Saving-Investment Imbalance and the Public Debt

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Abstract

There are concerns about the sustainability of public debt in Japan, US and major European countries. In this paper the public debt problem is approached from the perspective of national accounting, analysing the distribution patterns of net financial transactions or financial net worth among the sectors. Empirical analysis suggests that the dearth of private-sector investment and the saving glut is the fundamental problem behind the swelling public debt.

Keywords: national accounting; financial accounts; financial balance sheets.

1. Introduction

According to the *IMF World Economic Outlook*, at the end of 2013, Japan is estimated to have the highest ratio of gross general government debt relative to GDP, at 224% of GDP. The second highest was Greece, at 186% of GDP. Estonia had the lowest level, at only 13% of GDP. The US ranked seventh among advanced economies, just after Belgium and before Spain, with an estimated gross general government debt of 104% of GDP. Although there are many people who believe in the virtue of balanced budget, in the perspective of national accounting, government deficit can be considered as a result of dearth of investment and the saving glut in the private sector. Indeed, the rapid aging of Japan's population has created a situation in which households have strong motivation to save and non-financial corporations are cutting back on their investment. The net financial transactions (i.e. net financial surplus or deficit) which could be directly obtainable from the financial account show such a macroeconomic condition. This indicator is unique because it is not only a financial indicator, but also a barometer of the real economy.

Fisher and Easterly (1990) were one of the first authors who approached the public debt problem from the macroeconomic perspective. They clarified the logical relationship between the public debt and the net external debt using macroeconomic identities. Ruggles and Ruggles (1992) and Ruggles (1993) were the pioneers of the empirical study in this field; they pointed out that the public debt problem was best approached from the viewpoint of private-sector saving-investment imbalances. According to their study, in the perspective of national accounting, the real problem is the dearth of investment and the saving glut in the private sector; it is apparent that the public sector alone cannot solve the problem. Bernanke (2005) argued that one source of the saving glut is the strong saving motive of rich countries with aging populations, which must make provision for a impeding sharp increase in the number of retirees relative to the number of workers. With slowly growing or declining workforces, as well as with high capital-labor ratios, many advanced economies also face an apparent dearth of domestic investment opportunities.

In this paper the public debt problem is argued from the perspective of the distribution of financial net worth among the sectors. Section 2 considers the relationship between net financial

transactions and saving-investment imbalance. Some observation results are presented in section 3 for the Japanese economy and in section 4 for 21 OECD countries. The last section provides our concluding remarks with respect to the role of government debt in the mature economy.

2. Saving-investment imbalance and the net financial transaction

The sequence of the SNA flow accounts consist of three main accounts: income and outlay account, capital account and financial account (Table 1). Resources and uses are entered in the income and outlay accounts; the changes in non-financial assets are recorded in the capital accounts while the changes in financial assets and liabilities are listed in the financial accounts.

Table 1: Summary of SNA flow accounts

	Sector 1		…	Sector i		…
	Uses/Assets	Resources/Liabilities		Uses/Assets	Resources/Liabilities	
Income & outlay account	U_1	R_1		U_i	R_i	
Capital account	ΔN_1^+ ΔN_1^-			ΔN_i^+ ΔN_i^-		
Financial account	ΔF_1^+ ΔF_1^-	ΔL_1^+ ΔL_1^-		ΔF_i^+ ΔF_i^-	ΔL_i^+ ΔL_i^-	

We denote R as resources and U as uses during an accounting period. ΔN^+ (ΔN^-), ΔF^+ (ΔF^-), ΔL^+ (ΔL^-) are increase (decrease) in non-financial assets, financial assets, liabilities during an accounting period, respectively. The subscript $i = 1, \cdots, n$ indicates the i th institutional sector. Some key variables — saving, investment, net lending or net borrowing and net financial transactions — are written in the following manner using the above notations.

