

**CHARLES UNIVERSITY IN PRAGUE
FACULTY OF SOCIAL SCIENCES
INSTITUTE OF ECONOMIC STUDIES**



BACHELOR WORK

DEFICITS OF PUBLIC FINANCE AND FISCAL POLICY

INSTITUTIONAL CHALLENGES

Author: Petr Gapko
Leading: Ing. MPhil. Ondřej Schneider, PhD
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**PROHLAŠUJI, ŽE JSEM BAKALÁŘSKOU PRÁCI VYPRACOVAL SAMOSTATNĚ A POUŽIL JSEM
JEN UVEDENÉ ZDROJE.**

**I PRONOUNCE THAT I HAVE WRITTEN THIS BACHELOR WORK ON MY OWN AND THAT I
HAVE USED ONLY LISTED SOURCES.**

PRAHA, PRAGUE 31.5.2004.

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PETR GAPKO

Tato práce se snaží pomoci současnému výzkumu na poli institucionální ekonomie zabývající se problémem veřejných financí a fiskální politiky. Hlavním objektem našeho zkoumání je fenomén rozpočtového deficitu. Tento problém se vynořil přibližně před třemi dekadami a je pravděpodobně jednou z nejzávažnějších chronických chorob současného demokratického světa. Naše práce poskytuje základní přehled moderní ekonomické literatury napsané na téma veřejné finance a rozpočtový deficit a pokouší se navrhnout řešení této problematiky, které by případně mohlo pomoci při dalším výzkumu.

This work tries to help current research on the field of institutional economics concerning public finance and fiscal policy. The main objective of our research is a phenomon of budget deficit. This problem has arised three decades ago and is probably one of the biggest chronical diseases of the democratic world. This paper provides brief overview of modern economic literature written on the theme of public finance and budget deficits and suggests a solution of this problem which could possibly help another research activities.



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In the last 30 years we can in many countries observe large deficits of public finance. These deficits are long lasting and cannot be explained by classical or Keynesian economic theories. Many economists and politicians tried and still try to construct such a model which will describe why governments create deficits. This work sums up recent economic literature written on this theme, provides a reader wide retrospective and tries to find a global solution of problems binded with deficits.

In the first part, we will focus on a question “why governments create deficits”. We will look on this problem from many points of view and each point of view will represent a model from recent literature. These models are mainly institutional and public choice models so we will try to suggest a model based on marginal productivity of governmental expenditures. For this purpose we will show how governments reacts (*ceteris paribus* = other issues fixed) when national income increases or decreases. This discussion is very important because it is showing what would governments do and why they would do it if Y changed.

In the second and third part of this work we will try to find out whether deficits and fiscal policies have got any effect on the whole economy or on decision making of subject of the economy. For these purposes we will use regression analysis and econometric methods. We will not explain further these methods, this problem goes far above the framework of this paper. The main goal of this part will be a comparison of our “marginal productivity model” discussed and introduced in the first part with results from the second and third part. This comparison will be done with a help of graaphical tools introduced again in pthe first part.

Finally in the last, fourth, part of our work we will try to discuss processes of working out a budget and institutional choices. This work describes in this part

every step of political decision making (concerning fiscal policy of course) from the first vote to implementing the policy. We will explain some institutional rules such as “open rule” or “hierarchical structure”. Finally we will try to suggest some basic constitutional and institutional restrictions on politicians. Purpose of these restrictions is to avoid issuing huge long lasting deficits and thus to avoid governmental bankrupt.

2

WHY GOVERNMENTS CREATE DEFICITS?

To explain whether large long lasting deficits are harmful to the economy or not, we need to define basic conditions under that deficits rise. This chapter is focused on the question of the rise of deficits, defines main essential conditions for the birth of a deficit and tries to explain two main problems:

- i) Why there are deficits of public finance in certain countries but not in others?
- ii) Why governments created (and still create) deficits in the last three decades but not before?

We will start our discussion with describing two main budget expenditures models, the „tax smoothing“ model and the „balanced budget“ model. We will then proceed to an explanation why governments don't follow policies based on these models and don't solve long lasting deficits which we can observe in most of the OECD countries nowadays. For this purpose we will use a public expenditures model based on the Keynesian macroeconomic theory.

BUDGETARY MODELS AND BUDGETARY POLICIES 2.1

Balanced budget models 2.1.1

This type of budgetary models is in the most cases focused on the amount of governmental expenditures. The government has to ensure some amount of public goods that are necessary for functioning of the economy. This sum of public goods should be (and without any exception is) in every country financed by government without a rise of a deficit. These public goods are for example military expenditures or expenditures of government (e.g. salaries for members of the government). On the other hand there is much bigger amount of public goods

that we can understand as a luxury. These public goods (i.e. health service, social expenditures) are the main cause of astronomical governmental expenditures and are a condition necessary for a deficit to rise. What do balanced budget models say is that the global amount of governmental expenditures should equal the amount of tax income at the same time. In other words, the government can spend only what it earns¹.

One can say that balanced budget is fair among generations but here its advantages end. The biggest disadvantage and a reason why governments do not follow balanced budget policy is its intratemporality. Suppose that government spending needs to be high in a certain period (there can be a war or a recession in the country). Balanced budget policy implies high tax rates in our period and low tax rates before and after this period. Its inconsistency with paretooptimality is visible on the first sight. In the time of recession the national product is decreasing, firms are supposed to close up and thus there are less tax payers. Higher taxes in this time will force more firms to end their production and close factories. This distortion can be formalized as a decreasing marginal utility of taxes. When paying high taxes through the period of recession, lowering tax rates by one percentage point will increase one's utility much more than decrease in tax rate in the time of economic growth because given the same level of taxes more companies will end their production in the time of recession.

Tax smoothing model 2.1.2

Younger and in many ways much better view on budgetary rules gives us the "tax smoothing model" which instead of balanced budget model prescribes constant tax rates through an economic cycle. This policy implies a deficit in the time of recession and surplus in the time of growth. The surplus through the time of economic growth is supposed to compensate the deficit made by government in the recession.

¹ See Barro (1979)

Very important extension of this model is its application on business cycles. Business cycle is such a period, which concerns a recession to its bottom and an economic growth from the bottom of a recession. Due to tax smoothing policy, general tax rate should be constant not within a fiscal year but within one business cycle (but not longer because of differences among cycles). Each business cycle is a bit different and can have weaker recessions or growths. Each business cycle lasts a period of several years (this time period cannot be exactly defined due to differences among countries). A „fiscal planner“ (government or a minister of finance) cannot project economic behavior of an economy further than a couple of years, middle-run fiscal projections are made usually four years to the future. If we take into account that a business cycle complies with a political cycle¹, we can claim that tax rates should be constant through a political cycle. That means each government should make such a fiscal choice on the beginning of its governance which would be constant through the time of its governance and the government is not supposed to change it. Many public choice and games theories are engaged in this problem more than we will need for our deficit discussion, we will only mention some fiscal theories of this kind later in this chapter.

Is the tax smoothing theory consistent with our reality? Barro² has tested the tax smoothing model on British and American data between years 1700-1990. He found that data were consistent with basic principles of the tax smoothing theory, but only in broad sense. The debt/GNP ratio increased during wartimes and decreased in peacetimes and times of prosperity. However the test showed some exceptions that are inconsistent with the tax smoothing theory. The biggest exception was found in the eighties in the United States where the debt/GNP ratio sharply increased. Barro argued that in the early eighties the cold war was unleashed followed by the acceleration of nuclear arms race. This led to big

¹ Theory teaches that politicians run strict and unpopular but needed programmes in the two-years-time after getting into office and run popular programmes in the two-years-time before elections so that the business cycle is „assimilated“ by the political cycle and they can overlap.

government expenditures on military services financed by deficits. If a tax smoothing policy had been followed, the debt/GNP ratio would have been supposed to decrease after the end of the cold war. The reality is somewhere else. The debt/GNP ratio has been rising since the beginning of the eighties without any exceptions till today. The tax smoothing model failed to explain this increase and seems to be unable to explain similar situations in many other OECD countries.

POLITICAL MODELS 2.2

Fiscal illusion model 2.2.1

This model is based on a theory of imperfect information. Nobody has the whole set of information necessary for economic planning, knowledge is spread among all people in a certain economy. With such a spread information there cannot be a central planner, a person that would know the wishes of all people and who could plan a production which would satisfy all needs of the economy.

We need to define some basic conditions so that the model could be functionable. The first condition is that there are at least two interest groups competing for the power. The second condition is that the voters don't know all budget constraints of the government, that means people are misinformed about gains of today's deficit and costs of future tax burden imposed to finance the accumulated deficit. They overestimate gains and underestimate costs. Why? People prefer present consumption to future consumption, the marginal utility of one currency unit spent today on consumption is bigger than the marginal utility of the same currency unit spent on consumption in the future.

Under these conditions voters will favor the deficit financed expenditures programmes and vote for a party that offers such a programme. Therefore a party which will create deficit will come into power. This can be an explanation for the

² See Barro (1985, 1986)

rise of a deficit. A big advantage of the fiscal illusion model is that it claims that people want deficits only in a time of recession but they are liable to tax illusion and they don't punish (maybe they even don't want to punish) deficits or ballanced budgets in a time of economic growth. This leads to long lasting deficits¹.

We have though a question why there are deficits only in certain countries and not in others? Why now? One can argue that there are different political institutions in certain countries that maybe could have created more fiscal illusion but then why in Europe with very similar rules and democratic principles some countries have deficits and some countries do not? And why in the USA with nearly the same political situation for hundreds of years can we observe large deficits only the last three decades?

The fislal illusion model is not sufficient for a discussion about rising a deficit. Following models can explain better differencies among countries that could have possibly caused deficits of public finance in some of them but nowhere else.

Intergenerational redistribution of debts

2.2.2

Another model describing a problem of deficits and public debts provides us with a bit different angle of view. An intergenerational model goes further in time than the tax smoothing model. It concerns not only the time of one economic cycle but it compares relations of creating debt among generations.

