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Toward a New Japan-U.S. Economic Alliance: A Novel Strategy to Stabilize Government Bond and Foreign Exchange Markets

Abstract

Amidst a turbulent global politico-economic situation, Japan and the United States are experiencing similar challenges regarding sovereign bonds and foreign exchange rates, albeit their different levels of economic severity. A declining dollar has decreased the real income of Americans and spread a lingering fear of inflationary pressures, while a higher yen has begun forcing Japan's export-oriented companies to dislocate their production facilities, bringing about growing anxieties over a protracted revitalization of the Japanese economy from the disasters caused by the 3/11 Great East Japan Earthquake. In other words, the two countries are in the same boat amidst a global politico-economic tempest. Under these circumstances, this short essay suggests a novel and collaborative strategy to reduce the risks of sovereign debt crises and foreign exchange market volatility by formulating a conceptual framework based on the "Fiscal Theory of the Price Level (FTPL)." This Japan-U.S. collaborative strategy, the authors hope, would make a contribution to strengthening of the Japan-U.S. alliance with which the world economy will restore its stability.

1. Introduction: Japan and the United States in the Same Boat amidst a Politico-Economic Tempest

1-1. Mounting Anxieties over Sovereign Debts and Helter-skelter Foreign Exchange Markets

Amidst a global politico-economic tempest, the Japanese and U.S. economies have similar problems regarding sovereign bonds and exchange rates, albeit their different levels of economic severity. The 2008 global financial crisis made several experts anticipate looming sovereign debt crises (see Table 1).[2] Indeed, Japan and the United States have the nagging sovereign debt problem; and the United States is suffering from inflationary pressures while there are pervasive fears against hollowing-out in Japan.

Despite lingering anxieties especially embraced by foreign investors, Japan's towering public debt-to-GDP ratio has not yet brought about soaring and volatile yields of Japanese government bonds (JGBs), thanks primarily to a huge pool of domestic savings of the household and corporate sectors and their extraordinary home bias.[3] However, on August 24, Moody's Investors Service cut its rating on JGBs by one notch to Aa3, after weighing Japan's political

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[2] See, for example, Stephen G. Ceccheti *et al.*, "The Future of Public Debt: Prospects and Implications," Working Paper No. 300, Basel: Bank for International Settlements, March 2010, www.bis.org/publ/work300.htm, and Carmen M. Reinhart and Kenneth S. Rogoff, "From Financial Crash to Debt Crisis," NBER Working Paper No. 15795, March 2010.

[3] See, for example, Kiichi Tokuoka (徳岡喜一), "The Outlook for Financing Japan's Public Debt," Working Paper WP/10/19, Washington, D.C.: IMF, January 2010, http://www.imf.org/external/pubs/ft/wp/2010/wp1019.pdf.

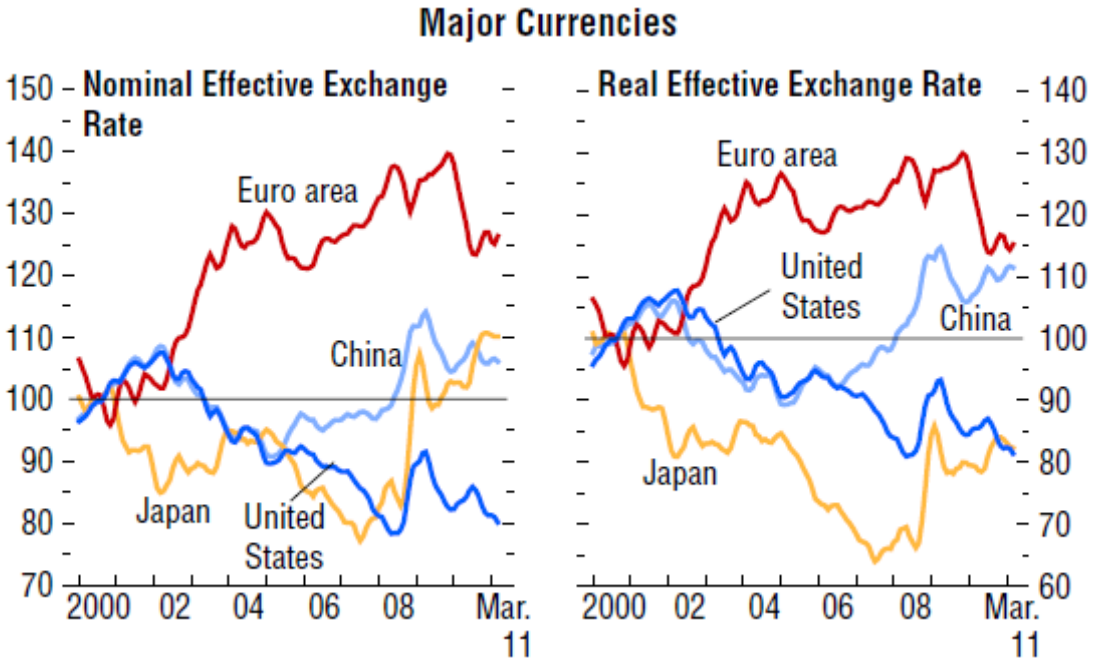
leadership. Accordingly, the Japanese government will be forced to devise a judicious strategy to lessen investors' anxieties over the future JGB issuances. In addition, a feeble economic recovery in the U.S. and European economies has exerted extraordinary downward pressures on the U.S. dollar and the euro, and in turn, led to a historic high nominal value of the yen vis-à-vis the U.S. dollar, which will squeeze the profits of Japan's export-oriented companies and make them cogitate leaving Japanese soil (see Figure 1).[4]