Saving $S_i = R_i - U_i \quad (\geq 0 \text{ or } < 0)$ (1)

Investment $I_i = \Delta N_i^+ + \Delta N_i^- \geq 0$ (2)

Net lending or net borrowing $NLB_i \equiv \left(R_i - U_i\right) - \left(\Delta N_i^+ + \Delta N_i^-\right)$

$= S_i - I_i$ (3)

Net financial transactions $NFT_i \equiv \left(\Delta F_i^+ + \Delta F_i^-\right) - \left(\Delta L_i^+ + \Delta L_i^-\right)$ (4)

Vertical double entry assures the sum of uses and changes in assets (left-hand side) is equal to the sum of resources and changes in liabilities (right-hand side) for each sector, then we have;

$U_i + \Delta N_i^+ + \Delta N_i^- + \Delta F_i^+ + \Delta F_i^- = R_i + \Delta L_i^+ + \Delta L_i^-$. (5)

If a pair of credit and debit is entered simultaneously in the financial accounts of different institutional units, the total changes in financial assets and liabilities cancel out each other.

$\sum_i \left(\Delta F_i^+ + \Delta F_i^-\right) = \sum_i \left(\Delta L_i^+ + \Delta L_i^-\right)$. (6)

Considering vertical double entry, equation (3) is rewritten as follows;

$NLB_i = \left(R_i - U_i\right) - \left(\Delta N_i^+ + \Delta N_i^-\right)$

$= \left(\Delta F_i^+ + \Delta F_i^-\right) - \left(\Delta L_i^+ + \Delta L_i^-\right)$ （from equation (5)）

$= NFT_i$. (from equation (4)) (7)

It means that net financial transactions and net lending or net borrowing are the two sides of the same coin for each institutional unit, i.e. the financial surplus or deficit in the financial account is an equivalent of the balance of saving and investment in the capital account; thus we define new variable $\Delta V_i = NFT_i = NLB_i$.

Furthermore, from equation (6), the macroeconomic total of the changes in financial net worth is written in the following manner;

$$\sum_i NFT_i = \sum_i \left\{ \left(\Delta F_i^+ + \Delta F_i^- \right) - \left(\Delta L_i^+ + \Delta L_i^- \right) \right\}$$
$$= 0$$
$$= \sum_i NLB_i . \quad \text{(from equation (7))} \qquad (8)$$

Financial net worth is obtainable as an accumulation of net financial transactions of the past $V_{i\tau} = \sum_{t=1}^{\tau} \Delta V_{it}$, where the subscript t indicates accounting period.

3. Observations for the Japanese economy

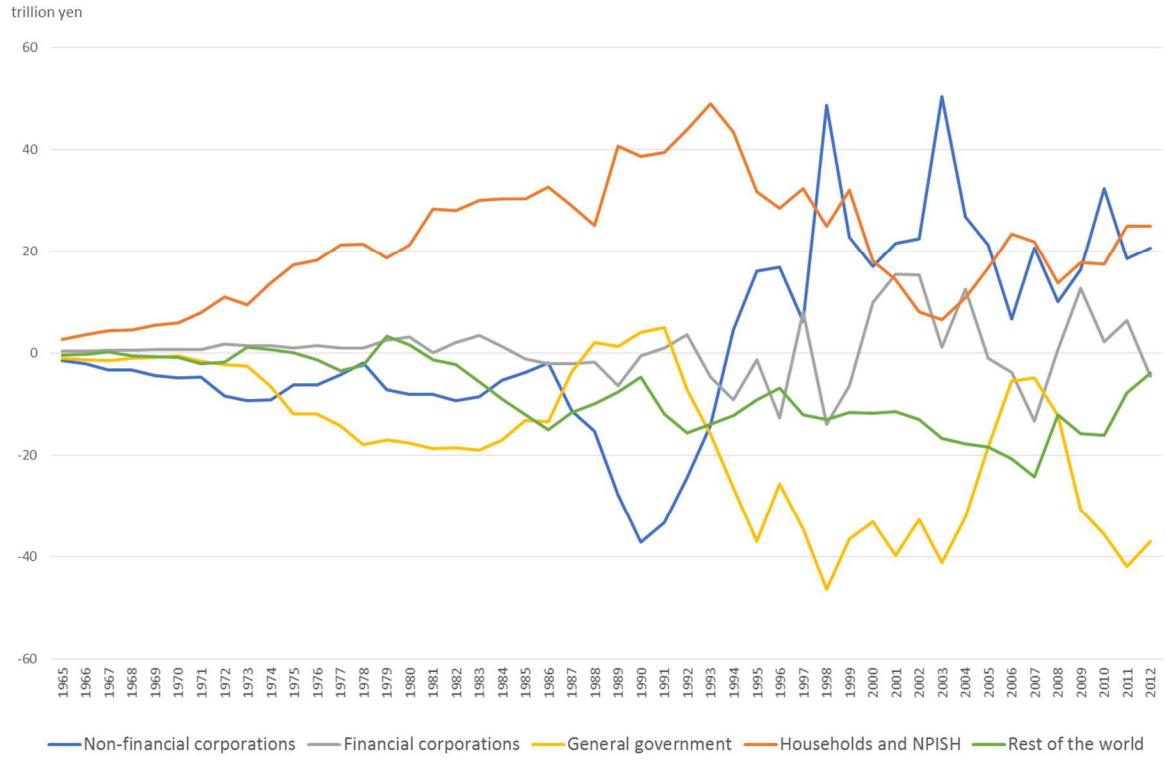
The Bank of Japan produces two series of flow-of-funds accounts; the one based on 1968 SNA and the other based on 1993 SNA. While the former covers the years 1954-1999, the latter covers from 1980 onwards. They contain the data on net financial transactions of non-financial corporations ($\Delta V_{N\tau}$), financial corporations ($\Delta V_{F\tau}$), general government ($\Delta V_{G\tau}$), households and NPISH ($\Delta V_{H\tau}$), and the rest of the world ($\Delta V_{R\tau}$). From equation (8), it is apparent that;

