The Effectiveness of Fiscal Expansion under Huge Debt: The Recent Japanese Case

Yutaka Kurihara
Professor of International Economics and Finance
Faculty of Economics, Aichi University
4-60-6 Hiraike Nakamura Nagoya Aichi
453-8777 JAPAN

Abstract

Fiscal expansion, especially under debt, has been avoided because of negative economic impacts. Most policymakers tackle this problem. Some countries, such as Japan, have introduced fiscal expansion despite huge debt. Some European countries have tried to expand fiscal expenditures under these circumstances with high interest rates that undermine investments and criticism by other countries. This paper examines whether or not fiscal expansion under huge debt has been effective in Japan. Empirical results show such fiscal expansion is effective. Also, effects of fiscal expansion are short-lived. Fiscal expansion cannot be avoided despite economic debt; however, for fiscal policy, limitations of this approach should be considered. Unlimited fiscal expansion is dangerous. Household saving habits in Japan support the use of government bonds; however, there is some possibility that foreign investors would turn their back on Japan if the Japanese economic future is perceived negatively..

Keywords: debt, deficit, fiscal policy, monetary policy, Japan

JEL Classifications: E51, E52, E58, E62

1.   Introduction

Japan experienced high economic growth in the 1980s, and stock and land prices increased greatly. The Japanese yen appreciated enormously; however, exports that have traditionally been strongly related to the Japanese economic condition did not reduce. Fortunately, consumer prices also did not rise strongly, so households were not damaged. However, the so-called bubble economy, during which stock and land prices rose, collapsed at the beginning of the 1990s, and the Japanese economy experienced serious economic conditions. After that, the Japanese economy recovered gradually and the world economy and the United States recovered. However, in the 1990s, Japan suffered a remarkable recession. The reason that the recession occurred is said to be the fragile Japanese financial system and structural problems, such as delays in political and economic systems and reforms and deregulation in many areas that damaged the Japanese economy for a long time. Huge, nonperforming loans prohibited Japanese financial institutions from investing and lending capital. The Japanese central bank, the Bank of Japan (BOJ), introduced new financial policy, the quantitative easing policy, in March 2001. However, the BOJ quit quantitative easing in March, 2006, as there were some signs that the economy was emerging from deflation and recession. Following the global financial crisis around the year of 2008, the BOJ increased the purchases of Japanese government bonds aggressively.

After that, the Japanese government changed to a new policy, called *Abenomics*. Abe is the name of Japan's prime minister. Abenomics is distinguished by a set of policies that comprises three branches: (1) aggressive monetary policy, (2) fiscal consolidation, and (3) growth strategy. In 2013, the BOJ and the Japanese government published a joint statement. At that time, under huge debt, the government demanded more aggressive financial policy. The BOJ started to conduct monetary policy based on the principle that the policy shall be aimed at achieving price stability, thereby contributing to the sound development of the economy. The government would revitalize Japan's economy, not only by implementing flexible management of macroeconomic policy but also by formulating measures to strengthen the competitiveness and growth potential of Japan's economy.

In addition, by strengthening coordination between the government and the BOJ, the government would steadily promote measures aimed at the establishment of a sustainable fiscal structure to ensure the credibility of fiscal management (Cabinet Office, Ministry of Finance, and Bank of Japan, 2013).Japanese fiscal expansion again began to increase. Also, recently, Abe announced a nominal GDP target of \600trn (from around \500trn now) by promoting Abenomics. This paper examines whether or not fiscal expansion under huge debt has been effective. Recently, government debt has been regarded as having negative impacts on the economy. For example, currency integration in European economies has functioned under severe fiscal conditions. The total amount of government debt in any country should not exceed 60% of GDP, and in any one year, the government budget debt should not be more than 3% of GDP. On the other hand, fiscal expansion under huge debt has recently been regarded less negatively. Japanese public debt as a percentage of GDP is quite high; in fact, it is much higher that of Greece. Industrial economies, including Japan and some European countries national residents, have requested strong expansion of fiscal policy to boost the economies in spite of the fact that they have huge amounts of debt. The notion of fiscal expansion under large debt merits close examination. This paper is structured as follows. Section 2 reviews the literature on this issue. Based on this section, section 3 provides theoretical and empirical analyses to support the empirical studies. Section 4 shows the empirical studies and analyzes the results. Finally, this paper ends with a brief summary.