Table 1. General Government Fiscal Balances and Debt (% of GDP)

Year	2005	2006	2007	2008	2009	2010	2011	2012	2016
Net Debt: Japan	84.6	84.3	81.5	96.5	110.0	117.5	127.8	135.1	163.9
United States	42.7	41.9	42.6	48.4	59.9	64.8	72.4	76.7	85.7
Germany	53.1	52.7	50.1	49.7	55.9	53.8	54.7	54.7	52.6
France	56.7	53.9	54.1	57.8	68.4	74.6	77.9	80.0	77.0
Gross Debt: Japan	191.6	191.3	187.7	195.0	216.3	220.3	229.1	233.4	250.5
United States	61.7	61.1	62.2	71.2	84.6	91.6	99.5	102.9	111.9
Germany	68.0	67.6	64.9	66.3	73.5	80.0	80.1	79.4	71.9
France	66.4	63.7	63.8	67.5	78.1	84.3	87.6	89.7	86.7

Note: Figures for the years between 2011and 2016 are projections.
Source: IMF, *World Economic Outlook*, April 2011, Table A8 (p. 195).

Figure 1. Effective Exchange Rate of Major Currencies (Index, 2000=100, Three-month Moving Average)



Source: IMF, *World Economic Outlook*, April 2011, Figure 1.18 (p. 24).

[4] As for the impacts of the high yen on Japanese firms, see, for example, Joseph Sternberg, "Japan's Hollow Threat," *Wall Street Journal*, August 4, 2011, http://online.wsj.com/article/SB10001424053111903344 14045764850818988574 82.html and *Nikkei Weekly*, "Execs Most Fear Strong Yen: Survey," August 30, 2011.

On the other side of the Pacific, the U.S. political leaders are also suffering from the same fiscal malaise. The U.S. government has already experienced inside-the-Beltway bickering over debt ceiling crises. In the past, however, the government has successfully escaped the risk of bankruptcy and maintained investors' confidence.[5] But, this year, the U.S. government for the first time failed to soothe investors' anxiety both at home and abroad, though President Barak Obama and Congressional leaders demonstrated their brinkmanship to avoid a humiliating and catastrophic default. On August 5, Standard and Poors (S&P) downgraded U.S. government bonds from the highest rating AAA to the second-highest AA+. Although the 2012 presidential election approaches, it is still difficult to find clear and auspicious signs to identify the political will to reduce the U.S. fiscal budget. At the same time, the United States is facing uncertainty over the plunging dollar, while Japan is suffering from the yen's historic appreciation. A lower dollar would boost U.S. exports and sustain the current fragile economic recovery. But a rapidly plunging dollar would also invite a substantial decrease in U.S. purchasing power and lead to inflationary pressures and higher long-term interest rates.[6]

To sum up, Japan and the United States are in the same boat in an uncertain and treacherous politico-economic storm. The current situation is urging the two countries' policymakers to devise innovative, and if possible, collaborative strategies. Furthermore, for them, there is no time to waste—if we could borrow Shakespearian words, "Defer no time, delays have dangerous ends."[7]

1-2. Wanted: New Strategies and Decisive Actions

There has been a plethora of documents and studies regarding the fiscal imbalances of Japan and the United States.[8] A glimpse of analyses in the bibliography gives an impression that the two countries have common difficulties in devising debt-management policies despite their varying levels of public debt-to-GDP. Accordingly, the authors venture to suggest a new strategy in their debt management policy to secure smooth and stable public financing besides traditional policy mixes (i.e. curtailments in outlays and tax hikes) to restore fiscal discipline. These traditional policy mixes have long been proposed by experts in both Japan and the United States. Consequently, the next section will juxtapose and briefly examine several analytical proposals designed to correct Japan's fiscal deficit. Nevertheless, an

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[5] As for evaluations of past debt crises in the United States, see, for example, Pu Liu *et al*., "Did the Repeated Debt Ceiling Controversies Embed Default Risk in U.S. Treasury Securities?" *Journal of Banking & Finance*, Vol. 33, No. 8 (August, 2009), pp. 1464-1471.

[6] See, for example, Martin S. Feldstein, "What's Next for the Dollar?" NBER Working Paper No. 17260, July 2011.

[7] William Shakespeare, *Henry VI*, Part 1, Act 3, Scene 2.

