Budget Deficits and Inflation: A Theoretical and Empirical Survey

Hiroshi Fujiki

Japan's fiscal position is deteriorating continuously, and some argue that a debt write-off through managed inflation will be inevitable if public debt is to increase at the present pace. This article will first examine if inflation is an inevitable component of the attempt to solve the current government debt problem by looking at the history of debt reduction in other countries. Next, it will evaluate the economic theory on the interdependence between fiscal and monetary policies in light of the historical experience of inflation. In so doing, it finds that the gold standard imposed discipline on both fiscal and monetary policies while under the floating exchange rate regime budget institutions and the central bank system served as a guidepost to economic policy-making as an alternative to the gold standard. Based upon these theoretical, historical, and institutional findings, it will conclude by reflecting on the ways in which the experience of other countries can be useful for evaluating Japan's situation.

Key words: Hyperinflation; Sustainability of government debt; Budget institution; Central bank independence; Zero interest rate policy; Structural reform

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I. Summary and Organization

Japan's fiscal position is deteriorating continuously, and some argue that a debt write-off through managed inflation will be inevitable if public debt is to increase at the present pace (Itoh and Shimoi [1999]).

This article will first examine if inflation is an inevitable component of the attempt to solve the current government debt problem by looking at the history of debt reduction in other countries. Next, it will evaluate the economic theory on the interdependence between fiscal and monetary policies in light of the historical experience of inflation. In so doing, it finds that the gold standard imposed discipline on both fiscal and monetary policies while, under the floating exchange rate regime, budget institutions and the central bank system served as a guidepost to economic policymaking as an alternative to the gold standard. Based upon these theoretical, historical, and institutional findings, it will conclude by reflecting on the ways in which the experience of other countries can be useful for evaluating Japan's situation.

Chapter 2 will show that Japan's fiscal situation is deteriorating rapidly and that some economists have found empirical results that cast doubt on the sustainability of debt financing in Japan.

Chapter 3 will review the historical experience of debt reduction in other countries. The experience of Britain and the United States under the international gold standard shows that debt reduction was feasible for "small government" which followed the principle of the balanced budget even under sustained deflation.

The outbreak of hyperinflation and the subsequent stabilization in Germany and Austria in the interwar period shows that the primary cause of the inflation was an increase in inconvertible paper money that was unbacked or backed only by government debt that was unlikely to be redeemed through taxation.

In the postwar period, the mature welfare state in Britain and Canada, both of which faced a fiscal crisis, managed to consolidate its fiscal position through privatization and incremental debt reduction.

Chapter 4 will review the theoretical relationships between fiscal deficits and inflation and the institutional arrangements regarding the central bank and governmental budget-making. It is plausible to argue that the gold standard provided a mechanism to check hyperinflation thanks to the balanced budget principle and the gold convertibility of paper money, which served as a guarantee of public debt. It is also possible to interpret central bank independence and new budgeting institutions under the float as alternative mechanisms of commitment to guaranteeing debt: the former being a check on the government's incentive to trigger unanticipated inflation and the latter being a constraint on government spending.

Chapter 5 will review commonalties in the experience of debt reduction between Japan and other countries.

Chapter 6 will conclude by thrashing out the theoretical implications of the foreign experience of budget deficits and inflation for Japan, which suffers from an extraordinary situation with enormous public debt under zero nominal interest rates.

II. Evaluation of the Present Fiscal Situation in Japan

The dependence ratio of the general account of the national budget (*ippan kaikei*) on the issuance of the bonds on an ongoing annual basis has dramatically increased and reached a postwar record of 43.3 percent in the fiscal year (FY) 1999 budget (adjusted for the second supplementary budget of December 9, 1999), up from 10.6 percent nine years ago. On a stock basis, the outstanding long-term debts of the central and local government sectors combined has reached ¥608 trillion, equivalent to 122.5 percent of GDP—the worst level of all industrialized societies.[1] Under these circumstances, on November 11, 1999, the government announced a new economic package amounting to a grand total of ¥17 trillion, with the aims of putting Japan back on sustainable recovery and of laying the groundwork for renewed economic development during the twenty-first century. Krugman (1999a) has called Japan's gargantuan government spending "the largest peacetime fiscal stimulus in history" and judged that the effects of the spending would be the same as old-fashioned Keynesian public spending with constant interest rates. In other words, Krugman doubts that a large, yet sustainable, government spending package has more than temporary effects and that a sustained economic recovery will help wipe out debt in the future.

Has Japan's fiscal position deteriorated to an unsustainable level, as Krugman suggests? The rest of this chapter will show some empirical results regarding the conditions required for preventing default and the sustainability of the Japanese fiscal position.

First of all, the neutrality principle (Barro [1974]) suggests that if the present generation correctly anticipates the effects of increased budget deficits on the future generation and offsets the latter's tax burden by bequests, budget deficits will have no real impact on the economy. As long as this theory holds, there is no point in discussing the size of budget deficits on an annual basis. In Japan, however, many analysts tend to dispute the neutrality principle.

Next, in order to prevent default, the primary balance—tax revenues minus expenditures net of interest payment—needs to turn positive at some point in the future. This condition can be evaluated by testing statistically for the sustainability of public debt: "public debt outstanding today must equal the present discounted value of the difference between tax revenues and government expenditures in each period, calculated from the present to a future point."[2] The following two statistical methods have been used to analyze the Japanese data.

1. The World Economic Outlook published in October 1999 by the International Monetary Fund (IMF) also indicates that the GDP ratio of Japan's government debt as of 1998, either on a gross or net basis (excluding pension assets), is the worst of all G-7 countries, along with Italy. On the other hand, if pension assets are included, Japanese public debt is the lowest among the G-7 countries. However, as long as the pension assets are not disposable for redeeming debt, gross debt is more important in terms of government financial management. In the following article we will not discuss the pension issue.
2. Another well-known non-default condition is that of Domer, who says that the present growth rate must exceed the interest rate on public debt. In Japan, the studies described in this paper assume that the Domer condition does not hold.

The first method directly tests if the present discounted value of public debt will diverge in the future, following Hamilton and Flavin (1986) and Bohn (1995). Doi and Nakasato (1998), who applied this method to the data of Japanese aggregate public debt of the central and local governments from FY 1955 to FY 1995, concluded that the debt was sustainable.

Bohn (1998) proposed a second method of testing the sustainability of debt: He tests if (1) the GDP ratio of the primary balance goes up as the GDP ratio of public debt goes up, and (2) if the GDP ratio of public debt does not exceed some fixed level. According to his method, both conditions need to be satisfied. Doi (1999) has used this method for the Japanese general account from FY 1956 to FY 1998 and found that the conditions for the sustainability of debt are not met.

To sum up, many have tended to hold the view that Japanese debt was sustainable until recently, but the most recent results using the 1995–1998 data have begun to cast doubt on its sustainability.

III. The Historical Experience of Debt Reduction in Other Countries: Is Inflation Inevitable?

In light of the extreme fiscal conditions in Japan, those who support continued government spending for economic recovery seem to point to the Japanese postwar experience as a successful case of writing off huge debt through a bout of hyperinflation. Even those who rule out hyperinflation as an alternative seem to support moderate inflation that would be conducive to debt reduction. Chapter 3 will examine the historical experience of debt reduction in other countries in order to clarify the relationships between budget deficits and inflation.

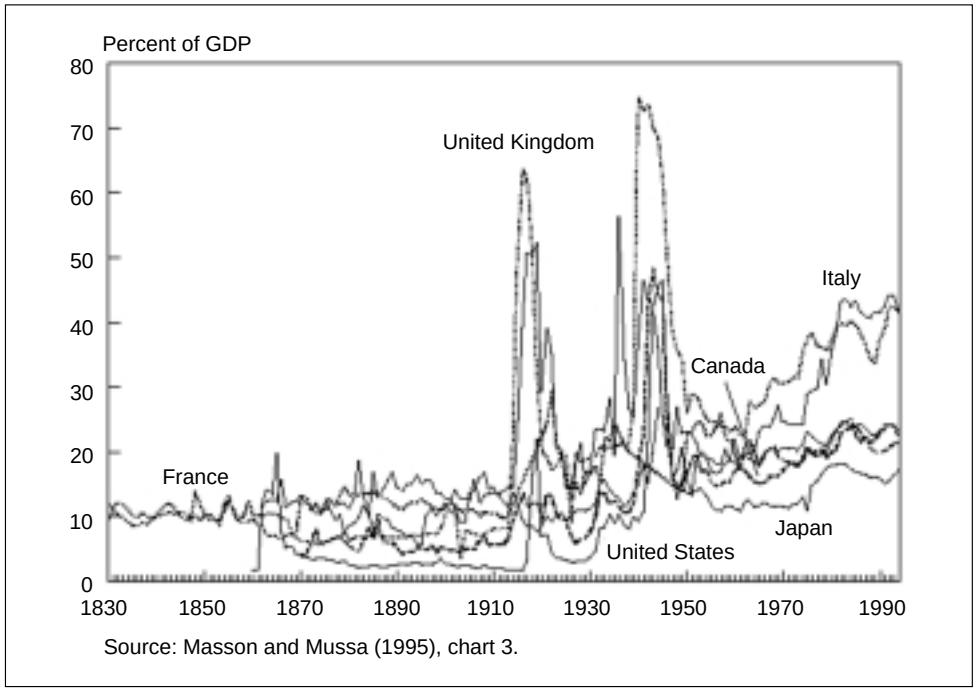
Looking at the long-term time series of expenditures and the fiscal position of the central government in industrialized countries (Masson and Mussa [1995], reproduced in Figures 1 and 2), one notices the following points:

The budget deficits before World War I were mainly due to temporary wartime spending. The ratio of spending to GDP was not very high except during wartime, and the budget deficits were a result of temporary wartime financing as well as redemption of debt.

After World War I, the European countries faced the problem of enormous war-related debt. Also they saw a gradual increase in welfare spending, and some countries experienced a burst of hyperinflation. Nonetheless, under the old IMF regime, this lasted until the 1970s; the pre-World War I pattern of a buildup of wartime debt followed by redemption was repeated.

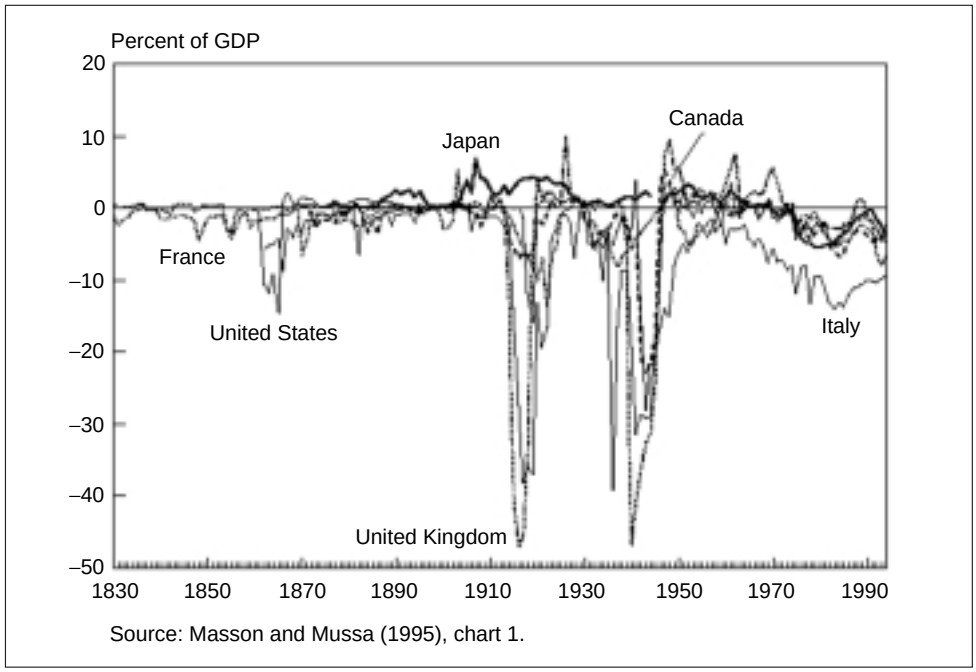
After the transition to the floating exchange rate regime, the increase in welfare-related spending and the economic stimulus in response to the oil crises led to an

Figure 1 Public Spending of the Central Government in the G-7 Countries Except Germany (1830–94)



Source: Masson and Mussa (1995), chart 3.

Figure 2 Fiscal Position of the Central Government in the G-7 Countries Except Germany



Source: Masson and Mussa (1995), chart 1.

