

Research Notes

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Fiscal federalism in transition: A suggested framework of analysis and empirical evidence. The case of Ukraine.

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**Fiscal federalism in transition: A suggested framework of analysis and empirical evidence. The case of Ukraine.**

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Abstract

A framework for evaluating a system of fiscal federalism is proposed and applied to Ukraine. It is found that fiscal equalization in Ukraine effectively redistributed income from relatively wealthy to relatively poor regions, it promoted regional economic convergence, and surprisingly and in contrast to common judgement, it even dampened the recession (promoted economic growth) in both types of regions. A key explanation for this unexpected success could be that both the marginal tax on regional tax revenues (which is imposed by any fiscal equalization system) and the volume of fiscal equalization payments have been relatively moderate. In addition, the relatively poor regions must have used the received transfers much more wisely than previously thought. In other areas of fiscal federalism important improvements were recently implemented (regarding the distribution of expenditure responsibilities among the government levels and transfers) but a weak point of the system is still the definition of own revenues of subnational governments.

JEL classification C33, H77, O47

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<sup>1</sup> German Institute for Economic Research, Berlin. Tatjana Vachnenko, Institute of Economic Forecasting, Kiev, compiled the data used in this paper and other information on fiscal federalism in Ukraine and helped in their interpretation.

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## **1. Introduction**

In many countries that cover a relatively large land area, the organization of intergovernmental relations has been blamed for seriously impeding economic development. Best known are the cases of Argentina (Tommasi et al., 2001) and Russia (Litwack, 2001), but even in the case of the much smaller and highly developed country Germany empirical evidence was presented in support of this hypothesis (Baretti, Fenge, et al., 2000, Baretti, Huber, Lichtblau, 2000).

However, a generally accepted framework for evaluating a given system of intergovernmental finances does not exist. The theory of fiscal federalism is only evolving and does not offer a set of concrete conditions that could be used in an evaluation. In order to evaluate a given system it is therefore necessary to construct a framework that is sufficiently flexible to be empirically applicable while at the same time sufficiently concrete to allow a meaningful evaluation. Hence, a normative set of criteria is defined, based on the current elements of the theory of fiscal federalism, which attempts to fulfill these requirements. It is then applied to Ukraine as an example for a transition country. For several reasons Ukraine lends itself well for this attempt: It is the largest European country with pronounced regional economic differences and particular problem regions. Ukraine's system of fiscal federalism has been blamed to be one reason for the relatively slow reform progress and thus for the long recession period during 1990-1999 with real official output declining by about 60%. Moreover, it was possible to compile a data set that covers Ukraine's 26 major regions over a period of four recent years, which allows panel econometric analysis to study incentive effects of the system. Following theory, the key variables in this econometric analysis are the marginal tax the fiscal equalization system imposes on regional tax revenues and the volume of fiscal equalization payments. Both variables are constructed for Ukraine's 26 major regions and used in regional per capita growth and tax revenue regressions with the surprising result that the overall effect of the system was growth promoting despite many shortcomings of the system especially in the areas of expenditure and revenue assignments.

The paper is structured as follows: in section 2 a framework is laid out, which may constitute a reasonable yardstick for evaluating a given system of fiscal federalism. Section 3 provides a brief overview over major developments of fiscal equalization during the past decade. Section 4 uses then the proposed framework to analyze Ukraine's system of fiscal federalism. The findings are summarized in the concluding section 5, where particular further improvements are also proposed.

## **2. A suggested framework of analysis**

The theory of fiscal federalism is concerned, above all, with three broad areas of research:

- Equalization of income disparities between the regions.
- The distribution of government responsibilities (functions) and thus expenditures among the different levels of government.
- Assignment of revenue sources to the budgets of the different government levels and establishment of some taxation autonomy for local governments so as to provide them with a certain degree of self-financing and thus self-reliance.

An additional important aspect, which has to be considered in each of these research areas, is whether the system of fiscal federalism provides incentives for regional and local governments to promote within their possibilities sustainable economic growth, to raise revenues and minimize administrative costs.

For these areas and on the basis of the relevant literature criteria are defined, which could be reasonable minimum standards, or norms, that should be fulfilled by any system of fiscal federalism.

## **2.1 Equalization of income disparities among regions**

The arguments for vertical and horizontal fiscal equalization are manifold.<sup>2</sup> Most well known is the argument for redistribution of income between wealthier and poorer regions. Redistribution serves to maintain a certain level of public goods provision and thus certain minimum social standards throughout the country. Additional arguments include the establishment of an efficient nationwide net of physical infrastructure, insurance for public budgets against sudden revenue shocks, and the internalization of vertical and horizontal spillover effects of budget decisions taken by the central or a subnational government. Hence, fiscal equalization may create important potential beneficial effects expected to raise the long run growth potential of the entire country. However, redistribution is likely to have adverse incentive effects on the behavior of the regions and their magnitude may rise with the degree of equalization, i.e. the chosen equalization coefficient. Although the research concerning such adverse effects is only evolving and very limited, the available evidence suggests that they need to be taken seriously (see, for instance, Smart and Bird (1997) and Smart (1998) for Canada and Barette, Fenge, et al. (2000), and Barette, Huber, Lichtblau (2000) for Germany). Assuming that a rising degree of equalization produces both benefits and disincentives, there is thus an optimal level for it, where the marginal benefits and marginal costs of equalization are equal. However, construction of a model that could be solved for this optimal equalization degree and which considers country specific characteristics that influence the benefits and costs of equalization, is beyond the scope of this paper. Therefore a pragmatic approach is adopted and a very flexible norm is defined:

*There should be a positive effective degree of equalization without causing significant adverse incentive effects for regional governments to promote regional economic growth, provide for efficient administration and raise revenues.* To empirically assess the fulfillment of this norm thus requires measurement of both the effective degree of equalization and of potential disincentive effects.

## **2.2 Distribution of expenditure responsibilities among the different levels of government**

The view of Musgrave (1959) is still widely shared, that of the three main functions of a government (i.e. allocation, redistribution and stabilization) only the allocation function may be shared by the different government levels. Redistribution activities should be exclusively performed by the central government, because otherwise competition of regional governments, enforced by mobility and migration of private households, may

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<sup>2</sup> See the discussion, for instance, in Boadway and Hobson (1993).

lead to an erosion of the social support system.<sup>3</sup> The important point is that these policies should be formulated on the national level and financed in whole or to a large extent by central transfers so that local competition in social policies is largely prevented. The same is analogously true with regard to macroeconomic stabilization. This function cannot be effectively performed by regional and local governments, because neither do they have particular incentives to implement coordinated counter-cyclical measures such as tax reductions and spending increases during a recession (or the opposite during a boom), nor are they responsible for monetary policy, which is also an important instrument for stabilization. But regional and local levels are, of course, asked to support central government stabilization efforts and not to undermine them, which would call for the establishment of a formal “stability pact” that regulates the responsibilities in the area of stabilization.

Overall then the distribution of government responsibilities among the different government levels concerns primarily the allocation function. This function refers to the provision of public goods and services including the correction of inefficiencies of private markets. However, among these tasks are also many important ones where it is not controversial that they should be the responsibility of the central government and not of lower levels of government, either because the central government can implement them at lower administrative costs or because competition of regional governments may lead to inefficiencies such as an undersupply of public services. Following Bird and Wallich (1993) it may be argued that the allocation function of the State includes three types of services, whose provision in the sense of defining supply levels and securing adequate financing should be the responsibility of the central government or in some instances, that of regional governments, but not the responsibility of local ones:

First, those services for which there are, or are for political reasons, no significant differences in demands in different jurisdictions (e.g. defense, national security, education, public health). Second, services which exhibit sizable beneficial “spillovers” between jurisdictions (e.g. education, public health, environmental protection, interstate transport). Third, services for which the additional costs of local administration are sufficiently high to outweigh its advantages (e.g. administration of income taxes).<sup>4</sup>

Despite the central government’s overall responsibility for the provision of services that satisfy these criteria, the actual delivery of many of them may well be delegated to local governments in order to adhere to the subsidiarity principle and realize efficiency gains. Transfers and a control system concerning the execution could guarantee that minimum provisioning standards are fulfilled nationwide.

Considering all these arguments, our evaluative norm becomes: *Local governments should have the expenditure responsibility for all those public goods and services in the allocation branch, which may be assumed to have significant differences in demand in*

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<sup>3</sup> This does, however, not mean that local governments should not be involved in formulating social support policies and deliver social services on the local level. Their expertise is very much needed in defining these policies and in making the provision of social services efficient, which includes minimization of local administrative costs in providing the services and of misuse and also permanent monitoring of their effectiveness.

<sup>4</sup> The tasks of education and health care show that the Bird and Wallich (1993) criteria are not mutually exclusive. Further examples for tasks of the central government within its allocation function that also satisfy several of these criteria are competition policies and other regulatory policies to prevent market failures (supervision of financial and energy markets, of telecommunication, railways etc.).

*different localities and are not associated with considerable spillovers. In addition, they may become the executor of expenditure programs defined by the central government and financed via transfers concerning public goods and services that are characterized by significant spillovers.* Thus, subnational governments may receive expenditure assignments for a large array of goods and services, examples of which are presented in table 1.<sup>5</sup>

Table 1  
Indicative expenditure assignments for subnational governments in the “allocation branch” of the functions of government

Responsibilities for local governments		Responsibilities for regional governments shared with the central government
Services that are assumed to exhibit significant differences in local demands and which may not cause substantial spillovers between jurisdictions	Services that are assumed to exhibit differences in local demands and which may cause significant spillovers, that could, however, be handled by transfers or contracting	Services for which there are, or are for political reasons presumed to be, no significant differences in local demands and/or which have significant spillovers that cannot satisfactorily be handled by transfers or contracting and/or those for which the additional costs of local administration are sufficiently higher to outweigh its advantages
Local public transportation Fire protection Local Roads Libraries Local police services Sanitation Sewage Public utilities Housing Culture and parks Sports facilities Community centers	Basic education (including child care) Basic health services	Interlocal transportation Secondary and higher education Secondary and tertiary hospitals Special service hospitals Interstate roads Local museums

### 2.3 Assignment of revenue sources to the budgets of the different government levels and establishment of some taxation autonomy for local governments

There appears to be general agreement in the literature about key principles concerning the assignment of taxes to the different government levels:

- Taxes on relatively mobile factors of production (e.g. taxes on labor and profits, capital gains tax), taxes that are usually progressive for the purpose of income redistribution (e.g. personal income tax, inheritance tax), and taxes whose base can be verified better by the national government than by local governments (e.g. income taxes) should be primarily determined by the central government.<sup>6</sup> Otherwise the following main problems may

<sup>5</sup> The categorization shown in table 1 is subjective and indicative only because arguments can be made that most expenditure functions are shared between levels of government. The goal here is to provide nevertheless an orientation for the expenditure distribution between the different government levels.

<sup>6</sup> However, there is also broad agreement in the literature that local governments could and should be allowed to levy surcharges -within certain limits- on those of these taxes, which are borne by local residents, such as the personal income tax and the inheritance tax.

arise: First, tax competition among the lower levels of government may lead to undertaxation of relatively mobile factors of production (e.g. Zodrow and Mieszkowski, 1986, Edwards and Keen, 1996, Sinn, 1998, Hines, 1999). Second, redistribution tasks are unlikely to be satisfactorily fulfilled (Wildasin, 1991), Feldstein and Vaillant, 1994). Third, tax evasion may be promoted, if local governments are less able than the central government to verify the tax bases. In addition, natural resources, although immobile, should be taxed by the central government because they are usually regionally concentrated thus contributing to uneven regional development if regional governments keep the revenues.

- Regional and local governments should have significant own revenue sources determined within limits by themselves. Only then can there be some beneficial tax competition between jurisdictions, can their autonomy and accountability be enhanced, and thus an improved allocation of resources be expected. The taxes they are entitled to levy should concern relatively immobile factors (e.g. land, fixed property) and they could be surcharges on income and property taxes borne by local residents. The taxes and fees levied by them should to the extent possible be benefit related in order not to repel mobile factors, i.e. "...neutralize the impact of fiscal operations on location choice" (Musgrave and Musgrave, 1984, p. 517).

- Given that the own revenues of lower levels of government, including subnational surcharges, will usually cover only a fraction of the expenditure responsibilities, the remainder must be financed via tax sharing, revenue sharing, and transfers.

Of these, from an economic point of view, tax sharing is the least preferred financing method. Tax sharing means that the central government determines the base and the rates of the tax, and shares revenues with the subnational jurisdictions where revenues originate. Hence, there is no tax competition, and fiscal autonomy and accountability exist only in spending (Mc Lure, 1995).

Revenue sharing provides financing to subnational governments on the basis of factors such as population, average income, incidence of poverty, tax capacity and fiscal effort. It too provides little subnational fiscal autonomy but it is considered to be an effective means of fiscal equalization (Mc Lure, 1995).

Given these problems with tax and revenue sharing, transfers attain high importance in the system of intergovernmental relations. They serve two major purposes: First, they can be relatively stable revenues compared to tax and revenue sharing. Second, horizontal differences in fiscal capacity of regional governments need to be reduced, which can be done easily through transfers.

