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OPTIMIZING THE MANAGEMENT OF FINANCIAL FLOWS BASED ON ASSESSMENT OF REGIONAL MULTIPLIER EFFECTS[1]

This article examines the issues of improving the effectiveness in the management of regional financial flows. As their main hypothesis, the authors provide a rationale for the argument that the management of regional financial flows must be optimized on the basis of multiplier economic effects that allow to better assess the performance of regional socio-economic policy. The article presents a multifactor model for managing the financial flows at the regional level, or the matrix of financial flows based on the principles of general economic equilibrium theory, Input—Output balancing method and methodology of national accounts system. The consolidated budgetary balance sheet of the region is presented as an important structural element of the model. A methodology has been developed for integrating the consolidated budgetary balance sheet of the region in the matrix of financial flows. By using the example of individual subjects of the Russian Federation, the authors calculated the matrix multipliers of consolidated budgetary balance sheet that allow to simulate the multiplier economic effects resulting from the impact of different types of exogenous economic factors on the development of regions, and to forecast the impact of changes in the fiscal reallocation on GRP and household income, assess the impact of external investment on the economic growth of the regions and study the effectiveness of federal tax policy at the regional level. The article demonstrates that the value of multiplier effect depends on several factors, including the external trade relations of the region, its dependence on imports, the share of value added in gross output, as well as the propensity of households to savings. The approach proposed by the authors can be used by the government authorities at different levels in the development of their strategies of socio-economic development, assessment of the extent and areas of impact made by various exogenous factors on the economy of the region, as well as in the analysis of the investment initiatives of the private sector seeking the financial support for its projects from the state. The authors propose the areas for improving the management of financial flows based on maximizing the multiplier economic effects in the short and medium term for the regions with a different level of fiscal capacity.

Keywords: multiplier, matrix of financial flows, multiplier effect, consolidated budgetary balance sheet, endogenous and exogenous factors of economic development

Introduction

In any state, the finance is traditionally regarded as a key qualitative characteristic of the economic system, that determines the ability to ensure the independence of national economy, its stability, sustainability and capacity for constant renewal and self-improvement. This is due to the fact that, as an integral part of economic well-being in any state, the finance encompasses a broad range of national, social and demographic factors.

In this context, the problem of increasing financial stability of Russia acquires a particular significance, which is especially relevant today for a country that is facing economic sanctions, a sharp decline in oil prices, an unprecedented drop of its currency exchange rate and other external and internal shocks. All this gives a particular importance to the issue of mechanisms used for managing the regional financial resources, their availability and sufficiency for sustainable socio-economic development of the regions in order to ensure a decent standard and quality of life for their people. The assessment of all financial flows circulating in the region provides a better understanding of how progressive is its financial system, and whether it is adequate for resolving the challenges of the current stage of economic development.

This article deals with the improvement of effectiveness in the management of regional financial flows as a growth factor for the social and economic attractiveness of the regions. As their main hypothesis, which has both scientific and practical importance, the authors advance the following argument: one of the main areas to ensure financial stabilization of the subjects of the Russian

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Federation is in optimizing the management of regional financial flows, which should consider the multiplier effects that allow to better assess the performance of regional socio-economic policy.

Building the Matrix of Regional Financial Flows: Theoretical and Methodological Aspects

We believe that the management of regional financial flows must focus on the overall economic impact that includes not only direct but also indirect effects. This approach allows a broader view of the results obtained in managing the financial flows, and it allows to change the regional policy in favor of those measures which, despite relatively low levels of direct economic efficiency, can generate a high multiplier effect. First, these are the projects in the areas and industries that, in their production, rely on domestic designs and materials, because a high proportion of domestic suppliers allows to increase the multiplier effect, which is especially relevant for Russia, given its active policy of import substitution.

The calculation of multiplier effect is a separate area of economic theory, which was discussed in sufficient detail in Russian and foreign scientific literature.

The term multiplier was first introduced in 1931 by Richard F. Kahn [1], a British economist, to justify the organization of public works as a way to escape the economic depression and reduce unemployment. He showed that state spending on public works not only leads to creation of new jobs, but also stimulates the consumer demand, and thereby contributes to overall growth of production and employment in the economy. Later, John. M. Keynes [2, 3] formulated the theory of multiplier effects in the economy and, in addition to the employment multiplier, introduced the investment or income multiplier. The impact made by multiplier on the economy is called the multiplier effect.

