Government expenditure and theory of efficient private and public finance

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Abstract

The efficient government finance will increase economic growth and thereby income distribution. This research has been formulated an efficiency theory of production and finance. This research compared the government expenditure patterns into two situations. One, when a government borrows and accordingly allocates resources for productive expenditures for private and public finance. Another situation is that when a government borrows and fixed the resources for productive expenditure for only public finance. A comparative efficiency theory of production and finance are being formulated to test the general equilibrium of production of goods and services. This general equilibrium theory of efficient production of a firm has been made a conclusion that government resource allocation in both for private and public finance is efficient and never creates economic distortion even if these resources are borrowed form domestic sources. These domestic sources might be private commercials banks or any other financial institutions. The government resource allocation is not efficient when the government borrowing is fixed only for increasing public finance. This process implies diminishing return and thus increases public expenditure implicitly. Increasing nonproductive government expenditure will expand the size of the government and accordingly reduce economic growth in the long run. But both the private and public finance from borrowing will not hamper the efficiency of the production of a firm and accordingly reduce economic distortion. The tendency of reducing economic distortion will ultimately increase economic growth and economic welfare as well.

Keywords: Finance, Government Expenditure

Introduction

Borrowing from bank and financial institutions is now a days a normal phenomenon to adjust government budget deficit in a developing economy. Self sufficiency in private and public finance is essential for accelerating economic growth in the developing countries. In many developing countries economic policy has been assisted by the international organizations and donor agencies during the last three to four decades. Their policy recommendation along with the substantial financial support for various economic issues and infrastructure development has been increased the economic growth and welfare in developing countries. Taking foreign loan, financial supports could not be replaced as a substitute of domestic loan from bank and financial institutions due to various economic impacts on that process. There is no substantial production efficiency and finance theory found in compliance with the economy of developing countries to identify the production efficiency and economic impacts of borrowing from domestic sources by the government.

It is well presumed that borrowing from bank for government expenditure will increase economic distortion but the government borrowing for resource allocation is efficient for production of goods and services and accordingly private and public finance. Commercial banks dominate financial sectors of most developing countries. Their performance reflects substantial influence on the overall efficiency of domestic resource mobilization and allocation. The overall efficiency of financial intermediation of private commercial banks will decrease if the government intervene the domestic bank finance. There is a little research in budget deficit but there is no theoretical research found to investigate the causal impact of production efficiency and finance. The government resource allocation for private and public finance is efficient for firms endogenous production although these finance are being made by borrowing from domestic sources.

The central bank revenue from its holdings of private sector claims rises as inflation and nominal interest rates rise if the central bank is the supporting authority for deficit finance of the government expenditure. For any given level of fiscal expenditure undertaken by the central bank, the central banks revenue will depend on the extent to which it exploits its monopoly over reserve money. Until the central bank exploits this monopoly to the full, incipient central bank losses can be reduced or eliminated through higher inflation. A balance sheet situation that causes a loss when prices are stable may produce a profit at some positive inflation rate.

Chamley and Honohan (1990) extends the analysis of the optimal inflation tax in the presnce of distortionary taxes using a dynamic model with money in the utility function. The general result is that the optimal taxation tax is approximately where the interest elasticity of money demand equals the excess burden of other taxes.

Deravajan *et al.*(1996) classified public expenditures into two kinds of productive investment. They paid attention to the problem, namely under balanced budget rate, how the marginal changes in budget allocation rate alters economic growth rate. It depends on the productivity of each type of investment and their initial budget allocation.

Diamond and Mirrlees (1971) produced production efficiency theory which shows that investment decisions should be allowed to maximize income at world prices. Otherwise, suboptimal investment decisions will lower total resources available for both government expenditure and consumption. We have to investigate the efficiency of domestic borrowing from bank and financial institutions. We have to find out the effective and efficient government finance where the government investment decision will be effective to increase economic growth. In general, identical consumer-investors use their endowments in period one to purchase the consumption good, domestic and foreign financial assets. The borrowing from central bank will reduce commercial financial intermediation and accordingly domestic private investment. Giovannini and de Melo (1993) present an analytical framework which can be used to analyze financial restriction from the tax efficiency standpoint.

Form these economic literatures, we do not found any theoretical analysis that may reflect the efficiency theory of production and private and public finance when the government is willing to borrow from the domestic sources. The government has to depend on commercial borrowing if it restricts the borrowing from abroad. For many reasons our borrowing from abroad is decreasing. The objective of this research is to produce a theoretical model for an efficient production and finance theory and to investigate the impact of government borrowing for private and public finance. Here, the government productive expenditures for private finance are presumed the expenditures that are fixed for the project of private and public partnership (PPP). The definition of public finance is the government investment for productivity of goods and services.

