

REGIONAL DISTRIBUTION OF GOVERNMENT EXPENDITURES IN YUGOSLAVIA

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Regional distribution of government expenditures is examined first in relation to other indicators of economic and social development. This shows both the magnitude of regional disparities and the degree of redistribution in the field of government expenditures brought about by the federal subsidy. The static aspect of regional disparities is analysed by decomposing *per capita* income into demographic, employment and productivity components. The time-dimension of disparities is analysed by introducing the concept of time-distance, which is a dynamic measure of disparity that is complementary rather than competitive with existing static measures.

Institutional aspects are explored next, along with some implications of the present system of federal subsidy as an instrument towards regional equalization of the budgetary resources available to lower levels of government. A few alternative technical solutions to improve the present system are discussed and a set of macro-variables is suggested as a framework within which the degree of equalization, which is basically a political decision, could be discussed in an explicit and systematic way. While the question of the appropriate degree of equalization remains a problem with many facets, it can be shown that government expenditures have been distributed much more equally than the corresponding levels of regional economic activity.

I. INTRODUCTION

Government expenditures are an important potential instrument of economic policy for attaining the growth and distributional objectives of a society. The role which the distribution of benefits of government expenditures plays in practice depends on the objectives and institutional characteristics of the country in question, the size of the government sector in the economy, the level of economic and social development, and many other factors peculiar to a specific case being analysed. Therefore, in discussing the distribution of the benefits of government expenditures, the institutional characteristics of the country in question should be clearly spelled out to facilitate meaningful comparisons with other countries.

In this paper a partial aspect of the problem will be discussed, i.e. the problem of regional distribution of government expenditures. In Yugoslavia the republics and autonomous provinces (AP) enjoy considerable freedom of decision with respect to their revenues and expenditures. Since there are still substantial differences in the degree of development between various regions, a federal subsidy is used as a means towards equalization of regional distribution of government expenditures. Regional distribution of government expenditures will be examined in Section II in relation to other indicators of economic and social development to show the extent to which government intervention has helped to improve the situation in the less developed regions. After discussion of the institutional framework, the present criteria for this equalization scheme are analysed in Section III. Some possible technical improvements in the system are suggested in Section IV, where also various possible degrees of equalization are expressed in terms of the macro-variables analysed.

II. REGIONAL DISPARITIES IN ECONOMIC AND SOCIAL DEVELOPMENT

In our institutional framework the recipients of federal subsidy are republics and autonomous provinces, which are in turn responsible for distribution of subsidies to lower level units of government in accordance with their own criteria. To simplify the exposition in this paper the country will be divided into two regions, the more developed region (MDR) and the less developed region (LDR),¹ the latter being the recipient of the subsidy. This aggregation will preserve the essential lines of argument, while avoiding the complications related to the larger number of republics and provinces and their specific characteristics.

1. *Static Comparison*

Selected indicators related to economic activity and social services are presented in Table 1. Starting with the economic indicators, the biggest difference between the more and less developed part of the country is observed with respect to the national income *per capita*, the value of the LDR being only 50 percent of that for the MDR. Infrastructure indicators show somewhat smaller disparity, while fixed assets *per capita* and percentage of skilled labour force in the LDR reach 60 and 70 percent of the value for the MDR, respectively. A much higher value of 86 percent of that in the MDR is observed for the indicator national income per employed person in the non-agricultural sector, a fact which shows that the main problem of the less developed region is to find productive employment for its labour force. This issue will be developed further in II-2.

It is considered that the economy of the LDR is too weak to provide from its own resources the investment needed to enhance its economic base and at the same time ensure a satisfactory level of social services for its population. At present the two most important institutional provisions for the central government's intervention to reduce the degree of disparity are:

- (i) The Fund for the Development of the Less Developed Republics and Provinces in the sphere of material production, which channels somewhat less than 2 percent of the country's GDP as additional investment to the LDR;
- (ii) A subsidy to less developed republics and provinces from the federal budget to supplement their own budgetary resources for social services. This partial equalization scheme, rather than the former, will be examined in this paper in more detail.

With respect to regional distribution of communal budgetary expenditures (i.e. budgets for local administrative units), *per capita* expenditures for the LDR reach as high as 80 percent of the level of the MDR. However, in the present institutional framework some important social services are not financed by the budget alone, but are carried out by independent institutions which have also their

¹The more developed region consists of Slovenia, Croatia and Serbia (except AP Kosovo), while the less developed region comprises Bosnia and Herzegovina, Macedonia, Montenegro and AP Kosovo, or about 35 percent of the country's population. In the original study [3] all of them were analysed separately.