$$\Delta V_{N\tau} + \Delta V_{F\tau} + \Delta V_{G\tau} + \Delta V_{H\tau} + \Delta V_{R\tau} = 0 \ . \qquad (9)$$

The sector-by-sector net financial transactions are depicted in Figure 1. As a primary sector of savings, the households (apart from non-corporate enterprises) exhibit excess financial assets for roughly half a century during the observation period of 1965 through 2012. Although there was a tumble in 1973, 1979, 1987 and 1988, the financial surplus grew steadily during 1965 through 1993. The general pattern of the financial surplus growth gave way for downward trends after the financial bubble burst at the beginning of 1990s, but this downward trend stopped and an increasing trend was observed from 2004 onward. In contrast to this, as the primary investors, the non-financial corporations stayed in the domain of financial deficit during the observation period of 1954 through 1993. However, they moved into surplus in 1994 and stayed there since then. These figures represent the saving investment imbalance in the private sector, one of the difficult problems with which Japanese economy are confronting.

Equation (9) means that if both Households (including NPISH) and non-financial corporations have financial surplus, i.e. $\Delta V_{N\tau} > 0$ and $\Delta V_{H\tau} > 0$, at least one of other sectors must have financial deficit. In general, the financial assets and liabilities of financial corporations are more or less balanced, so that financial surplus/deficit is relatively small if any. Those of the rest of the world could be either positive or negative depending on the current balance of payment. As a logical consequence, as Ishida (2003) asserts, it is hard to reduce government deficit as long as there is a saving-investment imbalance in the private sector. Indeed the general government had net financial deficit during the entire observation period of almost half a century except for 1988-1991.

Figure 1: Net financial transactions by sector (Japan)



4. Comparison of 21 OECD countries

The pattern of distribution of the financial net worth among institutional sectors looks more stable than that of the net financial transactions as shown in Tsujimura and Tsujimura (2010), so we chose it as the indicator of the saving-investment imbalances of a country. We can group the countries on three criteria: (a) if the excess liabilities of non-financial corporations is greater than the excess financial assets of households; (b) if the financial net worth of the general government is positive; (c) if the financial net worth of the rest of the world is positive. Based on the above criteria, there are six possible combinations:

[Class I] $\mathsf{C}_{\mathrm{I}} = \left\{ \left(-V_{N\tau} \geq V_{H\tau} \right) and \left(V_{G\tau} < 0 \right) and \left(V_{R\tau} > 0 \right) \right\}$

[Class II] $\mathsf{C}_{\mathrm{II}} = \left\{ \left(-V_{N\tau} \geq V_{H\tau} \right) and \left(V_{G\tau} \geq 0 \right) and \left(V_{R\tau} \leq 0 \right) \right\}$

[Class III] $\mathsf{C}_{\mathrm{III}} = \left\{ \left(-V_{N\tau} \geq V_{H\tau} \right) and \left(V_{G\tau} \geq 0 \right) and \left(V_{R\tau} > 0 \right) \right\}$

