

Crowding-out and crowding-in effects of government bond market on private sector investment (Japanese case study 1995-2011)

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المستخلص:

..... يعكس هذا البحث العلاقة بين استثمار القطاع العام والقطاع الخاص من خلال النفقات الحكومية التي يتم تمويلها عن طريق العقود الحكومية ضمن الاقتصاد الياباني .
تفترض هذه الدراسة بأن العجز الذي يتم تمويله من خلال قضايا العقود لا يستبعد استثمار القطاع الخاص وأن أسلوب التمويل هذا قد يتجمع ضمن القطاع الخاص بهذا ، تقوم الحكومة بأبرز قضايا العقود ومن ثم بيعها ضمن الأسواق المالية المحلية والعالمية .
أن هذا الأسلوب لا يؤثر على معدلات الفائدة لأنها ليست حساسة تجاه النفقات الحكومية وإنها تعتمد على مستويات معدل الفائدة ضمن السوق المالية العالمية أكثر من اعتمادها على السوق المالية المحلية وذلك بسبب العولمة والتكامل الموجود بين الأسواق المالية .

Abstract

This paper reviews the relationship between public sector investment and private sector investment, through government expenditures financed by government bonds in the Japanese economy. This study hypothesizes that deficit financed by bond issues does not crowd out private sector investment, and that the financing method may actually crowd in (private investment). Thus, the government raises bond issues and sells them in the domestic international financial markets. This method does not affect on the interest rates because they are insensitive to government expenditures and they depend on interest rate levels in the international financial market more than in the domestic financial market because of globalization and integration among financial markets.

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I. Introduction

The relationship between government debt, its financing and economic performance is a subject of continuing discussion in economics and public policy making. While the Neoclassical school advocates Crowding-out, increased government involvement in the economy might distort the economic and political environment of business and discourage or crowd out private sector investments.

On the other hand, the Keynesian model argues that an increase in the government spending stimulates the domestic economic activity and Crowds-in private investment. The government might help to lay the ground for the development of the private sector, through the provision of legal infrastructure that ensures physical and intellectual property rights and by undertaking investments that deepen the physical and human capital infrastructure in the country.

The Japanese economy is very huge; it is the third largest economy in the world after the United States and China. The Japanese government budget is also very big, and the government expenditures are directed to infrastructure and include investments in public works, education, and health care facilities. As a result, this expenditure in productive investments, and human capital infrastructure by the state might crowd in, rather than crowd out, private sector investments.

In addition, the Japanese government may use fiscal policy that involves increased spending in infrastructure projects as an aggregate demand management tool. If such policies turn out to be successful, decreased macroeconomic volatility and a more stable level of aggregate demand may provide stimulus for private businesses.

Nevertheless, not all government expenditures are productive in nature and not all aggregate demand management attempts are successful in practice.

The rest of the paper is organized as follows:

Section II; discusses the theoretical literature of government expenditure increase.

Section III; discusses the present trend of budget deficit and government bonds market in Japan.

Section IV; discusses the definition and determinants of crowding-out and the effect of government bonds market on private sector investment in Japan.

Section V; contains a summary and conclusions.

II. The Theoretical literature:

This section describes the various influences on the multiplier effects of government spending increase, which is financed by government bond issues in the government bonds market. The intention is to identify the circumstances under which fiscal expansions will tend to be relatively effective or relatively ineffective in stimulating economic activity.

The growth of fiscal deficits and the resulting increase in government debt have attracted the attention of policymakers and financial market analysts. However, the impact of these factors on economic variables remains controversial among economists, the effects of government deficits particularly on private investment.

There are different views on the effects of increased government expenditures on private investment¹:

- 1. The Neoclassical considers that the individuals are planning their consumption over their entire life cycles. By shifting taxes to future generations, budget deficits increase current consumption. By assuming the full employment of resources, the Neoclassical argue that increased consumption implies a decrease in saving. Interest rates must rise to bring equilibrium to capital markets. High interest rates, in turn, result in a decline in private investment. Thus, budget deficits could "crowd-out" private investment. (Aschauer, 1989) provides empirical evidence showing that higher public capital spending lowers private investment.*
- 2. There are Keynesian who provide a counter argument to the crowding-out effect by making a reference to the expansionary effects of budget deficits. The essence of the Keynesians approach to development financing is that investors may lay claim to real resources in excess and ex ante estimates of*

¹ See: - Yesim KUSTEPEI, "Effectiveness of Fiscal Spending: Crowding out and/or crowding in?" YÖNETİM VE EKONOMİ 1: 2005 Cit.: 12 Say: 1, Celal Bayar University. B.F. MAN SA, pp 184-185. and also:

- Erdal Atukeren, "Interactions between public and private investment: Evidence from Development countries" Swiss Institute for Business Cycle Research (KOF) Swiss Federal Institute of Technology - Zurich (ETH Zurich) Zurich, September, 2004, pp1-2.

saving, as capital formation creates new capacity and employment. Thus, an initial inflationary impulse may be offset by an increased supply potential, and planned saving (*ex ante*) may catch up with forced saving (*ex post*) again².

They argue that usually budget deficits result in an increase in domestic production, which makes private investors to become more optimistic about the future course of the economy and they invest more. This is known as the "crowding-in" effect. Eisner (1989) gave an example of this group, who concludes that "The evidence is thus that deficits have not crowded-out investment. There has rather been crowding in.

3. There is the Ricardian equivalence approach advanced by Barro (1989), who argues that an increase in budget deficits, say, due to an increase in government spending, must be paid either now or later, with the total present value of receipts fixed by the total present value of spending. Hence, a cut in today's taxes must be matched by an increase in the future taxes, leaving interest rates, thus, private investment unchanged.

In other words, in anticipation of the future tax increase, consumers save rather than spend the income resulting from the tax cut, and the reduction in tax leads to an equivalent increase in saving. A reduction in tax that simply substitutes debt-finance for tax-finance at unchanged government spending would leave consumer spending unchanged. If government consumption is increased and financed by debt, private consumption should decline one-to-one with each unit of money of higher permanent government spending³.

Whether public and private sector investments are substitutes or complements, it has been a ground for strong controversy in economic theory and policy. Free markets advocates argue that government intervention in the economy should be minimized. According to this view, state sector activity competes with private sector for scarce resources and drives their prices up. Especially if public sector investments are financed by borrowing, this leads to an increase in market interest rates and thus raises the cost of capital for the private sector. Hence, some private sector projects become unprofitable. The end result is the crowding out of private investments by public sector investments. Since it is generally accepted that private sector investments contribute more to economic growth, an increase in the size of the public sector at the expense of the private sector also hinders economic growth and well-being⁴.

² See, Dirk J. Wolfson, "Public Finance and Development Strategy", The Johns Hopkins university press, London 1979, pp 38-39.

³ See, C.W.M. Naastepad, "The Budget Deficit and Macroeconomic Performance", Oxford University Press, New York, 1999, pp26-27.

⁴ See: - Erdal Atukeren, "Interactions between public and private investment: Evidence from Development countries", Op.Cit, p2.

