QUESTIONS AND ANSWERS CONCERNING THE INDEX OF RELATIVE FISCAL CAPACITY

The concept of an index of relative fiscal capacity was outlined in broad terms in the budget resolution for the 2000 budget where it was suggested that this index be used as a new fiscal tool to determine the revenue side of local budgets. Adoption of this tool would be a giant step towards the creation of a formula based transfer system in Ukraine. Since this concept of an index is relatively new in Ukraine, many questions have arisen concerning the measurement basis, purpose, scope and impact of this index if it were used as a planning device in the formation of local budgets. This note attempts to address these concerns in a question and answer format.

QUESTION #1: HOW IS THE INDEX OF RELATIVE FISCAL CAPACITY CALCULATED AND WHAT IS ITS PURPOSE?

The main function of the index is to provide a consistent, reliable and transparent method of determining the revenue side of the annual intergovernmental budget drawn up by the Ministry of Finance. To see how these goals might be achieved, we begin with a brief description of how the index is calculated and how it is intended to be applied. If oblasts are taken to be the relevant local government unit, the index represents an attempt to measure the per capita revenue capacity of an oblast in comparison with the average per capita revenue capacity of all oblasts. Some simple notation can help to clarify the nature of this calculation. If R_i/P_i denotes the observed per capita revenues from own source revenues for the i'th oblast, and R*/P indicates the average amount of per capita revenues from own sources for all oblasts, a useful identity which links these two variables is:

$$R_i/P_i = ((R_i/P_i)/ (R^*/P))x (R^*/P)$$

This identity clearly holds at any moment in time. However, if the index of relative fiscal capacity, defined as the ratio $(R_i/P_i)/R^*/P$, is fixed at some point, this identity is transformed into an equation which can be used to forecast oblast revenues given some projection of expected average per capita revenues, R*/P. Used in this manner, the index of relative fiscal capacity becomes part of a forecasting mechanism and the critical issue is whether the predictions forthcoming from this forecasting framework are reasonably accurate or reliable. The issue of reliability is examined empirically in response to the final question that is considered below.

Before turning to the question of reliability, however, a simple numerical example can illustrate how the index is calculated and used for forecasting purposes. Assume there are three oblasts, A, B, and C with the observed per revenue capabilities shown in Table I. Revenue capabilities are the amounts of revenue generated in each oblast from revenue sources that have been assigned to the oblasts before any tax sharing may have occurred.

TABLE I

Oblast	Per capita own source revenue	Share of total population	Index of relative fiscal capacity	Revenue Forecast (20,000)
A	30,000	.3	1.67	33,400
B	10,000	.5	.55	11,100
C	20,000	.2	1.11	22,200

Average per capita revenue is the population weighted average of the per capita oblast revenues: .3 (30,000) + .5 (10,000) + .3 (20,000) = 18,000. The index of relative fiscal capacity is obtained by expressing the per capita revenue capacity of each oblast as a fraction of the amount of average per capita revenue. Thus for oblast A, its index value is the ratio of 30,000 to 18,000, or 1.67. Index values for the other oblasts are calculated in the same manner. The last column indicates how the index can be used to obtain revenue forecasts for each oblast. If in the next period average per capita revenues of all oblasts are anticipated to be 20,000, the per capita revenue forecast of each oblast is simply the product of this amount and its index value. In the case of oblast A, the revenue forecast therefore is 33,400 (1.67x20,000).

If average per capita revenues can be accurately projected, the size of the errors in this forecasting procedure will depend on how stable the index is over time and on whether it is possible to easily modify the index to take into account economic and policy changes which could cause the index values to change with time. The question of how and when to revise the index in response to policy changes raises important policy issues which are discussed below. Clearly, however, if the index is fairly stable when measured at different points in time, the index itself will not be a serious source of forecasting failure.

If the index is fixed for a certain period of time, as suggested below, the application of the index on a regular basis over this period will set the pattern of inter-oblast transfers given some independent assessment of the expenditure needs of different oblasts. As long as the estimation of relative expenditure needs does not vary much from year to year, oblasts will be placed in a much stronger position to anticipate the approximate size of their expected transfer for several years. This enhanced revenue certainty should improve the planning capacity of oblast budgets and help to curb the appearance of expenditure arrears that might otherwise occur in the presence of unstable transfers to oblasts.

