Fiscal Policy Effects on Economic Growth: 
Short Run vs Long Run

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Abstract

There are two important aspects to take into account while analysing fiscal policy effects on economic growth. First, it should be made clear whether Keynesian short-run or classical long-run effects are the object of interest. Second, the relations between different fiscal and macroeconomic variables should be identified – all possible simultaneous changes in other fiscal and macroeconomic indicators should be taken account of while analysing the effect of any fiscal policy decision on economic growth. As demonstrated in this article, Keynesian principles do not seem to hold as fiscal policy cannot have any remarkable impact on economy in a short run. But it is confirmed that in the long run, expansionary fiscal policies are not beneficial to the economy generally. For a government it is essential to recognise that changes in different revenue and expenditure categories may have the same impact on budget balance and on total government revenue and expenditure but they have different effects on economic growth in the long run. For example, fiscal policy decisions have different effects depending on whether to save increased revenue, to spend it for current expenditure or to use it for public investment.

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1. Introduction

“Perhaps the most fundamental achievement of the Keynesian revolution was the reorientation of the way economics viewed the influence of government activity on the private economy. Before Keynes, it was a commonplace that government spending and taxation were powerless to affect the aggregate levels of spending and employment in the economy; they could only redirect resources from the private to the public sector.” (Blinder, Solow 2005).

“With a classical supply curve, every dollar increase in real government spending is offset by a dollar reduction in private spending, so crowding out is complete” (Dornbusch, Fischer, Startz 1998).

Do these statements hold in real life? Generally, Keynesian approach is considered to be valid in the short run where prices are given and output and
employment depend on the demand. The supporters of that school believe that lower taxes and bigger government consumption have a positive impact on economy. On the contrary, the favourites of classical school say that it cannot be sustainable in the long run where prices adjust and where output and employment are at their potential levels.

These approaches are tested in this article to see if and how fiscal policy decisions affect economy, specifically GDP growth. Keynesian analysis is based on theoretical analyses, which later on provides for understanding of empirical analysis of long-run classical effects.

The theoretical part relies on national accounts, which is a simple way to show that GDP components (consumption, investment and net export) can be further divided into sub-components whereas most of these sub-components are fiscal policy indicators – different government sector revenue and expenditure categories. It is equally important to note that these fiscal indicators are interrelated with each other (for example, budget deficit is the gap between total revenue and total expenditure) and that they have a direct impact on other macroeconomic indicators (on private consumption, current account balance, GDP).

In the long run, there are so many additional factors (human capital quality, price level, initial economic stance, technological development etc) that influence economic growth. This is due to the fact that not only the relationships of the same time period matter here but rather the consequences of the events of one period on the events of the following period. The longer the period, the more complicated it becomes to analyse the relationships between the events of the current period and the ones of the preceding and following periods. No theoretical model can perfectly explain why things are as they are. Therefore, empirical approach is used to find out fiscal policy effects on economic growth in the long run.

Altogether, the key is hidden in understanding that if one is analysing the effect of any fiscal policy decision on economic growth one should take account of all possible simultaneous changes in other fiscal and macroeconomic indicators. For example, the effect of budget balance on growth is not necessarily the same at all levels of revenue and expenditure. Or, the effects of government total expenditure depend on whether there is increase in government wage costs, social benefits, government investment or any other expenditure category. Also the opposite is valid. If one is interested in impacts of private consumption on growth it is absolutely necessary to find out whether changes in consumption are due to changes in taxes, social benefits, private saving or anything else.

## 2. Short-Run Fiscal Policy Effects

Starting with theoretical analysis of the short-run (or Keynesian) fiscal policy effects on economic growth it is worth to base on national accounts. In national accounts the total output or GDP is the sum of private consumption C, government consumption G, total investment I and net export (X - M):

\[ Y = C + G + I + (X - M) \]  

(1)

All of those GDP components can be further divided into several sub-components. That can be done the way where many of these sub-components are the indicators of fiscal policy. Before explaining the mathematical relations between GDP and fiscal indicators it is helpful to see how the fiscal indicators themselves are related to each other.
Probably the most analysed fiscal measure is the budget balance, or financial balance \((D|S)\), which can be deficient if negative or in surplus if positive. The importance of that can be imagined as it indicates through the borrowing need the sustainability of government finances and hence that of fiscal policy, which in turn gives very relevant signals to agents of the economy. Budget balance is the difference between government total revenue and total expenditure (spending):

\[
D|S = Rev - Exp
\]  

(2)

Thus, while analysing the effects of budget balance on economic growth the revenue and expenditure levels should not be ignored. There are two main reasons for this. First, if expenditure exceeds revenue the deficit can be considered just as an alternative type of financing (through borrowing, issuing bonds or using reserves from the previous periods) beside ordinary revenue. If, on the contrary, revenue exceeds expenditure, the surplus may be interpreted as an extra outlay of funds (repayments of loans or increasing own reserves, for example) in addition to the ordinary expenditure. Second, the impact of budget balance is not necessarily the same at all levels of revenue and expenditure – it should be analysed whether, for example, the deficit of 3% of GDP has the same impact on growth on low and high levels of revenue and expenditure or not.

As said, not only the gap between revenue and spending but also the levels of revenue and spending have effects on the economy. The size of government revenue and expenditure indicates the rate of government’s intervention in the private sector’s actions. This is done through collecting taxes, giving subsidies and social benefits, making public investments etc. So, by affecting private sector actions government clearly affects the macroeconomic performance. The size of spending (often also called the role of government, for example) has been considered more important in this regard mostly. This can be understood, as the level of expenditure is higher than the level of revenue, i.e. there is a deficit, usually. Thus, revenue consideration could underestimate the rate of government’s intervention.

