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The Municipal Transfer System in Nicaragua: Evaluation and Proposals for Reform

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Acronyms

AMUNIC	Asociación de Municipios de Nicaragua
BIDE	Boston Institute for Developing Economies
CSD	Comisión Nacional de Descentralización
FISE	Fondo de Inversión Social de Emergencia
FONIM	Fondo Nacional de Inversión Municipal
IBI	Impuesto a Bienes Inmuebles
IMI	Impuesto Municipal a los Ingresos
INIFOM	Instituto Nicaragüense de Fomento Municipal
MDPTM	Modelo de Determinación de Potenciales Tributarios Municipales
MHCP	Ministerio de Hacienda y Crédito Público
PGR	Presupuesto General de la República
PTM	Potencial Tributario Municipal

Executive Summary

Brief description of the current transfer system

1. For almost 20 years, the Nicaraguan authorities have been implementing a fiscal decentralization process to devolve an increasing degree of autonomy to municipalities. As a part of this process, and mainly due to the efforts of the Association of Municipalities of Nicaragua (AMUNIC is the acronym in Spanish), the first municipal transfers were approved in just 1999. Later, the funds available for the municipalities were increased gradually as a percentage of the General Budget (PGR), until in August 2003 the new Law of Municipal Transfers set this percentage at 4% of the total central government tax revenues in 2004, and stated that it should be increased at least by 0,5% per year up to 10% of the PGR in 2010. In 2005 the transfer program corresponded to 5% of the PGR, whereas in the present year the percentage increased to 6%.

2. The Law of Municipal Transfers defines five targets for the municipal transfer program: 1) to promote the development of the diverse parts of the national territory; 2) to reduce the imbalance between the capacity to raise revenues and the cost of public service provision at the municipal level; 3) to stimulate local revenue collections and efficiency in municipal management; 4) to make possible the management and implementation of local policies of development and to allow local governments to administer national policies and development programs against poverty; and 5) to contribute to increased transparency in local management.

3. In order to reach these objectives, the Law of Municipal Transfers also establishes four fundamental criteria to compute the amount of municipal transfers: 1) Fiscal Equity, meant to reduce the horizontal imbalances between municipalities; 2) Efficiency (or Fiscal Effort) in the collection of property taxes (IBI), meant to stimulate IBI collections with respect to the potential revenues in each municipality; 3) Population, which responds solely to the number of inhabitants of each municipality; and 4) Execution of transfers, which rewards the full disbursement of capital transfers.

4. According to the Law of Municipal Transfers, Managua is entitled to 2,5% of the transfer fund, whereas 97,5% is distributed among all other municipalities in accordance with the four criteria. Each distribution criterion is weighted equally, and so the 97,5% of the transfer fund is divided by four and the total transfers for each municipality consist of the sum of the transfers received by each criterion.

5. The potential per capita tax revenues, required to assign the transfers by Fiscal Equity has been calculated so far on a historical basis and now the authorities are considering the introduction of a new methodology, the MDPTM, developed and applied by the Boston Institute for Developing Economies (BIDE). The determination of the potential IBI collection, required to assign the transfers by Fiscal Effort, would also depend on this model. Although the MDPTM would constitute a great improvement with respect to the methodology used in the present, it is also a complex model that requires a great deal of

information. In any case, even if the application of the MDPTM is feasible in the immediate future, the proposals provided in this report could easily incorporate its estimations.

Evaluation of the current transfer system

6. The expenditure responsibilities defined by the law as exclusive to municipal governments are few, but there is also a wide range of public services for which the law establishes a shared responsibility between the municipal governments and the central government. All in all, the level of expenditure responsibilities of municipalities is still low and it has even been suggested that the transfers provided to local governments are excessive. To clearly define the expenditure responsibilities of local governments remains a pending task of the decentralization process, and the implementation of a rational and efficient system of transfers depends intimately on its fulfillment.

7. Even though each of the objectives defined by the Law of Municipal Transfers is desirable and legitimate, it is important to recognize that their achievement requires different instruments. The fact that all of them are being addressed simultaneously by a unique system of unconditional transfers suggests that there exists some confusion regarding the way in which these objectives must be pursued with respect to the proper design of a transfer program and its potential benefits. In order to clearly explain how a transfer system should be designed according to the economic theory and the international experience, in this report Nicaragua's municipal transfers program is analyzed from the perspective of an *equalization* transfer system. Indeed, the objective of horizontal equalization is without doubt, in spirit, the leading principle of the existing system in Nicaragua.

8. The basic structure of a system of equalization transfers is based on the concept of per capita fiscal disparity, which can be defined as the excess of per capita expenditure needs over per capita fiscal capacity. Per capita expenditure needs corresponds to the amount of resources required to finance a standard level of expenditure responsibilities per inhabitant, while per capita fiscal capacity corresponds to the ability of a government to collect revenues from its tax base at a given level of fiscal effort. Fiscal disparity is computed simply as the difference between expenditure needs and fiscal capacity for each municipality. In those cases where the fiscal disparity is negative, it can be said that there is no "excess" of needs, and so such localities should enjoy no benefits from the equalization transfer program. Although simple in structure, an equalization transfer system based on the concept of fiscal disparity differs significantly from the one currently applied in Nicaragua. A significant difference is that only the system based on the concept of fiscal disparity allows for exclusion from benifits of those municipalities that are in a more advantageous fiscal situation with respect to the national average. Since the concept of per capita fiscal disparity facilitates the distinction between "needy" municipalities and "able" local governments, it also ensures a greater potential for equalization in the system.

9. Among the four allocation criteria contemplated by the current transfer system, population is the only one that can be considered representative (up to a certain point) of

per capita expenditure needs. The Equity criterion, on the other hand, is explicitly defined as representative of fiscal capacity. Therefore, only 50% of the transfer fund is currently assigned according to the basic scheme of an equalization transfer system. On the other hand, as will be shown in this report, the inclusion of the Efficiency and Execution criteria in the system of transfers actually reduces the equalizing effect of these transfers; in reality, the way in which the Efficiency and Execution criteria are implemented amounts to an equal transfer amount for each municipality independently of its size.

10. The Law of Municipal Transfers establishes that a minimum percentage of the transfers received must be used in capital investments. In reality, this percentage may represent the share of the transfer fund corresponding to capital transfers, which obviously are treated in this case in the same way that equalization transfers are. Nevertheless, the significant differences between equalization transfers and capital transfers should be recognized, and the current Nicaraguan system most likely prevents the municipal expenditures in investments from being efficiently assigned. For these reasons, it is advisable to calculate capital and equalization transfers separately.

11. There is a widespread consensus in the literature about the basic criteria to be used to finance investment expenditures. Capital transfers should be given to localities where the stock of infrastructure is relatively low, and the grants should take the form of matching grants. Since matching grants are can positively affect (correct) incentives, they are useful for encouraging more efficient behavior of local governments. Capital transfers should be meant to pursue, exclusively, the maximization of the social benefits of the investment (economic efficiency), which depends on the needs of each community, its financing capacity (including borrowings) and on the fixed assets available to cover those needs. Additionally, capital transfers must be accompanied with technical assistance to the local governments, particularly in preparing investment plans, maintaining infrastructure, monitoring the progress of the projects and in evaluating their results.