TABLE 1
DISPARITIES BETWEEN THE MORE AND THE LESS DEVELOPED REGION
(AVERAGE FOR YUGOSLAVIA = 100), MID-1960's

	MDR	LDR	LDR as % of MDR
<i>Economic indicators</i>			
1. National income <i>per capita</i>	120.9	60.5	50
2. Roads per 100 km ²	123.0	65.5	53
3. Railways per 100 km ²	120.0	71.7	60
4. Fixed assets <i>per capita</i>	116.7	70.0	60
5. Percentage of employed with secondary or university education	108.0	75.7	70
6. National income in non-agriculture per employed	103.2	89.2	86
<i>Monetary indicators for social services</i>			
7. Communal budget expenditure <i>per capita</i>	108.3	87.0	80
8. Expenditures on social services <i>per capita</i>	116.6	68.1	58
<i>Non-monetary indicators for social services</i>			
9. Employment in social services <i>per capita</i>	111.1	78.6	71
10. School enrolment, primary level	103.2	95.5	93
11. Literacy rate for age group 10-34 years	104.6	91.4	87
12. Library books per inhabitant, age 10 or above	113.5	70.0	62
13. Hospital beds <i>per capita</i>	114.1	73.0	64

own sources of revenue. For a much broader definition of social services (which would err in the opposite direction of being too broad for the purpose of equalization), the per capita financial outlays of non-market institutions (covering education, science, culture and entertainment, health, social welfare, social security and government administration) could be compared. Here the value for the LDR is only 58 percent of that for the MDR. This figure, however, overstates the degree of disparities in the broad definition of social services for various reasons.²

Non-monetary indicators can help to avoid this bias. The only reasonable aggregate non-monetary indicator for social services is employment in the sector per head of population, the value of which (LDR = 71 percent of MDR) is much closer to that of communal budget expenditures *per capita* than to the *per capita* financial outlays of non-market institutions. Examples of specific non-monetary indicators show that the disparities are not uniform; for some social services they are very small, for some larger.

Apart from indicating the order of magnitude of disparities, the static comparison leads to two important conclusions: (i) If *per capita* income is used as a proxy variable for the general level of economic and social development, the level of MDR relative to the LDR is overstated since very few indicators for the LDR

²This is a financial indicator, and the real (non-monetary) benefits are not strictly proportional to the outlays. For instance, the predominant part of the outlays are personal incomes, which are higher in the MDR than in the LDR. In addition, the demand for certain social services is related to the achieved level of development, and some of the services render benefits beyond the geographical boundaries of the region.

show larger disparity than that in the *per capita* income.³ (ii) With the help of central government intervention, the less developed part of the country reached in many attributes considerably higher levels of development and welfare than its level of economic activity, as measured by national income *per capita*, would permit.

2. Decomposition of the Difference in Per Capita Income

In analysing the difference in *per capita* incomes, it is useful to decompose this difference in a way which will be useful later in discussing the magnitude of the federal budget subsidy and the regional distribution of government expenditures in terms of macro-variables. *Per capita* income as well as the ratio of *per capita* incomes for the two regions can be expressed as a product of three factors:

$$\frac{\text{national income}}{\text{population}} = \frac{\text{labour force}}{\text{population}} \times \frac{\text{employment}}{\text{labour force}} \times \frac{\text{national income}}{\text{employment}}$$

Table 2 shows the 1966 values of these components for the MDR and the LDR for three variables: national income *per capita*, budget revenues *per capita*, and wages and salaries *per capita*. It is of interest to observe that the static difference in 1966 is practically the same for all three variables. This decomposition of budget revenues *per capita* will be analysed further in Section IV, where the budget subsidy for the LDR to achieve a more equal distribution of government expenditures will be discussed.

The first component on the right hand side looks at the portion of the difference in *per capita* income between the two regions which could be attributed to demographic factors. Labour force stands as a proxy for a hypothetical employment situation, where the same percentage of the population in the working age (15–64 years) would be employed in all regions. This eliminates the

TABLE 2
DECOMPOSITION OF SOME *PER CAPITA* VARIABLES INTO DEMOGRAPHIC,
EMPLOYMENT AND PRODUCTIVITY COMPONENT, 1966
(Average for Yugoslavia = 100)

Variable	Variable		Labour Force		Employment		Variable	
	Population		Population		Labour Force		Employment	
	MDR	LDR	MDR	LDR	MDR	LDR	MDR	LDR
National income	119.5	62.5	104.3	91.7	108.5	81.5	105.6	83.6
Budget revenue	120.3	61.0	104.3	91.7	108.5	81.5	106.3	81.6
Wages and Salaries	120.4	60.8	104.3	91.7	108.5	81.5	106.4	81.4