But also different components of government expenditure have different effects. Expenditure can be broken down to government investment \(I_{\text{gov}}\), social benefits to households \(E_{\text{social}}\) (among social benefits also transfers to nonprofit institutions and subsidies to enterprises are considered), grants to other countries \(E_{\text{grants}}\), purchases of goods and services \(E_{\text{purch}}\), wage costs \(W_{\text{gov}}\) and interest payments \(E_{\text{int}}\):

\[
Exp = I_{\text{gov}} + E_{\text{social}} + E_{\text{grants}} + E_{\text{purch}} + W_{\text{gov}} + E_{\text{int}}
\]  

(3)

Similarly, different revenue categories have different effects. These categories are direct taxes \(TD\), indirect taxes \(TI\), grants \(Rev_{\text{grants}}\) (from abroad mostly) and non-tax revenue \(Rev_{\text{nontax}}\):

\[
Rev = TD + TI + Rev_{\text{grants}} + Rev_{\text{nontax}}
\]  

(4)

Going back to equation (1) and its relations to the fiscal indicators, first a simplification is being done, according to which government consumption equals to spending on purchasing goods and services:

\[
G = Exp_{\text{purch}}
\]  

(5)

Private consumption is the difference between household disposable income \(YD\) and private saving \(S_{pr}\):

\[
C = YD - S_{pr}
\]  

(6)
Household disposable income is gross national disposable income GNDI less government consumption and government saving S_{gov} where GNDI is the sum of GDP, private sector’s foreign income Y_{f.pr} and government’s net grants from abroad and where government saving equals to the budget balance plus government investment:

\[
Y_D = GNDI - G - S_{gov} = Y + Y_{f.pr} + (Rev_{grants} - Exp_{grants}) - G - (D|S + I_{gov})
\]

(7)

Taking account of the relations (7) and (2)-(5) the equation (6) can be rewritten as follows:

\[
C = Y + Y_{f.pr} + (Rev_{grants} - Exp_{grants}) - G - (TD + TI + Rev_{grants} + Rev_{nontax} - I_{gov} - Exp_{social} - Exp_{grants} - G - W_{gov} - Exp_{int} + I_{gov}) - S_{pr} =
\]

\[
= Y + Y_{f.pr} - TD - TI - Rev_{nontax} + Exp_{social} + W_{gov} + Exp_{int} - S_{pr}
\]

(8)

Total investment in equation (1) is the sum of government and private investment:

\[
I = I_{gov} + I_{pr}
\]

(9)

Net export equals the current account balance CAB less private sector’s foreign income less government’s net grants from abroad:

\[
X - M = CAB - Y_{f.pr} - (Rev_{grants} - Exp_{grants})
\]

(10)

Current account balance is the gap between total saving and total investment whereas government saving less government investment gives budget balance:

\[
CAB = S - I = S_{pr} + S_{gov} - I_{pr} - I_{gov} = D|S + S_{pr} - I_{pr}
\]

(11)

Taking account of the relations (11) and (2)-(5) the equation (10) can be rewritten as follows:

\[
X - M = (TD + TI + Rev_{grants} + Rev_{nontax} - I_{gov} - Exp_{social} - Exp_{grants} - G - W_{gov} - Exp_{int}) +
\]

\[
+ S_{pr} - I_{pr} - Y_{f.pr} - (Rev_{grants} + Exp_{grants}) =
\]

\[
= TD + TI + Rev_{nontax} - I_{gov} - Exp_{social} - G - W_{gov} - Exp_{int} + S_{pr} - I_{pr} - Y_{f.pr}
\]

(12)

Placing the relations (8), (9) and (12) into equation (1) we get the following relationship:

\[
Y = Y + (TD - TD) + (TI - TI) + (Rev_{nontax} - Rev_{nontax}) + (Exp_{social} - Exp_{social}) +
\]

\[
+ (W_{gov} - W_{gov}) + (Exp_{int} - Exp_{int}) + (G - G) + (I_{gov} - I_{gov}) + (I_{pr} - I_{pr}) +
\]

\[
+ (S_{pr} - S_{pr}) + (Y_{f.pr} - Y_{f.pr})
\]

(13)

It appears from the equation that the movements in fiscal indicators have no impact on GDP of the same time period (the same goes for non-fiscal indicators like private investment, private saving and private foreign income). In other words, increase in direct taxes, for example, lowers private consumption but improves net export in the same amount, hence leaving total GDP unchanged. The equation does not include government grants both on revenue and expenditure side – due to the fact that these have contrary effects on net export itself already (see equation (12)).
Thus, the level of economic development must depend on some other factors, on factors that have emerged in the past obviously. And, as the main interest now is the fiscal policy’s impact on economic growth rather than on nominal GDP of the same period and in order to avoid the problem of causality the inter-temporal approach could be used, where GDP of the current period depends on the GDP of the previous period and hence on the components and sub-components of the GDP of the previous period:

\[ Y_t = F (Y_{t-1}) = F \left[ C_{t-1}, G_{t-1}, I_{t-1}, (X-M)_{t-1} \right] = F (Rev_{t-1}, Exp_{t-1}, ...) \]  (14)

Dividing both sides of the function (14) by GDP of the previous period and taking account of the relationships above we get that GDP growth \( y \) (interpreted as real growth here) is the function of different fiscal and other indicators measured relative to GDP:

\[ y = F (TD, TI, Rev_{\text{non-tax}}, Rev_{\text{grants}}, Exp_{\text{social}}, W_{\text{gov}}, Exp_{\text{int}}, G, I_{\text{gov}}, Exp_{\text{grants}}, I_{\text{pr}}, S_{\text{pr}}, Y_{f.pr}) \]  (15)

Still, even when using the inter-temporal approach, fiscal policy cannot have effects on economic growth remarkably different from zero in the short run, which lasts some months only. Table 1 concludes the theoretical short-run approach.

