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**The Future of Monetary Policy:
Lessons from the History of Monetary Economics**

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(English translation based on the Japanese original)

Introduction

Economies around the world have been facing elevated inflation, and attention has been drawn to the responses made by governments and central banks (Chart 1). It is difficult to predict how long the current inflation will last in the medium to long run. One recent narrative regarding inflation is that, since the mild-inflation regime accompanied by anxiety over deflation has ended, we are about to enter a regime of high inflation.¹ There are others, however, who are skeptical whether inflation will take hold (Wolf 2022a; Krugman 2022a, 2022b).

Since the 2000s, the global economy has been concerned about secular stagnation or "Japanification" -- the combination of low inflation (or deflation), low growth, and low interest rates. But will this era of Japanification be finally over as the narrative insists? In addition, as inflation has started to be observed worldwide, the efficacy or validity of the idea of a high-pressure economy has become a controversial topic.² On the question of how long the current inflation will last, I would like to discuss future monetary policy and the high-pressure economy from a medium- to long-term perspective, rather than examining the current inflation.

John Hicks argued that the dynamics of money and the history of monetary economics are closely related to each other. He said monetary theory "belongs to monetary history" in a sense, because "a large part of the best work on Money is topical" and "throughout the whole time -- back before Ricardo, forward after Keynes -- money itself has been evolving" (Hicks 1967a, pp. 156-57). In order to consider the future of monetary policy, I will first outline the recent inflation narrative and then look back at the history of monetary economics, including economic history and the history of economics. The history of monetary economics reveals the importance of nominal values in the economy and the role of monetary policy in determining them. The classical monetary economists, on whom I will mainly focus today, already recognized the non-neutrality of money -- that is, the fact that the nominal value of

¹ See *The Economist* (2022a, 2022b), Spence (2022), and Rogoff (2022a, 2022b). For this narrative by members of the Japan Association of Business Cycle studies (JABC), see Shimazu (2022) and Kataoka (2022).

² The idea of a high-pressure economy has its origins in Okun (1973). For studies conducted by the Bank of Japan, see Kaihatsu et al. (2018) and the Bank of Japan Research and Statistics Department (2018). For an assessment of a high-pressure economy in the United States, see Fatás (2021).

money affects the real value of the economy. In light of this historical context, I will go on to consider future monetary policy, drawing the conclusion that the mild-inflation regime is still in place and concern over Japanification has not yet been dispelled, particularly in Japan.

I. Looking at the Present: Is the Mild-Inflation Regime Over?

Has the mild-inflation regime ended because of the onset of the current global inflation?³

The narrative that we are about to enter a high-inflation regime is based on the following six factors (Chart 2).

First is the growing role of government. Some argue that inflationary pressure on the economy will increase due to higher government spending, tighter regulations, and accumulating fiscal deficit and government debt.

The second factor is the convergence of economic growth. With China's high growth coming to an end, the growth rates in emerging economies are declining. This suggests that the growth rates of advanced economies and those of emerging economies are beginning to converge.

The third factor is the end of globalization, or deglobalization. Sluggish growth in goods trade since 2008, coupled with recent geopolitical tensions and rising concern over economic security, has led to a global restructuring of supply chains. It has been argued that the shift from the era of integration and efficiency to that of segregation and stability will bring high inflation.

The fourth factor is the change in demographics. According to Goodhart and Pradhan (2020), the global low inflation environment is the result of a significant increase in the world's labor supply from 1990 to 2018 due to the rise of China and developments in demographics in advanced economies. However, they point out that this trend is now reversing: a declining and aging population in China and advanced economies will lead to a return of inflation.

³ The distinction between a mild-inflation regime and a high-inflation regime is not clear-cut. One may argue, however, that the former is a state of inflation staying at around the 2 percent inflation targets of major central banks, whereas the latter is a state of inflation being more than double 2 percent but less than 10 percent.

The fifth factor is the transition to a decarbonized society to address climate change. Some have argued that this transition will lead to so-called greenflation.

The sixth factor is the onset of a wartime economy. There is a view that growing geopolitical risks could lead to a wartime economy, including a return to the kind of inflationary environment that was seen during the Cold War (Pozsar 2022).

I would like to look at these factors one by one. First, the role of government has been steadily growing in size and scope.⁴ Since the 1980s, there have been periods when attempts were made to curb such growth, but the uptrend continues. Analyzing the effects of government regulation is not straightforward since the nature of such regulations may matter, but it is safe to say at least that they have tended to proliferate. Inflation has trended downward during this same period. Also, we can find no clear relationship between inflation rates and the ratio to GDP of government spending or government debt (Charts 3 and 4).

With regard to the second factor, it is unclear whether the slowdown in growth rates is inflationary or deflationary in nature. Indeed, low growth is precisely the phenomenon over which concern was raised amid secular stagnation, with some arguing that low growth is the cause of low inflation.

As for the third factor, the argument over whether globalization has brought low inflation is empirically inconclusive (Kuroda 2018). Some hold that it is too early to tell whether globalization has even run its course. Although growth in goods trade has decelerated in recent years, trade in services continues to grow at a high rate (Chart 5). Naturally, the restructuring of supply chains from the perspective of economic security can serve as a cost-push factor, as firms opt for the security of procurement over minimizing costs. On the other hand, given that services industries are labor intensive, if automation of the services sector moves ahead globally -- through the use of means such as artificial intelligence (AI) -- and wages converge on a global level, this may turn out to have a disinflationary effect (Baldwin

⁴ *The Economist* (2021) shows that the ratio of government spending to GDP in advanced economies has trended upward since 1870. Adolf Wagner's law of increasing state activity and Peacock and Wiseman's displacement effect hypothesis argue that government spending will inevitably increase. See also, Robinson (2020).

2022; Wolf 2022b).

Fourth, the impact of demographics is uncertain. It is true that the decline in labor supply due to a declining and aging population could become inflationary. On the other hand, longer life expectancies can motivate people to build up their precautionary savings and push up savings rates. Declining birthrates will cause reductions not only in the labor force population but also in the consumer population, which, among other factors, could have an adverse impact on the growth rate. This has more often been regarded as a deflationary factor, particularly in Japan.

As for the fifth factor, greenflation, the impact of decarbonization on economic and financial conditions is complicated. If it is thought of as a response to negative externalities, this implies firms taking on costs that they have previously not faced, which becomes a cost-push factor. What is not clear is whether this will elevate inflation or have a disinflationary effect by suppressing aggregate demand. Conversely, if investment related to decarbonization rises, this could stimulate aggregate demand and feed into demand-pull inflation. In this respect, whether greenflation occurs will depend not so much on cost-push factors but on developments in aggregate demand (Schnabel 2022).

The last factor, the onset of a wartime economy, is potentially the most inflationary one. One study finds that the last 12 largest wars resulted in a sharp rise in inflation and nominal interest rates during and in the aftermath of war. The study shows that, especially in wars fought globally, inflation peaked at 8 percent on average one year after the war ended and took about three years to subside (Chankova and Daly 2021).

Next, I would like to address, more generally, things to keep in mind regarding the impact of these factors on price developments. First, many of the inflation factors listed here are cost-push factors. However, it is well known that cost-push inflation does not last long. When an exogenous shock occurs, adjustment from old to new pricing mechanisms takes place. After adjustment, the rising inflation rate is likely to return to the steady-state inflation rate; so, the important point is how this rate is affected. Of course, it is possible that cost-push factors will remain, but whether they will push up the steady-state inflation rate is uncertain.

Second, related to the fact that cost-push inflation is unsustainable, the factors being addressed here are real factors, and it is not obvious what their impact on prices would be. If we think of prices as the price of goods and services relative to money, it would seem necessary to take monetary factors into consideration.