On the other side, it is argued that public investments may indeed be beneficial for the development of the private sector. The government sector, for example, can afford to invest in infrastructure projects that involve large costs and need long times to become profitable. The private sector may benefit from the effects from such public sector projects during and after the completion of the project. A better developed infrastructure in roads and railways, for example reduces transportation costs, and hence facilitates a better business environment. Furthermore, public investments in education and health care facilities help improve the level and the quality of human capital in an economy. In addition, as an aggregate demand management tool, government investments might be used as a counter-cyclical economic policy measure to smooth the business cycle and revitalize the private sector activity - at least in the short run. Last but not the least, the crowding out arguments explained in the paragraph above are based on the assumption that the economy operates at its production limits and that it has well-developed and efficiently functioning financial markets. These conditions are not always fulfilled-especially in developing countries.

Thus, public investments may not necessarily compete with the private sector for scarce resources. Some private sector investments might also not be financed if financial markets are underdeveloped. In such situations, public sector investments might indeed play a catalyst role in providing the economy with much needed and otherwise hard to undertake investments. As a result, the private sector and the economy in general may benefit from public sector investment.

III. Present trends of budget deficit and government bond market in Japan:

1. Budget Deficit:

A budget deficit occurs when an entity (often a government) spends more money than it takes in. The opposite is a budget surplus. The size of a government budget deficit is often an important political issue as well as one of economic policy.

An accumulated deficit over several years is referred to as the government debt. Often, a certain part of spending is dedicated to paying off debt with certain maturity, which can be refinanced by issuing new government bonds. That is, a fiscal deficit leads to an increase in an entity's debt. Debt is essentially an accumulated flow of deficits. Any deficit must, ultimately, be repaid and financed.

The financial deficit can be financed in a variety of ways; some are more extreme than others. A brief description of these ways will be useful for our discussion of limits of financing. In order to account for all major sources of financing, the deficit is defined on an accrual basis. We will distinguish domestic from foreign sources.

- 1. Domestic financing: Borrowing from the public (free sales of bonds, sale of bonds to captive market), building up of domestic arrears, borrowing from the banking system and others⁵.*
- 2. Foreign financing: Grants, concessionary loans, commercial loans, external arrears and other⁶.*
- 3. Mixed financing: Borrowing from both, the domestic and international financial market by issuing international bonds in them. The high savings rate and excess liquidity in the international financial system made it possible for the bulk of the fiscal deficit to be financed through non-inflationary domestic sources in the form of government securities.*

The deregulation and liberalization of financial markets is probably the optimal policy mix for financing the budget deficit and consists of international saving in addition to domestic saving. The budget deficit at its present levels should be financed entirely by open-market borrowing, and should decline tax-financing.

1) General Government Gross Debt (International Comparison):

Large and recurring government budget deficits in the industrial countries have pushed up ratios of government debt to GDP. Table 1 shows this fact. In Japan the ratio of government debt to GDP, increased from 87.1 percent in the 1995, to over 165.5 percent in 2004, and also over 204.2 percent in 2011. The same development took place in other industrial countries such as United State where debt to GDP ratio had been between 60-70 percent on average in the period 1995-2011. Similar numbers exist for Germany and France (see table 1).

⁵ See, Vito Tanzi, "Public finance in developing countries" Edward Elgar publishing limited, London, 1991, PP 91-98.

⁶ IBID.

Table (1) General Government Gross Debt (International Comparison), 1995-2011
(As a percentage of GDP)

	1995	1996	1997	1998	1999	2000	2001	2002	2003
Japan	87.1	93.8	100.5	113.2	127.1	135.4	143.7	152.3	158.0
U.S.	74.2	69.9	67.4	64.2	60.5	54.5	54.4	56.8	60.2
U.K.	52.7	51.2	52.0	52.5	47.4	45.1	40.4	40.8	41.5
Germany	57.2	58.8	60.3	62.2	61.5	60.4	59.8	62.2	65.4
France	63.9	66.3	68.8	70.3	66.8	65.6	64.3	67.3	71.4
Italy	125.5	128.9	130.3	132.6	126.4	121.6	120.8	119.4	116.8
Canada	100.8	101.7	96.3	95.2	91.4	82.1	82.7	80.6	76.6
	2004	2005	2006	2007	2008	2009	2010	2011*	
Japan	165.5	175.3	172.2	167.1	173.9	192.8	198.4	204.2	
U.S.	61.2	61.4	60.9	62.0	71.1	84.4	92.8	98.5	
U.K.	43.8	46.4	46.1	47.2	57.0	72.4	81.3	88.6	
Germany	68.8	71.2	69.3	65.3	69.4	76.5	79.9	81.3	
France	73.9	75.7	70.9	70.0	75.9	87.1	92.4	97.1	
Italy	117.3	119.9	117.2	112.7	115.1	127.7	131.3	132.7	
Canada	72.6	71.6	70.3	66.5	71.3	83.4	84.4	85.5	

Source: Ministry of finance, "Japan's Fiscal Condition", Tokyo, Dec.2010, p12, available at;
<http://www.mof.go.jp/english/budget/budget/fy2011/e20101224b.pdf>

* FY2011: forecast.

All of this has forced authorities to think hard about how they could minimize the cost of placing and servicing government debt. And the more they thought about that problem, the more convinced they seemingly became about three conclusions⁷:

First: One could no longer rely almost exclusively on domestic investors. Given the size of the debt, crowding-out factors would push up domestic interest rates too high, relaxation of capital controls and the increasing global competition for savings had rendered domestic investors less captive than before. Furthermore, if the debt was to be sold at low cost, government would have to tap the international market.

Second: If government debt was to be attractive to the international investor, it would be necessary to institute a series of reforms in government bond market. Those reforms, in turn, would be based on the standards of liquidity, transparency, issuing trading efficiency, and tax treatment established in the world's premier government securities market, namely, the market for US government securities.

Third: If government debt management was to be more clearly formulated in terms of cost minimization and if these reforms in the government securities market were to be implemented effectively, government debt management would need to gain greater independence from the rest of government, and particularly

⁷ See, IMF, "International Capital Market", Washington, D.C., Sep. 1994, pp20-21

from monetary and exchange rate policies. Where this has been done, the underlying assumption is that there are sufficient monetary policy instruments available to neutralize the impact of debt management operations on the monetary base. Under this approach, the management of the maturity and currency composition of debt also ceases to send signals to future monetary and exchange rate policy.

Japanese Government Debt:

Earlier, we emphasized that government debt depends largely on the budget deficit. The Japanese government debt outstanding increased from 553 trillion in the (FY1998) to over 770 trillion yen in the (FY 2008) and continued with this tend to be over 892 trillion yen in the (FY 2011). (See table 2).

Table (2) Long-Term Debt Outstanding of Central and Local Governments of Japan 1998-2011 (Trillion yen)					
	As of end – FY1998 (Actual)	As of end – FY2003 (Actual)	As of end – FY2008 (Actual)	As of end – FY2010 (Estimated)	As of end – FY2011 (Estimated)
General Gov.	390	493	573 (568)	668 (648)	692 (680)
General Bonds	295	457	546 (541)	642 (622)	668 (656)
As a percentage of GDP	58.7	92.6	111 (110)	134 (130)	138 (136)
Local Gov.	163	198	197	200	200
As a percentage of GDP	32	40	40	42	41
Total	553	692	770 (765)	869 (849)	892 (880)
As a percentage of GDP	110	140	157 (156)	181 (177)	184 (182)

Source: Ministry of finance, "Japan's Fiscal Condition", Tokyo, Dec.2010, p5, available at;
<http://www.mof.go.jp/english/budget/budget/fy2011/e20101224b.pdf>

Notes:

GDP for FY1996-2008: Actual; FY2010: Estimates; FY2011: Forecast.