### Table 1. Short Run Fiscal Policy Effects on GDP

<table>
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<tr>
<th></th>
<th>YD</th>
<th>D/S</th>
<th>C</th>
<th>G</th>
<th>I</th>
<th>X-M</th>
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<tr>
<td>G</td>
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</tr>
</tbody>
</table>

GDP in the last column is the sum of C, G, I and (X-M) being therefore not changed due to variable changes.

### 3. Long-Run Fiscal Policy Effects

A long run in an economy enables a lot to happen. There are so many different factors, so many interrelations between them and so many variations over time which have to be taken account of if one wants to explain economic events. These factors need not necessarily be purely economic ones – these are as well social, cultural, environmental, geographical etc. The longer the period, the more complicated it becomes to analyse the relationships between the events of the current period and the ones of the preceding and following periods. No theoretical model can perfectly explain why things are as they are. Therefore, empirical approach is used here to find out fiscal policy effects on economic growth in the long run.

The empirical analysis reflects a cross-country panel study with 52 countries under observation. The country choice is world-wide including examples from both the
European Union old and new member states as well as from other advanced, transition and developing countries.

The sample is defined as slipping ten-year-averages for each country. The current time t is six years ahead of the previous period t-1. For example, the average growth of 1976-1985 depends on the average explanatory variables of 1970-1979.

Table 2. Fiscal Policy Indicators and GDP Growth in 1990-ies by Countries

<table>
<thead>
<tr>
<th></th>
<th>y</th>
<th>D/S</th>
<th>Revenue</th>
<th></th>
<th></th>
<th>Expenditure</th>
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<td>52.5</td>
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### Table 2 continued

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<th>Other Revenue</th>
<th>Total Expenditure</th>
<th>Op.</th>
<th>Exp_soc.</th>
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**Notes:**
- Growth y is real GDP growth rate and average for 1996-2005.
- Fiscal indicators are shares of GDP and averages for 1990-1999.
- Deficit (D|S) is the gap between total revenue and total expenditure.
- Other revenue is non-tax revenue and grants.
- Operating costs (Op.) are spending on wages and consumption.
- Other expenditures are investment, interest payments and grants.

The main data sources are government finance statistics and international financial statistics yearbooks of the International Monetary Fund. In addition, the data provided in Eurostat’s database NewCronos are used, but only where they are comparable with the IMF data (for example, Eurostat’s data on GDP growth and budget balance for old EU member states). Very often the methodologies are too different to combine several sources. Non-fiscal data stem from databases of the United Nations and International Labour Organization. Also, the freedom indexes of the Heritage Foundation are used.

The data are for general government and not for central government only. In a few cases where the data (or part of them) for the sub-national government are missing and the size of the sub-national government can be assumed to be irrelevant, the general government is equalised with central government (or with central plus regional governments).

There are several shortcomings in the quality of fiscal data, which have to be taken into consideration. First, the classification of data may not always be correct in the sources. Second, the cash based approach has been used in fiscal statistics mostly, differing thus from other macroeconomic statistics which is on accrual basis. Third, there are some consolidation issues. For example, inside the central government the social security contributions have been consolidated (eliminated) but those paid by sub-national government to central government are not.

Fiscal policy is a major government policy to direct the developments in the society and, more narrowly, in the economy. Fiscal policy of one period shapes the nature of the economy in the following time periods. One could distinguish between fiscal decisions made by government and fiscal indicators which government cannot directly control. The example of the former is setting tax rates and tax base as well as the sizes of social benefits. Some of the ones not controlled by government could nowadays be interpreted as those being called automatic stabilizers. These are the changes in fiscal variables due to the changes in economic environment and not due to someone’s decisions – during economic regression the total spending on social benefits increases and the tax revenue decreases; and vice versa if the economy booms. This
would happen even though the tax and benefit rates fixed by government remain the same.

Swedish and American economist Bent Hansen (1958) has already in the middle of last century paid attention to the importance of the characteristics of variables (or “parameters”), although from a different angle obviously. According to him, the dividing line between the controllable and uncontrollable parameters (or “State parameters” and “endogenous variables”, respectively) is based on the fact that certain parameters, the uncontrollable, may be considered to be given by “nature”, while the remainder can be determined by those who determine economic policy.

However, this different nature of variables is disregarded in this article. This can be done because long-run averages of variables are being used. This allows, first, to assume that the effects of economic cycles are smoothed out. Second, it is not so easy to distinguish between variables which are directly influenced by government and which are not.

Another important element to be kept in mind once again is that all fiscal and other indicators reflected in equation (13) are interdependent. A change in taxes may bring along other revenue and expenditure changes via change in household disposable income (welfare), consumption, saving, etc. But it certainly and most directly brings along changes in total revenue of government and through that in budget balance. So, if government would want to decrease taxes but not worsen budget deficit it needs to increase non-tax revenue or decrease any expenditure category, and take into account that all those changes have effects on the economy.