³This statement is also true for all more and less developed regions, not only for the grouping in the MDR and LDR. In the latter case all selected indicators show a smaller degree of disparity than *per capita* income. In an earlier analysis of a broader selection of indicators for each republic and autonomous province [3], in a few instances larger discrepancies were observed. It would be of interest to examine whether this phenomenon is observed also in comparisons of indicators of economic and social development between more and less developed countries.

present interregional differences in the degree of employment of the available labour force. The values of the demographic component show, however, that even equal employment opportunities would still leave employment on a *per capita* basis in the LDR some 12 percent lower than in the MDR as a result of differences in age structure.

The employment component compares the actual employment situation in the regions⁴ with the average level of employment of working age population in the whole country (i.e. with the case of equal employment opportunities). This component shows the largest disparity, the value for the LDR being only 75 percent of that for the MDR.

The third component, national income per employed, is a complex indicator which depends on a variety of factors such as the structure of the economy, organizational ability, general preconditions for development, productivity of labour and many others. The unadjusted value for the LDR amounts to about 79 percent of the value for the MDR. When adjusted for the less favourable structure of the LDR's economy,⁵ the value of national income per employed rises to over 83 percent of that in the MDR.

With 1966 *per capita* income in the LDR reaching only 52 percent of the value for the MDR, the corresponding *per capita* employment figure is 66 percent. The age structure of the population explains the smaller but not an insignificant part of the difference between the two regions. The employment component proper (actual employment in relation to labour force) still shows greater discrepancy between the two regions than either the productivity or the demographic component. While the importance of the latter two components should not be underestimated, it is obvious that unequal employment opportunities represent the major obstacle to a more equal regional distribution of *per capita* income or *per capita* budget revenues.

3. *Dynamic Disparities as Measured by Time-Distance*

Since economic and social development is a multi-dimensional and long-term phenomenon, static measures of disparity have to be complemented with dynamic measures to yield a better understanding of the disparities involved. This section, to some extent a digression from the main line of the paper, which deals with static considerations of regional distribution of government expenditures, raises the issue of the dynamic aspect of the problem.

Time-distance⁶ is a measure of time-dimension of disparities which is complementary, rather than competitive, with existing static measures. It is

⁴The biggest problem is to find meaningful estimates for employment in the agricultural sector. In order to avoid the possibility of underestimating the employment problem of the LDR, national income in agriculture was divided by the value of the national income per employed in the non-agricultural sector to yield an estimate of how many people can be assumed to be employed in agriculture at the productivity level of the non-agricultural sector. For details see Table VII-4 in P. Sicherl and associates [3]. A slightly different treatment, using the active population in agriculture, is discussed in S. Stajčić, P. Sicherl, S. Bolčić [4].

⁵Apart from the assumption that the number of employed in private agriculture was determined by the productivity level in the non-agricultural sector.

⁶For further elaboration of time-distance as a dynamic measure of disparities and its analytical and policy implications, see my paper [2].

defined as the distance in time (number of years) between the points in time when the two regions reach a specified level of the indicator in question. If $X_1(t)$ and $X_2(t)$ represent the values of the indicator X in time t for the MDR and LDR, respectively, there are two possible definitions of time-distance: S-distance (T_1), when measured *ex post*, and P-distance (T_2) measured *ex ante*.

$$(1a) \quad X_2(t) = X_1(t - T_1)$$

$$(1b) \quad X_1(t) = X_2(t + T_2)$$

Assuming that the respective average rates of growth of the indicator for the two regions are r_1 and r_2 , and that the static degree of disparity is expressed as the ratio $a(t)$,

$$(2) \quad a(t) = \frac{X_1(t)}{X_2(t)}$$

static and dynamic measures of disparities can be formally integrated in a consistent framework:

$$(3) \quad T_1(t) \cdot r_1 = \ln a(t) = T_2(t) \cdot r_2,$$

where the natural logarithm of the ratio $a(t)$ for the two regions at a point in time is expressed as a product of the respective average rate of growth of the indicator and the respective time-distance between the two regions with regard to the indicator in question.