1. *Review of Existing Studies*

Until recently, fiscal expansion in the presence of huge debt has been considered to damage the economy. It is interesting to note that some papers recently have indicated that fiscal expansion under debt has less serious issues than originally believed. Afonso and Jalles (2014) indicated that long-run fiscal sustainability is not rejected. Yoshino and Vollmer (2014) showed that government debt obligations in Japan are predominantly held by Japanese residents and monetary policy is autonomous, so Japan has not yet suffered from a serious sovereign debt crisis. Many Japanese residents are willing to absorb increasing amounts of Japanese government bonds without high yields. This is specific issue in Japan differs from that of other countries. Sakuragawa and Sakuragawa (2016) showed that when there is a domestic bias in the asset portfolio of domestic bondholders, these investors turn out not to have access to any assets that hedge fiscal risk.

On the other hand, if Japan's national debt continues to expand, there is some fear that fiscal crisis may occur in the future. Arai and Nakazawa (2014) indicated that a large primary surplus, 13.8-18.7% of GDP, is needed to prevent the public debt-to-GDP ratio from expanding. Kameda (2014a) showed that the real budget deficit in 2008 caused about 2-3% increase in the Japanese government bond yields, which reduced the real GDP by 0.39-0.63 percentage points in 2008. Kameda (2014b) found that during bad government financial conditions, the demand effects of government expenditure are weak. Ueda, Yoneta, and Ota (2014) showed that current fiscal policies in Japan are distracted from satisfying intertemporal budget constraints and attaining efficient intertemporal allocation of resources.Ko and Morita (2015) conducted empirical simulations that showed that around 2% growth, or a Ricardian fiscal stance, can keep the debt-GDP ratio attainable. Miyazaka and Yamada (2015) stated that the Japanese government indicated that it will be difficult to achieve the government target of fiscal consolidation by the year 2020. Velinov (2015) indicated that Finland, Norway, Sweden, Switzerland, and the United Kingdom have sustainable fiscal policies and that Greece and Japan do not.

Morita (2015) found that fiscal policy shock boosts consumption more effectively in the high rule-of-thumb household's period. Miyazaki (2016) showed that tax reduction and subsidy to stimulate the adoption of ecofriendly cars in Japan increased automobile production; however, a program to promote the purchase of energy-efficient household appliances had no impact on appliance production in Japan. Zhang (2016) showed that government policies that cause inflation are more effective in affecting the real interest rates at the zero lower bound than they would be in normal times. However, Hayashi (2014) showed that government policies have failed to increase Japan's GDP to the expected level even with the promotion of Abenomics. Kurihara (2014, 2016) indicated that Abenomics showed some effects in increasing stock prices. Fukuda and Doita (2015) showed that under Abenomics, foreign investors were eager to purchase Japanese stocks and to sell the Japanese yen, but local investors were not eager. Kurihara (2014) indicated that zero interest rate policy has succeeded in lowering and stabilizing the interest rates and boosting the economy. Lam (2015) showed that although the BOJ has successfully depreciated the yen by around 30% and maintained a low interest rate environment, plenty of challenges lie ahead. Kurihara (2016) found that the zero interest rate in Japan and the exchange rate of yen/US dollar influenced Japanese stock prices positively.