[8] As for Japan's fiscal condition, see, for example, the Japanese government, Cabinet Office, "Keizai Zaisei no Chu-Choki Shisan [Mid- and Long-term Estimates of Japan's Economy and Government Finance/経済財政の中長期試算]," August 12, 2011, http://www5.cao.go.jp/keizai3/econome/h23 chuuchouki.pdf. See also IMF, "Japan: 2010 Article IV Consultation," Country Paper 10/211, July 2010, www.imf.org/external/pubs/ft/scr/2010/cr10211.pdf and OECD, *Country Survey: Japan, 2011*, April 2011; As for the U.S. fiscal condition, see, for example, Council of Economic Advisers, *Economic Report of the President*, February 2011, Office of Management and Budget, *Budget of the U.S. Government, Fiscal Year 2012*, February 2011, and Congressional Budget Office, "The Budget and Economic Outlook: An Update," August 2011, http://www.cbo.gov/doc.cfm?index=12039, and D. Andrew Austin and Mindy M. Levit, "The Debt Limit: History and Recent Increases," RL31967, Washington, D.C.: Congressional Research Service, July 2011. See also, IMF, "United States: 2011 Article IV Consultation," Country Paper 11/201, July 2010, www.imf.org/external/pubs/ft/scr/2011/cr11201.pdf. Although the authors discuss Japan's fiscal condition in the next section, they do not have any close look at the U.S. condition in this short essay. As for evaluations of the U.S. condition, see, for example, Ray C. Fair, "Estimated Macroeconomic Effects of the U.S. Stimulus Bill," *Contemporary Economic Policy*, Vol. 28, No. 4 (October 2010), pp. 439-452, Henning Bohn, "The Economic Consequences of Rising U.S. Government Debt: Privileges at Risk," Working Paper No. 3079, Munich: CESifo Group, June 2010, and Albert Marcet and Andrew Scott, "Debt and Deficit Fluctuations and the Structure of Bond Markets," *Journal of Economic Theory*, Vol. 144, No. 2 (March 2009), pp. 473-501.

undeniable absence of strong political leadership, combined with complex and time-consuming political logrolls within the National Diet (Japan's parliament) and Congress, has rendered the two countries unable to implement public deficit reduction measures in a swift and bold fashion.

To make matters worse, the current fragile global economic condition has rendered policymakers unable to adopt unpopular measures to reduce public debt and left a sizable amount of public debt untouched.[9] At the same time, a rapidly aging society in Japan, and in the United States to a lesser extent, will raise the level of expenditures for the elderly. This aging problem makes both of fiscal and monetary policies more difficult to maneuver.[10]

Under these circumstances, the authors try to devise a novel strategy to mitigate the expected inflation costs caused by soaring and volatile government yields and exchange rate fluctuations with the help of a conceptual framework of the "Fiscal Theory of the Price Level (FTPL)" that has emerged since the 1990s though some seminal works had already appeared in the early 1980s.[11] The authors do not think this novel strategy is a panacea that could lead automatically to fiscal consolidation and a marked lessening of inflationary pressures. Nonetheless, the authors think it would be of great importance to work out this innovative strategy as a temporary measure given the current unavoidable political gridlock.

2. Japan's Sovereign Debt Crisis: The Danger Is "Clear and Present," or "Invisible and Distant"?

2.1. Conventional Approaches to Restore Fiscal Discipline

Japan's public debt-to-GDP ratio has risen dramatically since the mid-1990s due to a series of fiscal stimulus packages in the wake of the bursting of its bubble economy. Generally speaking, in the political community, Japan's ceaselessly accumulating sovereign debt has been regarded as an invisible and distant danger while it has long been a clear and present danger in the business and academic communities. Accordingly, several experts have already raised a clamor for the restoration of fiscal discipline as discussed later in this section. The foreign media have also voiced their concerns about Japan's looming sovereign debt crisis.[12] Yet, the government has not successfully recovered its fiscal health; and it still remains pessimistic about its mid- and long-term prospects (see Table 2).

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[9] See, for example, Carmen M. Reinhart and Kenneth S. Rogoff, "A Decade of Debt," NBER Working Paper No. 16827, February 2011 and McKinsey Global Institute, "Debt and Deleveraging: The Global Debt Bubble and Its Economic Consequences," January 2010, www.mckinsey.com/mgi/.../debt.../debt_and_deleveraging_full_report.pdf.

[10] See, for example, Eric M. Leeper and Todd B. Walker, "Fiscal Limits in Advanced Economies," NBER Working Paper No. 16819, February 2011.

[11] There have been various theoretical and empirical studies regarding the FTPL. See, for example, Thomas J. Sargent and Neil Wallace "Some Unpleasant Monetarist Arithmetic," *Quarterly Journal*, No. 531 (Fall 1981), Federal Reserve Bank of Minneapolis, http://www.minneapolisfed.org/publications_papers/pub_display.cfm?id=151, Eric M. Leeper, "Equilibria under 'Active' and 'Passive' Monetary and Fiscal Policies," *Journal of Monetary Economics*, Vol. 27, No. 1 (February 1991), pp. 129-147, John H. Cochrane, "Long-Term Debt and Optimal Policy in the Fiscal Theory of the Price Level," *Econometrica*, Vol. 69, No. 1 (January 2001), pp. 69-116, Gaetano Bloise and Pietro Reichlin, "Long-Term Public Debt and the Fiscal Theory of the Price Level," CEPR Discussion Papers DP5479, January 2006, Jerome Creel *et al*., "Using Structural Balance Data to Test the Fiscal Theory of the Price Level: Some International Evidence," *Journal of Macroeconomics*, Vol. 28, No. 2 (June 2006), pp. 338-360, Burcu Berke, "The Fiscal Theory of the Price Level in European Union: Evidence from Panel Data," *International Journal of Economic Perspectives*, Vol. 3, No. 4 (May 2009), pp. 223-247, and Oscar Bajo-Rubio *et al*., "Deficit Sustainability and Inflation in EMU: An Analysis from the Fiscal Theory of the Price Level," *European Journal of Political Economy*, Vol. 25, No. 4 (December 2009), pp. 525-539.