The financial flows circulating in the economy are always tied to specific territory, because they reflect the results of interaction (financial transactions) of specific institutional units in a particular location. For example, the households receive their income, which they use to pay taxes, make purchases and savings, the companies produce and sell their products, financial brokers provide financial services to households and companies, regional authorities prepare the regional budget and spend it on common regional needs, etc. In addition, the region has the financial flows of inter-regional and international institutional units that receive their funds outside the region and, in turn, send them to other administrative and territorial entities. As a result, a particular territory becomes a place for localizing a set of financial transactions performed by institutional units and for concentrating some financial resources available within the country.

The financial flows are heterogeneous in their content. Their movement is based on material flows that reflect the established relationships of economic entities, state bodies, public organizations and households with regard to production, distribution, exchange, and consumption of resources, goods and services. The financial flows pass from one to another and, therefore, to fully understand the total financial resources within a region, we should consider the entire set of financial sources, including:

— Funds accumulated in the budgetary system, such as grants, subventions and other proceeds from upper-level budgets to cover the shortfalls in the regional budgets, and centralized investment (from the federal budget or federal investment funds);

— Money from extrabudgetary funds, mostly, extrabudgetary social funds;

— Resources used by economic entities (profit and depreciation charges);

— Resources of households;

— Resources of commercial banks and other financial institutions (used for urgent and repayable financing of working capital and capital investment).

The interaction of these flows provides the reproduction characteristic of regional financial resources across their various forms. In general, it is hard to escape the conclusion that, as a management object, the financial resources reflect a fairly complex system of cash flow.

The consolidated financial balance sheet, which reflects total financial resources created and used within a region, serves as the main tool for analyzing the flow of all financial resources created and available in its territory. This consolidated financial balance sheet allows to consider the national income, created and used within the region, and a portion of national income created outside the region, but received within the region as part of allocation and reallocation process.

The budgetary resources have a great importance for the development of regions. To analyze and assess the budgetary financial flows circulating at the regional and municipal levels, we propose to use the consolidated budgetary balance sheet of the region, which includes all sources and complete

expenditure obligations of budgetary institutions and organizations, regardless of their departmental affiliation. Unlike the traditional understanding of budgetary expenditure and revenue as the aggregate of tax payments remaining in the region, and total expenditure of regional and local budgets (the consolidated budget of the region), the consolidated budgetary balance sheet provides a broad overview of all budgetary flows circulating within a territory.

Firstly, the revenue side includes the financial flows generated by economic entities at all levels of the budgetary system and extrabudgetary funds, which allows to determine not only the financial resources available to the territory (at the regional and municipal levels), but also the proceeds from the region in the form of various payments to upper-level budget, extrabudgetary funds, etc.

Secondly, the state expenditure is treated as the aggregate of funds directed to finance any economic entities within a given territory. In other words, for example, the financing of military or scientific institutions, which is currently provided on the departmental basis, may be reflected in the budgetary balance sheet as the expenditure of federal authorities in the region. This treatment significantly expands the boundaries of state presence in different regions and contributes to a more adequate understanding of its role in various territories. The analysis of the structure of inter-budgetary financial flows revealed that the direct expenditure in the federal budget is no less important for the socio-economic development of the regions than the actual financial aid, with the former exceeding the latter by 3–4 times in some subjects of the Russian Federation.

Thirdly, the balance sheet-based approach to preparing the consolidated budgetary balance sheet implies not just simply defining the balance of financial resources received by the budgets at all levels and used within a territory, but also must show the sources of their formation and allocation channels across various economic entities and levels of the budgetary system.

From this point of view, presenting the structure of flows in the consolidated budgetary balance sheet of the region is a fairly complex issue and, therefore, requires to use special methods for describing these flows. In our view, the system of national accounts (SNA) represents a constructive basis for preparing the consolidated budgetary balance sheet that is the most adequate in terms of structural elements and methodology of calculation. The relationship of financial flows used in the system of national accounts provides the reproduction characteristic of regional financial resources across their various forms. The inter-sectoral balance of SNA is the information and methodological framework for analyzing the relationships between the sectors of national economy, identifying the most important economic ratios and structural shifts. The use of economic and mathematical model built into the methodology of its preparation allows to solve a wide range of analytical tasks in the area of efficiency of public production, pricing, factors of economic growth, as well as in forecasting the macroeconomic characteristics [4].