Materials and Methods

In general equilibrium theory of consumer preference, we usually restrict the assumption of utility and demand function of goods and services, production function and distribution. This research formulated an efficient production and finance theory in restriction to consumer choice and the theory of production function. The following implicit assumptions are fixed to formulate the theoretical model.

Definition: 1

According to Varian (1992), the study of consumer behavior has been taken income as exogenous. But in more elaborate models of consumer behavior it is essential to consider how income is generated. The standard way that an economist always thinks of consumer having some initial endowment. Suppose, $w = (w_{1,} \ldots\ldots\ldots\ldots, w_k)$ of various goods which can be sold at the current market price p. This is presumed as consumer income $m = pw$ which can be used to purchase other goods. The utility maximization problem becomes: $\max\ u(x)$ such that $px = pw$. The way of solution for this problem is to find a demand function $x(p, pw)$. The net demand for good i is $x_i - w_i$. where x is consumption good. Here the proposition is that prices influences the value of what consumer has to sell as well as wants to sell. If it differentiates demand with respect to price:

$$\frac{dx_i(p, pw)}{dp_i} = \frac{\partial x_i(p, pw)}{\partial p_i}\Big|_{pw=cons\tan t} + \frac{\partial x_i(p, pw)}{\partial m} w_i .$$

The first proposition in the right-hand side of this expression is the derivatives of demand with respect to price, holding income fixed. The second term is the derivative of demand with respect to income, times the change in income.

Definition: 2

A firm produces output with the following production function:

$x = f(k,l)$ ----------2.1

Or, we may say in a broader sense when considering capital share of labour, $x = f(k)$

Where, $f'(k) \geq 0, f''(k) \leq 0$;

Here the notations used in the basic theorem: $x = output, k = capital, l = labour$,

p_i = private finance, p_w = public finance

According to proposition (2.1), $x = f(k,l)$. The assumption is that the finance is a proxy of capital as an endogenously determined factor of production function. Here, private finance and public finance as proxy of private and public capital respectively. Here, p_i = private finance, p_w = public finance. Now the production function stands:

$x = f(p_{i,} p_w, l)$ ----------(2.2)

Taking the production function in the form of *Cobb- Douglas*:

$x = Al^{\alpha-1}.p_i^a.p_w^{\alpha-1}$ ---------- -(2.3)

where $0 < \alpha < 1$. A is positive constant, α is a positive private capital share, and $\alpha - 1$ is a public capital share. This equation implies that for each firm exhibits constant returns to scale in the private inputs, l and p_i. The assumption is that labour l , is constant. For fixed p_w, the economy faces diminishing returns to the accumulation of capital, p_i . If however, p_i , rises along with p_w , then eq.(2.3) implies that diminishing return will not arise; that is, the production function species constant returns in p_i , and p_w , for fixed l .

Assumption is that a firm is the beneficiary of public finance for any infrastructure facilities produced by the government. The productive government expenditure relates to public and private finance. Firm's output x is produced by private and public finance.

Definition: 3

The assumption of distribution of production of goods and services are: $x^n = \sum_{j=1}^{n} x_j$.

The functional distribution of aggregate output per capita:

$$x^n = \sum_{j=1}^{n} x_j = \sum_{j=1}^{n} c_j + \sum_{j=1}^{n} i_j + \sum_{j=1}^{n} g_j + \sum_{j=1}^{n} n_{r\,j} \text{ ---------- (3.1)}$$

Here, the notations used in the equations:

$x =$ output, c =consumption, i =investment, g =government purchase, n =export, r =import, $n_r = n - r$, p_i = private finance, p_w = public finance,

Any positive change of structural variable of equation (3.1) has positive impact on firm's output as well as aggregate production. These structure variables should have positive relation to the other macroeconomic environments. For simplicity of the theoretical model, the government expenditure is fixed as following which have implicit impact on firm's investment and output efficiency:

$$g^n = \sum_{j=1}^{n} g_j = \sum_{j=1}^{n} p_{e,i_j} + \sum_{j=1}^{n} p_{w_i} \text{ ----------(3.2)}$$

Where: g = government expenditure, p_e = Nonproductive government expenditure, p_w = public finance as proxy of productive expenditure.

Result and Discussion

Based on the definitions (1-3), there is a scope to produce a general equilibrium theorem for the firm's efficient production and finance. It is presumed here that public expenditures are distributed per capita basis that a firm and individual maximized their production and income. This research did not produce any inter-temporal or aggregate impact of production efficiency to avoid the complexity of the theoretical model. The individual consumer and firm's behavior have substantial impact in aggregate level. Here, the government productive expenditures for private finance (p_i) are being presumed the public expenditures that are fixed for the project of private and public partnership (PPP). The definition of public finance is the government investment for productivity of goods and services.