[12] See, for example, *Economist*, "Japan's Debt-ridden Economy: Crisis in Slow Motion," April 8, 2010, http://www.economist.com/node/15867844. See also *Economist*, "Japan's Debt Problem: Sleepwalking towards Disaster, To Prevent a Looming Economic Disaster, Japan Urgently Needs Radical Change," April 8, 2011, http://www.economist.com/node/15868024 and Rob Cox, "Who Would Save Japan in a Sovereign Debt Crisis?" May 27, 2011, http://blogs.reuters.com/columns/2011/05/27/who-would-save-japan-in-a-sovereign-debt-crisis/.

Table 2. Japan's Mid- and Long-Term Fiscal Balances (% of GDP)

Fiscal Year	2010	2011	2012	2013	2014	2015	2020	2023
Primary Balance: Case (A)	-6.0	-6.0	-5.0	-4.1	-3.4	-3.0	-3.1	-3.2
(B)	-6.0	-6.0	-5.0	-3.7	-2.7	-2.0	-1.4	-0.8
Budget Balance: Case (A)	-8.0	-8.4	-7.4	-6.5	-6.0	-5.7	-7.4	-8.8
(B)	-8.0	-8.4	-7.4	-6.2	-5.4	-4.9	-6.3	-6.9
Debt-to-GDP Ratio: Case (A)	173.9	181.3	183.7	188.3	190.4	192.1	211.1	227.9
(B)	173.9	181.3	183.7	185.6	184.3	182.5	184.3	185.8

Note 1: Case (A) assumes a lower growth economy while Case (B) a higher growth economy. For more information, see Cabinet Office, *op. sit*.
Note 2: Figures for the years between 2011 and 2023 are projections.
Source: Japanese Government, Cabinet Office.

Recently, several economists have proposed plans for fiscal consolidation. The followings are notable analyses to attract the authors' attention.

First, Takero Doi discusses Japan's fiscal sustainability immediately after the government unveiled its policy package to address the 2008 economic crisis with a budget size of 56.8 trillion yen in April 2009.[13] Doi argues that a hike in the consumption tax is inevitable from the current 5% level and a 17% level.

Second, Hiromichi Shirakawa suggests the consumption tax be raised to a 32% level; alternatively, if the government wants to keep the consumption tax rate below 20%, social welfare expenditures should be halved, and discretionary spending be reduced by some 30-to-40%.[14]

Third, Masaya Sakuragawa and Kaoru Hosono conduct a simulation analysis of Japan's fiscal sustainability. They argue that the Japanese government should keep the public debt-to-GDP ratio under control and such policy would require that the current 5% level of consumption tax should be raised to a 16-to-21% level in the long run.[15]

Fourth, Gary D. Hansen and Selahattin Imrohoroglu warn that a sovereign debt crisis might emerge around the years between 2018 and 2020. If the government wants to avoid such crisis, they suggest, it should raise the consumption tax to a 35% level, at the cost of a 1.5% permanent decline in consumption expenditures. An alternative policy would be to raise the income tax rate from a 30% level to a 60% level though such measure would bring about a loss of social welfare equivalent to a permanent 3.9% decline of consumption expenditures.[16]

Finally, R. Anton Baun and Douglas H. Joines argue that Japan will face a grave problem arising from a rapidly aging and precipitously declining population, and that Japan's population might be reduced in the future to the level of 40 million or 80 million.[17] They also examine four scenarios where the consumption tax rate will be raised to certain levels between 21% and 37.5%.

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[13] Takero Doi (土居丈朗), "Zaisei Shutsudo no Utage no Ato ni [In the Aftermath of Fiscal Spending Sprees/財政出動の宴の後に]," in *Nihon Keizai no Kasseika* [Revitalizing the Japanese Economy/日本経済の活性化], edited by Takatoshi Ito (伊藤隆俊) and Naohiro Yashiro (八代尚弘), Tokyo: Nihon Keizai Shimbunsha, September 2009. See also Takero Doi *et al*., "Japanese Government Debt and Sustainability of Fiscal Policy," NBER Working Paper No. 17305, August 2011.

[14] Hiromichi Shirakawa (白川浩道), "Konji Sekai Kinyu-Keizai Kiki ga Nihon Keizai ni Ataeta Inpakuto no Kosatsu [A Study of the Impacts of the Current World Financial-Economic Crisis on the Japanese Economy/今次世界金融・経済危機が日本経済に与えたインパクトの考察]," in *Sekai Kinyu Keizai Kiki no Zembo* [The Entire Picture of the World Financial and Economic Crisis/世界金融・経済危機の全貌], edited by Kazuo Ueda (植田和男), Tokyo: Keio University Press, 2010.

[15] Masaya Sakuragawa (櫻川昌哉) and Kaoru Hosokawa (細川薫), "Fiscal Sustainability in Japan," August 2011, http://web.econ.keio.ac.jp/staff/masaya/.