Third, when considering these issues within the framework of monetary policy, it is appropriate to consider the relationship between the natural rate of interest and market interest rates. To deem a real factor to be inflationary, we have to observe a tendency for the natural rate of interest to rise vis-à-vis market interest rates. In fact, however, the aforementioned real factors affect the natural rate of interest through various channels, and the rate can either rise or fall (Chart 6).⁵

To give an example from demographics, because post-retirement households tend to draw down their savings, capital supply may decrease. This would push up the natural rate of interest. On the other hand, households anticipating longer life expectancies will seek to augment their savings accordingly, which may increase capital supply. This would lower the natural rate of interest. Moreover, if the declining population reduces the labor force population, the per-capita capital equipment ratio will rise, leading to a fall in capital demand. This would also lower the natural rate of interest. We thus ought to say that the overall impact of demographics on the natural rate of interest is uncertain. Furthermore, if uncertainties increase on the whole, this could motivate people to build up their precautionary savings, which in turn would boost capital supply. This would consequently lower the natural rate of interest.

II. Looking Back: History of Monetary Economics

So far, I have not discussed the role of monetary policy. Even though the natural rate of interest fluctuates, market interest rates are not necessarily determined accordingly. Let me lay out the framework for my analysis. The current analytical framework has been developed

⁵ Gopinath (2022) considers the following seven channels through which the novel coronavirus (COVID-19) pandemic will have enduring effects on the natural rate of interest: inequality, demographics, labor supply, productivity, savings and safe assets demand, debt in advanced economies, and climate transition. She states that only the last two channels can clearly push up the natural rate of interest.

throughout the history of monetary economics, but many issues remain unresolved. I want to center my discussion around classical figures in the history of monetary economics, mainly David Hume and Henry Thornton (Chart 7). Following Fisher (1911), the quantity theory of money broadly recognizes the non-neutrality of money in the short run, but holds that money is neutral in the long run. Nonetheless, there have been some economists who have in fact argued for the long-run non-neutrality of money (Humphrey 1991).

A. The Price Revolution and Hume

Precious metals discovered in South America in the 15th century flowed into Europe in large quantities. From then until the middle of the 17th century, the inflation rate in Europe rose to around 1.0-1.5 percent. This is known as the price revolution. The quantity theory of money grew out of this experience. Let me turn to Hume here. In *Of Money* (1752), he acknowledges the impact of the price revolution on the real economy, stating that

the greater quantity of money, like the Roman characters, is rather inconvenient, and requires greater trouble both to keep and transport it. But notwithstanding this conclusion, which must be allowed just, it is certain, that, since the discovery of the mines in America, industry has [i]ncreased in all the nations of Europe, except in the possessors of those mines; and this may justly be ascribed, amongst other reasons, to the [i]ncrease of gold and silver. Accordingly we find, that, in every kingdom, into which money begins to flow in greater abundance than formerly, every thing takes a new face: labour and industry gain life; the merchant becomes more enterprising, the manufacturer more diligent and skilful, and even the farmer follows his plough with greater alacrity and attention. (Hume 1987, pp. 285-86)

"Industry" here should be interpreted as including not only the quantity of labor supply but also its quality. However, Hume (1987, p. 286) adds the following qualification: "It is only in [an] interval or intermediate situation, between the acquisition of money and rise of prices, that the [i]ncreasing quantity of gold and silver is favourable to industry." The reason for this is the rigidity of money wage contracts. Predicated on this, we would assume that a rise in prices only temporarily reduces real wages, and the quantity of labor supply would simply increase. Hume (1987, p. 288) concludes that "it is of no manner of consequence, with regard

to the domestic happiness of a state, whether money be in a greater or less quantity." However, he immediately adds that

the good policy of the magistrate consists only in keeping it, if possible, still [i]ncreasing; because, by that means, he keeps alive a spirit of industry in the nation, and [i]ncreases the stock of labour, in which consists all real power and riches. A nation, whose money decreases, is actually, at that time, weaker and more miserable than another nation, which possesses no more money, but is on the [i]ncreasing hand. This will be easily accounted for, if we consider, that the alterations in the quantity of money, either on one side or the other, are not immediately attended with proportionable alterations in the price of commodities. (Hume 1987, p. 288)

What Hume is pointing out here is, first, that money has no effect on the real economy in the long run and ends up only determining prices. Even if money has an impact, it is only in an interval or intermediate situation; this is the argument for the long-run neutrality of money. Second, however, what he is setting out as a policy argument can also be taken to suggest the non-neutrality of money. Furthermore, he is drawing attention to the harmful effects of deflation in contrast to the benefits of inflation.

Many interpretations have been put forward as to how these two propositions can coexist.⁶ The compatibility of the two propositions aside, in the latter we may be able to locate the roots of the idea of a high-pressure economy. The key point is that Hume, who advocated the quantity theory of money, also recognized the complex relationship between nominal and real values, while distinguishing between what is now called the short and long term. Hume is one of the economists who identified sustainable economic growth, looking to people's industrial activities, knowledge, and systems as the driving force behind economic growth. What is crucial is how the real and monetary factors of this economic growth are related.⁷ Recent research has shown that the price revolution also had a real impact. When the production of precious metals increased, so did nominal GDP; and, while real GDP increased,

⁶ For an overview and interpretations of related research, see Sakamoto (2011, pp. 199-251), Dimand (2013), and Schabas and Wennerlind (2020, pp. 159-60).

⁷ See Brewer (2010), and Schabas and Wennerlind (2020).

prices did not rise to the same extent at the same time.⁸ Former chairman of the Federal Reserve Board Alan Greenspan also argued that deflation is a threat because it stifles corporate vitality.⁹ Hume's argument overlaps in part with this view.

B. The Bank Restriction Period and Thornton

Hume was skeptical of the role of banks and paper credit.¹⁰ Hume's friend Adam Smith pointed out the benefits of banks (Laidler 1981). However, an analysis of paper credit had to wait until the next generation, and this was the accomplishment of Thornton.

In 1797, against the backdrop of the Napoleonic Wars, the Bank of England (BOE) suspended the convertibility of its notes into gold. This was initially intended as a temporary measure but lasted until 1821. The years from 1797 to 1821 are known as the Bank Restriction Period. Inflation continued in the United Kingdom following the suspension of gold conversion. Controversy erupted over when conversion should be resumed.¹¹ Thornton took an active part in this controversy, primarily through publication of *An Enquiry Into the Nature and Effects of the Paper Credit of Great Britain* (1802). His accomplishments can be summed up in three points.¹² First, in an era in which credit played a significant role in finance, he analyzed why rapid financial swings lead to economic swings. Second, he pioneered a theory based on the distinction between what we now call the natural rate of interest and market interest rates. Third, he paved the way for the monetary and prudential policies of central banks in terms of setting market interest rates and providing liquidity.

With respect to the first point, Thornton deemed that the reason rapid financial swings lead to economic swings lies in the nature of money. During an economic downturn, manufacturers

⁸ According to Palma (2022, pp. 1608-9), "a 10 percent increase in precious metals production relative to their stock at time t leads to an increase in real GDP of approximately 0.9 percent by year $t + 9$. After this peak, the (point estimate) effect of the monetary shock on real GDP diminishes, as the price level rise increases in intensity."

⁹ Watanabe (2022, pp. 285-87) touches upon Greenspan's view on deflation.

¹⁰ Hume (1987, p. 284) stated: "To endeavour artificially to [i]ncrease [paper] credit, can never be the interest of any trading nation."

¹¹ For the so-called Bullionist controversy, see Laidler (2000).

¹² For Thornton's prominent accomplishments, see Hicks (1967b), Laidler (1987), Murphy (2009, pp. 189-214), Arnon (2011, pp. 96-125), and Wakatabe (2013, pp. 102-11).

and merchants attempt to sell off their goods in pursuit of money. At the same time, broad-based buying restraint emerges.¹³ As a result, "the manufacturer, on account of the unusual scarcity of money, may even, though the selling price of his article should be profitable, be absolutely compelled by necessity to slacken, if not suspend, his operations" (Thornton 1978, p. 118). The resulting fall in prices affects employment.