Fortunately, there is agreement in the literature about essential characteristics of a well-designed system of vertical and horizontal transfers (e.g. Bird and Wallich, 1993, Ladd, 1994, Thirsk, 2000): It should be transparent in the sense that rules or formulas determine the transfers rather than discretion and political bargaining. Transfers should be based on the potential revenue-raising capacity and not on actual revenues so as to avoid disincentives to fiscal effort. Transfers should in principle be of an unconditional nature and not interfere with the expenditure priorities of local governments with two important exceptions: The first one concerns transfers to finance social protection.<sup>7</sup> The second

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<sup>7</sup> The central government should guarantee a minimum level of social support for families and individuals irrespective of the fiscal situation of the respective local or regional government. At the same time, the

exception concerns the financing of expenditures with “spillovers”, i.e. sizable benefits for outsiders (non-residents of the respective jurisdiction), such as education, interstate infrastructure, and arguably also health care. These transfers may take on a conditional nature to protect the interests of outsiders. Such conditional transfers are often matching (conditional) grants, where the central government pays a part of the cost of certain expenditures carried out by local governments.<sup>8</sup>

Considering all these arguments, our norm regarding the assignment of revenue sources and taxes has the following five main elements:

- *Lower levels of government should have significant own revenues determined within limits by themselves.*
- *Taxes levied by them should not concern the relatively mobile factors of production with one exception, namely surcharges on the central government personal income tax and inheritance tax, which they should be allowed to levy within limits.*
- *The transfer system should be based on rules, be transparent, and it should consider the potential revenue-raising capacity. Only those transfers that are intended to cover expenditure programs with sizable spillovers (e.g. education, health, interregional infrastructure) and transfers that finance social protection should be of a conditional nature.*
- *The revenue sources granted to subnational governments should, of course, be sufficient to cover their expenditure responsibilities and, if these responsibilities have a tendency to rise,<sup>9</sup> the revenue sources should increase accordingly and without a significant time lag.*
- *The revenue sources for subnational governments should be relatively stable and predictable.*

Table 2 summarizes the evaluative framework.

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competence of local authorities especially concerning the prevention of misuse of social support should be utilized and administrative costs minimized so that local authorities should deliver these services and possibly determine some details of the provision. Conditional transfers may accomplish these goals better than either forcing subnational governments to finance all social support or to burden the central government not only with the financing task but also with the task of efficient provision of social support.

<sup>8</sup> Although there are no guidelines as to the precise matching rate appropriate for particular expenditure programs, the rate could be viewed as having three components (Bird and Wallich (1993)): There is a basic matching rate, which reflects the degree of interest on the part of the central government in the provision of the service, motivated by spillovers or other considerations. The second component is a uniformly determined measure of fiscal capacity. The third element is the degree of local demand elasticity (local enthusiasm). Thus, the matching rate faced by a given local government would be higher, the larger the central interest and the lower both the local fiscal capacity and demand elasticity are.

<sup>9</sup> There is considerable empirical evidence that supports “Wagner’s law” according to which the scale of total government activity tends to expand relative to the national economy, especially in developing countries, e.g. Beck (1979).

Table 2  
Summary of framework for evaluating intergovernmental fiscal relations

Equalization of income disparities among regions	Assignment of revenue sources	Distribution of expenditure responsibilities
<p>- There should be a positive effective degree of equalization of income between regions.</p> <p>- Equalization should not cause significant adverse incentive effects for subnational governments, for instance with regard to improving their own tax base, the efficiency of their tax and other government administration, and the efficiency of their expenditure decisions.</p>	<p>- Lower levels of government should have significant own revenues determined within limits by themselves so as to provide them the opportunity to adjust their revenues at the margin.</p> <p>- Taxes levied by them should not concern the relatively mobile factors of production with one exception, namely surcharges on the personal income tax, which they should be allowed to levy within limits.</p> <p>- Natural resources (although immobile) should be taxed by the central government.</p> <p>- The transfer system should be based on transparent rules, which consider the potential rather than the actual revenue-raising capacity. Only those transfers that are intended to cover expenditure programs with sizable spillovers should be of a conditional nature (e.g. education, health, interregional infrastructure).</p> <p>- The revenue sources granted to subnational governments should be sufficient to cover their expenditure responsibilities.</p> <p>- The revenue sources should increase together with the responsibilities without a significant time lag.</p> <p>- The revenue sources should be relatively stable and predictable.</p>	<p>- The assignment of expenditure responsibilities should be clearcut and follow the subsidiarity principle.</p> <p>- Thus, local governments should have the expenditure responsibility for all those public goods and services in the allocation branch, which may be assumed to have significant differences in demand in different localities and which are not associated with considerable spillovers, unless these spillovers are considered in the (well designed) transfer system. Hence, subnational governments may receive expenditure assignments for a large array of goods and services, examples of which are suggested in table 1.</p> <p>- The efficiency of the fulfillment of responsibilities should be regularly and automatically assessed based, for instance, on national and international comparisons.</p>

### 3 Main developments of intergovernmental fiscal relations during the 1990s

Fiscal relationships between Ukraine's three levels of government (central, regional (oblast) and local (rayon) governments) continued to be characterized by the former Soviet era top-down approach (Thirsk, 2000): The budgetary process begins with the formation of the central government budget including determination of payments to and receipts from the oblasts. The oblasts then prepare their budgets analogously and determine financing of their subordinated rayons with a mixture of shared taxes and transfers. These hierarchical fiscal relationships and the financial dependency of subnational governments on the next higher government level remained largely in place despite adoption in the latter half of the 1990s of both a new Constitution and a law on Local Self-Government, according to which the lowest government level would, in principle, enjoy complete budget autonomy in formulating and executing its budgets. Thus, a highly decentralized fiscal system would emerge.

The main difference between the Soviet and post-Soviet fiscal system was that during transition, especially since 1995 the mixture of shared taxes and subsidies in financing lower levels of government changed from year to year according to the central government's will.<sup>10</sup> All tax bases and rates continued, however, to be determined by the central government with oblasts not allowed to levy surcharges. Perhaps as a result of granting oblasts the right to keep all income tax revenues, targeted amounts of these revenues were exceeded significantly during 1997-98. The central government then decided that starting in 1999 several relatively wealthy oblasts had to share again these revenues with the center. "Sharing coefficients" were determined by the central government for each of these oblasts individually.<sup>11</sup> For 2000 and 2001 the system was changed yet again with personal income tax revenues given to the oblasts and corporate tax revenues kept by the central government. Excise tax revenues, which had previously been shared equally between the center and oblasts, also became central government revenues. Transfers from the center to the oblasts were always determined by the central government with regions trying to lobby. Overall, the system of revenue sharing and transfers was highly unstable, subject to political bargaining, and not compatible with a decentralized fiscal system.

Given the supremacy of the central government in determining fiscal relations it is not surprising that during the transition and recession period its share of revenues in GDP declined much less than that of subnational governments (Table 3).

Table 3 shows the evolution of the shares in GDP since 1997 of central government revenues and expenditures, on the one hand, and regional and local government revenues and expenditures, on the other.<sup>12</sup> Also shown are the transfers from the central government to lower government levels. During 1997-2000 the shares of subnational government revenues and expenditures in GDP fell drastically. By contrast, the central government's share of revenues in GDP fell much less and immediately rose again with the recovery of real output since 2000. This demonstrates that the central government has been more successful than subnational governments in securing revenues and only since 2001 and following the recovery of its revenue share in GDP did it halt the process of declining shares of subnational governments' revenues and expenditures through higher transfers to them.

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<sup>10</sup> For instance, in 1994, all income taxes were shared equally between the central and oblast governments, and oblasts received 20% of VAT and excises. In 1995 and 1996 oblasts were granted higher shares of VAT revenues, dependent upon their fiscal capacity. During 1997-98 the practice of tax sharing was largely replaced by assigning tax revenues exclusively either to the center or the oblasts. VAT revenues, which are the single most important tax and relatively stable as a share of GDP, were exclusively assigned to the central budget while oblasts received the less important and more volatile revenues from income taxes.

<sup>11</sup> The "sharing coefficients" ranged from 25% of the personal income tax revenues, which the Oblast Kiev was allowed to retain, to 80% of corporate income tax revenues, which the Oblast Odessa was permitted to keep.

<sup>12</sup> Owing to improvements in budget preparation the fiscal data since 1997 appear to be more reliable than previous data, which are therefore not shown here.

Table 3: Main Indicators of Intergovernmental Fiscal Relations System in Ukraine 1)

	percent of GDP				
	1997	1998	1999	2000	2001 2)
<b>Revenues and expenditures of the central and subnational governments including transfers</b>					
<b>Revenues</b>					
Central government	18,0	15,9	15,7	17,6	20,2
Subnational governments	15,7	15,0	12,7	10,2	10,3
<b>Expenditures</b>					
Central government	24,7	17,9	17,3	17,2	20,2
Subnational governments	15,5	15,2	12,6	10,0	10,3
<b>Intergovernmental transfers</b>					
Gross transfers from the central government budget to subnational governments	2,7	2,1	2,3	2,5	3,5
Net transfers from the central government budget to subnational governments	1,8	1,6	2,1	1,7	2,3

1) Starting 2000, the so-called own funds of "budgetary agencies" (i.e. mainly fees charged by these agencies such as educational institutions and hospitals) were included in the consolidated budget. They are here excluded to make the figures comparable.

2) Preliminary.

Source: Ministry of Finance, Budget Reports, own calculations.

This tendency of declining shares of subnational government revenues and expenditures in the consolidated budget (Table 4) appears to be inconsistent with fiscal decentralization, which was promised by the mentioned law changes.

Table 4: Share of regional and local budgets in the consolidated budget 1)  
(in percent)

	1997	1998	1999	2000	2001
Revenues without transfers	43,2	45,7	40,0	31,3	26,2
Revenues including transfers	52,0	53,3	49,0	41,7	39,9
Expenditures without transfers	39,9	48,1	45,4	38,6	35,3
Expenditures including transfers	42,3	49,9	46,2	42,0	39,9

1) Excluding the own funds of "budgetary agencies," see footnote 1, table 2.

Source: Ministry of Finance, Budget Reports, own calculations.

This leads to the question as to how the government's responsibilities are distributed among the three government levels? Until a new budget codex was adopted in 2001, there has not been a clear definition of this distribution, neither in the Constitution nor in the Law on Local Self Government. Hence, it is not surprising that during the long period of economic decline during 1990-1999 a process of devolving expenditure responsibilities to local governments took place, including the area of social protection. Table 5 shows that in 1999 at the preliminary end of this process of devolution and of the recession, subnational governments incurred about 45% of the consolidated government expenditures while receiving about 40% of consolidated revenues. Given their very limited ability to borrow on financial markets, there was a steady growth during the second half of the 1990s of their payment arrears, especially with regard to social protection obligations.

The table also shows that subnational governments incurred more than half of the consolidated expenditures for social protection, 74% of those for education, 86% of the expenditures for transport, roads, and communication, and 91% of total health care expenditures. Such high shares in connection with the growth of their payment arrears demonstrate that these governments were not relieved from spending responsibilities in areas where the central government should secure financing. Besides growth of payment arrears on the part of subnational governments, other natural consequences of the continuous pressure on their finances and of the instability of the system of intergovernmental finances included a halt of physical investment in education, health, and social facilities and efforts on their part to raise revenues through unconventional means. The latter included profit oriented commercial activity, thus hindering privatization and distracting local authorities from fulfilling their main tasks, and pressure on enterprises, often particularly foreign investors, via local tax authorities or otherwise, to make payments to local budgets or to finance particular local infrastructure improvements. All of this contributed to the perception of lawlessness and to Ukraine's difficulties in attracting foreign investment despite relatively low wage costs.

Table 5: Revenues and expenditures by the different levels of Government in 1999, percent of GDP, except column 3, which is in percent.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Central Government budget	Consolidated government budget	Share of subnational government budgets in consolidated budget 1)	Oblasts	Cities	Districts (Rayons)	Towns	Villages
<b>Revenues:</b>								
Value added tax	6,61	6,61	0	0	0	0	0	0
Corporate profit tax	1,20	5,00	76	2,41	0,86	0,50	0,02	0,01
Personal income tax	1,04	3,49	72	0,84	0,96	0,50	0,05	0,10
Excise for domestic goods	0,78	1,24	37	0,26	0,11	0,09	0	0
Excise for imported goods	0,17	0,17	0	0	0	0	0	0
Fees for the utilization of natural resources	0,22	1,15	81	0,16	0,51	0,09	0,04	0,12
Import tariffs	0,67	0,67	0	0	0	0	0	0
Privatization receipts	0,55	0,65	15	0,02	0,04	0,04	0	0
“Depreciation tax” 2)	0,38	0,38	0	0	0	0	0	0
Local taxes and fees	0,00	0,35	100	0,01	0,22	0,05	0,03	0,04
Receipts from the “State reserve”	0,31	0,31	0	0	0	0	0	0
Administrative fees	0,15	0,26	42	0	0,06	0,02	0,01	0,01
Transport tax	0	0,23	100	0	0,13	0,03	0,02	0,05
Trade patent 3)	0	0,23	100	0	0,14	0,07	0,01	0,01
Transit fees for oil and gas	0,22	0,22	0	0	0	0	0	0
Licenses for entrepreneurial and professional activity	0,10	0,21	52	0	0,07	0,02	0,01	0
National Bank of Ukraine (NBU) profit transfers	0,20	0,20	0	0	0	0	0	0
State directed funds 4)	1,79	3,07	42	1,23	0,03	0,02	0	0
Other revenues	1,10	1,42	23	0,08	0,17	0,06	0	0,01
<b>Total revenues</b>	<b>15,52</b>	<b>25,86</b>	<b>40</b>	<b>5,02</b>	<b>3,30</b>	<b>1,49</b>	<b>0,19</b>	<b>0,35</b>
<b>Expenditures:</b>								
Government administration	0,78	1,17	33	0,07	0,14	0,07	0,01	0,10
International activity	0,20	0,20	0	0	0	0	0	0
Science	0,23	0,23	0	0,01	0	0	0	0
Defense	1,23	1,23	0	0	0	0	0	0
Police and state security	1,18	1,32	11	0,08	0,04	0,01	0	0
Education	0,98	3,71	74	0,35	1,05	0,87	0,12	0,34
Health care	0,28	3,00	91	0,99	0,97	0,69	0,01	0,05
Social protection	1,56	3,26	52	0,39	0,71	0,59	0,01	0,01
Housing and communal services	0,01	0,92	99	0,23	0,50	0,11	0,04	0,03
Culture and art	0,05	0,32	84	0,10	0,08	0,07	0	0,02
Physical culture and sport	0,06	0,16	63	0,04	0,05	0,01	0	0
Industry and energetics	1,38	1,48	7	0,10	0	0	0	0
Construction	0,66	1,23	46	0,41	0,12	0,02	0	0,01
Agriculture, forestry, fishing	0,25	0,42	41	0,13	0	0,04	0	0
Transport, roads, communication	0,23	1,59	86	1,24	0,11	0,01	0	0
Expenditure on Chernobyl accident	1,14	1,14	0	0	0	0	0	0
“State reserve”	0,31	0,31	0	0	0	0	0	0
Debt service	2,43	2,43	0	0	0	0	0	0
State directed funds 5)	0,67	0,76	12	0,06	0,02	0,01	0	0
Other expenditures	1,35	2,51	46	0,38	0,24	0,44	0,01	0,09
<b>Total expenditures</b>	<b>14,95</b>	<b>27,39</b>	<b>45</b>	<b>4,58</b>	<b>4,03</b>	<b>2,95</b>	<b>0,22</b>	<b>0,66</b>

1) Sum of columns 4-8 divided by column 2.

