Investigation of the Effects Of Tax Revenues And Government Expenditure On Gross National Product

Hashem Mozaffari and Rasim Nabiyev

1PhD Student, Department of Sharg-Shenasin Azerbaijan National Academy of Science
2Associate Professor Department of economic Baku University (BU), Baku, Azerbaijan.

Abstract: Government expenditures and collecting tax from individuals and enterprises can be referred as tools of fiscal policy. Government expenditures refer to those expenditures which are collected annually by government through purchasing variety of goods and services. And tax revenues are those revenues and incomes, which government according to law obtains from individuals and legal entities for financing public expenditures and tax is a type of revenue that government obtains from individuals and legal entities according to law, in order to finance public expenditures. In the condition of balanced budget, the government collects fees as tax revenues and spends the same amount. But their influences upon economy and national product are not of the same size. Increasing effects of government expenditure on gross national product is more than its decreasing effects on it. In other words, government spending escalates gross national product and on the other hand, increasing of tax revenues from families and enterprises entails reduction of purchasing power and consequently decreasing gross national product.

Key words: Tax, government, income, product, GNP, GDP, tax revenues, government expenditures, gross national product, Government expenditures, expenditure, budget, national income, economy.

INTRODUCTION

The role of government in economy and its size are of the main issues. Related to this issue, diverse points of views have been presented by different economists and schools. Adam Smith, David Ricardo, John Batist, three theorists of classical school believed that governments’ economic activities should be limited and they prohibit government from interference in mechanism of market.

The part of government has evolved in economic system by passing of time and development of societies, by the advent of industrial revolution and development of industries and increase of the size of enterprises and the shares of great enterprises in market, creating monopolies, gaining further knowledge about external economic and non-economic consequences of market activities, growth of volume and amount of triplet tasks intended by classical theorists. And recent theories related to economy and economic activities were proposed.

The consequences of these evolutions entailed establishing a new branch in economy, which was designated as public sector economy or state sector economy. Gross national product that is to say, final value of produced goods and services in a certain period of time, is used as one the main indicators of assessing economic development. Government expenditure refers to the expenditure which is collected by government annually through purchasing variety of consumer and capital goods and services. And tax revenues are those revenues and incomes, which government obtains from individuals and legal entities for financing public expenditures in complying with law. Among factors which have major influence on gross national product, we can refer to government expenditures and tax revenues.

The Reasons for Increase of Government Expenditures:

By development of state sector, the charges of government increased as well. The factors which raised and are still raising the charges of government are presented in the following:
1. The outbreak of industrial revolution and its continuance in different countries.
2. War, civil war and national defense and economic and financial crises.
3. Increase of population and urbanization and subsequently rise of urban service.
4. Inefficiency of market mechanism and necessity of government intervention (Taghavi, 1985).
5. Raise of people’s incomes and in turn their requests for further welfare facilities in order to gain greater satisfaction.
6. Increase of revenue resources of governments and undertaking administrative affairs and providing public goods (Karimi, 1996).
7. Growth of expectations about government’s obligations, among members of society.

Corresponding Author: Hashem Mozaffari, PhD Student, Department of Sharg-Shenasin Azerbaijan National Academy of Science, No. 377, Nastearan6 Alley, Vesal St., Karshenasan Ave. (P. O. Box 56158 54578 ).
E-mail: mozaffarihashem@yahoo.com; Tel, Fax: +98-451-7728012.
Generally, government expenditure is classified into transfer, consumption and capital expenditure. Some of the government expenditure is financed through tax revenue and some from the resources which are provided by the income of that expenditure (Davani, 2005).

For example:

a. Some of expenditure is “compensate for itself, with the sense its expenditures is financed after exploitation, through selling water, electricity and phone line … to people.

b. Some of the expenditure is “economically” self-financing. Such as expenditure for creating roads, it is financed through transfer to agricultural products.

c. Some of the expenditure is social expenditure and is financed socially. Such as library, Parks and…

d. Some of the expenditure is that which prevent further expenditure in the future, like campaign with infantile paralysis and tuberculosis.

However, development of numerous problems in society has made theorists think about solving these problems by government. Criteria for assessing the role and the amount of government intervention consist of types of expenditure, their combination and their amount. Nevertheless, these criteria are not absolute and are assessed on the basis of some indicators. Additionally, in order to respond at least to their primary needs and expenditure, it is required that fiscal resources to be one of the necessary resources for covering tax revenues (Jafari Samimi, 2008).