On the other hand, Fujiwara, Nakazono, and Uedo (2015) showed that Japan seemed to have moved closer to a long-term liquidity trap and no clear difference was found before and after the introduction of Abenomics. Recently, Zhang (2016) indicated that monetary policy news at the zero lower bound is less effective. It can be safely said that household saving habits in Japan support government bonds. This is the most important reason that the Japanese government could have had a huge debt in addition to some room to raise the tax rate. Tremendous debt seems to have no impact in dampening the Japanese economy. However, market participants and national residents have known that Japanese debt is very heavy. So there remains some possibility that people, including the Japanese, know of the heavy debt situation and it may cause instability of the economy or recession. It should not be forgotten that the Japanese economy faces an aging population and increasing social welfare expenses. Moreover, foreign investors may withdraw from investing in Japanese financial markets when market conditions worsen. Their actions would be faster than those of Japanese investors.

2. Theoretical and Empirical Analyses

2.1 Theoretical Analysis

To examine whether or not fiscal expansion under huge debt has been effective, inflation is regressed by fiscal policy (i.e., volume) and other variables. In this approach, inflation rate, instead of the GDP rate, is used for economic growth. Deflation in some developed countries has prevailed seriously. Financial shock hit the world economy and infected many countries. Of course, policymakers have tried to combat the situation; however, most developed countries suffered deflation and recession despite aggressive fiscal and monetary policy. Deflation in most developed economies is regarded as bad and moderate inflation is regarded as combating deflationary pressure and boosting the economy. Japan is not an exception.

2.2 Empirical Analysis

Inflation rate is regressed by some variables. Candidate independent variables are public expenditure, monetary base, exchange rate, short-term interest rate, long-term interest rate, GDP gap, and the time of conducting policy. Also, the relationship between variables is examined. The relation of cause and effect and the time span during which the policies were in are also examined as they are very important. The sample period is from 1992Q1 to 2015Q4 (i.e., the most recent). In 1991, the bubble economy burst, so that specific time period is avoided.

Public expenditures are from Ministry of Internal Affairs and communications and GDP gap data are from the BOJ. Data for other variables are from International Financial Statistics (IMF). All of the data are unstable at least 10% level (ADF unit root test is employed), so the *rate* of each variable instead of its level is used for estimation. All of the data are quarterly.

Empirical methods are ordinary least squares, robust estimation, and generalized methods of moment (GMM). In addition to the standard OLS method, robust estimation is also used for estimation and is unlike maximum likelihood estimation. OLS estimates for regression are sensitive to the observations that do not follow the pattern of the other observations. This is not a problem if the outlier is simply an extreme observation from the tail of a normal distribution; however, if the outlier is from non-normal measurement error or some other violation of standard OLS, it compromises the validity of the regression results if a no robust regression method is employed. This paper also invokes the GMM. GMM is employed because of the simultaneity problems associated with endogeneity that complicate the assessment of the direction of causality between variables. Lagged explanatory variables are used as instruments.

A Chow breakpoint test is conducted for the overall sample period to determine whether or not a breakpoint exists. The null hypothesis is that there were no breaks at specified breakpoints.

A Granger causality tests also is performed to check the relationship among variables (i.e., explanatory variable and dependent variable). The cause-and-effect relation is checked. This test is as follows: A time series X is said to Granger-cause Y if one can show a series of t value and F value on lagged values of X (lagged values of Y included) and those X values give statistically significant for values of Y.

3. Empirical Results

3.1 Regression Analysis

The results of the regression analysis are shown in Table 1.

Table 1: Regression Analyses

C	0.06	0.27**	0.12	0.08	0.25
	(0.22)	(1.99)	(0.44)	(0.82)	(1.56)
Public expenditure	1.23***	1.18***	1.18***	1.40***	1.18***
	(5.15)	(4.41)	(4.42)	(6.42)	(3.73)
Monetary base	1.99***	1.62**	1.89**	1.79***	1.69***
	(2.76)	(2.38)	(2.62)	(3.51)	(3.15)
Exchange rate	-0.0003	-0.0004			
	(-0.21)	(-0.25)			
Long-term interest rate	-0.24		0.08		
	(-1.53)		(0.52)		
GDP gap	0.22***	0.31***	0.31***	0.29***	0.31***
	(4.54)	(6.32)	(6.46)	(7.39)	(5.24)
Conducting policy	-0.26				
	(-0.67)				
Adj.R2	0.61	0.52	0.52		0.52
RW-squared				0.72	
F-statistic	19.47	22.65	22.76		
(prob.)	(0.00)	(0.00)	(0.00)		
Rn-squared				147.20	
				(0.000)	
J-statistic					0.00
D.W.	1.15	0.87	0.88		0.87
Method	OLS	OLS	OLS	Robust least squares	GMM

