The Design of Intergovernmental Equalisation Transfers: Indian states and Kosovo[1]

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January 2007

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Introduction

This essay examines how to design intergovernmental equalisation transfers (IET) for two cases. The first is the case of Indian states where we examine how the use of imperfect data can efficiently approximate first-best measures of fiscal capacity and optimal IET schemes. The second is the case of Kosovo where we will simulate an IET scheme using property tax data.

The purpose of the first part of this paper is to examine how a number of imperfect indicators usually available in developing countries compare to a first-best measure of fiscal capacity. This is of interest since economists working in the field of fiscal federalism often have to conceive intergovernmental equalisation transfers (IET) schemes in countries where the appropriate data required for optimal design is not available. This paper follows two prior studies that sought to answer the same question: Vaillancourt (2001) and Boex and Martinez-Vazquez (2004). Our analysis was carried out using a World Bank study of local organizations in India which provides us with data that both is and is not usually available in developing countries.

In the second part of this paper we will devise an IET scheme for Kosovo using recent data on tax assessment as a proxy for fiscal capacity. Limited data availability had prevented ed the country from having a proper IET scheme for a number of years.

The paper is divided into three sections. We first review the theoretical and empirical literature on IET in section 1. In the second section, we present the data and related issues, discuss our methodology and examine the results for the Indian case and then conclude. In the third and last section of this paper, we look at the case of Kosovo. We present the data and methodology. The results are discussed. Lastly, we conclude briefly.

1. What are IET ?

Equalisation consists of a system of unconditional redistributive transfers usually from the central to sub-national governments (SNGs), hence the name intergovernmental equalisation transfers (IET). The main purpose of such transfers is to enable SNGs with different revenue raising capabilities (fiscal capacity) and different expenditure needs (fiscal needs) to provide comparable levels of public services at comparable revenue efforts. In other words, such transfers aim to equalise the net fiscal benefit (NFB) received by otherwise-equal individuals in different regions of a single country; where NFB equals the amount of public services received minus the amount of taxes paid.

$$NFB_i = public\ services\ received_i - taxes\ paid_i$$

IET are a consequence of decentralisation. That is, IET are needed to replicate the fiscal structure of unitary state within a decentralised federation. The question of whether IETs are desirable is a matter for societal consensus and subsequent policy choices. This paper will not examine the case for desirability. Rather, this paper assumes such equalisation schemes are desirable.

Since James Buchanan's influential paper (1950) a significant literature has developed on the use of IET to rectify inequities and inefficiencies that may arise within a decentralised federation. Indeed, Buchanan and many others[3] (Boadway and Flatters, Shah) argue that IET constitute a rare occurrence in economics, i.e., it is the case where both equity and efficiency concerns coincide. This section will provide a brief overview of this literature[4].

Equity

Buchanan's approach focuses solely on the fiscal capacity of SNGs. The fiscal capacity of a SNG is defined as its ability to raise revenues from its particular tax bases.

[3] See Buchanan (1950), Boadway and Flatters (1982), Shah (1994)
[4] See Boadway (2004) for an excellent in-depth review.

Regarding equity, IET aim to enable SNGs with different fiscal capacities to provide comparable levels of public services at comparable tax rates. In a country with heterogeneous regions, SNGs will likely have different fiscal capacities and as a result will be unable to offer the same level of public services at the same tax rates. Consequently, to ensure that the same level of public services will be available, the poorer SNGs must impose greater tax burdens on its citizens.

Buchanan focuses exclusively on the *"taxes paid"* part of the NFB equation. This approach ignores the fact that heterogeneous regions may have inherent characteristics that render them unable to provide certain public services at the same costs. Thus, with respect to IET design one must also take into account the *public services received* part of the equation which in practice is assessed by indicators of fiscal needs. With heterogeneous regions, fiscal needs differentials may lie in cost differences or needs differences. That is, differences may exist in the per-unit cost or in the number of units needed per capita of a standardised public service. The former may arise from climatic and geographic features or density and distance factors whereas the latter may be due to demographic factors such as the age structure of the population or cultural factors such as the need to provide public services in multiple languages. Thus, IET design should be predominantly concerned with eliminating differences in NFB provided to otherwise-identical individuals living in different regions rather than focusing just on fiscal capacity or fiscal needs.

Efficiency

With respect to efficiency, IET aim to eliminate migration of labour and capital induced by regional differences in NFBs induced by decentralisation. Indeed, economic efficiency requires that the geographical distribution of labour and capital be based on productivity considerations, not on expected NFB.

IET around the world

Many countries opt for a decentralised structure of governance and attempt to implement effective equalisation transfer schemes. For instance, India has used since 1919 a system of intergovernmental fiscal transfers to rectify horizontal and vertical inefficiencies between states[5]. In India, as it is the case for a number of countries, decision-making over intergovernmental transfers is delegated to an independent agency. In this case, India's Finance commission provides formulae-based[6] equalisation transfers using fiscal capacity, expenditure differential and fiscal effort indices: For the 2000-2005 period, 62.5 percent is based on income per capita, 10 percent is based on population, 7.5 percent on area, 7.5 percent on an index of infrastructure, 7.5 percent on "fiscal discipline" and 5 percent on tax effort. Many other countries have opted for equalisation schemes (e.g. Brazil, China, Malaysia, and Nigeria). Consider *Table A-1* from Bird & Vaillancourt (2004). This table shows the importance of IET around the world as well as the diversity of equalisation schemes. However in most developing countries the necessary data to compute IET using formulae-based instruments are rather limited or simply unavailable. How can such countries make an optimal design? This is a question that we and other researchers seek to answer.

When countries opt for equalisation, efficient formulae and indicators are needed. However, in developing countries, it is often the case that the data needed to compute such transfers are limited or unavailable. This has motivated authors (Vaillancourt, 2001 Martinez-Vazquez and Boex, 2004) to find indicators among the available data that best fit the first-best measures of fiscal needs and fiscal capacity.

Vaillancourt's paper (2001) is a first attempt at examining the way in which various indicators typically prevalent in developing countries are correlated to an indicator of fiscal capacity. To do so, the author used data from the 1951 and 1961 censuses and from 1954 taxation data for the two poorest Canadian provinces, Newfoundland and Prince-Edward-Island. According to Vaillancourt, this data can serve

[5] See Rao (2004) p.16
[6] See Rao, 2004

as a reasonable proxy for a middle-income developing country such as Morocco. Eight simple indicators are computed:

Demographic indicators

- percentage of the population under age 19 attending school
- percentage of the population with little schooling
- percentage of rural population

Housing indicators

- housing in need of repair
- wood used for heating fuel
- wood or coal used for cooking
- households with no piped water

Labour market indicator

- percentage of the population 14 years and older employed

These indicators are computed for each of the thirteen census divisions examined. Both the mean and maximum value of a given indicator are used as targets for equalisation. As a measure of fit, the author reports the absolute difference between the equalisation entitlement obtained for indicator *i* and the reference point, i.e., an indicator of taxable capacity for each SNG; in this case taxable income. Although no indicator is clearly more precise than another, indicators of rurality (percentage of rural population, percentage with no piped water) perform fairly well. The paper's main finding is that using maximum rather than mean values as equalisation targets yields better results, since the need to correctly match transfers equal to zero is reduced.

Martinez-Vazquez and Boex proposed a similar analysis. Based on data available for Georgia for 1957-1960 they were able to compute a variety of indicators.

Eight measures of local fiscal needs:

- actual and lagged local expenditures per capita
- equal per capita expenditure norm

- the proportion of poor households
- the proportion of households without piped water
- an index of need based on infant mortality
- an index of expenditure needs based on poverty, water access and infant mortality (similar to HDI)
- a traditional Representative Expenditure System
- a regression-based Representative Expenditure System

They also provide measures of fiscal capacity:

- revenue collection and lagged revenue collection per capita
- poverty as a proxy of fiscal capacity
- regional income level as a proxy of fiscal capacity
- average per capita personal income
- traditional Representative Revenue System
- regression-based Representative Revenue System

The regression-based Representative Expenditure System (and the regression-based RRS) is a data-intensive method based on regression analysis. It involves regressing different expenditure categories on a series of explanatory variables (land area, population, age distribution, etc…) in order to obtain equations for every expenditure category and every SNG. According to the authors, these are the first-best measures of fiscal capacity and fiscal needs.