That very diminution in the *price* of manufactures which is supposed to cause them to be exported, may also, if carried very far, produce a suspension of the labour of those who fabricate them. The masters naturally turn off their hands when they find their article selling exceedingly ill. It is true, that if we could suppose the diminution of bank paper to produce permanently a diminution in the value of all articles whatsoever, and a diminution . . . in the rate of wages also, the encouragement to future manufactures would be the same, though there would be a loss on the stock in hand. The tendency, however, of a very great and sudden reduction of the accustomed number of bank notes, is to create an *unusual* and *temporary* distress, and a fall of price arising from that distress. But a fall arising from temporary distress, will be attended probably with no correspondent fall in the rate of wages; for the fall of price, and the distress, will be understood to be temporary, and the rate of wages, we know, is not so variable as the price of goods. There is reason, therefore, to fear that the unnatural and extraordinary low price arising from the sort of distress of which we now speak, would occasion much discouragement of the fabrication of manufactures. (Thornton 1978, pp. 118-19)

Thornton, like Hume, notes that the reason the diminution of money affects employment is the rigidity of money wage contracts. He believes that if wages fall to the extent that prices do at the same time, there will be no effect on employment. However, because there is downward rigidity in the rate of wages, a fall in prices will affect the real economy. His depiction of this influence, as well as his use of the term "industry" in the following quote, is reminiscent of Hume.

¹³ Hicks (1967b) relates this tendency to Keynes's liquidity preference theory.

A great diminution of notes prevents much of that industry of the country which had been exerted from being so productive as it would otherwise be. When a time either of multiplied failures, or even of much disappointment in the expected means of effecting payments arises, plans of commerce and manufacture, as well as of general improvement of every kind, which had been entered upon, are changed or suspended, and part of the labour which had been bestowed proves, therefore, to have been thrown away. . . . The goods which ought to form part of the assortment of the factor or the shopkeeper, and to be occupying their premises, are loading the warehouse of the manufacturer, and, perhaps, are suffering damage by too long detention. On the other hand, some sales are forced; and thus the goods prepared for one market, and best suited to it, are sold at another. There cease, at such a time, to be that regularity and exactness in proportioning and adapting the supply to the consumption, and that dispatch in bringing every article from the hands of the fabricator into actual use, which are some of the great means of rendering industry productive, and of adding to the general substance of a country. Every great and sudden check given to paper credit not only operates as a check to industry, but leads also to much of this misapplication of it. (Thornton 1978, pp. 119-21)

Thornton does not mention the long-term effects of such a check to and misapplication of industry. Nor did Thornton himself consider inflation preferable to deflation. However, fluctuations in the quantity of money are clearly undesirable as they have a negative impact on the real economy, at least in the short run.

In relation to Thornton's second accomplishment, the extent to which manufacturers and merchants receive bank loans is determined by the relationship between their expected profit rates and market interest rates. If the market interest rate is lower than the rate of expected profit, bank lending will increase, the quantity of money will increase, and prices will rise. On the other hand, if the market interest rate is higher than the rate of expected profit, bank lending will decrease, the quantity of money will decrease, and prices will fall. Thornton distinguishes between nominal and real interest rates, taking into account changes in inflation

expectations.¹⁴ His account of changes in inflation expectations was later taken up by Irving Fisher, while his two-interest-rate analysis was later adopted by Knut Wicksell; both form the theoretical basis of modern macroeconomics.

This brings us to Thornton's third accomplishment, which is an inquiry into the policy responses of central banks. At the time of the Bank Restriction Period, the BOE did not see itself as a central bank. Thornton argued that it should act as one. First, he stated that central banks should act to stabilize price fluctuations by setting market interest rates consistent with expected profit rates. Then, as Walter Bagehot would later emphasize, they should supply liquidity in times of financial crisis. When a financial crunch occurs, people's demand for money surges, giving rise to moves to withdraw money from the banking system. At such a time, it would be reasonable for an individual bank to simply reduce lending, but if all banks were to act in the same way, lending in the economy as a whole would dwindle further. Thornton argued that, in times of a financial crunch, the BOE should rather provide liquidity to the economy by lending generously.

C. Subsequent Developments

Since I have discussed subsequent developments elsewhere, here I will touch on topics related to our current context.¹⁵ Thornton was concerned about deflation but thought it would last only for the short run. However, the time came when Europe was exposed to prolonged deflationary pressure. The question as to whether the mild deflation seen at the end of the 19th century -- lasting from 1873 to 1896 -- had an impact on the real economy remains a matter of debate. Some argue that at that time it was "good deflation" under which productivity improved, while others focus on the adjustment capability of the economic structure of the 19th century, where labor and product markets were flexible. However, some recent studies have shown that, after correcting for errors in the measurement of price data,

¹⁴ Thornton (1978, pp. 335-36) made this distinction in his speech to the UK Parliament in 1811. According to Humphrey (1983), William Douglass -- born in Scotland in the 18th century -- was the first to distinguish between real and nominal interest rates.

¹⁵ See Wakatabe (2009, 2015, 2017).

the deflation had a negative impact on the real economy (Kaufmann 2020).¹⁶

It was during this period that the quantity theory of money evolved into the supply and demand theory of money advanced by Alfred Marshall, as well as by Fisher and Wicksell. In essence, the theory parallels the innovation in economics that occurred around the same time, known as the marginal revolution, and is closely related to the full-fledged application of the supply and demand theory to pricing goods and services.¹⁷ Wicksell explored ways of defining the natural rate of interest, but took this to mean a long-term rather than a short-term interest rate.¹⁸

The Great Depression of the 1930s was accompanied by severe deflation. At this time, monetary economics made great strides forward and the field of macroeconomics was born. John Maynard Keynes's innovation lay in constructing a principle of effective demand. I should note that, whereas the most successful interpretation of Keynes, the IS-LM model, assumes the rigidity of wages and prices, Keynes himself did not premise his ideas on wage or price rigidity. He sought to argue that the more flexible wages and prices are, the more unstable the economy becomes.¹⁹

Elevated inflation came on the scene in the 1970s.²⁰ This is the period when Milton Friedman and the monetarist school of economics took the world by storm. However, Friedman's work in economics is really an extension of Keynesian economics. The well-known equation for the quantity theory of money is $MV = PQ$, where M is quantity of money, V is velocity of money, P is price level, and Q is quantity of real output, and PQ on the right-hand side of the equation reflects nominal GDP. It is also possible to regard the left-hand side as corresponding

¹⁶ Fischer (1996) considered that the deflationary period started much earlier and characterized the period from the 1820s to the 1890s as the "Victorian equilibrium." See Cameron's (1997) critical review of Fischer's argument. See also Wakatabe (2013, pp. 255-59).

¹⁷ See Laidler (1991). Edgeworth's (1888) paper served as another important discussion of the time regarding the basic theory of central banks.

¹⁸ As Rogoff, Rossi, and Schmelzing (2022, p. 8n9) argue, Wicksell's definition of the natural rate of interest is an economy-wide average concept encompassing both short- and long-term interest rates.

¹⁹ His hypothesis was later followed by the construction of disequilibrium economic theory, but remains unproved.

²⁰ With regard to the Great Inflation of the 1970s, see Wakatabe (2022).

to money supply and the right-hand side as corresponding to money demand. If we assume the causality from money supply, Friedman's argument is that money supply determines nominal GDP. For changes in nominal GDP, the extent to which either the price level or quantity of real output changes depends on the shape of the aggregate supply curve. If real output were constant, a change in M would cause only prices to change. However, real output is not necessarily constant. Although the neutrality of money holds in the long run, the short-run non-neutrality of money is an understanding inherited from the classical school.

Of key relevance to the contemporary debate is Friedman's argument that cost-push factors do not lead to sustained inflation.