Note. *** denotes significant at 1%, ** at 5%, and * at the 10% level. Figures in parentheses are t-statistics (OLS and GMM) and Z-statistics (Robust least squares).

The empirical results in Table 1 are almost robust. Public expenditures are effective in all cases on inflation and may positively impact economic growth. Also, the monetary base has been positive for inflation, so monetary policy could have some influence on inflation. However, whether or not both of these effects are large remains open for discussion. The GDP gap is also effective. Abenomics has three branches. A growth strategy becomes increasingly important as there may be some limitations of monetary and fiscal policies as mentioned before. On the other hand, exchange rate and long-term interest rate have no relationship with inflation. Depreciation of the Japanese yen may promote inflation; however, with globalization, inflation is less likely to occur. Cheap imported goods and services could be available all over the world, including Japan. Increases in long-term interest rates promote decreasing inflation; however, there is no relation with inflation. The main reason is that interest rates have been quite low and stable. However, a causal relation among variables is checked later in this paper.

3.2 Breakpoints Analysis

With a long sample period, there may be some breakpoints. As mentioned before, a Chow test (see Table 2) is employed for estimation. There are three breakpoints there at 10% level. The null hypothesis is that there are no breaks at specified breakpoints.

Table 2: Chow Breakpoint Test

	F-Statistic	Wald Statistic
2002Q4	2.12	8.47
	(0.08)	
2008Q4	2.71	10.82
	(0.04)	
2013Q4	2.04	8.17
	(0.09)	

Note. Figures in parentheses are probability.

In 2001, Prime Minister Koizumi implemented drastic structural reform under the policy that there should be no growth without reform.

Under this policy, the issuance of government bonds was limited to no more than 30 trillion yen. In 2008, the Lehman shock occurred, and after that, the Japanese government changed and more aggressive fiscal policy was strongly demanded. At the end of 2002, the Japanese government changed and Abe became the prime minister. Fiscal policy became more aggressive to stimulate the economy.