The Social Accounting Matrix is one of the most promising and latest tools of macroeconomic analysis used in the world. It is also called the Integrated Matrix of Financial Flows and is based on the principles of the theory of general economic equilibrium, Input—Output balancing method and the methodology of the system of national accounts. The consolidated budgetary balance sheet of the region is an important structural element of this model. From an economic point of view, the matrix of financial flows reflects, on the basis of balance-sheet identities, the movement of financial resources from revenue generation to their final use in different institutional sectors, such as the households, public administration sectors, financial and non-financial corporations. From a statistical point of view, the matrix of financial flows is a detailed system of consolidated national accounts of goods and services, production, revenue generation, use of revenue and capital transactions, revenue and expenditure accounts of economic sectors and account for reallocation in the form of tax and non-tax revenue and expenditure in the budgets of various levels.

A critical area for using the matrix of financial flows is the medium-term forecasting and modeling the relationship between financial results obtained by institutional sectors (households, public administration sector, non-financial and financial corporations), and the final demand in the economy.

In a regional analysis, designing a matrix of financial flows allows to address the following tasks:

— Presenting an expanded view of financial turnover within a territory, including the transition from initial revenues of economic agents obtained from participation in the process of production (wages, taxes on production and gross profit) to their final use for consumption and savings;

— Studying the flow of revenues between the institutional sectors of the region, identifying trends in the proportions of allocation and use of revenues, assessing the impact of external impacts on the regional economy;

— Identifying the deficits in the system of financial balance sheets of territories, including the fiscal deficit, determining the optimal ways to cover these deficits, assessing their impact on various institutional sectors;

— Analyzing the impact of fiscal reallocation on socio-economic indicators in the regions, such as the gross value added, final consumption, mixed income, gross savings;

— Assessing the impact of direct territorial expenditure of the federal budget on social differentiation and economic growth of the regions;

— Forecasting the economic effects from external (including foreign) and other investment to the territory.

The matrix of financial flows and methods of its use in the analysis of macroeconomic processes were first developed by G. Pyatt, a British scientist. A great contribution to the development of theoretical and practical foundations underlying the matrix of financial flows was also made by R. Stone, E. Rowe, E. Thorbecke, B. Roberts, K. Reinert, K. Shyles, D. Roland-Holst and other well-known economists.

In Russia, the theoretical and practical issues of building the matrix of financial flows were examined by N. Mikheeva, E. Abramova, A. Belousov, R. Istomina, L. Vlasyuk, N. Zakharchenko, V. Kalashnikov and other researchers.

As already noted above, the matrix of financial flows is a balance sheet-based model that reflects all stages of reproduction process through the flow of tangible and intangible benefits covered by the counter flow of financial resources. All indicators of this matrix are directly associated with specific economic sectors and industries. Each element of the matrix of financial flows is recorded as a double-entry, that is, the income of one economic agent is the expenditure of another economic agent, which ensures the balanced nature of the model. In addition, since each economic agent is involved in several economic processes (production, consumption, savings, reallocation of revenues), the same entities may appear multiple times — for example, once, in the portion of balance sheet that reflects the process of production; another time, in the portion that reflects the use of revenue, etc. Thus, the matrix of financial flows is a consolidated system of indicators that allows to cover all aspects of economic reproduction in the form of a single balance sheet-based system. This allows to use it for comprehensive analysis of economic processes and, what is crucial in the context of this paper, it allows to determine the multiplier effects arising under the impact of economic parameters and conditions affecting the results.

The matrix of financial flows looks like a square matrix in which the rows reflect the formation of resources (revenues), while the columns reflect their use (expenditure) by various institutional sectors. In contrast to the standard model of inter-sectoral balance (or Input — Output tables), the matrix of financial flows considers, along with the intermediate and final consumption and gross value added, the transfer payments between institutional sectors, as well as the allocation of factor payments. This matrix can be developed both in the aggregated and disaggregated or expanded form. The structure of the matrix of financial flows is shown in Table 1. The method used for preparing the matrix of financial flows, calculation of matrix multipliers based on such matrix and the process of distributing the multiplier effects are described in detail in various papers [5–15].