QUESTION #2: HOW WILL THE INDEX AFFECT INCENTIVES TO STRENGTHEN THE TAX BASE OF LOCAL BUDGETS?

The index by itself will not discourage local officials from undertaking greater efforts to collect more revenue from sources that have been assigned to them. The reasoning is that application of the index makes transfer payments depend on the index calculated revenue potential of an oblast and not on the actual amount of revenue an oblast collects. Thus if one oblast, for example, undertakes more concerted collection

efforts and raises more revenue than indicated by its potential, its transfer payments will be unaffected and total revenues for the oblast will rise by the additional amounts collected. In this case, the index of this particular oblast would not be revised upward to reflect the increase in collections and reduce the amount of transfers received.

If all oblasts were successful in raising more revenues from assigned sources, however, it is not entirely clear what would happen. If revenues rose in all oblasts by approximately the same percentage amount, the index would be unchanged but it is possible that the forecast of average per capita revenues would rise to reflect this increase in collections. In this case, the total amount of transfers allocated to oblasts would decline by the amount of the additional collections and oblasts collectively would not benefit from their greater revenue raising efforts unless expenditure targets were increased to reflect the growth in revenue capacity.

Adverse revenue raising incentives could also be avoided if the annual forecasts of expected average per capita revenue were not revised by backward glancing at actual revenue performance but instead were revised solely on the basis of anticipated changes in macro-variables such as predicted inflation and real output growth. Another way of averting adverse incentives in the case of local taxes and fees would be to simply exclude them from the calculation of the index and the definition of average per capita revenues. This proposal was contained in the budget resolution for 2000. Exclusion would sever the tight link between transfers and revenue potential and allow any increase in local taxes and fees to finance a higher level of expenditures.

If new local taxes were introduced that provided significant amounts of additional revenue, such as a local property tax for example, this exclusion device, however, would create other difficulties. While exclusion would guarantee that local governments would reap the full revenue rewards from a new property tax, it is unlikely that all oblasts would have identical opportunities to introduce and apply the tax. Omission of property taxes from the index of relative fiscal capacity would lead to a distorted picture of the relative revenue raising powers of different oblasts and contribute to greater regional fiscal inequality by compromising the ability of a formula based transfer system to achieve fiscal capacity equalization.

QUESTION #3:
WHAT ARE THE MERITS OF "FREEZING" THE INDEX FOR A CERTAIN PERIOD OF TIME, FOR EXAMPLE, TWO OR THREE YEARS?

If the index were not fixed for a future period and, instead, were modified every year to take into account the actual performance of oblast revenues in the previous year, the index would work to nullify any incentive to raise additional revenue and at the same time create undesirable incentives to reduce revenue raising efforts. Adjusting the index on an annual basis according to actual revenue performance in the previous period would make the index operate in a manner closely resembling the current system of transfer payment determination in which revenue "surpluses" are extracted from oblast budgets and revenue "shortfalls" in oblast budgets are replenished. To avoid these undesirable revenue incentives and delink transfers from actual revenue performance, it is important that the index be frozen for a period of at least two years or longer.

The index is a proxy for inter-oblast differences in the size of the per capita tax base. Over time these differences will change and it will become necessary to periodically revise the index to account for these changes and re-estimate the amount of revenue potential in each oblast. Economic development is unlikely to occur at an identical pace in each oblast and eventually the index should be adjusted for regional differences in the growth of the per capita tax base.

Another source of changes to the relative size of regional tax bases is new tax legislation which could alter the differential ability of oblasts to raise revenue. New tax rules could affect either the rate, the base, or both, for different taxes. The impact of a change in tax rate on the index will depend on the size of the change. If the change is small the effect on the index will also be small. Large tax rate changes, on the other hand, will have a non-uniform impact on different oblasts to the extent the size of the per capita tax base varies among the oblasts.