Let us suppose that there are only two groups of people, two generations, fathers and sons. If there wasn't some intergenerational altruism, the world couldn't possibly work correctly. The "homo economicus" theory says that every man should be selfish and orientate only on his own pleasure. If this theory obtains, every father would borrow as much as possible and spend everything during his

¹ See Buchanan & Wagner (1977).

own life. His offsprings would inherit a large debt which they will have to pay¹. Other models of this type examine e.g. demographical pyramids of economies but discussing them is getting above the framework of our work.

Fortunately there is some intergenerational altruism. Each generation cares about its sons and daughters and wants a better life for them. For a better explanation of this model, we will show some relations between fathers and sons on a graph of consumption curve. On Y axes there is consumption of the future generation, sons. On X axes is consumption of the present generation, fathers. Curve "i" labels an indifferent curve describing consumption preferences of the present generation, fathers. The curve AB is consumption possibility frontier and shows all possible settings of present and future consumption. This curve captures the possibility of borrowing.

¹ We don't count with a possibility of defaulting the debt here.

sons, future generation

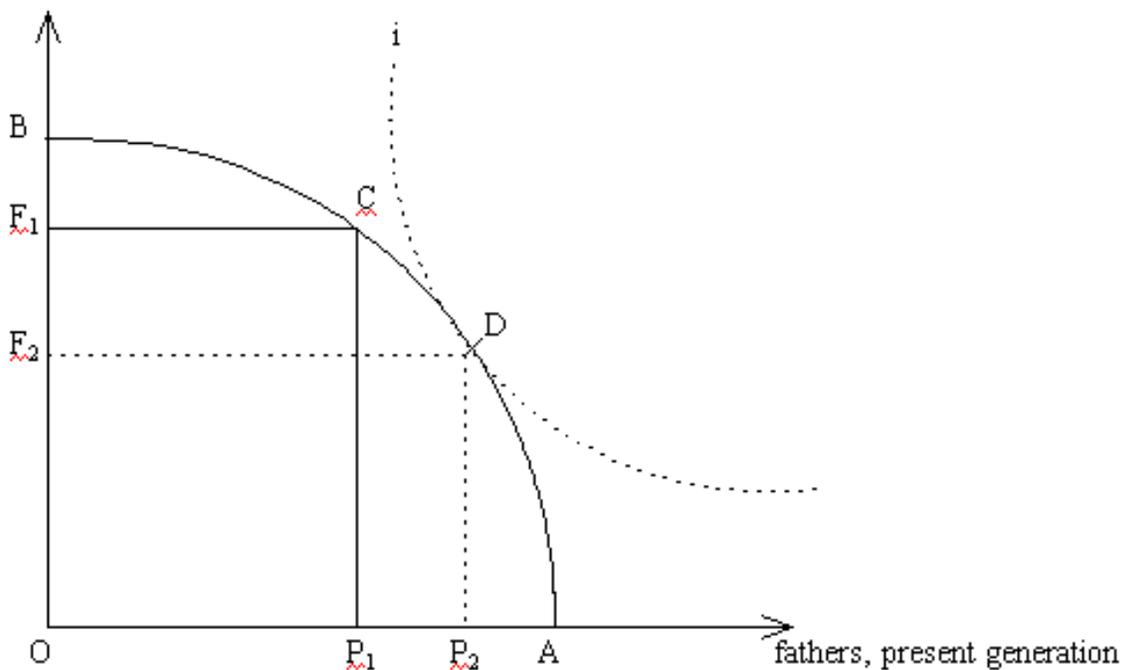


figure 2.1

Point A is such a level of consumption, where everything is consumed by the present generation and can be called a „point of maximum selfishness“. The point B is a „point of maximum altruism“ and in this point the whole consumption belongs to the future generation while the present generation doesn't consume. Even a situation in the point A or in the point B is impossible in real life. Point C describe such a level of consumption of the present (P_1) and future (F_1) generation where the budget is balanced. In this point no deficit and debt is created. If we take into account the „i“ curve, the consumption will be distributed just as describes point D. In this situation the present generation will consume amount P_2 and the future generation amount F_2 . The difference between points P_1 and P_2 is „borrowed amount of consumption“. A debtor is the present generation and a creditor is the future generation which will have to pay the debt created in past with an amount of consumption represented by a difference $F_2 - F_1$. This amount is larger than the borrowed one because of interest which has to be paid from the created debt.

Why is an intergenerational borrowing possible? Let us suppose an economy with two groups of people, poors and riches. The riches are indifferent to fiscal policies while the poors prefer such a policy which creates a deficit. This is the way how the poors borrows indirectly consumption from future generations and because of indifferent preferences of the riches, creation of the deficit (followed by creation of a debt) can be adopted as fiscal policy even among benevolent social planners.

Even though this model appears to be relevant it doesn't explain why there weren't large long lasting deficits before the seventies and why the deficits appear only in certain countries. More and above in the past deficits were often accumulated and reduced within one generation. These admonitions make the intergenerational redistribution of debts model inefficient in explaining fully why governments create deficits.

Debt as a political game

2.2.3

The institutions of deficit and debt can be abused for a political game. In this part we will describe a model of a political game where even a right-wing party in office creates a deficit as an instrument which helps the party's reelection in the future. For a better interpretation of this model, we will restrict it only to two political parties, one left-wing and one right-wing. The left-wing party prefers social spending; its government would be spending-oriented. The right-wing party prefers free market and reducing the bulk of government administration. The left-wing party is more probable, if in office, to create a deficit and it would be not a surprise if it would follow such a policy. The right-wing party is not supposed to create a deficit and enlarge the national debt but will it behave in such a way on all accounts?

Let us suppose that a right-wing party came into the office after dramatic elections. Let us suppose more that the result of next elections is uncertain.

Under these conditions the right-wing party in office could spend more and create a deficit. The other party which could come into office in next elections will then have to service the inherited debt and would spend less on social welfare programmes. This will lead to discontent of the electorate and to a decrease left-wing party's probability to hold its government. The bulk of a deficit is given by two variables: the deficit is larger i) the more polarized are preferences of the two parties; ii) the more uncertain is the result of next election and thus the lower is the probability of today's government to persist in office.

This model has been extended a several times¹ and we will discuss two of these extensions. The first extension compares behavior of two parties (when in office). One party is supposed to lower taxes and issue a debt (analogy with the left-wing party discussed above) and the other to raise taxes. What happens if in a country with balanced budget comes the first, „low taxes“ party into office? Taxes will be lowered and a deficit issued. The deficit is then paid by raise in taxes when one of the future governments (probably made up from the second party) comes into office (the debt will have to be paid off once). If the second party had come into office before the first party, it would have raised taxes, created surpluses and encouraged future spending.

The second discussed extension is based on the “median voter theorem” and describes a society where decisions are taken by a majority rule. In this model proposals are voted after a pairwise discussion. These conditions lead to a theorem that a deficit is created and a debt issued because the median voter prefers present consumption and wants to raise it to the detriment of his future consumption. A successful party should than offer such a programme which counts with issuing a debt.

This class of models suffers of that they don't take into account that issuing a debt doesn't commit future generations to pay the debt back. Defaulting the debt

¹ See e.g. Wittman (1983), Calvert (1985), Alesina (1988) or Alesina & Rosenthal (1994).

is in open economy modelled as a loss of part of the country's output. Government's possibility to issue a debt is then limited to an amount which will make future government indifferent between defaulting and paying off the debt. The future government can use the inherited debt to manipulate electorate's preferences. Left-wing party wants to default the debt because it is being held by the richest people. On the other hand if a right-wing party holds government it can increase its probability to win next elections by issuing or enlarging inherited debt so that the left-wing party will lose its support (don't forget that left-wing prefers defaulting).

Why were large national debts issued in the last century and not before? Previously governments governed longer and changed not as quickly as today¹. The high frequency of changing governments leads to an uncertainty and instability in economy, parties fight to get into office and issue debts to lower the level of expenditures of future (perhaps the opponent's) governments.

Why in certain countries? The second result of "political games model" claims, that the more polarized the preferences of parties on political markets are, the larger the issued debt is. Each country has got its own political market that differs from other political markets. Alesina constructed some kind of an "instability index" containing some institutional issues and changes² in the OECD countries. This index affirmed that countries with more instability on political markets issue larger debt than more stable countries.

Wars of attrition 2.2.4

Very important extension to the class of political games models uncovers political combats inside coalitions in one period of time. The main idea of this model

¹ See Alesina & Perotti (February 1994).

² These issues were: whether or not there was a revolution in the country, whether there are hard-line parties in the country, how frequently governments changed in the country, regional or racial conflicts, some institutional characteristics; for more see Perotti & Alesina (1994) or Alesina (1989).

called “wars of attrition model” is that social fights delay efficient fiscal policy and create fiscal shocks. An inefficient policy is followed by a rise of a deficit and public debt begins to accumulate.

Suppose two political groups in coalition in power that have to adopt a policy of fiscal stabilization after fiscal shock. The deficit has risen and there is a debt of high amount which has to be paid by our two groups. Adopting a policy of fiscal stabilization means that the groups are fighting with each other how to divide paying off the debt. This game has got two assumptions, one winner and one defeated. The assumptions are: i) one group has to pay more ii) the groups aren't informed about its opponent's power. Under these assumptions we can claim that nobody wants to surrender first and the two groups compare gains and costs from being defeated. Costs of being defeated means paying the larger amount of the debt. The main gain for the group that surrendered is that the next period (which would the fight last if the group didn't surrender) will be the period of living in stable economy. We can understand this gain as an amount of the debt which won't be (but would be if the fight continued) in this period accumulated. The period after which one group will surrender is the longer the more polarized are fiscal preferences of the two groups.

Economic crises or a recession part of economic cycle shortens the period of political wars. Costs of living another period in uncertainty are rising, gains outnumber costs and one group will surrender sooner as if the economy was healthy. Spolaore (1993) measured discrepancies in coalition by comparing followed policy with the “optimal policy” which would follow the benevolent social planner. This policy is given as a function of costs of creating such a policy and period of fiscal shock. Spolaore argued that coalition governments mostly delay the necessary fiscal adjustment because of inside fightings so the period the government needs to accept the “optimal policy” is longer than the period of accepting the same policy under the reign of the benevolent social planner. On the contrary majoritarian cabinets with one single party incline to

underestimating of social impact (according to the weak control power of the opposition) but the time necessary to accept the “optimal policy” shortens (we can say that are more capable of action). As a result of this model we can claim that inefficiencies in economies are the larger the more groups we can find in government coalitions.