12. The Execution criterion does not constitute an appropriate instrument to obtain an efficient level of municipal government investment. Most municipalities now report full execution of their budgets, and so this criterion results in identical transfers for all of them, regardless of the size of the jurisdiction. In addition, this scheme does not promote nor facilitate the efficient behavior of local governments. Those municipalities that are not able to fulfill their investment plans, and therefore receive less in transfers according to this criterion, are probably those requiring more technical assistance and financial support. Because of these and other reasons to be explained below, in this report we recommend eliminating this allocation criterion.

13. Regarding the Efficiency or Fiscal Effort criterion, although it is true that the international experience contains examples of its inclusion in the equalization formula, it is advisable to avoid this practice or to limit it only to a transitory measure, until a sort of revenue collection tradition has been developed. This is because there are no valid arguments to award municipalities that *choose* to spend more to enjoy a higher standard of public services. Based on these arguments, in this report we recommend separating this allocation criterion from the equalization program and assigning a special fund to stimulate

the fiscal effort in the short and medium term. In the long term, after developing a revenue collection tradition, the elimination of this criterion is recommended.

14. As an alternative way to finance a program to stimulate municipal collections in the short term, we recommend the use of the resources that FONIM currently uses from international donors. These resources are significant and there seems to be an explicit interest in using them for this purpose. Additionally, these funds have a transitory character that matches the need of giving an initial impulse to the municipalities that are not performing satisfactorily in terms of fiscal effort.

15. Despite our recommendation of eliminating the criteria of Efficiency and Execution, it is important here to point out the misleading way in which they have been incorporated into the allocation formula. The transfers assigned by both criteria are defined without considering the size of the municipalities, which generates erratic differences in the per capita transfers received by the municipalities and distorts the equalizing effects of the transfer system. For example, if a high fiscal effort or the complete fulfillment of the investment plan of a municipality amounts to double the national average, then such a municipality will receive double the transfers received by the average municipality, regardless of whether or not the first has 1,000 inhabitants and the average municipality 40,000 inhabitants. This implies a disproportionate per capita benefit for the smallest municipalities (not necessarily with the greatest needs) and a benefit that can well be insignificant for the municipalities with more population. In general, the allocation criteria and the transfers should be defined first in per capita terms, and from there, considering the population, total municipal transfers can easily be computed. Independently of whether these criteria are included or not in the allocation formula, the current apportionment procedure constitutes a serious problem of design that must be fixed.

16. The MDPTM is a methodology developed to estimate local revenue potential, and that can be used to estimate horizontal fiscal disparities across municipalities. It is used successfully in several developed countries and is considered the most precise method currently available. Nevertheless, as is also well known, the MDPTM is very complex and requires very detailed information; thus due to the costs involved and the lack of the necessary data, its implementation in less developed countries might not be feasible. In this report we are not concerned about its feasibility, and instead we rely on the fact that there exists great interest among the Nicaraguan authorities for applying this methodology and already significant resources have been spent toward its implementation. If the methodology can actually be implemented, the estimated potential revenues may easily be integrated into the recommendations and proposals offered in this report. Otherwise, if the implementation of the MDPTM is not possible, this report offers a feasible alternative for the computation of municipal fiscal capacity based on historical per capita collections, information that is currently available.

Proposals for reform and analysis of results

17. According to the principles associated with a good equalization transfer system, the proposals presented in this report look for the reduction of the differences in fiscal

disparities across municipalities. Thus, the objective is to estimate per capita expenditure needs and fiscal capacity for each municipality (as explained previously, this excludes the Efficiency and Execution criteria). The proposals are provided in a modular way; first, we present a module for the estimation of fiscal capacity (CF), and second, we present three different modules for the estimation of expenditure needs (NG1, NG2, and NG3). This makes their application very flexible and it also allows, for example, combining the preferred proposal for expenditure needs with the estimations of fiscal capacity based on the MDPTM.

18. In order to adapt the proposals to the Nicaraguan situation, we ignore our recommendation of dividing the transfer system into two independent programs, one for equalization transfers and another for capital grants. The design of the second program is beyond the scope of this report and, in addition, its development needs prior stated approval by the appropriate authorities. To ensure consistency in the fiscal budgetary balance, the proposals refer to the total amount of resources devoted to the transfer program.

19. In particular, the proposal for estimating per capita fiscal capacity (CF) is based on historical information of municipal revenues. Fiscal capacity encompasses potential own revenues (own revenues collected under a standard level of fiscal effort), the revenues shared with the central government, and all current transfers with the exemption of equalization transfers. The main difficulty consists of estimating the potential own revenues because they cannot be properly approximated by actual own revenues. For the case of shared revenues and current transfers (excluding equalization transfers) it is correct to use the actual amounts because local governments are usually not able to affect them. The proposal for estimating potential own revenues consists of computing the proportion of per capita local tax revenues over the per capita average at the national level during the relevant periods. The per capita fiscal capacity is obtained by multiplying the average of such proportions by the projected per capita collections at the national level. The main advantages of this methodology are the use of available information and the fact that an average of several periods limits the ability of local governments to alter the estimation of fiscal capacity. (Local governments might be tempted to reduce their fiscal effort with the intention of showing a low fiscal capacity in order to receive more transfers in the future.)

20. Proposal 1 for estimating per capita expenditure needs (NG1): consists of the determination, by the central authorities, of minimum standards of expenditures by “client” for each of the most relevant functions of the local governments. The methodology is simple and transparent; it ensures that the fixed standards of expenditures are feasible, facilitates political discussion on national spending priorities and, particularly, on the allocation of spending at the local government level. It is also very flexible because it allows for adjustments of the standards according to changes in the functional priorities set by the central authorities. At the moment, however, due to the lack of information on functional spending at the local level, as well as the insufficient demographic information required to compute the number of clients by function, it seems impossible to implement this proposal in the short run. Nevertheless, this proposal is presented as the best option towards which future reforms in the transfer system should be heading. The use of this

methodology, in combination with proposal CF (or possibly with the estimations of fiscal capacity based on the MDPTM), would imply a substantial improvement of the system in terms of rationality, simplicity, transparency, and effectiveness in the reduction of the horizontal imbalances.

21. Proposal 2 for estimating per capita expenditure needs (NG2): consists of determining a unique standard of expenditures by inhabitant, which is computed as the per capita average of the forecasted expenditures for all local governments. This methodology, equivalent to an equal per capita expenditure, is extremely simple and transparent, and even though it does not consider other variables that may be important in determining the per capita costs of specific municipal services in each municipality, it may well be considered as a previous step to the implementation of proposal NG1. We argue that the mere modification of the structure of the present system, replacing it with a fiscal disparity-based system in which proposal NG2 is included, would represent a substantial improvement of the municipal transfer system.

22. Proposal 3 for estimating per capita expenditure needs (NG3): consists of elaborating a weighted index of per capita expenditure needs that is meant to represent cost differences in the cost of provision of goods and services across municipalities. The proposed index assigns a weight of 60% to Population, a variable that establishes an order of magnitude for the total costs faced by each municipality; 30% to the variable Poverty (measured by extreme poverty gap or "brecha de pobreza extrema"), that can be used to directly represent the greater needs associated with poorer population as well as its greater dependency with respect to public municipal services; and a weight of 10% to the variable Area (squared kilometers), that might serve as a proxy of the costs incurred due to the physical extension of jurisdictions. It is important to stress that the choice of the variables and their weights, although reasonable in principle, are essentially arbitrary. We do not have the information required to rigorously justify such weights and a deeper analysis is beyond the scope of this study. The objective of this proposal is to provide a feasible alternative, based on available information, that could suitably represent the differences in expenditure needs across municipalities.