In addition, legislative changes to the tax base may be either general or specific in nature. A general change, affecting the tax base measurement in all oblasts, will have a smaller impact on the values of the index than specific changes which have large effects on the tax base in only a few oblasts. For example, a presidential decree signed on July 14,1999 grants substantial tax benefits to the metallurgical industry which is concentrated in eastern Ukraine. This decree is expected to produce revenue reductions primarily in the Zaporizka, Dnipropetrovska and Donetska oblasts and reduce the relative value of their indices. Unlike this example, other legislative changes which affect the size of the tax base in all regions will have a much smaller impact on the index.

Unless changes in tax legislation produce insignificant effects on index values, these changes should be immediately reflected in new values for the index with an appropriate adjustment in the amount of transfers planned for the balance of the fiscal year. Otherwise, without some form of revenue guarantee, subnational government finances will be destabilized by new tax legislation and the whole purpose of a formula based transfer system will be defeated.

There is a danger, however, of going too far to accommodate certain kinds of changes in tax legislation. The proposed proliferation of free economic zones illustrates this danger. As instruments of regional economic development, free economic zones are subnational tax havens that benefit the region in which they are located at the expense of economic activity in other regions. Such zones have the strong potential to divert capital and labor from regions where zones have not been established and therefore harm the development prospects of these regions. A corresponding adjustment to the index would only exacerbate this regional bias by redistributing the transfer pool in favor of regions having zones.

Regions which opt for a free economic zone within their territory have effectively chosen to reduce the tax rate applied to their tax base. Other countries which use a formula based transfer system would disallow a transfer recipient from increasing its transfer by the simple expedient of reducing its tax rate. This disallowance is achieved by applying a standard or fixed tax rate to a region's tax base. It can be argued, therefore, that where a region exercises discretion in determining the size of its tax base, any resulting change in the base should be ignored for purposes of calculating the index. Only

changes in the base which result from nationally imposed tax legislation that is independent of regional choice should influence the calculation of the index.

QUESTION #4:
WHY ARE TOTAL AMOUNTS OF TAXES COLLECTED IN AN OBLAST USED TO CALCULATE THE INDEX RATHER THAN THE AMOUNTS OF TAX ACTUALLY ALLOCATED TO LOCAL BUDGETS?

The primary purpose of the index is to objectively measure the revenue potential of an oblast and in some oblasts this potential, given current revenue assignments among different levels of government, will exceed the amount of revenue required to finance the planned expenditure of the oblast. In this situation some form of regionally variable tax sharing will be required to transform revenue potential into required revenues. The index in these cases provides a way of determining the overall amount of tax sharing that is required to finance the oblast budget.

If the enterprise profits tax and the yield from excise taxes were exclusively assigned to the State budget and used in large part to pay for a larger volume of transfers to all oblasts, this distinction between revenue potential and revenue needs would disappear. All of the remaining revenues left at the subnational level would be needed to finance subnational budgets.

QUESTION #5:
WHY DOES THE INDEX USE THE AMOUNT OF TAXES COLLECTED INSTEAD OF THE AMOUNT OF TAX DUE?

The short answer to this question is that you cannot spend what you cannot collect. Therefore, to add tax arrears to tax collections would be the equivalent of adding apples and oranges. The idea of including taxes due into the revenue is no doubt motivated by the desire to spur local governments to be more aggressive in collecting taxes. However, if overdue taxes are not collectible because of inadequate enforcement procedures or are subject to either write-offs or write-downs, they do not contribute to the purchasing power of local governments and should not be added to the amount of taxes due that are actually received by local governments.

Of course, if tax arrears were a constant proportion of tax collections in every oblast, it would not matter to the calculation of the index if taxes due were used in lieu of the amount of tax collections because the index values would unaffected by the inclusion of tax arrears.

QUESTION #6:
CAN THE INDEX BE USED AT AN INTRA-OBLAST LEVEL TO ESTIMATE REVENUE PROJECTIONS FOR RAYON AND CITY BUDGETS?