I. Theorem: The Government finance is efficient when a government borrowings is fixed only for productive expenditures of private and public finance.

Proof: From the equation (2.3), we find the production function financed as proxy of the private and public capital. The presumption is that the firm's production function depends on two types of capital. One is private capital and another is public capital (2.2). As otherwise, we may say the proxy of private and public finance. Considering the implicit impacts of the definitions (1-3), a firm maximizes it's production function:

$$\max . x(p_{i,} e(p_{i,} p_w))$$
$$s.t. - - I(p_i + p_w)$$

Rearranging the equations:

$$x(p_{i,} e(p_{i,} p_w)) - tI(p_i + p_w) = 0 - - \text{----------(i)}$$

The first order condition of the equations:

$$\frac{\partial x}{\partial p_i} + \frac{\partial x}{\partial e(p_i)} \frac{\partial e(p_i)}{\partial p_i} - t \frac{\partial I(p_i + p_w)}{p_i} = 0 \text{----------(ii)}$$

$$\frac{\partial x}{\partial p_i} + \frac{\partial x}{\partial e(p_w)} \frac{\partial e(p_w)}{\partial p_i} - t \frac{\partial I(p_i + p_w)}{p_w} = 0 \text{----------(iii)}$$

$$\frac{\partial x / \partial p_i + \partial x / \partial e(p_i)}{\partial e(p_i) / \partial p_i} + \frac{\partial x / \partial p_i + \partial x / \partial e(p_w)}{\partial e(p_w) / \partial p_i} = \frac{\partial I(p_i + p_w) / \partial p_i}{\partial I(p_i + p_w) / \partial p_w} - - \text{(iv)}$$

Here e reflects productive government expenditure and t represents transformation. The equation (iv) satisfies the equal marginal principal of private production plus public production equals the total finance for private and public production. This theoretical assumption is efficient when government borrowing has been fixed only for private and public finance. In general, private and public finance stimulate economic growth. But we found evidence here that even if the public finance is organized through government borrowings, it is also efficient and increases production efficiency of a firm.

II. **Theorem:** Government finance is not efficient when government borrowing is fixed only for increasing public finance and expenditure.

Proof: In this assumption, e reflects productive government expenditure and t represents transformation. The assumption here that if the government expenditure is fixed only through borrowing from private sector, say private banks or financial institutions, the private investment will be hampered. As government expenditure increases, the scope of private investment will be reduced. In this situation, a firm will maximize it's production function as follows:

$$\max . x[p_{i,} e(p_w)]$$
$$\text{s.t. } \text{------} tI(p_i + p_w)$$

Rearranging the equations:

$$x[p_i, e(p_w)] - tI(p_i + p_w) = 0 - - \text{----------(i)}$$

The first order condition of the equations:

$$\frac{\partial x}{\partial p_i} + \frac{\partial x}{\partial e(p_w)} \frac{\partial e(p_w)}{\partial p_i} - t \frac{\partial I(p_i + p_w)}{p_i} = 0 \text{----------(ii)}$$

Rearranging the equations again (ii)

$$\frac{\partial x}{\partial e(p_w)} = \frac{\dfrac{-\partial e(p_w)}{\partial p_i}}{\dfrac{\partial x}{\partial p_i}} + t \frac{\partial I(p_i + p_w)}{\partial p_i} \text{----------(iii)}$$

Here the equation (iii) does not satisfy the equal marginal principal of private production plus public production equals the total finance for private and public production. The equation (iii) confirmed that the government borrowing is not efficient when government productive expenditure is fixed for only public finance. The increase in public finance taking loans from domestic sources will decrease private finance. It will incur deadweight loss and reduce output of the firm's production. To increase productive public expenditure and accordingly reduce private finance is not efficient. This process will not capture the economic distortion.

Conclusion

The only option for the government to capture deadweight loss and thereby improve production efficiency is to allocate resources for productive expenditures of both private and public finance when borrowing from domestic sources. Therefore, allocation of national budget from borrowing should be distributed carefully. It has the privileged that the government productive expenditure will not hamper economic growth in a country if the public choice of a country is to increase production efficiency and accordingly reduce economic distortion. This research suggests that it is better to increase nonproductive government expenditures collected from tax revenue instead of borrowing from domestic financial institutions to support budget deficit. Any government borrowings for productive expenditures are efficient to private and public finance and accordingly absorbed economic distortions.

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