The new dynamic measure of disparity introduces three important elements in the comparative analysis of disparities:

- (i) It provides the missing link between the static measure of disparity $a(t)$ and the rate of growth of the indicator.
- (ii) Since, for a given ratio $a(t)$, the time-distance is inversely proportional to the rate of growth of the indicator, high rates of growth of various development and welfare attributes are shown to be instrumental in reducing the degree of disparity measured by time-distance, even when the static degree of disparity remains unchanged. The effect of reducing time-distance by higher rates of growth should not be used as an argument against the need to reduce the static degree of disparity, but its additional effect has to be taken into account when a decision on overall strategy is being considered.
- (iii) Depending on the rate of growth, attributes which show a high degree of disparity in static comparison might at the same time show a rather small distance in time, and vice versa. The assessment of the degree of disparity in various development and welfare attributes based on static measures might not coincide with the results based on the time-distance as a dynamic measure of disparity.⁷

⁷This analytical framework can also be usefully employed in bringing into the picture the dynamic aspects of income and wealth distributions, disparities in educational and cultural facilities, employment opportunities etc. not only between regions and countries but also between income, social or racial groups.

Without going into a detailed analysis of the dynamic aspects of differences in the degree of economic and social development, a few numerical illustrations might be helpful to show the order of magnitude of the time lag between the more and the less developed region in Yugoslavia. Using (3) and (1b), and assuming that 6 percent (in real terms) is a representative growth rate for future increase of *per capita* income in the LDR, it will take the LDR about 12 years to reach the present MDR level of *per capita* income. In the mid-1960's *per capita* financial outlays on social services (broadly defined) grew at a rate similar to *per capita* income, the implied time-distance being around 9 years. Thus, even with a degree of static disparity such that *per capita* income in the MDR is twice as large as in the LDR, in a dynamic society the time-dimension of the gap could be of the order of magnitude of a decade.

III. FEDERAL SUBSIDY AS AN INSTRUMENT TOWARDS EQUALIZATION OF REGIONAL GOVERNMENT EXPENDITURES

Three alternative approaches to the problem of the appropriate degree of regional equalization of government expenditures could be distinguished. The first and most ambitious approach would define the long-term objectives of economic and social development of the country and its regions. All instruments of central government intervention could then be integrated, considering the proper interrelationship between the development of the economic activities and social services. Such a long-term programme would provide a realistic perspective of the solution of the problem, including a time dimension for achievement of the objectives within the constraint of available resources.

The second approach, depending on the political decision as to the minimal level of satisfaction of needs which could be tolerated, on the one hand, and guaranteed, given the limited resources, on the other, could base the estimate of needs on micro-criteria relevant for various kinds of social services. The results of further research in these fields would no doubt improve the estimates of needs, but there are unsettled institutional and professional questions which may make general consensus along these lines difficult at present.

Therefore, the simpler third approach, based on aggregate criteria for determination of subsidy, seems to be a more operational way of dealing with the problem, until the requirements of the more ambitious approaches could be met. In this approach the estimate of the possible degree of satisfaction of needs can also be approximated by the estimate of the aggregate constraint from the revenue side.

1. *Institutional Aspects*

Any system of subsidies will cover only a partial aspect of the fiscal system, since it depends on the present institutional framework, in general, and on the present tax system and institutions providing the services, in particular. Self-management (and the consequent decentralization of decision-making) in economic activities and social services is the basic institutional characteristic of Yugoslavia's social and economic system. Thus the system of subsidies will have to be consistent with decentralized decision-making and allow for a considerable

degree of freedom of the republics with respect to their revenue and expenditure patterns.

Under these circumstances the usual dilemmas of the choice between a general subsidy⁸ or earmarked subsidies, on the one hand, and between expenditure or revenue side providing the criteria for the subsidy, on the other, are more appropriately resolved in favour of a general subsidy and revenue equalization. While it is obvious that the objective is to achieve a more equal regional distribution of the satisfaction of needs, it is very difficult to determine needs in an objective way. The desire for more and better social services is practically unlimited and the extent to which these needs will be met is determined by the amount of resources devoted to their satisfaction. This broad decision of how many resources are to be devoted to those needs which are satisfied by institutions financed by the budget is taken when the country's tax system and division of responsibilities between various levels of government is decided upon. It means that in reality the considerations of needs and resources (or expenditures and revenues) are very closely interrelated, and to be consistent the partial problem of budget subsidies as a sub-system of the fiscal system has to be guided by the same general principles as the latter.

Two underlying characteristics of the Yugoslav fiscal system are: (i) the right of republics and communes to determine sources and rates of revenue and the level of satisfaction of needs on their territory; and (ii) the idea that the budget revenue should be related to the principle of remuneration according to work.⁹ At the present time, however, the differences in the degree of economic development between the regions are too large to permit these principles to be fully applied in the whole country. In these circumstances the principle of solidarity of the more developed with the less developed parts of the country is still an important element in determining the final regional distribution of government expenditure.