Because the budgeting process at the intra-oblast level mirrors that which is used at the center-oblast level, there is no reason why the same index approach cannot be used to determine the revenue potential of both rayon and city budgets. No additional factors

come into play and no modification of the underlying methodology is required to apply the index to the intra-oblast level. Extension of the index to the intra-oblast level should go hand in hand with the introduction of a formula based transfer system to this level of government.

There is some concern, however, that the index may be less reliable in forecasting revenues at the sub-oblast than at the oblast level. Many rayons and municipalities are revenue dependent on the economic fortunes of one or a few large enterprises. By comparison, oblasts have a much more diversified revenue base which imparts more stability to their revenue flow. As a result, the application of the index to the sub-oblast level may need to be supplemented with a reserve fund that could be used to smooth out unanticipated fluctuations in the revenues of rayons and municipalities having unstable tax bases. Of course, to the extent that reliance on an unstable profits tax is the source of this problem, its solution lies in assigning the profits tax to the central government which is better equipped to deal with revenue vicissitudes.

QUESTION #7: DOES THE INDEX OF RELATIVE FISCAL CAPACITY NEED TO BE ADJUSTED FOR THE PRESENCE OF MUTUAL SETTLEMENTS?

The issue here is whether a hryvnia of mutual settlements is equivalent in purchasing power to a Hryvnia which is collected in the form of cash. In the system of public accounts in Ukraine this equivalence is assumed to exist. Cancellation of a tax debt through a mutual settlement is treated as both a receipt and an equivalently valued expenditure for a local government. What a local government receives in benefits is assumed to be equal in value to what the local government would have received if the tax debt had been paid in cash.

However, the true economic value of a mutual settlement may be generally less than its nominally recorded value. If, for example, a local government agrees to receive a barrel of apples having a market value of Hr 100 in exchange for a cancellation of tax liabilities worth Hr 150, the mutual settlement is overvalued by Hr 50. If the tax debt had instead been paid in cash, the local government would have been able to buy apples worth Hr 150. In this example, the use of a mutual settlement has increased the "effective" revenues, and purchasing power, of the local government by only Hr 100 and not, as it is recorded, by Hr150.

Both micro-economic observation and econometric evidence support the notion that the value of mutual settlements should be "discounted" when compared to the value of cash in total revenues. The question then becomes one of determining the appropriate size of the discount to be applied to mutual settlements. Regression analysis indicates that a discount of the order of 20-25 per cent is required in making comparisons of the revenue capacity of different local governments having different mixes of cash and mutual settlements in total revenue.[1] For example, if two oblasts have the same amount of total revenue of Hr 100, but one of them has entirely cash and the other has Hr 40 of mutual settlements, the effective total revenue of the oblast with mutual settlements is

[1] For more details of this calculation, see W. Thirsk and P. Ricoy, "How Much is a Hryvnia of Mutual Settlements Worth?", mimeo, 1999.

approximately Hr 92 (60+40x.8) and not the recorded amount of Hr 100. In calculating the index of relative fiscal capacity the value of the total revenue in the oblast with mutual settlements should be entered as the amount Hr 92 instead of the recorded Hr 100.