**Tax Revenues and its Objectives:**

In economic sciences’ lexicon, tax revenue is an amount that government legally receives from the income and assets of legal entities or individuals and after settling it to the treasury account, uses it for public expenditure and safeguarding the economic, political and social public interests of the country, (Farhang, 2001).

According to the authorities of economic and public finance issues, governments, by collection of the least tax, look for the following goals in their budgeting and financial policymaking:

1. Tax revenues as source of state’s income for compensating for expenses/charges.
2. Using tax as one of the instruments in fiscal policy.
3. Applying tax for budget deficit when government expenditure increases.

Optimum allocation of resources, economic development and fair distribution of income, creating employment, stability of economy and preserving general level of prices, improving international trade, payment balance are of significant economic goals and tasks of governments, providing security, equity and political development and so on are of non-economic objectives and obligations of governments. In order to fulfill the above duties and other duties, governments have to spend and spending requires income resources. One of the governments’ financing resources is tax revenues. According to a large number of authorities, the more taxes’ portion in financing government expenditure the better and it prevents considerably from undesirable economic effects. Consequently, in developed countries, in addition to financing government expenditure, tax revenues have a fundamental role as a fiscal policy tool. In developing countries, however, tax does not have such a position.

Government revenues generally are earned through tax and non-tax resources. The revenue obtained from selling and presenting different kinds of goods, monopoly services by government and receiving its money besides tax revenues, is of government revenues’ constituents. Overdependence on mono-product incomes such as oil income, regarding the sharp fluctuations of oil prices in the global market, in many cases it has led to instability of the whole revenues of the government, as a result it has led to economic and sometimes political instabilities of countries.

The total tax revenues of government are divided into two groups of indirect and direct tax. Indirect tax refers to the tax that is imposed on the consumers of goods and users of services and includes sales tax, consumption tax and import duties. Direct tax refers to the tax that government receives over on the income or the wealth people acquire. Income tax generally includes salary income tax, occupations income tax, corporation income tax, properties income tax and other incomes. Additionally, wealth tax consists of inheritance tax, annual property tax and stamp duty tax.

**The Influences of Government’s Expenditures:**

The expenditures of Government are of numerous influences, which among them four cases are referred in the following:

A. Influence on the level of product and employment.
B. Influence on the level and the way of distribution of income and wealth.
C. Influence on the level of general prices.
D. Influence on the level of gross national product.
The study intends to investigate the four effects of government expenditures and tax by government on the level of gross national product (Y) as instruments of fiscal policy. If in the three-part economy including household consumption and cost of investments of economical enterprises and government expenditure

\[
Y = C + I + G_c + G_i
\]  

Which in this model:
Y = national income = gross national product (Tafazoli, 1991).
C = consumption expenditure.
I = investment expenditures of private sector.
G_c = consumption expenditure of government sector.
G_i = investment expenditures of government sector.

For convenience the aggregate of consumer and capital expenditure of government are shown with G and the gross national product is indicated as follows:

\[
Y = C + I + G
\]  

The production model starts with defining total charges and total product. In an economy, total product is obtained by aggregation of the real product of final goods and services (Davani, 2005).

Furthermore, Y equals the aggregate of real incomes. Since each unit of the products will turn into a unit of income for one person, the sum of the expenditure in the three-part model will be introduced by the sum of household consumption expenditure, private sector investment expenditure and government expenditure. For achieving the production model, we define the consumption function. We propound this question: What is determinant in household consumption and spending?

The aggregate of families’ consumption (c) and saving (s) depends on the total income. That is, any change in income causes change in consumption and saving. Now, for showing the relation between consumption and income, we use the following consumption function:

\[
c = c + by
\]

In the above model, c (autonomous consumption) and b, as a positive coefficient, is indicator of the slope of consumption curve which is called marginal propensity to consume (MPC) and its value is between 0 and 1. The above consumption function is known as the Keynes Function (John Maynard Keynes). One of the specific characteristics of the above function is that along with increase of income, consumption goes up but not as much as income (Akhavi, 1999).

The above consumption function does not indicate the intervention of government. In other words, this function shows the consumers’ behavior apart from government. Now the question is that how we can show government’s intervention in the above consumption function?

