Optimization of Government Expenditures for the Economic Development of the State. The Case of Ukraine

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Abstract: The economic crisis in Ukraine requires the government to change its approach in the management of government expenditures. The aim of this article is to explain the optimal amount of government investment needed in the economy of Ukraine and determine the economic sectors where government investments will be the most effective. It was calculated that to achieve stable growth of GDP the ratio of budgetary investments and business investment should be in these proportions: 35% should be from budgetary investments; 65% from investments from the business sector. Priority economic sectors needing government investment are agriculture and the processing industry. These will help to increase the export of finished products and reduce raw material exports in the future. GDP growth will contribute to the payment of foreign debt obligations, and reduce the budget deficit.

Key-Words: budget, government expenditures, budget deficit, government investments, financial flows

1 Introduction

Ukraine's economy at the current stage of development is in a deep structural crisis, the consequences of which are exacerbated by the military actions in the east of the country and economic pressure from Russia. Lack of proper funding has forced the government to increase the volume of external debt and raise taxes. Seeing that public debt and chronic budget deficits are increasing, the corresponding role of government expenditure management is increasing as well. This important and timely rational use of government funds is caused by several factors. The first factor is the need to prevent risks from corruption. Corruption is increasing because of the deepening crisis and reduction in the effectiveness of state and public controls. The second factor is reducing an inefficient use of public funds. The ineffective use of public funds is often due to errors in evaluating the economic effect of budget investments, and also because a funding recipient is not interested in high efficiency since the funds are provided freely without repayment terms. The third factor is the need to stimulate economic development. Economic growth is a guarantee that in the future the government will be able to repay debt without resorting to new borrowing. Therefore, the Ukrainian government must solve this problem: in what industries it is advisable to invest public funds and on what conditions.

2 Problem Formulation

Studies of government expenditure by Ukrainian economists have mainly focused on assessing economic development impact, the growth of budget deficits, and government expenditure optimization. In particular, K. Pavliuk (K. Pavliuk, 2006) focused attention on the social role of government expenditures because in her opinion budgeting is an instrument for achieving a high level of justice and utility for each member of society [1]. V. Demianaishin (V. Demianishin, 2008), explored the conceptual bases of the budget doctrine of Ukraine and considered the budget interrelated with the processes of economic development of the state [2]. The role of government expenditures in economic growth was presented in the research of I. Zapatrina (I. Zapatrina, 2008) and Y. Pasichnyk (Y. Pasichnyk, 2005) [3, 4]. The needs of Ukrainian society at the present stage of the country's economic development require that government expenditures act primarily as a sustaining resource, a driving force of economic development.

Modern publications by Western economists have a slightly different focus due to the different level of

economic development and different needs of research. Part of their research has focused on the role of government financed public services, the need to increase government spending on health care, which is shown, in particular, in papers by J. Appleby and A. Harrison (J. Appleby and A. Harrison, 2008), C. Colombier and W. Weber (C. Colombier and W. Weber, 2011) and others [5, 6]. Many economists focus their attention on the instruments of government financing and their impact on macroeconomic development. So, A. Matto (A. Matto, 1996) and F. Trìonfettì (F. Trionfetti, 1997) investigate the peculiarities of public procurement organizations and their role in the development of international specialization and trade [7, 8].

Another group of economists, W. Dorotinsky (W. Dorotinsky, 2008), D. Jacobs (D. Jacobs, 2008), M. Spackman (M. Spackman, 2001), focus on the role of government investment expenditures and the need to improve the management of these expenditures and budget deficits [9-11]. Unlike Ukrainian economists, modern Western scholars explore budgeting in terms of its best use as public domain, with an emphasis on its role in funding public goods and services, not on providing for the functions of government. These differences in focus between Ukrainian and Western research can be evaluated as differences in policy problems, government expenditures, causes of occurrence, and levels of economic development. The aim of this article is to explain the optimal amount of government investment needed in the economy of Ukraine and determine the economic sectors where government investments will be the most effective.