Figures in parentheses in FY2008 and FY2010-2011 do not include front-loading issuance of refunding bonds. The borrowings in the Special Account for Local Allocation and Local Transfer Tax are shared by the central government and local governments in accordance with their shares of redemption. The amount of the borrowings outstanding incurred by the central government was transferred to the general account at the beginning of FY2007, so that the borrowings outstanding in the Special Account since the end of FY2007 are the debt of the local governments (approx. 34 trillion).

Government bonds outstanding in the Special Account for Fiscal Investment and Loan Program are at approximately 119 trillion yen as of end-FY2011.

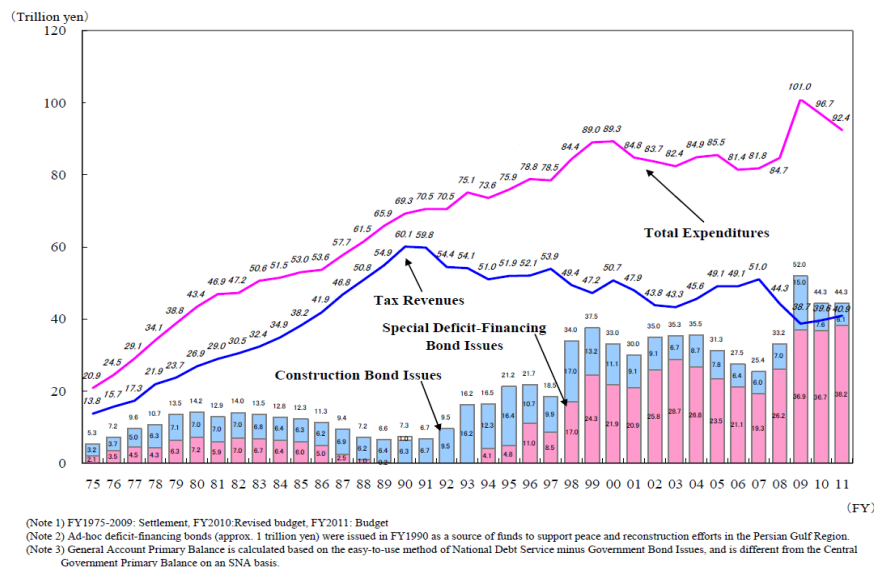
The public budget's components in Japan:

Figure 1 provides the amounts of public budget's components in Japan for the period 1975-2011. It is divided into two curves, the first one is an indicator for tax revenues and the second one is an indicator of total expenditures and, in addition of government bonds issues.

The total expenditures increased sharply from 20.9 trillion yen in 1975 to 75.9 trillion yen in 1995, and it still keeps rising until now, so it amounts to 92.4 trillion yen in 2011, (See figure 1).

In tax revenues there was a similar trend as in the total expenditures, so they increased sharply from 13.8 trillion yen in 1975 to 51.9 trillion yen in 1995 and that was the biggest amount of tax revenues. But tax revenues decreased after

Figures 1; Trends in General Account Tax Revenues, Total Expenditures and Government Bond Issues in Japan 1975-2011



Source: Ministry of finance, "Japan's Fiscal Condition", Tokyo, Dec.2010, p2, available at;
<http://www.mof.go.jp/english/budget/budget/fy2011/e20101224b.pdf>

2000 from 50.7 trillion yen to 40.9 trillion yen in 2011.

As a result, a budget deficit needs to be financed, and we noted the increase in the government bonds issue in (figure 1), which substitutes the decreases in tax revenues.

Government Bonds

Government bonds issues increased in recent years and bonds have become an important financing instrument. Originally, these bonds were used to finance construction projects. Lately, issue bonds to finance government deficits have evolved. Increasing use of these deficits-covering bonds entails the danger of leading to inflation.

A brief history of postwar government bonds:

Since the end of World War II the government has undergone dramatic changes in the financing of its expenditure. These changes have been in part, due to cyclical business conditions, and due in part to the political pressures both inside and outside government.

During the 1960's and half of the 1970's, Japan had a high rate of economic growth. The government enjoyed high tax revenues and could finance increased expenditures, as well as reduce tax rates. However, in the second half of the 1970's, the government could no longer depend on increasing tax revenues? The oil crisis resulted in depressed business conditions, and tax revenues in FY1975 fell far below the original budget estimates. The government was in a serious financial situation, and bonds to finance the deficit were issued for the first time.

Some Keynesian economists have advocated a policy of budget deficits to stimulate effective demand. They have strongly recommended the issuance of government bonds to finance the revenue deficit, thus causing an expansionary budget. Since 1975, the government has issued bonds for the financing of its investment expenditures.

Financing deficits by issuing bonds does not necessarily shift the burden of government expenditures to future generations. However, the government has tried to convince the public about the importance of relations between present and future generations. Future generations, which will enjoy the benefits of government investment, will also be required to pay the debt-servicing expenditure, including interest payment and capital-refunding. If the whole government investment expenditure is financed by taxes collected from the present generations, an unequal burden is imposed.

Until 1974, the total government bond issue did not exceed the total government

Box (1) The history of Japanese stock exchange:

The Japanese securities market was founded by the Meiji Government in the (1870's). This "new" government- issued public bonds to the former Samuri, as a form of pension system. At the same time, the government was establishing new industries, the railways, national banks, trading companies, etc., and as a result, created a need for public exchange, where securities could be negotiated. The Meiji government formed the "Stock exchange regulations", but the government found itself unable to enforce these regulations and a new law was passed in (1878), incorporating older Japanese regulations that covered rice transactions. In the same year, the Tokyo and Osaka exchange were established as profit-making joint stock companies and these grew rapidly during the next ten years or so, along with the growth of business enterprises, though government bonds accounted for most of the transactions.

(See, Willian Duncan," Japanese markets review 1974-75", Gower economic publications, London, 1974, p92).

⁸ See, Masazo Ohkawa, "Government Bonds", Research in the "Public Finance in Japan", Edited by Tokue Shibata, University of Tokyo press, Tokyo, 1986, PP123-124.

investment (for construction works) in the general account budget. Thus, the government bonds issued was called "construction" bonds; the issuance of government bonds for the general account budget was lawful in such special cases as when the revenues raised were used for government investment.

Present Trend of Government Bonds Issue and Bond Dependency Ratio:

The JGB (Japanese Government Bond) issue amount has been on an increase in the recent years. While the JGB issue amount often refers to that of new financial resource which are bonds (construction bonds special deficit-financing bonds), securities issued by the central government also include refunding bonds and Fiscal Loan Bonds. As the figure 2 shows, the total issue amount of these government bonds was increasing at a dramatic pace, particularly in the last several years. Although the issue amount of new financial resource bonds had been covering between 30 and 40 trillion yen since FY1998, it is reduced to less than 30 trillion yen in FY2006 and increased to 44.3 trillion yen in FY2011. As for the total issue amount of JGBs, including refunding bonds, the figure had increased from 70 trillion yen to over 80 trillion yen during FY1998 to FY2000. Furthermore, the launch of Fiscal Loan Bonds in FY2001 pushed it up to over 130 trillion yen, and since then, it kept increasing. In FY2006, however, the total sum is reduced to approximately 165 trillion yen⁹, and to 162.4 trillion yen in FY 2010¹⁰.