It is essential to distinguish changes in *relative* prices from changes in *absolute* prices. The special conditions that drove up the prices of oil and food required purchasers to spend more on them, leaving less to spend on other items. Did that not force other prices to go down or to rise less rapidly than otherwise? Why should the *average* level of all prices be affected significantly by changes in the prices of some things relative to others? Thanks to delays in adjustment, the rapid rises in oil and food prices may have temporarily raised the rate of inflation somewhat. . . . [H]owever, . . . the basic source of inflation is the faster growth in the quantity of money than in output. (Friedman 1974)²¹

Another area that came to draw attention during this period was the role of "expectations" in economics. Inflation expectations rather than exogenous cost-push factors contribute to sustained inflation. Reining in the Great Inflation called for subduing inflation expectations. Although this stress on expectations is particularly tied in with the "rational expectations revolution" associated with Robert E. Lucas Jr. and Thomas J. Sargent, among others, the concept of expectations has been taken up throughout the history of monetary economics, with different theorists approaching it differently. There was also a growing awareness that monetary policy plays an important role in stabilizing inflation expectations to bring about price stability. Inflation targeting, which is the monetary policy framework now adopted by

²¹ See also Kakino (2019, p. 93).

central banks in many countries, was born out of lessons learned from the Great Inflation of the 1970s. This awareness spread gradually through both academic and central banking circles and is still widely shared today, having been further shaped by the experience of stagnation accompanied by prolonged deflation in Japan starting in the late 1990s, the Global Financial Crisis (GFC) of the 2000s and responses to the subsequent recession, and by responses to the COVID-19 pandemic starting in 2020.

III. Looking Ahead: Lessons from History

Finally, I will consider future monetary policy in light of history. I would first like to consider future economic and financial conditions.

A. Implications from History for Future Economic and Financial Conditions and Monetary Policy

Jordà et al. (2019) demonstrated that, for 16 countries including Japan from 1870 to 2015, the following relationship between the real rate of return on safe assets (r^{safe}), the real economic growth rate (g), and the real rate of return on aggregate wealth (r^{wealth}) held approximately true:

$$r^{\text{safe}} < g < r^{\text{wealth}}.$$

This relationship can be understood intuitively. Safe assets have the lowest rate of return. This is followed by the rate of return on the aggregate flow of goods and services in the economy. The rate of return on all assets, including risk assets, is the highest. Three further relationships follow from this.

First, except for the interwar period and the period between the Great Inflation and around the 2000s, $r^{\text{safe}} < g$ held true. Although g reached the 4 percent range during the high-growth period following World War II, it fell to the 2 percent range in the 1970s. It then declined further with the onset of the GFC in the 2000s, but has recently remained at around 2 percent. It can also be said that there is no empirical correlation between the economic growth rate and real interest rates.²²

²² Rogoff, Rossi, and Schmelzing (2022) also did not find any clear correlation between global long-maturity real interest rates and the real economic growth rate.

In a similar vein, what about developments in the natural rate of interest? While there are various estimates of the natural rate of interest, one way to look at it is to analyze developments in real interest rates. According to Schmelzing (2020), global real interest rates have historically been on a downtrend (Chart 8).²³

Second, except for the period of the two world wars, $g < r^{\text{wealth}}$ held true. Although the decrease in g and the increase in r^{wealth} both contributed to the gap between the two figures, the increase in r^{wealth} is taken to have made a larger contribution.

Third, except for limited periods, $r^{\text{safe}} < r^{\text{wealth}}$ held true. The gap between the two is equivalent to risk premia, but this gap has been shrinking in recent years. Under the Bretton Woods system, while r^{safe} was low, r^{wealth} was high, driven upward by housing returns. However, r^{wealth} has been declining in recent years.

What are the implications for future monetary policy if the above relationships continue to hold?

First, if the natural rate of interest continues on a declining trend, the challenge for central banks' monetary policy will continue to be how to lower real interest rates in an effective manner. Faced with the zero lower bound (ZLB) in an era of low inflation, central banks have taken steps to boost the effectiveness of their monetary policy. Various proposals have been made to improve policy objectives (Chart 9). As a result, central banks have reaffirmed the importance of committing to the 2 percent inflation target. With regard to policy measures, the Bank of Japan, for example, has introduced such measures as quantitative easing, negative interest rates, diversification of asset purchasing, yield curve control, and forward guidance. The necessity for policy innovation to boost the effectiveness of monetary policy, both in terms of policy objectives and measures, may increase; it certainly will not diminish.²⁴

²³ Due to data limitations, global real interest rates in this study were calculated from GDP-weighted nominal interest rates and inflation rates using available data for eight countries: Italy, the Netherlands, France, Spain, the United Kingdom, Germany, the United States, and Japan. Since the study does not take into account the recent rise of China and emerging economies, the possibility of underestimation warrants attention.

²⁴ Bernanke (2022, pp. 330-65) elaborates on this point.

Second, if $g < r^{\text{wealth}}$, this implies that the uptrend in the ratio of total assets to GDP will continue. If there is a certain positive correlation between total assets and total liabilities, this means that the ratio of total liabilities to GDP will also trend upward. This in turn means that asset price fluctuations will have a growing impact on the economy through asset (liability) balances.

Third, decreasing risk premia can lead to the underpricing of risks. Krishnamurthy and Muir (2017) argue that financial crises frequently occur when risk premia shrink and risk is underpriced. Central banks will increasingly need to prepare macroprudential policies to maintain stability in the financial system.

The above considerations are based on history and past trends. Should these trends change significantly, my conclusions will also change. We cannot rule out the possibility that such major changes will occur in the future. However, as I said earlier in section I., it is uncertain whether the natural rate of interest will rise as a trend in the future. On the contrary, we cannot deny the possibility of an ongoing decline in the natural rate of interest. What history over the long term makes apparent is that the mild-inflation regime has not come to an end, and we should say that the potential dangers of secular stagnation and Japanification have not yet passed.

B. Introduction and Achievements of Quantitative and Qualitative Monetary Easing (QQE)

There is no need for pessimism, however, even during periods of Japanification. Having long been mired in deflation, the policy change made in Japan with the introduction of QQE in April 2013 has produced positive effects. Even before its introduction, economic growth had been achieved despite the declining labor force population, but the GDP growth rate has improved and prices have risen clearly since 2013, as the unemployment rate declined and the number of employed persons increased (Charts 10 and 11). The overall GDP growth rate has been low because the labor force population has been declining; however, if we look at the real GDP growth rate per capita, which takes into account changes in the employment rate over time, we see that, while the rate was at 0.4 percent in the 2000s, it recovered to the 1990s level of 1.3 percent in the 2010s (Chart 12). This suggests that there was a rise in productivity

per worker and in the labor force participation rate. Improved employment conditions led to an increase in the employment rate for new graduates and ended the so-called employment ice age. Of course, providing support for those who struggled to find jobs during the employment ice age remains a crucial task. In order to create an environment that can provide employment opportunities for this generation, it is important to maintain a high-pressure economy. While the year-on-year rate of change in the consumer price index (CPI, all items less fresh food) was on average minus 0.3 percent between fiscal 1998 and fiscal 2012, the average rate from fiscal 2013 onward rose to 0.4 percent (Chart 13). Although it is true that the price stability target of 2 percent has not yet been achieved, we are now in a situation where the economy is no longer in deflation, in the sense of a sustained decline in prices.²⁵

These improvements in economic activity and prices were made following the adoption of the price stability target of 2 percent in 2013. Japan's economy was in deflation for a prolonged period, but sustainable monetary easing certainly had positive effects on the real economy. Consequently, it can be said that this provides evidence that QQE supports the idea of a high-pressure economy.

Conclusion

Today, I considered the narrative that, with the end of the mild-inflationary regime accompanied by anxiety over deflation, concern about secular stagnation and Japanification has passed into history, and that a regime of high inflation will emerge. Against this narrative, I have argued that the threat of secular stagnation and Japanification has not yet been dispelled completely. This is because cost-push factors, real factors, and changes in the natural rate of interest -- the factors that are usually pointed out -- do not necessarily suggest sustained inflation; rather, it is important to take monetary factors into consideration to determine whether inflation will be sustainable.

As Hicks's words introduced at the beginning of the speech indicate, the field of monetary economics has changed over time in accordance with actual economic and financial developments. After having experienced price fluctuations, monetary economics has become increasingly aware of the importance of price stability. Moreover, not only have there been

²⁵ For details of the relationship between wages and prices, see section II. B. in Wakatabe (2022).

persistent so-called inflation fears but also deflation fears. While the quantity theory of money is commonly characterized by its argument for the short-run non-neutrality of money and the long-run neutrality of money, the possibility of money being non-neutral in the long run has also been pointed out since the theory was first developed. This reflects the fact that prices are not completely adjusted in markets. Later, with the growth of the credit economy, two-interest-rate analysis was developed. As the divergence between the two interest rates will not automatically be adjusted under the fiat money system, the role of the central bank as the issuer of money is essential in order to ensure price stability.