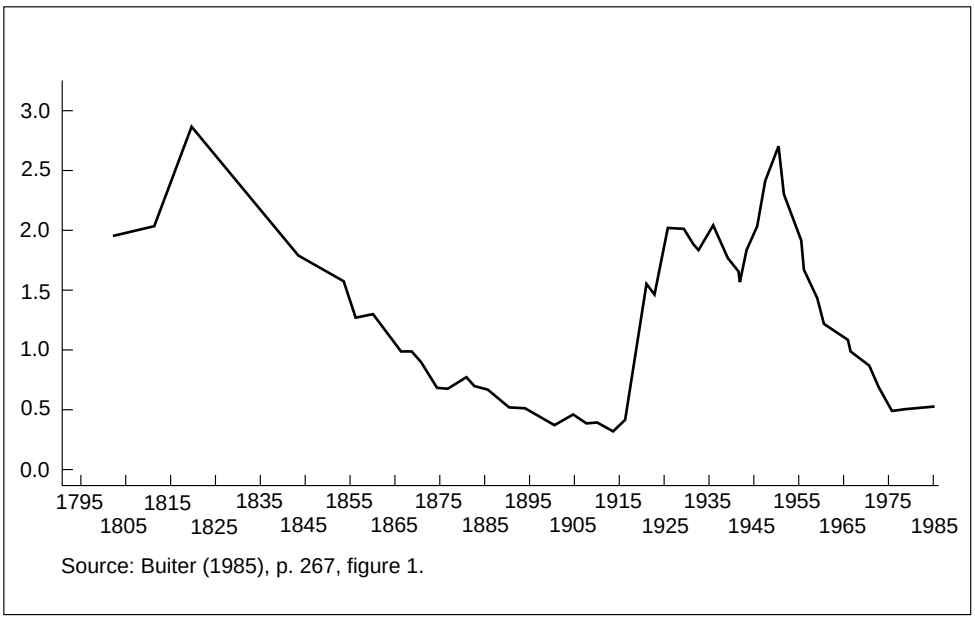
increase in central government spending and deficits. Thus, it will be necessary to divide the history of budget deficits into three periods: the classical international gold standard before World War I, the gold-exchange standard in the Interwar period, and the floating exchange rate regime after the collapse of the old IMF regime. Using this periodization, the following sections will review the experiences of those countries in greater detail.

A. Government Debt Reduction under the International Gold Standard

1. Britain after the Napoleonic wars

Buiter (1985) analyzed the long-term movements in British government spending on a stock basis. Figure 3 shows the long-term time-series of the ratio of government debt to GDP. The ratio peaked at 2.88 in 1821 and then gradually tapered off to 0.29 by 1914. There was no outbreak of inflation during this period, and Buiter (1985) pointed out that the main factor in this decline was economic growth.

Figure 3 U.K. National Debt-GDP Ratio



Source: Buiter (1985), p. 267, figure 1.

On the other hand, Barro (1987) analyzed the flow data from 1701 to 1918 to examine the relationship between inflation, long-term interest rates and temporary increases in government spending due to war. As Table 1 shows, the only times when war triggered price inflation were during the Napoleonic wars and World War I. Aside from these two periods, the gold standard was maintained, and the correlation between prices and government spending is ambiguous (Figure 4).

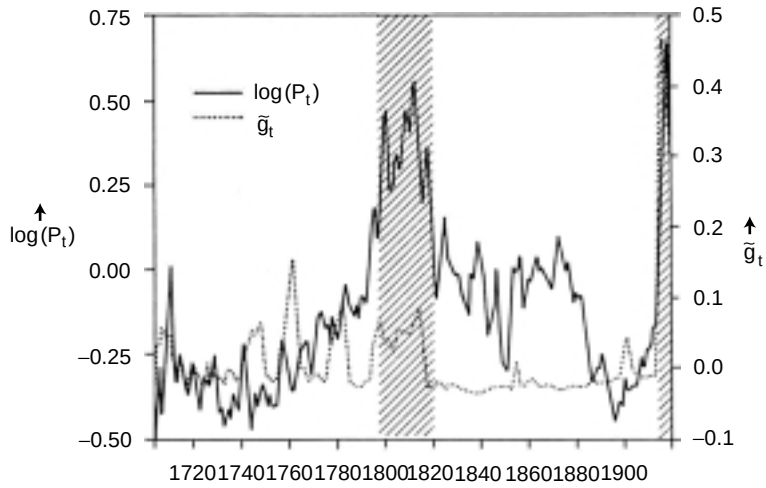
Table 1 Temporary Military Spending, Inflation and Interest Rates in the United Kingdom

Period	War	Average g	Peak of g (year)		Changes in R	Changes in P
1702-13	War of Spanish Succession	2.3	5.1	(1707)	2.7	1
1740-48	War of Austrian Succession	3.3	5.7	(1748)	0.6	1
1756-63	Seven Years' War	9.6	16.1	(1761)	1.2	2
1775-83	War of American Independence	4.9	9.8	(1782)	1.9	3
1793-1815	Wars with France (including Napoleonic Wars)	5.2	9.4	(1814)	1.6	74
1854-56	Crimean War	0.7	0.7	(1855)	0.2	6
1899-1902	Boer War	2.5	2.7	(1901)	0.4	4
1914-18	World War I	37.7	49.3	(1916)	1.2	109

Notes: g is the ratio of real military spending to trend real GNP less than the mean value of spending ratio over the period from 1701-1918. R is measured by the consols rate, P is measured by the wholesale price index.

Source: Barro (1987), Table 13.1 with modification by the author.

Figure 4 Temporary Military Spending and Price Levels in the United Kingdom



Source: Barro (1987), figure 13.7. Shaded areas are periods of suspension.

2. The United States before World War I

Brown (1990) showed that huge government debt emerged in the USA after (1) the War of Independence, (2) the War of 1812, (3) the Civil War, and (4) each of the two World Wars. Wartime spending was the main spending item of the federal government in each of these episodes of sizable debt, as in the case of Britain.

The reduction of wartime debt caused by the War of Independence and the War of 1812 lasted a very long time, until about 1835. Immediately after the end of the War of 1812, the increase in tariff revenues helped improve the budget balance, but economic recovery faltered due to a deflation-led depression. Thus, debt reduction had to rely on tariff revenues after that.

Reconstruction after the Civil War was characterized by the following economic conditions: (1) the annualized growth rate was about 5 percent until 1893; (2) prices declined by about 2 percent a year; (3) the interest rate declined from 6 percent to 2 percent; and (4) the budget balance was almost always in surplus each year. As shown in Table 2, the debt-to-GDP ratio peaked at 39 percent in 1871, then dropped to 8 percent by 1891. This reduction can be decomposed into economic growth (23 percentage points), net redemption adjusted for deflation (10 percentage points) and the increase in the debt burden due to deflation (six percentage points). Thus, debt reduction was not achieved through inflation in this period.

Table 2 Factors Reducing the U.S. Debt-GNP Ratio, 1871–91 (percent)

Debt-GNP ratio, 1871			39
Factors:	Resumption of specie payment	–4	
	Real growth to 1891	–23	
	Net real debt payment	–10	
	Net price changes	+6	
Total net changes			–31
Debt-GNP ratio, 1891			8

Source: Brown (1990), Table 8.1

On the other hand, the post-World War I debt reduction was mainly achieved through budget cuts (Table 3).

One should note two points in evaluating the pre-World War I experience. First, government spending itself was relatively small. Second, the debt burden increased due to deflation. What is important is that inflation was beyond the control of the central bank due to the gold standard during this period. Also, government revenues heavily relied on customs duties and, in that sense, international trade largely determined the size of revenues.[3]

Table 3 Factors Reducing the U.S. Debt-GNP Ratio, 1919–29 (percent)

Debt-GNP ratio, 1919			30
Factors:	Real growth to 1929	–8	
	Net real debt payment	–8	
	Net price changes	+2	
Total net changes			–14
Debt-GNP ratio, 1929			16

Source: Brown (1990), Table 8.2

B. War Debt Reduction: Hyperinflation or Fiscal Austerity?

The notorious hyperinflation scenarios in Austria and Germany in the interwar period helped reduce their external debt. Both countries were defeated in World War

3. According to the author's calculation with NBER's Macrohistory Database, the proportion of tariff revenues in total federal revenues on a monthly basis averaged 57 percent from 1880–89 and 48 percent from 1890 to 1899.

I and were required to pay reparations the size of which was by no means justified by their economic fundamentals. Hyperinflation may have driven them into chaos, but it also helped reduce their external debt to a repayable level. However, these episodes do not prove that unrepayable debts have no other redress apart from hyperinflation. For instance, Czechoslovakia, which became independent from Austria in the same period, adopted stringent fiscal and monetary policies and managed to avoid a bout of hyperinflation. The following sections will describe these three episodes, relying on Iwami (1999) and particularly on Sargent (1986).

1. Austria

Defeated in World War I, the Austro-Hungarian empire was dissolved after the war and Austria was reduced from an empire of 50 million inhabitants to a small state of 6.5 million people. The government of Austria had to reemploy imperial bureaucrats. Unemployment also reached crisis proportions, stemming from a surge in immigration from the successor states of the old empire. The government had to spend a huge sum to cope with food shortages and to pay unemployment benefits. In the meantime, tax rates and public fees were not raised and enormous budget deficits resulted, which, in turn, were financed by the sales of treasury bills to the central bank. Aside from these emergency expenditures, the amount of reparations that Austria owed to the victorious states was still uncertain and there was the prospect of an even larger fiscal burden in the future.

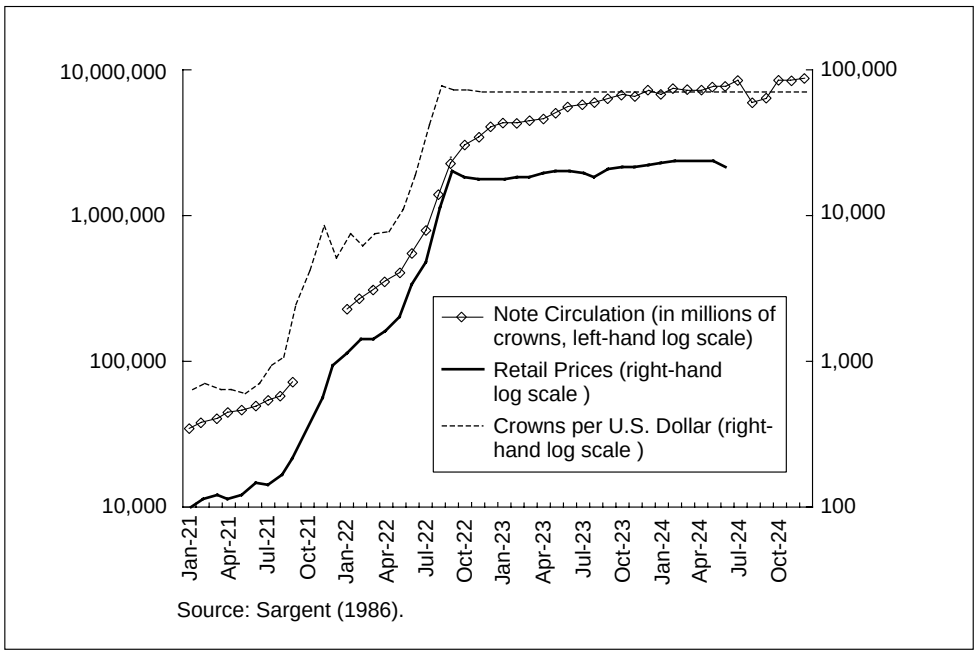
Under these circumstances, the increasing expectations that these emergency expenditures might become permanent triggered a capital flight; the Austrian crown began to depreciate quickly from June 1921 onwards and domestic prices surged. The Austrian government tried to stem the crisis through exchange controls, but the exchange rate depreciation did not subside.

However, the Austrian crown suddenly stabilized in August 1922 (720 crowns to the U.S. dollar in June 1921 and 77,300 crowns to the dollar in August 1922), and prices stabilized in September 1922 (at 20,090 compared to 100 in 1921). Furthermore, the stabilization of exchange rates and prices took place against a background of large increases in note circulation (Figure 5).

The immediate cause of exchange rate and price stabilization was the press report in August 1922 that the League of Nations would soon start working on Austrian fiscal reform. The protocols signed on October 2, 1922 provided for (1) Austria's political independence and sovereignty; (2) the granting of international loans; and (3) the establishment of an independent central bank and the government's pledge not to monetize the budget deficits. In addition, the Reparation Commission renounced claims on Austria.

The implementing legislation of November 14, 1922 established a new central bank and prohibited the central bank from lending to the government without collateral worth an equivalent amount of gold and foreign assets. The bank was also required to cover its note issues with gold, foreign assets and commercial paper. The gold convertibility of the currency would be restored when the government's obligations were reduced to 30 million gold crowns. At the same time, the government decided to discharge 100,000 civil servants, to raise the prices of government-sold goods and services, and to reform the systems of collecting taxes and customs duties.