23. Due to the fact that the proposals described and the current transfer system define the expenditure needs and fiscal capacity of each municipality in a different way (the current system does not define them explicitly), it is very difficult to compare their equalizing effects in an objective manner. Indeed, each system tends to equalize better according to the particular criterion on which it is based, and for that reason the discussion about their equalizing effects should instead be centered on the rationality of such criteria. The present report can be understood as an extensive discussion about the principles ruling a good equalization transfer system and about the proper criteria to allocate transfers among local governments in Nicaragua.

24. Despite the impossibility of directly comparing different systems, certain objective observations, like the smaller variability of per capita transfers (that can be observed, for instance, in the absence of disproportionately high per capita transfers given to some municipalities with small populations), and the exclusion as beneficiaries of those

municipalities which by themselves have the means to cover the average expenditure needs, suggest the superiority of the model proposed in this report with respect to the current system.

Critical path of reforms

25. It may be useful to organize the proposals along a critical path of reforms that establishes the order in which they can be implemented. This path arranges the proposed reforms in three levels: short, medium, and long run, according to the feasibility of the proposals:

- At the first level (short run), it is feasible to maintain the allocation formula of equalization transfers based on only two criteria, population and fiscal capacity, while the Execution criterion is eliminated and the Efficiency criterion is formally separated from the equalization transfer system. This level of reforms would require solely the modification of the Law of Municipal Transfers.
- At the second level (medium run), it is possible to implement a system based on the definition of fiscal disparity, whose main advantage is the deprivation of equalization transfers for those municipalities with a relatively better fiscal situation (negative fiscal disparity), which should allow for a greater equalizing power. Proposals NG2 and NG3 for measuring expenditure needs (along with the estimation of fiscal capacity) fit well into this plan. Again, this level of reform requires only modification of the Law of Municipal Transfers.
- Finally, at the third level (long term), it would be feasible to introduce the changes required in the Law of Municipalities in order to clarify the municipal expenditure responsibilities and to implement a functional classification of the budget. These measures would allow the implementation of proposal NG1, selected as the most recommendable for the Nicaraguan case.

26. As a complement to the measures described, the critical path of reforms also requires deciding about the use of those funds released from the equalization transfer system. The 25% of the transfer fund currently apportioned according to the Execution criterion could plausibly be maintained in the equalization fund, or alternatively, it could also be used to finance a fund for stimulating capital investments. This decision should be made at the first level of the critical path of reforms. Additionally, the 25% that is currently distributed according to the Efficiency criterion could, also in the short term, be assigned to finance a program to stimulate tax effort. Finally, in a third stage, when the tax collecting tradition has been developed, we recommend the gradual elimination of the tax effort program, and the reassignment of the respective funds to some of the programs with permanent status: equalization or investments.

I. The Current Municipal Transfer System in Nicaragua

I.1 Introduction

By the end of the eighties, Nicaragua began a process of decentralization of the public sector with the purpose of increasing the degree of municipal autonomy. The first great impulse to the decentralization initiative was given by the Political Constitution of 1987, and more recently the new Constitution approved in 1995 served to deepen even more the political will of achieving greater municipal autonomy. The Law of Municipalities published in 1988 established the direct election of municipal authorities, as well it provided a larger range of expenditure responsibilities for local governments. Nevertheless, although both initiatives were consistent with the decentralization process, they were not properly accompanied by an increase in resources available to the municipalities: the municipal governments did not have the authority to set tax rates within their jurisdictions; thus they could not increase their own revenues while no transfer system had been implemented to correct the gap between their expenditure responsibilities and their ability to generate enough revenues to cover them.

During the nineties the interest of the authorities of the central and municipal governments in deepening the decentralization process gave rise to a nationwide debate in which the main shortcomings and needs of the system were identified and some priorities for reform were also settled upon. Unfortunately, in spite of the existing agreements, the implementation of the reforms was unfruitful.[2] The efforts made by the Association of Municipalities of Nicaragua (AMUNIC) in order to provide additional resources to the municipalities through the creation of a transfer system financed by the General Budget (PGR), still faced in 1996 the opposition of the General Assembly and other legal constraints. The first municipal transfers were approved after several delays in 1999, but they corresponded only to the 0.7% of the PGR. Later AMUNIC, without a doubt the main promoter of the transfer system and its growth, continued working for the development of the system and to increase the transfer fund as a percentage of the PGR, until recently obtaining the legal mandate, established in the new Law of Municipal Transfers of August 2003, to reach 10% of the PGR in 2010. [3]

Based on the legal framework defined by Law no. 466, additional efforts have been made in order to develop and implement the Method of Determination of Municipal Revenues' Potential (MDPTM). The consultancy provided by the Boston Institute for Developing Economies (BIDE) has been focused on this task, which has also been supported by the United Nations Capital Development Fund (UNCDF) and INIFOM. The proposed methodology is internationally considered as one of most desirable, but its use has so far been restricted to countries where the existing information systems are relatively more

[2] See Guerrero (2005).

[3] Although one may be sure about the need of increasing the amount of transfers, it is difficult to determine whether a 10% is the proper increase or not, specially because that figure has not been derived from the consideration of the actual expenditure needs and fiscal capacity of the local governments. These issues will be extensively analyzed throughout this report.

complete than those in Nicaragua. Indeed, even though the method encompasses many variables that help to better outline the capabilities and potentials of each municipality, given the lack of municipal information in Nicaragua, the model might not suitably compute the desired estimates and thus its results could be very limited.[4] Significant work is currently under way in order to develop the required data bases and to assist the municipalities in understanding its correct use and contributions.

The approach of this report can be understood as focused on the "architecture" of the transfer system; that is, on the design of a structure that is compatible with the goals pursued by the authorities of the central and municipal governments, which must also be rational from the economic viewpoint and feasible under the existing restrictions on institutional and informational grounds. This work can be seen as complementary (not as a substitute) to the efforts that are being made in improving the estimations of tax revenue potentials. One relevant question is whether in the short or medium run the implementation of the MDPTM is actually feasible. This is an issue that we will discuss in more depth. However, it is important to clarify here that while our proposals for estimating fiscal capacity may be inferior to the MDPTM they still offer reasonable and suitable alternatives for the problem at hand.

The current transfer system constitutes one of the pillars of the Nicaraguan fiscal decentralization process; however, the lack of coherence with which the process has been developed and the ambiguities that still characterize its design and characterize the role of municipal transfers continue to prevent local governments from enjoying effective fiscal autonomy and limiting a more efficient use of public resources. The main difficulty is not so much with the level of resources (it has even been suggested that municipal transfers would be excessive compared with the true needs of the local government[5]) but with the lack of clarity in the current assignment of expenditure responsibilities.[6]

The main objectives of this report are to provide a critical analysis of the current transfer system within the legal framework and the goals pursued by the Nicaraguan authorities, to explain the normative principles that need to be considered in the design of an equalization transfer system, and to present an alternative methodology that suitably integrates the characteristics of an efficient transfer system with the particular requirements established by the Nicaraguan decentralization process.