2) A tax that was temporarily levied by the central government on depreciation allowances of state owned enterprises so as to obtain some revenues from them despite their notorious loss-making.

3) “Trade patent” is an optional presumptive tax for very small businesses.

4) Chernobyl fund, social insurance fund, employment fund, innovation fund, road fund, fund for protection of disabled, environment protection fund.

5) Social insurance fund, employment fund, innovation fund, fund for protection of disabled, environment protection fund.

Source: Ministry of Finance, Budget reports, own calculations.

Despite these disappointing characteristics it should not be concluded too quickly that the fiscal federalism system contributed to the long recession during 1990-1999. This requires a deeper analysis especially of the incentives the system provided to subnational governments to promote economic growth.

## **4 Empirical Evaluation**

### **4.1 Equalization of income disparities among regions**

A data set was compiled comprising all of Ukraine's 26 oblasts.<sup>13</sup> For the four years from 1996 through 1999 it has been possible to collect for each of these oblasts annual data needed to measure the effective degree of fiscal equalization and to perform panel regressions in an attempt to analyze incentive effects of equalization on the behavior of subnational governments.<sup>14</sup> Given the relatively large number of oblasts and the relatively large variation in the data this relatively short time period is just sufficient to allow meaningful statistical analysis.

#### **4.1.1 Measuring the effective degree of equalization**

Annual oblast tax revenues before and after fiscal equalization as percent of the national per capita average are shown in figures 1 and 2 for the years 1998 and 1999, respectively.<sup>15</sup>

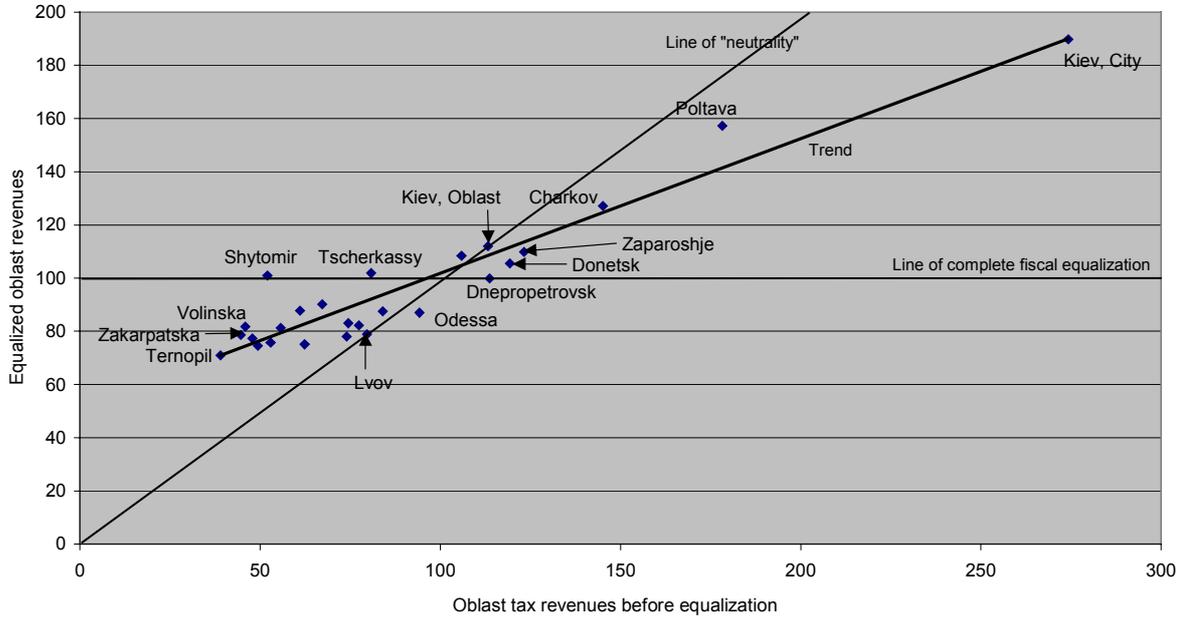
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<sup>13</sup> Ukraine comprises 24 states called oblasts, the autonomous Republic of Crimea and two so-called cities of state subordination, Kiev and Sevastopol. In the data sample used here Sevastopol is included in the data of Crimea and Crimea and Kiev city are treated as oblasts so that the total number of oblasts equals 26. Among these 26 oblasts there are two Kiev oblasts, namely the city itself and the surrounding of it, which are called here "Kiev city oblast" and "Kiev oblast."

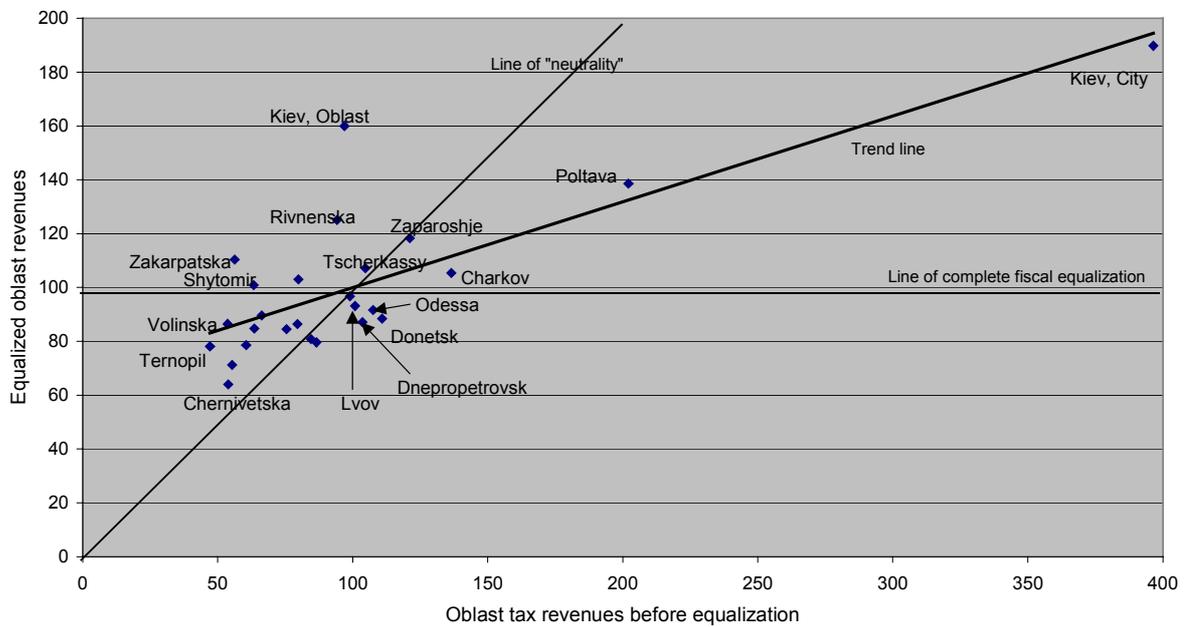
<sup>14</sup> The data were compiled by Tatjana Vachnenko, Institute of Economic Forecasting, Kiev. All data used in this paper are available from the author on request.

<sup>15</sup> The 1996 and 1997 distribution of per capita revenues before and after fiscal equalization is similar to the one shown in figures 1 and 2.

**Figure 1**  
**Tax revenues before and after fiscal equalization, 1998**  
**(in percent of the national per capita average)**



**Figure 2**  
**Tax revenues before and after equalization, 1999**  
**(as percent of the national per capita average)**



Evidently, the fiscal equalization system effectively redistributed income from the relatively wealthy oblasts to the relatively poor ones: Had the system no redistribution effect then the individual oblasts would have been located on the line of “neutrality,” where revenues before and after equalization as percent of the national per capita average

are unchanged. On the other hand, had the system equalized per capita revenues perfectly, then the oblasts would have been located on the horizontal line of “complete fiscal equalization”, i.e. they would have received 100% of the national average of revenues per capita after equalization. In other words, the lower the slope of the trend line the higher is the average degree of effective redistribution. As can be seen the slope of the trend line was in both years somewhere between the two extremes (line of neutrality and line of complete fiscal equalization) and in 1998 there were relatively few outlier oblasts located relatively far away from the trend line. However, the clustering of the oblasts around the trend line decreased substantially in 1999.<sup>16</sup> This suggests that in this year redistribution became more arbitrary. Nevertheless, there has been an effective lifting of relatively poor regions on cost of the relatively wealthy ones: the pre-equalization distribution of per capita revenues ranged from about 45% to 400% of the national average. After equalization no oblast had in both years less than somewhat above 60% and more than 200% of the national average level.

Another indicator of the effectiveness of redistribution is the simple correlation between GPP per capita before equalization and net transfers per capita, which is  $-0.74$  for the period 1996-99. This confirms that net transfers tended to increase the lower had been regional per capita income. Overall then, it appears that the fiscal equalization system provided for a positive degree of effective redistribution.

#### **4.1.2 Estimating incentive effects of the system of fiscal equalization**

Effective equalization should not cause significant adverse incentive effects for regional and local governments in their economic management, which could be detrimental to regional economic growth and regional tax revenues. For reasons of space the analysis of the effects of fiscal federalism is limited to these two indicators of regional economic performance.<sup>17</sup>

##### **4.1.2.1 Effects on economic growth**

###### **a) Model description**

The economic growth specification follows the neoclassical cross-sectional growth model of Barro and Sala-i-Martin (1991, 1995), extended by Knight, Loayza and Villanueva (1993) to include time series data and to improve the consideration of unobserved

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<sup>16</sup> Apparently, the changes in the equalization system implemented in 1999, when selected relatively wealthy oblasts were forced to contribute more of their collected income tax revenues to the central government which then determined transfers to the regions, was associated with producing more outliers from the trend line and some apparent “unfairness.” For instance, Zakarpatska and Kiev oblast benefited extremely from this change, whereas oblasts such as Donetsk and Dnepropetrovsk, whose per capita revenues were above 100% of the national average before and after equalization in both years 1998 and 1999, were pulled down below 100% of the national average after equalization in 1999.

<sup>17</sup> It should be mentioned, however, that in an even more comprehensive empirical analysis several other indicators of regional government performance could be considered, that may be important especially for transition countries. These may include improvements of the regional public capital stock, “slimness” of regional government, abstention of regional governments from activities for the purpose of commercial profit, success in taking over crucial parts of the social sphere of former state owned companies to promote privatization, etc.

country specific effects. Barette, Fenge et al. (2000) extended this model to study the effects of fiscal federalism for the case of Germany. Here, the regression analysis includes Ukraine's 26 oblasts and the four years 1996-1999 using annual data. An innovation is introduced by distinguishing between net recipient regions and net contributing regions because theory suggests that there may be behavioral differences. The variables are adjusted for the respective national average, i.e. they are deviations from the national average. This eliminates those time specific effects, which affect all oblasts similarly (symmetric shocks) and which dilute the estimation results.

Specifically, the dependent variable is the deviation of per capita real GDP growth from the national average  $YGDA_{it}$  ( $\ln(y_{it}/y_{it-1}) - \ln(ya_t/ya_{t-1})$ ), where  $y$  represents real per capita GDP of region  $i$  during year  $t$  and  $ya$  is the national average of real per capita GDP. It is assumed to be determined by the starting level real per capita income  $YDA_{it-1}$  (i.e. the deviation from the national average,  $y_{it-1} - ya_{t-1}$ ), population growth  $PGDA_{it}$  (i.e. the deviation from the national average,  $\ln(pop_{it}/pop_{it-1}) - \ln(popa_t/popa_{t-1})$ , where  $pop_{it}$  represents the population in region  $i$  during period  $t$ , and  $popa$  represents the national population), and variables that measure the effects of the fiscal equalization system. Since the Barro and Sala-i-Martin model assumes that there is no migration of workers, an additional variable representing commuting of workers between regions is usually included in this regression. Since the goal is to analyze effects of fiscal federalism, this variable attains importance especially if there are regions or cities, whose economic growth benefits from commuters who live in another region where income taxes may be paid. Ukraine is, however, an exception in this regard, because income taxes are paid in the city of the working place and these tax revenues are not transferred to the region of residence. Hence, this institutional peculiarity mitigates potential distortions when not controlling for effects of migration and commuting due to unavailable data.