“Furthermore, whether a given budget item is a State parameter or not, a change in this item will normally involve (or, be accompanied by) other (induced) changes in the budget, since most of the budget income and expenditure items are endogenous variables. This will mean that we cannot simply assume that one budget item is changed and all others … are kept constant, and then look for the incidence of this budget change” (Hansen 1958).

But placing all the interdependent fiscal variables into the equation imposes a risk that there exists multicollinearity between them and that not all parameters of them are significant. However, the problems of multicollinearity and significance are considered irrelevant in order just to demonstrate that the decomposing of government revenue and expenditure into single revenue and expenditure categories does matter. Second, even if some revenue and expenditure types were arithmetically correlated, it would not imply that the size of one is derived from the size of the other due to their economic essence. The fiscal variables are linked to each other arithmetically but not naturally.

Solving function (15) as a linear regression equation has the results shown in column 1 Table 3. Column 1 in Table 3 indicates that most of the government revenue and expenditure items have a significant effect on GDP real growth. However, these results should be interpreted with caution ($R^2=0.45$). Obviously, there are many other variables which can influence the growth, especially in the long run. These are variables for measuring initial level of economic development, price level and many institutional factors (democracy, education, health, structure of the economy, working time, technological development) as well as some dummy variables (time period, geographical location).

As shown in column 2, the growth is regressed on some additional variables like GDP deflator, initial GDP (GDP per capita PPP in the first year of period t compared to the one of USA) and property rights (based on the index of Heritage Foundation). The latter should reflect the stage of democracy in a given country. This
equation explains the growth effects better already. At the same time it is confirmed that some fiscal variables are not very significant for the model.

Table 3. Regression Results of Fiscal Policy on Economic Growth

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<td>0.0957</td>
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<td>Exp\textit{\textsubscript{int}}</td>
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Parameters are significant at 99% if not otherwise marked.
* marks significance at 95%.
** marks significance at lower levels.

Making further regressions it appears that in most of the variable combinations the parameters of non-tax revenue and interest expenditure (as well as of private saving, in fact) are of lower than 95% significance. Also the relevance of grant expenditure is not always clear. This enables to leave out those variables from the model without affecting the parameter values of other fiscal variables remarkably, even though these variables are mathematically interrelated (see equations (2)-(4)).

Columns 3 and 4 of table 3 confirm that the quality of the model can be increased if the variables of insignificant parameters are left out whereas the parameter values of other fiscal variables do not change drastically. Note that this may easily happen if some other variables of function (15) would be left out from the model. This would be exactly for the reason of direct arithmetical relationship where these variables do not exist independently from each other. Secondly, it would not give information about total revenue and total expenditure of government, for example. This way, \textit{R}^2 can be raised to 0.63.
Revenue Effects

The summary of several regressions allows claiming that the parameter value of direct taxes is between 0.08 and 0.15, the one of indirect taxes is between 0.08 and 0.2 and the one of grant revenue is between 0.5 and 1. The parameter value of non-tax revenue is between 0.01 and 0.05 though it is not always statistically significant. The signs of all revenue parameters are positive, i.e. raising any type of revenue by government brings along faster GDP growth.

However, except for grants the parameter values are quite small. For example, one percentage point higher direct taxes would add to the growth rate about 0.1-0.15 pp. Or, decreasing indirect taxes from 20% of GDP to 15% of GDP means slower growth in the amount of 0.4-1 pp. The importance of assistance to the developing countries is reflected by the fact that one percentage point higher grants bring along additional growth of 0.5-1 pp.

As explained by equation (4), a change of any type of revenue category results in a change of total revenue in the same amount. So, it clearly matters what type of revenue to raise in order to improve the budget balance and at the same time achieve the best results on GDP growth. If a government wishes to increase budget revenue it should choose indirect taxes instead of direct taxes as raising this category has slightly more positive effects on growth.

Furthermore, changes in household disposable income (and thus in private consumption) and in current account balance, which are caused by changes in taxes of the same time period, have simultaneously the same effect on growth as have the respective changes in taxes (see Table 1).

In previous literature the effects of taxes on economic growth are not so clear. Generally, the effects of direct taxes (taxes on income and property distorting the decision to invest, distortionary taxes) and of indirect taxes (consumption taxes) are being distinguished though also consumption taxes may be distortionary through the influences on investment, education and training, technical progress (Gemmell 2004, Hermes and Lensink 2004). Also, most of the empirical analyses have been made for the OECD countries only. Leibfritz, Thornton and Bibbee (1997) made an attempt to replicate some of the cross-country studies on the relationship between taxation and growth for OECD countries. They found that both total tax revenue to GDP and direct taxes are negatively related to the rate of growth (10 percentage point higher tax rate is accompanied by roughly 0.5 percentage point lower rate of growth).

Also Plosser (1992) has found a significant negative correlation between the level of taxes on income and profits (as a share of GDP) and growth of real per capita GDP. King and Rebelo (1990) simulated changes in the income tax by applying an endogenous growth model and found that an increase from 20 per cent to 30 per cent reduces the rate of growth by 2 percentage points. In a Solow-type neo-classical growth model, the tax effect is much smaller and the welfare loss is equivalent to a permanent drop in real consumption by only 1.6 per cent.