With respect to fiscal needs, the authors find that the best performing alternative measure is the per capita expenditure norm, which is solely allocated in proportion to population. As it was the case for Vaillancourt, composite indices perform fairly poorly. With respect to fiscal capacity, all the proposed indicators performed well.

The authors conclude rather tentatively. First, different methodologies can have a great impact on IET design. Second, their analysis shows that the best indicators of fiscal needs and fiscal capacity are not necessarily data-intensive. For instance, the per capita

expenditure norm is one of the best-performing indicator and its formula relies only on two variables. Finally, the best performing indicators are both the actual expenditures and revenue collections per capita. But these do not satisfy an incentives criterion which we will discuss later on.

2. India

Data

The data used to perform this analysis came from the World Bank (2001) study of the performance of local organizations in India. The study used a mixed methodology comprised of traditional extensive data collection based on questionnaires and intensive enquiry using interactive methods such as focus groups and various rural appraisal instruments. It aimed to assess the performance of local organizations (LO) that provide development programs in the three key sectors of watershed development (natural resource management), rural water supply and sanitation (basic needs) and rural women empowerment and development (social development).

By means of both quantitative and qualitative methodologies, data were gathered from representatives and staff of LOs implementing such programs; from the villages and elected bodies; and from households benefiting from development programs. The study was conducted in the three states of Karnataka, Madhya Pradesh, and Uttaranchal (formerly Uttar Pradesh) although due to missing data only Karnataka is included in our analysis. We will discuss this point later on.

Respondents for the household questionnaire were selected using a stratified random sample from a listing of members of sector specific local organizations. These organizations were identified during an organizational mapping of each village studied. It is important to point out that villages were not selected at random. Rather, these entities were selected based on the prevalence of sector specific LOs operating within their territory. Therefore, it is unclear whether our results are applicable to the general case. We discuss this point in the next section.

The main issues are twofold. First of all, there is missing or suspicious data for some of the variables in the World Bank study. Second, selection of villages based on the prevalence of LOs within their territory could induce a bias.

Because of missing data on revenues and lagged revenues many observations on villages had to be dropped. In some cases, the data were suspicious showing great variations from year to year. In other cases, the data showed patterns that raised doubts on data collection itself. Thus, many villages were dropped from the sample. The original dataset contained data on 36 villages in Karnataka. After data cleaning only 28 villages were available for analysis. Additionally, there was missing or suspicious data for actual and lagged revenue collections and other variables for villages in Uttaranchal and Madhya Pradesh. Because of this limited availability only the state of Karnataka was included in the final sample.

Table 1 - *Original and Final Sample Size by State*

State	Original Sample Size	Final Sample Size
Karnataka	36	28
Uttaranchal	36	0
Madhya Pradesh	36	0

Source: WB Data on the performance of local organisations

Second, as noted above village selection in the World Bank study based on the prevalence of sector specific LOs operating within their territory. Since villages were not selected at random, it is unsure whether our results can be representative of villages without important LO activity. However, the similarity of results to those found in prior studies lessens this concern. Nevertheless, the reader should be warned of such a possibility.

Methodology

We draw on the above-mentioned studies to compute sixteen indicators; their values are reported in table A-2.

- average total income (*first-best measure*)
- population (distribution based solely on population share)
- average revenue collections per capita for each village
- average lagged revenue collections per capita for each village (revenues for the preceding year)
- percentage of poor households
- percentage of households with a water connection
- percentage of households where a child was sick in the last six months
- percentage of households who own a television set
- percentage of households who own a radio
- percentage of households who own a wall clock
- percentage of households who own land
- percentage of households who own an iron box
- percentage of households who own sheep and/or goats
- distance (in meters) from the nearest water source
- percentage of population that is literate

Revenues and lagged revenues per capita provide information about revenue collections for the Gram Panchayat (government body) from 1998 to 2001 for every village. Since revenues and lagged revenues have proved to be successful indicators for Martinez-Vazquez and Boex, villages for which this data was missing were excluded from the analysis. However, this type of indicator is clearly inefficient from an incentives stand point. Indeed, should IET be based on such indicators SNGs would clearly be inclined to spend more and to minimise tax effort in order to receive more transfers.

As mentioned in the introduction regression-based RRS is argued by Boex and Martinez-Vasquez to be the best available measure of fiscal capacity (regression-based RES is argued to be the best available measure of fiscal needs). However, it is also the

most data-intensive. Ideally, these regression-based methods should be computed using time series data. However, in the World Bank study data on expenditure and revenues was only available for three fiscal years, 1998-1999, 1999-2000 and 2000-2001. Given this limited availability, neither RRS nor RES can be obtained by regressing expenditures categories on a series of factors such as population and land area.

Method

A transfer pool (1 000 000 R's) is to be allocated between villages (SNGs) using average total income as our first-best indicator. The formula for a given indicator and village *i*:

$$Allocation_i = \frac{TP * SharePop_i * ShareDev_i}{\sum_{i=1}^{n} SharePop_i * ShareDev_i}$$

Where *TP* stands for transfer pool, $SharePop_i$ is for the share of the total population for village *i* and $ShareDev_i$ is for the share of the sum of the deviations for villages *1…, n* from the equalisation target. The same formula is used to compute the allocation of this transfer pool for each of the fifteen remaining indicators. We use both the maximum and the mean value of a given indicator as targets for equalisation. For example, to obtain the allocation for village *i* we first calculate the total population which is the sum of the population for all villages.

$$Total\ Population = \sum_{i=1}^{28} population\ of\ \ village\ i$$

We then obtain the share of this *sum for village i*

$$SharePop_i = \frac{population\ of\ \ village\ i}{\sum_{i=1}^{28} population\ of\ \ village\ i}$$

For a given indicator, we then choose an equalisation target - either the mean or the maximum value of the indicator – and obtain the deviation from this target for every village in the sample. By definition, when the maximum value is used, one deviation will equal zero whereas with the use of the mean value, deviations can be either negative,

positive or zero. Villages for which the observed value of an indicator exceeds its mean – with positive deviations - do not receive transfers. The values of their deviations are set to zero. We then compute the absolute value of the sum of the modified deviations.

$$Total\ Deviation = \left| \sum_{i=1}^{28} deviation\ for\ village\ i \right|$$

We then obtain the share of this *sum for village I*

$$ShareDev_i = \frac{deviation\ for\ village\ i}{\sum_{i=1}^{28} deviation\ of\ village\ i}$$

We multiply the amount of the transfer pool by these two shares. We compute the sum of the product of these two shares to ensure that the proportions sum to one.

$$Allocation_i = \frac{TP * SharePop_i * ShareDev_i}{\sum_{i=1}^{n} SharePop_i * ShareDev_i}$$

Finally, the allocation produced by each indicator is compared with the first-best indicator (average total income) by computing the total absolute difference (TAD). We also report the sum of squared differences (SSQ) which gives greater weight to observations that deviate farther from the equalisation target.

Table 2 - Allocation of transfer pool for villages A, B and C, $ (example)

	Village		
	A	*B*	*C*
First-best indicator	500 000	250 000	250 000
Other indicator	0	250 000	750 000
Absolute difference	500 000	0	500 000

The TAD is simply the sum of the absolute differences calculated for every village in the sample. The method to calculate the SSQ is straightforward. In this case the TAD equals 1 000 000 $ which is a fairly poor performance. Indicators are ranked according to their respective TADs (and SSQs); from the smallest to the largest (the smallest being the best performing indicator).

Results

We report the TAD in the first and third column of table 3. The indicators are ranked according to their respective TADs in the second and fourth column. The ranks specified in parentheses are those computed when SSQ is used as goodness-of-fit measure.

As it was the case in Vaillancourt (2001), for a given indicator using maximum values as targets for equalisation rather than mean values yields better fit. This is due to the fact that when using maximum value as a target the need to correctly match transfers equal to zero is reduced. For any given indicator, the TAD reported when mean value was used ranged from 2 to 5 times the size of the maximum value TAD. For example, the TAD for the worst fitting indicator (distance from the nearest water source) when mean value is used is equal to 1 588 323 $ which is more than twice as large as the maximum value TAD, 708 419 $. The mean value TAD for the best fitting indicator (population) is roughly five times larger than the maximum value TAD. Furthermore, our results show that the worst fitting indicator when maximum value is used (distance from the nearest water source) still outperforms the best fitting indicator with mean value (percentage of poor households) as a target for equalisation. This suggests that for any given indicator maximum value as a target for IET is preferable to mean value.