TABLE II

Fiscal Capacity and Discounting Mutual Settlements

Oblast	*Estimated per capita revenues 1998*	*Fiscal capacity index 1998*	*Estimated per capita revenues 1998 (adjusted for mutual settlements with a 20% discount)*	*Fiscal capacity index 1998 (adjusted for mutual settlements with a 20% discount)*	*Difference*
CRIMEAN REPUBLIC	155.4	*0.72*	147.0	*0.73*	*-0.006*
VINNYTSKA	99.0	*0.46*	94.2	*0.46*	*-0.006*
VOLYNSKA	89.4	*0.41*	86.0	*0.42*	*-0.011*
DNIPROPETROVSKA	214.6	*0.99*	203.3	*1.00*	*-0.009*
DONETSKA	256.0	*1.19*	241.0	*1.19*	*-0.004*
ZHYTOMYRSKA	111.2	*0.51*	103.6	*0.51*	*0.003*
ZAKARPATSKA	96.2	*0.45*	92.3	*0.46*	*-0.010*
ZAPORIZKA	245.3	*1.14*	233.6	*1.15*	*-0.017*
IVANO-FRANKIVSKA	163.7	*0.76*	145.9	*0.72*	*0.038*
KYIVSKA	164.3	*0.76*	156.2	*0.77*	*-0.010*
KIROVOHRADSKA	89.5	*0.41*	84.6	*0.42*	*-0.003*
LUHANSKA	159.9	*0.74*	148.8	*0.73*	*0.006*
LVIVSKA	175.7	*0.81*	167.5	*0.83*	*-0.013*
MYKOLAYIVSKA	251.2	*1.16*	223.3	*1.10*	*0.061*
ODESKA	188.0	*0.87*	183.7	*0.91*	*-0.036*
POLTAVSKA	428.1	*1.98*	383.6	*1.89*	*0.089*
RIVNENSKA	150.6	*0.70*	135.1	*0.67*	*0.031*
SUMSKA	186.5	*0.86*	172.7	*0.85*	*0.011*
TERNOPILSKA	74.5	*0.34*	70.1	*0.35*	*-0.001*
KHARKIVSKA	323.5	*1.50*	287.3	*1.42*	*0.080*
KHERSONSKA	114.2	*0.53*	101.9	*0.50*	*0.026*
KHMELNYTSKA	126.0	*0.58*	114.7	*0.57*	*0.017*
CHERKASKA	165.3	*0.77*	151.2	*0.75*	*0.019*
CHERNIVETSKA	108.9	*0.50*	98.4	*0.49*	*0.019*
CHERNIHIVSKA	129.6	*0.60*	123.4	*0.61*	*-0.009*
KYIV	710.1	*3.29*	696.5	*3.44*	*-0.149*
SEVASTOPOL	181.2	*0.84*	176.3	*0.87*	*-0.031*
Average	216.0		202.7	*1.00*	*0.000*

Making adjustments to the index of relative fiscal capacity along the lines suggested will raise the value of the index for cash rich oblasts and lower it for oblasts having a relatively high proportion of mutual settlements. If all oblasts had the same proportion of cash and mutual settlements in their total revenue, the index values would be insensitive to any discounting adjustment. In Ukraine, however, this proportion of cash to total revenue varies among oblasts and therefore will have some impact on the index when discounts are applied to all mutual settlements. The size of these adjustments is indicated in Table II. There it can be seen that applying a 20 per cent “discount” to mutual settlements will reduce the value of the index for oblasts extensively using

settlements, such as Poltavska and Kharkivska and raise the value of the index in oblasts such as Kiev city where relatively little use is made of mutual settlements.

Under a formula based transfer system these adjustments would redirect the flow of intergovernmental transfers to some extent in favor of those oblasts that rely more heavily on mutual settlements to finance their expenditure plans. Although there is a clear-cut equity rationale for making this type of adjustment, in the context of designing a satisfactory formula based transfer system, these revisions must be treated cautiously.

A cardinal principle of any formula based transfer system is that it should not contain any elements that local governments can use to influence the size of their transfer entitlement. A formula based system will not work well if local governments can increase the amount of their transfer by altering either their expenditure or revenue behavior. Applying a discount for mutual settlements contravenes this basic principle and oblasts should be denied any opportunity to enhance their transfer by engaging in a larger volume of mutual settlements. One way of avoiding such adverse incentives would be to make an initial adjustment to the measurement of relative fiscal capacity when a formula is introduced but to disregard, for an extended period of time, any increase in the relative use of mutual settlements when the formula is in force.

QUESTION #8: IS THERE ANY EVIDENCE TO SUGGEST THAT THE INDEX IS A RELIABLE FISCAL TOOL FOR FORECASTING OBLAST REVENUES?

To obtain a sense of the reliability of the index-based revenue forecasts, it is necessary to create a benchmark against which the forecasts can be evaluated and simulate the results of applying the index One approach is to estimate the expected execution of total revenue for all oblasts in 1999 and compare these expected values to the amount of revenue that would have been forecast at the beginning of 1999 using the fiscal capacity index. Total revenue in this case refers to the amount of revenue collected in each oblast less the amounts received for local taxes and fees and the land tax.