The current model of monetary economics may need to be changed, depending on future circumstances. That said, the lessons learned from history are that it is monetary factors that are important in determining whether an economy is being subject to inflationary or deflationary pressure, and that monetary policy conducted by central banks will play a vital role since it controls the quantity of money.

Japan's experience of prolonged deflation suggests that it takes a great deal of effort to dispel anxiety over deflation. Nevertheless, there was no need to give up the challenge of overcoming deflation simply because the economy fell into deflation; against the background of the Bank's monetary policy measures adopted since 2013, the economy has improved and is currently no longer in deflation. That said, Japan's experience has raised questions about a number of dichotomies in economics: nominal and real values, the short term and long term, and the business cycle and economic growth. I believe that there is still a lot to be learned regarding these issues, both theoretically and empirically. In this sense, monetary economics is still in the process of development, and the questions raised by Hume are still under debate.²⁶

Thank you.

²⁶ Jordà, Singh, and Taylor (2020) highlight the hysteresis effects of monetary policy on capital and technology. Kurozumi and Van Zandweghe (2022) point to the possibility that the optimal policy response will differ depending on changes in labor force participation rates.

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The Future of Monetary Policy: Lessons from the History of Monetary Economics

*Keynote Speech at the 38th Annual Meeting
of the Japan Association of Business Cycle Studies*

December 3, 2022

WAKATABE Masazumi
Deputy Governor of the Bank of Japan

Introduction

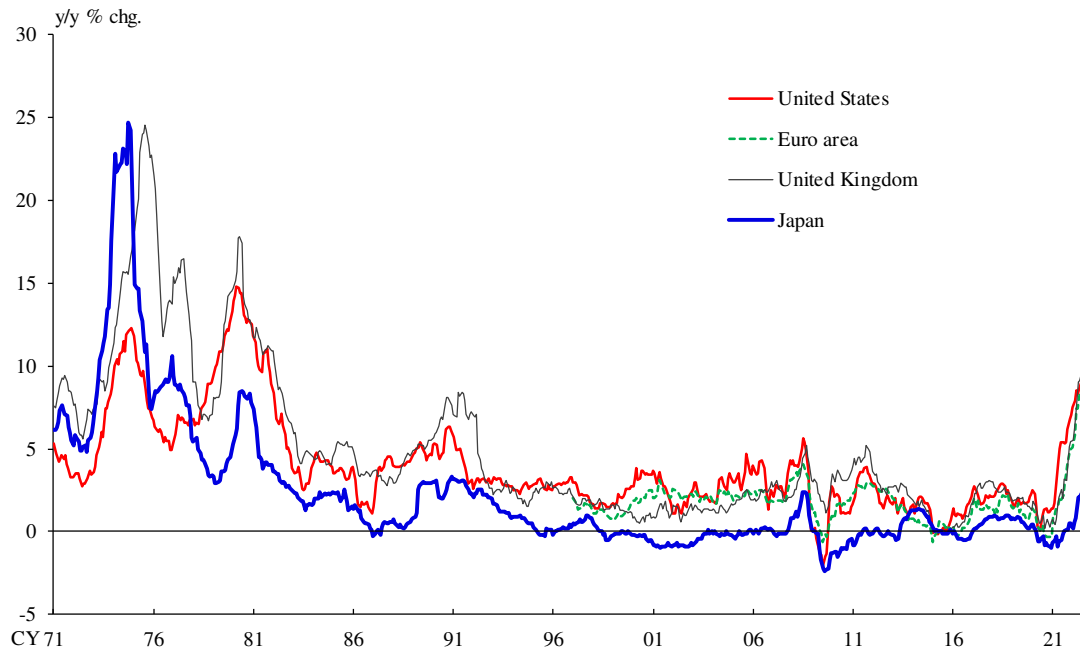
I. Looking at the Present: Is the Mild-Inflation Regime Over?

II. Looking Back: History of Monetary Economics

III. Looking Ahead: Lessons from History

Conclusion

Price Developments in Selected Economies



Note: Figures for the United States and the United Kingdom are for the CPI for all items. Those for the euro area are for the HICP for all items. Those for Japan are for the CPI for all items excluding fresh food, and those from 1997 onward exclude the direct effects of the consumption tax hikes. Figures for the United Kingdom prior to 1989 are based on the ONS estimates.

Sources: Haver; ONS; Ministry of Internal Affairs and Communications.

1

I. Looking at the Present: Is the Mild-Inflation Regime Over?

Is This the End of the Mild-Inflation Regime?

Until Now: Concern over Japanification

(Low Inflation (or Deflation)
and Low Interest Rates)

- Smaller government, deregulation
- Rise of China and emerging economies
- Globalization, market integration, global supply chain
- Large labor supply
- Carbonized
- Peace dividend



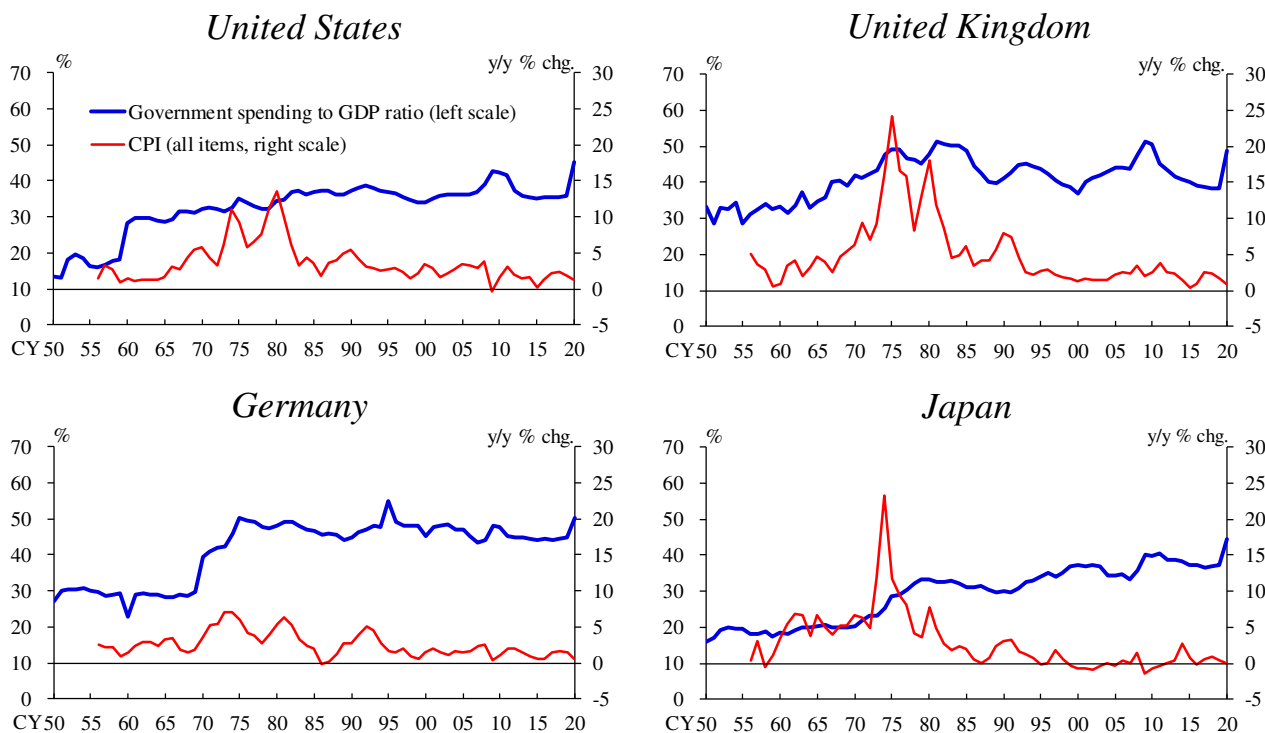
From Now On: Return of Inflation?