Population constitutes the best performing indicator when using maximum value as a target posting a TAD of 148 818$. It places fifth using the mean value method. This is of interest since many countries already use such an indicator. Thus, the data is usually readily available at the micro level and by age brackets. Correcting for age distribution

could improve the fit (data on age distribution was not available). Further studies are needed to verify its effectiveness.

Table 3 - *Total absolute difference (TAD) and Total Sum of Squared Deviations (SSQ) using maximum and mean value as targets, rank for fifteen indicators (in rupees)*

Indicator	Max (R's)	Rank (SSQ)	Mean (R's)	Rank (SSQ)
%literate	291 763	***5 (5)***	1 024 608	***9 (8)***
%poor	387 188	***10 (8)***	819 563	***1 (1)***
%pucca	452 297	***13 (14)***	1 048 361	***11 (12)***
%radio	398 776	***12 (10)***	979 149	***6 (5)***
%tv	259 298	***4 (4)***	1 002 148	***7 (7)***
%wall clock	301 797	***6 (6)***	1 026 546	***10 (11)***
%iron box	312 085	***7 (7)***	844 004	***2 (4)***
%land	363 639	***8 (9)***	933 214	***3 (9)***
%sheep/goat	393 041	***11 (12)***	1 493 102	***14 (14)***
% with water	244 441	***3 (3)***	1 019 741	***8 (6)***
%child sick	516 495	***14 (13)***	1 270 263	***13 (13)***
distance	708 419	***15 (15)***	1 588 323	***15 (15)***
revenues	184 267	***2 (2)***	940 513	***4 (3)***
lagged revenues	380 441	***9 (11)***	1 087 696	***12 (10)***
per capita	148 818	***1 (1)***	953 164	***5 (2)***

Source: Tables A-3 and A-4

Average revenue collections per capita constitute the second best performing indicator when using maximum value as a target posting a TAD of 184 267 $. It places fourth using the mean value method. Martinez-Vasquez & Boex found similar results as it ranked first. However, as we have already mentioned this indicator does not have an efficient incentives structure. Thus, although effective in theory its use is discouraged in practice.

Overall, indicators of rurality perform fairly well. The percentage of households with a water connection is the third best performing indicator posting a TAD of 244 441$. It places eighth when using mean value as a target. Vaillancourt found similar results whereas Martinez-Vasquez & Boex found it to be the worst performing indicator. As opposed to average revenues per capita, this indicator satisfies the incentives constraint. Moreover, the data needed for its calculation is fairly easy to collect. Water connections are easier to account for than television sets for example because they cannot be easily disposed of or hidden[7]. Thus, this indicator satisfies the necessary incentives and ease of collection criterions while performing well. Developing countries looking for methods that are not data-intensive should pay attention to such an indicator.

The percentage of households who own a television set performed well posting a TAD of 259 298 $. None of the prior studies have examined this indicator. However as we have mentioned already, television sets are relatively easy to hide and thus would probably not yield efficient IETs in practice.

Lastly, using the SSQ method did not yield significant changes in the ranking of the indicators.

Conclusion

This section of the paper aimed to replicate two prior studies where imperfect indicators were used to simulate IETs. Fifteen indicators were computed and compared with a first-best measure of fiscal capacity. The performance of each indicator was established using total absolute difference (TAD) from the first-best equalisation transfer entitlement. As it was the case for Vaillancourt (2001), we find that for a given indicator using maximum values as targets for IET rather than mean values yields better fit. This is due to the fact that the need to match transfers equal to zero is reduced. Furthermore, our results show that the worst fitting indicator when maximum value is used still

[7] If satellite dishes are used, this may be less of an issue as the need for a clear line of sight makes them hard to hide.

outperforms the best fitting indicator with mean value as a target for equalisation. This suggests that maximum value as a target for equalisation is always preferable to mean value. Second, population constitutes the best performing indicator when using maximum value as a target. Third, as it was the case for Boex & Martinez-Vasquez average revenue collections per capita perform well. However, this indicator does not have an efficient incentives structure. Finally, the percentage of households with a water connection is the third best performing indicator and it also satisfies the necessary incentives and ease of collection criterions. Vaillancourt also found this indicator to be effective. As a result, developing countries looking to devise IET schemes that are not data-intensive should pay attention to such an indicator. However, further studies are needed to clearly confirm its effectiveness.

3. An IET scheme for Kosovo

Introduction

The purpose of the second part of this paper is to design an IET scheme for Kosovo. Since the end of the tragic events that took place in the late 1990's Kosovo has been ruled by a bifurcated central government comprised of the UNMIK (United Nations Mission in Kosovo) and of the PISG (Provisional Institutions of Self Government) with an assembly, a president and a ministerial council. However, due to limited data availability the country still lacks a proper IET scheme. Using methods which were tested in the first part of this paper, four schemes will be devised. We will report and discuss differences in per capita allocations for a selection of municipalities.

Data

The data on tax assessment and other demographic characteristics was obtained as a by-product from work by François Vaillancourt on Kosovo Decentralisation for the UNDP[8]. Although data on tax assessment was available for 2004, 2005 and 2006 we only used 2005. Data on actual grants received came from the 2006 Kosovo Budget. Finally, data on majority and minority profiles was provided by the Statistical Office of Kosovo but was only available for 1991. From the 30 municipalities in the original dataset only 27 remain due to missing data. The municipalities that were excluded are Leposaviç, Zveçan and Zubin-Potok; these are Serbian municipalities that do not provide data to the relevant central agencies . The municipality of Fushe Kosove was also excluded because it is a significant outlier with respect to fiscal capacity. Indeed the municipality posts a 26.34 Euros tax assessment per capita which lies at roughly four standard deviations from a mean of 5.77. Thus, the final sample is comprised of 26 municipalities; the data re found in table A-5.

[8] Data compiled by Luan Bicaj from multiple public sources such as Association of Kosovo Municipalities 2005 and Organisation for Security and Co-operation in Europe Municipal Profiles 2005 and provided by François Vaillancourt..,.

The population data used to perform this analysis was derived from information on population figures available to the UNMIK Department of Local Administration (DLA) and the Central Fiscal Authority (CFA) as of the 8th of August 2001. The last valid Census was conducted in 1981; the Albanian majority boycotted the 1991 Census. The population of Kosovo adds up to a little more than 2 million people and is composed of 85-90% Albanians, 5-8% Serbs and other small minorities such as Romas, Turks, etc.

The 2001 population data is often contested by municipalities who claim that their population has now increased. This is probably true; however the important issue is the relative population size since the absolute size of the population does not affect the allocation of grants. So, "in this respect, it is plausible that internal migration since 2001 will have increased the population share of municipalities with greater economic activity such as Prishtine or Prizen. This means that using the 2001 population implicitly equalises for fiscal potential since Prishtine which has greater local tax potential than poorer municipalities receives less per capita than it should while the others receive more."[9].

Methodology

The municipalities of Kosovo constitute sub-national government (SNGs) bodies which were the focus point of the first part of this paper. In 2006, the main source of municipal revenues is central government grants, which represent 79.6 % of total revenues with municipal own source revenues (MOSR) making up 20.4 %**.**

The actual setting of transfers to SNGs as a share of Kosovo generated revenues began in 2001-2002. This share of forecast central budget revenues was established at around 22% for 2005. This proportion is historically related to the needs of the municipalities. It is divided into four specific grants:

[9] See Vaillancourt (2006)

The Education Grant: The amount of this grant awarded to the 26 municipalities studied here was 73 132 291 Euros in 2005[10].
The Health Grant: The amount of this grant was 17 184 438 Euros for the 26 municipalitie) in 2005.
Additionally, there is a *General Grant* of 36 365 264 Euros for the 26 municipalities and a *Property Tax Collection Incentive Grant.*

This part of the paper will consider the sum of the Education, Health and General Grants which constitutes a total transfer pool of 125 681 993 Euros (excluding the Property Tax Grant).