[16] Gary D. Hansen and Selahattin Imrohoroglu, "Fiscal Reform and Government Debt in Japan: A Neoclassical Perspective," mimeo., 2011.

[17] R. Anton Braun and Douglas Joines, "The Implications of a Greying Japan for Public Policy," mimeo., 2011.

These aforementioned analyses unanimously propose draconian policy prescriptions regarding drastic outlay curtailments and/or substantial tax increases to reassure Japan's fiscal sustainability. These economically rational policies, however, cannot be swallowed by policymakers as politically acceptable and feasible measures—Many politicians still embrace a bitter memory of the 1998 devastating defeat of the then ruling Liberal Democratic Party (LDP) in the upper house election immediately after the 1997 consumption tax hike (from 3% to 5%).[18] This political impracticability of these aforementioned policies urges the authors to work out an innovative measure to nudge Japan's fiscal position in a more balanced direction.

Unfortunately, the Great East Japan Earthquake that shook the entire world as well as the Japanese Archipelago in March has placed additional cumbersome burdens on the government's fiscal health. The economic damages caused by the earthquake, the accompanying tsunamis, and the ensuing meltdown at the Fukushima Daiichi Nuclear Power Plant were enormous. A preliminarily estimated figure regarding the losses of social infrastructure, housing, and private firms' plants and equipment was between 16 trillion and 25 trillion yen (3.3% and 5.2% of 2010 GDP).[19] The entire damages caused by the earthquake are still expanding day by day. First, to date, government efforts have been focused on disaster relief, leaving other operations (including gauging accurately damages) undone, which makes it hard for analysts to examine accurately the entire amount of the damages caused by the Earthquake. Second, the economic losses, especially in the sectors of agriculture and fishing, are still unfathomably expanding,[20] particularly because of threats from and rumors about radiation contamination. Accordingly, in the quake-hit regions, a multitude of cities and towns are still suffering from additional damages because of the ongoing nuclear accident. These local governments have been busy decontaminating soil and water as well as cleaning rubble and debris. Thus, the Japanese government is now forced to adopt unexpectedly additional expansionary measures to cover reconstruction spending for the quake-hit regions despite its resolve to reduce the persistently growing debt.

In the meantime, Japan's policymakers have made strenuous efforts to work out sophisticated debt management policy instruments so as not to invite warnings from the market. Japan's Ministry of Finance reports that it has gradually expanded the issuance of super long-term bonds (30 year- and 40 year-bonds), developed an environment where retail investors can hold more JGBs, and nurtured a favorable climate for prospective foreign investors.[21] Given the political standoff where both budget reduction and tax increase are extremely difficult to implement, policymakers in Japan (and the United States) are expected to think more imaginatively to achieve its goals of smooth and stable

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[18] It is very difficult to nail down the decisive cause of the LDP's defeat in July 1998. Although the majority of politicians tend to connect the defeat with the consumption tax hike in April 1997, some experts point out other factors, especially, the turbulent financial situation where Japan's economy was hard hit in a series of bankruptcies of financial institutions (Nissan Mutual Life Insurance on April 15, 1997; Sanyo Securities, November 3, 1997; Hokkaido Takushoku Bank, November 17, 1997; Yamaichi Securities, November 22, 1997) as well as the East Asian financial crisis that started in July 1997.

[19] The Japanese government, Cabinet Office, "Analysis of Macroeconomic Impact of the Tohoku-Pacific Ocean Earthquake," March 23, 2011, www5.cao.go.jp/keizai3/getsurei-e/2011mar2.pdf.

[20] As for the damages in the agricultural sector caused by the Great East Japan Earthquake (as of August 23), see the website of Japan's Ministry of Agriculture, Forestry, and Fisheries, http://www.maff.go.jp/e/quake/press_110824-2.html.

[21] As for the past debt management policy implemented by Japan's Ministry of Finance, see, for example, " Highlights of FY2011 Government Debt Management," December 24, 2010, http://www.mof.go.jp/english/jgbs/debt_management/plan/index.htm. See also, the Ministry of Finance, Debt Management Report 2010, September 2010, http://www.mof.go.jp/english/jgbs/publication/debt_management_report/2010/index.htm.

financing and the minimization of financing costs. For this reason, the authors develop a theoretical framework in which policymakers can reduce expected inflation costs substantially by developing a debt management scheme where each agrees to purchase the other's government bonds. This joint debt management scheme is, in essence, the same economic transactions as foreign exchange market interventions by financial authorities from the viewpoints of changes in their balance sheets. However, the difference between them lies in purposes; while foreign exchange market interventions aim at a short term stability of foreign exchange rates, the joint debt management policy tries to achieve a long-term stability of expected inflation.

3. A Novel and Collaborative Strategy: Toward a Joint Debt Management Policy

3.1. Purposes of the Novel Strategy

The preceding sections have provided grounds that policymakers of Japan and the United States should devise a set of novel, if possible collaborative, strategies to reduce the risk of sovereign debt crises and foreign exchange market volatility by fending off inflationary pressures. In other words, the two countries have a common challenge of the loss of market confidence in government bonds. At the same time, the United States is concerned about mounting inflationary pressures caused by a nose-diving dollar, while Japan is shivering with a fear of looming correction of the historic high yen.