The effects of the fiscal equalization system are considered by two variables: On the one hand, there is the *volume* of fiscal equalization and, on the other, there is a "*marginal tax*", which the system imposes on regional tax revenues. The theoretical background is the following: Barette, Fenge et al. (2000) suggested a simple theoretical model in which the regions are able to improve their economic growth performance through their own economic policies (e.g. less red tape, better infrastructure etc.). These policies exhibit decreasing marginal benefits (more efforts to raise economic growth are associated with declining benefits, for instance, regarding private incomes, employment, and tax revenues) and increasing marginal costs (higher growth may result, for instance, in progressively rising environmental costs and demands for public infrastructure and public services). The regions will thus choose an optimal growth rate where marginal benefits of efforts to raise growth equal marginal costs. In this model fiscal equalization influences the optimal regional growth rate via two channels:

The first channel is the volume of net payments a region has to make or receives. If net payments received by an oblast increase (decrease), then its fiscal capacity rises (falls) and it experiences a positive (negative) income effect. This implies lower (higher) marginal benefits for it of raising economic growth. Hence, this effect of fiscal equalization lowers the optimal growth rate for net recipient oblasts because a volume increase means for them an increase in fiscal capacity. For net payer oblasts, however, an

increase in volume raises the optimal growth rate because they have now to provide more support to poor regions and therefore have to generate more growth to compensate for this income loss. In the empirical analysis, a variable representing this income effect needs to be found, which is exogenous.

Two variables were used alternately, lagged by one period to account for time lags. First, following Barette, Fenge et al. (2000) the average share of tax revenues in GDP of all other oblasts ( $TO_{t-1}$ ) was used, since the revenues in other oblasts can hardly be influenced by an individual oblast. This variable is the only one in the regression that is not expressed as a deviation from the national average. Since theory suggests that net recipient oblasts may react differently to changes in the volume of fiscal equalization than net contributing oblasts, the variable TO was split accordingly into two so-called interactive dummies: one for those 10 oblasts who can be considered - according to the data presented below - to have been net beneficiaries of the equalization system ( $TO_{receive10,t-1}$ ) and another one for all other 16 oblasts ( $TO_{pay16,t-1}$ ). As a second proxy for the volume of fiscal equalization the share of transfers in GDP (TRA) from the second stage of the fiscal equalization process as described below was used and also lagged. It can be considered exogenous in the sense of being determined by variables of previous periods. Appendix A provides empirical support for this. It too was split into the two groups of oblasts ( $TR_{receive10,t-1}$  and  $TR_{pay16,t-1}$ ).<sup>18</sup>

The second channel through which fiscal equalization influences the optimal regional growth rate is the marginal tax rate imposed by the system on a region's tax revenues (MTR). It is defined as the fraction of 1 additional unit of tax revenue collected by a region that flows out of it. It can be negative if a region receives more than it has to pay. This marginal tax is not directly observable. In an equalization system which uses rules and formulas to determine the individual net payments it can be estimated through simulations (see, for instance, Barette, Huber, and Lichtblau (2000), who performed such simulations with regard to the income tax in Germany). When the equalization system is not based on rules but when tax sharing coefficients and net transfers are determined in a rather arbitrary fashion each year for each region, calculation of the marginal tax becomes very complicated.<sup>19</sup> Given the difficulties in calculating the exact MTR, a proxy for it is used.

An effort was undertaken to calculate for each oblast and for each of the considered four years the "tax rate" the oblasts paid to the central government on the revenues collected within their territory.<sup>20</sup> This was done for those six taxes, which are the most important ones for the oblasts (and the central government) from a revenue point of view. They account for at least 80% of the initial total revenues collected in each oblast (excluding

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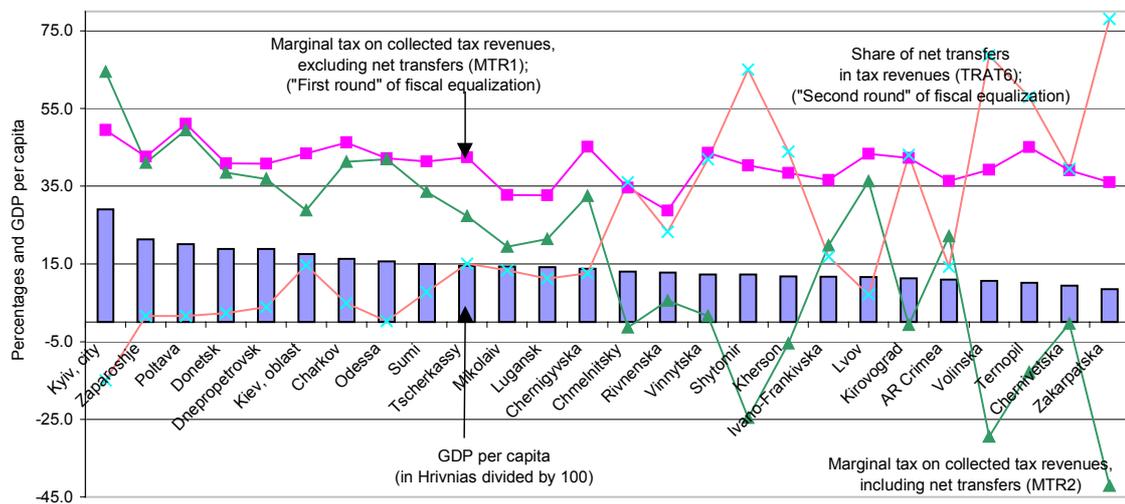
<sup>18</sup> Also tried as a proxy for the volume were net payments to the system of equalization (B). In contrast to the other two proxies this variable had never any significance.

<sup>19</sup> This arbitrariness and thus the difficulty in calculating the true MTR does not diminish its theoretical importance for influencing the behavior of regional governments, especially if, as in Ukraine, redistribution is taken seriously by the central government and thus success of one region in stimulating growth and tax revenues is likely to be followed for it by a higher MTR. In other words, the MTR is not fixed but sensitive to efforts by the regions to improve growth and revenues.

<sup>20</sup> This work was performed by Tatjana Vachnenko.

net transfers and privatization receipts).<sup>21</sup> Since there is in principle no “tax free” amount and no progressive tax rate schedule faced by an individual oblast, this average tax rate is also a marginal tax rate. It is called MTR1 and is the tax rate for oblasts during the first stage of the fiscal equalization process (figure 3). Also calculated for each year were the net transfers each oblast received or paid in the second and final stage of the fiscal equalization process. These net transfers were also expressed in percent of the regional revenues collected from the 6 major taxes (TRAN6). There was one oblast, Kiev city, that incurred negative transfers, on average, during 1996-99 (figure 3). Deducting these net transfers as percent of major revenues from the MTR1 of stage 1 yields a proxy for a comprehensive marginal tax rate MTR2 (figure 3). This variable may be the best available proxy for the true marginal tax rate for reasons explained in the footnote, and is therefore used as a proxy for MTR.<sup>22</sup>

**Figure 3**  
Ukraine's fiscal equalization system: Marginal tax rates, net transfers and per capita GDP by oblast  
(Averages during 1996-1999) 1/



1/ Tax rates and net transfers are shown as percentages of the regional revenues from 6 major taxes; GDP per capita is shown as local currency amount divided by 100.

<sup>21</sup> These taxes are the VAT, personal income tax, corporate profit tax, excise tax on domestic goods, excise tax on imported goods, and land tax.

<sup>22</sup> Since there are no published rules for the determination of the true MTR1 and MTR2, which include feedback effects from changes in collected revenues on the tax rate, one cannot perform simulations of changes of these tax rates under different scenarios. But one can estimate elasticities of tax revenues transferred to the center and of net transfers received from the center with regard to regional tax revenues raised. The first mentioned elasticity is a proxy for MTR1 and by deducting from it the second mentioned elasticity one obtains a proxy for the comprehensive marginal tax rate MTR2. Both consider feedback effects. However, these elasticities are averages for the whole period under consideration and thus they cannot be used in panel regressions. In addition, for the 26 regions they range from -37 percent to 6.3 percent and equally poor or wealthy regions have very different elasticities, which makes them difficult to interpret. The time period under consideration may be too short to allow to obtain reasonable elasticity estimates.

As can be seen, the MTR2 is highly, positively correlated with per capita income. The correlation coefficient during 1996-99 is .67. Relatively poor regions have - with three noteworthy exceptions (Ivano-Frankivsk, Lvov, and Crimea)- a negative marginal tax rate. (It may take an insider to explain the three exceptions). The marginal tax rate is then almost steadily increasing up to a still relatively moderate level of below 40% for most of the relatively wealthy regions with two exceptions: Poltava, which paid on average during 1996-99 50% and Kiev with the highest marginal tax rate of 65% on average. This progressive marginal tax rate schedule appears to be a very reasonable policy since it has the same theoretical justification, analogously applied, as progressive personal income taxation and it does not appear to reach levels that may be considered extremely high, perhaps with the exceptions of Poltava and Kiev.

Also the marginal tax of stage 1 of the equalization process (MTR1), which is not progressive, has a relatively moderate level of below 45% in most cases. The highest rates are found for Kiev with 49% and for Poltava with 51%. These findings have importance because it is commonly accepted knowledge that moderate marginal taxation is crucial for mitigating disincentive effects and distortions caused by any taxation.

There are 8 oblasts with a negative MTR2 on average during 1996-99<sup>23</sup> and 2 oblasts whose MTR had been slightly positive on average but negative during some of the period.<sup>24</sup> Therefore, these ten oblasts are defined here to be net recipients of the fiscal equalization system and the remaining 16 oblasts are defined as the group of net contributors.

In the regressions, lagged deviations of MTR2 from the national average are used (MTR2DA<sub>t-1</sub>) and this variable was also split into two interactive dummies in order to consider potential differences in the effects of the marginal tax on per capita growth in net recipient and net contributing oblasts (MTR2DAreceive10<sub>t-1</sub> and MTR2DApay16<sub>t-1</sub>, respectively). Although these interactive dummies are less highly correlated with per capita income (YDA) than the MTR2DA variable, the correlation is still relatively high and they are also relatively highly intercorrelated. Acknowledging this multicollinearity problem and given the data constraints, there is no remedy other than to test the sensitivity of the results to dropping variables and to estimate the equations with one group of interactive dummy variables at a time. The correlation between all other independent variables is very low. To summarize, the basic model is:

$$\begin{aligned}
 YGDA_{it} = & a_1 YDA_{it-1} + a_2 PGDA_{it} + a_3 TO_{receive10}_{it-1} + a_4 TO_{pay16}_{it-1} \\
 & \quad (-) \quad \quad (-) \quad \quad (-) \quad \quad (-) \\
 & + a_5 MTR2DA_{receive10}_{it-1} + a_6 MTR2DA_{pay16}_{it-1} + u_i + e_{it} \quad (1) \\
 & \quad \quad (-) \quad \quad \quad (?)
 \end{aligned}$$

where  $i$  represents the oblasts,  $u_i$  represents oblast specific effects, and  $e_{it}$  is an error term. Volume effects of fiscal federalism are measured either by the TO variable (split into the two groups, TO<sub>receive10</sub> and TO<sub>pay16</sub>), which measures tax revenues in GDP of other oblasts, or by shares of net transfers in GDP received during the second stage of the equalization process (TR<sub>receive10</sub> and TR<sub>pay16</sub>, respectively). The signs below

<sup>23</sup> Chernivetska, Chmelnytsky, Kherson, Kirovograd, Shytomir, Ternopil, Volynska, Zakarpatska.

<sup>24</sup> Rivnenska and Vinnytska.

explanatory variables represent the expected signs of the estimated coefficients as explained below. Definitions of the variables and their descriptive statistics are provided in Table 6. The variables are stationary with possibly one exception, the share of tax revenues in GDP of other oblasts (TO), whose time trend declined slightly.

Table 6: Definitions and descriptive statistics of the variables used in estimating regional real per capita economic growth (4 years 1996-1999, 26 oblasts, 104 observations (Total))

Variable	Calculation Method	Definition	Sample	Mean	Standard deviation	Minimum	Maximum
YGDA <sub>it</sub>	$\ln(y_{it}/y_{it-1}) - \ln(y_a/ya_{t-1})$	Real GDP growth per capita (deviation from national average)	Total	-3.8 E-16	0.0403	-0.0903	0.0815
YDA <sub>it-1</sub>	$y_{it-1} - ya_{t-1}$	Lagged real per capita GDP (deviation from national average)	Total	4.37 E-16	2.1636	-4.0480	8.5797
PGDA <sub>it</sub>	$\ln(\text{pop}_{it}/\text{pop}_{it-1}) - \ln(\text{pop}_a/\text{pop}_{a,t-1})$	Population growth (deviation from national average)	Total	2.5 E -19	0.0233	-0.1637	0.1597
TO <sub>it-1</sub>	Average share of tax revenues in GDP in all other oblasts	Lagged average share of tax revenues in GDP in all other oblasts	Total	0.1983	0.01001	0.18075	0.21218
TObreceive10 <sub>it-1</sub>	TO <sub>it-1</sub> * 1, for i = 10 recipient oblasts 1/, otherwise TO <sub>it-1</sub> * 0.	Lagged share of tax revenues in GDP in 10 net recipient oblasts;	10 net recipient oblasts	0.1035	0.1321	0.0	0.2880
TOpay16 <sub>it-1</sub>	TO <sub>it-1</sub> * 1, for i = 16 contributing oblasts 2/, otherwise TO <sub>it-1</sub> * 0.	Lagged share of tax revenues in GDP in 16 net contributing oblasts;	16 net contributing oblasts	0.1636	0.1308	0.0	0.2869
TRADAreceive10 <sub>it-1</sub>	TRADA <sub>it-1</sub> * 1, for i = 10 recipient oblasts 1/, otherwise TRADA <sub>it-1</sub> * 0.	Lagged share of net transfers in GDP in 10 net recipient oblasts; (deviation from national average)	10 net recipient oblasts	0.0158	0.0267	-0.0176	0.1128
TRADApay16 <sub>it-1</sub>	TRADA <sub>it-1</sub> * 1, for i = 16 contributing oblasts 2/, otherwise TRADA <sub>it-1</sub> * 0.	Lagged share of net transfers in GDP in 16 net contributing oblasts; (deviation from national average)	16 net contributing oblasts	-0.0157	0.0228	-0.1306	0.0138
MTR2DAreceive10 <sub>it-1</sub>	MTRDA <sub>it-1</sub> * 1, if i = 10 recipient oblasts, 1/ otherwise MTRDA <sub>it-1</sub> * 0.	Lagged marginal tax rate in 10 net recipient oblasts; (deviation from national average)	10 net recipient oblasts	-0.1081	0.1739	-0.7458	0.0018
MTR2DApay16 <sub>it-1</sub>	MTRDA <sub>it-1</sub> * 1, if i = 16 contributing oblasts, 2/ otherwise MTRDA <sub>it-1</sub> * 0.	Lagged marginal tax rate in 16 net contributing oblasts; (deviation from national average)	16 net contributing oblasts	0.1080	0.1374	-0.1669	0.5297

1/ Chernivetska, Chmelnytsky, Kherson, Kirovograd, Rivnenska, Shytomir, Ternopil, Vinnytska, Volynska, Zakarpatska.