Wars of attrition model can easily explain, why we can observe large deficits from the seventies and not before. The first oil shock can be explained as fiscal shock. After this shock, OECD countries delayed necessary acquisitions and thus the impact of the shock was worse than it could be. In some countries (i.e. Belgium, Italy) political confusion or weak coalition governments caused greater delay and bigger deficits than countries with strong majoritarian or presidential systems (i.e. UK, USA).

MARGINAL PRODUCTIVITY MODEL 2.3

For better graphical interpretation we need more theoretically based model with clear graphs and definitions. Fiscal models are often very complicated with lots of conditions but if their conditions are fulfilled they are significant enough to explain certain parts of economic decision-making. The marginal productivity model is graphically-based and shows the relationship between governmental expenditures and national product in simpler way.

Governmental reaction curve 2.3.1

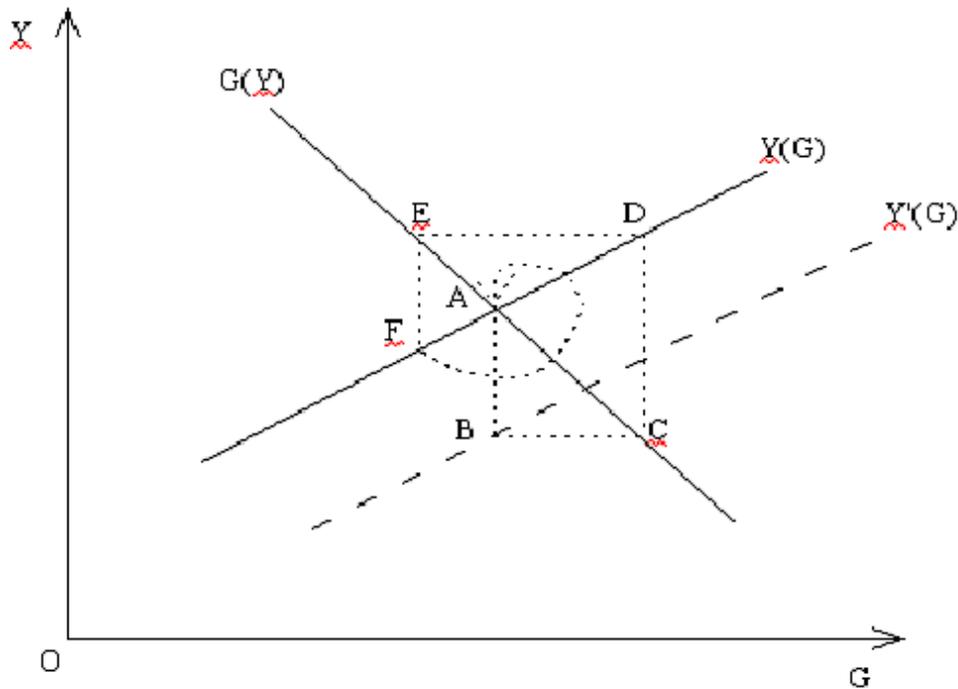


figure 2.2

Basic idea of this submodel is that the level of national output can be derived (ceteris paribus) from the level of governmental expenditures, e.g. if other parts of Y are fixed, we can shift Y by shifting G (so we test reactions of government when Y changes). On the other hand the change in the level of national income changes (ceteris paribus again) governmental expenditures (i.e. government spend more in the time of recession). We can say that national income (Y) is a function of governmental expenditures (G) and vice versa. These two assumptions are represented in figure 2.2 as two functions $Y(G)$ and $G(Y)$, where the function $G(Y)$ can be understood as a reaction function of government on the movement of Y ; on the graph it is represented by governmental reaction curve $G(Y)$. Let's suppose that an economy is in general equilibrium (point A). What will happen if negative shock causes a recession and a decrease in Y ? The shock is represented by the line AB and is supposed to be exogenous. It decreases output to the point B corresponding to the curve $Y'(G)$. The government will react and raise its expenditures to point C . The raise in expenditures will raise output and through this mechanism the economy will return to the equilibrium point A . This mechanism is functionable only under a

ceteris paribus condition. If we miss the *ceteris paribus* condition, other factors would influence both curves $Y(G)$ and $G(Y)$ and move them. New equilibrium points would arise and the process of equilibrium finding would become more complicated.

When does government create deficit? In general equilibrium point A the budget is balanced. A decrease in output without any changes in governmental expenditures causes the deficit to appear. The increase in expenditures enlarges the deficit. We can find the deficit among points A, B and C. Among points D, E and F government decreases its expenditures and creates a surplus which finances the deficit. It isn't clear whether there can be a deficit between points C and D because both curves $Y(G)$ and $G(Y)$ could have different slopes in different economies. This model is only illustrative and we wanted to show how the government reacts and raises its expenditures when Y increases and/or decreases. The submodel is based on Keynesian and neokeynesian economies and isn't consistent with some modern economic theories (i.e. rational expectations theory).

Marginal productivity of governmental expenditures

For better description how national output depends on governmental expenditures we need to define one new variable. Suppose there is a function of $Y(G)$ (national output) dependent only on G (governmental expenditures). Then we define marginal product of governmental expenditures as the first derivative of the function $Y(G)$. We write:

$$Y=Y(G) \quad (i)$$

$$MPG = \frac{\partial Y(G)}{\partial G} \quad (ii)$$

MPG is a function decreasing in G . That means the more governmental expenditures government provides, the less the national output will be added. Why? Let us compare governmental expenditures with private investment. Private sector invests into some projects beginning with the most profitable one. The profitability of projects is decreasing with the invested amount of money. That is why investment is a function of interest rate. It's very similar to governmental expenditures. The government is investing its funds into some public programmes. The only difference between public and private investment is that the private sector invests to more profitable projects.

Decreasing shape of the MPG function implies concavity of $Y(G)$ function. Shape of the $Y(G)$ function is showing figure 2.3. The point $MPG=1$ means that if we add one unit of currency to the governmental expenditures, there will be added the same unit of currency to the national output, we write:

$$MPG = 1 \Leftrightarrow (\Delta G = 1 \Rightarrow \Delta Y = 1) \quad (iii)$$

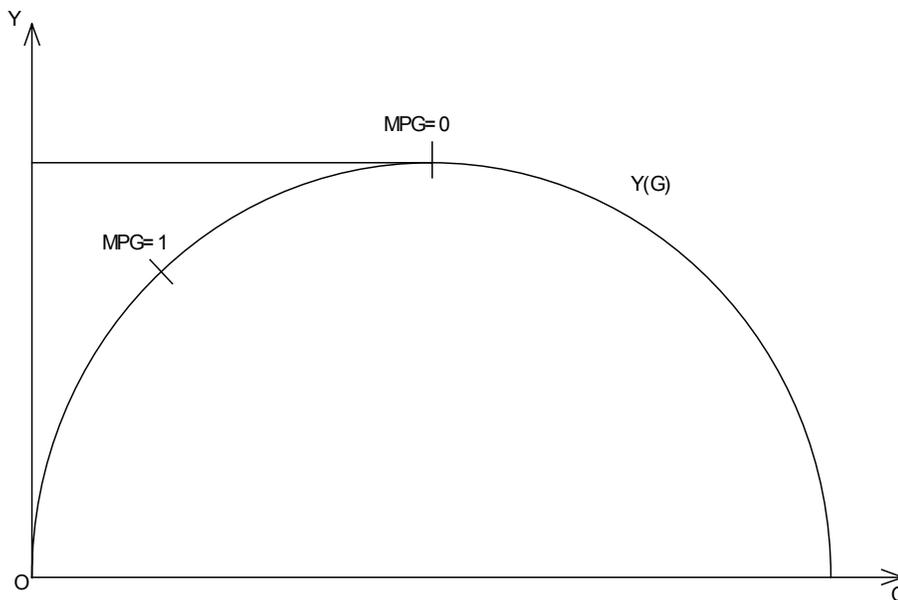


figure 2.3

In the point $MPG=0$ no increase in governmental expenditures will add something to the national output, national output is on its maximum¹. From this point the national product is decreasing when G rising. The first derivative of the $Y(G)$ function equals in this point zero²:

$$\frac{\partial Y(G)}{\partial G} = 0 = MPG \quad (iv)$$

Why is Y behind this point decreasing? The government can't distinguish between profitable and non-profitable projects. Voters are miss-informed, no one has the whole set of information and thus this leads to an inefficiency. If the government invested to a non-profitable project, there would be nobody to punish government's behaviour.

When does government create a deficit? This discussion differs in every economy and this question depends wholly on very specific conditions such as fiscal adjustment. Intuitively we can claim that a point, behind that a deficit is being created, lies somewhere between points $MPG=0$ and $MPG=1$. For better interpretation we will show this problem on a graph.