Figure 2 provides information for the period 1975-2011, for government bond issues and bond dependency. The main objective here is to compare the government bond issues and their percentage to total expenditures in Japan.

The government bond issues changed on three stages during this period as follows:

Stager1: Since the second half of the 1970's to the end of it, government bond issues raised from 5.3 trillion yen in 1975 to 14.2 trillion yen in 1980.

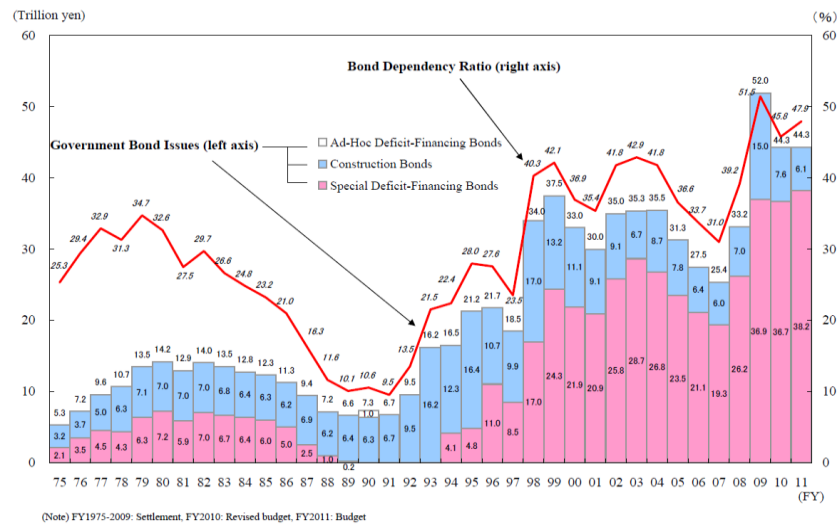
Stage2: Since the beginning of the 1980's to its end, government bond issues decreased from 14.2 trillion yen in 1980 to 6.6 trillion yen in 1989.

Stage3: Since the beginning of 1990's to the end of the study period in 2011, government bond issues increased sharply from 7.3 trillion yen in 1991 to 44.3 trillion yen in the 2011.

⁹ See, Ministry of finance, "Guide to Japanese Government Bonds 2006", Tokyo, www.mof.go.jp, p8.

¹⁰ Ministry of finance, "Highlights of FY2010 Government Debt Management", Tokyo, Dec. 2009, p1, available at; <http://warp.ndl.go.jp/info:ndljp/pid/1022127/www.mof.go.jp/english/bonds/e20091225reference.pdf>

Figure 2; Japanese Government Bond Issues and Bond Dependency Ratio 1975-2011



Source: Ministry of finance, "Japan's Fiscal Condition", Tokyo, Dec.2010, p3.

<http://www.mof.go.jp/english/budget/budget/fy2011/e20101224b.pdf>

In FY (1975), the bond dependency ratio was 25.3 percent of total expenditure, it increased to (34.7) percent of total expenditure in the FY (1979), and its percentage was even highest in the (1970's). In the (1980's) it decreased to 10.1 percent of total expenditure in the FY (1989), and the trend toward increase of total expenditure began during the (1990's) from (9.5) percent of total expenditure in the FY (1991) and it kept on rising to 42.1 percent of total expenditure in the FY (2000) and 47.9 percent of total expenditure in the FY (2011). (See figure 2).

Trend of accumulated government bonds outstanding:

The accumulated government bonds outstanding in the Japanese government bonds market refer to construction bonds and special deficit-financing bonds changed on two stages during the period (1975-2011), as follows: **Stager1:** From (1975) to (1990), the accumulated government bonds outstanding increased sharply, this amount rose from 15 trillion yen in (1975) to 166 trillion yen in (1990). (See figure3).

Stage2: From (1991) to (2011), the accumulated government bonds outstanding increased very quickly. This amount increased from 172 trillion yen in (1991) to 668 trillion yen in (2011).

Effects of government bonds market on private sector investment in Japan:

This part of the study analyses the effectiveness of the government bonds market in the context of the Crowding-out or Crowding-in hypothesis in the Japanese economy in the short and long run. I will use the most recent studies to examine my research hypothesis.

In the above discussion about the possible beneficial effects of public sector involvement in the functioning of the economy, we restrict ourselves only to productive investments. This excludes other categories of public spending, such as wages and salaries, subsidies, and unproductive government consumption items. Some of these expenditure items may be used as counter-cyclical policy measures, and thus help smooth business cycles, but the effect of such expenditures on private sector investments is another topic to investigate. Another issue is the source of financing the public investments. Or, is tax financing better than borrowing? On the basis of that, we will give some assumptions to start out our discussions as follows:

The higher government expenditure and the resulting increase in government deficit are financed by a method which is called deficit-covering bonds. It is not tax-financed; in general the tax-financed deficit is crowding-out the private sector investment more than the bond-financed deficit¹¹.

Tax-financed government expenditures have a direct effect on private sector investment. On the other side, bond-financed government expenditures have an indirect effect on private sector investment, through the reduction of the credit amount and the rising of the interest rate in the domestic market.

The government deficit's effects depend mainly on the structure of the government's financing. When there is an increase in the government's financing needs, and such needs are financed domestically, there will be upward pressure on interest rates, and a crowding-out of private investment. Conversely, if the government finances itself, externally, by issues of government bonds in the domestic and international financial markets, the situation will be opposite. Through development of domestic and international financial markets since the 1990s until now, the governments have become more liquid and increasingly oriented in carrying out fiscal policy. They also take the impact of a fiscal policy action into consideration, through increasing issues of securities and selling them in domestic and international financial markets.

In other words, the high savings rate and excess liquidity in the international financial system made it possible for the bulk of the fiscal deficit to be financed through non-inflationary domestic sources in the form of government securities. The large issuance of these securities was subscribed mainly by pension and insurance funds. As there was sufficient liquidity in the banking system to meet the private sector's financing needs, the government requirements did not result

¹¹ See, Habib Ahmed, Stephen M. Miller, "Crowding-Out and Crowding-In Effects of the Components of Government Expenditure", University of Connecticut, Department of Economics Working Paper Series Working Paper 1999-02, July 1999, p 12.

in any crowding-out effects¹².

The government deficit's effects depend mainly on the structure of the government's expenditure, which is can be divided into:

Spending on productive services (e.g., building infrastructure).

Spending on law enforcement and the protection of private property.

Spending on unproductive (consumption) services (e.g., subsidizing food).

The spending on consumption services has a negative effect on growth, while spending on productive services affects growth positively.

And the more important point in this place is that fiscal expansion cannot go on indefinitely, because it will create structural imbalance in the economy.

These assumptions give us more points for discussion on the deficit-covering bonds and their effect on private sector investment.

Interest rates:

The traditional view argues that government expenditure crowds out private investment. Higher government expenditure increases the interest rates making capital more expensive and reducing private investment¹³. Even if the rate of interest were allowed to increase, there is still the set of questions:

What is the investment elasticity with respect to the rate of interest?