3.3 Causality Analysis

A pair wise Granger causality test is performed to check the relationship among variables. The results are shown in Table 3.
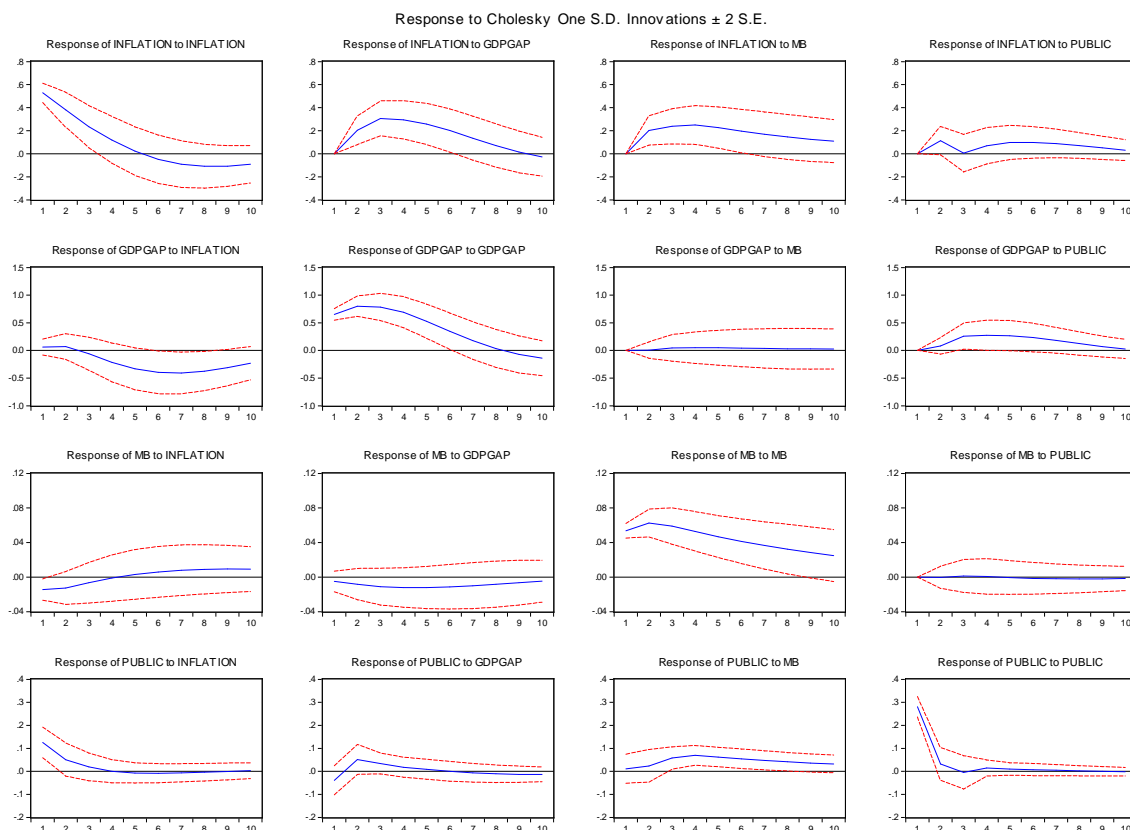
Table 3: Pairwise Granger Causality Tests

Null hypothesis	F-Statistic	Probability
Public expenditure does not Granger cause inflation	3.60	0.06
Inflation does not Granger cause public expenditure	2.29	0.13
Monetary base does not Granger cause inflation	3.96	0.05
Inflation does not Granger cause monetary base	0.02	0.88
GDP gap does not Granger cause inflation	10.69	0.001
Inflation does not Granger cause GDP gap	5.38	0.02
Public expenditure does not Granger cause monetary base	8.76	0.004
Monetary base does not Granger cause public expenditure	0.07	0.79
Public expenditure does not Granger cause GDP gap	0.35	0.55
GDP gap does not Granger cause public expenditure	1.15	0.28

Almost all of the results are clear. The empirical results of Table 1 are confirmed by these tests. For this paper, the relationship between public expenditure and inflation is important. The result is as expected at the 10% level.

3.4 Impulse Response Function

Finally, VAR estimates are performed. Figure 1 shows the results of impulse responses

Figure 1: Impulse response function.

The results are clear. Fiscal expansion has a positive effect in overcoming deflation; however, the effect continues only one year or so. It does not continue. To conduct fiscal policy, the limitation of the policy should be considered.

4. Conclusion

Deflation in Japan has continued to be a serious issue for more than 20 years. Policymakers in Japan have tried to combat the situation; however, Japan has suffered deflation and recession despite aggressive monetary and fiscal policy. Limitations of monetary policy, such as the zero or negative interest rate policy or quantitative easing, have appeared clearly, so fiscal policy should pay much attention to combat deflationary pressure and to boost the economy again. By adopting Bionomics, the Japanese government has again started to employ more aggressive fiscal policy; however, Japan has huge amounts of fiscal debt. This paper examined whether or not fiscal expansion, especially under debt, has been avoided.