The authors try to formulate a simple conceptual framework to develop a novel and collaborative strategy for a joint debt management policy. This section provides a brief explanation and a tentative evaluation of this novel strategy, while a more detailed theoretical explanation is provided in the Appendix. The authors' model assumes an economy comprising two countries where analytical comparisons are made at two different points in time—present ($t = 0$) and future ($t = 1$). Each country (Japan or the United States) issues government bonds to purchase bonds issued by the other country. Let h denote Japan's probability of successful fiscal consolidation ($0 \leq h \leq 1$) and h^*, that of the United States.[22] In addition, let g denote Japan's purchasing portion of bonds issued by the United States government in order to engage in a joint debt management policy ($0 \leq g < 1$), and g^*, that of the United States.[23] Each government is concerned about inflationary pressures raised by plummeting of bond prices and volatile movements of foreign exchange rates, though the government eventually set the price of government bonds by maneuvering its monetary policy. Under these circumstances, each government tries to minimize expected inflation in the country by purchasing a certain portion of the bonds issued for the joint debt management policy by the other country.

This conceptual framework analyses (1) government decision to determine the prices of government bonds and the purchase amounts of the foreign government bonds, and (2) the price levels of each country. According to the 'Fiscal Theory of Price Level (FTPL),' the price level is determined by government debt and the present and future tax

[22] In this model, the probabilities of successful financial consolidation (h and h^*) are assumed as parameters that are constant and will not change irrespective of the transactions of government bonds conducted by this joint debt management policy. However, there should be arguments that both of h and h^* change according to the joint debt management policy conducted by the governments and market expectations in response to the government behavior. Therefore, further sophistication of this model is needed in this regard.

[23] The model tells us that at the time of $g = g^* = 1$, the amount of bonds issued in each country will be infinite..

and spending plans, with no direct reference to monetary policy.[24]

The authors' theoretical framework produces the following implications. First, Japan and the United States can reduce their expected inflation costs by implementing a joint debt management policy even at the time of sovereign debt crises facing the two countries. Second, in order to purchase the other country's government bonds, the government should issue additionally its bonds. But our theoretical framework denies the possibility that such issuance could change the values of its government bonds or invite inflationary pressures on its domestic economy.

3.2. Evaluation of the Novel Strategy and Future Tasks for Model Sophistication

Based on the theoretical model, the authors conducted numerical calculations and tried to evaluate effectiveness and practicability of a joint debt management policy. The following numerical analysis gives insightful information regarding the prospective joint debt management policy.

Figure 2. Numerical Analysis (1)

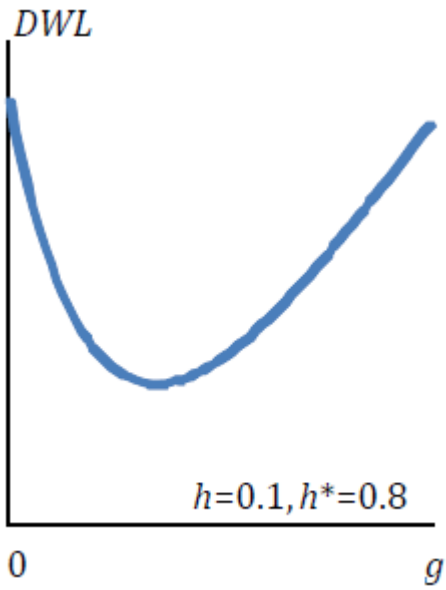


Figure 2 shows Japan's varying levels of the expected inflation costs (labeled as deadweight loss (*DWL*) in the Figure) according to the level of Japan's purchasing portion of government bonds issued by the United States (g), given the fixed levels of successful fiscal consolidation (h = 0.1 and h^* = 0.8). Now Japan has little hopes of successful fiscal consolidation (h = 0.1) while the United States embraces high hopes (h^* = 0.8). Under these circumstances, the Japanese government can decide the level of g that could lead to the lowest expected inflation costs (*DWL*), though market sentiment might raise a question—what if the United States is dragged into a fiscal debacle at the time of Japan's fiscal fiasco? The rationale of U.S. authorities' joint debt management policy is that the United States can reduce its expected inflation costs (*DWL**) by doing so, as shown below in Figure 3, according to the FTPL model devised by the authors.

[24] See, for example, Marco Bassetto, "Fiscal Theory of the Price Level," in *The New Palgrave Dictionary of Economics*, second edition, edited by Steven N. Durlauf and Lawrence E. Blume, London: Palgrave, 2008. In an open economy, the FTPL does not automatically demonstrate its theoretical validity according to Bill Dupor ("Exchange Rates and the Fiscal Theory of the Price Level," *Journal of Monetary Economics*, Vol. 45, No. 3 (June 2000), pp. 613-630). However, when there are transversality conditions imposed on all the governments concerned in a model, the FTPL retains its validity.