Easterly and Rebelo (1993a) found that the level of taxes is not significant in the new growth theory-type regressions. In their opinion, the reason why Plosser found significant effects is the strong positive correlation between the level of taxes and the initial level of income: tax to GDP ratios are relatively low in poorer countries, which then start to catch up (the convergence effect). They found that only income tax rates have a significant negative effect on per capita growth, but no other tax measures do. The same is presented in another paper by them (Easterly, Rebelo 1993b).

Slemrod (1995) found positive, negative and no correlations between taxes and the level of per capita income depending on the specification of parameters and the
countries included. He found a positive correlation between the level of tax revenue to GDP ratio and the level of real GDP per capita across countries in particular when developing countries (with lower GDP per capita and lower tax rates) were included in the sample. For OECD countries alone, he found no positive or negative relationships between the level of tax rates and the level of GDP per capita. By looking at the relationship between changes in tax rates and growth in OECD countries, he found a negative correlation.

Koester and Kormendi (1989) found in a cross-country analysis for the 1970s a significant negative effect of the marginal tax rates on the level of real GDP per capita but not on the growth rate. Holding average rates constant, a 10 percentage point decrease in marginal tax rates would increase per capita income in an average industrial country by more than 7 per cent and in an average developing country by more than 15 per cent. Thus, a revenue-neutral tax reform that reduces tax progressivity would raise income and lead to an upward shift in the growth path.

The complexity of the effects of tax changes (tax reforms) was expressed already by Hansen (1958). He discussed that a revision of the tax structure from direct to indirect taxation would in itself involve a decrease in the value of money and increase income inequality. Therefore, there should be other results of such tax reform, which are considered to be so favourable that they more than compensate for the disadvantage of a reduced value of money. These results are enhanced by economic incentives like increase in the supply of labour and saving. However, he claims, the increase in the incentives is uncertain.

Regarding the grant revenue, McGillivray and Morrissey (2004) claim that foreign aid supports growth in developing countries because it increases government spending, including public investment. However, they admit that if aid is spent on some non-productive expenditure, then the effects on growth are not so clear. Also, they have found that aid may increase fiscal deficit, which in turn may constraint growth.

Gemmell (2004) has summarised many empirical works of other researchers (some have been mentioned previously) whereas he has divided them into three generation studies depending on the econometrical methods used, but more importantly depending on whether the simultaneous effects of different revenue and expenditure categories as well as the budget deficit decisions have been taken into account or not. Regarding taxation, there have been found negative effects (Marsden 1983, Engen and Skinner 1992, Fölster and Henrekson 1999) or no significant effects (Mendoza, Milesi-Ferretti and Asea 1997, Agell, Lindh and Ohlsson 1997 and 1999). If looking at the so-called third-generation studies (examining at least two of tax/expenditure/deficit effects simultaneously), then these have shown negative effects of taxes (Kocherlakota and Yi 1997, de la Fuente 1997), negative effects of distortionary taxes and no effects of other taxes (Kneller, Bleaney and Gemmell 1999, Bleaney, Gemmell and Kneller 2001) and negative effects for OECD countries but positive effects for low-income developing countries (Miller and Russek 1997).

The literature quite clearly points out that most of the analyses have found negative effects of taxes (or no significant effects) on economic growth. This seems to be due to what has been explained before, that no simultaneous effects of expenditure and deficit have been taken account of. Another reason is that mostly only developed countries have been under consideration. The results in this article are remarkably different pointing out that actually all revenue categories have positive effects on growth.
Expenditure Effects

Regarding the growth effects of government expenditure types, the parameter value for spending on employees is between -0.15 and -0.3, for consumption spending between -0.25 and -0.35, for social benefits between -0.07 and -0.18 and for investment between 0.09 and 0.23. The parameter values for interest and grant spending are insignificant in many variable combinations between -0.01 and -0.07 and between 0 and 0.67, respectively.

The parameter signs are in most cases negative whereby especially remarkable are the parameter values for government’s own operating costs, i.e. wage and consumption spending. In both cases 5 percentage points higher spending relative to GDP would mean a slower growth rate in the amount of up to 1.5 pp. The effect of social benefits is more modest but it still enables to claim that bigger benefits slow down the GDP growth. Also interest spending has a negative effect reflecting the fact that debt financed public expenditure does not support growth.

As the opposite, public spending on investment is positively correlated with growth. Every one percentage point higher investment increases GDP in the amount of 0.1-0.2 pp in real terms.

Here again, according to equation (3), changing any type of expenditure category results in a change of total expenditure in the same amount. So, if a government wishes to cut budget expenditure it should do it on account of current spending, not on account of investment – the former would speed up economic growth but the latter would damage it.

In addition, it can be said that as a change in wage or social benefit expenditure causes simultaneously the same change and in the same time period (ceteris paribus) in private consumption (in household disposable income) and in current account balance (see Table 1), then the size of the effect of private consumption and foreign balance on growth is actually the same as is reflected by the parameter value of the respective budget expenditure variable. For example, raising social benefits from 10% to 20% to GDP also means that private consumption is higher by 10 pp and net export is lower by 10pp (which is nothing more than a change in initial GDP structure). All that has a consequence of about 1-1.5 percentage point slower annual growth in longer run.

The effects of government spending on economic growth have been analysed inter alia by Barro (1997). He has found a significantly negative effect on growth from the ratio of government consumption to GDP (measured exclusive of spending on education and defence) with the estimated coefficient of -0.136. He concluded that a greater volume of non-productive government spending – and the associated taxation – reduces the growth rate. “In this sense, big government is bad for growth.”