3 Problem Solution

Government financing of investment projects means the allocation of budget funds for innovative investment activity. Government investments can be made in the form of public capital investment financing, project financing, the acquisition of shares, or rights of participation in enterprise management. During an economic crisis, budget investment should play a stabilizing role and contribute to the economic development of the state. V. Fedosov maintains "…government investments promote economic development, expand demand and thereby stimulate the economy" [12]. W. Easterly and S. Rebelo point out that the main purpose of government investments is infrastructure development; in general these will make a positive impact on the social and economic development of a country [13]. Despite the need for government investment in Ukraine, their effectiveness actually remains very low. If the purpose of government investment is to ensure economic growth and a stabilization of economic processes in priority sectors of the national economy, the question then arises of how to identify such priorities while not violating fair conditions of economic competition.

In Ukraine, budget investments are made through the financing of targeted programs, investment projects, granting subventions, and as budgetary credits. Investing through the financing of state programs has both advantages and disadvantages. The advantage is the intended direction of budgetary funds. However, as evidenced by the audit results of budget fund use, their efficiency is quite low. In part, the low efficiency is laid at the program formation stage due to the low quality of its adjustment, and incomplete or untimely funding at all stages of the program. Financing of investment projects by the government should provide for a competitive selection of the most effective and most needed projects. However, due to the absence of state priorities and the opaqueness of the competitive selection procedures (also because of a lack of common standards), budget funds are not always used effectively in this area.

It should be noted that investment budget funds are used abroad, however, the practice of their provision differs from Ukraine. The main difference is that Ukrainian government funding is rarely under full financing of an investment project.

More often the provision of government funds is carried out under conditions of co-financing (Belgium, Israel, Finland, Chile) [14]. Co-financing of innovative projects has enabled Finland for the past 15 years to create a powerful venture industry. Similar co-financing success has taken place in the Netherlands, Belgium, and Israel. Successful experience providing direct investment is in the United States, where it is aimed at supporting small business innovation. Thus, to stimulate economic development, it is necessary to guide budget investment in terms of economic growth. This provides the impetus for economic development, and will be an indicator for investors of the seriousness of government intentions.

I suggest using diversified financial flow mechanisms to finance priority investment projects. Its essence lies in joint-funding priority sectors of the economy: budget grants and investor's funds. This approach has been successfully applied in Poland, the Czech Republic, Hungary, and Croatia. The criterion of effectiveness is the marginal growth of GDP. The results of calculations are presented in table 1.

Table 1

The results of the diversification of financial flows

The share of investments (sources of private investor)	The share of the budget funds	The variance of a combination of financial flows	Marginal growth of GDP
0,0	1,0	2,484131	3,088898
0,05	0,95	0,206052	0,603222
0,1	0,9	0,203374	0,139274
0,15	0,85	0,160466	0,162511
0,2	0,8	0,135211	0,131715
0,25	0,75	0,138281	0,023196
0,3	0,7	0,113491	0,030454
0,35	0,65	0,100814	0,015293
0,4	0,6	0,051931	0,145326
0,45	0,55	0,067399	0,058754
0,5	0,5	0,032202	0,189186
0,55	0,45	0,017608	0,287106
0,6	0,4	0,011305	0,437422
0,65	0,35	0,02341	0,44775
0,7	0,3	0,047859	0,653552
0,75	0,25	0,136959	0,972628
0,8	0,2	0,48447	1,587846
0,85	0,15	0,604413	1,702389
0,9	0,1	1,131415	2,207116
0,95	0,05	1,433435	2,421667
0,1	0,00	2,0254	2,513473

Source: calculated by author

The calculations were performed using Statistica software product.

The utility function for the financial flow of investments at their own expense is described by the equation (1):

$$\delta_{\mathrm{I}}^2 = -0{,}0031 \times \mathrm{X}_{\mathrm{A}}^2 + 0{,}3385 \times \mathrm{X}_{\mathrm{A}} - 1{,}9551 \quad (1)$$

The utility function for the financial flow of budget investments is described by the equation (2):

$$\delta_{\mathrm{B}}^2 = 0{,}0031 \times \mathrm{X}_{B}^2 - 0{,}3385 \times \mathrm{X}_{B} - 1{,}551 \quad (2)$$

Mathematical description is in the table. 2.