What a degree of response does the private sector investment have to changes of the interest rate in the domestic financial market?

How high is the degree of elasticity of the interest rate to changes in government expenditures?

What is the role of the central bank and the impact of the interest rate on the supply and demand of money and its impact on the amount of money?

¹² V Vijayaledchumy, "Fiscal policy in Malaysia", BIS Papers No 20, Fiscal issues and central banking in emerging economies, Monetary and Economic Department, October 2003, p 176.

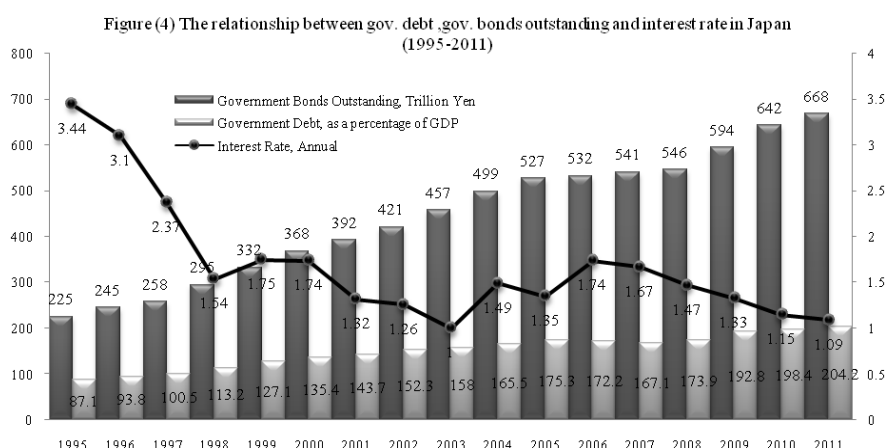
¹³ IBID, p3.

One can, for example, strongly argue that the impact of the rate of interest on investment is mostly modest. The interest rate is one from a set of parameters that has an impact on the private investment sector, and may be minor importance.

On the other side, it is a very important matter that interest rates depend more on the international financial market than on the domestic financial market. It is not easy for any economy to determine the structure of interest rates without trends of the international interest rates in the international financial market, so the international interest rates determine the amount of capital demand and supply, particularly since the economies live in a situation of globalization and integration in the financial markets.

In addition, there are a lot of enterprises and big companies which have high liquidity and they do not need to borrow money, so other enterprises have the ability to borrow from the international financial market.

Now we examine whether higher levels of government debt are associated with higher or lower levels of interest rates in Japan, what kind of relationship exists between government debt and government bonds outstanding and interest



Source: Ministry of finance, "Japan's Fiscal Condition", Tokyo, Dec.2010, p4, p12, available at; <http://www.mof.go.jp/english/budget/budget/fy2011/e20101224b.pdf>

OECD, "Long-term interest rates", available at; <http://stats.oecd.org/Index.aspx?QueryId=29813>

* FY2011: forecast.

rates in Japan's economy during the period (1995-2011), and then, determining the impact of government debt and expansion in the government bonds market on private sector investments, through the interest rates channel.

We can get information about this through the interest rate channel in figure (4), which provides information about the relationship between government bonds outstanding and government debt, increasing sharply from 87.1 of GDP in (1995) to 204.2 of GDP in (2011). The interest rate declined from 3.44 in 1995 to 1.09 in 2011.

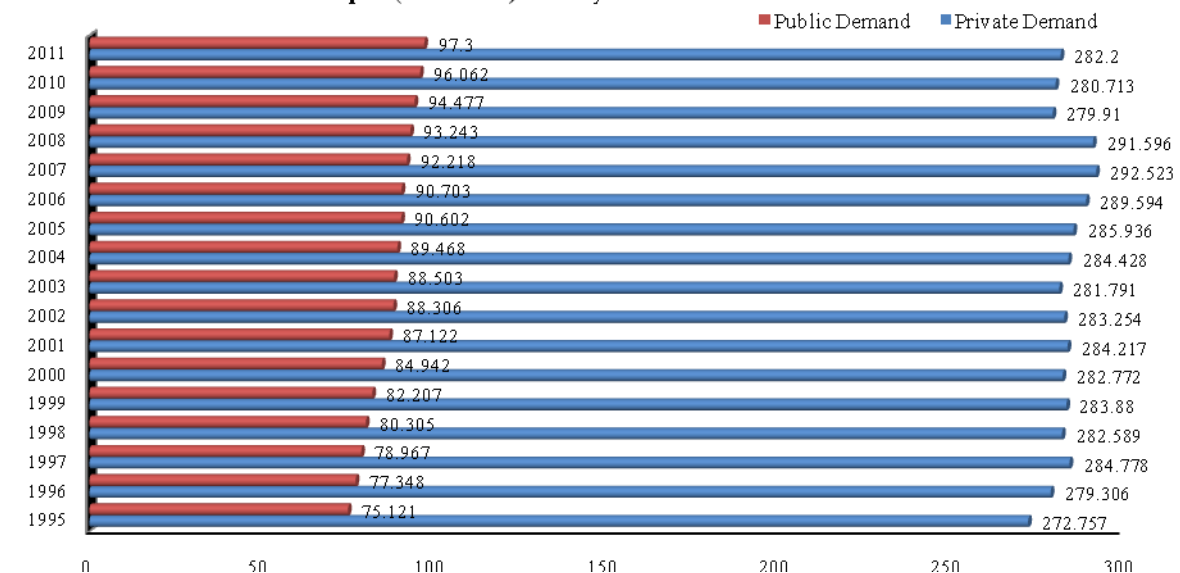
The Relationship Between Public Sector and Private Sector Investment:

A more difficult relationship to differentiate is that between public sector and private sector investment. Crowding-in of private sector investment by public sector investment is defined to occur when increased public sector investment is associated with increased private sector investment. This may arise because public infrastructure provision affects returns on private investment positively, hence enhancing the incentive to carry out such private investment.

Source: Ministry of finance, "MONTHLY FINANCE REVIEW", No. 459, October 2011, p62, p63, available at; http://www.mof.go.jp/english/pri/publication/mf_review/cy2011/453/453_01.htm

The relationship between public sector and private sector investment is presented in (Appendix table A-1), where the within-country correlations between public sector and private sector investment for all 63 countries are presented by (Stephen and Mariusz as an example)¹⁴. The table shows that there is sometimes crowding out and sometimes crowding in, with an almost even split between the two. This may explain the contradictory findings in literature (The studies are summarized in Appendix table A-2). And it is also important to note that these numerous studies in addition have shown that certain types of infrastructure and public investment facilitate both growth and private investment.¹⁵

Figure (5) The relationship between Private and public demand in Japan (1995-2011) Trillion yen



¹⁴ Periods for the correlations vary by country, ranging from the entire sample period of 1970-2000, to as brief as 1995-2000.

¹⁵ Stephen S. Everhart and Mariusz A. Sumlinski, "Trends in Private Investment in Developing Countries Statistics for 1970-2000 and the Impact on Private Investment of Corruption and the Quality of Public Investment", IFC, International finance corporation, discussion paper number44.p17.