The main problem of determining the magnitude of the subsidy to the LDR in practice is to find an optimal balance between the principle of self-financing and the principle of remuneration according to work, on the one hand, and the principle of solidarity, on the other. The solution is to be found somewhere between the lower limit, which corresponds to level of own revenue (no subsidy), and the upper limit, where the needs would be satisfied equally in all regions without regard to the level of their own revenue. At either limit one principle completely dominates the picture at the expense of the other. Whatever might be the optimal balance between these principles from the political point of view, it will also have to be within the constraint of given resources.

In the 1965 law the Federal Assembly was given the responsibility to determine the magnitude of the federal subsidy to those republics and autonomous provinces whose own *per capita* budget revenues are below the average *per capita* budget revenue for the country as a whole. However, this level is also

⁸There are also some earmarked subsidies from the federal budget, but the main instrument for achieving a more equitable regional distribution of government expenditures is the general subsidy discussed here.

⁹The idea is put into practice by using personal revenue and retail trade as the two most important tax bases in the system. For a developing country with less than full employment, there might be important negative side-effects in efficient allocation of resources by making labour relatively more expensive.

specified as the upper limit to which the subsidy to any republic is allowed to supplement its own revenue.¹⁰

These provisions were not precise enough to be operational without further elaboration, but they established two important elements of the existing system of the subsidy: (i) The more developed republics keep their levels of own budget revenue and they establish their level of budget expenditures according to the principle of self-financing; (ii) The less developed republics are not to be subsidized beyond the level of the country's average *per capita* budget revenue, which together with the form of financing of the subsidy from the federal budget somewhat decreases the disincentive effect of the subsidy on the effort of the more developed republics to raise their level of expenditures and revenues.

2. Some Implications of the Present System

A few characteristics of this system can be illustrated using a simple example of the MDR and LDR; the extension for the case of more units in each group is straightforward. The provision that the Yugoslav average of *per capita* own budget revenue is the upper limit to which the LDR can be subsidized is expressed as¹¹

$$(4) \quad \frac{E_i}{P_i} = \frac{R_j}{P_j} \cdot k$$

The value of the coefficient k will be 1 in case of maximum permissible subsidy, and less than 1 when lack of resources or other considerations do not allow such a degree of redistribution. It is assumed that the same tax rate t_s is applicable to both regions, which is a fair assumption in the Yugoslav conditions; possible deviations will be discussed below.

$$(5) \quad R_j = (B_i + B_j) \cdot t_s$$

Under this system the *per capita* expenditure in the LDR increases by the same amount whether its own tax base or that of the MDR is increased by a given amount. The subsidy is derived as the difference between the level of expenditure for the LDR as determined by the criteria in equation (4), and their own revenue:

$$(6) \quad X_i = E_i - B_i \cdot t_s$$

$$(7) \quad X_i = t_s \left[\frac{P_i}{P_j} (B_i + B_j) k - B_i \right]$$

¹⁰With exceptions being allowed in some specified cases.

¹¹Symbols to be used in this section:

R = Own budget revenues of republics, autonomous provinces and communes

B = Tax base (assumed to be the same for federal and other taxes)

E = Government expenditure

X = Budget subsidy

P = Population

t_s = Average or standard tax rate for own revenue

t_c = Increase in federal tax rate needed to finance the subsidy

k = Coefficient of the level of equalization

Subscripts: i = LDR, j = MDR, J = Yugoslavia as a whole.

The partial derivative of X_i with respect to B_i is negative, while that of B_j is positive and equal to the partial derivative of E_i with respect to B_j . This means that, while an increase in the tax base of the MDR increases both the subsidy and the level of expenditure in the LDR, an increase in LDR's own tax base increases its level of expenditures by less than it decreases the subsidy.

The subsidy is financed by both MDR and LDR, contributing to the federal budget in proportion to their tax base:

$$(8) \quad X_i = t_c(B_i + B_j).$$

The net subsidy received by the LDR is:

$$(9) \quad X_i - t_c \cdot B_i = E_i - B_i(t_s + t_c)$$

From this it is obvious that the LDR is even less stimulated to increase its tax base than in the case of the gross subsidy. An increase in the average or standard tax rate of own revenue in all republics and communes will, however, raise the *per capita* government expenditure in both regions. However, it will also increase the magnitude of both the gross and the net subsidy to the LDR as long as the value of k is not less than or equal to the present ratio k^0 of LDR's *per capita* own revenue to the Yugoslav average of *per capita* revenue.¹² This present ratio k^0 corresponds to the lower limit of the interval within which the optimal balance between the principle of self-financing and the principle of solidarity has to be found. For any value of k larger than k^0 , the value of the subsidy is positive and the LDR is stimulated to try to increase the tax rate t_c in both regions, and discouraged from increasing its own tax base.