I.2 Description of the current transfer system

The Law No. 466 of Municipal Transfers, published on August 20, 2003, establishes the objectives of the Nicaraguan transfer system, as well as the criteria and procedures by which the transfers from the central government to the municipalities will be defined.

The objectives of the system, as stated in Art. 3 of the law, are the following:

[4] Instituto Nicaragüense de Fomento Municipal (2005).
[5] See Ballivián et al (2004).
[6] See, for instance, Martinez-Vazquez (1997).

- to promote the integral and harmonious development of the diverse parts of the national territory, in accordance with article 179 of the Political Constitution;
- to contribute to reduce the imbalances between the ability to raise revenues and the cost of providing public goods assigned to municipal governments;
- to stimulate local tax revenue collections and efficiency in municipal management;
- to allow the implementation of policies and strategies of local development, in the context of municipal autonomy, and to facilitate their ability to manage policies with national scope regarding development and poverty reduction; and
- to contribute to the transparency of local management, by encouraging the participation of citizens and social auditing in the Budget, Strategic Plans, Operative Plans and other plans of Municipal Investment.

The total amount of transfers for 2004 was set at 4% of the total tax revenues of the central government. The following years, the Law establishes a growth of at least 5% in the share of tax revenues, which is conditional on a growth equal to or higher than 1% of the GDP during the previous year, to finally reach during 2010 a percentage, also minimum, of 10% of tax revenues. So far such requirements have been properly satisfied; in 2005 the transfer program was financed with 5% of the General Budget and in the present year the percentage increased to 6%.

Independently from the actual size of the transfer fund, 2.5% will be given to the Municipality of Managua, while 97.5% will be allocated among the other 151 municipalities in accordance with four fundamental criteria: Fiscal Equity, Efficiency in the collection of IBI (property taxes), Population, and Execution of capital transfers.[7]

Defining the total amount of transfers for all municipalities (excluding Managua) as T_t, the general formula describing its composition is defined by: $T_t = T_{et} + T_{ft} + T_{ht} + T_{gt}$, where each criterion is implicitly considered equally important, with a weight of 25%, and where T_{et} corresponds to transfers by Fiscal Equity in period *t*, T_{ft} by Efficiency in the collection of the IBI, T_{ht} by Population, and T_{gt} by Execution.

The specific amounts which the four components will be allocated in each municipality *i* are obtained through the following procedures:

1. <u>Transfers by Fiscal Equity</u> (T_{eit}):

		Notation and observations
1.1 Per capita Fiscal Potential (P_{it}):	$P_{it} = Y_{it} / H_{it}$	Y_{it} : potential tax revenue
		H_{it} : population
1.2 Average P_{it} (S_t):	$S_t = \sum P_{it} / N$	N : number of municipalities

[7] Until the publication of the Law of Municipal Transfers in 2003, the legal framework of the transfer system was provided by the Municipality's Strengthening Program (Programa de Fortalecimiento Municipal), in which only three criteria were defined: Fiscal Equity, Efficiency in IBI collections, and Execution.

1.3 Horizontal Fiscal Gap (B_{it}):	$B_{it} = S_t - P_{it}$	$B_{it} > 0$ is the required transfer condition
1.4 Required Transfer per *i* (T_{nit}):	$T_{nit} = B_{it} * H_{it}$	
1.5 Required Transfer for *all i* (T_{nt}):	$T_{nt} = \sum T_{nit}$	
1.6 Correction Coefficient (K):	$K = T_{et} / T_{nt}$	
1.7 Transfer by Fiscal Equity (T_{eit}):	$T_{eit} = K * T_{nit}$	where $T_{et} = \sum T_{nit}$

The Fiscal Equity criterion is meant to reduce the differences in potential per capita tax revenues across municipalities, which is done by giving more resources to those municipalities with lower potential per capita tax revenues and excluding from benefits those municipalities for which this variable is higher than the national average.

The computation of the potential per capita tax revenue is currently based on historical data of IBI collections, and a new methodology, based on the MDPTM, is now being considered in order to improve the estimation of potential local tax revenues. The MDPTM roughly consists of a version of the representative revenue system, which is intended to estimate statistically the effect of several variables in the potential revenues of municipalities. The MDPTM requires a great amount of information, part of which is still not available, so in practice it has been impossible to fully implement this methodology and only a sample of 30 representative municipalities has been used to estimate the desired coefficients.[8] Although not necessarily representative, these coefficients permit a first estimation of the potential revenues for all municipalities, as has already been made for 2004. Mainly due to the lack of information, and likely due the complexities of the methodology, the actual implementation of the MDPTM continues to be delayed in the present.

2. <u>Transfers by Fiscal Effort on IBI collections</u> (T_{fit}):

		Notation and observations
2.1 Fiscal Effort ($E_{i(t-2)}$):	$E_{i(t-2)} = R_{i(t-2)} / V_i$	$R_{i(t-2)}$: actual collection of IBI in period *t* - 2 V_i: tax potential of IBI in *i*
2.2 Distribution Index (I_{it}):	$I_{it} = E_{i(t-2)} / \sum E_{i(t-2)}$	
2.3 Transfer by Fiscal Effort (T_{fit}):	$T_{fit} = I_{it} * T_{ft}$	where $T_{ft} = \sum T_{fit}$

According to this criterion, the transfers are distributed proportionally with respect to the relative fiscal effort. This criterion, also called Efficiency in the collection of the property tax (IBI), is meant to stimulate the fiscal effort of municipal governments, and particularly, the collection of the IBI, which is considered poorly executed in practice. A valuation of

[8] A brief description of the MDPTM is presented in Appendix I.

properties contained in the Municipal Cadastral Base is used in the estimation of the revenue potential of the IBI,.[9]

3. <u>Transfers by Population</u> (T_{hit}):

		Notation and observations
3.1 Population proportion of i (Q_{it}):	$Q_{it} = H_{it} / \sum H_{it}$	
3.2 Transfer by Population (T_{hit}):	$T_{hit} = Q_{it} * T_{ht}$	where $T_{ht} = \sum T_{hit}$

The transfers assigned according to this criterion are distributed in identical amounts per inhabitant, regardless of any other consideration.

4. <u>Transfers by Execution</u> (T_{git}):

		Notation and observations
4.1 Accomplishment Ratio ($Z_{i(t-2)}$):	$Z_{i(t-2)} = C_{i(t-2)} / A_{i(t-2)}$	C : executed amount of investment in period t - 2 A : assigned amount for investment in period t - 2
4.2 Accomplishment Index (W_{it}):	$W_i = Z_{i(t-2)} / \sum Z_{i(t-2)}$	
4.3 Transfer by Execution (T_{git}):	$T_{git} = W_{it} * T_{gt}$	where $T_{gt} = \sum T_{git}$

The allocations by budgetary Execution are meant to reward municipal discipline in the fulfillment of investment plans undertaken in previous periods. As with Efficiency transfers, the amounts to be allotted according to this criterion do not vary by the population of the municipality nor by any other type of variable. If all municipalities achieve the same level of execution (most of them fulfill 100%) the result is that all municipalities receive the same transfers regardless of their size or any other consideration.