2/ Crimea, Charkov, Chernigivska, Dnepropetrovsk, Donetsk, Ivano-Frankyvsck, Kiev city, Kiev oblast, Lugansk, Lvov, Mykolaiv, Odessa, Poltava, Sumi, Tscherkassy, Zaparoshje.

Source: author's calculations.

The expected signs of the independent variables are as follows:

Since the neoclassical growth model predicts wealthier regions to grow slower than poorer ones due to higher efficiency of capital in poorer regions, which attracts capital, the relationship between the level of lagged per capita output (YDA<sub>it-1</sub>) and per capita growth should be negative. An estimated negative sign would indicate conditional

convergence of regional per capita output. The expected influence of population growth ( $PGDA_{it}$ ) on per capita real income growth is negative, all other things held equal, as predicted by the neoclassical growth model. Also negative is the expected influence of lagged tax revenues of all other oblasts ( $TO_{it-1}$ ), which is supposed to measure the income effect of the fiscal equalization system. This is because higher tax revenues in all other oblasts tend to mean for both types of regions, net contributors and net recipients, that their income rises, which implies lower marginal benefits of raising their regional per capita growth rate.<sup>25</sup> Thus, their optimal per capita growth rate decreases. The same is true if volume effects are measured by received transfers during the second stage of the equalization process, because their increase means for both types of regions a positive income effect and hence less incentives to promote growth.

The MTR has two effects on the behavior of the oblasts. First, increases of MTR diminish the benefits from raising output in both net contributors and net recipient regions. This is a substitution effect, which results in a lower optimal growth rate in both types of regions. Second, there is also an income effect because a higher marginal tax rate raises the total amount of funds available for redistribution: relatively wealthy oblasts will pay more and loose income while relatively poor oblasts receive these additional resources. In the net recipient regions this will reinforce the substitution effect, because increased income will diminish further their incentives to raise output. But in the net paying regions the loss of income means higher incentives to raise output, which works in the opposite direction than the substitution effect. Only if one assumes that the income effect in the net paying regions is relatively weak (or relatively strong and dominating the substitution effect) will their optimal growth rate decrease (rise) and in this case the total theoretical effect of a marginal tax rate increase on output growth would be determinate, i.e. negative (positive). Overall then, for net recipient oblasts, a negative influence of the marginal tax rate on per capita growth is expected whereas for net contributor regions the sign is indeterminate.

## **b) Results**

Table 7 presents four sets of estimated equations for the dependent variable per capita growth. Overall, it is remarkable how well the theoretical expectations are met with two exceptions, population growth and the volume effect of fiscal equalization in net recipient regions. The GLS method is used to correct for heteroskedasticity. To consider the multicollinearity problem, the regressions were estimated dropping different variables. The signs of the estimated coefficients were robust to these changes and not affected although their size and their statistical significance was somewhat influenced. Multicollinearity, if a serious problem, tends to lower the statistical significance of the regressors and causes relatively large changes of the estimated coefficients when dropping explanatory variables. Both of these characteristics were not observed regarding the estimations presented here, raising confidence in the results.

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<sup>25</sup> Net paying oblasts tend to contribute less to fiscal equalization if revenues in all other regions rise, which lowers their marginal benefits from raising the per capita growth rate. Net receiving oblasts tend to receive more funds if revenues in all other regions rise, and thus they also face lower marginal benefits of raising per capita growth.

Table 7: Estimated per capita GDP growth functions

(Dependent variable:  $YGDA_{it}$  (real per capita GDP growth, deviation from average); GLS (cross section weights) fixed effects model with annual data, 1996-1999, for 26 oblasts; total observations: 104-26=78 due to inclusion of lagged variables; t-statistics in parentheses below estimated coefficients)

Equation		(1)	(2)	(3)	(4)
Barro, Sala-i-Martin model	$YDA_{it-1}$ <i>Initial income; (deviation from national average)</i>	-0.0068 (-1.83)*	-0.007 (-1.77)*	-0.007 (-1.34)	-0.011 (-1.86)*
	$PGDA_{it}$ <i>Population growth; (deviation from national average)</i>	-0.067 (-0.41)	-0.098 (-0.55)	0.071 (0.29)	0.071 (0.04)
Growth effects of fiscal equalization	Volume proxied by tax revenues of other oblasts	$TO_{it-1}$ <i>Initial share of tax revenues in GDP of all other oblasts</i>	-0.695 (-2.10)**		
		$TOreive10_{it-1}$ <i>10 net recipient oblasts: initial share of tax revenues in GDP of other oblasts</i>		-0.649 (-1.02)	
		$TOpay16_{it-1}$ <i>16 net contributing oblasts: initial share of tax revenues in GDP of other oblasts</i>		-0.705 (-1.78)*	
	Volume proxied by transfers 1/	$TRADAreive10_{it-1}$ <i>Initial share of net transfers in GDP in 10 net recipient oblasts; (deviation from national average)</i>			1.440 (7.50)***
$TRADApay16_{it-1}$ <i>Initial share of net transfers in GDP in 16 net contributing oblasts; (deviation from national average)</i>				-0.328 (-1.26)	-0.669 (-3.28)***
Growth effects of the marginal tax of fiscal equalization	$MTR2Dareive10_{it-1}$ <i>Initial marginal tax rate in 10 net recipient oblasts; (deviation from national average)</i>	-0.164 (-2.83)**	-0.165 (-2.64)**		-0.008 (-0.13)
	$MTR2Dapay16_{it-1}$ <i>Initial marginal tax rate in 16 net contributing oblasts; (deviation from national average)</i>	0.078 (2.16)**	0.078 (2.11)**		0.083 (3.52)***
Summary statistics	Adjusted $R^2$	0.6735	0.6627	0.7849	0.6889
	F-statistic	47.21	36.46	103.30	40.30

1/ Net transfers during the second and final stage of the fiscal equalization system.

Note: \* denotes significance at the 10% level; \*\* denotes significance at the 5% level; \*\*\* denotes significance at the 1% level.

Source: author's calculations.

Specifically, a first finding is that there appears to be (conditional) convergence of the regional economic development since a higher starting level of real output dampens the per capita growth rate statistically significant at the 10% level. The coefficient of population growth has only in equations 1 and 2 the expected negative sign and is consistently statistically insignificant.

A second finding concerns the volume effect of fiscal equalization. Its estimated effect on the macroeconomic growth rate is negative, statistically significant at the 10% level (equation 1). Equations 2, 3, and 4 suggest, however, that this overall negative effect is due to the theoretically expected negative growth effect in net contributing regions. If their income rises (either because tax revenues in other oblasts (TOpay) increase, implying lower payments to be made by them, or because transfers to them (TRADApay) increase during the second stage of fiscal equalization), they have lower incentives to improve growth. Apparently this income effect dominates any expansionary effects on output that may result from higher government expenditures following the income rise. By contrast, according to equations 3 and 4, output growth in net recipient regions benefits from higher government income, which was not theoretically expected. The theoretical model does not consider effects of government expenditures on output, because it concentrates solely on incentive effects of fiscal equalization. Apparently, in

net recipient regions, the expansionary effect on output of higher government expenditures dominates any potential adverse incentive effects. Per capita growth in a net recipient oblast increases by about 1.3 to 1.4 percentage points if it receives additional transfers of 1 percent of its GDP. Such a strong growth impact could not occur if these transfers would cause strong adverse incentive effects and/or if transfers were largely inefficiently used, as is often alleged. This result suggests that transfers act as a multiplier in net recipient regions and promote regional income convergence.

A third finding is that a higher marginal tax rate in contributing regions is statistically significantly associated with higher economic growth, suggesting that for these regions the income effect dominates the substitution effect. This reaction has the same direction as the one to a change in the volume of fiscal equalization indicating that contributing regions make efforts to compensate for any income losses due to fiscal equalization payments. In the logic of fiscal equalization such an increase in the marginal tax rate for contributing regions means for recipient regions a lower marginal tax rate, i.e. the marginal subsidy to them increases. According to equations 1 and 2, a decrease of the MTR2receive variable is associated with higher growth in recipient oblasts since the estimated sign of it is negative and statistically significant. Hence, the marginal subsidy on tax revenues granted to net recipient regions is, in fact, growth promoting: An increase in the marginal tax rate in net contributing regions by 10 percentage points would increase the average growth rate in these regions by about 0.8 percentage points. An assumed simultaneous decrease of the marginal tax rate in recipient regions by also 10 percentage points (an absolute increase in their negative marginal tax rate) would raise their average growth rate by about 1.6 percentage points.

In sum, these results suggest that the fiscal equalization system is, quite contrary to its reputation, even growth promoting: the effects from a higher volume of fiscal equalization are such that contributing oblasts would incur an income loss and try to make up for it through raising growth while recipient oblasts would spend the additional transfers in a growth promoting fashion. An increase in the marginal tax on tax revenues would again spur growth in contributing oblasts (due to the income loss) while a simultaneous decrease in this tax for recipient oblasts (a higher subsidy granted for each additional revenue unit collected) would also promote growth in these regions.

### **c) Policy implications**

To raise macroeconomic growth and provided the estimated coefficients remain stable, the results suggest to increase the progressivity of the marginal tax rate MTR2 so that it increases (on average) for net contributing regions and falls further, on average, for net recipient regions.<sup>26</sup> At the same time, the volume of equalization payments could also be increased because then the relatively wealthy and contributing regions would incur an income loss, which would cause them to improve their growth performance further while the recipient regions would receive more transfers, which results in higher growth there

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<sup>26</sup> Figure 3 showed that there could be room for this, since the average marginal tax rate for net contributing regions during 1996-99 was 35% (pulled up by Kiev city whose marginal tax rate was 65%) and for net recipient regions it was -10% (pulled down by Zakarptska, whose rate was -42%).

too. These measures would contribute to even better regional economic convergence because the beneficial growth effects of a given reduction in the marginal tax rate for recipient regions and of an increase in transfers to them are about twice as large as the beneficial growth effect of an increase in the marginal tax rate for contributing regions and a decrease of transfers to them by the same magnitude. The regression results can be used for simulations, which allow to quantify exactly the overall growth impact of such policy changes and the growth impact on the two types of regions. For reasons of space this type of exploitation of the findings must be left for additional research.

Technically the proposed policy changes could be implemented relatively easily through introducing:

- a “tax free amount” in the first stage of the equalization process,
- several income brackets (indexed to inflation), which would be taxed at increasing rates, and
- adjusting the volume of transfers granted during the second stage of the equalization process so that the total volume of fiscal equalization increases somewhat.

However, another more careful interpretation of the estimation results would consider that marginal taxation and the volume of transfers appear to have been at reasonable levels, i.e. not very high, and increasing them could risk that the estimated relationships break down. In other words, trying to exploit more fully the measured incentives could backlash. Thus, the best policy may be neither to increase marginal taxation nor the volume of transfers but to improve further the other elements of fiscal federalism (distribution of expenditure responsibilities and definition of own revenues of subnational governments).

#### **4.1.2.2 Effects on tax revenues**

##### **a) Model description**

Although subnational governments have very limited possibilities to levy taxes and although taxes are collected by the state tax administration that is formally controlled by the central government, subnational governments can influence tax collections through granting tax exemptions<sup>27</sup> and through their influence on the tax administration. This power of subnational governments is here termed “enforcement” activity. There is thus the question as to whether the equalization system affected this activity and regional tax revenues. A natural hypothesis is to assume that the higher the degree of inter-regional redistribution, the less willing the regions become to collect taxes, simply because recipient regions rely on the support while contributing regions resent it.

As a theoretical benchmark for the empirical analysis, the model of Bordignon, Manasse, and Tabellini (1996, 2001) is used, which was taken up by Baretto, Huber, Lichtblau (2000) for an empirical analysis of revenue effects of the German fiscal equalization

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<sup>27</sup> In fact, the state tax administration complained frequently about the extent of tax exemptions granted by regional governments.

system.<sup>28</sup> It is termed B-M-T model, according to its original proponents. It clarified the major channels through which the fiscal equalization system influences regional tax collections. The model has two sectors, private agents and regional governments, who cannot save and maximize utility. Private agents consume both a private and a public good, the latter being supplied by the regional government and paid for through a proportional income tax. The tax rate  $t$  is determined by the central government as is the share  $S$  of the tax revenues collected by regional governments, which they are allowed to retain for themselves while the remainder is kept by the central government. The budget constraint of private agents has the peculiarity that after-tax private incomes and thus consumption are not only dependent on labor supply and the income tax rate but also on the tax enforcement activity of regional governments. This means that even if the central government is solely responsible for tax policy, regions can influence the effective tax rate and actual tax revenues.

Maximization of the private agents' utility, subject to the private sector's budget constraint, yields an indirect private utility function, which is then maximized by the regional government subject to its own budget constraint. Assuming a simple fiscal equalization system, where regional tax revenues above the national average are redistributed to a certain degree (defined by an equalization coefficient) to regions with below average tax revenues, the regional public budget constraint becomes a simple equation: expenditures for the public good, and thus the supply of the public good, equal actual tax revenues times the tax sharing coefficient ( $S$ ), plus a transfer ( $B$ ), which is positive, if regional tax receipts are below the national average, and negative, if regional tax receipts are above the national average.