To establish the benchmark, executed values of total revenue in each oblast were taken for the first ten months of 1999 and multiplied by the inverse of the ratio of executed revenues for the first ten months of 1998 to total executed revenues for 1998. Creating the benchmark in this manner assumes that the seasonal pattern of revenue collection observed in 1998 will be repeated in 1999.

The simulation procedure assumes that, at the beginning of 1999, the forecast of total revenue for all local revenue would have been the amount of the expected 1999 revenue execution. Although other measurements of the index are feasible, for illustrative purposes the index was calculated for 1998 as the ratio of the amount of per capita revenue in each oblast to the average per capita revenue in all oblasts. This index appears in column two of Table III.

One criterion of forecast reliability that is adopted is the percentage of forecast errors that cluster within a range of plus and minus eleven per cent. Another criterion that may be used is the relative accuracy of the index approach compared to the revenue forecasts made by the Ministry of Finance in the 1999 budget. In making this comparison, it is useful to consider the implicit index of relative fiscal capacity contained in the oblast projections of total revenue made by the Ministry. That is, given the

Ministry's revenue projections shown in column one of Table III, an index of relative capacity can be constructed in the same manner as the one constructed for 1998 by taking the ratio of per capita revenue projected for each oblast to the average per capita amount projected for all oblasts. This implicit index is shown in column three of Table III.

TABLE III
SIMULATION OF REVENUE FORECASTS USING THE INDEX OF RELATIVE FISCAL CAPACITY

Oblast	***Total revenues***						
	Revenue Forecast of MoF (1999) ('000 UAH)	*Index of Relative Fiscal Capacity*	*Implicit Fiscal Capacity Index of MoF*	*Revenue Benchmark for 1999 ('000 UAH)*	*Revenue Forecast Using the Index ('000 UAH)*	*Percentage Forecast Error Using the Index*	*Percentage MoF Forecast Error*
Aut.Rep. of Crimea	436,503	*0.73*	*0.71*	618,816	466,466	*-24.6*	*-29.5*
VINNYTSKA	283,847	*0.53*	*0.54*	275,882	288,404	*4.5*	*2.9*
VOLYNSKA	155,239	*0.46*	*0.50*	138,219	144,911	***4.8***	*12.3*
DNIPROPETROVSKA	1,119,765	*1.02*	*1.03*	1,228,831	1,133,110	***-7.8***	*-8.9*
DONETSKA	1,563,791	*1.17*	*1.08*	1,404,369	1,740,956	*24.0*	*11.4*
ZHYTOMYRSKA	210,398	*0.52*	*0.50*	244,905	223,579	***-8.7***	*-14.1*
ZAKARPATSKA	133,386	*0.41*	*0.36*	227,392	156,789	***-31.0***	*-41.3*
ZAPORIZKA	764,973	*1.09*	*1.31*	740,793	659,083	*-11.0*	*3.3*
IVANO-FRANKIVSKA	300,024	*0.82*	*0.71*	351,417	355,966	***1.3***	*-14.6*
KYIVSKA	447,233	*0.76*	*0.84*	876,345	421,463	*-51.9*	*-49.0*
KIROVOHRADSKA	165,372	*0.61*	*0.48*	190,068	215,739	*13.5*	*-13.0*
LUHANSKA	555,510	*0.72*	*0.72*	643,317	575,947	***-10.5***	*-13.6*
LVIVSKA	623,802	*0.79*	*0.79*	716,379	641,934	***-10.4***	*-12.9*
MYKOLAIVSKA	395,575	*1.10*	*1.04*	537,694	430,731	***-19.9***	*-26.4*
ODESKA	653,212	*0.90*	*0.89*	763,455	675,099	***-11.6***	*-14.4*
POLTAVSKA	1,193,989	*1.82*	*2.44*	912,425	916,509	***0.4***	*30.9*
RIVNENSKA	244,395	*0.63*	*0.71*	263,142	223,351	*-15.1*	*-7.1*
SUMSKA	311,115	*0.83*	*0.79*	331,370	336,718	***1.6***	*-6.1*
TERNOPILSKA	218,425	*0.46*	*0.65*	142,757	157,908	***10.6***	*53.0*
KHARKIVSKA	1,264,081	*1.48*	*1.46*	1,019,402	1,320,208	*29.5*	*24.0*
KHERSONSKA	196,871	*0.53*	*0.55*	182,085	195,126	***7.2***	*8.1*
KHMELNYTSKA	247,928	*0.57*	*0.58*	280,634	250,663	***-10.7***	*-11.7*
CHERKASKA	377,039	*1.00*	*0.89*	454,433	437,242	***-3.8***	*-17.0*
CHERNIVETSKA	225,576	*0.54*	*0.83*	143,319	151,877	***6.0***	*57.4*
CHERNIHIVSKA	367,882	*0.77*	*0.98*	274,740	299,513	***9.0***	*33.9*
CITY OF KYIV	1,944,891	*3.07*	*2.56*	1,871,114	2,399,705	*28.3*	*3.9*
CITY OF SEVASTOPOL	103,406	*0.99*	*0.91*	101,616	115,921	*14.1*	*1.8*
Total	**14,504,228**			**14,934,920**	**14,934,920**		