The Law of Budgetary Regime (Ley de Régimen Presupuestario) establishes categories in which municipalities are grouped according to the amount of their current revenues: type "A", consists only of Managua, through type "H", which is composed of those municipalities with the lowest current revenue (see Table 1). The Law no. 466 restricts the percentage of the transfers that can be spent on current expenditures by determining a minimum percentage of expenditures in investments according to the type of municipality receiving the transfer. These percentages define greater budgetary flexibility for small municipalities, which is in line with the expected lower possibility that they might have in taking advantage of the economies of scale associated with the administration and the

[9] The Municipal Cadastral Base summarizes the information about the values of properties nationwide, while such values are based on the following sources: National Census of 1995 (type of house –collective or individuals, and the population), the Survey of Life-standards Measurement of 1998 (population living in extreme poverty), the Third Farming National Census of 2002 (area of properties and exploitation of land) and tables of values of the National Commission of Cadastre, period 2003-2004 (cost of lands by square meter, construction cost by square meter, values of rural land by hectare, and value of perennial tillage and forests by hectare).

provision of public services. This criterion therefore seems to recognize that smaller municipalities would tend to operate with relatively higher administrative costs.

Table 1: **Current Revenues by Category and Constraints to the Spending of Transfers**

Category	Current Revenues (IC) (thousands of cordobas)			Minimum share of investments in spending of transfers
A (Managua)	50,000	< IC	--	90%
B	10,000	< IC <	50,000	80%
C	6,000	< IC <	10,000	80%
D	2,500	< IC <	6,000	80%
E	1,000	< IC <	2,500	70%
F	750	< IC <	1,000	70%
G	400	< IC <	750	60%
H	0	< IC <	400	60%

Sources: Law of Municipal Budget Regime and Law of Municipal Transfers.

All in all, the current transfer system contains some elements that are not quite properly designed in order to pursue the objectives defined by the law. Furthermore, as explained in this report, these objectives are mutually incompatible and thus the potential benefits from the system are compromised.

One of the main difficulties faced by the current transfer system in Nicaragua is the lack of a clear definition of the expenditure responsibilities of municipal governments. This is an old problem that has not been properly addressed during the fiscal decentralization process. Martinez-Vazquez (1997) already suggested in his report about the decentralization strategy that "the Law of Municipalities should contain an explicit and more complete listing of assignments of expenditure competencies of municipalities...". Recently, Ballivián at al. (2004) emphasized that although clear improvements have been achieved in terms of increasing the available resources of municipalities via the implementation of the new transfer system, the corresponding transfer of functions has still not taken place, the reason that the decentralization process in Nicaraguan would suffer from a problem uncommon in the international context, of likely allocating an excessive amount of resources among municipal governments. As these conclusions indicate, there exists a consensus about the urgency of defining clearly without ambiguity the expenditure responsibilities of municipal governments. This is a necessary condition to determine the real degree of sufficiency or insufficiency of the current transfer fund.

The expenditure responsibilities defined by the law as exclusive to municipal governments are the following:[10]

- development and maintenance of urban infrastructure;
- management of municipal public services;
- construction, maintenance and management of public libraries;
- construction and management of public cemeteries;

[10] Ballivián et al. (2004).

- construction and maintenance of parks, and recreational and sports' infrastructure;
- construction of institutional buildings.

Although the list of exclusive responsibilities is short, there exists an ample range of public services for which the law establishes a shared responsibility between municipal and central governments. The most important are the construction and maintenance of roads and municipal public infrastructure, public health services, electricity, and the conservation of natural resources and environment.

In practice, the expenditure responsibilities diluted between both tiers of government are numerous and important, and municipal governments are forced to assume them entirely when the central government does not contribute with the investments required by the local community. In this sense, the law is excessively vague in the assignment of responsibilities and allows for abuses and inefficiency in the allocation of available resources.

On the revenue side, the main functions of local governments is the administration of municipal sales taxes, the property tax (IBI), and other less important taxes and rates. Tax autonomy at the municipal level is thus very limited, and the problem is worsened by the fact that municipal governments do not fully use the discretion they currently have.[11] Additionally, although local governments do have borrowing ability for financing capital expenditures, this alternative is rightly limited to a 20% of their annual budget. The greater problem in this area is the effective monitoring of the legal norms.

In partial conclusion: The limitation that municipal governments have in their capacity to collect revenues, joined with an inadequate assignment of expenditure responsibilities, prevents effective fiscal autonomy in the municipalities and prevents them from an efficient distribution of public resources.

In the next chapters we will describe the principles and characteristics of a rational transfer system, in accordance with both the economic theory as per the international experience, and will propose a system that closely follows such considerations as well as meeting the declared objectives of the Nicaraguan program, taking into account also the current limitations in available information.

In terms of credit, municipal governments can only borrow for the purpose of capital infrastructure. In addition, and as a good measure, debt service payments can not represent more than 20% of the municipal budget in any one year. The major challenge in this area lies on the central government's ability to monitor and control compliance with these rules.

[11] As in the case of the clarification of expenditure responsibilities, this issue is beyond the scope of the present report and it should be addressed in a different study.

II. Elements for Evaluating the Current Transfer System

II.1 Equalizing effect of total transfers by municipality

(i) Evolution of the transfer fund

As explained, the new Law of Municipal Transfers, which came into force in 2004, established that during that period the transfer fund would correspond to 4% of the General Budget, and that in the following years this percentage should be increased by a minimum of 0.5%, providing there is a minimum PGB growth of 1%. The proportions that have been applied for the assessment of the transfer fund in subsequent years were 5% in 2005 and 6% in 2006, which satisfies the legal request.

Table 2: **Evolution of the transfer fund and basic statistics**
(figures in thousands of current cordobas)

	2001	2002	2003	2004	2005	2006
Total transfers	87,500	132,100	150,443	407,855	738,318	910,253
Managua	4,375	4,375	4,000	10,196	18,458	22,756
Percentage	5.00	3.31	2.66	2.50	2.50	2.50
Transfers to other municipalities	83,125	127,725	146,443	397,659	719,860	887,497
Statistics (excluding Managua):						
Average	554	851	970	2,633	4,767	5,855
Minimum	201	298	434	1,061	1,253	1,611
Maximum	1,187	1,665	2,439	8,625	13,333	14,428
Standard Deviation	262	323	406	1,166	2,049	2,534
Coefficient of Variation	0.47	0.38	0.42	0.44	0.43	0.43

Source: INIFOM y own estimations.

(ii) Equalizing effect of the transfer system during the period 2001-2004

The fundamental criterion by which the transfer system should be evaluated is its equalizing effect on fiscal disparities. The final equalizing effect will depend on both the relative importance of intergovernmental transfers in the municipal budgets and on their distribution. These two aspects are captured in Table 3 and Table 4.

The fact that average per capita revenues before and after transfers notably increased in the period 2002-2004 (see Table 4) means only that total transfers have become increasingly more important with respect to own revenues. The equalizing effect of the system should, instead, be verified in a reduction of the *variability* of per capita revenues once transfers have been allotted. Table 4 shows an almost nil change in the coefficient of variation of per capita revenues before and after the release of transfers, which might suggest that between 2002 and 2004 the system did not achieve the desired objectives.