The redistribution of fiscal contributions also has important repercussions on the own cost to the LDR and MDR of a unit of government expenditure. Let C represent total tax contributions to finance the level of expenditures in republics and communes, i.e. own revenue plus contributions to federal budget needed to finance the subsidy to the LDR:

$$(10) \quad C_i = B_i \cdot t_s + B_i \cdot t_c$$

$$(11) \quad C_j = B_j \cdot t_s + B_j \cdot t_c$$

For the MDR total tax contributions compared with its level of government expenditures are:

$$(12) \quad \frac{C_j}{E_j} = \frac{B_j \cdot t_s + B_j \cdot t_c}{B_j \cdot t_s} = 1 + \frac{t_c}{t_s}$$

This expression shows that, apart from self-financing the expenditures, it will have to contribute t_c/t_s percent of its expenditure level for the financing of the subsidy to the LDR. Thus, for any practical purpose the cost of a unit of its government expenditures to the MDR is not 1, but $1 + t_c/t_s$. This would amount (for $k = 1$) to a "surcharge" of about 13 percent.

¹²The partial derivative of gross subsidy X_i and of net subsidy $X_i - B_i \cdot t_c$, both with respect to t_c , is equal to $P_i/P_j \cdot (B_i + B_j) \cdot k - B_i$. This value is positive, except for values of $k \leq B_i/P_i \cdot P_j/B_j + B_j$. The right hand side of the inequality, multiplied and divided by t_s , is the present ratio of the LDR's *per capita* revenue to the average value for the country as a whole (k^0).

Equation (12) can be written as:

$$(13) \quad \frac{C_j}{E_j} = 1 + \left(\frac{P_i}{P_j} \cdot k - \frac{B_i}{B_i + B_j} \right)$$

This shows that, for $k > k^0$, the “surcharge” will be higher the bigger the discrepancy between the share of LDR’s population in the country’s population and the share of its tax base in the country’s tax base. For the LDR the corresponding ratio

$$(14) \quad \frac{C_i}{E_i} = \frac{B_i \cdot t_s + B_i \cdot t_c}{B_i \cdot t_s + X_i} = 1 - \frac{B_i \cdot t_c}{B_i(t_s + t_c) + B_j \cdot t_c}$$

indicates that LDR’s own cost of a unit of expenditure will be less than 1 for positive values of t_c (that is, when $k > k^0$). The ratio expresses the expected conclusion that own cost to the LDR of a unit of its public expenditure will be decreasing with the increase in MDR’s financing of the subsidy, which in turn depends on the relationship between the tax bases for the two regions. For $k = 1$, the LDR would finance less than 70 percent of its expenditures.

An examination of the institutional framework and the broad legal provisions with regard to the federal subsidy as an instrument leading to a more equitable regional distribution of government expenditures thus suggests some strong disincentive effects in the system. Even after two important policy decisions, i.e. to leave the MDR expenditures at the level determined by its own tax effort and to put the upper limit to the equalization of *per capita* expenditures in the LDR at the country’s average *per capita* level, this scheme might still not be feasible from the point of view of available resources or acceptable from the political point of view if equalization would be attempted at the maximum permissible level.

In such a case the transfer of resources from the MDR to the LDR would be only 20 percent lower than in the case of complete equalization (i.e., when *per capita* government expenditures would be the same in all parts of the country). We have also seen that “own cost” of government expenditures would rise to 113 percent of the expenditures in the MDR, while it would be less than 70 percent in the LDR. This means that the LDR, per unit of government expenditures, would have to collect only about 60 percent of the resources which the MDR has to provide. In the next section these problems are discussed in more operational terms and an attempt is made to determine a plausible range for k in terms of the macro-variables analysed in Section II.

IV. DISCUSSION OF SOME OPERATIONAL ISSUES

The law governing the eligibility of the less developed republics and provinces for the federal budget subsidy and the maximum amount of the subsidy does not provide enough elements to permit an unambiguous determination of the federal budget subsidy. In practice the decisions have been taken each year on an *ad hoc* basis within the framework of this law. Section IV-1 attempts to clarify some of the operational issues involved in determining the definition of the tax base and tax revenue to be used in the calculation of the subsidy. In Section IV-2 a

set of macro-variables is suggested as a framework within which the degree of equalization, which is basically a political decision, could be discussed in an explicit and systematic way.