Slemrod (1995) has found a positive correlation between the level of government expenditure to GDP ratio and the level of real GDP per capita across countries and no relationships for OECD countries alone. But he found negative correlation by looking at the relationship between changes in expenditure ratios and growth in OECD countries.

Cashin (1994) developed an endogenous growth model of the influence of public investment, transfers and taxation on the rate of economic growth. Increased government spending on productive items like investments and transfers generate positive externalities that raise private investments and thus economic growth. However, additional spending has to be covered by additional taxes that reduce the marginal return to private capital and so dampen economic growth.

Gemmell (2004) explains that it is clearly important to distinguish between productive and non-productive expenditure. But it is not so clear whether and to what
extent should public spending on education and health be considered as productive expenditure because of their effects on human capital accumulation. Also, he wonders, could spending on social benefits provide for growth as some of it may affect saving rates, inequality, enforcement of property rights etc?

According to Gemmell’s summary of other works, there have been found negative effects of government consumption spending (Landau 1983 and 1986, Grier and Tullock 1989, Alexander 1990, Barro 1991, Barro and Sala-i-Martin 1995, Devarajan, Swaroop and Zou 1996), positive effects of consumption spending (Romer 1989, Devarajan, Swaroop and Zou 1996) or no significant effects of consumption spending (Dowrick 1993, Nazmi and Ramirez 1997, Mosley 2000); negative effects of social welfare (social benefits) spending (Korpi 1985, McCallum and Blais 1987, Castles and Dowrick 1990), positive effects of social welfare spending (Weede 1986, Nordstrum 1992, Persson and Tabellini 1994) or no significant effects of welfare spending (Landau 1985, Hansson and Henrekson 1994); positive effects of government investment spending (Barro 1989, Nazmi and Ramirez 1997) or no significant effects of investment spending (Landau 1983 and 1986, Barro 1991, Easterly and Rebelo 1993b); and effects of total expenditure being negative (Fölster and Henrekson 1999), positive (Ram 1986) or not existing (Agell, Lindh and Ohlsson 1997 and 1999). In addition, it has been demonstrated that investment in human capital like education (Barro and Sala-i-Martin 1995) and health (Devarajan, Swaroop and Zou 1996) have (positive) effects on growth.

The researches including simultaneously several fiscal variables have found that investment effects are positive if tax variables are included (Kocherlakota and Yi 1997) and that spending on consumption and social welfare has no effects while investment has positive effects if tax variables are included (de la Fuente 1997, Kneller, Bleaney and Gemmell 1999, Bleaney, Gemmell and Kneller 2001). It has been also proved that there are differences between OECD and developing countries (Miller and Russek 1997) – while taking account of tax effects the total expenditure has no significant effect and education has positive effects in OECD countries, and total expenditure as well as education, defence and social security spending have negative effects in low-income developing countries.

Quite a many previous researches have found the positive effects of public investment and negative effects of government consumption and social benefits on economic growth being in accordance with the findings of the current paper.

Budget Balance Effects

Equation (2) presents that budget deficit (or surplus) is the gap between government total revenue and total expenditure. Also, in previous sections it has been explained that the effects of total revenue and expenditure changes on GDP growth depend on which precise categories of revenue or expenditure have changed. Consequently, any change in budget deficit has exactly the same impact on growth as the relevant revenue or expenditure category which has caused the change in deficit has.

It appears that almost any deficit increase (or surplus decrease) has negative effects on growth. An exception here is investment – a deficit increase stemming from bigger investment fastens economic growth. If a government wishes to accelerate growth it should raise taxes, cut current expenditure or increase investment (ceteris paribus!).

Secondly, the deficit caused by higher current spending (wage costs, government consumption, social benefits) cuts growth rate more than the deficit caused by lower taxes. Thus a government should consider that improvements in budget
balance would contribute to growth more if these come through decreased current spending (especially through wage and consumption costs) rather than through increased taxes.

Thirdly, even if the deficit remains unchanged but the taxes and current expenditure are raised by the same amount the growth rate would slow down (due to smaller absolute parameter values of tax variables compared to those of current expenditure). In other words, if a government supports balanced budget policy it should take account of that faster economic development can be reached at lower levels of taxes and current spending.

For a government it is essential to recognise that changes in different revenue and expenditure categories may have the same impact on budget balance but they have different effects on economic growth. For example, fiscal policy decisions have different effects depending on whether the deficit cuts are achieved through increased revenue, reduced current expenditure or fewer public investments. Another example describing the importance at choice making is that a modest deficit at low levels of revenue and current expenditure can be more beneficial to growth compared to balanced budget at high levels of revenue and expenditure.

In the literature, there is some recognition of importance of those simultaneous effects, but there is a lack of empirical evidence. So Gemmer (2004) admits that the net effect on growth of increasing the budget deficit depends on the simultaneous change in taxes and/or expenditures – for example, increasing the fiscal deficit in conjunction with a reduction in distortionary taxes could be growth-enhancing if the ceteris paribus growth-retarding effect of an increased deficit is outweighed by the ceteris paribus growth-enhancing effect of reductions in distortionary taxes (the way of financing the extra deficit could be important here). Similarly, Hermes and Lensink (2004) have pointed on the relevance of these simultaneous effects.

Several researches have been made in the field of budget deficit reduction (often called as fiscal consolidation) and of its implications on the economy. McDermott and Wescott (1996) analysed the relationship between deficit reduction and economic growth based on data of industrial countries. All successful cases (continuous deficit cuts reflected by strong decrease in government debt) resulted in economic growth and declining unemployment rate in medium term. This economic development was based on the growth of investments rather than growth of consumption. On the contrary, unsuccessful cases resulted in recession and unemployment growth. Furthermore, deficit reductions tended to be relatively more successful if they were based on expenditure cuts but not on tax increases.