Table 3: **Transfers as share of municipal revenues (percentage)**

	2001	2002	2003	2004
Average	13.9	20.3	18.9	26.2
Minimum	0.4	2.1	1.7	5.5
Maximum	36.9	52.5	48.4	(**)100.0
Standard Deviation	8.5	11.1	11.0	14.2
Coefficient of Variation	0.61	0.55	0.58	0.54
Number of municipalities (*) (excluding Managua)	145	137	151	147

(*) The number of municipalities varies as a result of the lack of information for some municipalities.
(**) Corresponds to the Municipality of Santa Lucia, which registers $0 revenue.
Source: own estimation based on INIFOM data.

Table 4: **The effect of transfers on municipal per capita revenues**
(figures in thousands of current cordobas)

	Fiscal Revenue Pre-Transfers			Fiscal Revenue Post-Transfers		
	2002	2003	2004	2002	2003	2004
Average	231	315	460	286	389	604
Minimum	25	25	0	52	48	137
Maximum	928	5,098	2,464	1,089	6,549	2,741
Standard Deviation	161	428	325	189	542	364
Coefficient of Variation	0.70	1.36	0.71	0.66	1.39	0.60
Number of municipalities (*) (excluding Managua)	137	150	147	137	150	147

(*) The number of municipalities varies as a result of the lack of information for some of them.
Source: own estimation based on INIFOM data.

Nevertheless, this analysis may be too aggregated, and it is still possible that certain equalization has taken place among some municipalities. Table 5 analyzes the effects in per capita revenues by municipal categories. A negative coefficient of variation indicates that transfers have homogenized per capita fiscal revenues for the municipalities in the respective category. The most noticeable facts shown in Table 5 are the great increase in average per capita revenues and the significant equalizing effect observed across small municipalities. The limited success of the system until 2004 is actually explained by the total amount of transfers favoring the smallest municipalities, not by a real equalization of per capita revenues at the national level. This can be verified by comparing the average per capita revenue among municipal categories. If the transfer system is really equalizing nationwide, we should observe a reduction in the variability of per capita revenues within each municipal category as well as across different categories. However, this is not the case, and in fact the disparity in per capita revenues increased across categories due to the insufficient support provided to large municipalities (see Table 6).

Table 5: **The effect of transfers *within* municipal categories**

Average per capita fiscal revenue:
(figures in thousands of current cordobas)

	Pre-Transfers			Post-Transfers			Variation (Post/Pre)		
Category	2002	2003	2004	2002	2003	2004	2002	2003	2004
B	261	323	491	276	337	532	5.7%	4.3%	8.4%
C	271	304	481	297	329	539	9.6%	8.2%	12.1%
D	225	343	436	265	394	539	17.8%	14.9%	23.6%
E	195	268	470	237	318	595	21.5%	18.7%	26.6%
F	190	509	554	255	657	726	34.2%	29.1%	31.0%
G	286	262	414	360	344	616	25.9%	31.3%	48.8%
H	256	256	414	359	377	655	40.2%	47.3%	58.2%

Coefficient of Variation**:**

	Pre-Transfers			Post-Transfers			Variation (Post/Pre)		
Category	2002	2003	2004	2002	2003	2004	2002	2003	2004
B	0.53	0.58	0.61	0.54	0.59	0.59	1.6%	0.8%	-3.1%
C	0.79	0.50	0.81	0.79	0.51	0.77	-0.2%	0.8%	-5.7%
D	0.71	0.78	0.55	0.70	0.75	0.50	-1.8%	-4.7%	-8.8%
E	0.53	0.48	0.78	0.52	0.48	0.67	-3.2%	-0.5%	-14.5%
F	0.64	2.20	0.80	0.63	2.19	0.68	-1.7%	-0.5%	-15.1%
G	0.99	0.59	0.86	0.88	0.54	0.67	-10.6%	-8.6%	-21.5%
H	0.54	0.45	0.44	0.48	0.43	0.37	-11.8%	-4.9%	-16.5%

Source: own estimations based on INIFOM data.

Table 6: **The effect of transfers across municipal categories**
(figures in thousands of current cordobas)

	Pre-Transfers			Post-Transfers			Variation		
	2002	2003	2004	2002	2003	2004	2002	2003	2004
Average per capita revenues	241	324	466	293	394	600	21.6%	21.6%	28.8%
Coefficient of variation	0.16	0.27	0.11	0.17	0.30	0.12	7.6%	11.3%	12.9%

Source: own estimation based on INIFOM data.

(iii) Equalizing effect of the transfer system during the period 2004-2006

The lack of detailed revenue and expenditure data at the municipal level for 2005 and 2006 forces us to modify the methodology used to analyze the equalizing effects of the transfer system. Given this limitation, the equalizing effect of intergovernmental transfers might ideally be verified in the relationship between per capita personal income –or gross regional product– and per capita transfers. If the relationship between both variables is negative, transfers would have an equalizing effect, represented by the magnitude and statistical significance of the relevant coefficient. Nevertheless, it is usually difficult to

obtain data on per capita personal income at the local level because its measurement is costly and requires information systems that are complex and sometimes impossible to implement. In particular, this information is not available in Nicaragua, thus the equalizing effect of transfers should be evaluated with a variable that serves as a proxy for per capita personal income. The existing gap in extreme poverty has been selected for this purpose.[12]

Tables 7 and 8 provide the results of the regressions showing the statistical relationship between the total amount of per capita transfers received by each municipality, which is the dependent variable in the regressions, and three explanatory variables: a poverty index, a continuous variable defined between 0 (absence of extreme poverty) and 1; population; and the municipal category represented by dummy variables from C to H (excluding Managua, classified as A). The dummies' coefficients indicate the difference (positive or negative) between the average per capita transfer received by the municipalities of the relevant category with respect to the average per capita transfer received by municipalities type B, after controlling for poverty level and total population.[13]

Table 7: **Single relationships between per capita transfers, and poverty, population and current local revenues (by categories), 2004-2006**

	2004	2005	2006	2004	2005	2006	2004	2005	2006
Intercept	***125.7	***187.6	***213.5	***232.4	***380.6	***451.7	41.3	72.6	*93.3
	(39.7)	(28.7)	(32.9)	(29.0)	(19.3)	(22.3)	(78.4)	(46.0)	(53.2)
Poverty Index	449.6	***1,003.6	***1,314.1	--	--	--	--	--	--
	(369.7)	(267.0)	(305.9)						
Population (thousands)	--	--	--	***-2.2	***-3.5	***-4.0	--	--	--
				(0.6)	(0.4)	(0.5)			
C	--	--	--	--	--	--	14.0	29.5	25.0
							(125.7)	(72.0)	(78.9)
D	--	--	--	--	--	--	50.9	*109.2	*122.4
							(94.7)	(56.0)	(64.7)
E	--	--	--	--	--	--	86.4	***173.6	***182.0
							(87.9)	(53.7)	(60.3)
F	--	--	--	--	--	--	129.6	***330.3	***410.2
							(106.5)	(58.6)	(68.0)
G	--	--	--	--	--	--	132.0	***250.3	***315.9
							(98.5)	(58.6)	(68.0)
H	--	--	--	--	--	--	***281.7	***386.1	***464.9
							(90.2)	(57.2)	(65.2)
R^2	0.01	0.09	0.11	0.07	0.29	0.30	0.12	0.36	0.42
F	1.48	14.13	18.45	11.53	61.05	62.62	3.18	13.71	17.24
Number Obs.	151	151	151	151	151	151	151	151	151

Standard errors are presented in parenthesis; * represents statistical significance al 10%, ** al 5% and *** al 1%.