Figure 5 Total Note Circulation, Exchange Rates and Price Levels in Austria



As a result, the Austrian budget was balanced within two years.

With a series of reforms, the regime changed from one of the central bank's liabilities, being backed by treasury bills with no assurance of future tax collection, to another of the central bank's liabilities fully backed by gold, foreign assets, commercial paper and the government's tax collection.

The Austrian episode clearly illustrates that even when the central bank's liabilities rapidly increase in the form of note issues (note circulation increased by a factor of 3.4 from September 1922 to July 1924) inflation does not accelerate (price indexes grew by a factor of only 1.2 from September 1922 to July 1924) as long as there is a commitment to a fiscal policy regime of maintaining convertibility of government debt and thereby assuring the value of assets purchased by the central bank. In other words, after the drastic simultaneous change in the fiscal and monetary regimes, the meaning of the central bank's balance sheet items changed, and note issues that had been perceived as inflationary were no longer interpreted in the same way.

What is important in this change in regime was that not only was the independence of the central bank guaranteed but also that the fiscal authority was required to pay due respect to the central bank in shaping fiscal policy. Also, the commitment of the fiscal authorities to budget discipline came to be perceived as credible because the most uncertain factor in government liabilities—the burden of reparations—was removed.

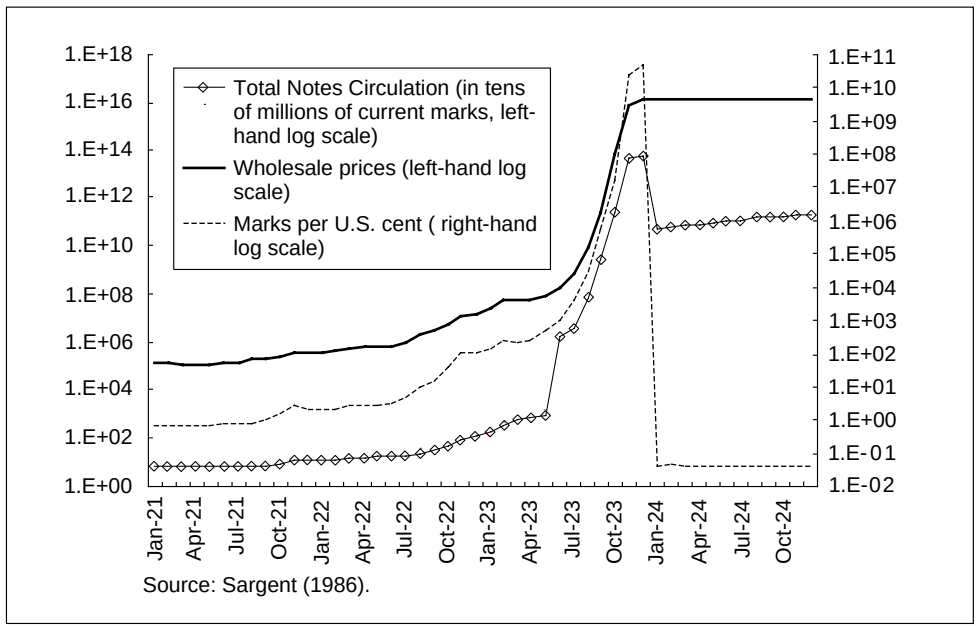
2. The Weimar Republic

Likewise defeated in World War I, Germany not only lost all of its prewar external credit but was also forced to pay reparations amounting to 132 billion gold marks at the London Conference of 1921.The annual reparation payment amounted to

4.6 billion gold marks, plus 26 percent of the value of exports. At that time, aside from reparation payments, the German budget was more or less in balance. The reparations were financed by credit from the United States, budget deficits, and note issues, which fostered an environment for the subsequent inflation.

The proximate cause of the hyperinflation occurred in January 1923, when the French and Belgian forces occupied the Ruhr region in rebuke of the German non-payment of reparations. The Germans, in turn, went on strike in protest, and the German government financed the wages paid to the striking workers by discounting treasury bills with the Reichsbank. In response to this inflationary fiscal policy, a flight from the currency broke out, despite exchange controls, and hyperinflation and depreciation of astronomical proportions ensued (Figure 6).

Figure 6 Hyperinflation in the Weimar Republic



Source: Sargent (1986).

However, the hyperinflation was miraculously stabilized in November 1923. The conventional interpretation holds that the immediate trigger for this denouement was monetary reform, including the denomination of 1 trillion marks to one Rentenmark, effective from October 15, 1923. But the denomination itself was of no consequence. More important for ending the hyperinflation were the ceilings placed on the issues of the Rentenmark (3.2 billion Rentenmarks) and the advances to the government (1.2 billion Rentenmarks) when a new Rentenbank took over the note-issuing function of the old Reichsbank. As a consequence, the government renounced the policy of financing the budget by note issues in full, and announced on October 27 a 25 percent cut in employment in the public sector, layoffs of temporary workers, and the forced retirement of people over 65 years of age.

Interestingly, note circulation continued to increase for several months after currency and price stabilization, as in the case of Austria. It is important to note,

however, that the note circulation was qualitatively different after the inflationary period ended because it was backed by discounted commercial bills. Also, the Dawes plan presented a much more realistic reparations payment plan which was implemented while the Allied Powers deliberated on the total amount of reparations. As a result, Germany was able to go back on the gold standard.

3. Czechoslovakia

Czechoslovakia, having become independent from the Austro-Hungarian empire, adopted tight monetary and fiscal policies soon after the cease-fire, even before the amount of reparations was fixed by a peace treaty. The government closed the foreign mail service from February 26, 1919 to March 9, 1919, and stamped all the Austro-Hungarian notes then circulating within its borders, recognizing them as its own debt.

By the statute of April 10, 1919, the banking office of the Ministry of Finance took over the functions of the old Austro-Hungarian bank, put a ceiling on the outstanding note issues and abided by the rule from then on. The government, having no other choice of finance but taxation and bond issues, levied taxes on property and maintained a sound fiscal stance. As a result, the exchange rate stabilized by the end of 1922. In the meantime, Czechoslovakia underwent a deflation because it was planning to go back to gold convertibility. Finance Minister Rasin, who advocated conservative fiscal measures, had initially planned to restore the prewar parity, but this plan was dropped following his assassination.

C. Debt Reduction in the Western Welfare States after the Shift to Floating Exchange Rates

The history of debt reduction in the post-World War II period includes the bankruptcy of the welfare state in Canada and Britain after the shift to floating exchange rates and experiments with deregulation and privatization in various countries. The experience of debt reduction by the Bush and Clinton administrations in the United States through economic growth and an ingenious budgeting system is exemplary.[4]

1. The United Kingdom since the Thatcher government[5]

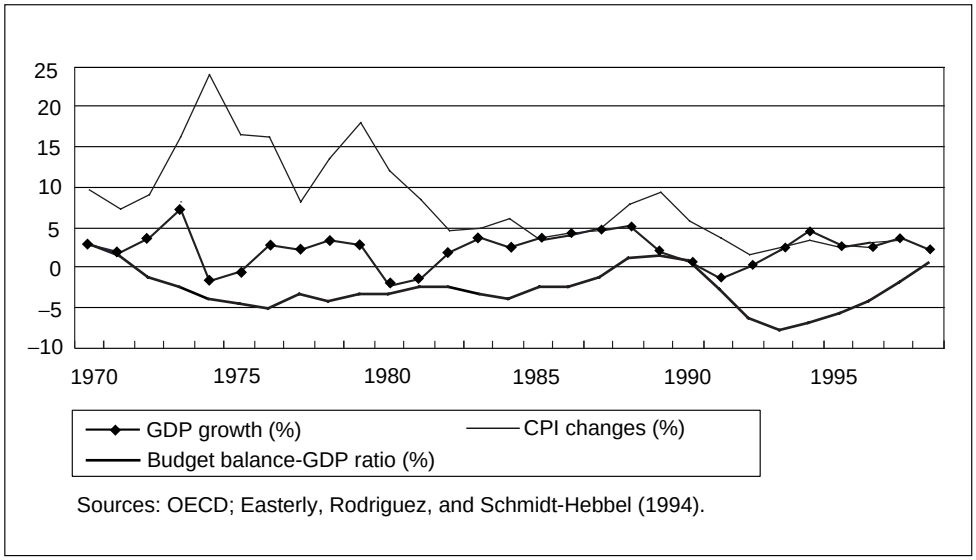
The British Conservative government adopted the massive fiscal stimulus and this was abandoned by the Labour government, under pressure from the IMF, in 1976. As a result, the proportion of government expenditure to GDP increased from 33 percent in 1960 to 45 percent in 1975, and the budget deficit of the fiscal year 1975–76 reached 7 percent of GDP. In the meantime, increases in oil prices, a deterioration in the terms of trade, and higher real wages all contributed to the lowering of the return on equity.

The Thatcher government launched a Medium Term Financial Strategy (MTFS) to contain inflation and reduce budget deficits in 1979, shifting the tax burden from direct to indirect taxes, privatizing the public sector, and adopting policies (such as cuts in public sector employment) to create "small government." Thanks to these measures, the budget turned from a deficit to a surplus in 1987–90 (Figure 7).

4. For budgetary discipline in the European countries with the aim of achieving economic and monetary union, see Tomita (1999).

5. This section relies largely on Maynard (1988) and Sugimoto *et al.* (1999).

Figure 7 Budget Balance-GDP Ratio, CPI Changes and GDP Growth in the United Kingdom



Sources: OECD; Easterly, Rodriguez, and Schmidt-Hebbel (1994).

The Major government that took office in 1991 saw a decline in tax revenues and an increase in social security expenditures due to a recession, and the budget again went into deficit in the fiscal year 1991, but as the economy recovered the deficits shrank after that. The New Control Total (NCT), introduced in the fiscal year 1993, contained the rate of increase in most budget items below economic growth, aside from interest payments on government bonds. This is said to have been effective in cutting specific expenditures (Tomita [1999]).

The Blair government has been trying to maintain budget surpluses since 1997 in the following ways. First, it has maintained the New Control Total (NCT). Second, it has made a sharp distinction between current spending and investment spending, and limited borrowing to investment spending, thereby keeping public debt below 40 percent of GDP. Third, while putting a priority on education, social security, and social infrastructure, it has been trying to run a budget surplus.

2. The Bush and Clinton administrations in the United States[6]

The New Economics, advocated by American Keynesians and adopted by the Kennedy and Johnson administrations in the 1960s, centered on the aggressive use of fiscal policy to maintain full employment. As a result of this policy, unemployment was lowered while wholesale prices remained stable. On the other hand, this policy entailed the side effects of increases in external deficits, short-term external debt, retail prices, and federal budget deficits. The Vietnam War, in particular, triggered inflation and widened federal budget deficits, which, in turn, elicited calls for budget discipline and monetary tightening.

Under the Nixon and Ford administrations in the 1970s, the devaluation of the dollar and the oil crisis confronted the government with a severe trade-off between

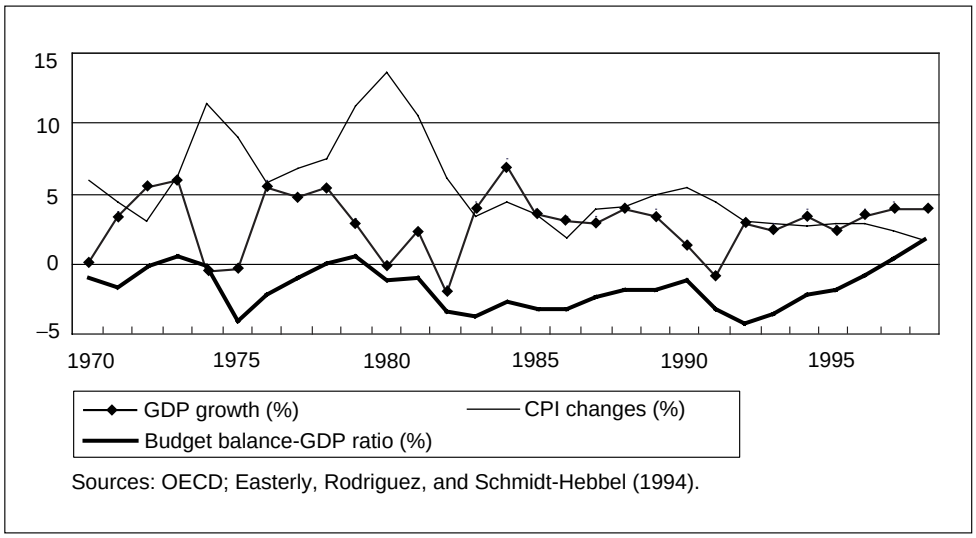
6. For the historical details in this section, see Sugita (1999).

reflationary and disinflationary policies. Under the Carter administration, the USA suffered further from stagflation—an increase in both inflation and unemployment.