Current Methods[11]

The allocation of the Education Grant uses a formula developed by the World Bank which allocates transfers to majority and minority populations on the basis of pupil/teacher ratios and a variety of other factors[12]. As for the allocation of the Health Grant it is based solely on the 2001 population data. Finally, the General Grant is the difference between the sum of these previous grants and the total transfer pool which is set at 22% of forecast central government revenue. The General Grant is comprised of two parts, a fixed amount of 100,000 Euros per municipality and the remainder divided according to the 2001 population data.

Revised Methods

To compute the revised methods we will make use of both shares and deviations. Using shares to simulate transfers is straightforward. For example, a municipality with a relatively greater population size would receive a proportional transfers – a larger slice of the pie. Using deviations requires a different approach which was laid out in the first part of the paper.

[10] This in a sense assumes that the formula applied to the 30 municipalities would yield this amount for the 26;thsis debatable but is the simplest assumption that can be used here.
[11] See Vaillancourt (2006)
[12] See the annex for the complete method

First, we simulate a scheme based solely on population. Formally,

$$1)\quad Grant_i = 1.00 \cdot TP \cdot \left(\frac{Pop_i}{\sum_{i=1}^{n} Pop_i} \right)$$

where $Grant_i$ is the total grant to municipality i, TP stands for transfer pool (125 681 993 Euros in our case), Pop_i represents the total population of municipality.

This and the current Kosovar scheme ignore fiscal capacity. Thus we propose an IET scheme based on Germany's revenue sharing formula[13] which accounts for differences in fiscal capacity. In this case 75 percent of the transfer pool is distributed on a per capita basis. The remaining 25 percent is allocated to municipalities with below-average fiscal capacity. For the purpose of our analysis, tax assessment per capita is used as a proxy for fiscal capacity. Formally,

$$2)\quad Grant_i = 0.75 \cdot TP \cdot \left(\frac{Pop_i}{\sum_{i=1}^{n} Pop_i} \right) + 0.25 \cdot TP \cdot \left(\frac{DevCap_i \times PopShare_i}{\sum_{i=1}^{n} DevCap_i \times PopShare_i} \right)$$

$DevCap_i$ is the deviation from the average tax assessment per capita $PopShare_i$ is the share of the total population for municipality i. This method is the same as in the first part of this paper. Remember that deviations for villages with above-average fiscal capacity are set to zero. The German approach was chosen because it has been shown to be significantly equalising[14,15] while having minimal data requirements.

Third we use population, land area and number of villages to allocate the transfer pool. Formally,

[13] See Ma (1997) pp. 12-14
[14] See Vaillancourt & Bird (2004) p.15
[15] See Ma (1997) p.14

$$3)\quad Grant_i = 0.75\left(\frac{Pop_i}{\sum_{i=1}^{n} Pop_i}\right) + 0.125\left(\frac{LA_i}{\sum_{i=1}^{n} LA_i}\right) + 0.125\left(\frac{NbVil_i}{\sum_{i=1}^{n} NbVil_i}\right)$$

where LA_i is land area and $NbVil_i$ is the number of villages in municipality *i*. The fact that the percentages attributed to population are the same in method 2 and 3 will enable us to better compare the allocation of the transfer pool. The main advantage of this method is that the data needed for its computation can be easily obtained. Moreover, it requires minimal monitoring by the central government of data collection carried out by SNGs.

Fourth we compute an IET scheme which accounts for population, fiscal capacity and fiscal needs.

$$4)\ Grant_i = 0.50\left(\frac{Pop_i}{\sum_{i=1}^{n} Pop_i}\right) + 0.125\left(\frac{LA_i}{\sum_{i=1}^{n} LA_i}\right) + 0.125\left(\frac{NbVil_i}{\sum_{i=1}^{n} NbVil_i}\right) + 0.25\left(\frac{DevCap_i \times PopShare_i}{\sum_{i=1}^{n} DevCap_i \times PopShare_i}\right)$$

Results

Our first method sees the transfer pool allocated using only population[16]. It yields three clear-cut winners, Podujevë, Prishtinë and Prizren respectively posting 7.68 €, 13.76 € and 7.41€ per capita increases in grants. These municipalities are also the most populous in Kosovo. Novobërde and Shtërpcë post the greatest decreases with 73.58 € and 58.63 € per capita. The total absolute difference (TAD) from the current Kosovar scheme is roughly 16 million Euros.

The second method allocates 75 percent of the transfer pool on a per capita basis. The remaining 25 percent is distributed using tax assessment per capita as a proxy for

[16] See table A-6 to A-9 for the complete results

fiscal capacity. This formula yields four winners Ferizaj, Malishevë, Podujeve and Skenderaj. Each of these municipalities post increases of more than 28 € per capita. Prizren and Prishtinë now post decreases of 3.87€, 0.85€ per capita while Novobërde and Shtërpcë post decreases of 9.06€ and 65.23€ respectively. This method yields a TAD of about 32 million Euros.

The third method utilises 75 percent population, 12.5 percent land area and 12.5 percent number of villages as equalisation factors. Prishtinë and Prizren post increases and Novobërdë and Shtërpcë post decreases smaller than those in methods 1 and 2. The TAD for this method is approximately 11 million Euros.

Finally, our fourth method is a variation on the third. It includes equalisation in terms of population, fiscal capacity and fiscal needs. For the first time Prishtinë posts a significant decrease whereas Novobërdë posts an increase.

First, we notice that methods that account for differences in fiscal capacity report decreases in per capita transfers to Prishtinë and Prizren. Indeed, the tax assessment per capita data suggest that the current scheme gives too high transfers to these municipalities. Second, methods 1 to 3 decreased transfers to Novobërdë and Shtërpcë. This may be evidence that the current scheme overestimates transfers to these municipalities as well.

Of all the methods reviewed in this analysis, the fourth is recommended because it accounts for both fiscal capacity and fiscal needs. Moreover, it is easy to compute and the necessary data is fairly easy collect.

Conclusion

In the second part of this paper we proposed four IET schemes for Kosovo. The fourth method is recommended because it accounts for both fiscal capacity and fiscal needs. Three out of the four formulas decreased transfers to Novobërdë and Shtërpcë. We also notice that methods accounting for differences in fiscal capacity report decreases in per capita transfers to Prishtinë and Prizren This consistency suggest than the current Kosovar scheme overestimates the needs of these municipalities. However, it is important to remember that our methods did not completely account for fiscal needs differentials. This fact could explain some unexpected results such as the negative correlation between a municipality's share of total minority population and its average per capita grant. A new census is planned for late 2006 or 2007. This fresh data will enable us to better assess the fiscal capacity and fiscal needs of Kosovar municipalities and to design an optimal IET scheme which would account for fiscal gap differentials.

Table A-1 Intergovernmental Equalisation Transfers in Six Countries

Country	Number of Regions	Number of equalisation programs	Distributive pool	Fiscal capacity categories	Expenditures differential categories	Fiscal effort
Australia	8	1	Federal VAT	18 (RTS)	41	No
Germany	16	3	Federal VAT	3 (RTS)	-	No
			Horizontal Sharing	3(RTS)	2	
			Supplementary federal grants from general revenue	Variable	-	
Switzerland	26	3	Federal conditional grants from general revenue	3 (RTS and macro)	2	Yes
			FDT, withholding tax custom duties (petrol and motor fuel) and National Bank's benefit	3	2	
			Cantonal contributions to social security	3	2	
China	31	9	Gap-filling (general revenue)	-	-	No
			Determined ad hoc by the central government	13 (RTS)	12	
			Central VAT	13 (RTS)	12	
			General revenue	-	1 (number of civil servants)	
			Other programs			
India	35	3	Total central taxes	2 (RTS and macro) plus gap filling	2	Yes
			General revenue	2	2	
			Specific purpose grants			
Brazil	27	2	Federal personal and corporate income tax and VAT			No
			For states	-	2	
			For cities	-	1	

Source:Bird and Vaillancourt(2004)

Table A-2 Final Dataset, 29 villages, Karnataka state, India.