(High Inflation and
High Interest Rates?)

- Bigger government, re-regulation
- Growth convergence
- Deglobalization, market fragmentation, economic security
- Declining and aging population
- Decarbonization (greenflation)
- Wartime economy

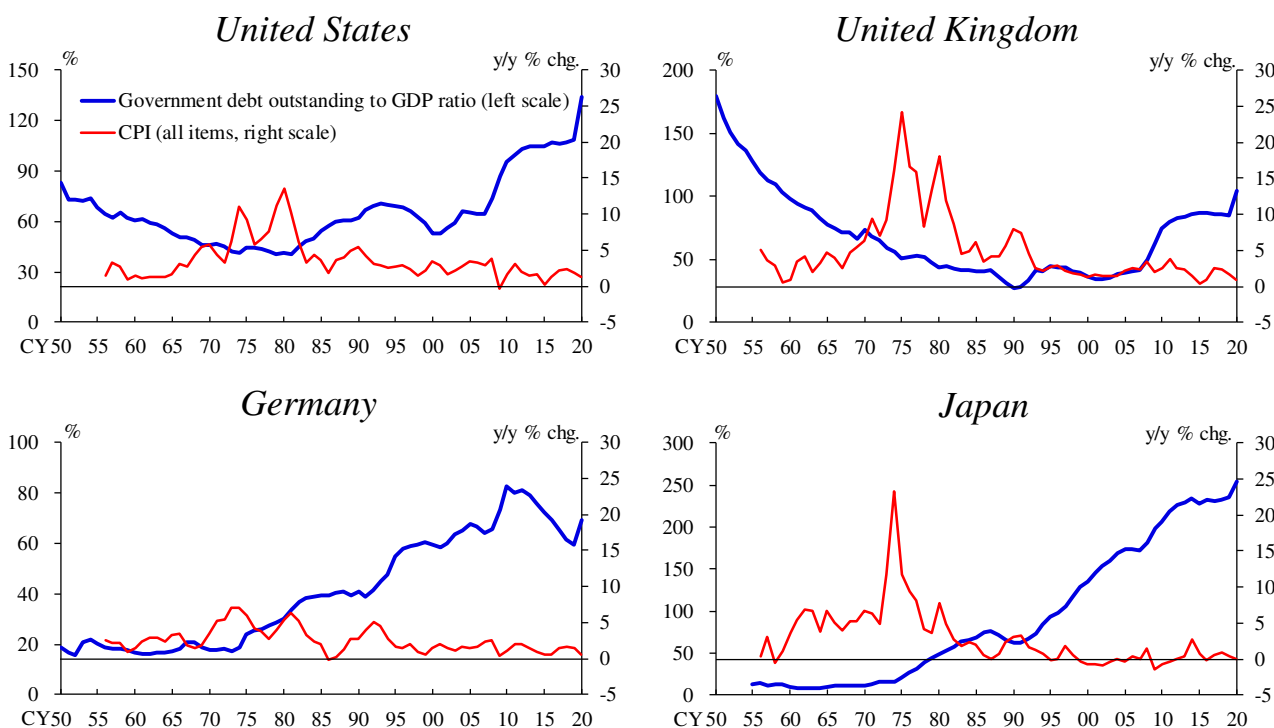
2

Government Spending and Inflation Rates: No Clear Relationship



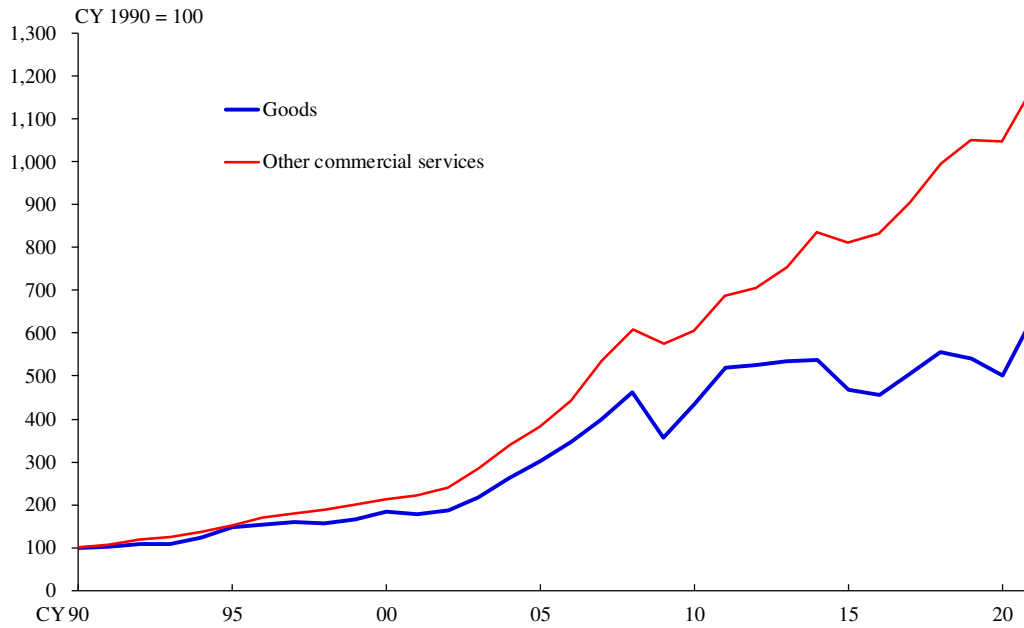
Notes: 1. Figures for the government spending to GDP ratio up through 2011 are from the Public Finances in Modern History database published by the IMF. The figures from 2012 onward are from the October 2022 *World Economic Outlook* (WEO).
 2. Figures for Germany prior to 1991 are those for West Germany.
 Sources: IMF; OECD; Mauro, P., Romeu, R., Binder, A. J., and Zaman, A., "A Modern History of Fiscal Prudence and Profligacy," *IMF Working Paper*, no. 2013/005 (2013).

Government Debt Outstanding and Inflation Rates: No Clear Relationship



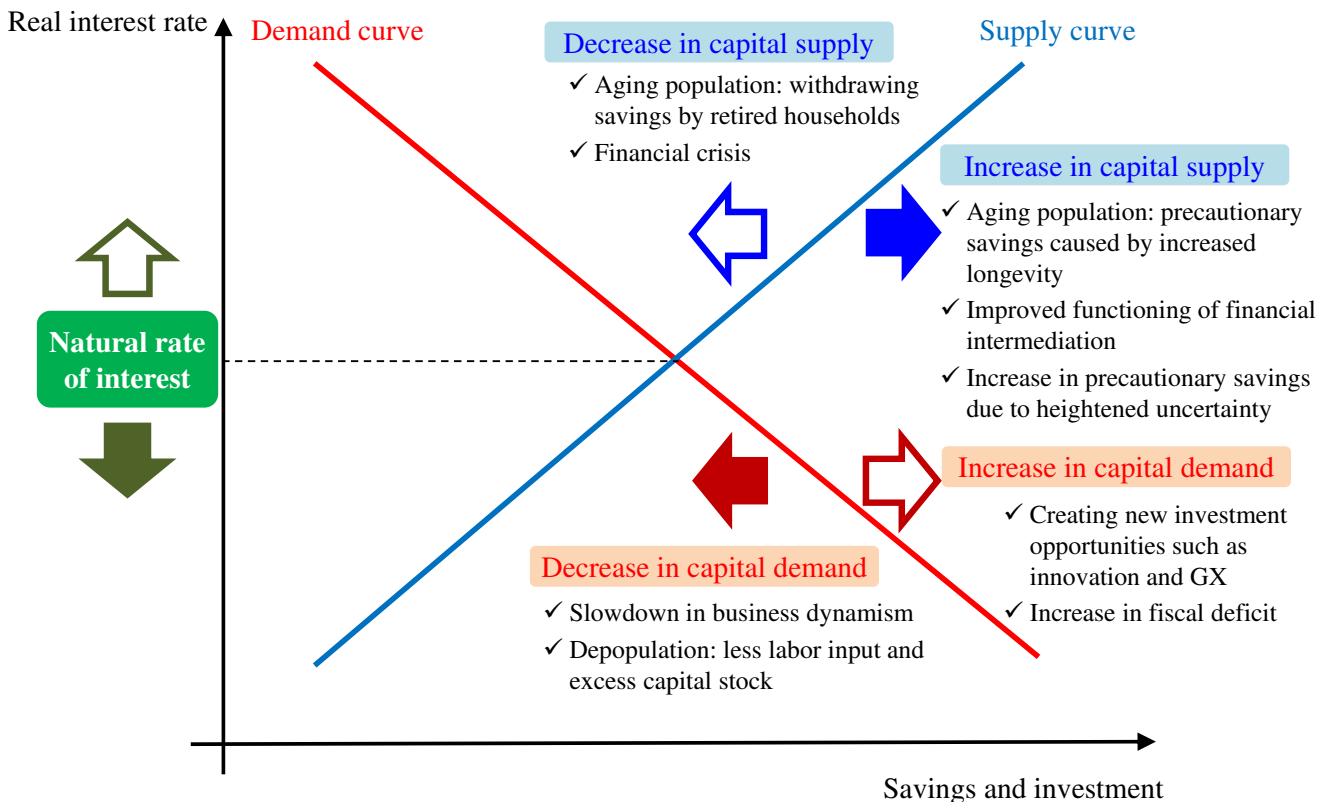
Note: Figures for Germany prior to 1991 are those for West Germany.
 Sources: IMF; OECD.