1. *Potential Versus Actual Tax Revenue*

Actual revenues are not appropriate magnitudes to be used in determining the level of federal subsidy since they can either underestimate or overestimate the fiscal potential of the regions. Uniform rules in estimating the actual tax bases for the whole country, on one hand, and application of standard (or country average) tax rates for the LDR, on the other, are minimum conditions for attaining a proper estimate of the respective magnitudes of revenue which could be used in determining the level of subsidy.

To deal with some of the disincentives of the system outlined in part III, a rule should be adopted that in all cases where the actual revenues exceed the computed hypothetical revenues,¹³ the surplus should not enter the estimate of the own revenue of either region. In cases where the computed revenue exceeds the actual, there is a need for asymmetrical treatment of the two regions. In the subsidized region the computed revenues should be taken as its own revenue when determining the subsidy to satisfy one of the conditions for the subsidy,¹⁴ while for the MDR the lower actual revenues should be taken since they are free to choose their own level of satisfaction of needs.

Apart from the problem of estimating the actual tax bases by uniform rules, in principle a potential (and not the actual) tax base should be taken for the LDR if, *ceteris paribus*, less effort or lower efficiency have resulted in lower actual tax base (e.g. lower salaries due to lower efficiency under similar conditions). In practice it is very difficult to assess the quantitative importance of the discrepancy between the actual and potential tax base. However, the distinction has to be kept clear in the theoretical framework.

2. *The Degree of Equalization*

Great disparities in the degree of economic development at present prevent the principle of self-financing prevailing in the MDR from being applied to the LDR. On the revenue side it is important to define what is to be understood as the degree of development with regard to the possibility of raising own revenue. One possible definition (expressed in terms of decomposition in Section II-2) would consider two regions to be equally developed if they have an equal percentage of their labour force employed (in the extreme case everybody in the relevant age group would be employed) and have objective possibilities to reach the same level of revenue per person employed.

Some of the consequences of the equalization to the highest permissible level ($k = 1$) were discussed in part III. According to Musgrave [1], a high degree of absolute equalization is not compatible with a workable system of fiscal federal-

¹³This implies that, on the average, higher than standard tax rates have been applied.

¹⁴Their tax effort must be at least equal to the average for the country as a whole. However, to determine the country's average *per capita* revenue the actual LDR's revenue should be taken if lower than the computed one.

ism. In discussing the probable range of k in the framework of our existing fiscal system, it might be advantageous to use the above decomposition of the *per capita* levels of own revenue into the demographic (DC), employment (EC) and productivity (PC) components (see Table 2, line 2 as a reference).

Equalization up to the average Yugoslav *per capita* level of own revenues ($k = 1$) could be expressed as a case where all three components would be raised to 100 from their respective values in Table 2. Obviously, the employment component should be raised to make up for the less-than-average actual employment in the LDR. The productivity component is a complex one (see II-2), and it is difficult to say to which level this component should be raised. The lower limit should at least make up for the less favourable structure of the LDR's economy as compared with the country as a whole. According to this calculation, the PC should be raised at least to 88 from the present level of 81.6.¹⁵ The value of PC should thus be between 88 and 100, but in principle the differences due to lower efficiency under similar conditions should not be compensated for since the computed level of own revenues is based on actual and not potential tax bases.

It is questionable whether the difference in the demographic component should be compensated for. As mentioned before, from the point of view of the ability to raise own revenue,¹⁶ two regions can be considered equally developed if the same proportion of the appropriate age group are employed under similar conditions. Among the three more developed republics (which form the MDR) governed by the principle of self-financing, there is no compensation for higher needs or smaller share of the labour force in total population, although there are substantial differences in the degree of development among them. From the point of view of equalization of fiscal potential to the point of the hypothetical average level, the DC component could stay at 91.7.

Taking into account the above considerations, and combining the values of the three components (DC = 91.7, EC = 100, PC = 88 – 100), the value of k which brings the degree of equalization to the hypothetical point of the average level of development would be between 80.7 and 91.7 percent of the average computed level of *per capita* own revenue for the country as a whole. Especially at the lower level of equalization it may be argued that consideration of needs of the LDR should be taken into account in addition to the criteria dealing with the revenue equalization. This would raise the corresponding values of k to reflect the appropriate political judgement.

Another possible interpretation of equalization to the highest permissible level ($k = 1$) would be to assume the following combination of the components: DC = 91.7, EC = 108.5, and PC = 100. This combination would assume that the LDR is compensated fully to equalize the employment level with that of the MDR (in reality this would mean compensating even beyond the less developed republics of the MDR!) and to compensate the PC to the Yugoslav average. Given the principles underlying the present fiscal system, there seems to be no room for compensation of the DC for higher-than-average needs. With PC in the earlier discussed range (88–100) and full hypothetical equalization of the employment

¹⁵In fact, the increase for the national income per employed person as the proxy variable from 83.6 to 88 might slightly exaggerate the increase in the revenue per employed person.