Budget ballance in the MPG model 2.3.3

How can we derive budget deficit or surplus from the marginal product of governmental expenditures? For this purpose we will use a curve displayed in figure 2.3 and new function $BS(G)$ where BS is budget surplus (negative if deficit) and G are governmental expenditures. This function is displayed in figure 1.4 and shows, how the budget surplus depends on G (ceteris paribus). The more the government spends the more will be added to the national output. Here we must count with decreasing MPG , so added values to Y will be smaller the higher G is. We define taxes as a percentage of national income and we write:

¹ This is the analogy of Laffer's curve concerning taxation

² This is the necessary condition for an existence of an extreme

$$TA = t \cdot Y \quad (v)$$

where TA is whole tax income of government, t is tax rate and Y national income. The right side of the equation (v) shows that government's tax income is a part of the national income. From (i) and (v) we get:

$$TA = t \cdot Y(G) \quad (vi)$$

As long as:

$$BS = TA - G \quad (vii)$$

We get from (vi) and (vii) that:

$$BS = t \cdot Y(G) - G \quad (viii)$$

$$BS = BS(G) \quad (ix)$$

We derived, that BS can be written as a function of G. Let's show a shape of the function BS(G) on a graph:

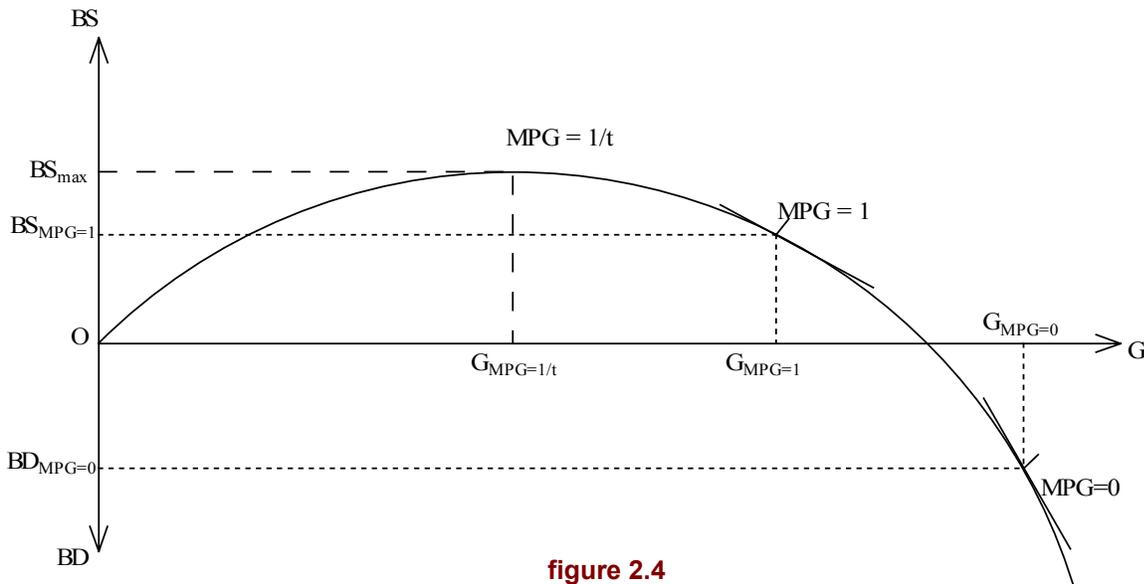


figure 2.4

The curve is rising up to the point, where $MPG = 1/t$. In this point, one additional unit of governmental expenditures will add $1/t$ units to the national income.

Marginal income from taxes will be $t \cdot \frac{1}{t} = 1$ unit. One additional unit of governmental expenditures will in this point cause a rise in the tax income of 1 unit. In other words, government will in this point get back what it spends. The budget surplus has got its maximum here, the function $BS(G)$ is from this point decreasing.

The point $MPG=1$ is the same point as in the figure 2.3, in this point one additional unit of G adds the same unit to Y . Government will get back on taxes an amount that equals t . In the point $MPG=0$ the national income reaches its maximum but this is purchased by a budget deficit. From this model we can claim that a deficit nowadays (*ceteris paribus*) will have to be financed by a surplus tomorrow, but the surplus will cause a decrease in national income. Interactions among BS , G , and Y is showing figure 2.5.

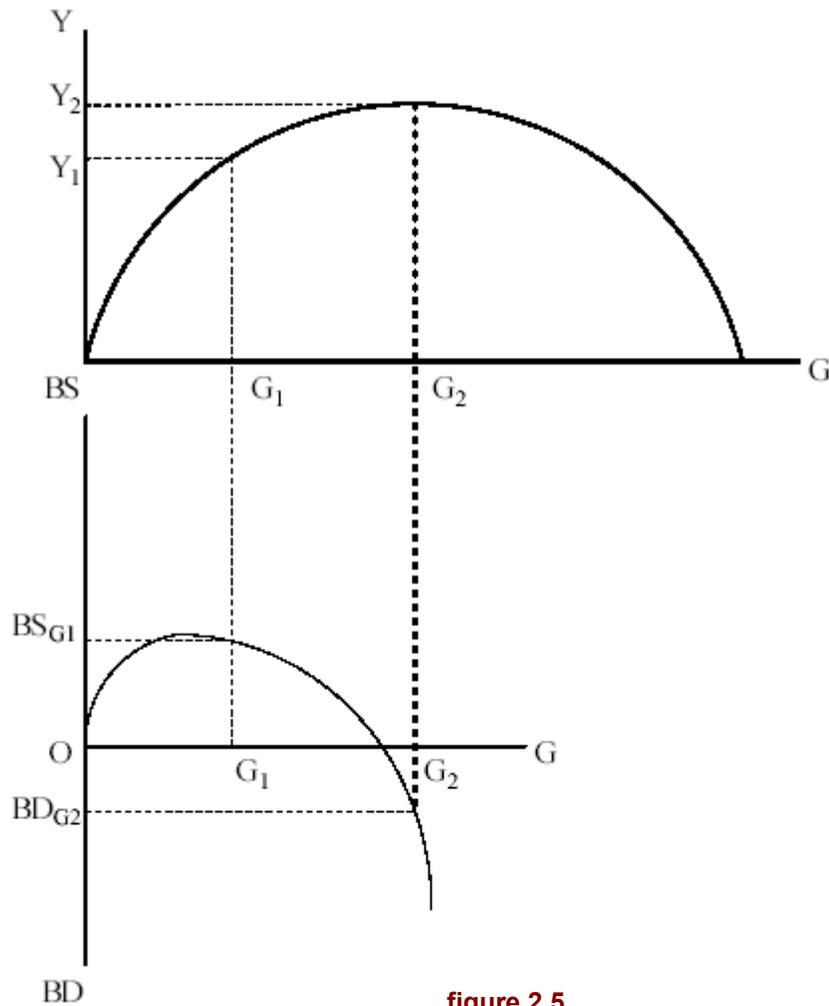


figure 2.5

Suppose volume G_1 of governmental expenditures. National income at this volume of G is Y_1 . Budget balance is shown in the lower graph, government creates a surplus BS_{G1} . What will happen if government wants to raise national income by an increase in G (let's suppose G increases from G_1 to G_2)? The national income will rise from the level Y_1 to the level Y_2 but the rise will be purchased by deep fall in budget balance. The surplus will turn into a deficit represented by the point BD_{G2} .

3

ARE DEFICITS OF PUBLIC FINANCE DANGEROUS?

In the previous chapter, we have discovered how a deficit could be created. We already know, what the deficit is, who is responsible for its creation and what are the main gains of issuing a debt. In this chapter, we will examine an influence of budget deficit on economy and we will try to claim whether the deficit is or is not harmless to the economy. The economy will be in this chapter described by gross domestic product (output, Y), which is visible variable, simple enough for our purposes. If we want to find out if a deficit is/isn't dangerous to the national economy (if it does or not lower the national income), we need to divide the influence into two parts, where the first part will be described as an influence of governmental expenditures and the second part as an influence of a tax burden. We already know that we can describe budget surplus (BS) as a difference between tax income (TA) and governmental expenditures (G):

$$BS = TA - G^1 \quad (i)$$

Because data of tax income and tax systems are very complicated we will use government's receipts. The biggest amount of receipts is the amount collected from taxes. We suppose that G will have positive effect on Y (because of governmental purchases) whereas the effect of TA will be negative. For describing both effects of G and TA we will use regression analysis. The effects of G and TA will be then described by marginal variables and the final effect of BD will depend both on the amount of TA and G and marginal units of their influences on Y .

¹ If BS is negative, it is usually written as budget deficit BD (the sign before changes). We will use both terms, so remember that: $BS = -BD$.

INFLUENCE OF G ON Y 3.1

Constructing the model 3.1.1

Keynesian economy tells us, that income (Y) can be counted as a sum of governmental expenditures (G), private consumption (C), private investment (I) and net exports (NX). Net exports are defined as a difference between exports and imports. We can write down this equation as follows:

$$Y = C + I + G + NX \quad (\text{ii})$$

This equation will be our basic tested model. For purposes of regression analysis we have to slightly adjust it, so the final tested model looks a bit different:

$$Y_i = \alpha + \beta_1 \cdot C_i + \beta_2 \cdot I_i + \beta_3 \cdot G_i + \beta_4 \cdot NX_i + u_i, \quad i = 1, 2, 3 \dots \quad (\text{iii})$$

where Y_i is response variable, C_i , I_i , G_i , NX_i are explanatory variables, α is intercept (absolute term of the model) and β_1 , β_2 , β_3 , β_4 are indices of input data that tell us, how much will Y change, if C, I, G or NX change of one unit. Sign i means that we have got data for individual time periods, i shows which period is the data concerning. Finally u_i is residual and describes the part of Y which is not explained by explanatory variables. Because the input data are “spread”¹, the model is usually logarithmicated to improve a elasticity of the model. In this case, we cannot use logarithmic functions, because some of the data are negative and logarithmic function is not defined for negative values.

The tested datasets come from economic history of the USA²; concretely we will test data for GDP (Y), private consumption, governmental expenditures, private investment and foreign trade between years 1959 and 2003. We expect that all

¹ They acquire very different values.

² The data for USA are the most accessible, there is a problem with looking for other data.

the explanatory variables will have positive effect on the Y so all the coefficients $\beta_1, \beta_2, \beta_3, \beta_4$ will be positive.

We will use estimation method called ordinary least squares (OLS) and a software called SAS. This method is used for linear estimatings; we will for simplification suppose that our model and estimates of it are linear. Following table shows estimated coefficients and intercept of the model (iii), standard errors and p-values. P-values are probabilities that the estimate doesn't say anything about the influence of concerned explanatory variable on the response variable.