[12] This indicator has been presented as part of the "Map of Extreme Poverty in Nicaragua" (2001), based on data from the Survey of Measurement of Living Standards in 1998, and VII National Census of Population and III Census of Housing in 1995. In this document, the Extreme Poverty Gap is defined as the value of consumption that the poor would require to reach the extreme poverty line as a percentage of such line and considering the proportion of extreme poor population to total national population".

[13] Although the categorization of municipalities is related at some extent to their population, the use of population and dummy variables for the group of municipalities is not redundant because the population changes inside each group.

When the regressions are run separately on each independent variable, municipal current revenues, measured according to the categorization of the municipalities, is the variable that best explains the total amount of per capita transfers to each municipality (see statistic R^2). With the exception of category G, on average the municipalities tend to receive greater per capita transfers when their current revenues are smaller.

The growth observed during 2004-2006 in the correlation between per capita transfers and each independent variable may be interpreted as a greater correspondence of the transfer system to some of the variables that determine the differences in fiscal disparity of the municipalities. It is also important to note the small correlation between per capita transfers and population. The coefficients indicate a minimum decrease (only a fraction of local currency) in per capita transfers when the population of the municipality is augmented by one resident. This fact, plus the relative statistical insignificance observed in the coefficients of municipal categories suggest that transfers may not be capturing changes in the cost of public service provision associated with economies of scale in local management. It is reasonable to expect that municipal costs by resident would vary with the size of the municipality; if such relation exists this should result in larger estimated coefficients.

Table 8: Multiple regressions of per capita transfers with poverty, population and current local revenues (by categories), 2004-2006

	2004	2005	2006	2004	2005	2006
Intercept	***210.1	***312.7	***358.3	241.7	***345.5	***379.1
	(46.7)	(30.0)	(34.4)	(150.1)	(84.8)	(94.3)
Poverty Index	223.1	***678.3	***931.3	59.5	***616.8	***904.1
	(365.6)	(233.9)	(267.6)	(387.3)	(225.7)	(247.3)
Population (thousands)	***-2.1	***-3.2	***-3.7	-1.8	***-2.9	***-3.0
	(0.7)	(0.4)	(0.5)	(1.1)	(0.7)	(0.7)
C	--	--	--	-74.9	-123.2	*-137.1
				(138.8)	(76.3)	(81.8)
D	--	--	--	-85.0	-115.8	-134.1
				(128.6)	(73.3)	(83.0)
E	--	--	--	-74.6	-90.6	-118.5
				(137.5)	(77.1)	(84.9)
F	--	--	--	-44.5	38.8	79.4
				(155.3)	(85.1)	(96.0)
G	--	--	--	-45.1	-44.2	-21.5
				(151.0)	(86.1)	(96.9)
H	--	--	--	90.1	75.0	113.2
				(155.0)	(88.1)	(97.8)
R^2	0.07	0.33	0.35	0.13	0.45	0.51
F	5.93	36.24	39.70	2.70	14.49	18.54
Number Obs.	151	151	151	151	151	151

Standard errors are presented in parenthesis; * represents statistical significance al 10%, ** al 5% and *** al 1%.

When we control simultaneously for the poverty index, population, and the category of current revenues, the last variable has an erratic behavior and is statistically insignificant. In this context, and particularly for the last two years, the poverty line is the only variable that has a statistically significant coefficient with a relevant magnitude. Therefore, as a partial conclusion, the current transfer system seems to be effective in the equalization of

fiscal capacities whenever they are inversely related to the poverty level, but neutral regarding the differences in the cost of public service provision (assuming that the cost function is the same in all municipalities and independent of poverty levels).

The equalizing effect of the transfer system might also be analyzed from the perspective of the four distribution criteria defined by the law.

Table 9: **Correlation between Extreme Poverty Line and per capita transfers, 2004-2006 (according to total transfers and by distribution criterion)**

Criterion	2004	2005	2006
Fiscal Equity	0.37	0.35	0.33
Efficiency	0.05	0.22	0.33
Population	0.00	0.00	0.00
Execution	0.07	0.12	0.10
Total Transfers	0.10	0.29	0.33

Source: own estimation based on INIFOM data.

Table 9 shows a positive correlation between the poverty index and the per capita transfers assigned by each distribution criterion, confirming that the system has been equalizing according to this concept. Although a poor correlation is observed during 2004 (0.10) at the beginning of the new system, the correlation coefficient grows up to 0.33 with the transfers assigned in the present year. This result is mainly explained by a higher correlation between the poverty index and the transfers assigned according to the Efficiency criterion, which suggests that poorer municipalities might have been motivated to improve their fiscal effort in the collection of the IBI relatively more than the rest of the municipalities.

II.2 Relative weights of distribution criteria and their equalizing effect

The relative weights assigned in the allocation formula to each distribution criterion is crucial for the determination of the actual equalizing effect of the system. Considering that the main objective of the Nicaraguan transfer system is to reduce the differences in fiscal disparities across municipalities, an evaluation of the equalizing effects of each distribution criterion as well as the identification of the type of municipalities favored by them, may help to evaluate the effectiveness of the current formula and to identify some desirable characteristics for the proposed alternative system.

The strategy used in this section consists of simulating different weights on the criteria used to allocate the municipal transfers. While the identical weights assigned to each criterion by the current system facilitate the computation of transfers and the understanding of the system, they do not necessarily represent effectively the sources of fiscal disparities among municipalities. Naturally, there are many possible combinations of weights that might be used in this simulation, but its main goal is only to contrast the effects of alternative relative weights and not to obtain the optimal combination of the four criteria. The first simulation (S1) assigns a larger relative weight to the Fiscal Equity criterion,

which will determine 50% of the total transfers, while the Efficiency, Population and Execution criteria will determine 10%, 30%, and 10%, respectively (see Table 10).

Table 10: **Effect in total per capita transfers due to a change in the relative weights of the distribution criteria: Equity 50%, Fiscal Effort 10%, Population 30%, Execution 10%, 2004-2006**

(figures in thousands of current cordobas)

		2004	2005	2006
Current system	Weighted Average (*)	87	161	195
(25%, 25%, 25%, 25%)	Simple Average (151 municipalities)	166	277	331
	Minimum	28	51	56
	Maximum	3,295	1,335	1,681
	Standard Deviation	271	204	237
	Coefficient of Variation	1.64	0.74	0.72
Simulation 1	Weighted Average (*)	87	161	195
(50%, 10%, 30%, 10%)	Simple Average (151 municipalities)	134	237	286
	Minimum	29	53	61
	Maximum	1,335	643	906
	Standard Deviation	119	140	172
	Coefficient of Variation	0.89	0.59	0.60

(*) Obtained by dividing total transfers by total population. The differences with respect to the simple average are a consequence of the differences in the population of municipalities.
Source: own estimation based on INIFOM data.

When reducing the importance of the Efficiency and Execution criteria, the undesirable advantages of less populated municipalities are restricted. These criteria award smaller municipalities with transfers of equal magnitude as those given to large municipalities, and thus they are able to obtain disproportionately larger transfers per capita. As expected, the first simulation (S1) leads to smaller (simple) averages and variability of per capita transfers than the current system.