Integrating the Consolidated Budgetary Balance Sheet into the Matrix of Financial Flows

During this study, we made an attempt to integrate the consolidated budgetary balance sheet of the region into the matrix of financial flows and develop a methodological approach to calculating and analyzing the matrix multipliers. We developed a matrix of financial flows that includes 10 accounts: 1 — Goods and Services; 2 — Industry Sectors; 3 — Capital; 4 — Labor; 5 — Households; 6 — Regional Budget; 7 — Federal Budget; 8 — State Extrabudgetary Funds; 9 — Investment (Savings) 10 — Transactions with Outside World.

The integration of consolidated budgetary balance sheet of the region into the matrix of financial flows and subsequent analysis of the impact made by its elements on socio-economic processes in the region includes five main stages [9]:

1) Building the matrix of financial flows in the region;

2) Developing the matrix of average propensities based on the matrix of financial flows;

Table 1

The Diagram of Aggregated Matrix of Financial Flows

	Products	**Indust-ries**	**Factors**	**Enter-prises**	**House-holds**	**Govern-ment**	**Capital Account**	**Rest of the World**	**Total**
Products		Intermediate Consumption			Household final consumption expenditure	Government final consumption expenditure	Gross Capital Formation	Exports of Goods and Services	Aggregate Demand
Industries	Output								Total Sales
Factors		Value Added						Labor remuneration of employees received from the rest of the world	Factor Income
Enterprises			Gross Profit			Transfers to Enter-prises			Revenues of Enter-prises
Households			Labor remuneration of employees	Transfers of Enterprises to Households		Transfers to Households			Household Income
Government	Taxes on Products	Other Taxes on Production	Revenues from Factors of Production	Current Taxes on Revenues and Property of Enterprises	Current Taxes on Income and Property of Households			Property Income and Transfers	Government Revenues
Capital Account				Retained Earnings and Gross Saving of Enterprises	Household Savings	Government Savings			Total Savings
Rest of the World	Import of Goods and Services		Labor remuneration of employees paid by the rest of the world			Property income and transfers to the rest of the world	Net Lending (Net Borrowing) of the Economy		
Total	Aggregate Supply	Total Costs	Total Expenditure of Factors	Total Expenditure of Enterprise Sector	Total Expenditure of Household Sector	Total Expenditure of the Government	Total Capital Formation		

3) Allocating the elements of consolidated budgetary balance sheet in the matrix of financial flows of the region by endogenous and exogenous variables;

4) Calculating the average propensities of the system of multipliers of financial flows based on the matrix;

5) Calculating the multiplier effects in the region's economy resulting from the impact of fiscal exogenous variables.

The first stage involves filling in the elements of the matrix of financial flows with the values. This should be performed in compliance with the principle of equality so that the sum for an account in the row is equal to the relevant sum for that account in the column. The budgetary balance sheet is integrated into the matrix of financial flows in the form of such accounts as the Regional Budget, Federal Budget, State Extrabudgetary Funds. These accounts reflect the internal fiscal flows circulating within the regional reproduction system, as well as the outgoing (incoming) flows arising in the process of inter-budgetary reallocation.

The second stage in working with the matrix of financial flows is the calculation of the matrix of average propensities. In essence, this matrix is similar to the matrix of direct costs in the system of Input—Output tables. The factors of the matrix of average propensities are calculated for each account as specific weights of elements, included in the matrix of financial flows, in the total volume of resource utilization (expenditure) on this account, that is, each element of the matrix is divided by the sum of the relevant column.

The third stage involves the distribution of elements of the matrix of financial flows by endogenous and exogenous elements. Endogenous accounts do not track physical inflow and outflow of financial resources in the region. Exogenous accounts record inter-regional reallocation of financial resources and create a development momentum. For this reason, in most foreign studies, when calculating the matrix of financial flows at the national level, the accounts of goods and services, industry sectors, factors of production and households are considered endogenous, while such accounts as the government, investment and transactions with the rest of the world are considered exogenous. In this study, according to its objectives, the exogenous accounts include the Expanded Federal Budget, Investment and Transactions with the Outside World. The Regional Budget was classified as endogenous account because, from the regional point of view, the regional budgetary revenues and expenditure are intra-regional reallocation flows.