The Reagan administration, which suffered from large budget deficits, cut taxes and expenditures and deregulated the economy, starting in 1981. But the cuts in tax rates did not lead to revenue increases and shrinking budget deficits. The budget deficits reached a record high of 290.4 billion dollars in 1992 under the Bush administration, but the economy slowly recovered after that, and the Clinton administration, which was inaugurated in 1993, increased taxes for high income taxpayers while reducing its expenditure. The budget deficits shrank as the economy recovered and, in 1998, the federal budget ran a surplus for the first time in 29 years (Figure 8).

The Gramm-Rudman Statute, enacted during the Reagan years, had mandated across-the-board cuts in expenditures in order to attain certain deficit-cutting goals, but this measure was undermined by (1) overly optimistic economic and revenue forecasts designed to avoid tax hikes; (2) increases in expenditures of budget items without the cuts that had been mandated by the law; and (3) accounting manipulation.

Figure 8 Budget Balance-GDP Ratio, CPI Changes and GDP Growth in the United States



Sources: OECD; Easterly, Rodriguez, and Schmidt-Hebbel (1994).

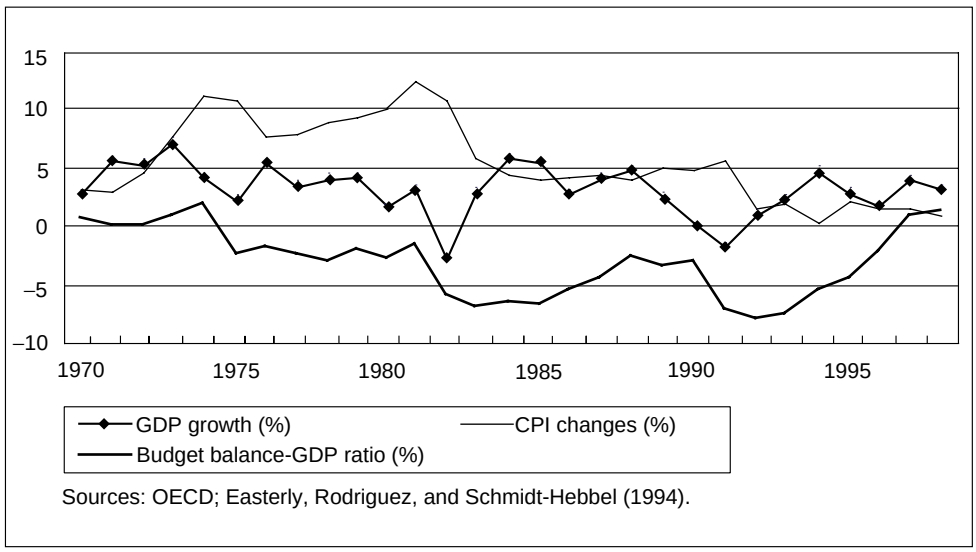
On the other hand, the budget measures that were introduced in tandem with the Omnibus Budget Reconciliation Act (OBRA), which was signed into law by the Bush administration, contributed to a reduction in budget deficits. In order to prevent temporary expediency measures being adopted to make the books look good, the law required (1) the stipulation of an upper limit on discretionary spending items such as defense, and (2) the adoption of a "pay-as-you-go" principle which would mandate either cuts in entitlements or tax hikes whenever a policy change resulted in net budget shortfalls. The measure also required across-the-board spending cuts if either of these two principles was violated. Budget management based on a distinction between discretionary expenditures and entitlements removed the debate on

"guns (defense) or butter (social welfare spending)" from the agenda. An increase in social welfare payments would henceforth require either tax increases or cuts in other entitlements, and therefore dulled the edge of political arguments calling for increasing social welfare payments. Thus, the Budget Enforcement Act (BEA) put constraints on Congressional budget making and helped reduced budget deficits.

3. Canada

According to Martin (1995), Canadian public debt was more or less equal to its GDP in 1945, but it came down to 20 percent of GDP by 1974, due to cuts in defense spending and economic growth exceeding the interest rate. Thereafter, however, higher long-term interest rates and increasing debt-service payments, a decline in revenues due to a recession, and a surge in pre-election spending in 1993 all led to budget deficits, which reached 6 percent of GDP by 1992 (Figure 9).

Figure 9 Budget Balance-GDP Ratio, CPI Changes, and GDP Growth in Canada



Sources: OECD; Easterly, Rodriguez, and Schmidt-Hebbel (1994).

The Liberal government, which took office in 1993, carried out a program of spending cuts, including (1) numerical targets to lower budget deficits to 3 percent of GDP by 1996, (2) a complete reappraisal of government spending programs, and (3) prior consultation with the private sector. As a result of the review, the government decided to retreat from the transportation and energy sectors. Privatization helped reduce subsidy payments and public-sector employment over the next three years. The federal budget turned to surplus in 1997.

Many of the Canadian provincial governments have enacted balanced-budget statutes since 1993. But not all of the improvements in provincial fiscal situations can be attributed to the balanced-budget laws. It seems that upward pressure on interest rates on municipal bonds issued by provincial governments started to appear in the early 1990s, and the population began to call for sound fiscal policy. These changes in the environment made it possible to pass balanced-budget bills, laying the groundwork for actual deficit reduction (Miller [1997]).

IV. Theories on Fiscal Deficits and Inflation and Monetary and Fiscal Institutions in Other Countries

The historical experience of hyperinflation suggests that expectations regarding central bank liabilities can change significantly with simultaneous changes in the fiscal regime. It also suggests that what institutionally prevented hyperinflation under the gold standard and the old IMF system was the regime of fixed exchange rates.

In the case of debt reduction by industrialized countries after the shift to floating exchange rates, independent central banks that were prohibited from underwriting bonds and budgeting institutions that placed limits on expenditures seem to have kept inflation in check. The following section summarizes this point theoretically and empirically.

A. Theoretical Relationships between Fiscal Deficits and Inflation under the Gold Standard

In order to consider the effect of the gold standard in preventing inflation, it is useful to start with the following budget constraint of a unified government:[7]

$$M_t v = p_t y \tag{1}$$

$$\frac{B_{t-1}}{p_t} = E_t \sum_{j=0} \frac{1}{r^j} \widetilde{S}_{t+j} \tag{2}$$

where M_t is the amount of nominal money in circulation, v is the velocity of money in circulation, p_t is the price level, y is real GDP, and B_{t-1} is the face value of nominal government bonds lasting one period and maturing at t. The budget surplus $\widetilde{S}_{t+j}$ includes the net profits of note issues but excludes interest payments. The relationship between $\widetilde{S}_{t+j}$ and S_t, a budget surplus that excludes net profits of note issues and interest payments, can be stated as $\widetilde{S}_t = S_t + (M_{t+1} - M_t) / p_t$.

Equation (1) represents the quantity theory of money while Equation (2) is called the budget constraint of a unified government (which consolidates the central bank and the central government). The latter equation shows that the choices of the fiscal authorities over $\widetilde{S}_{t+j}$ on the right-hand side determine the present discounted value of future budget surpluses, and thereby influence the real value of the nominal discount bonds B_{t-1} on the left-hand side.

1. The price-stabilizing effect of the gold standard (Monetarist/Ricardian)[8]

One can theorize about fiscal reform under the gold standard in the following way. First, most expenditures were temporary wartime expenses, which were financed by money issues involving a temporary departure from the gold standard. In the long run, however, the government would improve the trade balance in order to go back on gold and it would try to reduce debt through taxation and bond financing

7. Section IV.A uses the classical framework in order to consider the long-run inflationary effects following Cochrane (1999).
8. The following description is taken partly from Fujiki (1998).

policies. In other words, the central bank would determine M_t, which would then determine p_t through equation (1). However, because the central bank could not continuously issue nonconvertible notes in excess of its gold reserves, M_t was determined by gold reserves. The fiscal authorities would have to take the central bank-determined p_t as given, and it would have to determine $\{B_t, \overline{S}_{t+j}\}$ in accordance with equation (2), thereby equilibrating the primary budget balance.

The Bank of England used to abide by the gold standard in the sense that it would unconditionally buy up gold at a fixed value. This point is consistent with the fact that the only legal constraints on the Bank of England until 1945 were (1) a prohibition on commodity trading (the Tonnage Act of 1694), and (2) limitations on note issues (the Peele Act of 1844).

While they do not assume the existence of a gold standard, monetarist and Ricardian theories reflect the same institutional features where the central bank determines price levels and the fiscal authorities follow the budget constraint of equation (2).[9]

2. The experience of hyperinflation

Sargent and Wallace (1981) consider an extreme case in which the fiscal authorities have hit the upper limit on bond issues for some reason and the debt-GDP ratio has reached a high level. In such a case, they argue, there is no other way but to finance the unified government's liabilities by seigniorage. Under these circumstance, the tighter the central bank's monetary policy is (in the sense of issuing money at the rate lower than the rate of bond issues), the higher the rate of inflation once the upper limit on bond issues is reached because a greater amount of monetary issues would be required. The same holds for the central bank's underwriting of bonds through money creation.

To explain the hyperinflation scenarios in Germany and Austria, it is useful to consider the following special case, which assumes that there is a perfect forecast. The money demand function depends on the rate of inflation and can be summarized as in equation (3):

$$M_t \bar{v} (p_{t+1}/p_t)^b = p_t y \qquad (3)$$

9. Cochrane (1999) argues that under the condition of infinite velocity of money (v in equation [1]) owing to the advancement of electronic commerce, fiscal policy would, in essence, determine price levels because equation (2) would then determine the left-hand-side price levels, taking the government's basic budget balance and the nominal prices of bonds as given (fiscal theory of price level or FTPL). Buiter (1999), emphasizing that equation (2) is a budget constraint, points out that (1) the FTPL arguments go against the basic principles of economics, which suggest that the government ought to determine the primary balance and bond issues by taking price levels as given; that (2) the model constructed by Cochrane and others should be interpreted as one determining the rate of default on government bonds and not as one determining price levels; and that (3) if the government were to faithfully follow Cochrane's advice, it would default on its obligations or trigger hyperinflation—hence it is dangerous advice. Cochrane rebuts his criticism by using the following reasoning; Buiter's criticism assumes a Walrasian market price formation in which no transactions occur until the right price to equilibrate the budget constraint is found. But no government would be able to accurately foresee market prices when it plans on bond issues and tax revenues, and there is nothing *ex ante* to prevent the government from pursuing any plan it wants. Furthermore, he argues that a government that ignores the market and budget constraints, as Buiter assumes, would raise the bonds outstanding to infinity, but, in reality, an equilibrium price is adjusted in such a way that no such behavior is observed.

where b takes a positive value. Suppose that the central bank plans on zero inflation by fixing M_t at a constant $\bar{M}$. The price level satisfying equation (3) at time t can be given by the initial price level p_0 as in equation (4):

$$\ln(p_t) - \ln(\frac{\bar{M}\bar{v}}{y}) = \left(\frac{1+b}{b}\right)^t \{\ln(p_0) - \ln(\frac{\bar{M}\bar{v}}{y})\} \quad (4)$$

according to which $p_0 = B_{-1}(r-1)/rs$ if the fiscal authorities fixed s_t at a constant, s. Suppose that the initial value of debt was given exogenously as in the case of the Weimar Republic and that B_{-1} took a very large positive value. In such a case, the value of $p_0 = B_{-1}(r-1)/rs$ would far exceed $\bar{M}\bar{v}/y$ which would be determined by the central bank targeting zero inflation. Then, the price level, satisfying equation (4), would diverge, triggering fiscal-policy-induced hyperinflation.

3. The price stability mechanism under the gold standard and central bank independence

Sargent (1986) attributes the ending of hyperinflation to (1) the establishment of an independent central bank which is legally authorized to reject government requests for uncollateralized credit, and (2) the planned substantial change in the fiscal policy regime which enables a country to rid itself of large current-account deficits.

Inflation, after all, was not a monetary phenomenon but a fiscal one: once an independent central bank aspiring to go back on gold was established and a roadmap of fiscal reform presented, divergence in prices ceased (Sargent and Wallace [1981]). The validity of Sargent's (1986) argument can also be seen from the experience of Czechoslovakia, which avoided hyperinflation by hurrying to restore the gold standard through a stabilization of currency and a stringent fiscal regime, despite the fact that it faced many difficulties, similar to those of other countries which experienced hyperinflation.

The movement towards the restoration of the gold standard reflected the general trend in the interwar period, ranging from the Brussels conference convened by the League of Nations in 1920 (its recommendations included balancing government budgets, checking inflation, restoring the gold standard, establishing an independent central bank and, internationally, organizing an international investment bank and export credit and insurance) to the Genoa conference in April–May 1922, in which the participating governments resolved to go back to the gold standard as soon as possible. Broaddus and Goodfriend (1996) argue that the importance of central bank independence was internationally recognized for the first time, in the sense that policy management by the central bank under the constraint of the gold standard should be respected. It is also noteworthy that the gold standard called for balanced budgets in fiscal policy.