In the Japanese economy, the relationship between private and public demand is complementary. If we look carefully at figure 5, we will note that there is sharp complementation between them, and there are some other important notes as follows:

The public sector demand did not crowd-out the private sector demand ¹⁶, thus the private demand is still kept in an average level of about 272.7-282.2 trillion Yen in all of the period 1995-2011.

There exists a parallel between them. When the public investment and the private investment are increasing.

The correlation between the private sector and the public sector is very high; the correlation coefficient is 4516 percent in the period 1995-2011. (See figure 6).

Thus, the public sector investments crowd-in investment in the private sector of the economy.

The structure of the government expenditures:

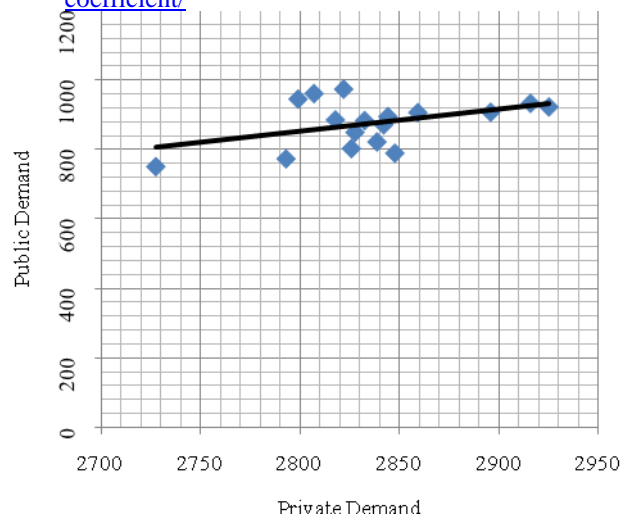
The crowding-out is not inevitable when the government deficit, which is financed by deficit-covering bonds, has effects on private sector investment. This depends on the structure of the government expenditures, especially when government expenditures are made in productive areas such as infrastructure and reconstruction.

As reviewed earlier, productive government investments might help enhance economic performance and growth potential especially in the framework of a developing country. The improved infrastructure, for example, should also be beneficial for the private sector activity and is reflected in increased private sector investments. Thus, one can argue that productive government investments are more likely to crowd in, rather than crowd out, private investments especially at earlier stages of development. Therefore, differences in the (initial) level of development should be taken into account¹⁷.

Figure (6) the correlation coefficient between private and public sector in Japan (1995-2011).

Source: This figure drawn by the author from the statistics in figure (5) and depend on;

<http://www.alcula.com/calculators/statistics/correlation-coefficient/>



¹⁶ This percentage calculated by author from the statistics in figure (5), and depended on this equation:

$$r^2 = \sum xy / \sqrt{\sum x^2} * \sqrt{\sum y^2}$$

¹⁷ Erdal Atukeren, "Economic and Institutional Determinants of the Crowding-in Effects of

Furthermore, our investigation into the determinants of the crowding-in effects of public investments can indeed be seen as a special case of the determinants of private investments in developing countries. That is, the public investments have enhanced private sector investments, by improve the economic and political conditions and the institutional environment should be right (or, at least, not hostile) in the first place. This relates to the economic, political, and institutional environment of private business. Macroeconomic stability, sound economic policies, or improvements in economic conduct should promote private sector activity. In addition, the availability of domestic credit is an important factor in developing countries, since borrowing constraints may impede the private sector development¹⁸. Also, a reduction of the government size through cuts in unproductive government consumption and transfer payments should lead to an improvement in the private business environment.

We emphasize the role of two institutional variables regarding the political and legal environment of business¹⁹:

First: The improvements in the rule of law and the protection of property rights lead to higher levels of economic freedom, which should be positively affecting the private business environment.

Second: The government investments are prone to misuse for political purposes or for the benefit of interest groups. As such, they may not fulfill their original purpose in practice and may indeed hinder private sector activity due to the possible presence of uncertainty and lack of accountability in policy making. In addition, economic reforms, which are represented by the changes in the economic freedom indices, also necessitate a good degree of checks and accountability in the political system to be effective and sustainable.

For example, if an increase in private investment also necessitates an increase in public works and infrastructure. A new factory, for example, would increase the need for public infrastructure and services near that facility. In this case, public and private investment goes hand in hand to enhance the productive capacity of an economy. This point leads to a complementary effect from public to private investments.

Public Investments in Developing Countries". Swiss Institute for Business Cycle Research (KOF / ETH Zürich) WEH - ETH Zentrum, CH-8092 Zurich, Switzerland.(This version: 14 October 2005)

p5

¹⁸ IBID,p5

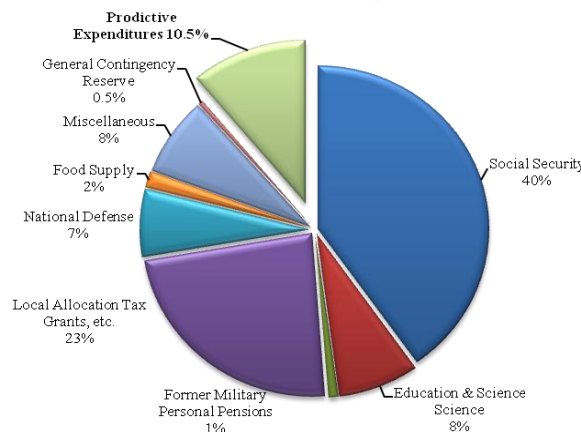
¹⁹ Erdal Atukeren, "Economic and Institutional Determinants of the Crowding-in Effects of Public Investments in Developing Countries", Op.Cit., p8.

Public investment in infrastructure may also affect private capital formation indirectly, through changes in output and relative prices. Public capital in infrastructure may increase the marginal productivity of existing factor inputs (both capital and labor), thereby lowering marginal production costs and

increasing the level of private production. In turn, this scale effect on output may lead, through the standard accelerator effect, to higher private investment. Moreover, if there are externalities associated with the use of some production factors (for instance, learning-by-doing effects resulting from a high degree of complementarity between physical capital and skilled labor), a positive growth effect may also result. An improvement in the stock of public capital in infrastructure may therefore affect the rate of total factor productivity growth, independently of its effect on private capital accumulation²⁰.

Investments in Japan especially that for infrastructure, are mostly undertaken by the public sector, which is financed either through loans from the international financial market or through borrowing from the domestic market. This structure implies insensitiveness to market incentives (for example, interest rate). However, Japan has a developed economy, and, in this sense, public and private investments probably act as complements, fiscal spending is having a stimulating effect on private investment.

Figure 7: The Distribution of General Expenditures by Major Expenditure FY2011 Budget



Source: This figure drawn by the author depending on Ministry of finance, "Japan's Fiscal Condition", Tokyo, Dec.2010, p2, available at: <http://www.mof.go.jp/english/budget/budget/fy2011/e20101224b.pdf>

Figure (7) gives information about the distribution of general expenditure by showing the major areas of expenditure. The productive government expenditure amounts to over 10.5 of general expenditure in (FY2011 Budget). It contains

²⁰ Pierre-Richard Agénor, Mustapha K. Nabli, and Tarik M. Yousef, "Public Infrastructure and Private Investment in the Middle East and North Africa," WPS3661, pp7-8).

Public Works, Economic Assistance, Official Development Assistance ODA, Small and Medium Size Businesses, and Transfer to the special industrial investment account.