In the fourth stage, the matrix of average propensities is used to calculate the system of matrix multipliers of financial flows in accordance with the formula for calculating the inverse matrix [5]. This results in preparing the table of multipliers for endogenous accounts. Each column shows the effect induced by a single change of exogenous factor. Therefore, the system of matrix multipliers can be used to analyze and forecast a variety of economic dependencies.

The fifth stage includes the calculation of multiplier effects on the economy of the region, depending on the type of fiscal exogenous impact. In this model, the following main types of exogenous impacts have been identified within the consolidated budgetary balance sheet of the region:

1. Changes of exogenous demand in the economic system of the region. The changes in demand can be caused by the increase (decline) of federal and regional budgetary investment, inter-budgetary transfers, increase/decline in the funding of federal institutions within a region, replenishment of national strategic stockpile, etc.

2. Changes of exogenous demand for the products of enterprises residing in the region. This account is used when the initial increase of demand is met exclusively by local producers. The multipliers of this account are used mainly in case of changes in the amount of funding of federal social transfers in kind, as well as to assess the economic implications for the region resulting from changes in the terms of indirect taxation (VAT, excise duties, customs duties, etc.)

3. Changes of exogenous demand for the capital as a production factor. This account is used to assess the results of state policy in respect of the profits earned by the entities operating in the economy. These measures mainly include the change in the terms of taxation for the profits of enterprises, as well as the budgetary subsidies to producers of some products.

4. Changes of exogenous demand for the labor as a production factor. This account is used to assess the effects from changes of state policy in the area of labor taxation and, in particular, from change in the tax rates of deductions to state social extrabudgetary funds, raise of minimum wage, wages of public sector workers, etc.

5. Changes of household income resulting from the provision of social transfers from the federal budget or state social extrabudgetary funds to the households, including the budgetary subsidies to the households, pensions, as well as other non-taxed household income. This account can also be used to assess the effects of changes in personal income tax rate.

6. Change of transfers from the federal budget to the regional budget. This account is used to assess the exogenous increase (decline) of regional budget revenues, the main source of which is usually represented by various gratuitous transfers from the federal budget or state extrabudgetary funds.

Therefore, depending on the objective of the study, after selecting the type of exogenous fiscal impact, the system of matrix multipliers allows to assess a variety of multiplier effects. The multipliers of Goods and Services account are used to assess the total change of demand in the economy of the region, those of Industrial Sector — change of demand for the products of the region's residents, those of Capital and Labor — potential change of GRP, those of Households — final change of household income and their consumer demand, those of Regional Budget — final change in the revenues of consolidated regional budget.

Assessing the Impact of External Factors on Regional Economy with the Matrix of Financial Flows

The methods for calculating and analyzing the system of matrix multipliers have been tested by using the example of Sverdlovsk, Chelyabinsk, and Kurgan Regions in which the fiscal flows are balanced to various degrees. The matrix of financial flows in these regions was built on the basis of statistical data[2], as well as materials of research studies [16–19]. For each region, we obtained 36 multipliers, which have been used to assess the impact of the most significant exogenous factors considered in the calculation of fiscal balance sheet of the region. The results of calculations (multipliers) are provided in Table 2 and show the response (change) of endogenous (internal) factors of economic development to a one-time change under the external impact made by an exogenous factor.

It should be noted that the high value of multipliers in Kurgan Region can be explained by the high share of public sector in the structure of its economy, including health care, education, social institutions, state and municipal administration. A particular characteristic of their activities is a higher level of value added in gross output (up to 90 %). This leads to increased domestic economic effects from the exogenous fiscal impact.

The calculation of multiplier effects, caused by the changes in financial flows of the consolidated budgetary balance sheet of the region, requires to structure them. First, it is necessary to allocate the financial flows that circulate within the state social extrabudgetary funds, such as the Pension Fund of the Russian Federation, Social Insurance Fund, Federal Health Insurance Fund and Regional Health Insurance Fund. Since the final recipients of money allocated through extrabudgetary funds are the households, for this area, we will use the multipliers of Households account.

Secondly, the need to allocate the financial flows generated by the federal budget, in the process of accumulating the taxes and financing the federal budgetary institutions and organizations operating in the region. For this area, we will use the multipliers of Goods and Services account, as the tax collection and budgetary funding directly affect the demand for goods and services in the region.