B. Theoretical and Institutional Relationships between Fiscal Deficits and Inflation under Floating Exchange Rates

1. Optimal taxation by a unified government

The postwar experience of the welfare state suggests that debt reduction was not

accomplished through hyperinflation. Why does a unified government not trigger hyperinflation in the absence of the gold standard? The theory of optimal taxation by a unified government due to Herrendorf (1997) suggests important lessons in this regard. In his theory, optimal taxation is the choice of an optimal combination of money creation, bond issues (inflation-indexed bonds as well as nominal-interest-bearing bonds), and taxation on consumer goods, in order to minimize social-welfare costs while meeting given government expenditure needs.

Inflation induced by money creation contributes to the government's financial well-being in two senses: (1) as an inflation tax, in which anticipated inflation reduces the real balance of money, and (2) via the effect of reducing the real balance of nominal-interest-bearing debt through unanticipated inflation. Incidentally, the model assumes that the production mechanism of goods is unaffected by taxation, that nominal interest rates are positive, that the Fisher equation holds, and that money is neutral in the long run.

The social welfare costs that accrue from a unified government's taxation can be broken down into the following parts: (1) the cost of taxation on goods (tax collection costs, which increase with the tax rate); (2) the costs of anticipated inflation (the opportunity cost of money holding, which increases as the nominal interest rate rises); (3) the costs of unanticipated inflation (the menu and other costs, which arise from the rigidity of nominal contracts; they increase as the inflation rate goes up); and (4) the costs arising from the asymmetric effects of inflation on income distribution. Ignoring the fourth part for the moment, Herrendorf (1997) assumes that the unified government tries to minimize the present discounted value of the weighted average of the social costs ([1]–[3] above) by choosing optimal paths of inflation, taxation, the balances of nominal debt and inflation-indexed bonds outstanding. The possibility of default on government debt is disregarded. As long as the unified government can commit itself to an optimal path of taxation, it would choose the inflation rate, the tax rate, the balances of nominal bonds and inflation-indexed bonds in such a way that the marginal utility of changing each variable is equal to the marginal social cost of each.

The conditions under which a high inflation rate is optimal include the following: (1) if the costs of tax collection are high; (2) if the costs of unanticipated inflation are low because the interest-rate elasticity of real asset balances is low; and (3) if the desired real money balances are extremely high, even under very high inflation. Herrendorf (1997) argues that the first condition is unlikely to be met in industrial societies with financial liberalization and that, even under the second and third conditions, the incentives for economizing on money holding will increase and hence high inflation is unlikely to be desirable. Conversely, deflation, such as that accomplished by the Friedman rule, is optimal if the costs of taxation on goods are zero and if the costs due to the effects of deflation on income distribution are negligible. Thus, neither high inflation nor deflation is desirable. The optimal inflation rate should be determined empirically through the measurement of the social costs of inflation, but

there is no consensus among empirical researchers on this question.[10]

On the other hand, Herrendorf (1997) argues that this kind of optimal taxation by a unified government is unfeasible due to the time inconsistency problem pointed out by Kydland and Prescott (1977). In particular, if the revenues from realized inflation are large while its costs are small (in terms of debt management, if the weight of inflation-indexed bonds is small), Herrendorf (1997) points out that the unified government will take advantage of stable inflationary expectations on the assumption that the unified government will pursue optimal inflation. The unified government could then reduce the real debt burden by excessive surprise inflation. In other words, even if the government tries to secure government revenues through appropriate levels of inflation *ex ante*, there is a possibility that the government will trigger excessive inflation *ex post*. When the constraint of the gold standard is unavailable, the institutional mechanism to prevent this incentive for the welfare state is a system of central banking. Alternatively, each country's budget system could be interpreted as an institutional mechanism to restrain government expenditures within a reasonable range.

2. The need for a central bank independent of the unified government

One of the major ways to restrain the incentives for the unified government to trigger excessive inflation is to increase the independence of the central bank within the unified government. This argument is usually made without considering the budget constraint of the unified government, but it has been increasingly refined since the advent of the theory on the inflationary bias in monetary policy (Barro and Gordon [1983]).[11]

Rogoff (1985) proposed to appoint as central bank governor someone whose inflation-unemployment tradeoff preferences are more inflation-averse than the social average and to delegate the conduct of monetary policy to such a person. Translated into the language of optimal taxation, this proposal would amount to delegating monetary policy to someone who would estimate the losses from realized inflation to be higher than the government would.

As a device to curb the inflationary bias and to steer the economy to an optimal state, Walsh proposed a performance contract between the government and the central bank, whose rewards are linked to the actual rate of inflation. Svensson (1997) showed the same results as Walsh (1995) could be obtained by setting the inflation target below the social optimal by the margin of the inflationary bias and by making the central bank follow such a target. From the standpoint of the optimal

10. There is no consensus on the costs of zero inflation among the studies using U.S. data. Akerlof *et al.* (1996) argue that zero inflation brings greater unemployment than a 3 percent inflation in an economy in which firms, concerned about the effect on worker motivation, generally refrain from lower nominal wages. Attanasio *et al.* (1998) tried to measure the household transaction costs from inflation, using a money demand function, and calculated that the cost of inflation is about 0.1 percent of total consumption. Feldstein (1997), on the other hand, emphasizes the loss for firms by capital taxation. According to him, the transition costs from 2 percent inflation to zero inflation is about 5 percent of GDP, while the annual welfare gains of reducing inflation from 2 percent to zero discounting at the rate that investors require for risky equity investments implies a present value gain equal to more than 35 percent of the initial level of GDP. Thus, he thinks that the transition to zero inflation is desirable. There is consensus, however, on the deleterious effects of double-digit inflation on economic growth as seen in Barro (1995).

11. This literature is based on the theory of rational expectations such as Friedman (1968) and Lucas (1972), which purported to explain the emergence of stagflation—the increase in both unemployment and inflation after the shift to the floating exchange rate regime.

taxation theory, one must choose an efficient feasible mechanism from among these alternative plans. Recently, many innovations have been made, such as the establishment of the European Central Bank and the revision of the Bank of Japan Law, in light of the historical experience of stagflation since the oil crises, as well as the theoretical implications of this literature.[12] Unfortunately, there is still an insufficient number of theoretical and empirical analyses on the institutional design of the central bank that would be desirable under the condition of large government debts.[13]

3. The importance of a budgeting system

Herrendorf (1997) argues that it is useful to index at least part of public debt to price indicators to solve the time-inconsistency problem when the benefits of inflation outweigh its costs.[14]

The budget deficits of advanced industrial societies since 1975, as shown in Figure 2, do not conform to the anti-cyclical pattern (in the sense of moving in the opposite direction to the business cycle) predicted by the theories of optimal taxation such as Herrendorf (1997) and Barro (1979); instead they seem to expand as they pass through each round of the business cycle.[15] Also the pace of deficit expansion differs from country to country. As seen from the empirical studies that cast doubt on the sustainability of government debt in Japan, various pressures on the government may be forcing it to continue spending even though such spending is not sustainable in the long run. This consideration gives rise to the concern that debt may not be sustainable without some kind of limits placed on spending levels, no matter how well debt is managed.

12. The inflationary bias of Barro and Gordon (1983) arises from an incentive to raise production above the level that is feasible under free market conditions. If the revision in the central banking law rules out such a policy option, does that mean that the theory of inflationary bias is no longer relevant? Cukierman (1999), taking into account that the central bank decides monetary policy with future forecasts under imperfect information, argues that even in the absence of the excess production motive along the lines of Barro and Gordon (1983), the inflationary bias does not vanish (1) if the central bank tends to overestimate the risks of monetary tightening (underemployment) relative to the risks of monetary easing (overemployment), or (2) if there is error in inflation control due to error in the central bank's money supply control.
13. Recent theoretical analyses on this question include Beetsma and Bovengerg (1997a, 1997b) and Uchida *et al.* (2000). Uchida *et al.* (2000) assume that the public has desired targets for inflation, production and public goods provision and that they delegate control of the money supply to the central bank and decisions on tax rates and government expenditures to the fiscal authorities. Assuming that there is a time-inconsistency problem on the part of both the central bank and the fiscal authorities, it is possible that the targets for government expenditures will be higher in order to realize an allocation of resources that is desirable from the societal point of view. In such a case, Uchida *et al.* (2000) obtain a result that the central bank should pursue disinflationary goals all the more aggressively in light of the unified government's budget constraint.
14. In Herrendorf's model, however, it is not desirable to raise the weight of inflation-indexed bonds to unity. For, if such a choice were made, the benefits of unanticipated inflation would vanish while the government would, in turn, acquire an incentive to deflate as long as there are costs to realized inflation. Also, it is not entirely correct to argue that the central bank can purchase an unlimited quantity of price-index bonds because they are not inflationary. To be sure, inflation-indexed bonds curb the temptation for the government to reduce the debt servicing burden through unanticipated inflation. On the other hand, as inflation-indexed bonds outstanding increase as government spending increases, a mechanism for keeping outstanding government debt to a sustainable level will be needed. As the historical lessons of hyperinflation show, confidence in money that is only backed by price-index bonds that cannot be repaid is likely to vanish as soon as the sustainability of government debt itself comes into doubt.
15. Barro's (1979) argument can be summarized as follows. Suppose that the tax system is not neutral toward resource allocation because the government levies taxes on labor income and consumption. Examined in a dynamic framework, it can be shown that taxation on labor income distorts inter-temporal choices over labor and leisure and thereby distorts resource allocation. In such a model, it is desirable to issue public debt for absorbing the shocks of the business cycle as well as for keeping tax rates flat over time (i.e., tax smoothing).

This perspective has spawned the literature on the political and institutional mechanisms that produce budget deficits. There are five strands to this literature, according to Alesina, Roubini, and Cohen (1997).

First, the theory of fiscal illusion says that elected politicians are not averse to the increase in budget deficits whereas the voters themselves, who are ill-informed about the long-run budget constraints on the government, tend to welcome present government spending more than they dislike future tax increases. The difficulty with this argument is that it cannot explain why budget deficits did not increase before the 1970s even though politicians faced the same problem then.

Second, another theory interprets government debt as a strategic instrument in the game of party competition. For instance, the Reagan administration left an enormous amount of debt to the subsequent Democratic administration, making it impossible to pursue a welfare policy as the latter wished. As this example shows, if there are differences in party preferences over fiscal policy, budget deficits may increase. However, this model has not been rigorously tested with data.

Third, a perspective on intergenerational transfer predicts an increase in government debt. Because future generations cannot participate in current fiscal decisions, which tend to put priority on current spending, government debts may expand over time. But there is no clear cross-national correlation between age composition as a proxy variable for inter-generational transfers on the one hand and the degree of deficit expansion on the other.

Fourth, coalition governments may require more time to reconcile competing interests and, therefore, they may not be able to reduce deficits in a timely manner once an exogenous shock creates a deficit. Some empirical research has been done on this point, giving some support to this theory.

Fifth, the electoral district system gives rise to an incentive to overvalue the interests of specific districts rather than the national-level benefits and costs. This bias could bring about an increase in budget deficits. While this may be able to account for the allocation of expenditures within a country at a specific point in time, it cannot explain the increase in budget deficits over time.

Also, even if the budget deficits increase, the welfare state tries to reduce deficits by privatization and spending cuts when deficits have reached a certain level, and does not resort to hyperinflation. Enacting the Budget Enforcement Act (BEA) at the same time as the Omnibus Budget Reconciliation Act (OBRA) of 1990, the United States was able to cut deficits by setting upper limits on discretionary expenditures (such as defense spending) and by instituting a "pay-as-you-go" principle which forced the government to cut entitlements (such as social security payments) or to increase taxes when a policy change caused a net revenue shortage. Also, Tomita (1999) points out the effectiveness of the New Control Total (NCT) method in the United Kingdom. It seems that these budget institutions placed a restraint on budget deficits from the expenditure side and therefore prevented the government from resorting to hyperinflation.

In this connection, it is noteworthy that Alesina, Roubini, and Cohen (1997) point out that procedural rules governing the drafting and approving of budgets and expenditures help account for the cross-national differences in the size of budget

deficits. In particular, they highlight three factors: (1) legislation on numerical targets such as balanced budget laws and numerical targets for budget deficits, (2) the method of budget preparation and the voting methods for approval, and (3) transparency of budget-related documentation.