Coefficient	Estimate	Standard error	P-value
Intercept	69.80742	7.67121	<.0001
β_1	0.86921	0.03603	<.0001
β_2	1.19178	0.07150	<.0001
β_3	0.73831	0.06087	<.0001
β_4	0.76301	0.08563	<.0001

figure 3.1

You can see that all the estimates are significant on the 95% confidence level due to the P-values in the last column. All of the estimates are positive and as they are significant we can claim that all the explanatory variables have got positive effect on Y (so our expectations were realistic). The difference is only in how big the effect is. The only coefficient bigger than 1 (except the intercept) is β_2 . If a coefficient is bigger than 1, the effect on the response variable is described in following equation:

$$\beta > 1 \Rightarrow \Delta V < \Delta Y \quad (\text{iv})$$

In other words, if $\beta > 1$ and the explanatory variable (V), which is β responsible for, grows of 1 unit, the final growth of the responsible variable (Y) will be bigger than 1 unit, if a ceteris paribus condition is undertaken (if other explanatory variables

are fixed). For better interpretation we can imagine that coefficient in model (iii) are marginal productivities of our explanatory variables. In our case we have got only one coefficient bigger than 1 and this coefficient is responsible for private investment. Private investment is the only explanatory variable, which has got marginal productivity bigger than 1. Other variables, namely private consumption, governmental expenditures and net exports have got marginal productivities smaller than 1, their influence on Y is smaller than e.g. the influence of In and if we want to add one unit to Y, we will have to add 1.15 units to private consumption. The worst influence on Y has got the governmental expenditures variable. We can say that it is always better to raise GDP by increasing private investment or consumption than by growing governmental expenditures.

Why is G in our model so bad for shifting GDP?

3.1.2

The basic opinion spread worldwide among many economists is that government is the worst manager. From recent experience from the experiment with socialism, it appears to be true that government is unable to manage correctly a company. If a company is owned by private owner, the owner will get, in the simplest way, all the money the company earns. But if the company is owned by public sector, it is a public budget, who is a recipient of earnings or losses of the company. If this company suffers huge loss which the owner seems unable to finance, private owner will end production, the loss will be paid by the owner and trusters of the company. But if such a company is owned by public, the loss will be paid from taxes (that means by all the taxpayers). The government is not motivated; the real owner of that company is public, every man and woman. The government figures in the company as a "steward". Ownership is the best motivation which human race knows. Government is not motivated by it and this problem can project e.g. into false functioning of the company, which should have closed production.

We face very similar problem concerning governmental investment or other sectors of governmental expenditures. Government as a manager of public

money is not motivated by ownership and missinvests. The question is, whether state aid or raised expenditures during recessions are or not useful. The second question is the amount of state aid. In the first chapter, we have shown that governmental expenditures can be useful only in some amount. There was a discussion of MPG as an indicator, when should government stop raising its expenditures. The next figure is modified graph defining MPG from the first chapter and shows us, where the MPG from our recession lies:

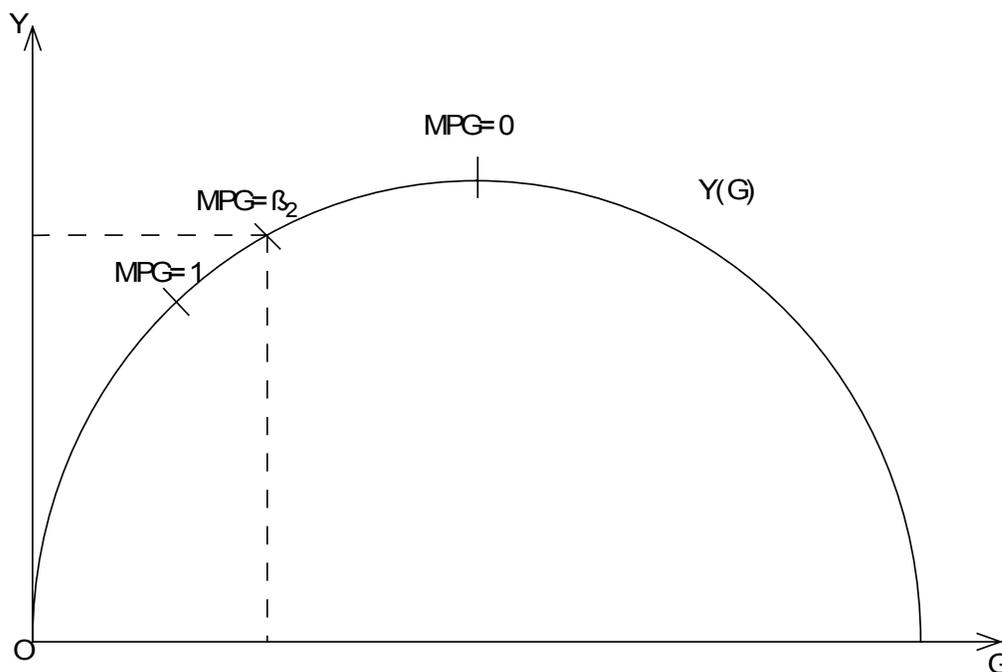


figure 3.2

The figure 3.2 shows that our $MPG=\beta_3$ is somewhere between points $MPG=0$ and $MPG=1$. The exact value of our MPG in **0.73831** that means that if we (ceteris paribus) raise G of 1 unit, Y will rise of 0.73831 units¹. As the marginal productivities of other variables in model (iii) are bigger than MPG, it would be

¹ Here we must note that the coefficients were estimated from data between years 1959 and 2003 so the MPG value 0.73831 is relevant for long run, the short run MPG could vary.

better to achieve GDP growth by lowering G and taxes in accordance to raise the most productive variable private investment or private spending¹.

Pareto-efficiency measured by marginal productivity

3.1.3

From the idea of changing GDP growth support among the four variables we can define some kind of “pareto-efficiency equation” which will take into account all what we have derived in previous subchapters. This model counts with short run and quickly changing marginal productivities. The equation describes a situation in one time, when government has got lump sum of money and the only instrument to raise growth is moving money among variables.

$$\text{MPG} = \text{MPC} = \text{MPIn} = \text{MPNx} \quad (\text{v})$$

In this equation, all the marginal productivities MPG, MPC (marginal productivity of consumption), MPIn (MP of investment) and MPNx (MP of net exports) will equal, if an economy is in Pareto’s equilibrium. Why? Let us suppose that MPG is bigger than MPC. If the government raises taxes in order to lower C and get more money for G, lower C will cause a raise of MPC and bigger G a decrease in MPG. If government gets from taxes 1 unit, consumption will be smaller and G bigger of this unit. According to marginal productivities, Y will shift of a difference MPG-MPC. If there is free movement of capital among variables C, G, In and Nx, we can claim that government (and of course public sector too) will move the capital from one variable to another, until all marginal products of these variables will equal.

The model is strictly theoretical and won’t be functionable in real economy, because in reality we can find lots of obstacles that prevent capital from moving among our four variables. Also elasticities of our marginal functions of MPG,

¹ Lowering corporate taxes will give companies more money to finance further development (investment) or raise wages in order to make better working conditions for employees (they will consume more). Lowering income taxes would cause increase in consumption because of more money in households.

MPC, MPIn and MPNx can be small so moving capital would not have expecting effect.

THE GROWTH MODEL 3.2

We have realised, that G has got positive and significant effect on the absolute value of Y but there are some other variables such as investment that have got bigger positive effect. The conclusion was that it is always better to raise Y by giving additional financial funds to those variables that have got the biggest positive effect on Y (the biggest MP). What we don't know is if there is some significant effect of G on the economic growth. Enger & Skinner (1992) tested some US data and we will "borrow" their recession analyses. Economic growth \dot{y} is defined to be the average annual logarithmic change in GDP and is our response variable. As explanatory variables figure in this model I/Y , \dot{L}/L , \dot{g} and \dot{t} and are constructed using the averages of the domestic investment/GDP ratio, the growth rate in the workforce¹, the percentage point change in the government spending/output and in the tax revenue/output ratios respectively. For better interpretation is the model written down in the equation (vi):

$$\log \dot{y}_i = \alpha + \beta_1 \cdot \log(I/Y)_i + \beta_2 \cdot \log(\dot{L}/L)_i + \beta_3 \cdot \log \dot{g}_i + \beta_4 \cdot \log \dot{t}_i + u_i \quad (\text{vi})$$

Input data are observations from 107 countries from the whole world between years 1970-1985. One can argue that 15 years-time is not sufficient time to get reasonable results but the tax data from the sixties and before are not available². This problem is resolved by cross-sectional character of the datasets and by analysing data from 107 countries we will get satisfactory results that are summed-up in the next table. The estimation method is again the ordinary least squares (OLS) method.

¹ Workforce here: people from 15 to 64 years of their age.

² For further discussion see Enger&Skinner (1992)

Coefficient	Estimate	t-value
β_1	0.120	5.10
β_2	0.434	5.52
β_3	-0.109	1.46
β_4	-0.308	3.45

figure 3.3

As you can see from the table, first two coefficients are positive, e.g. the share of domestic investment on GDP and growth of the workforce have got positive effect on the output growth. The other two coefficients are negative so that the change in percentage points in governmental spending and the tax revenue shares of GDP have got negative effect on the output growth.

Here we are getting to a paradox, the absolute value of G has got positive effect on the absolute value of Y, but if we analyse percentage point changes, the effect is negative. Why? The explanation is not as difficult as it may seem on the first sight. When we discussed model (iii) we said that it would be better to finance Y growth (in absolute numbers again) by reorganising some money from G to other variables. In the second model, G had negative effect on Y, measured in growth rates because G was in the tested period high and rising and was draining money from other sectors of domestic economy, e.g. investment and consumption. The output was growing but not as fast as it could grow, due to the problem of money relocation. In other words, we can say that the huge amount of G stepped on the brakes of economic growth.

Engen and Skinner realised after couple of recessions of similar kind that both governmental spending and taxation have got strong and negative effect on output growth. A balanced-budget increase in G and taxation of 10 percentage

points will decrease both long-run and short-run growth rates by 1.4 percentage points¹.

PRIMARY AND SECONDARY EFFECTS OF BD

3.3

From the results of the last regression we can't deduce any consequences respecting the influence of BD. Here is necessary broader analyses which will respect taxes and governmental expenditures. We will describe primary and secondary effect of budget deficit on the output growth rate.