Thirdly, it is necessary to allocate the financial assistance transferred from the federal budget to the regional budget. In this case, for grants and subsidies included in the consolidated regional budget and allocated by regional authorities with a relative degree of autonomy, we will use the multipliers of Regional Budget account. However, for federal subventions, it is necessary to apply multipliers of Households account, because their final recipients are specific household groups within the region (in this case, the regional budget acts only as the administrator of social payments).

Next, based on Table 2, we calculated the impact of financial flows, recorded in the consolidated budgetary balance sheet of the region, on socio-economic indicators. Table 3 describes potential multiplier economic effects.

[2] Natsionalnyye scheta Rossii v 2005–2012 godakh: stat. sb. [National accounts of Russia in 2005–2012: collection of articles]. (2013). Rosstat, Moscow, 364.

Regiony Rossii. Sotsialno-ekonomicheskie pokazateli 2013: stat. sb. [Regions of Russia: socio-economic indicators. 2013: collection of articles] (2013). Rosstat, Moscow, 990.

Statistichekie i analiticheskie materialy FNS Rossii [Statistical and analytical information of the Federal Tax Service of Russia]. Retrieved from: http://www.nalog.ru/rn66/related_activities/statistics_and_analytics/forms/4163396/ (date of access: 4/1/2015).

Table 2

The Impact of External Factors on Economic Indicators of the Regions

External (Exogenous) Factors	Internal (Endogenous) Factors	Subjects of the Russian Federation		
		Sverdlovsk Region, rubles	Chelyabinsk Region, rubles	Kurgan Region, rubles
Increase of federal grants, transfers, etc. by 1 ruble aimed at aligning the budgetary provision of regions	Increase of aggregate demand for goods and services in the economy;	+3.08	+2.61	+3.02
	Increase of GRP;	+0.59	+0.40	+0.65
	Growth of household income;	+0.79	+0.60	+0.98
	Final increase of regional budget revenues	+0.12	+0.08	+0.12
Increase of VAT payments by resident enterprises of the region to the federal budget (for example, due to the rate increase) by 1 ruble	Decline in the gross output of goods and services by resident enterprises;	–3.07	–2.60	–3.00
	Decline of GRP;	–0.70	–0.55	–0.76
	Decrease of household income;	-0.94	–0.82	–1.16
	Decline of regional budget revenues	–0.14	–0.12	–0.14
Increase of profit tax payments of resident enterprises of the region, for the portion transferred to the federal budget, by 1 ruble	Decline in the gross output of goods and services by resident enterprises;	–1.48	–1.22	–1.56
	Decline of GRP;	–0.84	–0.76	–0.90
	Decrease of household income;	–1.09	–1.11	–1.38
	Decline of regional budget revenues	–0.18	–0.16	–0.17
Increase in wages of workers of federal budgetary institutions operating in the regions by 1 ruble	Increase of aggregate demand for goods and services in the economy;	+1.81	+1.60	+1.65
	Increase of GRP;	+0.85	+0.75	+0.85
	Growth of household income;	+1.18	+1.12	+1.28
	Increase of regional budget revenues	+0.12	+0.09	+0.11
Increase of social transfers to households paid from the federal budget, including pensions, unemployment benefits, etc., by 1 ruble	Increase of aggregate demand for goods and services in the economy;	+2.55	+2.13	+2.27
	Increase of GRP;	+0.49	+0.33	+0.48
	Growth of final household income;	+1.66	+1.50	+1.75
	Increase of regional budget revenues	+0.16	+0.13	+0.15

Source: Authors' calculations.

The calculations performed by using the multipliers of the matrix of financial flows for 2012 showed that the changes in the financial flows of the consolidated budgetary balance sheet of the regions have a major impact on socio-economic development of the regions.

Based on obtained results, as well as analysis and assessment of particular characteristics in the economic development of different regions, we can draw the following conclusions: First, the value of multiplier of the consolidated budgetary balance sheet depends on external trade links of the region, its reliance on imports, the amount of the inter-budgetary transfers and direct federal expenditure in the region. Secondly, the share of value added in the gross output of goods and services has a great importance and, accordingly, in the analysis, we need to consider the structure of regional GRP by types of economic activities that have a varying degree of productivity. Thirdly, the multipliers of

Table 3

The Calculation of Multiplier Effects Resulting from the Impact of Financial Flows of Consolidated Budgetary Balance Sheet of the Regions