Government needs income for spending. Since one of the government’s authorities is to receive income from the private sector, by levying tax, government earns the required income for spending from the families. Consequently, government’s intervention appears in the consumption function through the tax. If government receives the required income for spending from families and by consumption tax; the consumption function will be in the following form:

\[
c = c + b(Y - T)
\]

If we show the disposable income by \(Y_d\), we can write the above consumption function in the form below:

\[
c = c + b(Y_d)
\]

While

\[
Y_d = Y - T
\]

Now function consumption is substituted in product model:

\[
Y = c + b(Y - T) + I + G
\]
In the above equation \( \frac{1}{1-b} \) is called coefficient and is represented as \( k \). Since \( b \) is, the marginal propensity to consume, thus \( d \) is the marginal propensity to save. In this case, consumption coefficient is reverse of the marginal propensity to save. Inasmuch as \( 0 < b < 1 \), coefficient \( (k) \) is always greater than 1. It means that if government expenditure \( (G) \) and/or investment of private sector \( (I) \) increase or decrease, gross national product reduction or rise will be more than theirs.

\[
\Delta Y = \frac{1}{1-b} \Delta G
\]

\[
\Delta Y = \frac{1}{1-b} \Delta I
\]

\[
\Delta Y = \frac{-b}{1-b} \Delta T
\]

In the above model \( \Delta Y, \Delta G, \Delta I, \Delta T \) refer to the changes in gross national product, government expenditures, tax and investment of private sector.

It can be observed that changes in government expenditure and investment affect gross national product positively and changes in taxation affect gross national product negatively. It means that, with escalating government expenditure and investment, gross national product rises, whereas the growth of tax amount decreases gross national product. But the increasing impacts of government expenditure and investment are more than shrinking impacts of taxation.

In order to prove the above mentioned materials, numerical examples are presented:

1. Suppose our model only includes autonomous consumption and investment by private sector or enterprises:

\[
Y = C + I
\]

If no tax is collected by government and there is no spending, then we will have:

\[
Y = c + bY_1 + I
\]

\[
Y - bY_1 = c + I
\]

\[
Y(1 - b) = c + I
\]

If we suppose that we have:

\[
C = 100 \quad b = .8 \quad I = 200 \quad G = 0 \quad Y = ? \quad Y = 100 + .8Y + 200 + 0 \quad Y_-.8Y = 300 \quad Y = \frac{1}{1-.8} (100 + 200)
\]

\[
Y = 1500
\]

It is observed that if government collects more tax than it spends, the amount of gross national product will be 1500 units.

2. Now we assume that government enters in the flow of economy as exercises fiscal policy i.e. spending and collecting tax. Definitely, changes in government expenditure make changes in national income and gross
national product and any escalation in its amount causes more increase in national income. However, the tax that its basis and rates are determined by government and is collected from household will make the household’s demand and consumption amount and purchasing power, decrease. Yet, the amount of household’s income and demand and consumption would be affected more than the amount of tax (because of multiplier). For affirming the above points, first go through the effects of government expenditure, then the effects of tax separately.

a. The effects of government expenditure changes on gross national product:

Government expenditure is one of the government’s fiscal policy tools which increase has a positive effect on production. Any increase in government expenditure causes more payment to families and this makes the disposable income increase. As a result, the amount of household’s demand and consumption rises and in long-term, this can cause the total production to increase. Moreover, production rise causes the economic and national income to grow.

According to the previous three-part model:

\[ Y = C + I + G \]

\[ Y = c + b \beta + I + G \]

\[ Y - b \beta = c + I + G \]

\[ Y(1 - b) = c + I + G \]

\[ Y = \frac{1}{1 - b}(c + I + G) \]

It was observed that the positive sign in government expenditure (G) with the multiplier causes extreme effects of government expenditure on gross national product.

Numerical example 2:
Suppose we have:

\[ C = 100 \]
\[ b = 0.8 \]
\[ I = 200 \]
\[ G = 150 \]

Answer:

\[ Y = 100 + 0.8y + 200 + 150 \]
\[ Y - 0.8y = 450 \]
\[ Y (1 - 0.8) = 450 \]
\[ Y = \frac{1}{1 - 0.8}(450 \text{ )} \]
\[ Y = \frac{1}{0.2}(450 \text{ )} \]
\[ Y = 2250 \]

It is shown that only 100 units of rise in government spending adds 500 units to its previous value (\( y=1500 \)).

b. The impact of tax revenues’ changes in gross national product:

Taxation is one of the tools of fiscal policy that its escalation converse to government spending has negative impact on national income. Any increase in collecting tax from households by government causes abatement in disposable income of household. Subsequently declines amount of household’ consumption and demand at the micro level and national income at the macro level (Karami, 2001).