First, varieties of balanced budget laws can be found not only in the budget systems of Canadian provinces but also in U.S. state governments. Poterba (1996, 1997) has shown that stringent budget institutions tend to restrain government spending.[16]

Second, as for the methods of budget preparation and voting on budgets, Alesina, Roubini, and Cohen (1997) divided the voting methods into two types: (1) deciding the total budget size first and then deciding the breakdown of that amount, and (2) deciding specific spending programs first and summing up the total of these programs. They found that the first type is more likely to maintain budget discipline. They also divide the ways of approval into the closed rule and the open rule. Under the closed rule, a legislator makes a budget proposal and the legislature votes on it. If a proposal is voted down, another legislator proposes a different budget and the legislature continues voting until one is approved. Under the open rule, a legislator is selected to make a budget proposal, and then the legislature chooses another member who either proposes to vote on the first budget or to propose an amendment. If an amendment is proposed, it is balloted against the first budget proposal. The one who gets majority support can propose another budget proposal. The closed rule reflects the interest of the majority and tends to produce the lower ratio of benefits relative to taxpayer costs. The open rule allows for changes in the overall size as well as the content of the budget, but has the disadvantage of being too time-consuming.

Lastly, Alesina, Roubini, and Cohen (1997) argue that transparency in budgeting procedures has the effects of (1) preventing politicians from increasing spending through fiscal "illusion," and (2) preventing them from increasing spending by not presenting rational voters with a clear idea about the future consequences of fiscal policy.

In light of these considerations, von Hagen and Harden (1995) coded an indicator to measure to what extent budgeting systems of the (then) 12 EU member states curb the spending bias of government agencies that tended to propose excessive spending programs relative to an economically efficient budget. They took account of three aspects: (1) budget negotiations within the government, (2) deliberations over budget proposals in the legislature, and (3) the amount of information revealed in the budget proposals (greater transparency is expected to raise the government's commitment). As for the first aspect, they focused on the decision-making powers of the prime minister and the finance minister and the negotiations on numerical targets within the government. In the second, they looked at the possibility for amendments, voting procedures on specific spending items, whether or not there is a vote on the total size of the budget before deliberations and transparency of the budget. On the third, they focused on the discretion that the chief of each

16. Poterba and Rueben (1997), for instance, examined the relationship between interest rates on municipal bonds and the state budgeting institutions, using the U.S. state data from 1973 to 1996, and found that the states with institutions that punish budget deficits pay lower interest on their bonds (by 15–20 basis points) and that market participants had favorable views of stringent budget discipline.

government agency has in relation to the finance minister. This indicator, constructed to be proportionate to the stringency of fiscal discipline, turned out to be negatively correlated with the debt-GDP ratio.

Thus, the theoretical and empirical results in many advanced industrial societies have been accumulating regarding the possibility that institutional design in budgeting can make a difference in reducing budget deficits.

V. Japan's Experience of Fiscal Reform

The historical examination of other countries' experience of debt reduction has shown that there are three types: debt reduction under the gold standard, reduction of wartime debt through hyperinflation, and fiscal reform of the welfare state. The following section will review Japan's experience as it conforms to this typology.

A. Debt Reduction under the Gold Standard: Redemption of Wartime Debts after the Russo-Japanese War (1906–16)[17]

Japan won the Russo-Japanese war, but peace was achieved without reparations. Because Japan had issued foreign bonds to finance the war, debt servicing on the huge external debt was necessary after the end of the war. Japan ran chronic trade deficits, and concern arose over the outflow of specie. The Japanese government pursued aggressive postwar policies in such areas as the buildup of the military, nationalization of railroads, and colonial rule, and, as a result, expenditures continued to increase and the government had to raise taxes and issue new bonds. In the meantime, the accumulation of debt outstanding eroded confidence in Japan abroad and pushed down the price of government bonds, inhibiting fresh inflows of foreign funds.

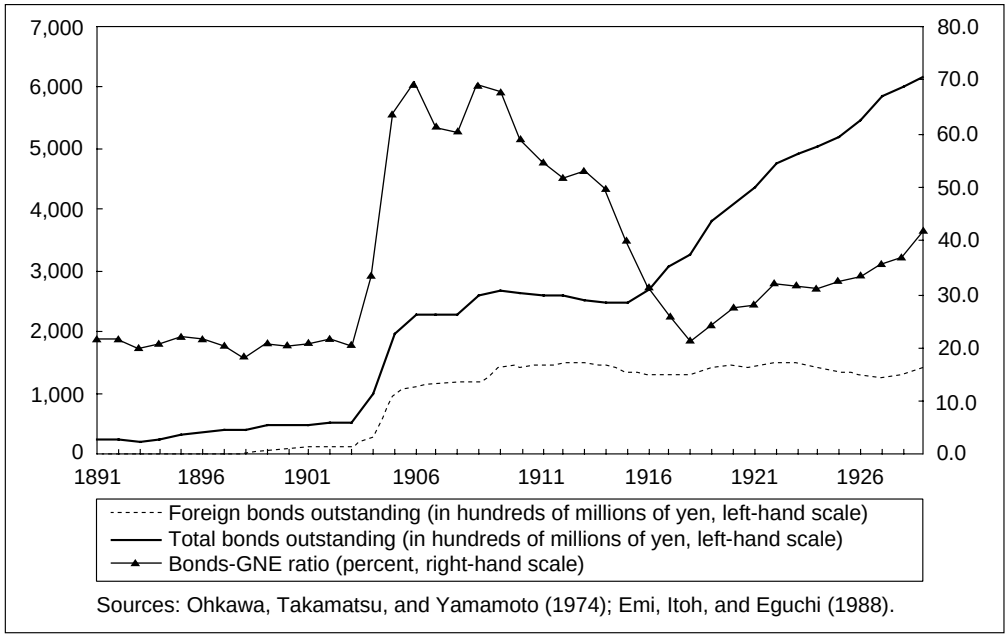
Under these circumstances, the Japanese economy stagnated. This was partly influenced by the 1907 depression abroad. Prime Minister Katsura (who also served as finance minister) reshuffled the cabinet in July 1908 and announced a new fiscal policy including spending cuts, suspension of new bond issues, and redemption of old bonds outstanding.

The Katsura government also refinanced bonds three times with lower interest rates and succeeded in decreasing the debt-service burden and in putting off redemption of the principal. To be exact, however, only the first and second rounds of refinancing were successful. In the third round, the syndicate of financial institutions that was formed to underwrite the government bonds refused to do so, and instead demanded redemption in cash. The government had to issue bonds abroad to finance redemption at home and, as a consequence, the foreign bonds outstanding increased further (Emi [1965]).

From 1911 to 1916, debts outstanding dwindled. Wholesale prices surged from 1911 to 1912, up by 10 percent, but from 1913 to 1915 they declined. Thus, this period did not see hyperinflation (Figures 10 and 11).

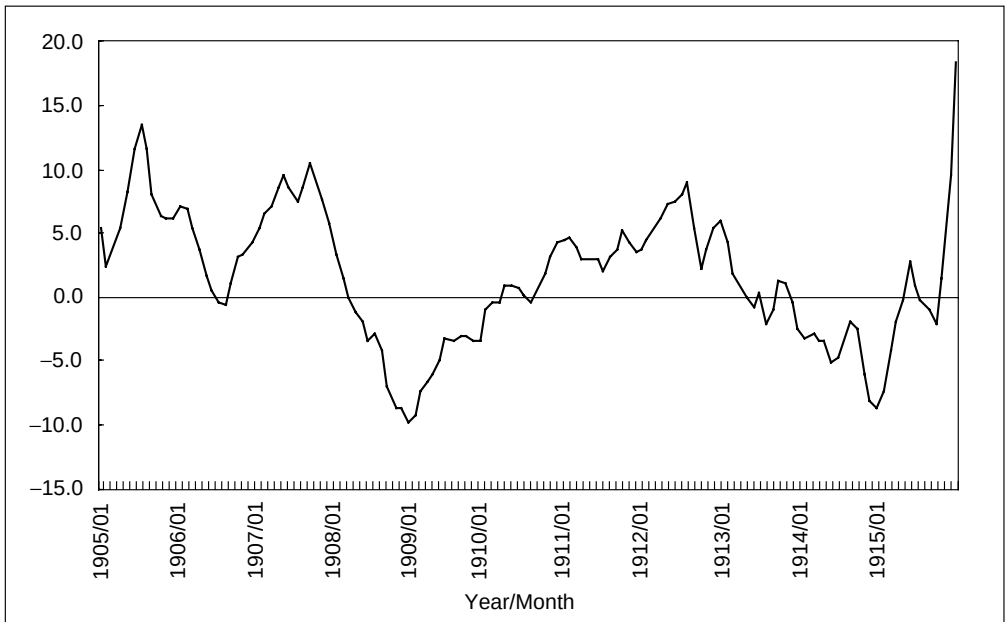
17. This section draws on *Nihon Ginko Hyakunenshi*, vol. 2

Figure 10 Japanese Debt Reduction after the End of the Russo-Japanese War



Sources: Ohkawa, Takamatsu, and Yamamoto (1974); Emi, Itoh, and Eguchi (1988).

Figure 11 Price Changes Around the Time of the Russo-Japanese War (Year-on-year percentage changes in wholesale prices)



Sources: Ohkawa, Takamatsu, and Yamamoto (1974); Emi, Itoh, and Eguchi (1988).

In the meantime, the economy was treading water. The success in debt reduction under these circumstances can be attributed to the export of gold, the maintenance of convertibility of Bank notes to gold, and market confidence in the traditional

balanced-budget policy under the gold standard.

Faced with the specie crisis prompted by a steady outflow of gold, two successive finance ministers, Masayoshi Matsukata and Tatsuo Yamamoto, tried to avoid borrowing foreign funds and instead tried to dampen imports and domestic demand. Thus, it was logical for them to attempt to reduce debt. More noteworthy in this connection is the case of Bank of Japan Governor Takahashi, who thought that Japan ought to borrow foreign funds to supplement domestic savings in order to develop industry and expand exports in an expanding equilibrium. Takahashi also stressed budget austerity and administrative efficiency as a premise for foreign borrowing. He also recognized the need to enhance confidence in the durability of the gold standard in the future.

B. Hyperinflation after World War II[18]

By the end of the fiscal year 1945, the Japanese government had debts totaling ¥200 billion, in the form of various bonds, including domestic bonds, foreign bonds, short-term government securities and advances. Apart from these, the government had about ¥56.5 billion of liabilities related to wartime indemnities such as guarantees for government decrees and for military procurement contracts and war risks insurance.

The enormous increase in government liabilities included the following three factors. First, it was impossible to finance the war (with a total cost of ¥204.6 billion) with foreign bonds, and therefore the issues of domestic government bonds increased rapidly.[19] Second, productive capacities had been devastated by the end of the war, and therefore, economic activities had significantly declined.[20] Third, bonds that had been issued to meet a surge in temporary war-related expenses, such as retirement allowances for veterans and payments to the military industry (¥27.3 billion from August–December 1945) were mainly purchased by the Bank of Japan, leading to an increase in note issues.

In preparing the Fiscal Year 1946 budget, expenditures totaling ¥15.2 billion were expected to produce a revenue shortfall of ¥2.5 billion. If wartime indemnities were included, the anticipated revenue shortfall for the Fiscal Year would balloon to ¥70 billion. Asked to comment on the budget proposals, Professor Hyoe Ouchi argued his "Outlines of Japanese Fiscal Measures"[21] as follows: First, the budget should be balanced in order to prevent inflation. In particular, he urged putting limitations on wartime indemnities, lowering interest on public bonds, and privatizing national properties and enterprises. Second, he warned that inflation would be inevitable even

18. For the historical facts in this section, see *Showa Zaiseishi: Shusen kara Kowa made*, vol. 11, *Showa Zaiseishi*: *Showa 27-48 nendo*, vol. 3, and *Nihon Ginko Hyakunenshi*, vol. 5.
19. The amount of financial assets outstanding at the end of the war is estimated to be over ¥500 billion. Gross national expenditure (GNE) in 1944 was ¥74 billion, but the figure for 1945 is not known. Hence, the ratio of these assets to national income cannot be computed.
20. By the end of the war, industrial production had gone down to one tenth of the 1935–37 level, and agricultural production was down to less than three fifths of the 1933–35 level. About 25 percent or ¥64.3 billion of national wealth as well as 44 percent of territory had been lost.
21. A memo dated October 24, 1945, drafted in response to Colonel Kramer's policy inquiry as to what to do with the Japanese public finance on the assumption that the Japanese government would be unable to cancel its domestic indemnities against war damages.

if these debt reduction measures were taken, because the budget would not be balanced within a period of three years or so. Third, he was optimistic that inflation would remain moderate as long as the government was to take these debt-cutting measures to restrain the increase in budget deficits. In the meantime, private demand would recover, the real interest rate on public bonds would come down, and the decline in real debts in the private sector would revive investment and production. After an economic recovery, it would be possible, he argued, to aim at sound fiscal policy. In essence, he argued that managed inflation would help reduce debt and revive the economy, which in turn would help reduce budget deficits. Since budget deficits were a source of inflation, "inflation itself had the potential to cure itself". Fourth, he argued that the government should set a five-year fiscal plan, including such goals as balancing the budget within five years and ceasing the money financing of expenditures within four years. Professor Ouchi's proposals can thus be interpreted as a combination of money-financing bonds in part and defaulting on guarantees against wartime liabilities in part, given that it would be impossible to refinance all the wartime liabilities through issuing new bonds.