Figure 3. Numerical Analysis (2)

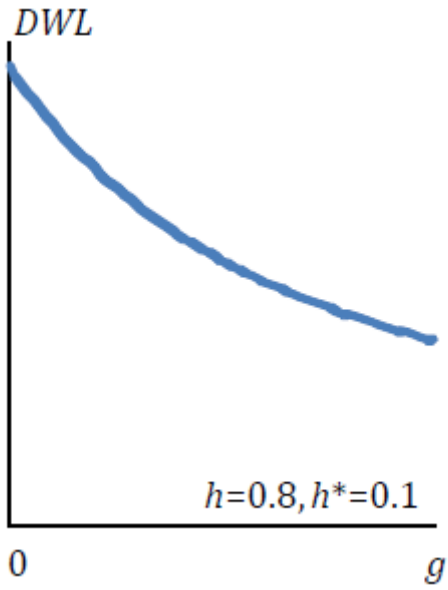
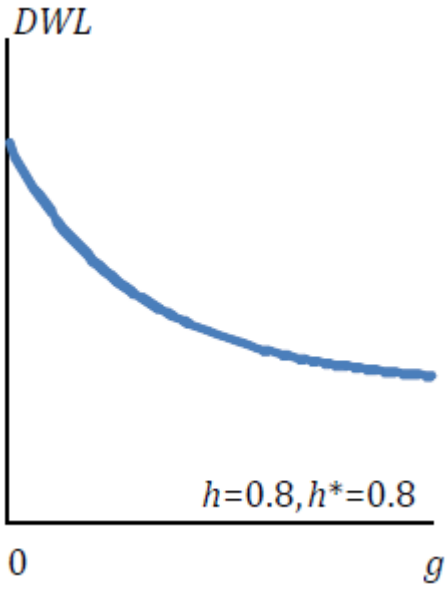


Figure 3 shows an opposite case of the one shown in Figure 2, where Japan has ample prospects for successful fiscal consolidation (h = 0.8) while the United States is on the verge of sovereign debt crisis (h^* = 0.1). The larger portion Japan purchases U.S. government bonds (g), the lower the expected inflation costs (*DWL*). This time, it should be noted that Figure 3 indicates that Japan should purchase almost all portion of government bonds issued by the United States to achieve the lowest expected inflation costs (*DWL*) (g is close to 1.0). There might be a fear-stricken market where investors think Japan might be hard hit at the time of U.S. fiscal fiasco. But, the rational of Japan's joint debt management policy is that Japan can reduce its expected inflation costs (*DWL*) by doing so as our FTPL model suggests. In the meantime, some of readers would be concerned that the Japanese government might lose the sense of fiscal discipline, and it can take advantage of this policy by asking a financially unhealthy foreign government to collude in the market and raise a moral hazard question between the two countries. Therefore, there should be further contemplations over legal and institutional frameworks prior to the elaboration of the joint debt management policy.

Figure 4. Numerical Analysis (3)



Even when Japan and the United States are simultaneously in a rosy fiscal situation, each government might be lured to adopt a joint debt management policy. Figure 4 shows the varying levels of Japan's expected inflation costs (*DWL*) according to the level of Japanese government's purchasing portion of bonds issued by the United States (g), given the fixed levels of successful fiscal consolidation ($h = h^* = 0.8$). The best policy for the Japanese government would be to purchase almost all portion of bonds issued by the U.S. government (g is close to 1.0), and *vice versa*. Again, some of readers are worried about this situation like the case of Figure 3, in which both countries' governments prone to resort to the joint debt management policy to the extent that both countries lose fiscal discipline and they might exacerbate fiscal conditions in the long run. Therefore,

these considerations suggest further sophistication for the legal and institutional constraints set against the Japanese and U.S. governments.

The aforementioned numerical analysis is still in a state of rudimentary development and further sophistication should be needed. At the same time, as briefly explained above, prior to the development of this joint debt management policy, there should be active discussions among practitioners and academics regarding legal and institutional frameworks existing in the two countries.

Despite such problems within this simple FTPL model, the authors try to stress the importance of contemplating novel and collaborative strategies given the politico-economic cul-de-sac in both Japan and the United States. As discussed in the previous sections, the conventional policy instruments (budge cuts and tax hikes) are not expected to play a substantial role to restore fiscal balances in the two countries, though the joint debt management policy cannot play a larger role either. Accordingly, the authors would explore extensively every possibility of novel, and if possible collaborative, strategies in the international economy.

4. Conclusions

This short essay has examined briefly the current dire situation surrounding the economies of Japan and the United States and discussed a novel and collaborative strategies for policymakers in the two countries. Regarding the joint debt management policy, a journey to the implementation of this policy as well as the theoretical sophistication of our FTPL model is still long and uncertain. Nonetheless, the authors try to look to a sobering truth that without our laborious and imaginative efforts to examine every policy instrument, our economies are destined to fall into a miserable economic meltdown.

Despite the rudimentary level of model sophistication, our FTPL approach offers three things to worth contemplating. First, a process of working out innovative and collaborative strategies for the two countries requires constructive discussions among a wide variety of participants and audiences in both Japan and the United States. Such active discussions themselves strengthen the Japan-U.S. alliance. Second, well-functioning of the joint debt management policy can revitalize the economies of Japan and the United States and enable them to take on more responsibility jointly to take the lead in the global economy. Revitalization of the Japanese and U.S. economies is of great significance in politico-economic terms, especially with regard to their relationship with emerging countries including China. A more robust Japan-U.S. economic alliance will allow the two countries to bear their responsibility to formulate liberal norms and rules for the global economy and in guiding emerging countries toward a more transparent global economy. Finally, the joint debt management approach can be expanded to a multi-country model. Accordingly, the current Japan-U.S. two-country model can incorporate the European Union as a third player, which could lead to a more stable joint debt management policy.