The government's financing:

As reviewed earlier, the financial deficit should be financed. When we go back to our assumptions, there are in general two methods. The first is called deficit-covering bonds, and the second is tax-financed. Generally, the tax-financed investment is crowding-out the private sector investment more than the bond-financed investment. That is because tax-financed government expenditures have a direct effect on private sector investment, on the other side, bond-financed government expenditures have an indirect effect on private sector investment, through reducing the amount of credit and raising the interest rate in the domestic market.

A bond-financed (as opposed to tax-financed) government purchase of goods and services induces an ex-post crowding out of private investment via a rise in real interest rates²¹.

Debt-financed government expenditure has a positive effect on private sector investment, while tax-financed has a negative effect on it, because it increases the cost of investment for the private sector. For example, the public investment in infrastructure displaces or crowds out private investment, its net positive impact on private capital formation can be highly mitigating. Such crowding-out effects tend to occur if the public sector finances the increase in public investment, through an increase in distortion taxes- which may increase incentives for private agents to evade taxation, or reduce the expected net rate of return to private capital²².

In the Japanese's economy, the debt-financed government expenditure has been very high in the recent years, the bond dependency ratio attained (47.9) percent of total expenditure in (2011)²³.

Financial market efficiency degree:

Government bonds and government bond markets have several

²¹ David Alan ASCHAUER, "DOES PUBLIC CAPITAL CROWD OUT PRIVATE CAPITAL?", Federal Reserve Bank of Chicago, Chicago, IL 60604, USA, Received May 1988. Final version received April 1989, p 175.

²² Pierre-Richard Agénor, Mustapha K. Nabli, and Tarik M. Yousef, "Public Infrastructure and Private Investment in the Middle East and North Africa, op.cit, pp6-7).

²³ See figure (2) page (12) in this study.

characteristics that, altogether, distinguish them from private securities. These characteristics may include²⁴:

Minimal credit risk—due to taxation authority and/or the power to monetize debt.

Well-developed market infrastructure—due to broad investor bases for government securities, efforts by issuing governments to minimize the cost of the public debt, and the use of government securities for implementing monetary policy.

Broad yield curve—government securities are issued in a fairly small number of maturities (to maximize liquidity) but spaced out to cover a fairly wide range of maturities.

Supporting repo and derivatives markets.

Not all of these characteristics are present, or present to the same degree, in all government securities markets. Central governments in some European countries have, for example, not issued shorter-term debt securities, thus effectively “truncating” government yield curves in these countries. The U.S. Treasury market exhibits all of these characteristics.

The government bond markets have become a large fraction of financial markets in many countries, through the benefits of government bond markets as bonds can provide an alternative, non-inflationary source of financing for governments, foster a healthy capital market, and improve the functioning of the financial system. Moreover, active government bond markets can have indirect benefits, through better monetary management, enhanced transparency, a widening of investment opportunities, easier benchmarking of corporate sector claims, and a more efficient determination of the time value of money²⁵.

The bonds issues of the Japanese government were huge in recent years and lead to expansions in the financial market as well as an increase in private financial investment, thus the government bonds issues were crowding-in the private sector investment in the financial market, through the financial instruments (Equity and cooperate and government bonds)²⁶. In addition, allowing non-residents to invest in Japan's financial market, this operation is crowding-in the international

²⁴ IBID, pp 12-13.

²⁵ Stijn Claessens, Daniela Klingebiel, and Sergio Schmukler, " Government Bonds in Domestic and Foreign Currency: The Role of Macroeconomic and Institutional Factors", Stanford University, Working Paper No. 169, June 2003, pp3-4.

²⁶ Japan's government bond issues have led to expansion in financial market since (FY1974-1975), See, Sera Eken, "Integration of Domestic and International Financial Market: The Japanese experience", IMF Staff Paper, Vol. 31, No. 3, Washington D.C., Sep. 1984, pp 500-516.

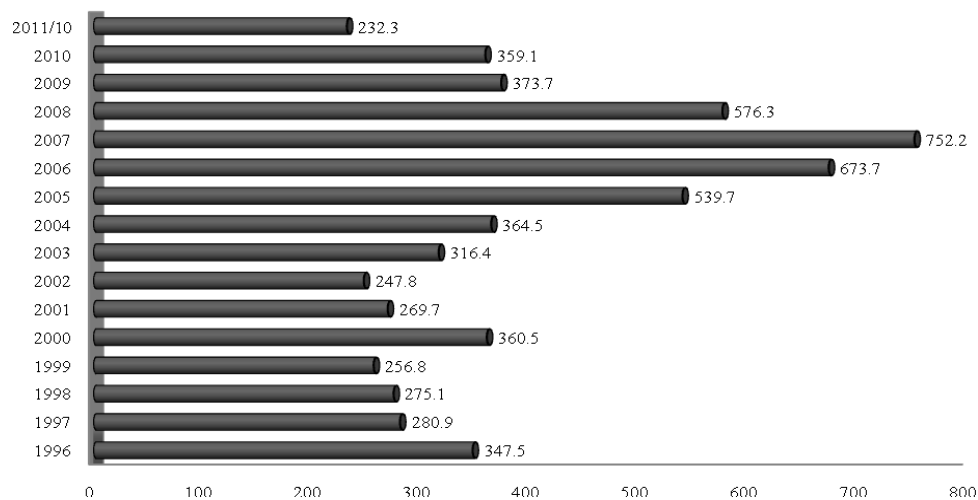
private sector and brings an inflow of international capital to Japan's financial market.

Figure (8) provides information about the total market value of the Tokyo stock exchange (TSE). We noted that the total amount of market value increased from 347.5 trillion yen in 1996 to 752.2 trillion yen in 2007, and declined because of the world financial crises to 232.3 trillion yen in 2011.

In the other side, the increase of Japan's government bonds issues motivates the non-residents private sector to invest in Japan's financial market. For example, the trading value of foreign stock on the Tokyo Stock Exchange (TSE) increased from 24.386 billion yen in 2003 to 323.324 billion yen in 2007 and because the world financial crises declined to 101.144 billion yen in 2009²⁷.

Source: Tokyo Stock Exchange, "Fact Book 2011", Tokyo, 2011, p2,

Figure (8) Total Market Value of the Tokyo Stock Exchange (1996-2011)
(Trillion Yen)



available at; <http://www.tse.or.jp/english/market/data/factbook/b7gje60000003032-att/b7gje6000000hldu.pdf>

The government bonds have come to play the following roles in both domestic and international financial markets²⁸:

Benchmarks for pricing and quotation in domestic and international bond markets.

Important components of global bond indexes used by portfolio managers. Major instruments for hedging fixed-income positions in international

²⁷ See, Tokyo Stock Exchange, "Fact Book 2006", Tokyo, 2006, p6. And Tokyo Stock Exchange, "Fact Book 2011", Tokyo, 2011, p11, available at;

<http://www.tse.or.jp/english/market/data/factbook/b7gje60000003032-att/b7gje6000000hldu.pdf>

²⁸ Garry J. Schinasi, Charles F. Kramer and R. Todd Smith, "Financial Implications of the Shrinking Supply of U.S. Treasury Securities", IMF, Washington DC., March 20, 2001, p7

currencies and international markets.

Collateral for domestic and international financial transactions.