It is hard to find an instance of internal documents at the Ministry of Finance arguing in favor of managed inflation, but there is a description of the role of inflation in reducing debt in an Industrial Funds Division document dated October 15, 1945, entitled "Outlines of New Fiscal and Economic Reform in Japan."

Wartime indemnities were virtually cancelled in the end, and inflation indeed arose. Therefore, by the end of 1945, the government came to the view that inflation had curbed the real burden of bonds outstanding. Hyperinflation during the fiscal year 1945 had reduced the real debt outstanding to less than one third of the 1944 level. In the meantime, as production recovered, the ratio of government liabilities (excluding wartime indemnities) to national income was 73.5 percent by the fiscal year 1946, down from 260 percent in the fiscal year 1944 (Table 4).

Table 4 Japanese Debt Reduction after the End of World War II

End of Fiscal Year	Total public debt (in millions of yen)	Long-term domestic bonds outstanding (in millions of yen)	National income (in millions of yen)	Wholesale prices (1945=100)	Real debt outstanding (1945=100)	Debt-National income ratio (percent)
1944	151,952	106,745	56,937	22	339	266
1945	199,454	139,924	n.a.	100	100	n.a.
1946	265,342	172,237	360,855	202	65	73
1947	360,628	208,541	968,031	725	24	37
1948	524,409	279,553	1,961,611	1,648	15	26
1949	637,286	290,758	2,737,253	1,902	17	23
1950	554,008	240,767	3,381,500	2,801	10	16
1951	645,463	260,608	4,434,600	2,952	10	14

Source: Calculated from *Showa Zaiseishi*, Vol. 11.

After the immediate postwar period, inflation under the Ishibashi budget far surpassed Professor Ouchi's forebodings,[22] and the real debts outstanding of the government were cut to a great extent. This inflationary policy—Dodge diagnosed that continued budget deficits and money financing were primary causes of hyperinflation—finally came to a close with the severe austerity budgets of 1949 and after.

In light of these lessons of history, the Public Finance Law of 1947 prohibited the underwriting of government bonds by the Bank of Japan and laid out basic rules about the issuing of construction bonds. On the other hand, the Bank of Japan Law, which had been enacted under the heavy influence of the National General Mobilization Law, was revised and implemented only in April 1998.

If one focuses solely on the fact that debt reduction proceeded fast, the hyperinflation during the immediate postwar period may be looked on as a policy success. But such a perspective loses sight of the fact that households and industries bore the brunt of income losses from the cancellation of wartime liabilities in 1946.[23]

The cancellation of wartime indemnities drove major industries into bankruptcy because they had produced military goods with bank borrowings on the expectation that the government would pay up. As a consequence, financial institutions also needed to be liquidated. Likely casualties included insurance companies, which lost the coverage of war risks insurance, and the shipping industry, which lost ships due to war. As a matter of principle, therefore, it is preferable for the government to guarantee wartime debts for the sake of economic recovery, but deficit bonds to cover such guarantees were likely to add fuel to inflation, creating a policy dilemma.

Under these circumstances, a directive from the Supreme Commander of the Allied Powers (SCAP) abolished property taxes and canceled wartime indemnities, making it inevitable that the banks and industries would run huge deficits.[24] To cope with the industry's difficulties, the Enterprises Reconstruction and Reorganization Law was enacted, which enabled the enterprises to transfer secure assets such as cash and goods into new accounts while freezing the wartime indemnities in the old books.[25] As a result, military-related industries—aerospace and armament industries in particular—had to write off more than 90 percent of their capital.

In the meantime, a new measure was taken in February 1946. This new rule stopped the circulation of old Bank notes and prohibited the withdrawal of deposits (i.e., a deposit moratorium), except withdrawal in new yen notes with an upper limit on the total amount. Despite the deposit moratorium, however, note circulation increased again, and all that could be done was to stop financial institutions from going bankrupt from bank runs. The Emergency Financial Measures Ordinance,

22. Underwriting by the Bank of Japan financed the bonds issued by the Reconstruction Finance Cash Office (established in January 1947). As a result, the note issues increased rapidly and triggered another bout of inflation.
23. The following description has been informed by the writings of Takafusa Nakamura. See Arisawa (1976), pp. 277–280. Also see Itoh (1995).
24. Nakamura (1979), however, interprets the SCAP's cancellation of wartime debt indemnities as meaning to remind the Japanese that "war did not pay" as well as demonstrating the Allied Powers' political clout.
25. To estimate the macroeconomic impact of the debt by major enterprises, about 65 percent of over 5,000 companies were subjected to liquidation under the old accounts. The ratio of new accounts was only 6.9 percent in the case of aerospace and arms industries, which incurred the heaviest damage. See *Showa Zaiseishi: Shusen kara Kowa made*, vol. 13, p. 775.

taking effect in August 1946 in tandem with the cancellation of wartime indemnities, divided deposits under moratorium into two types, tier 1 and tier 2. The first was guaranteed to be secure, but the latter was prohibited to withdraw, which was eventually cancelled when financial institutions were liquidated based on Financial Institution Reconstruction and Reorganization Law. Imperial banks made up for their losses by writing off most of their reserves, all of their capital stock and 76 percent of the tier 2 moratorium deposits.

As reviewed so far, the hyperinflation and the cancellation of wartime indemnities helped reduce government liabilities substantially, but the losses inflicted on depositors and shareholders by these measures were enormous, although executed under the special circumstances of postwar reconstruction.

C. Fiscal Reform in the 1980s

With the issuance of deficit-covering bonds in the supplementary budget of the fiscal year 1965 and that of construction bonds in the next fiscal year, Japan deviated from the principle of balanced budgets, which had been held since the end of the war. After the exogenous shocks of the shift to floating exchange rates and the first oil crisis, the Japanese government aggressively undertook public works for economic recovery. As a result, the dependency ratio for government bond issues jumped from 11.3 percent in 1974 to 25.3 percent in 1975, finally reaching a high of 32.6 percent in 1981. In 1973 (the year which ushered in major social welfare measures), pension payments were indexed to price levels, and the ratio of social welfare expenditures to national income went from 6 percent in 1973 to over 10 percent in 1980. Ihori and Doi (1998) summarize the tortuous processes involved in launching fiscal reform undertaken in light of the deterioration of the fiscal situation.

In the late 1970s, the government attempted a fiscal reform by introducing a general consumption tax, but this was postponed because the ruling Liberal Democratic Party lost the 1979 election. From 1979 onwards, the Ministry of Finance tried to reduce debts by placing an upper limit on each agency's budget request. This was called a "ceiling" method, which required the budget request to be based on the previous year's budget, give or take certain percentage points, fixing the total budget size, within which budget requests were accepted. In 1981, Prime Minister Nakasone appointed the second Temporary Council of Research on the Public Administration System, which offered several policy recommendations. Based upon these recommendations, the government privatized three public enterprises, reduced public sector employment and cut social spending. In the meantime, economic recovery added to tax revenues. Finally, in 1989, the government started levying a consumption tax, which enabled it to stop relying on deficit-financing bonds in the main budget of the fiscal year 1990. Also, the dependence rate was lowered to about 10 percent—a level on a par with the pre-oil crisis period.

Ihori and Doi (1998) point out the major problems with the ceiling method as follows: First, exceptional increases in spending were allowed even under a zero-growth ceiling; Second, the ceilings were applied only to the main budget and could not prevent large increases in public works expenditures in supplementary budgets from 1990 onwards; Third, it only aimed at reducing budget deficits and, as a result,

rigidity in the structure of expenditures and the vested interests remained intact. Despite these problems, fiscal reform without hyperinflation proved to be possible in Japan as in other countries.

D. Evaluation of the Fiscal Deficits after the Collapse of the Bubble Economy

Iwamoto (1999) argues that aggressive fiscal policy in the 1990s did not stimulate the economy but did add to public debt. In particular, he points out two problems: First, not enough attention was paid to the lack of consistency between economic stimulus and fiscal reform; second, there was a lack of coherence between expenditures to stimulate the economy and other expenditures: for instance, austerity that started with the implementation of the Fiscal Structure Reform Law in November 1997 was quickly reversed by the announcement of economic stimulus measures in April 1998.[26]

Regarding the first problem, Iwamoto (1999) points out a need for a new framework. Traditional Keynesians tend to ignore the long-term consequences of fiscal policy, arguing that fiscal reform needs to be ignored for the moment for the sake of economic recovery and that the economy does not recover if spending is too low. On the other hand, the neoclassical theorists emphasize the long-term consequences of fiscal policy such as the accumulation of public debt. Thus, he argues that there is a need for a framework in which both economic stimulus and fiscal reform could be discussed. As a strong candidate for such a framework, Iwamoto points to a theory that suggests that policy intervention could be justified only if the downturn in the business cycle arose due to a coordination failure in the market with a "bad" equilibrium being chosen among multiple equilibria.

If we were to view the downswing of the business cycle as an example of market failure, a new perspective would emerge. Instead of regarding public investment as an economic stimulus, as old-fashioned Keynesians do, the new perspective would conduct a cost-benefit analysis of any economic measure as part of a neoclassical resource-allocation problem. In this perspective, there is no trade-off between economic stimulus and fiscal reform.

For example, national income accounting counts government expenditures as part of national income, justifying even wasteful investments. Cost-benefit analysis, on the other hand, does not evaluate the nominal sum of each item; instead it evaluates its opportunity cost. In this analysis, not all the current public investment projects would be justified. Economic measures that take advantage of underutilized resources have zero social opportunity cost and should be aggressively pursued. On the other hand, if public works competed with the private sector, the costs for the private sector would be considered a cost for the government as well. Therefore, the cost-benefit analysis will place a certain restraint on such projects.

Such stringent criteria would justify employing only involuntarily unemployed workers, and given that it is difficult for the government to prove the existence of coordination failures, an aggressive fiscal policy to redeploy involuntary

26. As early as 1996, critics argued that Japan was the only industrialized economy still pursuing a Keynesian approach (Kapstein [1996]).

unemployment would be justified only in a situation of massive unemployment, Iwamoto (1999) argues.

As for the fact that the Fiscal Structure Reform Law of November 1997 was undermined in June 1998 as the economy deteriorated, Iwamoto (1999) argues that the government should have conceived contingency plans for a variety of situations when it embarked on fiscal reform.

VI. Are the Theories regarding Deficits and Inflation Relevant to Japan's Situation?

The following section will ask how relevant the theories and historical experiences of other countries are to the special situation currently existing under zero interest rates in Japan.

A. Primary-Market Bond Purchases and Hyperinflation as Non-Options

Now that the expansionary policies of low interest rates and huge spending have run their course, while future revenue increases permitted by high economic growth are unlikely, the royal road to fiscal reform is structural reform.[27] A resurrection of the kind of hyperinflation adopted in the postwar closed and regulated economy is not permissible under present circumstances (Kosai [1999]).

In order to execute such a policy in practice, we need to revise the Public Finance Law that prohibits the Bank of Japan from undertaking government bond issues, but during the Diet deliberations, the intention to trigger hyperinflation would be revealed to the public. Thus, it is hard to conceive that debt can be reduced as a matter of *fait accompli* before the markets react. The kind of default resembling the cancellation of wartime indemnities in the immediate postwar period would impose too high a burden on industries, banks and depositors, and hence it is also out of the question.

The proposal that is receiving most attention now is a gradual reduction of debt through moderate inflation (for example, targeting 4 percent inflation for the next 15 years) based on Krugman's (1998) idea. There is consensus among Western economists as to the success of inflation targeting as a means of accomplishing instrumental independence of the central bank in small economies that have been suffering from inflation.[28] However, the theory was developed against the historical background of monetary tightening for price stability under the assumption of positive nominal interest rates without consideration of the sustainability of public debt. It bears close examination whether or not that kind of theory is applicable to

27. For similar views, see Miyao (1999), Feldstein (2000), Fujiwara (1999). As an example of reform, Ihori (1999) proposes reviving the supply side by lowering marginal tax rates and a commitment to numerical methods to reprioritize expenditures which are currently captured by the vested interests. Iwamoto (1999) proposes the use of tax revenues in good times to redeem government bonds. In light of the fact that the Fiscal Structure Reform Law was suspended as the economy worsened, ex ante planning of countermeasures for a variety of conceivable situations is necessary for this kind of commitment to work.
28. For instance, see Bernanke *et al.* (1999).

