconomic framework. On the supply side, the dense concentration of specialized talent accelerates the frontier of technological progress, expanding aggregate supply (AS). Simultaneously, this structure shifts the aggregate demand (AD) curve outward via a distinct multi-channel multiplier: first through the immediate capital expenditures of startups consuming local inputs to establish operations, second through the subsequent household adoption of newly commercialized products, and third through high-value export vectors. This dynamic mirrors the structural trajectory of Stockholm, which has successfully leveraged targeted institutional frameworks to establish itself as a primary European idea hub with a **high per-capita density of unicorn startups** (Atomico, 2025). Crucially, empirical macroeconomic research indicates that the growth dividends of such concentrated innovation shocks are remarkably durable, exerting a statistically significant, positive impact on aggregate productivity and national output that can persist for up to forty years (Kogan et al., 2017).

Furthermore, a highly globalized Tokyo hub is uniquely positioned to capture a significant share of **regional entrepreneurial talent** by capitalizing on the persistent institutional and cultural divides between East Asian markets and Western tech ecosystems. By mitigating the legal and operational frictions that foreign founders typically face, Japan can position its capital city as the premier regional destination for founders seeking world-class venture infrastructure without the friction of Western displacement (ADB, 2025). However, executing this strategy introduces **distinct fiscal and political liabilities**. Re-engineering an urban economy into an innovation hub is highly capital-intensive and operates on a protracted timeline; it requires substantial up-front public and private outlays that will take years to manifest as **headline GDP growth**. Moreover, the sweeping deregulation required to facilitate this level of capital and labor mobility inevitably challenges deep-seated domestic operational structures, rendering the legislative pathway highly contentious (Alesina et al., 2003).

For Japan, the transition from a **cost-cutting economy** to an **innovation engine** requires moving away from incremental process improvement such as the traditional *Kaizen* model, and toward disruptive innovation. In the context of the augmented Cobb-Douglas function mentioned above, Innovation functions as the compounding multiplier. In a San Francisco-style ecosystem, the term ϵ_s^A isn't just a random shock, it is a systemic outcome of a specific regulatory environment that encourages risk-taking and the rapid reallocation of capital (Romer, 1990). The San Francisco lesson for Tokyo is not about the technology itself, but about the institutional architecture that supports it. To consolidate GDP growth, Japan must reform three specific areas identified in our deregulation scenario.

Firstly, risk capital reallocation is of utmost importance. In innovation hubs, capital is not trapped in low-productivity zombie firms. Instead, a robust venture ecosystem ensures that capital flows toward high-growth potential startups (Caballero et al., 2008). Japan's current corporate-sector surplus derived from its structural net-saver position, could be mobilized through **deregulation that incentivizes corporate venture capital** and lowers the barriers for early-stage financing (Bank of Japan, 2016).

Secondly, **permission to fail** should gradually become socially acceptable and structurally supported. Reform in Japan must address the social and legal consequences of business

failure. Innovation hubs thrive on productive failure, where the collapse of one firm releases talent and ideas back into the labor pool (L). Deregulation that simplifies bankruptcy and allows for faster second acts would increase the frequency and magnitude of the positive productivity shocks (ϵ_s^A) in our model (Glaeser, 2011).

Lastly, **labor fluidity** should be prioritized. Paris in the 19th century and Silicon Valley today both relied on the ability of talent to move rapidly between competing projects. For Tokyo to become a similar hub, it must complete the third arrow of labor market reform, breaking the seniority-based wage system to ensure that human capital is deployed where its marginal product is highest (OECD, 2024).

Paris in the 19th century became an art and intellectual hub because it was a **City of Light**, represented by an open environment that attracted global talent and facilitated the exchange of non-rival ideas. The Romer model logic we applied earlier suggests that the non-rivalry of ideas is one of the only ways to break the **stagnation of a shrinking labor force** (Romer, 1990).

If Tokyo utilizes deregulation to lower the hidden costs of doing business, much like the **EU-Japan EPA** lowered the costs of trade, it can transform from a domestic administrative center into a global intellectual crossroads (European Commission, 2024). This is the essence of the **New Form of Capitalism** envisioned by recent administrations, depicted as moving beyond corporate efficiency and toward a virtuous cycle where social problem-solving, in aging, energy, and automation, generates new technologies that can be exported globally (Cabinet Office, 2023).

BEYOND DEFLATIONARY NORMS

The economic saga of Japan from the 1990s to 2026 serves as both a cautionary tale and a blueprint for the modern era of Japanization facing other advanced and emerging economies. As this analysis has demonstrated, Japan's **Lost Decades** were not merely the result of a **single asset bubble crash**, but the consequence of a deeply embedded deflationary norm, a social and institutional belief that prices and wages would remain stagnant in perpetuity. While the aggressive monetary innovations of the 2000s and the three arrows of Abenomics provided the necessary liquidity and temporary fiscal buffers to prevent total collapse, they often struggled to move the economy beyond **cyclical uplifts**.

The structural pivot arrived through the exogenous shocks of the early 2020s. The pandemic-era supply disruptions and the commodity price spikes of the Ukraine and Middle East wars performed a psychological service that decades of zero interest rate policy could not. They broke the low-price paralysis of the Japanese consumer. However, as the 2026 data indicates, cost-push inflation is a double-edged sword that risks stagflation if not met with a corresponding resurgence in real productivity and domestic demand.

The comparative lessons from China, South Korea, and Singapore reinforce a singular truth: **the only sustainable exit from stagnation is a fundamental reallocation of human and risk capital**. China's current balance-sheet struggle and South Korea's demographic-debt trap highlight that Japan's mistakes, delaying bank cleanups and relying on diminishing returns from physical infrastructure, must be avoided. Conversely, Singapore's NIRC model

and its proactive macroprudential tools offer Japan a template for transforming existing national wealth into a non-tax revenue stream that can fund the transition to an aging-resilient society.

Ultimately, as the Monte Carlo simulation highlights, Japan's path to a permanent resurgence lies in the **Hub Model**. By adopting the institutional architecture of global innovation hubs like San Francisco and 19th-century Paris, Japan can move beyond its traditional Kaizen process-efficiency model toward **disruptive, Romer-style innovation**. Through aggressive deregulation, the breaking of seniority-based labor rigidities, and a structural permission to fail, Tokyo can transform from a domestic administrative center into a global intellectual crossroads. If Japan can successfully catalyze this shift, the **¥600 trillion milestone** will not be remembered as a high-water mark of inflation, but as the foundation of a virtuous cycle of growth and distribution, a **New Form of Capitalism** that finally leaves the Lost Decades in the past.

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