¹⁶The predominant part of own revenue is raised by taxes on salaries.

component in both regions, the expected value of k is between 87.6 and 99.5 percent.

There are other possible interpretations which could be given to a particular value of k , which is finally determined by a political decision. In such a system, which discusses the subsidy in terms of aggregate criteria, the least determined from the technical point of view is the productivity component. Not only is its range rather wide, but it also has to bear adjustments for discrepancies between potential and actual tax bases, higher or lower money costs for providing a given amount of service in real terms, etc. Under the present circumstances even if the analysed macro-variables (DC, EC and PC) would be used as criteria determining the value of degree of equalization (k), the appropriate value of the PC to be used in determination of k would thus be at least partly influenced by value judgements.

V. COMPARISON WITH THE ACTUAL LEVEL OF SUBSIDY

Any action to lessen the differences between the regions in the field of government expenditures requires that careful consideration be given not only to financial, but also to political, legal, economic and other considerations. In finding an acceptable solution to this complex problem, the type and some elements of the chosen system will be decided by political considerations. Even when the theoretical principles of the system are established, it is possible that their quantification will not be possible due to lack of adequate information or relevant studies. A systematic and continuous improvement of the elements of the system is the only way leading to a more objective solution of the problem.

We have outlined three main approaches to the problem and concluded that at present important elements needed for either a long-term programme or a solution by determining minimum standards for various social services are still missing, making a political consensus very difficult if not improbable. In the meantime the necessary studies of the needs for, as well as the "technology" and costs of, providing social services should be undertaken to supplement the aggregate considerations, since in the long-run micro-criteria and the programming approach can considerably improve the present system of regional distribution of government expenditures.

Within the present system, where the aggregate constraint from the revenue side (own revenue + subsidy) determines the financial framework for LDR's government expenditures, the independence of all republics with respect to their patterns of expenditures and taxation is preserved in line with the philosophy of decentralized decision-making. Part IV has suggested some refinements of the existing system (outlined in Part III) and provided a macro-economic background for discussion of alternative degrees of equalization k . When discussing the appropriateness of a certain degree of equalization, a value judgement is involved, i.e. this is basically a matter of political decision. It is, therefore, of interest to compare Part IV with the actual regional distribution of government expenditures in the late 1960's, which was based on some *ad hoc* decisions within the framework explained in Part III.

In the years 1964-67 the subsidy to the LDR amounted to about 9 percent of the own government revenue for the whole country, or about 0.85 percent of the

national income. The average value of k was about 87 (in percentage terms).¹⁷ This falls in the upper part of the range when the EC for the LDR is compensated for up to the Yugoslav average, and is just below the lower limit for the case when the EC is fully equalized with that of the MDR. In terms of *per capita* government expenditures, the LDR reached 73 percent of the level for the MDR, while in *per capita* revenue it represented only 50 percent of the corresponding level for the MDR. The actual degree of equalization in real terms is most probably even higher than that outlined above in financial terms.

The time-distance for *per capita* government expenditures between the LDR and the MDR appears to be on the order of magnitude of 6 years, assuming 5 percent yearly increase in the LDR's *per capita* government expenditures at constant prices. While the question of the appropriate degree of equalization remains a problem with many facets, it can be said that the benefits of government expenditures have been regionally distributed much more equally than would be permitted by the corresponding level of economic activity, as measured by national income *per capita*.

REFERENCES

- [1] R. A. Musgrave, "Approaches to a Fiscal Theory of Political Federalism", in *Public Finances: Needs, Sources, and Utilization*, NBER, Princeton University Press, 1961.
- [2] P. Sicherl, "Time-distance as a Dynamic Measure of Disparities in Social and Economic Development", *Kyklos*, Vol. XXVI-3/1973.
- [3] P. Sicherl et al., *Izučavanje problema dopunskih sredstava republikama na trajnijoj osnovi*, mimeographed, Institut of Economic Studies, Beograd, 1968.
- [4] S. Stajić, P. Sicherl, S. Bolčić, *Kriteriji i metodi za merenje stepena razvijenosti nerazvijenih područja Jugoslavije*, mimeographed, Institut of Economic Studies, Beograd, 1970.

¹⁷Based on actual values of own revenue; the value of k would be most probably somewhat higher if based on an appropriate definition of hypothetical revenue (see IV-1).