In this model the freedom of action of the regional government is reduced to varying tax enforcement since the tax and fiscal equalization policies are determined by the central government. In optimum, the marginal rate of substitution (MRS) between the public and private good (i.e. the ratio of the marginal utility of the public good to the marginal utility of the private good) equals the region's marginal cost of public funds (MCPF):

$$\frac{\text{Marginal utility of public goods}}{\text{Marginal utility of private goods}} = \text{Marginal cost of public funds (X, MTR)} \quad (2)$$

The marginal cost of public funds have two elements. On the one hand, there is the well known conventional measure of MCPF, namely output losses in response to an increase of the tax burden in the presence of distortionary taxation ( $X$ ). On the other hand, the model introduces a second element, namely the marginal tax rate on regional tax revenues as discussed in the previous section (MTR). Whenever this optimality condition is disturbed, the regional government adjusts the level of tax enforcement so as to restore equilibrium.

In this model the fiscal equalization system influences regional tax revenues through two channels: first, an increase in the MTR implies a rise of the region's marginal cost of public funds (the right hand side of the optimality condition increases). To restore equilibrium with the only instrument the regional government has, i.e. the tax

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<sup>28</sup> For Germany the authors found significant negative effects of the equalization system on tax revenues.

enforcement level, the region will lower it. This lowers its tax revenues and the supply of the public good, which raises the marginal utility of the public good (the left hand side of the optimality condition increases) and it also lowers the MCPF (because lower taxation means less output losses and thus the initial increase of the right hand side of the optimality condition is dampened). Second, an increase in net equalizing transfers received by a region (B) means that its income rises and according to its budget constraint it supplies more of the public good, which lowers the marginal utility of the good. In order to raise this marginal utility again and restore equilibrium, the region must lower the tax enforcement level because this lowers tax revenues and spending for the public good. As a result, the marginal utility of the public good increases and the MCPF falls (due to lower taxation) until optimum is again restored.<sup>29</sup>

There is a third parameter of the fiscal equalization system considered in the model, the tax sharing coefficient  $S$ . However, according to the model changes in  $S$  have no effect on regional tax revenues. If, for instance,  $S$  is increased, the region will simply lower the tax enforcement level to maintain optimality. The same is true with regard to the tax policy parameter  $t$ . The regions would offset changes in  $t$  by adjusting regional tax enforcement accordingly. In sum, the model predicts that regional tax revenues depend negatively on MTR and B, while  $S$  and  $t$  would have no effect.

These theoretical results are based on restrictive simplifying assumptions, which may not be fulfilled: Empirically, changes in  $S$  and  $t$  may not be fully offset by adjustments of tax enforcement so that  $S$  and  $t$  should be included as additional explanatory variables in a regression that aims to explaining tax revenues.

In the empirical analysis regional tax revenues as a share of GDP are analyzed, denoted  $T$ .  $T$  comprises the revenues from the six most important taxes as already discussed. However, additional regressions are estimated, where collections of specific taxes are analyzed, namely the most important ones VAT, the profit and personal income tax. The marginal tax rate MTR is proxied by MTR2 as already discussed.  $B$  measures real per capita equalizing transfers received by an oblast and it can be positive or negative, dependent upon whether an oblast is a net recipient ( $B$  is positive) or a net contributor ( $B$  is negative).

The proxy for changes in the national tax policy is, as discussed above, the average tax burden in all other states (denoted  $TO$ ). It may be expected that changes in the national tax burden cannot be neutralized by the states as in the stylized model but rather could affect regional tax revenues in the same direction of the change.

The empirical analysis needs also to consider that, in contrast to the model, the statutory personal income tax is progressive and this should be controlled for. If there would be effective progression of the tax system, one could expect relatively wealthy oblasts to have above-average tax revenue shares in GDP. Since the available data did not allow to construct a satisfying tax progression variable<sup>30</sup> real per capita GDP ( $Y$ ) is simply used instead. A positive and significant coefficient would indicate effective tax progression and a negative coefficient would suggest that the tax system is regressive.

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<sup>29</sup> To derive this result one needs to assume that the additional net transfer has no effect on the region's MTR. The net transfer measures then the income effect of the fiscal equalization system.

<sup>30</sup> Barette, Huber, Lichtblau (2000) suggested to use income tax revenues relative to the regional income tax base.



Table 8: Definitions and descriptive statistics of variables used in estimating regional tax revenue functions 1/  
(4 years 1996-1999, 26 oblasts, 104 observations (Total))

Variable	Definition	Sample	Mean	Standard deviation	Minimum	Maximum
$TDA_{it}$	Total regional tax collections as percent of GDP (deviation from national average)	Total	26.71	7.82	17.08	64.63
$MTR2DA_{it-1}$	Lagged marginal tax rate on tax revenues (deviation from national average)	Total	1.37 E-16	26.96	-74.58	52.97
$BDA_{it-1}$	Lagged real per capita equalizing transfers per capita received by oblasts in 1996 Hrivnias (deviation from national average)	Total	4.37 E-15	117.66	-598.71	147.65
$BDA_{receive10}_{it-1}$	Lagged real per capita equalizing transfers in 10 net recipient oblasts (deviation from national average)	10 net recipient oblasts	33.14	44.81	0	147.65
$BDA_{pay16}_{it-1}$	Lagged real per capita equalizing transfers in 16 net contributing oblasts (deviation from national average)	16 net contributing oblasts	-33.14	98.08	-598.71	75.12
$S_{it-1}$	Lagged tax sharing ratio; weighted average of tax sharing coefficient of the personal income and profit tax	Total	84.47	23.55	25.0	100
$S_{receive10}_{it-1}$	Lagged sharing ratio in 10 net recipient oblasts	10 net recipient oblasts	22.67	29.95	0	80.55
$S_{pay16}_{it-1}$	Lagged sharing ratio in 16 net contributing oblasts	16 net contributing oblasts	34.46	29.03	0	92.66
$SVAT_{receive10}_{it-1}$	Lagged VAT sharing ratio in 10 net recipient oblasts	10 net recipient oblasts	9.62	29.62	0	100
$SVAT_{pay16}_{it-1}$	Lagged VAT sharing ratio in 16 net contributing oblasts	16 net contributing oblasts	8.93	24.08	0	100
$SPIT_{receive10}_{it-1}$	Lagged PIT sharing ratio in 10 net recipient oblasts	10 net recipient oblasts	33.65	44.85	0	100
$SPIT_{pay16}_{it-1}$	Lagged PIT sharing ratio in 16 net contributing oblasts	16 net contributing oblasts	50.82	44.68	0	100

1/ Net recipient and net contributing oblasts are listed in table 6. Descriptive statistics of variables MTR2DA, TO and YDA are also provided in table 6.

Source: author's calculations.

In addition to this basic estimating equation, regressions were also estimated, where the explanatory variables MTR, B, TO, and S were split, as in the previous section, into the two groups of net contributing regions and net recipient regions to analyze differences in their behavior.

## b) Results

Equation 1 in table 9 corroborates the theoretical expectations: both MTR and B are highly statistically significant and negatively related to tax collections. For instance, an increase in MTR by 10 percentage points lowers the average national tax revenue share

by 1.2 percentage points. An increase in net per capita equalizing transfers by 10 Hrivnias (in terms of their 1996 value, which equals about 5.5 US-Dollars), lowers the average tax revenue share by about half a percentage point.

Equation 1, table 9, supports even the extreme conclusion of the B-M-T model, that changes in the national tax policy and in tax sharing have no effect on regional tax revenues, since the estimated coefficients of the variables TO and S are insignificant.

Table 9: Augmented versions of the B-M-T-model of tax revenues

(GLS, cross section weights, fixed effects model with annual data, 1996-1999, for 26 oblasts; total observations: 104-26=78 due to inclusion of lagged variables; t-statistics in parentheses below estimated coefficients; all variables are deviations from the respective national average, except the tax revenue share in other oblasts TO and the tax sharing ratio S)

Equation		(1)	(2)	(3)	(4)	(5)	
Dependent variable:		TDA <sub>it</sub> (tax revenues in GDP)		VATDA <sub>it</sub> (VAT revenues in GDP)	PITDA <sub>it</sub> (Personal income tax revenues in GDP)	PTDA <sub>it</sub> (Corporate profit tax revenues in GDP)	
Independent variables: ↓			TDA <sub>it</sub>				
Tax ratio of previous period	<i>Lagged dependent variable</i>	-0.057 (-0.63)	-0.031 (-0.40)	-0.220 (-2.59)**	0.087 (0.83)	0.159 (1.60)	
Fiscal equalization system	Marginal tax rate of previous period	MTR2DA <sub>it-1</sub> <i>Lagged marginal tax rate on tax revenues of oblasts</i>	-0.116 (-4.12)***				
		MTR2DAreceive10 <sub>it-1</sub> <i>Lagged MTR2DA in 10 net recipient oblasts 1/</i>		0.209 (4.41)***		-0.075 (-0.47)	
		MTR2DApay16 <sub>it-1</sub> <i>Lagged MTR2DA in 16 net contributing oblasts 1/</i>		-0.114 (-2.64)**		-0.135 (-3.71)***	
	Received net real per capita equalizing transfers during the previous period	BDA <sub>it-1</sub> <i>Lagged received net real equalizing transfers in 1996 Hrivnias</i>	-0.045 (-8.66)***				
		BDAreceive10 <sub>it-1</sub> <i>Lagged received net real equalizing transfers in 10 net recipient oblasts</i>		0.159 (5.56)***	0.004 (1.10)	-0.004 (-1.82)*	0.052 (7.98)***
		BDApay16 <sub>it-1</sub> <i>Lagged received net real equalizing transfers in 16 net contributing oblasts</i>		-0.045 (-6.87)***	-0.019 (-4.11)***	-0.001 (-1.14)	-0.017 (-5.12)***
	Tax sharing ratio of previous period	S <sub>it-1</sub> <i>Lagged tax sharing ratio</i>	0.009 (0.66)				
		Sreceive10 <sub>it-1</sub> <i>Lagged S in 10 net recipient oblasts 2/</i>		0.200 (6.92)***	0.127 (7.24)***	-0.056 (-1.74)*	-0.029 (-4.66)***
		Spay16 <sub>it-1</sub> <i>Lagged S in 16 net contributing oblasts 2/</i>		0.007 (0.30)	0.031 (3.07)**	0.003 (0.96)	-0.012 (-2.18)**
National tax policy (Tax revenues of other oblasts)	TO <sub>it</sub> <i>Share of tax revenues in GDP of all other oblasts</i>	-0.162 (-1.13)					
	TOreceive10 <sub>it</sub> <i>TO in 10 net recipient oblasts 3/</i>		-4.482 (-8.71)***	-9.016 (-7.42)***	0.983 (1.26)	-4.251 (-9.32)***	
	TOpay16 <sub>it</sub> <i>TO in 16 net contributing oblasts 3/</i>		-0.143 (-0.93)	-1.267 (-3.15)**	-2.87 (-4.98)***	0.382 (1.82)*	
Tax progression	YDA <sub>it</sub> <i>Real per capita income</i>	-0.895 (-2.05)**	-0.734 (-1.54)	-0.023 (-0.07)	-0.210 (-2.02)**	0.437 (1.93)*	
Summary statistics	Adjusted R <sup>2</sup>	0.9904	0.988	0.9457	0.9620	0.9858	
	F-statistic	1602.44	761.40	196.39	282.95	597.53	

Note: \* denotes significance at the 10% level; \*\* denotes significance at the 5% level; \*\*\* denotes significance at the 1% level.

1/ In equations 3 and 4 the marginal tax rates on the VAT and PIT revenues could not be used due to too little variation. In equation 5, the marginal tax that applied for profit tax revenues was used.

2/ In equations 3 and 4 the tax sharing ratios with regard to the VAT and PIT, respectively, were used. The tax sharing ratio for the profit tax in equation 5 could not be used due to too little variation.

3/ In equations 3, 4, and 5 the TO variable represents VAT, PIT, and profit tax revenues in other oblasts, respectively.

Source: author's calculations.

Also evident is a regressive character of overall taxation, since higher per capita income (YDA) is, on average, statistically significantly associated with a lower tax revenue share in GDP. There is no evidence of hysteresis of tax revenues as indicated by the statistically insignificant coefficient of the lagged dependent variable. Also insignificant is surprisingly the TO variable suggesting that changes in national tax policy do not cause immediate effects on regional tax revenues.

Splitting the variables MTR, B, S, and TO into the two groups of oblasts (net recipient and net contributing ones), equation 2, table 9, yields interesting results: There are fundamental differences between the two types of regions, not visible in equation 1, because there the 16 contributing regions dominate the results. Equation 2 shows that the signs of the estimated coefficients of MTR and B, which are all highly statistically significant, differ for the two types of regions: For relatively wealthy and thus net contributing regions the expected negative signs were obtained. Hence, if these regions have to pay a higher marginal tax, they collect less taxes, and if they would receive higher net transfers (i.e. make less net payments to the system), they also would collect less taxes. But for relatively poor and net recipient regions, MTR and B have unexpected positive coefficients, inconsistent with the B-M-T model.

There may be plausible economic reasons behind this: The net recipient relatively poor regions have, on average, a much less advanced physical infrastructure than the contributing regions, since the latter include all of Ukraine's industrial centers. This could suggest that in the relatively less developed recipient regions increased public goods production may not be associated with a fall of the marginal utility of these goods. Perhaps it is even reasonable to argue that higher public goods production raises the marginal utility in these regions because roads, power supply, communications, schools, and hospitals could not be maintained during the early years of transition so that an additional dollar spent on them makes the infrastructure more productive and attracts private investment. In this case the reaction of the regional government to a higher MTR (i.e. a smaller subsidy) and thus higher MCPF would be to increase public goods production financed by higher effective taxation because this would raise the marginal utility of public goods. Similarly, an increase in B and thus initially higher public goods production would require higher effective taxation and thus even more public goods production because this would raise the MCPF. Whatever the true reasons may be, the data suggest that equalization transfers promote revenue efforts in recipient regions and this applies also to the tax sharing variable S, which has a significant positive sign in equation 2, table 9, for recipient regions.