World Trade: Stagnant Goods, Growing Services



Note: Figures are the sum of exports and imports on a U.S. dollar basis. Those for other commercial services exclude travel and transport.
Sources: WTO; Baldwin, R., "Globoitics and Macroeconomics: Globalisation and Automation of the Service Sector," *CEPR Press Discussion Paper*, no. 17530 (2022).

Determinants of the Natural Rate of Interest

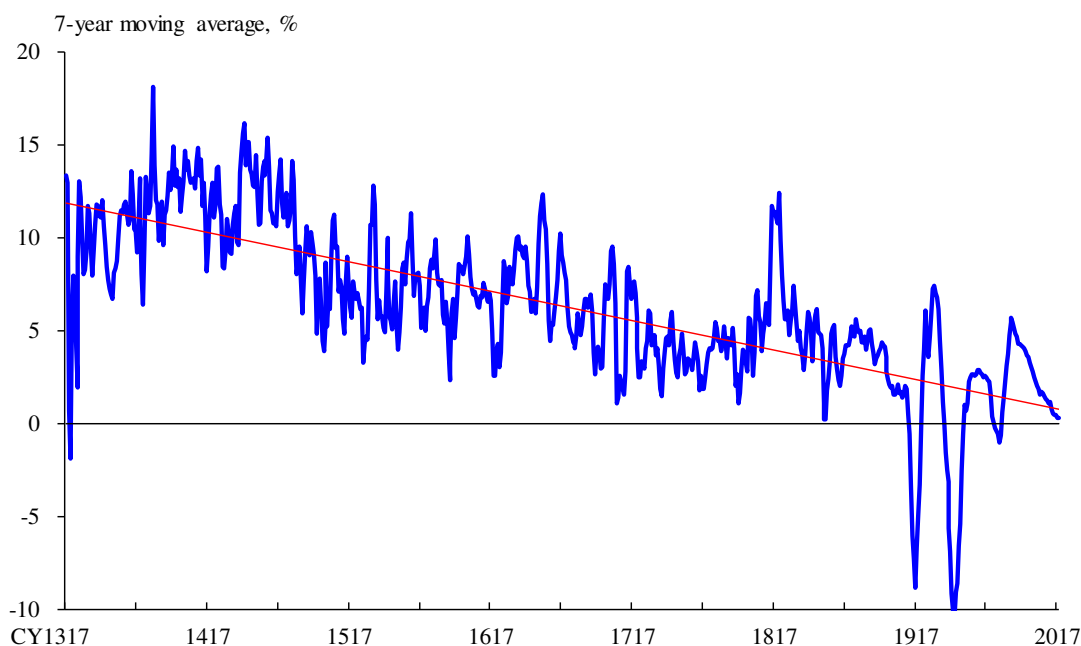


History of Monetary Economics

Episode	Period	Price Developments	Economist	Issue
Price Revolution	16-17th century	Prolonged inflation	D. Hume	<ul style="list-style-type: none"> • Benefits/harms of inflation and deflation • Neutrality of money
Bank Restriction	1797-1821	Deflation and inflation	H. Thornton	<ul style="list-style-type: none"> • Harms of inflation and deflation • Central bank for price and financial system stability
Long-Term Deflation	Late 19th century (1873-1896)	Prolonged deflation	A. Marshall I. Fisher K. Wicksell	<ul style="list-style-type: none"> • Evolution of the quantity theory of money
Great Depression	1929-1930s * Differs by country and region	Extreme deflation	I. Fisher J. M. Keynes	<ul style="list-style-type: none"> • Harms of deflation • Principle of effective demand
Great Inflation	1970s * Differs by country and region	High inflation	M. Friedman R. E. Lucas Jr. T. J. Sargent	<ul style="list-style-type: none"> • Reconfirmed role of money and expectations

7

Historical Downtrend in Global Real Interest Rate



Note: Figures are calculated based on GDP-weighted nominal interest rates and inflation rates using available data for eight countries: Italy, the Netherlands, France, Spain, the United Kingdom, Germany, the United States, and Japan.
 Source: Schmelzing, P., "Eight Centuries of Global Real Interest Rates, R-G, and the 'Suprasecular' Decline, 1311-2018," *Bank of England Staff Working Paper*, no. 845 (2020).

8

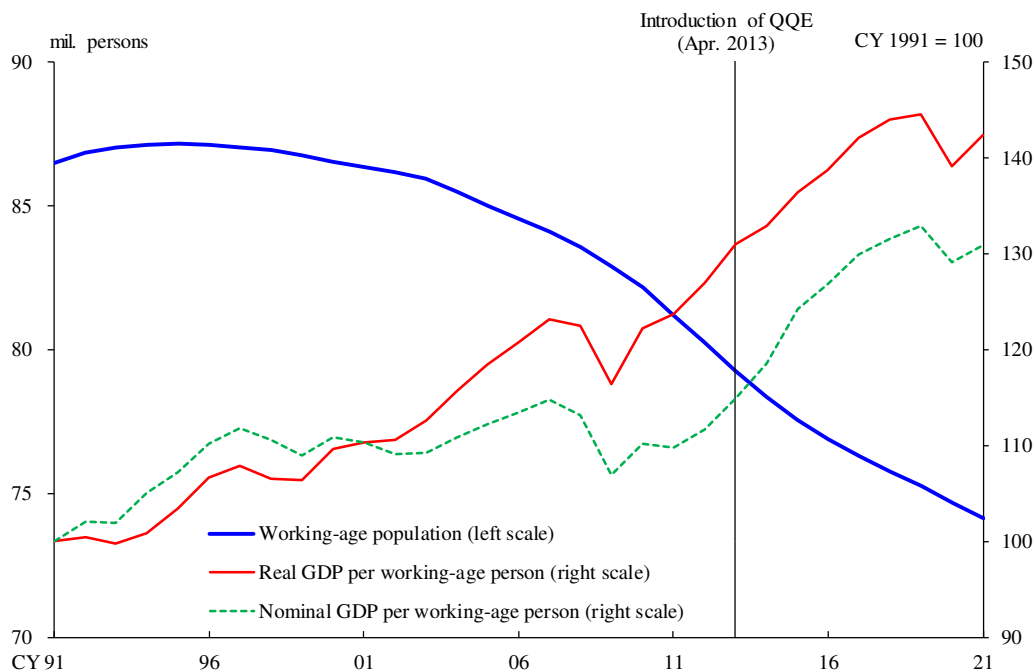
Discussions over the Monetary Policy Targets Overseas