Given the revenue benchmarks in column four of Table III, the results of using the index to forecast oblast revenues for 1999 are shown in column five of this table. The last two columns of Table III indicate the percentage size of the forecast errors that result, respectively, from the application of the index and the forecasting methodology used by the Ministry of Finance. Eighteen of the index based forecasts fall within the arbitrarily acceptable range of plus or minus eleven per cent. By comparison, only nine of the forecasts made by MOF fall within this range. Directly compared, the index based approach outperforms the MOF forecasts in the case of sixteen oblasts while the MOF

procedure is superior for eight other oblasts. Generally, the indexed based forecasts, while not perfect, inspire some confidence in this approach to forecasting.

Some of the largest forecast errors occur in the oblasts of Zakarpatska, Mykolaivska, and Kyivska. Further examination of these oblasts reveals that the source of the forecast error lies in the existence of special, and to some extent non-recurring, revenue circumstances. Both Mykolaivska and Zakarpatska, for example, have made intensive efforts to collect previous tax arrears, often in the form of a mutual settlement. In Kyivska oblast, on the other hand, collections for the road fund have been over-executed by about 50 per cent and, if the revenues from the road fund were excluded, the forecast error that would occur is instead only eight per cent.

What these oblast examples imply is that the index of relative fiscal capacity should only try to capture permanent sources of oblast revenue or, alternatively, should ignore one-time revenue mobilizing efforts that are successful in only temporarily raising additional revenue. Otherwise, measurement of the index will be distorted and oblasts would be unnecessarily penalized and discouraged from attempting to collect past tax arrears that, while they inject additional revenues into local budgets, do so only on a nonsustainable basis.

QUESTION #9:
DOES THE INDEX AFFECT THE FORECAST OF OVERALL REVENUES FOR SUBNATIONAL GOVERNMENTS?

The answer is no. The index is a redistribute device for determining how the forecasted amount of overall subnational revenue will be allocated among different regions. This forecast of overall revenues is carried out independently from the calculation of the index and is based on projections of macroeconomic indicators for the whole economy.

QUESTION #10:
IS AN INDEX OF THIS TYPE USED IN OTHER COUNTRIES?

The answer is yes and no. Yes, in that a number of developed countries such as Germany, Denmark, Australia, the United Kingdom, Japan and Korea take a measure of relative fiscal capacity into account as part of their formula based transfer system. No, in that most of these countries have accurate accounting systems in place that allow them to measure relative differences in per capita regional tax bases rather than differences in per capita tax revenues received. Regions in these countries typically have some ability to levy their own tax rate on the tax bases under their control and revenue capacity in a particular region is measured as the amount of revenue which would be collected if an average tax rate were applied to their base.

In Ukraine, this difference in the method of measure revenue capacity is immaterial because tax rates at the regional level are, for the most part, uniform and therefore differences in per capita revenue collections closely mirror differences in per capita tax bases.