[Class IV] $\mathsf{C}_{\mathrm{IV}} = \left\{ \left(-V_{N\tau} < V_{H\tau} \right) and \left(V_{G\tau} < 0 \right) and \left(V_{R\tau} < 0 \right) \right\}$

[Class V] $\mathsf{C}_{\mathrm{V}} = \left\{ \left(-V_{N\tau} < V_{H\tau} \right) and \left(V_{G\tau} < 0 \right) and \left(V_{R\tau} \geq 0 \right) \right\}$

[Class VI] $\mathsf{C}_{\mathrm{VI}} = \left\{ \left(-V_{N\tau} < V_{H\tau} \right) and \left(V_{G\tau} \geq 0 \right) and \left(V_{R\tau} < 0 \right) \right\}$

Table 2 depicts the overall distribution of financial net worth among institutional sectors for each OECD member country. The data are available from *National Accounts of OECD Countries, financial balance sheets*. In 2012, Japan belonged to Class IV along with Belgium, Denmark, Germany, Israel, and the Netherlands. In these countries, non-financial corporations are reluctant to invest so that the private sector in total has excess financial assets. They are investing surplus funds abroad but the government has no choice but to absorb the remaining

surplus — a typical case of dearth of private investment and saving glut. The same situation is seen in the Class V, however in these countries, trade deficit has also accumulated — a typical case of 'twin deficit' or 'twin debt'. These are Austria, Canada, France, Italy, the United Kingdom and the United States in 2012.

Table 2: Distribution patterns of the financial net worth among institutional sectors

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Austria	V	V	V	V	V	V	V	V	V	V	V	V	V
Belgium	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
Canada	V	V	V	V	V	V	V	V	V	V	V	V	V
Chile	–	–	–	–	–	I	I	II	III	III	III	III	III
Czech Republic	III	III	III	III	III	III	III	III	III	III	I	I	I
Denmark	V	V	V	V	V	IV	V	III	III	II	VI	IV	IV
Estonia	III	III	III	III	III	III	III	III	III	III	III	III	III
Finland	III	III	III	III	III	III	III	III	III	III	II	II	II
France	IV	IV	V	V	V	V	V	V	V	V	V	V	V
Germany	V	IV	V	V	IV	IV	V	IV	IV	IV	IV	IV	IV
Greece	V	V	V	V	V	V	V	V	I	I	I	I	I
Hungary	I	I	I	I	I	I	I	I	I	I	I	I	I
Ireland	–	V	I	V	I	I	I	I	I	I	I	I	I
Israel	–	–	–	–	–	–	–	–	–	–	IV	IV	IV
Italy	V	V	V	V	V	V	V	V	V	V	V	V	V
Japan	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
Korea	–	–	III	III	III	III	III	III	III	III	III	III	III
Luxembourg	–	–	–	–	–	–	III	III	II	III	III	III	III
Mexico	V	V	V	V	V	V	V	V	V	V	–	–	–
Netherlands	V	V	V	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV
Poland	I	I	I	I	I	I	I	I	I	I	I	I	I
Portugal	V	I	I	I	I	I	I	I	I	I	I	I	I
Slovak Republic	I	I	I	I	I	I	I	I	I	I	I	I	I
Slovenia	–	III	III	III	III	III	III	III	III	III	III	I	I
Spain	V	V	I	I	I	I	I	I	I	I	I	I	I
Sweden	I	III	I	I	III	III	III	III	III	III	III	III	III
Switzerland	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	IV	–
United Kingdom	V	V	V	V	V	V	V	V	IV	V	V	V	V
United States	V	V	V	V	V	V	V	V	V	V	V	V	V

5. Conclusions

The above analysis suggests that dearth of private-sector investment and the saving glut is the fundamental problem behind the swelling public debt. The people usually save to prepare for retirement; they are expecting to get goods, such as foods, and services, such as nursing, later after retirement. They accumulate funds just because the nature of the goods and services does not allow them to store. They usually invest in production facilities instead, expecting that the facilities will satisfy their future needs. Therefore, if there is a dearth of private investment, one option is that the government use the redundant funds to boost the future productivity. The investment in infrastructure may not directly provide bread and butter but at least it will contribute positively to boost the productivity. Maybe it is not an ideal substitute for private-sector production facilities, but improved social infrastructure might be better than nothing.

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