Village ID		211111	211121	211131	211141	211151	211211	211221
Income	mean	37428	14045	31031	21624	106453	30919	22763,75
Literacy rate	%literate	0,4375	0,3125	0,5	0,5	0,375	0,8	0,5625
Poverty	% poor	0,625	0,8125	0,6875	0,625	0,5625	0,625	0,6875
Type of house owned	%pucca	0	0	0	0,125	0,375	0,25	0,0625
Asset ownership	%radio	0,3125	0,1875	0,25	0,5	0,5	0,4375	0,4375
	%tv	0,3125	0,125	0	0,3125	0,5625	0,3125	0,4375
	%wall clock	0,5625	0,4375	0,625	0,625	0,8125	0,75	0,5625
	%iron box	0,0625	0,0625	0,0625	0,1875	0,3125	0,3125	0,0625
	%land	0,5	0,5	0,5625	0,9375	0,8125	0,9375	0,4375
	%sheep/goat	0,125	0,25	0,25	0,125	0,0625	0	0,0625
Water connection	%yes	0,25	0,25	0,25	0,25	0,25	0,375	0,25
Child 36 months or less fell sick	%no	0,75	0,875	0,6875	0,6875	0,9375	0,9375	0,8125
Distance from source of water	mean (mtr)	102	33	215	314	9	188	51
Total population		20000	9847	6436	7241	5330	3281	10024
Total revenues for SNG	2000-2001	1274827	229141	213716	218551	204304	307170	1479770
	1999-2000	906455	252766	271914	495796	204257	204927	481393

Table A-2 continued

Village ID		211231	211241	211251	211311	211321	211331	211341
Income	mean	27654	54131	33738	34801	40213	25398	41350
Literacy rate	%literate	0,5	0,75	0,5	0,5625	0,875	0,375	0,5625
Poverty	% poor	0,5	0,4375	0,5625	0,625	0,625	0,8125	0,375
Type of house owned	%pucca	0,25	0,375	0,4375	0	0,375	0	0,375
Asset ownership	%radio	0,4375	0,5625	0,5	0,3125	0,4375	0,125	0,625
	%tv	0,4375	0,4375	0,5625	0,4375	0,4375	0,25	0,75
	%wall clock	0,625	0,6875	0,75	0,6875	0,6875	0,6875	0,9375
	%iron box	0,0625	0,0625	0,375	0,4375	0,375	0	0,625
	%land	0,5	0,625	0,125	0,4375	0,875	0,5625	0,625
	%sheep/goat	0,125	0,0625	0	0,125	0,0625	0,0625	0
Water connection	%yes	0,4375	0,25	0,25	0,25	0,25	0,375	0,25
Child 36 months or less fell sick	%no	0,75	0,9375	1	0,75	0,9375	0,8125	0,625
Distance from source of water	mean (mtr)	16	24	28	112	67	58	23
Total population		10500	8227	8164	12258	6516	9314	7701
Total revenues for SNG	2000-2001	598930	475323	482823	919288	643097	568524	279487
	1999-2000	454130	558849	581608	594437	462455	961057	159273

Table A-2 continued

Village ID		211351	211362	215121	215131	215141	215151	215162
Income	mean	58050	39900	25754	42041	29805	29802	35596
Literacy rate	%literate	0,75	0,5	0,4375	0,6875	0,375	0,375	0,375
Poverty	% poor	0,4375	0,625	0,8125	0,75	0,625	0,5625	0,6875
Type of house owned	%pucca	0,1875	0,125	0,375	0,3125	0,4375	0,1875	0,1875
Asset ownership	%radio	0,625	0,3125	0,3125	0,4375	0,125	0,25	0,3125
	%tv	0,5	0,375	0,25	0,25	0,1875	0,0625	0,1875
	%wall clock	0,875	0,25	0,5	0,8125	0,3125	0,5625	0,5
	%iron box	0,5	0,25	0,125	0,3125	0,125	0,125	0,125
	%land	0,8125	0,8125	0,4375	0,5625	0,875	0,625	0,625
	%sheep/goat	0	0,0625	0,0625	0	0,0625	0,1875	0,0625
Water connection	%yes	0,5625	0,5	0,25	0,25	0,3125	0,25	0,25
Child 36 months or less fell sick	%no	0,875	1	0,625	0,9375	1	0,9375	0,9375
Distance from source of water	mean (mtr)	177,13	160,19	72,813	81,688	95,813	32,375	229,75
Total population		5820	4983	5392	5281	3703	6438	3842
Total revenues for SNG	2000-2001	471519	371118	220271	357927	374989	427992	336447
	1999-2000	229991	409641	218973	298837	299653	425531	254091

Table A-2 continued

Village ID		215231	215262	215321	215331	215341	215351	215362
Income	mean	32213	23584	44509	56069	46569	34278	54206
Literacy rate	%literate	0,5	0,375	0,5625	0,2	0,625	0,2667	0,625
Poverty	% poor	0,5	0,8125	0,6875	0,6875	0,375	0,5	0,4375
Type of house owned	%pucca	0,1875	0,25	0,3125	0,25	0,1875	0,125	0,125
Asset ownership	%radio	0,375	0,125	0,3125	0,3125	0,375	0,375	0,5
	%tv	0,3125	0,3125	0,375	0,4375	0,3125	0,1875	0,375
	%wall clock	0,625	0,5625	0,75	0,8125	0,75	0,625	0,5
	%iron box	0,3125	0,125	0,125	0,125	0,3125	0,0625	0,4375
	%land	0,8125	0,4375	0,6875	0,625	0,875	0,75	1
	%sheep/goat	0	0,0625	0,125	0,125	0,0625	0,0625	0,0625
Water connection	%yes	0,25	0,1875	0,25	0,25	0,3125	0,25	0,3125
Child 36 months or less fell sick	%no	0,8125	0,875	0,75	0,75	0,75	0,875	0,75
Distance from source of water	mean (mtr)	80,625	85,625	72,75	30,125	37,375	28,938	32,9375
Total population		5694	7172	5000	5598	5363	6834	5400
Total revenues for SNG	2000-2001	2617881	688726	395655	443469	289620	539000	237002
	1999-2000	442737	509477	361209	540782	344283	129000	284344

Source :Compilation by the author

Table A-3 Allocation of transfer pool (1 000 000 R's) in rupees for fifteen indicators using maximum value as a target for equalisation, 29 villages, Karnataka state, India.

	average income	***%literate***	***%poor***	***%pucca***	***%radio***	***%tv***	***%wall clock***	***%iron box***
Village 1	96 841	115 018	103 053	166 085	118 662	106 247	122 010	130 758
Village 2	63 832	72 809	88 792	81 772	81 793	74 730	80 095	64 379
Village 3	34 051	31 725	41 453	53 446	45 823	58 612	32 719	42 078
Village 4	43 089	35 693	37 310	42 951	17 185	38 467	36 811	36 821
Village 5	0	35 031	20 598	6 323	12 649	12 135	10 839	19 359
Village 6	17 385	3 235	16 906	11 677	11 680	17 430	10 008	11 917
Village 7	58 848	41 176	64 563	71 350	35 684	38 037	61 151	65 536
Village 8	58 041	51 758	27 051	37 369	37 379	39 843	53 379	68 648
Village 9	30 196	13 518	10 598	9 760	9 762	31 218	33 459	53 787
Village 10	41 644	40 243	31 550	0	19 375	18 587	24 902	23 722
Village 11	15 237	11 103	13 928	16 033	12 830	14 359	16 490	7 854
Village 12	61 613	50 353	63 161	101 793	72 728	46 514	49 853	26 714
Village 13	30 278	0	33 575	7 730	23 196	24 725	26 501	18 934
Village 14	52 959	61 216	83 986	77 346	88 418	56 548	37 880	67 660
Village 15	35 170	31 634	0	9 136	0	0	0	0
Village 16	19 761	9 563	7 497	27 618	0	17 667	5 917	8 456
Village 17	23 264	24 563	25 676	29 557	29 565	22 690	55 731	21 719
Village 18	30 524	31 009	48 620	6 397	31 991	32 736	38 376	31 335
Village 19	23 862	13 016	40 817	12 530	18 800	32 062	10 739	19 181
Village 20	19 910	24 338	19 080	0	35 152	25 292	37 650	21 520
Village 21	34 617	42 314	24 880	30 550	45 837	53 744	39 275	37 414
Village 22	19 097	25 251	24 746	18 231	22 795	26 242	27 344	22 328
Village 23	29 654	28 068	14 670	27 020	27 026	30 249	28 947	20 682
Village 24	41 692	47 138	64 671	25 525	68 084	38 100	43 753	41 680
Village 25	21 727	20 539	32 204	11 863	29 666	22 767	15 251	29 057
Village 26	19 786	49 670	36 056	19 923	33 214	21 242	11 384	32 533
Village 27	22 529	17 624	0	25 449	25 455	28 490	16 358	19 479
Village 28	34 601	54 648	17 607	40 537	32 437	46 677	34 742	44 680
Village 29	19 791	17 746	6 956	32 031	12 816	24 589	38 433	11 768
TAD	0	291 763	387 188	452 297	398 776	259 298	301 797	312 085
Rank		***5***	***10***	***13***	***12***	***4***	***6***	***7***