If we consider the three-part model once more without government, we will have:

\[ Y = C + I \]

Government levies tax over households’ income:
\[ C = c + byd \]
\[ yd = Y - T \]
\[ Y = c + b(Y - T) + I \]
\[ Y = c + by - bT + I \]
\[ Y - bY = c - bT + I \]
\[ Y = \frac{1}{1 - b}(c - bT + I) \]

It can be observed that negative sign of tax (-T) with \( \frac{-b}{1-b} \) multiplier on national income have more reducing influences on gross national product.

Numerical example 3:

Suppose we have:
\[ C = 100 \]
\[ b = 0.8 \]
\[ I = 200 \]
\[ T = 100 \]
\[ Y = ? \]

Answer:

\[ Y = 100 + 0.8(Y - 100) + 200 \]
\[ Y = 100 + 0.8Y - 0.8 \times 100 + 200 \]
\[ Y = 100 + 0.8Y - 80 + 200 \]
\[ Y - 0.8Y = 220 \]
\[ Y(1 - 0.8) = 220 \]
\[ Y = \frac{1}{1 - 0.8}(220) \]
\[ Y = 1100 \]

It is observed that collecting 100 units of tax by government decreases the production more than that amount (400 units). The comparison of 100 units of government expenditure with 100 units of tax revenues, despite having budget balance, has three different effects:

- First increase of government spending made gross national product to augment.
- Second escalation of tax reduced gross national product.
- Third the effect of 100 units of rise in government spending and tax revenues indicates that impact of government expenditure escalation on gross national product is more than effect of tax reduction on gross national product. In a way that, because of multiplier of government expenditure, 1 unit of increase in government expenditure, enhances gross national product 5 times. Conversely, due to tax multiplier, 1 unit of increase in tax revenues decreases gross national product 4 times.

c. Impact of simultaneous changes of government expenditure and tax revenues on gross national product:

Now we go through simultaneous changes of government expenditure and tax revenues on gross national product. If balanced budget, government spending and tax revenues are assumed equal:

\[ B = G = T \]

National income model in three-part economy can be presented as follows:

\[ Y = C + I + G \]
\[ y = c + b(y - T) + I + G \]
\[ Y = c + by - bT + I + G \]
\[ Y - bY = c - bT + I + G \]
\[ Y(1 - b) = c - bT + I + G \]
\[ Y = \frac{1}{1-b} \left( c - bT \right) + I + G \]

The above model is supplemented model, mentioned in the paragraphs (a) and (b), if it is simplified we will have:

\[ Y = \frac{1}{1-b} \left( G - \frac{b}{1-b} (T) + I \right) \]

It means that any change in gross national product, without making any change in investment is equal to the amount of changes in expenditure and tax revenues, with related coefficients (Taghavi, 2008). Never the less, they will never have the same size of influence, that is to say, (1 unit) change in government expenditure and (1 unit) change in tax revenues will not affect gross national product to the same amount. In order to confirm the above point, a numerical example is presented (Branson, 1979).

Numerical example:
If the government collects 100 units of tax and spends it again, what will be its effect on gross national product?

\[ G = T = 100 \]

Budget balance:
\[ B = G = T \]

\[ y = c + \frac{b}{1-b} (y-T) + I + G \]

\[ Y = 100 + .8 (Y_{100}) + 200 + 100 \]
\[ Y = 100 + .8Y - 80 + 200 + 100 \]
\[ Y - .8Y = 320 \]
\[ Y(1-.8) = 320 \]
\[ \frac{Y}{.2} = 320 \]
\[ Y = 5(320) \]
\[ Y = 1600 \]

It is observed that national product in this case, is more than the situation in which the government does not collect any tax and does not spend, to the extent of government expenditure.

It can be concluded that:
2. Unbalanced budget multiplier is function of MPC.

Multiplier \( 1 = MPC + MPS \)

\[ K = \frac{1}{1-MPC} = \frac{1}{MPS} \]

The major conclusion is that any change in taxation and government expenditure affects gross national product and even simultaneous changes in G and T with equal proportion not only counteract each other but also have more influence on gross national product (GNP) at least to the extent of government spending (Jafar samimi, 1995).

Of course, the effects of economic policies of government apart from above mentioned points depend upon economic atmosphere and situations of society, therefore economic policymakers can choose to apply appropriate tools and fiscal policy for achieving necessary economic objectives.

REFERENCES