Alesina and Perotti (1996) have done similar work. They also found that deficit reductions that rely primarily on spending cuts on transfers and government wages have a better chance of being successful and have expansionary implications on the economy. On the contrary, deficit reductions which rely primarily on tax increases and cuts in public investment tend not to last and are contractionary for the economy.

Leibfritz, Roseveare and van den Noord (1994) investigated fiscal policy, government indebtedness and its implications for economic performance in OECD countries. They found that the improvement in fiscal deficit goes hand in hand with a broadly equivalent decline in the saving-investment balance of the private sector. This means that in most countries the total domestic saving-investment balances and external current balances remain broadly unchanged. They also showed that the impact of fiscal policy on the macroeconomic performance heavily depends upon the behaviour of interest rates. An expansionary fiscal policy is likely to push towards higher real and
nominal interest rates, have adverse effects on private-sector confidence and would slow down the economic growth.

The conclusions made by Richardson, Giorno and Thurman (1994) suggest that a slower than projected growth implies cumulative deterioration in deficits and would accelerate growth in the ratio of debt to GDP. The necessary fiscal consolidation would therefore be steep and have serious secondary effects on activity and unemployment, unless accompanied by a supporting easing of monetary conditions. Because of adverse effects on prices and wages, deficit reductions through higher taxes appear to be more costly in terms of output and employment than corresponding reductions in current expenditure.

Herd (1989) examined the impact of increased government saving, i.e. of decreased deficit or increased surplus, on the economy, looking at the consequences for five major economies of the OECD. The results of the various scenarios show that the deficit reductions will have beneficial effects on the economy in the long run. In the short run the fall in output would be significant but after five years the initial depressive effects of government expenditure cuts are largely overcome. Of course, the cumulated loss of output remains large but the investments and national savings are higher. This implies the possibility of the economy to produce more output than is realised in the long term.

Gupta, Clements, Baldacci and Mulas-Granados (2002) provided empirical evidence that in low-income countries fiscal consolidations were not harmful for long-term as well as for short-term growth in the period 1990-2000. Fiscal consolidations achieved through cutting selected current expenditures tend to cause higher growth rates than adjustments based on revenue increases and cuts in more productive spending (capital expenditures and non-wage goods and services). In post-stabilization economies, increases in public investment and public consumption tend to have more typical Keynesian effects being likely supportive for economic growth.


The universal finding in the literature that deficit is bad for growth is not fully confirmed in this article. First, if additional deficit is caused by public investment it is good for growth. Second, modest deficit in case of small government is better for growth than balanced budget in case of big government.

Other effects

The data used in this research include variable values for 1970s and 1980s for many countries though the coverage is not as large as for 1990s. If growth was regressed only on variables of those three decades (which means that the number of observations was reduced to 110), then it turned out that the parameter values of decade dummies were insignificant – it was not possible to claim that in different past time periods there has been fundamentally different growth rates.

The economic convergence effect is proved. Lower initial GDP (GDP per capita relative to the GDP of USA) means a faster growth rate. If GDP level increases by 10 pp compared to GDP level of USA, then the growth rate is slower by 0.1-0.4 pp.

Prices changes (GDP deflator) have a significant negative impact on growth in statistical terms. If a country with zero inflation would in time experience an inflation
rate of 10%, then the long-run GDP growth rate would drop by 0.02 pp. But if dummies for Latin America and Asia (including the Pacific countries) are included in the regression equation, then the parameter value of GDP deflator becomes insignificant. The growth rate in Asian countries tends to be higher by 1-2 pp and in Latin America lower by 1.1-1.5 pp. It can be assumed that these dummies largely reflect the inflation differences around the world. This is consistent with what Barro (1997) has said – that low growth rates in Latin America are not caused by geographical location but rather by high inflation rates there.

Private investment has positive effects on growth in many combinations – if it increases by one pp then growth is faster by 0.04-0.15 pp. However, the parameter value tends to be insignificant if regional dummies and human capital variables measuring education and health are included in the regression equation. It seems that the share of investment relative to GDP is remarkably higher in Asian countries and lower in Latin America whereas it is negatively correlated with availability of education and positively with health quality. Also, the investment level is higher in countries of lower initial GDP.

The availability of education is measured as average share of female students at all levels of education. Even though it is negatively correlated to investment level there is a clear positive impact on GDP growth. The differences in education availability are not very big around the world, rather it has improved in all countries over time compared to 1970s and 1980s. For example, an increase in the share of girls of all students from 40% to 50% has fastened the annual growth rate by 0.6-1.3 pp.

The health quality is measured as the mortality rate of children under five years old. The decrease of the mortality rate by one child (per 1000 live births) accelerates growth rate by 0.01 pp.

Private saving seems to have negative effects on growth rate though the parameter value is not significant in all variable combinations. The interpretation of it is that – if saving is higher then private consumption is lower (equation (6)) and current account balance improves (equation (11)) – the negative effects of decreased consumption dominate over the positive effects of stronger current account balance.

Private income from abroad (revenue inflow less revenue outflow) has negative effects on growth. If revenue (profits, salaries of individuals) inflow increases by one pp or outflow decreases by one pp, then GDP growth rate slows down by 0.05-0.16 pp. It may well reflect the fact that if foreign companies are not able to make profits in a country, then it can be seen as an indication of economic slowdown to come.