The empirical results show that fiscal expansion is effective in spite of debt. Also, the effect of the fiscal expansion does not last very long. Fiscal expansion cannot be denied and may be effective under debt in some cases. In Japan, the specific condition that household saving habits support government bondsmay has produced these empirical results. Almost all of the results that this paper is clear. However, in conducting fiscal policy, the limitation of the policy should be considered. Unlimited fiscal expansion is dangerous and may impact economic sustainability. As noted in this paper, foreign investors may behave differently than Japanese investors. The Japanese investors' action, such as Japanese household saving habits supporting government bonds, would not be supported by foreign investors. There exists some possibility that foreign investors may turn their backs on the Japanese financial markets if the Japanese future economic condition seems less optimistic. The limitation of allowing fiscal debt cannot be judged easily and is always changing. Policymakers should know that there should be a limitation and that the effect of the policy is not very long. It cannot be denied that aggressive monetary and fiscal policy is conducted; however, structural reform along with these policies should be taken much more aggressively.

References

Afonso, A., & Jalles, J.T. (2014). A longer-run perspective on fiscal sustainability. *Empirica, 41*(4), 821-847.

Arai, R., & Nakazawa, M. (2014). A numerical analysis of Japan's fiscal sustainability in a simple OLG model. *Applied Economics Letters, 21*(17), 1194-1197.

Cabinet Office, Ministry of Finance, & Bank of Japan. (2013). Joint statement of the government and the Bank of Japan on overcoming deflation and achieving sustainable economic growth (January 22, 2013).

Fujiwara, I., Nakazono, Y., & Ueda, Y. (2015). Policy regime change against chronic deflation? Policy option under a long-term liquidity trap. *Journal of the Japanese and International Economies, 37*, 59-81.

2. Fukuda, S., & Doita, T. (2015). Unconventional monetary policy and its external effects: Evidence from Japan's exports. *Developing Economies*, *54*(1), 59-79.

Hayashi, T. (2014). Is it Abenomics or post-disaster recovery? A counterfactual analysis. *International Advances in Economic Research, 20*(1), 23-31.

Kameda, K. (2014a). Budget deficits, government debt, and long-term interest rates in Japan. *Journal of the Japanese and International Economies, 32*, 105-124.

Kameda, K. (2014b). What causes changes in the effects of fiscal policy? A case study of Japan. *Japan and the World Economy, 31*, 14-31.

Ko, J-H., &Morita, H. (2015). Fiscal sustainability and regime shifts in Japan. *Economic Modelling, 46*, 364-375.

Kurihara, Y. (2014). Has interest rate policy of the Bank of Japan influenced financial markets? *Journal of Finance and Economics, 2*(2), 77-85.

Kurihara, Y. (2016). Effectiveness of the zero interest rate policy for financial markets in Japan: Principal components analysis. *Applied Economics and Finance, 3*(3), 103-111.

Lam, K-C. (2015). Did Abenomics' two arrows hit the bullseye? *Journal of Applied Finance and Banking, 5*(3), 47-61.

Miyazaka, K., &Yamada, J. (2015). The growth strategy of Abenomics and fiscal consolidation. *Journal of the Japanese and International Economies, 37*, 82-99.

Miyazaki, T. (2016). Fiscal stimulus effectiveness in Japan: Evidence from recent policies. *Applied Economics, 48*(25-27), 2506-2515.

Morita, H. (2015). State-dependent effects of fiscal policy in Japan: Do rule-of-thumb households increase the effects of fiscal policy? *Journal of Macroeconomics, 43*, 49-61.

Sakuragawa, M., & Sakuragawa, Y. (2016). Absence of safe assets and fiscal crisis. *Journal of the Japanese and International Economies, 40*, 59-76.

Ueda, J., Yoneta, Y., & Ota, I. (2014). A quantitative analysis for required adjustments for Japan's fiscal policy. *Public Policy Review, 10*(3), 577-604.

Velinov, A. (2015). Assessing fiscal-policy sustainability: On the different states of the debt-to-GDP process. *Financial Archives, 71*(4), 415-439.

Yoshino, N., &Vollmer, U. (2014). The sovereign debt crisis: Why Greece, but not Japan? *Asia Europe Journal, 12*(3), 325-344.

Zhang, J. (2016). Macroeconomic news and the real interest rates at the zero lower bound. *Journal of Macroeconomics, 48*, 172-185.