By contrast, changes in tax sharing do not appear to influence revenue efforts in contributing regions, since in equation 2 the sign of Spay is insignificant. The estimated negative association of tax revenues with the national tax policy variable TO in equations 1 and 2 was unexpected. If national tax policy changes cannot be fully offset by the regions then there should be a simultaneous movement of the tax revenue shares in GDP in all regions, all other things held equal, and the sign would be positive. The estimated negative signs shows that tax revenues in the regions develop rather independently from each other, suggesting that regions have some influence on their tax revenues.

An attempt was made to look deeper into the effects of fiscal federalism by examining the revenues from three major taxes, VAT, PIT, and profit tax, individually (equations 3, 4, and 5). The attempt was not very successful but is nevertheless reported for the reason of completeness. The regressions require to use those MTR, S, and TO variables, which apply for the specific tax analyzed. For instance, the marginal tax rate in the VAT revenue regression must be the specific marginal tax on revenues from VAT. However, the variation of some of these variables was relatively small, which prevented their use in some cases (e.g. there was no variation of the marginal tax and the PIT and VAT sharing ratios during 1997-1998). Due to these data problems there is a difficulty of going from the broad measures in equations 1 and 2, table 9, to specific taxes in equations 3-5. Hence, these equations appear less reliable than equations 1 and 2. Although they broadly confirm equations 1 and 2, there are some differences. This concerns especially personal income tax revenues, where for recipient regions the signs of both B and S are negative, albeit weakly significant. The PIT regression also suggests that this tax, which is the only statutory progressive tax, is in fact regressive, which could be due to tax exemptions.

### c) Policy implications

The results suggest the following: if the marginal tax increases for contributing oblasts, which in the logic of fiscal equalization means that it falls for recipient oblasts, then both types of regions would have lower tax revenue shares. If recipient oblasts receive higher equalizing transfers, financed by contributing oblasts (a decrease of BD<sub>A</sub>pay), tax revenues rise in both types of regions.

The previous section found that overall economic growth and economic convergence appear to be promoted when raising the progressivity of the marginal tax and increasing the volume of equalization transfers. According to the results of this section, the former measure would dampen the tax revenue share in GDP in both types of regions, while the latter measure would raise it also in both types of regions. The net effect on tax revenues would depend on the elasticities involved. It would thus be open, which effect the growth promoting strategy would have on the revenue share in GDP.

However, the results of table 9 suggest that increases in the VAT sharing ratio may positively affect tax collections in both types of regions, although, admittedly, this result is based on relatively little variation in this ratio. Taking the estimated coefficients of the S variables nevertheless at face value, an increase in the VAT tax sharing ratio by 10 percentage points, i.e. allowing all oblasts to retain 10% of VAT revenues they collect as opposed to their current zero share, would raise the VAT share in GDP in recipient regions by about 1.3 percentage points, on average, and in contributing regions by 0.3 percentage points, on average. This overall rise of the VAT share in GDP could dampen any potential revenue losses that may result from increasing the degree of horizontal redistribution and it would even finance a part of the initial VAT revenue loss for the central government when it shares the revenues with the regions.<sup>31</sup>

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<sup>31</sup> Such participation of regions in VAT revenues would even come at little fiscal costs to the central government: The VAT share in GDP was about 6% during 2001, and thus the central government would initially lose 10% of this amount, i.e. 0.6% of GDP. However, due to improved VAT collections triggered by the participation of regions in these revenues, the VAT revenue share in recipient regions would rise by 1.3% of GDP so that here the central government would have even a net gain. In contributing regions the

In sum, higher support to recipient regions through changes in the marginal tax on regional tax revenues would risk to dampen the overall tax revenue share but higher net equalization payments would promote tax revenues with the overall effect open. Higher tax sharing coefficients appear to promote tax revenues, especially with regard to the VAT, which would support a policy to allow subnational governments to participate in these revenues.

#### **4.2 Distribution of expenditure responsibilities among the different levels of government**

Since the reform of the so-called budget codex in 2001, which regulates the fiscal relations between the different government levels, Ukraine's system of fiscal federalism fulfills the requirement for a clear separation of responsibilities among the three main government levels (appendix B). Three types of tasks are distinguished, namely those that must be executed by the central government and cannot be transferred to lower levels ("state responsibilities"), those tasks of the central government, whose execution is transferred to subnational governments due to an assumed efficiency gain ("delegated responsibilities"), and tasks of local governments ("own responsibilities"). The budget codex defines these three types of responsibilities including their financing. A closer examination reveals that this distribution of responsibilities is in accordance with the findings summarized in section 1 and adheres closely to the principle of subsidiarity.

Public services programs that are presumably associated with considerable beneficial spillovers among jurisdictions, such as education, health care, and social security programs, are defined by the central government so as to have nationwide minimum standards, but for efficiency reasons the responsibility for their implementation is largely delegated to regional and local governments. If the own revenues of subnational governments do not suffice to cover the minimum per capita expenditure levels set by the central government in these areas, the latter must pay the difference through transfers. Local governments are also given room to set up their own additional expenditure programs provided they are able to finance them out of own revenues. The only exception is law enforcement activity, where subnational governments apparently have no say. This could be justified by the goal to set a certain level of police protection at the national level without interference by local administrations.

There may, however, be a question regarding the missing participation of oblast governments in the responsibility for infrastructure investment in areas other than education, health, and culture, such as, for instance, interlocal transportation and interstate roads. Only the central government and to a small extent also local ones (provided the latter are able to finance investment themselves) are, according to the law, determining these investments. Oblast governments are blended out from these important decisions although their participation appears advisable due to their knowledge of regional bottlenecks.

Utilities are not explicitly mentioned in the provisions of the law. However, since they are owned by local governments, the responsibility for their supervision falls under local

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VAT share in GDP would rise by 0.3% of GDP and thus a small loss would be incurred by the central government.

governments' task to manage communal property. Price regulation of utilities is the responsibility of the central government, which therefore has, in principle, to cover the losses constantly incurred by most so-called communal services enterprises (utilities).

Assignments of responsibilities should, however, also be associated with a regular assessment of the efficiency with which they are fulfilled and there should be rewards if efficiency is above average. Ideally, this assessment would be carried out by an agency independent from the government such as the national court of auditors or private auditing firms. Such a system, which would promote interregional competition, is, however, still absent.

In sum, the division of responsibilities appears to be commendable and complies with theoretical considerations except, perhaps, the missing participation of oblast governments in certain infrastructure investment planning. Given that local governments are free to assume responsibilities beyond compliance with the nationwide minimum per capita expenditure standards set in the areas of government administration, education, health, and social security, a question is whether financing rules allow them to use this theoretical freedom, which would, in addition to regular efficiency checks, further enhance interregional competition.

#### **4.3 Assignment of revenue sources to the budgets of the different government levels and establishment of some taxation autonomy for local governments**

Oblast and local governments are financed through "own" revenues and transfers from the central government if the own revenues are not sufficient to cover minimum per capita expenditure standards set by the central government. The own revenues are relatively large shares (determined by the central government and subject to adjustments at any time) in the personal income tax (PIT), enterprise profit tax (PT), excise taxes, fees for the utilization of natural resources, small shares in privatization receipts and other central government revenues, and relatively unimportant local taxes and fees. Upper limits for local taxes and fees are determined by the central government and revenues from them amounted to less than 1% of GDP on average during 1996-2000 while total expenditures of subnational governments during this period were above 13% of GDP on average. One reason for this low share is that a real estate tax comparable to western standards has not yet been introduced although it is mentioned in the budget codex as one of the purely local taxes. The main financing items for oblasts and local governments are their shares in the PIT and PT and transfers from the central government.

This brief summary shows that all of the basic requirements for the financing of subnational governments have not been fulfilled:

- Lower levels of government do not have significant own revenues determined within limits by themselves. On the contrary, the fact that the central government decides at its will on the tax sharing coefficients and does not allow participation of subnational governments in the revenues of the most important and most stable tax, the VAT, makes subnational governments completely dependent on the central government. Subnational governments face even the risk of receiving smaller tax sharing ratios if they improve the collection of shared taxes.

- The requirement for local taxes to be levied mainly on immobile factors of production is not fulfilled since a broad based property tax has not yet been introduced.
- Tax revenues on the use of natural resources are almost entirely given to subnational governments although they are regionally concentrated and therefore should be levied only by the central government.
- The requirement for revenue sources of subnational governments to be sufficient to cover their expenditure responsibilities was, at least during the recession, not met because transfers to them were insufficient to meet even those expenditures mandated by social and other laws causing rising payment arrears.
- The revenue sources of subnational governments are not relatively stable and predictable since the most important revenues for them, those from the PIT and PT are the most volatile tax revenues and transfers from the central government were unreliable.
- The transfer system was neither transparent nor based on enforceable rules, although it was effective, as shown in the empirical analysis, in redistributing income from relatively wealthy to relatively poor regions in an apparently growth promoting fashion. However, since 2001 a reform of the transfer system, following successful USAID advice, brought crucial improvements: For the first time transfers were based on formulas, which have the general form:

$$T_i = (a (G - R * FC_i)) * P_i, \quad (4)$$

where T is the transfer from the central government to region i or, if negative, the payment region i has to make to the central government, a is the equalization coefficient, which was set to 1 in 2001, G is the standardized per capita expenditure level, R is average per capita own revenues for all regions, FC is an index of the region's i fiscal capacity relative to the average, and P is the population of region i. The actual calculations of transfers are somewhat more complicated because there are different formulas for each major expenditure category and because adjustments are made to consider regional differences in expenditure needs G (due to differences in costs) and in tax revenue losses as a result of tax exemptions granted by the central government. The per capita expenditure needs G are set by the central government with regard to the expenditure categories government administration, health care, education, social protection, housing and communal services, culture, mass media, sports and family support programs. In the case of education, social protection and housing and communal services, the expenditure norms refer not to the regional population but to the number of students, eligible consumers of social services, and square meters of considered housing, respectively. The index of relative fiscal capacity FC measures actual per capita tax revenues during the past two years relative to the average. There is a downward adjustment for any special regional tax exemptions granted by the central government and for tax overpayments. An upward adjustment is made for tax arrears.

This system clearly improves substantially transparency, enforcement of minimum per capita spending for all major public services, and it provides incentives for more efficient government spending because transfers are made dependent on users of

services and not on the size and number of the facilities as was previously the case. But this system still has weaknesses:

- Fiscal capacity is based on past revenues, which punishes successful tax collecting regions and rewards those that were weak collectors. Hence fiscal capacity should be redefined to reflect better the true potential tax revenues.<sup>32</sup>
- Special incentives for tax collection are absent. An example for such incentives could be to allow regions to keep the largest part of revenues, which exceed a certain limit.
- Since the central government can at its will and at any time change all parameters of the system, the predictability of revenues for subnational governments is severely inhibited, which would be needed to facilitate especially medium-term investment plans.
- This problem is underlined by the absence of any medium-term planning.
- The formula based system of transfers was introduced not only with respect to the transfers to oblasts but also with regard to the district level. This means that the central government has to calculate transfers to almost about 682 subnational government entities, which appears to be a clear overburdening.
- A control system regarding the use of the transfers should exist analogously to the discussion of monitoring the efficiency of government expenditures.

In sum, the financing of subnational governments appears still to be the major achilles heel of fiscal federalism.

## 5. Conclusions

Despite the poor reputation of the system of fiscal federalism before its recent reform, it appears to have been effective in redistributing income from relatively wealthy to relatively poor regions with even growth promoting effects. This is surprising but can perhaps best be explained with the relatively moderate marginal tax rates the system imposed on regional tax revenues (perhaps with the exception of Kiev city), the relatively moderate total volume of transfers to the regions (they exceeded only in one exceptional case of the least developed region Zakarpatska 10% of regional GDP on average during 1996-99), and last but not least with a much better use –with respect to growth promotion- of the received transfers on the part of the recipient regions than was previously thought. But precisely because it was found that the system was effectively redistributing income, promoting regional income convergence and economic growth one should probably resist the temptation to exploit the measured associations through

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<sup>32</sup> Russia, for instance, introduced in its budget law for 2000 an interesting measure for fiscal capacity FC of region  $i$ , defined as:

$$FC_i = \sum_{j=1}^n (K^j * GVA_i^j) , \text{ where } K^j \text{ is the share of tax levies (TL) in GDP of sector } j \text{ of the economy,}$$

$$\text{i.e.: } K^j = \frac{\sum TL_i^j}{\sum GVA_i^j} , \text{ and } GVA_i^j \text{ is gross value added of sector } j \text{ in region } i. \text{ Figures for the previous}$$

year are applied. This measure of fiscal capacity, although also backward looking, does not reward poor tax collections because it assumes that a given region could have at least collected in taxes what the average region collected under consideration of the formers particular economic structure.

increasing the progressivity of the marginal tax on regional tax revenues and the transfer volume. Otherwise the higher marginal burden and transfer volume could cause the estimated beneficial effects to disappear and the system might become growth inhibiting as was shown for Germany, where the marginal tax is extremely high for all regions, also for relatively poor ones due to the loss of transfers if a poor region raises more revenues. The best policy could thus be neither to change the marginal tax nor the volume of transfers.

An overall negative effect of the system on regional tax revenues was estimated. But this analysis of tax revenues also suggests that granting subnational governments higher shares in shared taxes would at least not dampen but probably promote overall tax revenues. The prime candidate in this regard should be the VAT, because these are the most important and most stable tax revenues. To consider both the apprehension in the theoretical literature concerning tax sharing and the problem of clearly insufficient own revenues of subnational governments, a proposal could be to grant the latter the right to participate in VAT revenues based on factors such as population, average income, incidence of poverty, tax capacity and fiscal effort. The necessary increase of the own revenues of subnational governments could also be done by allowing them to levy surcharges within narrow limits on the PIT and profit tax.