Multiplier	Sverdlovsk Region		Kurgan Region		Chelyabinsk Region	
	Factor	Multiplier Effect, mln rubles	Factor	Multiplier Effect, mln rubles	Factor	Multiplier Effect, mln rubles
Changes in the amount of grants and subsidies from federal budget (2011–2012)						
	–967		840		1,031	
Aggregate demand for goods and services in the economy	2.67	–2,581.89	2.47	2,074.8	2.28	2,350.68
Gross output of local enterprises	2.29	–2,214.43	2.05	1,722	1.69	1,742.39
GRP	1.06	–1,025.02	1.02	856.8	0.71	732.01
Household Income	0.86	–831.62	0.95	798	0.67	690.77
Regional budget revenues	1.12	–1,083.04	1.11	932.4	1.09	1123.79
Changes in the amount of subventions from the federal budget, balance of relations of the region with the Federal Center within the section of Extrabudgetary Funds						
	402		2,292		8,216	
Aggregate demand for goods and services in the economy	2.52	1,013.04	2.2	5,042.4	2.26	18,568.16
Gross output of local enterprises	2.16	868.32	1.82	4,171.44	1.67	13,720.72
GRP	0.99	397.98	0.9	2,062.8	0.7	5,751.2
Household Income	1.68	675.36	1.69	3,873.48	1.54	12,652.64
Regional budget revenues	0.16	64.32	0.14	320.88	0.14	1,150.24
Changes in the balance of relations of the region with the Federal Center within the section of Federal Budget						
	–3,922		–1,179		–1,464	
Aggregate demand for goods and services in the economy	3.18	–12,471.96	2.92	–3,442.68	2.71	–3,967.44
Gross output of local enterprises	2.73	–10,707.06	2.41	–2,841.39	2	–2,928
GRP	1.26	–4,941.72	1.2	–1,414.8	0.84	–1,229.76
Household Income	0.84	–3,294.48	0.9	–1,061.1	0.64	–936.96
Regional budget revenues	0.13	–509.86	0.12	–141.48	0.09	–131.76
TOTAL						
Aggregate demand for goods and services in the economy		–14,040.81		3,674.52		16,951.4
Gross output of local enterprises		–12,053.17		3,052.05		12,535.11
GRP		–5,568.76		1,504.8		5,253.45
Household Income		–3,450.74		3,610.38		12,406.45
Regional budget revenues		–1,528.58		1,111.8		2,142.27

Source: Authors' calculations.

consolidated budgetary balance sheet are closely associated with the propensity of economic agents to savings. Therefore, in terms of improving the effectiveness in the management of financial flows based on maximizing the multiplier macroeconomic effects, we can recommend the following areas for improving management of financial flows:

— Stimulating impact of federal fiscal policy should be aimed at the subjects of the Russian Federation that are least dependent on imports, have a high share of value added in their output and low propensity to savings;

— To achieve a high short-term positive economic effect in stimulating the economy of subsidized regions, the fiscal measures should be primarily aimed at increasing the household income (for example, through a reduction of income tax, tax deductions for the payroll fund, increase of social transfers to households), which leads to the increase in final consumption;

— For medium and long-term economic effect achieved through the growth of investment, it is preferable to use the monetary policy tools.

Conclusion

The presented matrix of financial flows and multipliers of the consolidated budgetary balance sheet of the region calculated on its basis certainly provide a simplified balance sheet model and do not reflect all relationships between the elements of regional reproduction system and institutional sectors. So far, the matrix does not consider the accounts of financial and non-financial corporations, which can be explained by the fact that currently there is not enough detailed statistical information available on federal banks and large enterprises belonging to vertically integrated holding companies that operate in multiple regions. Another simplification of the model is its underlying assumption that the prices remain unchanged and there is neither substitution of regional goods by imports, nor the utilization/accumulation of warehouse inventories during the increase/decline of aggregate demand. In addition, the relationship between such accounts, as Goods and Services and Industry Sectors has been implemented in a rather conditional way, given the absence of modern Input—Output tables compiled by types of economic activity. All this will the subject of our future research studies.

Overall, we can conclude that, to improve the effectiveness in the management of financial resources, it is advisable to prepare the detailed regional matrices of financial flows. This approach represents a promising area in the system analysis of regional economies that provides the basis for an effective financial policy aimed at improving the welfare of Russian people.

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