Main tool for liquidity management by the private sector, especially by banks.

Large share of foreign exchange reserves held by other governments.

Main monetary intervention instrument used by the central banks.

Domestic and international safe-haven.

For these reasons, it is likely that the supply of government bonds might increase in domestic and international financial markets.

Conclusions:

This study analyses the effectiveness of fiscal policy in the context of crowding out in Japan during the period (1995-2011). There exists a relationship between government debt and the government bonds market and private sector investment. The results show that there is a positive relationship between public sector investment and private sector investment.

Financing the government budget deficit became an important policy form of the fiscal policy, with an effect on the macroeconomic variables, particularly when it is financed by government bond issue, so it clearly through the big bond dependency ratio.

It is not inevitable that government budget deficit, which is financed by bonds, is crowding-out. This is illustrated by the following reasons:

The interest rates are insensitive to budget deficit.

The relationship between private sector and public sector investment is complementary.

Government expenditures are productive.

The level of development of the financial market and the degree of its integration into the international financial market is very high, so the government and private enterprises can borrow from domestic and international financial markets.

For these reasons, the government bond market is crowding-in the private sector investment in Japan's economy during the period (1995-2011).

Appendix:

Table (A-1) Selected literature review, Crowding-in, Crowding-out

CITATION	SAMPLE COUNTRIES	FINDINGS
Oshikoya (1994)	African	For most countries in this sample, public investment in infrastructure is complementary to private sector investment
de Oliveira Cruz and Teixeira (1999)	Brazil	Private investment is crowded out by public investment in the short term, but in the long term these two variables are complements
Clements and Levy (1994)	Caribbean	Crowding out
Blejer and Khan (1984)	Developing	Government investment in infrastructure is complementary to private investment, other types of government investment are not
Balassa (1988)	Developing	Crowding out
Greene and Villanueva (1991)	Developing	Crowding in
Heng (1997)	Developing	Shows that public capital can crowd in private capital by raising the marginal productivity of labor and savings
Ghura and Goodwin (2000)	Developing	- Overall sample suggests crowding in - Public investment crowds in private investment in SSAFR, but crowds out in Asia and LAC
Shafik (1992)	Egypt	Effects of government policy on private investment are mixed, evidence of crowding out in credit markets and crowding in as a result of government investment in infrastructure
Sobhee (1999)	Mauritius	Empirics suggest expenditures on health and infrastructure stimulate private investment, expenditure on education does not
Nazmi and Ramirez (1997)	Mexico	Crowding out
Musalem (1989)	Mexico	Crowding in
Looney and Frederiken (1997)	Pakistan	Crowding in
Sakr (1993)	Pakistan	When government investment is disaggregated into infrastructure and non-infrastructure components, the latter crowds out private investment
Ahmed and Miller (2000)	OECD and Developing	- Government expenditure crowds out for both samples, plus pooled sample - For developing countries, government expenditure on transport and communication crowds in
Argimon, Gonzalez-Paramo, Alegre (1997)	OECD	Crowding in effect of private investment by public investment through the positive impact of infrastructure on private investment productivity
Monadjemi and Huh (1998)	OECD (Australia, UK, USA)	Empirics provide limited support for crowding out effects of government investment on private investment
Pereira and Flores de Frutos (1999)	USA	Crowding in
Pereira (2000)	USA	Crowding in
Pereira (2001)	USA	- At the aggregate level, public investment crowds in private investment - Disaggregating private investment shows that the crowding in effect of public investment is strong for equipment and only marginal for structures - Public investment marginally crowds out private investment in information equipment

Source: Stephen S. Everhart and Mariusz A. Sumlinski, "Trends in Private Investment in Developing Countries Statistics for 1970-2000 and the Impact on Private Investment of Corruption and the Quality of Public Investment", IFC, International finance corporation, discussion paper number 44.P11.

Table (A-2) Investment Correlations *(denotes significance at 5 level)

Region	Income	Country	Private vs. Public
ECA	Lower middle	Bulgaria	-88% *
ECA	Lower middle	Lithuania	-83%
SSAFR	Low	Mauritania	-77% *
ECA	Upper middle	Turkey	-76% *
LAC	Lower middle	Bolivia	-74% *
ECA	Low	Azerbaijan	-70%
ECA	Upper middle	Poland	-70% *
LAC	Upper middle	Grenada	-68% *
LAC	Lower middle	St. Vincent	-66% *
East Asia	Low	Indonesia	-62% *
East Asia	Low	Cambodia	-61% *
LAC	Upper middle	Mexico	-57% *
ECA	Lower middle	Romania	-55%
LAC	Upper middle	Chile	-55% *
SSAFR	Low	Benin	-40%
LAC	Lower middle	Belize	-39% *
South Asia	Low	Pakistan	-36% *
MENA	Lower middle	Morocco	-35%
LAC	Lower middle	Paraguay	-34%
ECA	Upper middle	Estonia	-32%
LAC	Upper middle	Argentina	-31%
SSAFR	Upper middle	Seychelles	-25%
LAC	Upper middle	Dominica	-24%
LAC	Upper middle	St. Lucia	-23%
SSAFR	Lower middle	Namibia	-22%
LAC	Upper middle	Brazil	-21%
LAC	Lower middle	Colombia	-17%
SSAFR	Low	Comoros	-17%
LAC	Upper middle	Barbados	-17%
LAC	Upper middle	Venezuela, R. B.	-15%
LAC	Lower middle	Costa Rica	-14%
LAC	Lower middle	Dominican Republic	-12%
ECA	Lower middle	Kazakhstan	-5%
SSAFR	Low	Madagascar	-4%
South Asia	Low	India	-2%
LAC	Lower middle	Ecuador	-2%
LAC	Lower middle	El Salvador	1%
MENA	Lower middle	Tunisia	4%
East Asia	Upper middle	Korea, Rep. of	6%
LAC	Upper middle	Uruguay	6%
SSAFR	Low	Cote d'Ivoire	8%
LAC	Lower middle	Guatemala	9%
East Asia	Lower middle	Thailand	9%
East Asia	Lower middle	Papua New Guinea	11%
ECA	Low	Uzbekistan	15%
MENA	Lower middle	Egypt	17%
LAC	Upper middle	Trinidad & Tobago	20%
LAC	Lower middle	Peru	23%
East Asia	Lower middle	Philippines	24%
SSAFR	Upper middle	Mauritius	25%
East Asia	Upper middle	Malaysia	27%
LAC	Lower middle	Guyana	37%
SSAFR	Low	Kenya	38% *
SSAFR	Low	Malawi	50% *
LAC	Low	Haiti	51% *
MENA	Lower middle	Iran	52% *
SSAFR	Low	Guinea-Bissau	56% *
East Asia	Low	China	59% *
South Asia	Low	Bangladesh	64% *
LAC	Lower middle	Panama	64% *
LAC	Low	Nicaragua	67% *
SSAFR	Upper middle	South Africa	78% *
ECA	Lower middle	Yugoslavia, Fed. Rep.	97%

Source: Stephen S. Everhart and Mariusz A. Sumlinski, "Trends in Private Investment in Developing Countries Statistics for 1970-2000 and the Impact on Private Investment of Corruption and the Quality of Public Investment", IFC, International finance corporation, discussion paper number 44.p13

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