On June 26, 1954, when the world was in a state of upheaval, the British Prime Minister Winston Churchill visited the White House and discussed over dinner with his American counterpart, President Dwight D. Eisenhower to confirm the Anglo-American alliance, and left an oft-quoted phrase—"To jaw-jaw is always better than to war-war." At that time, the world was replete with fears of war including the Cold War and surrogate wars. In Vietnam, the Battle of Dien Bien Phu (Điện Biên Phủ) was fought between the Vietnamese and the French forces during the period between March and May 1954; in Europe, the Western European Union (WEU), a military alliance in the free world, was about to be established with the inclusion of a remilitarized West Germany in October 1954; in Southeast Asia, the Southeast Asia Treaty Organization (SEATO), a collective defense alliance that had been planned to be an Asian version of the NATO, was about to be established in September 1954; and in East Asia, Japan and the United States signed a Mutual Defense Assistance Agreement in March 1954. Amidst such tumultuous global politico-economic situation, Prime Minister Churchill said "talking is better than fighting." Now, the authors would say "talking is always better than remaining an idle spectator," and continue to say "action is always better than talking." In this sense, the authors will continue to work out theoretical and practicable policy instruments at a critical juncture in history.

Appendix: Simplified FTPL Model to Understand the Mechanism of Joint Debt Management Policy

Model Setup

The economy consists of two countries: Home and Foreign. The economy continues for two periods: $t = 0$ and $t = 1$. Consumers (both in Home country and in Foreign country) are endowed by the Nature with y_0 at $t = 0$ and y_1 at $t = 1$. At the beginning of $t = 0$, there exists the outstanding government debt $\overline{B}$ for Home government and $\overline{B}^*$ for Foreign government.

Uncertainty in fiscal consolidation

There is no government revenue at $t = 0$. At $t = 1$, the Home (Foreign) government obtain a lump-sum tax T_H (T_H^*) with probability h (h^*) and T_L (T_L^*) with probability $1-h$ $(1-h^*)$, where $T_H > T_L$ $(T_H^* > T_L^*)$.

Government actions

At $t = 0$, the Home government purchases g fraction of the Foreign bond and the Foreign government can hold g^* fraction of the Home bond. The Home (Foreign) government chooses q_0 (q_0^*), the price of the home (foreign) government bond.

Consumers' Problem:

$$\max_{k_0, b_0, b_0^*} c_0 + E_0[c_1],$$

subject to

$$c_0 + k_0 + \frac{q_0}{P_0} b_0 + \frac{q_0^*}{P_0^*} b_0^* \leq \frac{\overline{B}}{P_0} + y_0,$$

$$c(s) \leq k_0 + \frac{b_0}{P(s)} + \frac{b_0^*}{P^*(s)} - T(s) + y_1,$$

where P_0 (P_0^*) is the home (foreign) price level at $t = 0$, s is the state at $t = 1$, and $P(s)$ $(P^*(s))$ is the home (foreign) price level at s.

Home Government's Problem: Given (q_0^*, g^*),

$$\min_{q_0, g} E_0 \left[\left(\frac{P_1}{P_0} - 1 \right)^2 \right],$$

subject to

$$\overline{B} + \frac{P_0}{P_0^*} q_0^* B_0^* g \leq q_0 B_0.$$

Foreign Government's Problem: Given (q_0, g),

$$\min_{q_0^*, g^*} E_0 \left[\left(\frac{P_1^*}{P_0^*} - 1 \right)^2 \right],$$

subject to

$$\overline{B}^* + \frac{P_0^*}{P_0} q_0 B_0 g^* \leq q_0^* B_0^*.$$

Fiscal Theory of Price Level:

$$B_0 = P(s) \left[T(s) + g \frac{B_0^*}{P^*(s)} \right], \quad \text{for } s \in S$$
$$B_0^* = P^*(s) \left[T^*(s) + g^* \frac{B_0}{P(s)} \right], \quad \text{for } s \in S$$

Solution: Given the policies (q_0, g) and (q_0^*, g^*), the equilibrium is determined by the following equations.

$$P_0 = \frac{\overline{B}}{\sum_{s \in S} \gamma(s) T(s)},$$
$$P_0^* = \frac{\overline{B}^*}{\sum_{s \in S} \gamma(s) T^*(s)},$$

$$\frac{P(\tilde{s})}{P_0} = \frac{1}{q_0} \frac{\sum_{s \in S} \gamma(s) \{T(s) + g T^*(s)\}}{T(\tilde{s}) + g T^*(\tilde{s})},$$

$$\frac{P^*(\tilde{s})}{P_0^*} = \frac{1}{q_0^*} \frac{\sum_{s \in S} \gamma(s) \{T^*(s) + g^* T(s)\}}{T^*(\tilde{s}) + g^* T(\tilde{s})},$$

where $\gamma(s)$ is the probability of realization of the state $s \in S$ at $t = 1$. The governments choose their strategies, (q_0, g) and (q_0^*, g^*), to solve their optimization problems respectively.