Table A-3 continued

	%land	*%sheep/goat*	*% with water*	*%child sick*	*distance*	*revenues*	*lagged revenues*	*population*
Village 1	127 080	75 685	110 218	134 909	125 523	101 811	120 357	98 009
Village 2	62 568	0	54 266	33 211	15 482	55 249	79 385	48 255
Village 3	35 782	0	35 468	54 267	89 948	35 289	40 788	31 539
Village 4	5 751	27 402	39 904	61 055	149 998	39 984	26 143	35 484
Village 5	12 700	30 255	29 373	8 988	0	28 874	35 956	26 120
Village 6	2 606	24 832	10 849	5 533	39 846	15 442	13 897	16 078
Village 7	71 654	56 900	55 241	50 712	28 581	40 220	57 507	49 122
Village 8	66 717	39 734	23 146	70 827	4 551	54 355	65 450	51 455
Village 9	39 206	46 699	45 338	13 874	8 320	42 511	30 166	40 316
Village 10	90 779	61 789	44 991	0	10 199	42 042	27 123	40 007
Village 11	8 587	20 458	14 896	27 349	1 149	11 369	18 282	13 246
Village 12	87 623	46 387	67 553	82 685	85 111	60 627	69 724	60 070
Village 13	10 351	36 987	35 909	10 988	25 584	30 242	21 830	31 931
Village 14	51 783	52 870	30 797	47 120	30 831	47 737	0	45 643
Village 15	36 699	58 285	42 439	77 920	6 970	41 920	66 079	37 739
Village 16	13 868	44 049	0	19 629	66 352	28 335	38 538	28 521
Village 17	11 873	28 285	5 492	0	51 072	24 679	10 871	24 419
Village 18	38 543	30 607	29 715	54 557	23 233	29 035	35 091	26 423
Village 19	29 361	39 969	29 103	8 906	25 941	26 609	25 593	25 879
Village 20	5 882	21 020	16 325	0	21 746	17 064	8 574	18 146
Village 21	30 680	12 181	35 479	10 857	10 040	32 546	24 833	31 549
Village 22	18 309	21 809	21 173	6 479	57 548	18 381	14 804	18 828
Village 23	13 567	43 095	31 379	28 806	27 558	0	15 059	27 903
Village 24	51 267	40 711	47 429	24 189	37 150	33 533	23 979	35 146
Village 25	19 856	18 921	27 554	33 727	21 522	24 464	16 091	24 502
Village 26	26 677	21 184	30 850	37 761	7 874	27 383	3 832	27 433
Village 27	8 519	30 442	23 644	36 176	10 187	27 972	21 747	26 281
Village 28	21 712	38 792	37 661	23 049	9 060	33 460	59 923	33 490
Village 29	0	30 652	23 807	36 425	8 628	28 867	28 378	26 463
TAD	363 639	393 041	244 441	516 495	708 419	184 267	380 441	148818,094
Rank	***8***	***10***	***3***	***14***	***15***	***2***	***9***	***1***

Source :Calculations by the author

Table A-4 Allocation of transfer pool (1 000 000 R's) in rupees for fifteen indicators using mean value as a target for equalisation 29 villages ,Karnataka state, India

	average income	***%literate***	***%poor***	***%pucca***	***%radio***	***%tv***	***%wall clock***	***%iron box***
Village1	8 189	122 015	28 791	255 924	99 992	45 690	135 075	183 510
Village2	191 291	161 756	190 354	126 004	154 986	185 587	179 952	90 351
Village3	36 118	6 035	47 648	82 356	66 738	192 364	6 392	59 054
Village4	96 035	6 790	10 424	36 677	0	16 542	7 192	14 365
Village5	0	60 036	0	0	0	0	0	0
Village6	18 713	0	4 723	0	0	7 495	0	0
Village7	123 652	0	74 212	89 521	0	0	67 699	91 975
Village8	87 766	9 845	0	0	0	0	10 429	96 343
Village9	0	0	0	0	0	0	0	75 487
Village10	27 847	7 655	0	0	0	0	0	0
Village11	26 023	0	3 891	13 691	0	6 175	18 255	0
Village12	31 207	0	17 646	156 856	61 285	0	0	0
Village13	0	0	9 380	0	0	0	0	0
Village14	94 944	104 911	180 051	119 184	196 612	72 699	0	118 952
Village15	0	0	0	0	0	0	0	0
Village16	0	0	0	6 982	0	0	0	0
Village17	0	4 672	7 173	25 240	24 913	0	177 178	0
Village18	53 402	32 895	104 234	0	26 958	42 086	67 477	30 086
Village19	0	0	70 593	0	0	41 220	0	0
Village20	24 474	41 710	5 331	0	78 168	49 347	110 334	20 662
Village21	42 566	72 516	0	7 723	66 759	156 880	43 481	35 922
Village22	7 297	43 276	28 444	4 609	19 208	51 199	48 080	21 437
Village23	26 484	5 339	0	6 831	0	13 008	5 655	0
Village24	83 688	80 784	138 643	0	151 396	16 384	48 438	40 018
Village25	0	0	37 017	0	24 998	0	0	27 898
Village26	0	143 983	41 444	0	27 988	0	0	31 235
Village27	0	0	0	6 434	0	12 252	0	0
Village28	20 306	138 137	0	34 615	0	91 071	6 787	62 705
Village29	0	0	0	27 352	0	0	67 577	0
TAD	0	1 024 608	819 563	1 048 361	979 149	1 002 148	1 026 546	844 004
Rank		***9***	***1***	***11***	***6***	***7***	***10***	***2***

Table A-4 continued

	%land	*% sheep/ goat*	*% with water*	*%child sick*	*distance*	*revenues*	*lagged revenues*	*population*
Village 1	147 194	0	119 579	148 229	66 018	93 149	126 844	98 009
Village 2	72 471	0	58 875	0	0	140 403	159 837	48 255
Village 3	28 804	0	38 481	86 125	167 499	76 597	50 774	31 539
Village 4	0	0	43 294	96 898	332 475	91 371	0	35 484
Village 5	0	18 979	31 868	0	0	56 954	52 580	26 120
Village 6	0	60 083	0	0	67 655	0	0	16 078
Village 7	102 685	35 693	59 933	14 446	0	0	49 949	49 122
Village 8	77 277	0	0	77 820	0	65 593	77 543	51 455
Village 9	13 091	29 294	49 189	0	0	49 959	0	40 316
Village 10	201 364	149 502	48 812	0	0	46 934	0	40 007
Village 11	0	49 498	16 161	52 309	0	0	26 896	13 246
Village 12	125 570	0	73 290	90 850	64 598	24 366	58 183	60 070
Village 13	0	23 202	38 959	0	0	0	0	31 931
Village 14	41 685	33 165	0	13 423	0	49 349	0	45 643
Village 15	12 254	141 024	46 044	149 031	0	86 014	144 329	37 739
Village 16	0	106 578	0	0	107 236	3 254	53 914	28 521
Village 17	0	17 743	0	0	74 879	10 518	0	24 419
Village 18	55 235	19 200	32 239	104 347	0	54 392	46 982	26 423
Village 19	23 635	96 708	31 575	0	0	19 541	3 559	25 879
Village 20	0	13 185	0	0	7 811	0	0	18 146
Village 21	10 245	0	38 493	0	0	25 804	0	31 549
Village 22	6 114	13 680	22 971	0	111 361	0	0	18 828
Village 23	0	104 271	34 044	8 206	0	0	0	27 903
Village 24	73 469	25 538	111 968	0	468	0	0	35 146
Village 25	0	0	29 895	37 057	0	5 033	0	24 502
Village 26	8 908	0	33 470	41 489	0	5 518	0	27 433
Village 27	0	19 096	0	39 748	0	37 367	0	26 281
Village 28	0	24 334	40 860	0	0	7 302	134 291	33 490
Village 29	0	19 228	0	40 022	0	50 582	14 320	26 463
TAD	933 214	1 493 102	1 019 741	1 270 263	1 588 323	940 513	1 087 696	
Rank	***3***	***14***	***8***	***13***	***15***	***4***	***12***	**5**

Source :Calculations by the author

Table A-5 Original Dataset, 29 municipalities, Kosovo.