The tax smoothing theory² teaches us, that governments should cut taxes and raise expenditures through recessions or wars and raise taxes and cut expenditures through times of economic growth and international stability. In the beginning of a recession creating a deficit can be a very useful utility to smooth the business cycle and start up the economic growth. The debt accumulated through the recession will be paid as a part of future tax burden in the time of economic growth. In this case a deficit is rather useful than harmful to the economy and most governments would create it.

Nowadays lots of countries create deficits and public debts even if they are in the phase of economic growth. In the first chapter we have noted some models that describe why governments such deficits create. We have also mentioned that a burden which rises up from deficits will have to be paid by future generations on taxes. Finally, we have realised that a rise in taxes will cause a decrease in the output growth rate both in short- and long-run. The imperative result from these arguments is that a creation of a deficit can quickly shift up the absolute value of output, but after a certain period the raise in taxes will cause a decrease in the output growth rate and acts in this direction procyclically. This is the secondary

¹ See Engen&Skinner (1992).

² See Alesina &Perotti (1994)

effect caused by a creation of a deficit. This effect is dangerous because it isn't visible in the present time so that the present electorate is missinformed.

4

GOVERNMENTAL EXPENDITURES, TAXES AND POLITICAL MARKETS

FISCAL POLICY AND THE POPULAR VOTE FOR PRESIDENT

4.1

If we want to study an influence of fiscal policy on political markets, we have to find one fiscal variable, which could represent the fiscal policy. According to the equation (i) from part 2 of this work it is significant that there are three candidate variables to become a fiscal measure. Budget surplus (or deficit) is as we know from the last subchapter very disputable measure. Taxes and governmental expenditures are more “visible” variables for an electorate that can easily react in elections and change powers on political markets. Thus governmental expenditures and taxes are two suitable variables.

In this subchapter, we will describe two models constructed and tested by Niskanen¹. In both models will as responsible variable figure popular vote margin measured as the log of popular vote for the candidate of incumbent party minus the log of popular vote for the candidate of major opposition party. The only difference between our two models will be in one of the explanatory variables. In both models, there will be constant term, war dummy variable (set 1 for elections in years 1944, 1952 and 1968 and 0 for other) and a variable reflecting economic growth (measured as the log of real GNP per capita minus the log of real GNP per capita in the prior election year). In the first model there will be additional federal tax burden variable, measured as the log of real federal taxes per capita minus the log of real federal taxes per capita in the prior election year; in the second model the additional variable will represent growth of federal expenditures, measured as a log of real federal expenditures per capita in the prior election year. For illustration, the two models can be written as:

$$PV_i = \alpha_i + \beta_1 \cdot WD_i + \beta_2 \cdot (\log GNP_i^{real} - \log GNP_1^{real}) + \beta_3 \cdot (\log TA_i^{real} - \log TA_1^{real}),$$

where GNP^{real} means GNP real per capita, TA^{real} means real federal taxes per capita and $i = 1, 2, 3...$ (i)

for the first model and

$$PV_i = \alpha_i + \beta_1 \cdot WD_i + \beta_2 \cdot (\log GNP_i^{real} - \log GNP_1^{real}) + \beta_3 \cdot (\log G_i^{real} - \log G_1^{real}),$$

where GNP^{real} means GNP real per capita, G^{real} means real federal expenditures per capita and $i = 1, 2, 3...$ (ii)

for the second model. WD is war dummy variable in both models. We will again use regression analysis. Table 3.1 presents results of both regressions and their standard errors in parentheses. The input data are the 24 presidential elections in the USA from 1896 through 1988:

Coefficient	First model (standard error)	Second model (standard error)
Intercept	0.100 (0.043)	0.099 (0.041)
β_1	-0.341 (0.130)	-0.278 (0.129)
β_2	2.171 (0.375)	1.573 (0.308)
β_3	-0.489 (0.118)	-0.250 (0.056)

figure 4.1

From the table it is clear that wartime has got in both models negative effect on the popular vote for president and with higher taxes and governmental expenditures favors the opposition candidate. Economic growth has got positive effect and favors the incumbent candidate. Incumbent candidates have survived generally an increase in taxes thanks to inertia because voters have got strong

¹ See Niskanen (1992)

sense for continuity and give their votes to the incumbent candidate for general economic growth.

Results of this analysis favor our arguments from subchapter 2.2 realising that an increase in taxes has got much bigger negative effect than the same increase in governmental expenditures. Generally an increase in taxes of 10 percentage points will cause a decrease in the popular vote for the candidate of the incumbent party of about 1.2 percentage points. The results support our argument that the primary effect of budget deficits is insignificant and the negative effects of a deficit will project up to the negative effect of raised taxes in the future to pay off a debt caused by the deficit.

FISCAL POLICY AND MIGRATION 4.2

People also react on government's fiscal policy by moving. This is a bit complicated problem because there are tough barriers among countries. The most suitable object for testing if fiscal policy has got some effect on migration is again the USA where people can move from one state to another without any border barriers. The tested sample is 48 contiguous states of the USA. We expect that states where unpopular fiscal policy is followed will suffer of outmigration and states where the regional government has got popular fiscal programmes for the majority will be credited of immigration.

Niskanen again tested two models. The response variable is in both models net migration between years 1980 and 1988 measured as a percentage of the population in 1980. Explanatory variables are unemployment rate in 1980, percentage of population living in heavy urban areas in 1980, log of state and local tax revenues per resident in 1980 and net migration from 1970 to 1980 measured as a share of the 1970 population in both models. There are also some additional variables: log of population density in the state in 1980 in the first model and gross agriculture income as a share of total personal income in 1980, value of mineral production as a share of total personal income in 1980 and value of

manufacturing shipments as a share of total personal income in 1980 in the second model¹. In the table 3.2 there are results from regression analysis of both models. As shown in this table, percentage of population in heavy urban areas, population density and migration in the seventies have got positive effect on migration patterns in the eighties. In other words, people moved to densely inhabited states with huge metropolitan areas and with positive migration rates between 1970 and 1980. Negative effect on migration have got the unemployment rate in 1980, log of state and local taxes in fiscal year 1981 and all the income variables (share of income from agriculture, minerals and manufacturing shipments in 1980).

variable	Estimates of coefficients in 1st model (standard error)	Estimates of coefficients in 2nd model (standard error)
Intercept	62.960 (22.022)	53.378 (24.274)
Unemployment rate in 1980	-1.134 (0.396)	-1.305 (0.385)
% of pop. in metropolitan areas in 1980	0.104 (0.041)	0.068 (0.036)
Population density in 1980	1.392 (0.757)	
Share of income from agriculture in 1980		-0.139 (0.059)
Share of income from minerals in 1980		-0.141 (0.040)
Share of income from manufacturing shipments in 1980		-0.036 (0.024)
Log of state and fiscal taxes, FY 1981	-8.651 (3.202)	-6.323 (3.438)
Migration through 1970-1980	0.400 (0.056)	0.314 (0.052)

figure 4.2

The worst effect on migration have got without any questions state and local taxes, an increase in taxes by 10% appears to have reduced migration by 8.65

¹ For further discussion of these models see Niskanen (1992)

percentage points in the first model and 6.32 percentage points in the second model. The negative effect of our three income variables can be interpreted as a tendency to move from agricultural or mining areas.

Tested models tried to sum up all demographical, fiscal and economical aspects that can influence migration. Both demographics and economics support these models with their theories so we can claim that models are significant and say something about how people react on particular impulses.

5

HOW TO CREATE A BUDGET INSTITUTION?

In this chapter we will discuss some problems arising from creation of a budget institution. This procedure is very complicated problem and has to be solved as the first issue when a public budget is to be consolidated. We will focus especially on the structure of voting processes and try to make some normative judges about working out a new fiscal institution which will adjust voting for a budget in such a way that issuing deficit as political instrument will be no longer possible.

ASSUMPTIONS OF EFFECTIVE BUDGETARY INSTITUTIONS 5.1

Budgetary institutions are rules that affect government behavior when drafting and approving the budget but they can influence fiscal policy only if some basic conditions are undertaken. There are two main conditions that politicians should take into account when working out new budgetary institution in order to work out this institution properly so that it will be functionable:

- i) Budget institution is more difficult to change or dismiss than the budget law
- ii) Budget institution influences final vote and implementation of the budget too¹

We already know that budget institutions influence fiscal policy because we can observe an impact of this influence very easily. In fact, we can observe the difference of consequences of different budget institutions among countries. The

¹ For further discussion of these two conditions see Alessina & Perotti (1994)

main difference of these consequences is that in some countries we can observe large long lasting deficits and very strict fiscal discipline in others.

For the next assumption we need to define the whole budget process. One can see three phases of creating a budget:

- i) formulation of the budget proposal (executive branch)
- ii) presentation and approval of the budget (legislative branch)
- iii) the implementation of the budget (bureaucratic branch)

The main assumption on the new budget institution is that it will affect all the three phases of creation of the budget and restrain budgetary authorities when creating the structure of the deficit.

The final assumption can appear as a very simple one but it is important at least as much as the other assumptions; the institution should affect the degree of transparency of the budget and the degree of transparency of future projections of the budget. We added this assumption because nowadays a lot of governments makes deficits very untransparent by moving certain losses to off-budgetary items (this is the recent case of Czech Consolidation Agency losses) or shifting liabilities to future budgets. Also the future projections are often untransparent so that the projector (government) could create by underestimating bills and overestimating receipts fiscal illusion in the electorate.

THE STRUCTURE OF CREATING AND VOTING ON BUDGET 5.2

Voting processes 5.2.1

Alessina and Perotti distinguish two main types of voting procedures affecting the vote on budget. The first one can be called “*hierarchical*” and the other “*collegial*”. *Hierarchical* voting procedure means that when voting on budget, prime minister or budget authority has got some more power (or some special “final word” like accepting the budget even if all ministers are against) than spending ministers

and thus we can say the budget authority is superior to other ministers. *Hierarchical budget institutions* are those that give some preliminary powers on voting for budget to budget authority or to prime minister. *Collegial* voting procedure means that all the ministers have got the same powers when voting on budget and they can make amendments to the budget drawn up by the budget authority. *Collegial budget institutions* are those that don't give to the budget authority some special powers when voting on budget. *Collegial* voting procedures respect laws of minorities and are pure democratic while hierarchical makes possible quick voting and more drastic reforms¹.