Proposals	Description
Higher Inflation Target	... raise the target [from 2 percent] to, say, 3 or 4 percent (Bernanke, 2017)
Average Inflation Targeting	... targeting average inflation over a multiyear period (Clarida, 2019)
Price-Level Targeting	... [targeting] the level of prices on a steady growth path, rising by (say) 2 percent per year (Bernanke, 2017)
Temporary Price-Level Targeting	... apply a price-level target ... only to periods around ZLB episodes, retaining ... the current 2 percent [inflation] target at other times (Bernanke, 2017)
Inflation Target Range	... [setting a] goal within that range ..., perhaps year by year, depending on specific economic circumstances (Rosengren, 2018)
Nominal GDP Targeting	... targeting the growth rate or the level of nominal GDP (Svensson, 2019)

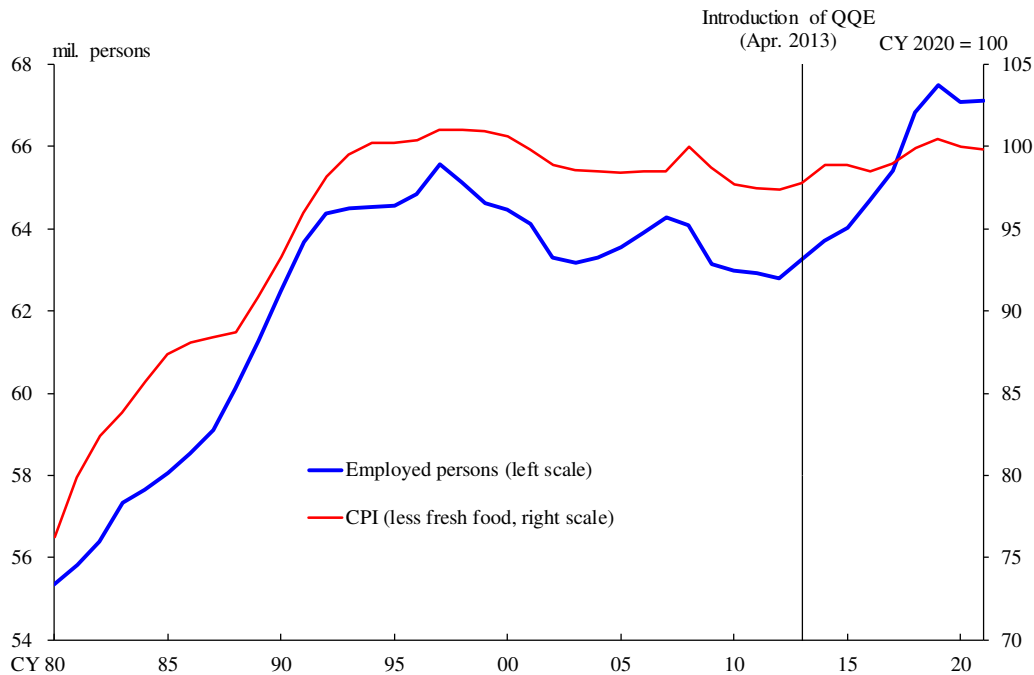
Sources: Bernanke, B. S., "Temporary Price-Level Targeting: An Alternative Framework for Monetary Policy," The Brookings Institution, October 12, 2017, <https://www.brookings.edu/blog/ben-bernanke/2017/10/12/temporary-price-level-targeting-an-alternative-framework-for-monetary-policy>; Clarida, R. H., "The Federal Reserve's Review of Its Monetary Policy Strategy, Tools, and Communication Practices," remarks at the 2019 U.S. Monetary Policy Forum, February 22, 2019; Rosengren, E. S., "Considering Alternative Monetary Policy Frameworks: An Inflation Range with an Adjustable Inflation Target," speech at the Money, Models, & Digital Innovation Conference, January 12, 2018; and Svensson, L. E. O., "Monetary Policy Strategies for the Federal Reserve," prepared for a presentation at the Conference on Monetary Policy Strategy, Tools, and Communication Practices at the Federal Reserve Bank of Chicago, June 5, 2019.

Economic Growth despite Depopulation

Working-Age Population and GDP per Working-Age Person



Increase in Employed Persons and Prices



Note: Figures for the CPI from 1997 onward exclude the direct effects of the consumption tax hikes.
Source: Ministry of Internal Affairs and Communications.

Decomposition of Economic Growth in Japan and the United States

$$\text{GDP} = \text{Total population} \times \underbrace{\frac{\text{Employed persons}}{\text{Total population}} \times \frac{\text{Total hours worked}}{\text{Employed persons}}}_{\text{GDP per capita}} \times \frac{\text{GDP}}{\text{Total hours worked}}$$

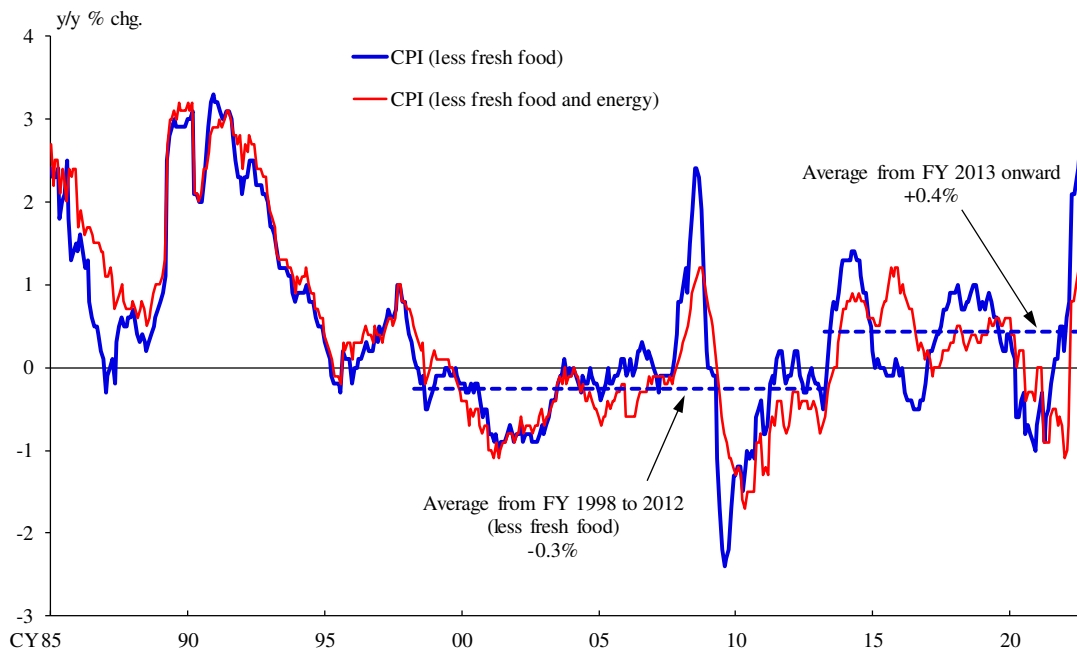
Japan

United States

	average, %							average, %					
	GDP	Total population	GDP per capita	Employed persons/ Total population	Hours worked per person	GDP per hour worked		GDP	Total population	GDP per capita	Employed persons/ Total population	Hours worked per person	GDP per hour worked
	(a)	(a)		(b)	(c)	(d)	(a)	(a)		(b)	(c)	(d)	
1990s	1.6	0.3	1.3	0.1	-1.2	2.4	1990s	3.2	1.2	2.0	0.1	-0.0	1.9
2000s	0.5	0.1	0.4	-0.2	-0.5	1.0	2000s	1.9	1.0	1.0	-0.5	-0.4	1.9
2010s	1.2	-0.1	1.3	0.6	-0.4	1.2	2010s	2.3	0.7	1.6	0.5	0.1	1.0

Source: Kuroda, H., "Japan's Inflation Dynamics and the Role of Monetary Policy," speech at Columbia University in New York, April 22, 2022.

CPI Inflation Rates: No Longer in Deflation



Note: Figures from 1997 onward exclude the direct effects of the consumption tax hikes.
Source: Ministry of Internal Affairs and Communications.