MUNICIPALITY	Total Tax Assessment 2005	Tax Assessment Per Capita	Population	Size in Square Km	Density per Square Km	Number of Villages	%Majority
DEÇAN	€ 204 877	€ 4,10	50000	180	277,78	42	97,28%
DRAGASH	€ 127 692	€ 3,65	35000	434	80,65	37	57,78%
FERIZAJ	€ 237 061	€ 2,14	111000	345	322,01	44	88,10%
FUSHE KOSOVE	€ 940 323	€ 26,87	35000	96	364,58	15	56,63%
GJAKOVË	€ 740 620	€ 6,44	115000	521	220,73	84	92,85%
GJILAN	€ 941 126	€ 8,56	110000	515	213,59	63	76,54%
GLLOGOVC	€ 167 834	€ 2,80	60000	290	206,90	36	99,90%
ISTOGU	€ 137 735	€ 3,13	44000	454	96,92	51	76,68%
KAMENICË	€ 231 078	€ 4,20	55000	523	105,16	76	73,05%
KAÇANIK	€ 156 438	€ 3,64	43000	306	140,52	40	98,31%
KLINA	€ 182 520	€ 4,15	44000	308	142,86	54	82,75%
LIPJAN	€ 293 734	€ 3,92	75000	422	177,73	71	77,36%
MALISHEVË	€ 111 513	€ 2,14	52000	306	169,93	44	98,96%
MITROVICA	€ 415 985	€ 3,78	110000	350	314,29	44	78,98%
NOVO BËRDË	€ 5 700	€ 1,14	5000	92	54,35	15	40,03%
OBILIQ	€ 181 718	€ 6,99	26000	105	247,62	20	66,31%
PEJA	€ 603 800	€ 5,25	115000	603	190,71	97	75,46%
PODUJEVE	€ 237 271	€ 2,03	117000	602	194,35	78	97,91%
PRISHTINE	€ 4 645 959	€ 11,61	400000	854	468,38	48	77,63%
PRIZREN	€ 884 205	€ 4,02	220000	640	343,75	73	75,91%
RAHOVEC	€ 217 939	€ 3,46	63000	276	228,26	35	91,91%
SHTËRPCË	€ 42 255	€ 3,84	11000	248	44,35	16	33,83%
SHTIME	€ 78 809	€ 2,81	28000	134	208,96	22	92,38%
SKENDERAJ	€ 110 263	€ 1,97	56000	375	149,33	52	98,14%
SUHAREKE	€ 260 744	€ 3,26	80000	361	221,61	41	94,89%
VITI	€ 286 406	€ 5,62	51000	300	170,00	43	78,68%
VUSHTRRI	€ 236 008	€ 3,15	75000	344	218,02	66	88,48%
Zvecan			16000	104	153,85	35	
Leposavic			19000	536	35,45	72	
Zubin Potok			15000	335	44,78	64	
Total	**€ 12 679 613**		**2236000**	**10959**	**5807**	**1478**	

Source :data provided by François Vaillancourt

Table A-6 Actual and revised grants using 100 percent population, 26 municipalities, Kosovo. (Method 1)

Municipality	Revised Grant	Actual Grant	Difference	Difference Per Capita
DEÇAN	2 921 478	2 992 808	-71 330	-1,43
DRAGASH	2 045 035	2 583 248	-538 213	-15,38
FERIZAJ	6 485 682	6 981 115	-495 433	-4,46
GJAKOVË	6 719 400	6 836 139	-116 739	-1,02
GJILAN	6 427 252	7 314 589	-887 337	-8,07
GLLOGOVC	3 505 774	3 988 124	-482 350	-8,04
ISTOG	2 570 901	2 814 898	-243 997	-5,55
KAMENICË	3 213 626	3 560 597	-346 971	-6,31
KAÇANIK	2 512 471	2 555 704	-43 233	-1,01
KLINË	2 570 901	2 917 054	-346 153	-7,87
LIPJAN	4 382 217	4 555 984	-173 767	-2,32
MALISHEVË	3 038 337	3 540 395	-502 058	-9,65
MITROVICA	6 427 252	7 346 002	-918 750	-8,35
NOVOBËRDË	292 148	660 028	-367 880	-73,58
OBILIQ	1 519 169	2 043 107	-523 938	-20,15
PEJË	6 719 400	6 773 239	-53 839	-0,47
PODUJEVE	6 836 259	5 937 433	898 826	7,68
PRISHTINE	23 371 826	17 867 639	5 504 187	13,76
PRIZREN	12 854 504	11 224 654	1 629 850	7,41
RAHOVEC	3 681 063	3 657 894	23 169	0,37
SHTËRPCË	642 725	1 287 614	-644 889	-58,63
SHTIME	1 636 028	1 746 391	-110 363	-3,94
SKENDERAJ	3 272 056	3 615 622	-343 566	-6,14
SUHAREKE	4 674 365	4 836 186	-161 821	-2,02
VITI	2 979 908	3 503 805	-523 897	-10,27
VUSHTRRI	4 382 217	4 541 724	-159 507	-2,13

Source :Calculations by the author

Table A-7 Actual and revised grants using 75 percent population and 25 percent tax assessment per capita. 26 municipalities, Kosovo. (Method 2)

Municipality	Revised Grant	Actual Grant	Difference	Difference Per Capita
DEÇAN	2 254 241	2 992 808	-738 567	-14,77
DRAGASH	1 991 864	2 583 248	-591 384	-16,90
FERIZAJ	10 737 330	6 981 115	3 756 215	33,84
GJAKOVË	5 039 550	6 836 139	-1 796 589	-15,62
GJILAN	4 820 439	7 314 589	-2 494 150	-22,67
GLLOGOVC	4 759 005	3 988 124	770 881	12,85
ISTOG	3 104 083	2 814 898	289 185	6,57
KAMENICË	2 410 220	3 560 597	-1 150 377	-20,92
KAÇANIK	2 458 750	2 555 704	-96 954	-2,25
KLINË	1 925 071	2 917 054	-991 983	-22,55
LIPJAN	3 738 909	4 555 984	-817 075	-10,89
MALISHEVË	5 018 059	3 540 395	1 477 664	28,42
MITROVICA	5 874 013	7 346 002	-1 471 989	-13,38
NOVOBËRDË	614 726	660 028	-45 302	-9,06
OBILIQ	1 139 377	2 043 107	-903 730	-34,76
PEJË	5 039 550	6 773 239	-1 733 689	-15,08
PODUJEVE	11 649 543	5 937 433	5 712 110	48,82
PRISHTINE	17 528 869	17 867 639	-338 770	-0,85
PRIZREN	10 372 885	11 224 654	-851 769	-3,87
RAHOVEC	3 898 809	3 657 894	240 915	3,82
SHTËRPCË	570 118	1 287 614	-717 496	-65,23
SHTIME	2 208 062	1 746 391	461 671	16,49
SKENDERAJ	5 662 794	3 615 622	2 047 172	36,56
SUHAREKE	5 372 189	4 836 186	536 003	6,70
VITI	2 234 931	3 503 805	-1 268 874	-24,88
VUSHTRRI	5 258 606	4 541 724	716 882	9,56

Source :Calculations by the author

Table A-8 Actual and revised grants using 75 percent population, 12.5 percent land area and 12.5 percent for the number of villages. 26 municipalities, Kosovo. (Method 3)