This definition of the two alternatives of voting procedures is very important for us, we can say that in every government the voting procedure is some trade-off between hierarchical and collegial model. Alessina and Perotti argued that one cannot find purely hierarchical or collegial voting processes but procedures among countries vary one from another by being "more collegial" or "more hierarchical".

One more notice to the structures of hierarchical and collegial voting. We can observe some kind of analogy between these two models of voting and types of government. Hierarchical voting system is very similar to majoritarian electoral systems and bi-party legislature it produces. On the other hand collegial voting is an analogy to proportional voting system which produces coalition governments (these governments tend to delay fiscal choices and choice of politics because of higher transaction costs inside of the government – more parties are more lobbying groups and needs much more negotiations). This analogy is quite important, to work out a budget institution means to understand voting procedures on every level of governmental power.

We have already discussed the structure of voting procedures but we have to mention one more aspect of voting and that is "when to vote on budget?" This

¹ See Alessina & Perotti (May 1996)

issue has got a lot to do with the first phase of construction of the budget, e.g. formulation of the budget proposal. Before we start with describing this problem we need to define a difference between the structure of the budget and the final size of the budget. The structure of the budget can be defined as a structure of budget expenditures because most of budget receipts are derived from taxes so when politicians vote on structure of the budget, they in fact vote on allocation of money among various projects. The final size of the budget is defined as the final size of tax receipts minus final size of budget expenditures (in fact governmental expenditures). There are two main ways how a budget proposal is prepared; one is that politicians vote on budget in advance (e.g. budget for fiscal year 2004 is approved in 2003 or 2002) and the second is that the budget is made up of accumulated bills. It is widely believed that when voting on budget in advance, deficit is not as large and fiscal discipline is much stricter than when letting the budget be determined by accumulation of bills.

HOW TO CHOOSE A BUDGET INSTITUTION 5.3

Timing of voting on budget 5.3.1

From the previous discussions two questions of the timing of voting on the budget have arisen, the first is whether it is better to vote on budget *ex ante* (in advance) or *ex post* (when the size of the budget is determined by the accumulation of bills) and the second whether to vote first on the size of the budget and then on the structure or inversely. We will start with the second question. To answer it, we will have to say something about regional aspects of the budget and mention one regional-based model of constructing the budget.

Let us suppose that the tax burden is distributed equally among regions of certain country. Representatives of regions persuade interests of their region and look for some projects that would bring benefits to their region but are financed from the budget of the whole country. Weingas, Shepsle and Johnsen constructed a

model, where voters of the i -th district get B_i money on benefits and have to pay $1/N$ money on taxes, where N is the number of regions. The regional representatives do not think about the effect of spending B_i on the budget of the whole country so the demand of public goods spent regionally and financed nationally is rising¹. The representative's power to spend has to be restricted in order to avoid high and quickly rising deficits and public debt.

Ferejohn & Krehbel studied determination of the size of the budget when the budget can be allocated between two different projects and different legislators have different preferences over benefits of the projects. They reached a conclusion that the size of the budget is in general NOT independent on the order of voting but it is not always the truth that it is smaller when the legislators vote first on final size and then on composition and in fact the relative size of the budget with different orders of votes depends on the distribution of legislators' preferences over the composition of the budget². Here we should mention the theorem of rational legislator. This theorem claims that rational legislator is looking forward when voting on the first issue of the budget and compares how his vote for or against influences composition and size of the final budget. When legislature votes first on size, rational legislator computes how certain size would influence certain composition and reversely. This theorem counts with perfect information and thus there are not any asymmetries of information in the economy. Ferejohn & Krehbel can't claim which order of voting is better, their work is purely positive.

Open vs closed rule 5.3.2

Closed rule is such a voting rule when legislature votes on budget only once and no amendments are admissible. When this rule is applied a proposal made by government or budget authority is voted up and down immediately with no delay. Open rule is the opposite pole on the field of voting institutions. Proposal is not

¹ See Weingast, Shepsle & Johnsen (1981)

² See Ferejohn & Krehbel (1987)

voted immediately automatically but opposition can construct amendments or vote immediately on the proposal. When an amendment is made legislature votes this amendment against the original proposal. The winner is the new proposal on the floor and another part of opposition or group of legislators is asked to make another proposal. We are getting back to the beginning of this process when the new proposal can be voted immediately or some amendments are made. This procedure is much more complicated than the closed rule but it respects rights of minorities and when an open rule is used there is no threat of dictatorship of majority. When the closed rule is used budget authority needs only simple majority of votes to accept its proposal. The budget authority can offer some benefits to the least majority and we are getting to other models of “winner” and “looser” where “winner” takes everything (dictatorship of majority) and “looser” has to pay.

Open rule can be rather ineffective and we will describe why. When legislature is voting on budget proposal made by budget authority, rejection of such a proposal can lead (with some probability which depends on quality of rejected proposal) to an even worse proposal next period. This is the reason why the “threshold of acceptance” of the first budget proposal is quite low and it can be accepted when satisfying simple majority only. We can explain it by some probability function too. The budget authority will work out such a proposal that satisfies some majority needs (gives benefits only to some majority). Even if this majority is “only” simple, there is a low probability that an amendment made by certain minority will satisfy bigger majority and thus will be accepted.

Budget authority has got big dilemma how to construct the first budget proposal. When the proposal will satisfy needs of all minorities and give benefits to every (even little) group the budget authority or the governing group will get only few benefits. On the other hand a proposal giving everything to the governing group has got very small probability to be accepted. We can argue that the proposal

made by budget authority will be the fairer the bigger are consequences for government (executive) from rejecting the budget.

As a conclusion we can describe four main characteristics of open and closed rules:

- i) OPEN RULE delays accepting of the budget because of bigger number of votings
- ii) CLOSED RULE leads to accepting more inefficient budgets where only the simple majority is satisfied
- iii) OPEN RULE can (and usually does) lead to such a budget where benefits are given to bigger than only simple majority
- iv) OPEN RULE leads to fairer distribution of benefits inside the majority¹

CONSTRUCTING BUDGET CONSTITUTION 5.4

How to create effective constitution that will take into account main restrictions which should hold the budget in some reasonable borders and avoid huge long lasting deficits? For this discussin we will use Niskanen's equation of public budget:

$$G - TA = BD \equiv ND \quad (i)$$

Where G are governmental expenditures, TA tax income of government, BD budget deficit and ND national debt. Niskanen argued that if budget constitution is effective, at least two of the four variables in equation (i) have to be strictly restricted.² The problem is that Niskanen examined only how to consolidate deficits of public finance and national debts and didn't take into account that the problem is not only in the size of BD and ND but in the size of G or TA too. Niskanen's work does not say which of the four variables in the model (i) should

¹ See Alessina & Perotti (May 1996) for further discussion

be restricted in order to achieve best situation. He only suggested how an amendment to the Constitution of the USA should look like but didn't say if this amendment can be used in other economies too.

The final part of our work (and its core) tries to sum up all shown arguments and make a conclusion how to construct budget constitution (and institution as "enlongated hand" of the constitution).

From recent experience from the EU and its Maastricht treaty we know that restricting BD and ND is not effective enough to restrict fiscal policies of member states and weak enforcement of such "treaty" washes out the so called "constitution"¹ itself. If G or TA is not restricted, government has got clear hands to construct its fiscal policy with all the impacts on present or future generations. If irresponsible fiscal policy is followed it can cause that future governments will not be able to issue such a deficit which will be consistent with constitution restricting BD and ND. These arguments imply that one of the right side variables of the model (i) has to be restricted.

One more problem appears in the EU "fiscal constitution". This rule restricts ND/GDP and BD/GDP ratios and a problem can rise up when member state is in recession (when GDP is decreasing). We can explain restricted ratios as functions decreasing in GDP.² Imagine a situation when member state has got ND/GDP and BD/GDP very close to restrictions³ and a recession is about to appear. The member state in such a situation is unable to turn away the appearing recession by shifting G (traditionally in the Keynesian way) without

² See Niskanen (1992)

¹ We can substitute the word "treaty" by the word "constitution" in this very special case because Maastricht treaty belongs to the primary European law (this law is binding for all member countries without any exceptions). The primary European law is in fact some substitution (or analogy?) of Constitutions of member states which holds on the whole area of the EU.

² That means that ND/GDP and BD/GNP ratios decrease, when Y increases and ND and BD hold their values (respectively) and reversely ND/GDP and BD/GDP raise when Y decreases.

³ ND/GDP is almost 0.6 (national debt is almost 60% of GDP) and BD/GDP is almost 0.03 (budget deficit is almost 3% of GDP).

breaking the constitution. The constitution would be broken anyway in the recession when both ratios rise because of decrease in GDP so it would be better for the state to break the constitution before the recession and try to turn the recession away. Penalty for breaking the constitution could be then paid when the recession disappears and the only effect of the constitution would in this case be rise in price in the process of turning away the recession.

Which variable from the right side of the model (i) should be restricted to achieve the most effective constitution? There is an argument why not to restrict G .¹ Government should have some fiscal instrument to avoid recessions and to smooth business cycles. Keynesian economy holds up when saying that government should raise its consumption to encourage economic growth. Governmental purchases are surely better instrument than lowering taxes. The best way is of course to lower taxes and rise governmental spending and this way should be possible under effective fiscal constitution. Of course this procedure is effective only in short-term and the effective fiscal constitution should count with that. Taking into account these arguments the best restriction on the right side of the model (i) would be to build some tax ceiling. How? We know that TA can be written in following way:

$$TA = tY \quad (ii)$$

To build a tax ceiling means to give a restriction on the height of t . As t is given as the tax burden and shows how much of Y is taxed in percentage, the simplest way is to say that t cannot be higher than e.g. 30% of Y . The necessary condition is that taxes should not be simply raised. For this purpose there can be one more tax restriction in the constitution like "taxes can be raised only by confirming of the qualified majority in the parliament". Such a constitutional rule will provide

¹ According to the subchapter 1.2.3 we can argue that if governments had some ceiling of $\max G$ they would spend what they could in order to maximize their chances of being reelected.

governments with a possibility of increasing G during recessions within borders (set up for BD) discussed in the following text.