Table 2

Mathematical settings of the financial flows utility

The characteristics		The dependence of the financial flows dispersion from the volume of:	
		Own investments X_A	Budget investments X_B
Fidelity	R^2	0,96	0,96
	F_{crit}	214,39	214,39
	F_{fact}	$2{,}79\times10^{-13}$	$2{,}79\times10^{-13}$
	P	0,9998	0,9898
Minimum		0,6467	0,3533

Source: calculated by author

Plot of a function of utility are listed at fig. 1.

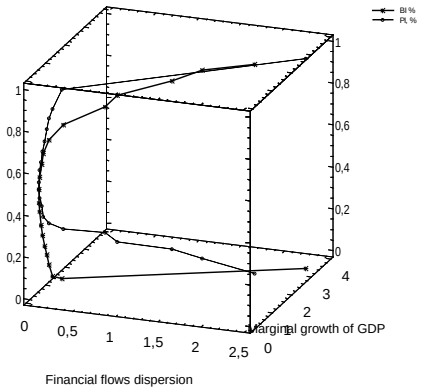

Fig. 1. Plot of the function of the financial flows utility

Source: calculated by author

Thus, to achieve stable growth of GDP, the ratio of budgetary investments and enterprise investment should be in these proportions: 35% should be from budgetary investments; 65% from enterprises.

An important problem is the determination of priority economic sectors in which to invest budget funds. To solve this problem I used the model interbranch balances. Calculations were made using MSExcel.

First, the technology coefficients matrix was calculated. The value of the cells of this matrix shows how much output of the respective industry is required. Next, to determine the multiplication effect, output growth of each industry was computed using the multiplication matrix (the difference between the identity matrix and a diagonal matrix of technological factors). The next step was to determine the inverse of the matrix. The last line of the table shows the complete multiplied effect of growth release for 1 UAH in each industry. Summary data on sectors studied for the period are shown in the appendix. As can be seen from the calculations (appendix), the largest multiplicative effect for the entire economy provides the increase of production in agriculture (1), processing industry (4), construction (6), trade (7) and the activity of transport and communications (9). Considering the results, the priority sectors for government investment should be agriculture, the manufacturing industry and construction. Trade, transport and

communications are service industries, the volume of provided services in them increases automatically with the growth of production volumes in other sectors of the economy.

4 Conclusion

Budget investing must be performed under conditions of co-financing with private investment in an aspect ratio of 35:65. The priority economy sectors for budgetary investments are agriculture and the processing industry. Government support of the processing industry and construction must be in harmony with the needs of agricultural development, which will provide an opportunity to increase the output of competitive finished goods and reduce the volume of raw material export. Due to the support of these sectors of the economy,the government will be able to accumulate the necessary financial resources for the revival in the remaining economic sectors.

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Appendix

Multiplicative effects of output growth in every sector of the economy in Ukraine for 2008-2013

	1	2	3	4	5	6	7	8	9
2008	2,385661	1,353256	1,658212	7,25031	4,785381	4,19807	3,957424	1,797833	**6,155713**
2009	4,881013	1,091614	3,493143	**37,32076**	2,287136	**9,904761**	**13,051**	2,33237	**16,00412**
2010	**13,89211**	1,151677	**7,480222**	**107,6284**	2,887233	**27,94211**	**40,08469**	5,418277	**36,2888**
2011	2,815175	2,906589	2,323703	3,481359	2,980902	**49,45661**	1,666634	2,561844	2,441911
2012	**9,953075**	1,181044	4,616085	**66,22203**	4,395196	8,842904	**27,35447**	3,450293	**18,16766**
2013	**14,29058**	2,091375	**8,48057**	**101,5781**	**10,57856**	**21,33424**	**39,57498**	**13,09649**	**43,18887**

Note: 1 – agriculture, hunting, forestry; 2 – fishing, crop production; 3 – mining, 4 – processing industry; 5 – production and distribution of electricity, gas and water; 6 – construction; 7 – trade; car repairs, household products and items for personal use; 8 – the activity of hotels and restaurants; 9 – the activity of transport and communications.

Source: calculated by the author