The transfer system could be improved further by redefining fiscal capacity so that it reflects better potential tax revenues, by introducing special incentives for tax collection, and not overburdening the central government with the calculation of transfers to 682 subnational budgets.

Regarding the distribution of responsibilities, the reformed budget codex offers clear assignments that follow closely theoretical considerations and the subsidiarity principle. However, oblast participation concerning decisions in infrastructure investment appears to be absent in the regulations. There is also no mentioning of a system of regular assessment of the efficiency of government expenditure programs by an independent agency. Also no mentioning is made of any medium-term planning.

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## Appendix A: Determinants of transfers

Transfers serve in the first place to correct regional per capita income inequality. Relatively poor regions should be enabled to maintain a certain level of public services and public infrastructure. Thus, the relative income position may be expected to be a major explanatory factor of transfers. Transfers are, however, also dependent on total funds available for redistribution. It could also be expected that they depend negatively on the fiscal capacity and they may be influenced by lobbying efforts. These four potential determinants are likely to influence transfers with a time lag. From a normative point of view, transfers should mainly be determined by income inequality and less so by lobbying. To test these hypotheses, transfers as a share of GDP (TRADA, deviations from national average) were regressed on a constant, past period's real income (GDPPCDA<sub>t-1</sub>, deviations from the national average), a proxy for past period's funds available for redistribution (the average share of tax revenues in GDP of other oblasts, TO<sub>t-1</sub>), past period's fiscal capacity (proxied by tax revenues in GDP, deviations from national average, TDA<sub>t-1</sub>), and on regional lobbying efforts. The latter are proxied by the share of agriculture in GDP (AGRDA<sub>t-1</sub>, deviations from the national average), because agriculture received by far the largest tax holidays compared to other groups of society, which could indicate that agricultural oblasts are relatively good lobbyists. Deviations from national average are used in order to eliminate the effects of symmetrical shocks on all regions. Table 10 shows that the regression explains a very high portion of the total variation in the share of transfers in GDP (the deviations from average). The GLS model is the appropriate one because it corrects for heteroskedasticity across panels as revealed by an LR test. The OLS results are also shown for comparison.

Table 10: Determinants of transfers

(Dependent variable: TRADA<sub>it</sub> (share of transfers in GDP, deviation from national average); annual data, 1996-1999, for 26 oblasts; total observations: 104-26=78 due to inclusion of lagged variables; t-statistics in parentheses below estimated coefficients)

Equation	(1) OLS	(2) GLS (cross section weights)
GDPPCDA <sub>it-1</sub> (GDP per capita; percentage deviation from national average) <i>Income inequality</i>	-0.054 (-3.86)***	-0.054 (-5.52)***
TO <sub>it-1</sub> (Share of tax revenues in GDP of other oblasts) <i>Availability of funds</i>	0.163 (0.53)	0.150 (1.11)
TDA <sub>it</sub> (Share of tax revenues in GDP; deviation from average) <i>Fiscal capacity</i>	-0.097 (-2.15)**	-0.110 (-3.73)***
AGRDA <sub>it-1</sub> (Share of agriculture in GDP as a proxy for lobbying for transfers; deviation from national average) <i>Lobbying</i>	0.241 (4.64)***	0.255 (9.49)***
Constant	-4.44 (-0.53)	-4.222 (-1.12)
Adjusted R <sup>2</sup>	0.6937	0.8722
F-statistic	44.60	132.41

Note: \* denotes significance at the 10% level; \*\* denotes significance at the 5% level; \*\*\* denotes significance at the 1% level.

Source: author's calculations.

The explained portion of the total variation in the dependent variable is somewhat lower when the explanatory variables are used without a time lag (not shown) suggesting that time lags are present, although it needs to be admitted that the time period analyzed is relatively short. Equation 2 shows that all estimated coefficients have the expected signs and are highly statistically significant with the exception of the proxy for total funds available (TO): Past period's deviation of per capita GDP from average is expected to have a negative sign because an increase in income relative to the average should result in lower transfers received and vice versa so as to promote income equalization. On the other hand, if more funds are available for redistribution, transfers should tend to rise, hence, a positive sign of  $TO_{t-1}$  is expected. If fiscal capacity (TDA) rises, transfers should decline. Finally, if lobbyism increases, this could be expected to raise transfers.

The regression also provides an impression about the relative strengths of the determinants of transfers. For instance, if a region's GDP falls by 10 percentage points relative to the national average, the region is likely to receive additional transfers in the amount of 0.54 percent of its GDP. (During the period considered the deviations of per capita GDP from national average ranged from -45% to 122% and most absolute annual changes of these deviations amounted to 1-5 percentage points but there are also several instances when they exceeded 10 percentage points). The same amount of additional transfers could also be obtained if the share of tax revenues in GDP of other oblasts were to increase by 3.6 percentage points ( $3.6 \cdot 0.15 = 0.54$ ) or if an oblast's fiscal capacity (the share of taxes in GDP) decreases by 4.9 percentage points, or, finally, if an oblast would raise its share of agriculture in GDP by 2.1 percentage points. Given, however, that the volatility of the tax shares and of agriculture in GDP is minor compared to that of per capita GDP this analysis suggests that transfers are mainly driven and determined by changes in deviations of regional income from average as it should be. This is also suggested by the relatively high, negative correlation of per capita income with transfers in GDP. The correlation coefficient is -0.59 for the period considered and higher, in absolute terms, than the correlation of the share of transfers in GDP with the other considered variables. However, it would have been even higher in absolute terms had there not been a few outlier oblasts (Crimea, Ivano-Frankivsk and Lvov) that received relatively little transfers despite their relatively low per capita incomes (see also Figure 3 in the text). These oblasts had above average fiscal capacities (shares of tax revenues in GDP) and below average shares of agriculture in GDP.

## Appendix B: Distribution of expenditure responsibilities among government levels

### 1. Expenditure responsibilities of the central government

- 1) State administration (legislature; the executive power; president)
- 2) Judicial power
- 3) International activity
- 4) Fundamental and applied research of nationwide importance
- 5) National defense
- 6) Law-enforcement and State security
- 7) Education:
  - general secondary education: specialized schools (including boarding schools) that use State property; secondary social rehabilitation schools;
  - vocational education (educational establishments and education-related establishments that use buildings owned by the central government);
  - higher educational establishments that use State property;
  - post-graduate education;
  - extra-curriculum educational establishments and activities related to extra-curriculum work with children as approved by the Cabinet of Ministers of Ukraine;
  - other educational establishments implementing nationwide functions as approved by the Cabinet of Ministers of Ukraine
- 8) Health care:
  - primary medical and sanitary aid, out-patient and in-patient aid (general hospitals and out-patient clinics implementing specific functions of nationwide importance as approved by the Cabinet of Ministers of Ukraine);
  - specialized and highly specialized out-patient and in-patient aid (clinics of research-and-development institutes; specialized hospitals, centers, leprosoria; hospitals for war veterans; specialized medical and sanitary departments; specialized out-patient clinics;
  - specialized dental clinics as approved by the Cabinet of Ministers of Ukraine);
  - sanatorium-and-resort aid (national sanatoria for tuberculosis patients, national specialized sanatoria for children and adolescents, specialized sanatoria for veterans of World War II);
  - sanitary-and-epidemiological supervision (sanitary-and-epidemiological stations, disinfecting stations; anti-epidemic activities);
  - other health-care programs that provide implementation of nationwide functions as approved by the Cabinet of Ministers of Ukraine
- 9) Social protection and social security:
  - State specialized pension programs (military pensions for the rank and file and their family members; pensions for retired military, the rank and file and commanders of bodies of internal affairs payable under other pension programs);
  - State social assistance programs (cash aid to refugees; compensations for medicines);
  - Prostheses programs; programs and activities related to social protection of invalids;
  - Reimbursement of losses incurred by citizens; measures related to return to Ukraine of the Crimean Tartars and other persons of other nationalities illegally deported from Ukraine; yearly one-time cash aid to veterans of World War II; life stipends for war participants;
  - Funds transferred to the Unemployment Social Insurance Fund;
  - Partial reimbursement of expenses on miners' regress claims;
  - State support to non-profit-making organizations of invalids and veterans that have the status of national organizations;
  - National programs and activities with respect to children, youth, women, and families;
  - State programs to support construction (reconstruction) of housing for certain categories of citizens
- 10) Culture and art:
  - State cultural and educational programs (national and State libraries, museums and exhibitions of nationwide importance; national parks of nationwide importance; international cultural ties; State's cultural-and-educational activities);
  - State theatre/show programs (national theatres, national philharmonic societies, national and State musical collectives and companies and other establishments and activities related to arts as approved by the Cabinet of Ministers of Ukraine);
  - State support to non-for-profit organizations of culture and art which have the status of national organizations;
  - State support to cinematography development programs;
  - State archives
- 11) State programs to support television, radio broadcasting, press, book publishing, and informational agencies
- 12) Physical training and sport:

- State programs to train the reserve and the main national teams and support their participation in national and international competitions;
- State programs on sports for disabled and rehabilitation programs (the Invasport Center, participation in sport competitions for disabled, and training sessions for them);
- Other State sport programs related to physical culture and sports
- 13) State programs to support regional economic development and high-priority sectors of the economy
- 14) Programs related to restoration of architectural monuments of nationwide importance
- 15) State programs for development of transport, road sector, communications, telecommunications, and information technologies
- 16) State investment projects
- 17) State programs related to liquidation of the aftermath of the Chernobyl catastrophe, protection of the natural external environment, nuclear safety, prevention and liquidation of emergency state and aftermath of natural catastrophes
- 18) Establishment and replenishment of State stocks and reserves
- 19) Servicing of the State debt
- 20) Elections and referenda
- 21) Other programs of exclusively nationwide importance

## **2. “Delegated” expenditure responsibilities of regional governments (oblasts) financed through own revenues and transfers**

- 1) State administration including regional parliaments
- 2) Education:
  - General secondary education for citizens who need special assistance and rehabilitation: specialized general-education establishments for children requiring correction of physical and/or mental development;
  - Sanatoria with boarding schools; secondary boarding schools for orphans and children without parents' care; children's houses;
  - Vocational educational establishments that use buildings owned by regional governments;
  - Higher education (communally-owned educational establishments);
  - Post-graduate education (post-graduate institutes for teachers and advanced-training centers for civil servants of local bodies of executive power and local self-governmental bodies; communally owned standing courses (centers) for advanced training of employees engaged in the socio-cultural sector and agro-industrial complex);
  - Other State educational programs
- 3) Health care:
  - Primary medical and sanitary aid, out-patient and in-patient aid (hospitals of oblast subordination);
  - Specialized medical and sanitary aid, out-patient and in-patient aid (specialized hospitals; out-patient clinics, including dentist's clinics; hospitals for veterans of World War II, children's homes, and blood-transfusion stations);
  - Sanatorium-and-resort aid (sanatorias for tuberculosis patients; sanatoria for children and adolescents; rehabilitation sanatorias);
  - Other State health-care and sanitary programs (medical/social expert boards; forensic medicine bureaus; medical statistics centers, suppliers of special medical equipment, health centers; health education activities; other programs and activities)
- 4) Social protection and social security:
  - State social protection and social security programs: Care of invalids with mental disorders; targeted social assistance to low-income families; compensation paid to the rehabilitated; children's boarding establishments; training and job-finding for invalids; hospices for aged and handicapped; hospices for handicapped children; pension centers; hospices for adolescents;
  - Oblast specific programs and activities related to the State's policy to support children, youth, women, families;
  - Other State social programs
- 5) Culture and art:
  - State cultural/educational programs (libraries, museums, and exhibitions of oblast subordination);
  - State theatre/entertainment programs (philharmonic societies, musical collectives and companies, theatres, palaces and houses of culture of oblast subordination; other establishments and activities related to arts);
  - Other culture/art related State programs
- 6) Physical culture and sport:
  - State programs for development of physical culture and sports (training activities in any type of sport schools of Republican and oblast subordination for children and adolescents; measures to support physical culture and sport of oblast subordination);
  - State programs related to sports and rehabilitation of the handicapped and oblast centers for handicapped athletes and rehabilitation schools; training sessions and competitions for handicapped athletes of oblast subordination

### **3. “Delegated“ expenditure responsibilities of local governments (Towns, Villages and Settlements), financed through own revenues and transfers**

1) Education:

- pre-school education;
- general secondary education (schools with kindergarden)

2) Health:

- Primary medical and sanitary aid, out-patient and in-patient aid (district hospitals, ambulatory centers, first-aid and obstetrics centers and first-aid stations);

3) Culture: Palaces of culture, clubs, and libraries in towns, villages, and settlements

### **4. “Own” expenditure responsibilities of local governments, financed through their own revenues, excluding transfers**

1) Local fire-fighting units

2) Extra-curriculum education

3) Social protection and social security:

- programs and activities of local importance to support children, youth, women, and families
- local social protection programs for certain categories of the population.

4) Local programs to support the housing and communal sector and provision of amenities in settlements

5) Cultural/art programs of local importance

6) Programs to support cinematography and mass-media of local importance

7) Local programs to support development of physical culture and sports

8) Restoration and protection of architectural monuments of local significance

9) Transport and roads:

- regulation of prices for services of metropolitan railways based on decisions of local self-governmental bodies;
- construction, reconstruction, and maintenance of commonly used roads of local importance.

10) Water-rescue activities

11) Servicing of local self-government debts

12) Local environmental protection programs

13) Management of communal property

14) Regulation of land-related affairs

15) Other programs approved by a responsible local parliament consistent with law.

Source: Budget codex of Ukraine, Kiev, 2001.