What should be done with the left side of the equation (i)? This question is rather more complicated. Is better to restrict deficit or national debt? As the national debt is derived from budget deficit, one may argue that it doesn't matter whether BD or ND is restricted. One variable affects the second one and reversely. When there is some restriction on BD the constitution is more binded with domestic economy and BD is simple variable that can be easily restricted. How to restrict BD? The best way would probably be some "deficit smoothing" rule which would allow government to issue deficit when the economy is in recession but restrict government in issuing deficit through the time of economic growth. Such a rule is very hardly defined and ineffective because it is not binded with present time but looks into the future as well as into the past. Government can feel less binded and would issue larger deficits in recessions and smaller surpluses (or balanced budgets) in economic growth. From this point of view appears better way how to restrict a deficit, namely balanced budget rule with "exceptions". Here the exception can be allowing the government to issue deficit in recession or during wartime but effect of this exception¹ has to be terminated by an "inverse exception", e.g. paying-off-the-debt rule².

Figure 5.1 is showing how will this budget constitution looks on a picture. Let's get back to the figure 2.3 in the part 2. There was some derivation of budget deficit from governmental expenditures. If we add our restrictions to this model and paste Laffer's curve to show how taxes can be restricted (the curve in upper right corner) and under an assumption that under balanced budget rule governmental expenditures equal tax income, we can easily derive some level of t that corresponds to the balanced budget rule (t^*). This t^* is our tax restriction

¹ The effect of such an exception is issued debt (derived from issued deficit during the time the exception holds).

derived from R_1 (our balanced budget rule). When the economy gets into recession or the recession is about to appear, the balanced budget rule is extremely hard and the restriction will weaken. Our new budget restriction is the line R_2 . What will happen after the recession? Concerning the “pay-off-the-debt rule” the budget restriction will move and the after-recession restriction will be line R_3 .

² Such a rule inverted to the exception could be e.g. that government has to pay of the part of the debt accumulated during the last recession in a time of X years after the recession has ended.

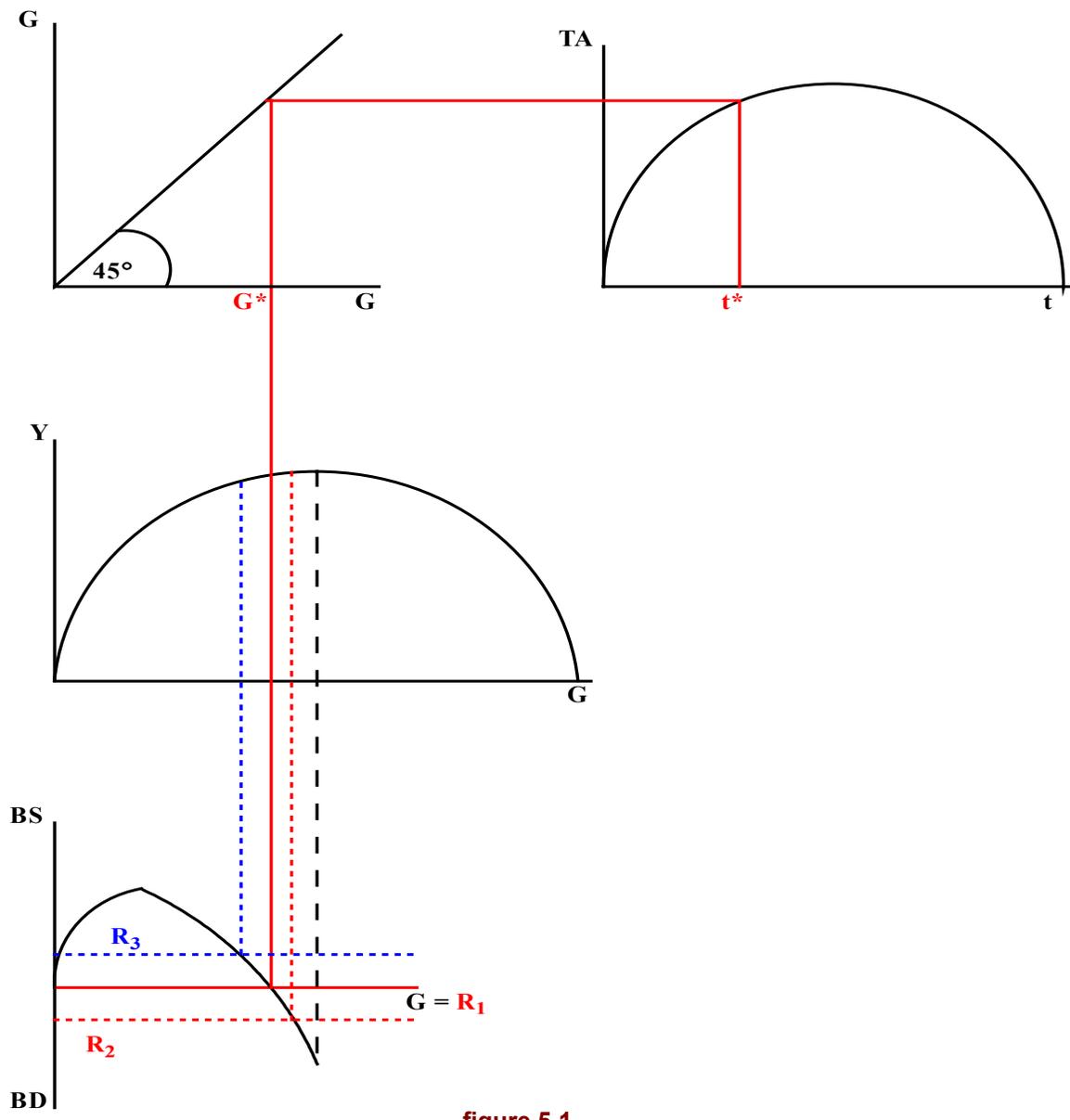


figure 5.1

On the figure 5.1 we can see that our proposed constitution allows governments to raise G during recessions but binds them in spending after the recession or during the time of economic growth. Sure there have to be some basic assumptions that we should probably have mentioned in the beginning of this

discussion¹. These assumptions are that the constitution cannot be easily overvoted and that penalty for breaking it should be very tough.

The constitution provides us basic law framework and to discuss restrictions on special government behavior we need to construct some rules on lower than constitutional level.

CONSTRUCTING BUDGET INSTITUTION 5.5

In the beginning of this chapter we have discussed conditions that effective budgetary institution should fulfil. The basic condition is that the budgetary institution has to be more difficult to change than the budget law itself. The second condition is that the budgetary institution should affect all phases of budget construction. We mentioned three phases of this construction and thus we will have three rules, each will affect one phase of budget construction.

The first step or phase of constructing the budget is a formulation of budget proposal. Our budget institution should adjust **who** has got the right to form the budget proposal and **how** and **when** it should be constructed. We have highlighted three important issues. Who constructs the budget is quite simple discussion and in the world can be only one alternative found which is that budget proposal forms budget authority which is hold by the winner of last elections. Question how concerns transparency of budgets. The best possible way to control this transparency is to set up a set of rules or standards dividing budget into strictly formulated chapters and subchapters. To avoid a degeneration of this system the institution should make possible a control of budgets from outside by some independent agency or auditor. This control should mark the degree of transparency and provide with these results the electorate. The last unanswered question is when to construct the budget

¹ But these assumptions are so well known that this work is not concerned about them, we will only name them.

proposal? This discussion is opened all around the world and we can argue that constructing preliminary proposals several years before the year it concerns will make the budget even more transparent.

The second (and probably the most important) phase of budget construction is the phase of presenting the budget proposal and voting on it. We have discussed several types of voting procedures above. The result from this discussion is that open rule delays accepting the budget and creates larger deficit whether closed rule has got opposite effects. The same problem appears when choosing between collegial and hierarchical structure of voting inside of the coalition (or government in office). Collegial rule respects rights of minorities but makes budget more complicated with larger deficits and delays. The general conclusion is that countries with the need of fiscal consolidation should choose an institution that is near to closed rule and hierarchical structure of voting and countries with stable national debts and balanced fiscal policy have to choose in a trade-off between rights of minorities and further stable fiscal policy.

Finally we are getting to the last phase of budget construction, to the phase of implementation of the budget by bureaucracy. We said that governments often overestimate governmental receipts (with overestimating economic growth) and underestimate its expenditures when forming the budget proposal in order to get the electorate under fiscal illusion. When the government behaves in such a way the implementation of the budget is very difficult and nearly everytime some additional expenditures in the end of fiscal period appear. This behaviour is rather intransparent and dangerous because bigger than expected deficits appear. The effective fiscal institution should adjust estimates of future tax revenues, economic growth and governmental expenditures. These over- and underestimatings can be minimized by giving a duty to present binding budget proposals in several years advance.

An effective constitution and institution would never be effective if the enforcement of these rules is low. There should be also strict punishments embedded in the rules that would strictly punish the government from breaking the rules. The strictest penalty is to dismiss the government and pronounce preliminary elections.

We hope that this work's suggestions will be sometime in the future useful for further examination of institutional aspects of fiscal policy and deficit creation.

This work has summed up all of the recent experience from world economic literature focused on public choice and institutional issues of fiscal policy. Institutional economics is new approach and provides us very special view on particular parts of classical economy.

We have focused in this work on one problem which in last years appeared, the problem of deficits of public finance and public debts. Providing few institutional models this work tried to explain why governments create deficits and how this issue of fiscal policy should be limited. Very important benefit of this work is the new angle of view of deficits and derivation of deficits from an amount of governmental expenditures.

In the last chapter (part 5) we have tried to derive new set of rules concerning fiscal policy. These rules have been derived from conditions and models found in economic literature and are representing the newest knowledge. This work doesn't offer exact recipe on healing public money problems but is hoped to help with forming new normative theory on borders of economics and law. The new science should concern economic issues of the process of institutional birth and change and should provide politicians with some normative judges how to make an institution correctly.

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