Japan's special situation, where there are nagging doubts about the sustainability of public debts and zero interest rates.

B. Unanticipated Moderate Inflation under the Zero-Interest-Rate Regime

Defining the liquidity trap as a situation in which equilibrium real interest is negative, Krugman (1999b) argues (1) that the announcement of inflation targeting is desirable as an option to break out of such a situation, and (2) that the central bank under a serious liquidity trap should try out any option with a positive (however small) probability of success even though a shift in expectations under inflation targeting is uncertain.

Similarly, Itoh and Shiomi (1999) advocate arousing inflation expectations as a way to break out of debt-ridden deflation and help reduce debt. For instance, they show that the real balance of bonds outstanding would be reduced by 13 percent with the Fisher effect (and by as much as 46 percent without the Fisher effect) if Japan were to target inflation at 3 percent over the next ten years.

Both of these proposals include aggressive purchases of government bonds by the Bank of Japan as part of the solution. Even if the undertaking of new bonds by the Bank is out of the question, it is certainly possible to argue (1) that because fiscal policy is still effective under the liquidity trap, the Bank of Japan should support fiscal policy by aggressively buying up bonds on the secondary market, or (2) that if such action were to help arouse inflationary expectations, it would help us break out of the liquidity trap. On the surface, this proposal seems to have the triple benefits of (1) reducing real debt, (2) absorbing outstanding bonds, and (3) raising the possibility of breaking out of the liquidity trap by working on expectation formation. The following subsections will examine these supposed benefits in that order.

1. The small and uncertain debt-reducing effects of unanticipated inflation

This article does not rule out the possibility that at least some amount of the nominal public debt could be reduced *ex post* as a result of moderate inflation in an overall environment of stable prices. Nevertheless, it is hard to imagine that a country with highly developed capital markets could engineer unanticipated inflation to effectively reduce public debt (Giovannini [1995]), since higher interest on new issues of bonds would offset the decline in the real amount of debt.

Itoh and Shiomi (1999), mentioned earlier, estimated the debt reduction due to a sudden triggering of unanticipated inflation, but even in their estimation, some of the debt reduction is offset by higher interest payments on bonds. Also, their estimation is based on the following optimistic assumptions.[29] First, it is not known if it is possible to shift inflationary expectations in practice. Second, it is assumed that the effects on the income distribution and the real economy are negligible. Third, even if some portion of debts can be reduced by unanticipated inflation, it is not clear how to prevent the accumulation of new debt.

29. The reader may wonder if it is at all possible to come up with more realistic and ingenious ideas to reduce public debt. But it is known (due to the so-called Lucas [1976] critique) that the present econometric techniques cannot handle a situation where future private-sector expectations are known to change. Therefore, it is hard to imagine that a more refined numerical technique would lead to a better debt-reduction plan than that of Itoh and Shiomi (1999).

2. The uncertain effects of bond purchases to break out of the liquidity trap

How about the policy option of the Bank of Japan's outright purchases of government bonds on the secondary market to absorb bonds in the market and to break out of the liquidity trap by changing expectations?

As Buiter (1996) points out, it often happens in Western industrial economies that greater pressure is brought to bear on monetary policy as budget deficits increase. However, Japan's present situation is special in that monetary policy is now in the uncharted territory of zero interest rates. There is not yet much rigorous formal literature on this special area.

It will be useful to examine the unified government approach once again in this extraordinary situation of zero interest rates combined with grave doubts about the sustainability of public debts. Svensson's (1999) paper is one of the few that takes into account the consolidated balance sheet of a unified government.

Suppose that the nominal interest rate goes down and that monetary policy is stuck in a liquidity trap. By assumption, high-powered money and bonds become close substitutes in this situation. If private agents correctly expect that the liquidity trap is to persist for a long time, they will also expect that the aggregate nominal amount of government liabilities will decrease under deflation in the not-too-distant future, for it would be impossible to keep on increasing nominal debts because then real debt would go to infinity under sustained deflation.

Svensson (1999) argues that the deflationary expectations held by private agents need to be erased to get out of the liquidity trap. That, in essence, would require a commitment to a policy of not decreasing the sum of the nominal monetary base and nominal government bonds outstanding. In this context, he proposes inflation targeting and, as a last resort, aggressive outright purchases of government bonds. However, Svensson (1999) is doubtful about the effectiveness of the latter for the following reasons.

First, money creation through purchases of bonds on the secondary market merely substitutes money for bond holdings in the private sector, keeping the total nominal amount of liabilities constant, because the liquidity trap means that nominal interest rates are stuck at zero and that bond prices do not change.

Second, while it is conceivable to add to high-powered money after absorbing all the bonds in private hands, the high-powered money is only a small fraction of the sum of bonds outstanding in advanced economies, and hence it would take a long time before the central bank could absorb all the government bonds on the market.

Finally, even if the central bank were to inject more high-powered money after such aggressive outright purchases of bonds, it is not clear that the market would have confidence that base money would not decrease in the future, Svensson (1999) argues.

In sum, under the policy of keeping interest rates at zero, outright purchases of government bonds by the Bank of Japan would not alter the aggregate nominal amount of government liabilities, and therefore they would be unlikely to have the hoped-for effects of absorbing excess bonds and of breaking out of the liquidity trap.

3. The side-effects of outright purchases of government bonds: the risk of expectation reversal

What is noteworthy in Svensson (1999) is that inflationary expectations may not stay at a constant rate after deflationary expectations have been eliminated. Suppose, for example, that moderate inflation has started after deflationary expectations have vanished when budget deficits (or base money) have increased to such an extent that they do not go down easily. The best scenario in such a situation is for inflation to continue. While interest rates will go up at the same time and bond issues will be increasingly difficult, the debt-reduction effects will outweigh the increase in interest payments (because government liabilities are long-term fixed-income liabilities), thereby avoiding a default situation, and the economy may recover.

Depending on the state of government liabilities, however, a drastic change in expectation formation cannot be ruled out. Suppose, for example, that unanticipated inflation is perceived as a loss of fiscal discipline or that aggressive bond purchases on the secondary market by the central bank are perceived as equivalent to the underwriting of new bonds. In such a case, long-term interest rates will shoot up and, in the worst-case scenario, new issues of bonds will become nearly impossible.[30]

The lessons of hyperinflation are that doubts about the sustainability of government liabilities (or commitment to gold convertibility in the gold-standard era) entail a risk that confidence in central bank notes—the liabilities of the central bank—will also be lost because notes are backed by government. The present and future choices in fiscal and monetary policies affect market expectations about future public finances, which could, in turn, affect today's prices and interest rates.

The literature that casts doubt on the sustainability of Japan's government debt does not argue that the government may not be able to roll over debts right away. Rather, it says that the continuation of the present course of fiscal policy will make debts unsustainable in the future. If temporary turmoil in an interest rate surge were to deter new bond issues, however, confidence in fiscal discipline would be lost, and there would be no small risk that confidence in bank notes would also be lost. In other words, inflation may not be a monetary but a fiscal phenomenon (Sargent and Wallace [1981]). This risk has nothing to do with the fact that the Bank of Japan enjoys operational independence from the government or that the Public Finance Law prohibits the Bank from undertaking bonds on the primary market, and the risk could happen only because of expectationary reversal.

The true intent of Itoh and Shiomi (1999) is to let the Bank of Japan take the initiative in aggressive purchasing operations before the circumstances compel the Bank to undertake new bonds. If the Bank were to embark on such a policy, debt reduction, which Itoh and Shiomi (1999) view as a side benefit of monetary easing, would become an end itself, and then that would create market expectations in which priorities over the goals of monetary policy (i.e., price stability) and the unexpected

30. Tomita (1999) argues that if the Bank of Japan were to succeed in engineering inflationary expectations, currency depreciation and the rise in domestic interest rates would prevent a decline in real interest rates. He also argues that achieving such a policy goal would require exchange controls and interest rate regulations, as effected by Finance Minister Takahashi in the interwar period. Neither of these options would be realistic under the current state of international interdependence Japan finds itself in.

consequences (i.e., budget deficit reduction) of monetary policy have been reversed. The incentive for the unified government as a whole to trigger unexpected inflation is quite large and a new problem of securing commitment to price stability would emerge once the central bank were to take a last-resort measure. Such a risk would particularly increase when unexpected inflation could not be engineered as hoped for, thereby heightening the pressure on the Bank to further increase the amount of bond purchases.

4. When fiscal discipline is needed to prevent the side effects of bond purchases

As already discussed, if Japan were to undergo another deflationary spiral under zero interest rates, where the Bank would have to purchase huge amounts of government bonds as a last resort, an institution to guarantee the fiscal authority's commitment to fiscal discipline would be needed. In such a case, we could usefully look at the budgeting systems in foreign countries. If monetary authorities were to take a measure of last resort under the condition of high government debts, opportunistic fiscal policy would only disturb expectation formation in the private sector, thereby weakening market confidence in the government's fiscal discipline.

Tomita (1999) argues that if the government were to continue economic stimuli in the form of tax cuts while public debt remained at a high level, even myopic consumers would start to expect future tax increases. They would then decrease their consumption in the expectation of tax increases, thereby offsetting the effects of the expansionary policy through tax cuts.[31] At the same time, confidence in fiscal policy would be lost, the risk premium on government bonds would increase, and currency would depreciate. Tomita (1999) argues that the experience of Sweden would be instructive; Swedes recognized that the crash in bond prices in 1994 would be a precursor to the "non-Keynesian effect," and they started serious fiscal reform. Thus, he argues that Japan should also take immediate fiscal reform measures before the worst possible world of "tax increases, budget cuts, and the simultaneous rise in prices and unemployment" ensues.

C. Thought Experiment on Employment Insecurity after Future Economic Recovery

There are signs that the Japanese economy has bottomed out. Although the Fiscal Structure Reform Law, which outlined the course of fiscal reform, is suspended for now, the reform of the Fiscal Investment and Loans Program (FILP) is pointing towards greater disclosure of the program cost estimates and information about the taxpayer burdens. The government is planning to sell the FILP bonds to the private sector in the future, which indicates greater transparency and respect for market trends. Such emphasis on market principles and the transparency of the budget system will have the effects of (1) preventing politicians from increasing spending by taking advantage of fiscal illusion, and (2) of decreasing discretionary spending which could arise from lack of information about future fiscal outcomes, as Alesina, Roubini, and Cohen (1997) have already pointed out. These new trends have the

31. The fact that the neutrality principle has not been proven in Japan does not exclude the possibility of such expectationary reversal. See Sims (1995) for a similar view.

additional advantages of clarifying the cost-benefit balance of specific expenditures and of increasing confidence in the efficiency of fiscal expenditures by taking market reactions into account. Also, these trends are consistent with those in the rest of world in such areas as greater transparency in policy management by the central bank and greater disclosure of private financial institutions.[32]

If a cost-benefit analysis of public works spending were to be conducted when the economy recovers in the future, most of them would be cut because they are often said to be inefficient. Such an outcome is not intended to cut budget deficits as an end in itself, as suggested by Ihori and Doi (1998), but it is nonetheless desirable in the sense that inefficient and inequitable expenditures would be cut while decreasing budget deficits as well.

In this context, note that Ohtake (1999) has ascertained that employment of male workers in their twenties and sixties in the construction sector has been on the increase since 1993. In other words, this goes against the overall trend of the increasing share of service employment, suggesting that public works are delaying the problem of unemployment into the future. If the proposals by Iwamoto (1999) and others on fiscal reform were to be adopted, consumption would have to decline due to cuts in public works and employment insecurity, risking another twist of the deflationary spiral. To stall such a vicious cycle, some may argue that traditional public works should be continued. To deal with such unemployment, however, a more effective policy would not be conventional public works projects but structural reforms, such as an expansion of job referral services, increasing portability of pensions and greater assistance for gaining reemployable skills (Ohtake [1999]). In such a situation, monetary policy could temporarily soften the pains of structural reforms. But Yamaguchi (1999) points out that monetary policy cannot be substituted for structural reforms and that, in the long run, it cannot lower unemployment below the level that would be attainable in new labor market conditions following such structural reforms.

There is no trade-off between fiscal reform and economic stimulus measures. A combination of various structural policies and economic measures based on cost-benefits analyses will enable us to achieve fiscal reform at the end of the day.

32. Professor Ryutaro Komiya of Aoyama Gakuin University points out: "New bond issues as well as issued bonds should be passed through the objective arena called the market. The independence of the Bank of Japan and market warnings are both necessary to secure fiscal discipline. The four major policy failures by the Bank of Japan, namely restoration of gold convertibility in the prewar period, the undertaking of government bonds by the Bank of Japan, inflation in 1973–74, and the recent bubble (economy) all derived from political pressures on the Bank, causing great losses on the part of the population." "Nichigin Hoijin,"*Asahi Shimbun*, November 3, 1999, morning edition.

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