Intuitively, economic development should depend on how much people actually work. Indeed, if growth is regressed on the amount of hours worked (hours paid or hours usually worked in case of some countries), then there is a firm positive link – every extra hour worked per week causes faster growth by 0.1 pp.

Also the use of modern technologies (technical progress) is traditionally considered beneficial to GDP growth. An index calculated based on telephone lines and cellular subscribers, internet users and personal computers per 100 persons should adequately reflect the level of innovative measures and at the same time point out the importance of communication. Relative improvement in index by 10 pp (SWE=100) accelerates growth rate by 0.1-0.3 pp.

The potential impact of the structure of economy is tested through the agricultural production growth. The parameter value of it is generally not significant, but there is some indication that faster growth of agricultural sector means slower GDP growth.
Growth rate can be regressed on different freedoms as growth should depend on the presence and strength of democracy. Indeed, property rights have clear positive effects on growth. An increase in respective index by 10 pp (on the scale of 100) would accelerate growth rate by 0.3-0.7 pp. Also freedom to make business and labour freedom seem to have positive effects on growth. But surprisingly freedom from corruption has negative effects (in Table 3). However, partly it is the problem of multicollinearity – the indexes of freedom from corruption and property rights are highly correlated.

4. Conclusions

It appears that in the short run fiscal policy cannot have any remarkable impact on the level of economic development or on economic growth. For example, increase in direct taxes lowers private consumption but improves net export in the same amount, thus leaving total GDP unchanged.

In the long run, most of the government revenue and expenditure categories have a significant effect on GDP real growth. There are many other factors which can influence the growth in the long run. These are the variables for measuring the initial level of economic development, price level and many institutional factors (democracy, education, health, structure of the economy, working time, technological development). The main results for revenue analysis are that if direct taxes, indirect taxes or grants are increased by one percentage point relative to GDP, then the growth rate is faster by around 0.1-0.15, 0.1-0.2 and 0.5-1 percentage points, respectively. The effect of non-tax revenue is not significant generally. The revenue categories have a positive impact on growth rate.

The main results for expenditure analysis are that if spending on employees, consumption spending or social benefits are increased by one percentage point relative to GDP, then the growth rate is slower by around 0.15-0.3, 0.25-0.35 and 0.1-0.15 percentage points, respectively. All these current expenditure types are negatively related to growth rate. As to the opposite, public spending on investment is positively correlated with growth. Every one percentage point higher investment increases GDP growth rate by 0.1-0.2 percentage points. The effects of interest and grant spending are insignificant in many variable combinations.

Changing any type of revenue or expenditure category results in a change of total revenue or total expenditure in the same amount. In addition, the budget surplus or deficit would change in a comparable amount. So, it clearly matters what type of revenue to raise or what type of expenditure to cut in order to improve the budget balance and at the same time achieve best results on GDP growth. Any change in budget deficit has exactly the same impact on growth as the relevant revenue or expenditure category which has brought up the change in deficit.

Almost any deficit increase (or surplus decrease) has negative effects on growth. The exception here is investment – the deficit increase stemming from bigger investment fastens economic growth. If a government wishes to accelerate growth, it should raise taxes, cut current expenditure or increase investment (ceteris paribus!).

Deficit caused by higher current spending (wage costs, government consumption, social benefits) cuts growth rate more than deficit caused by lower taxes. Thus, a government should consider that improvements in budget balance contribute to growth more if these come through decreased current spending (especially through wage and consumption costs) rather than through increased taxes.
Even if the deficit remains unchanged but the taxes and current expenditure are raised by the same amount the growth rate would slow down (due to smaller absolute parameter values of tax variables compared to those of current expenditure). In other words, if a government supports balanced budget policy it should take into account that faster economic development can be reached at lower levels of taxes and current spending.

Furthermore, changes in household disposable income (and thus in private consumption) and in current account balance which are due to changes in taxes, in wage expenditure or in social benefits of the same period, have actually the same effect on growth as have respective changes in taxes, wage expenditure or social benefits. For example, raising social benefits from 10% to 20% from GDP also means that private consumption is higher by 10 percentage points and net export is lower by 10 percentage points (which is nothing more than a change in initial GDP structure). All that has a consequence of about 1-1.5 percentage point slower annual growth rate in the longer run.

Many other (non-fiscal) impacts can be demonstrated. The economic convergence effect is proved where lower initial GDP means a faster growth rate. Inflation (GDP deflator) has a negative impact on growth. The significance of private investment is not clear, but quality of human capital seems to be relevant – both the availability of education and better health quality have positive effects on growth. Also, the more people spend their time for work, the higher the growth rate is. As expected, modern (communication) technologies provide for accelerated growth. Finally, democracy (property rights, freedom to make business, labour freedom) is important for economic growth.

To conclude, Keynesian short-run principles do not seem to hold and in the long run, expansionary fiscal policies are not beneficial for the economy generally. For a government it is essential to recognise that changes in different revenue and expenditure categories may have the same impact on budget balance and on total government revenue and expenditure, but they have different effects on economic growth.

Fiscal policy decisions of today do not affect people’s lives next year but they do so ten years after. It is a pity that there is less clarity about what happens in the meanwhile. Or as Dornbusch (1998) has stated: “Almost all economists (almost all) agree that the Keynesian model holds over a period of a few months or less and the classical model holds when the time frame is a decade or more. Unfortunately, the interesting time frame for policy relevance is several quarters to a few years.”

References