Municipality	Revised Grant	Actual Grant	Difference	Difference Per Capita
DEÇAN	2 987 809	2 992 808	-4 999	-0,10
DRAGASH	2 673 251	2 583 248	90 003	2,57
FERIZAJ	5 946 983	6 981 115	-1 034 132	-9,32
GJAKOVË	6 888 759	6 836 139	52 620	0,46
GJILAN	6 404 762	7 314 589	-909 827	-8,27
GLLOGOVC	3 527 849	3 988 124	-460 275	-7,67
ISTOG	3 269 662	2 814 898	454 764	10,34
KAMENICË	4 165 329	3 560 597	604 732	11,00
KAÇANIK	2 856 932	2 555 704	301 228	7,01
KLINË	3 074 167	2 917 054	157 113	3,57
LIPJAN	4 820 499	4 555 984	264 515	3,53
MALISHEVË	3 299 970	3 540 395	-240 425	-4,62
MITROVICA	5 911 566	7 346 002	-1 434 436	-13,04
NOVOBËRDË	547 681	660 028	-112 347	-22,47
OBILIQ	1 549 400	2 043 107	-493 707	-18,99
PEJË	7 177 121	6 773 239	403 882	3,51
PODUJEVE	7 032 143	5 937 433	1 094 710	9,36
PRISHTINE	19 469 424	17 867 639	1 601 785	4,00
PRIZREN	11 545 406	11 224 654	320 752	1,46
RAHOVEC	3 624 911	3 657 894	-32 983	-0,52
SHTËRPCË	1 070 637	1 287 614	-216 977	-19,73
SHTIME	1 707 441	1 746 391	-38 950	-1,39
SKENDERAJ	3 682 168	3 615 622	66 546	1,19
SUHAREKE	4 577 900	4 836 186	-258 286	-3,23
VITI	3 234 455	3 503 805	-269 350	-5,28
VUSHTRRI	4 635 769	4 541 724	94 045	1,25

Source :Calculations by the author

Table A-9 Actual and revised grants using 50 percent population, 12.5 percent land area, 12.5 percent for the number of villages and 25 percent fiscal capacity. 26 municipalities, Kosovo. (Method 4)

Municipality	Revised Grant	Actual Grant	Difference	Difference Per Capita
DEÇAN	2 320 572	2 992 808	-672 236	-13,44
DRAGASH	2 620 080	2 583 248	36 832	1,05
FERIZAJ	10 198 632	6 981 115	3 217 517	28,99
GJAKOVË	5 208 909	6 836 139	-1 627 230	-14,15
GJILAN	4 797 949	7 314 589	-2 516 640	-22,88
GLLOGOVC	4 781 079	3 988 124	792 955	13,22
ISTOG	3 802 845	2 814 898	987 947	22,45
KAMENICË	3 361 922	3 560 597	-198 675	-3,61
KAÇANIK	2 803 211	2 555 704	247 507	5,76
KLINË	2 428 337	2 917 054	-488 717	-11,11
LIPJAN	4 177 190	4 555 984	-378 794	-5,05
MALISHEVË	5 279 692	3 540 395	1 739 297	33,45
MITROVICA	5 358 327	7 346 002	-1 987 675	-18,07
NOVOBËRDË	870 259	660 028	210 231	42,05
OBILIQ	1 169 608	2 043 107	-873 499	-33,60
PEJË	5 497 271	6 773 239	-1 275 968	-11,10
PODUJEVE	11 845 427	5 937 433	5 907 994	50,50
PRISHTINE	13 626 467	17 867 639	-4 241 172	-10,60
PRIZREN	9 063 787	11 224 654	-2 160 867	-9,82
RAHOVEC	3 842 658	3 657 894	184 764	2,93
SHTËRPCË	998 030	1 287 614	-289 584	-26,33
SHTIME	2 279 475	1 746 391	533 084	19,04
SKENDERAJ	6 072 906	3 615 622	2 457 284	43,88
SUHAREKE	5 275 723	4 836 186	439 537	5,49
VITI	2 489 478	3 503 805	-1 014 327	-19,89
VUSHTRRI	5 512 157	4 541 724	970 433	12,94

Source :Calculations by the author

The Education Grant [17]

The Education Grant uses a formula developed by the World Bank that was first applied in 2004, which allocates funding towards majority and minority populations on the basis of pupil/teacher ratios of 21.3 for majority pupils and 14.2 for minority pupils.

- The formula utilized is as follows:
    - The number of minority and majority pupils in a municipality, - which should be obtained from official Directorate of Education reports to the MEST (Ministry of Education, Science and Technology), - are separately divided by the pupil/teacher ratio for that population type[18]. The resulting number of teachers is then multiplied times the Kosovo-wide average salary per teacher from payroll records.
        - Pupil/teacher ratios are set by the World Bank formula at 1 to 21.3 for majority pupils and 1 to 14.2 for minority pupils.
        - Formulae are:

No. Majority Teachers (NMAT) = No. Majority Pupils (NMAP) / 21.3 (Rounded Up)
No. Minority Teachers (NMIT) = No. Minority Pupils (NMIP) / 14.2 (Rounded Up)
Teacher Cost Need (TCN) = (NMAT+NMIT) x Kosovo-wide Average Salary of Teacher

- The number of administrative and support staff, as reported at thetimeof budget formulation, multiplied by the average salary per administrative and support employee from payroll records. This number, when added to the above, gives the total Wage Bill.
    - Formulae are:

Support Staff Cost Need (SSCN) = No. Admin & Support Staff 2004 x Kosovo-wide Average Salary of Staff
Wage Bill (WB) = TCN + SSCN = WB

- Good and Services: a fixed amount per school (500 Euro for each pre-primary and primary school, 1,000 per secondary school) is added to a fixed amount per student differentiated by majority and minority students.

[17] See Vaillancourt (2006) pp.16-17

- Fixed amounts per student for goods and services are set by the World Bank formula at €18 per Albanian student and €22.5 per student of other ethnic background.
- The formula is:

Goods & Services (GS) = (NMAP x 18) + (NMIP x 22.5) = GS

- Capital Outlays: €5 per student is allocated to the municipality.
  - The formula is:

Capital Outlays (CO) = (NMAP + NMIP) x 5 = CO

- Master Formula Calculations:

Estimated Education Need (EEN) = WB + GS + CO = EEN

EEN / Combined Total of All Municipalities' EEN = Percentage of Available Education Grant Funding to that municipality.

3. References

Bird, R. and Tarasov, A. (2002) *"Closing the Gap: Fiscal Imbalances and Intergovernmental Transfer in Developed Federations"*, International Studies Program, Andrew Young School of Policy Studies, Georgia State University, March.

Boadway, Robin and F. Flatters (1982) *"Efficiency and Equalisation Payments in Federal System of Governements,* Canadian Journal of Economics 15, 613-633.

Boadway, Robin (2004) *"The Theory and Practice of Equalisation"*, Department of Economics, Queen's University, WP#1016.

Boex, Jamie and Martinez-Vasquez, J.(2004),*"Designing Intergovernmental Equalisation Transfers with Imperfect Data : Concepts, Practices and Lessons"* , Georgia State University.

Bernd Spahn, Paul. (2004) "*Intergovernmental Transfers: The Funding Rule and Mechanisms*", International Studies Program, Andrew Young School of Policy Studies, Georgia State University, WP # 04-17.

Buchanan, James M. (1950) "*Federalism and Fiscal Equity*", American Economic Review, # 40-4, 583-599.

Day, Kathleen and Winer, Stanley L. (2005) "*Policy-Induced Internal Migration: An Empirical Investigation of the Canadian Case*", CESifo, November, WP#1605.

Kehmani, Stuti (2004) "*The Political Economy of Equalisation Transfers*", International Studies Program, Andrew Young School of Policy Studies, Georgia State University, WP # 04-13.

Ma, Jun (1997) *"Intergovernmental Fiscal in Nine Countries: Lessons for Developing Countries"*, World Bank, Economic Development Institute, WP# 1822.

Rao, Govinda (2004), *"Changing Contours in Fiscal Federalism in India"*, International Symposium on Fiscal Decentralization in Asia Revisited, Hitotsubashi University, Tokyo, February.

Shah, Anwar (1994) *"A Fiscal Needs Approach to Equalisation Transfers in Decentralized Federations*", World Bank, Policy Research Department, Public Economics Division, WP #1289.

Vaillancourt, François (2001), *"Simulating Intergovernmental Equalisation Transfers With Imperfect Data"*, National Tax Association Paper and Proceedings, pp. 57-63.

Vaillancourt, F. and Bird, R. (2004), *"Expenditure-based equalisation transfers"*, International Studies Program, Andrew Young School of Policy Studies, Georgia State University, November, WP # 04-10.

Vaillancourt, François (2006), "Fiscal Decentralisation in Kosovo", prepared for UNDP, July.

Statistical Office of Kosovo (200X), *"Kosovo and its Population"*.