In order to identify the municipalities that would benefit under S1, the total transfers received were regressed again on the variables describing municipalities' characteristics (Table 11). As in the current system, the poverty index is the most important variable explaining municipal transfers in S1. Population is less important in terms of the magnitude of the coefficients and also in statistical significance. Note that this happens even though the Population criterion increased its relative importance from 25% to 30%, because per capita transfers calculated through the Population criterion are constant and equal for all municipalities.

The other major change in the results of the regressions run for S1 with respect to the transfers actually distributed is the increased significance of municipal categories. This means that in S1 the size of municipalities in terms of current revenues turns out to be more important than their size in terms of population. Considering that the dependent variable is *per capita* transfers, the greater and positive coefficients of municipal categories represent

a bigger per capita prize obtained under S1 by the smaller municipalities in terms of (total) current revenues.

Table 11: **Joint relationships between the *simulated* transfers per capita, and poverty, population, and current local revenues (by category), 2004-2006**

	2004	2005	2006	2004	2005	2006
Intercept	***140.1	***231.6	***277.3	44.0	55.2	51.1
	(19.5)	(20.1)	(25.0)	(57.0)	(44.7)	(54.0)
Poverty Index	**334.4	***734.0	***901.8	123.2	***523.2	***657.7
	(152.5)	(156.3)	(194.9)	(147.1)	(119.0)	(141.7)
Population (thousands)	***-1.2	***-2.0	***-2.0	-0.1	-0.2	0.0
	(0.3)	(0.3)	(0.3)	(0.4)	(0.4)	(0.4)
C				-2.4	-0.8	0.5
				(52.7)	(40.2)	(46.9)
D				24.7	53.9	64.7
				(48.9)	(38.6)	(47.6)
E				59.9	***122.9	***141.2
				(52.3)	(40.7)	(48.7)
F				74.1	***180.9	***246.9
				(59.0)	(44.8)	(55.0)
G				*101.8	***176.2	***243.8
				(57.4)	(45.4)	(55.5)
H				***190.2	***322.3	***408.3
				(58.9)	(46.4)	(56.0)
R^2	0.16	0.36	0.35	0.35	0.67	0.70
F	14.11	41.92	39.45	9.43	36.75	40.74
Number Obs.	151	151	151	151	151	151

Standard errors are presented in parenthesis; * represents statistical significance the at 10%, ** at 5% and *** at 1% levels, respectively.

A correct interpretation of these results is that the Fiscal Equity criterion is more effective than the Efficiency and Execution criteria in equalizing the differences in average per capita current revenues across municipal categories. This result is quite intuitive, given that the Fiscal Equity criterion is the only one that has been computed using per capita local tax revenues, and also that poorer municipalities (those with lower per capita fiscal capacity) tend to be, on average, relatively smaller in terms of total current revenues. It is important to stress, however, that smaller municipalities are not necessarily poorer; and there are several cases of "small" municipalities with very high per capita revenues. What really determines the wealth of a municipality is not the total amount of revenues collected, but its per capita fiscal capacity.

Therefore, we may conclude that the Efficiency and Execution criteria are effectively rewarding smaller municipalities, but not necessarily the poorer municipalities. To confirm this, a second simulation (S2) has been done, in which the relative weights of Fiscal Equity and Execution criteria used in the first simulation are reversed, such that the weights considered are: 10% for Fiscal Equity, 10% for Efficiency, 30% for Population, and 50% for Execution. A third simulation (S3) inverts the relative weights of the Efficiency and Execution criteria used in S2. The correlation between the resultant total transfers by municipality and the poverty index are presented in Table 12.

Table 12: **Correlation coefficients between Extreme Poverty Gap and *simulated* per capita transfers, 2004-2006**

Simulation	2004	2005	2006
S1: 50%, 10%, 30%, 10%	0.23	0.40	0.40
S2: 10%, 10%, 30%, 50%	0.08	0.15	0.17
S3: 10%, 50%, 30%, 10%	0.07	0.25	0.35

Source: own estimations based on INIFOM data.

It is clear that the transfers determined by Fiscal Equity in S1 results in a more effective equalization, in terms of poverty, than the transfers determined by S2 and S3. Thus, giving higher relative weight to the Fiscal Equity criterion improves the distribution of the transfer system. S2 is the less equalizing schedule, suggesting that the Execution criterion contributes very little to the equalization purpose of the transfer system. Finally, since transfers according to S3 are shown to be moderately equalizing, the poorest municipalities benefit from the Efficiency criterion and thus they might be performing, on average, a greater fiscal effort than the richest municipalities.

II.3 The equalizing effect of transfers according to each criterion

(i) Transfers by Fiscal Equity

The transfers by Fiscal Equity have a high equalizing effect due to their clear goal of per capita equalization and the explicit separation of municipalities into contributors and beneficiaries. The evidence has been presented in the previous section; particularly, Table 9 shows the prominent and relatively stable correlation between per capita transfers by Fiscal Equity and the Extreme Poverty Gap. A similar conclusion is reached from Table 12, which shows how a greater relative importance assigned to the Fiscal Equity criterion results in a substantial increase in the correlation between total per capita transfers and the poverty gap.

The average of the "potential per capita tax revenues" serves as a reference to define the municipalities that will benefit from the Fiscal Equity criterion (those with smaller potential than the average) and the ones that will be excluded from its benefits (those with greater potential than the average). The current system of transfers uses the *simple* average among the 151 municipalities to estimate the average potential per capita tax revenues, which implies that municipalities with low population affect this indicator with the same weight as more populated municipalities. Although this is not a "defect" of the current system, it is important to understand the effects that this practice may have on the allocation of transfers. This issue is discussed briefly in Appendix II, which also provides alternative procedures to computing the average potential per capita tax revenues and the distribution index.

(ii) Transfers by Fiscal Effort

Even though the stimulus of fiscal effort may be considered as a legitimate objective of the transfer system, the inclusion of the Fiscal Effort criterion meant to equalize municipal budgets by prioritizing municipalities with smaller fiscal capacity (as has been stated in the Law of Transfers), may also be self-defeating. It is true that intergovernmental transfers can induce a lower fiscal effort on the part of municipal governments, but it is still desirable to discourage this practice by implementing measures that are independent of the equalization program. The international experience includes numerous examples of both cases, the inclusion of this criterion in the equalization formula and the development of independent programs to address this problem. However, whenever a Fiscal Effort criterion is actually incorporated, it is recommendable to define it as a transitory measure, used until a tradition of revenue collections has been developed.

The intention of encouraging IBI collections is justifiable and could be seen as an initiative that would eventually benefit municipal governments, but the importance given in the Nicaraguan transfer program to the IBI collections can also generate undesirable effects. Particularly, the implementation and administration of a property tax is very expensive and complex, and this tax is particularly unpopular and so leads to high political costs. In this context, differences in the technical and financial capacity of municipalities, community preferences and their political situation, may well result in great differences in the capacity of municipalities to collect the IBI. Due to these reasons, the criterion may reward municipalities that have not actually performed a greater fiscal effort, and would plausibly punish municipalities in which IBI collections are more difficult.

Moreover, the IBI does not constitute a representative measure of the municipal tax base. Even though it is the main source of local revenues over which municipal governments have a certain degree of discretion, total collection of this tax constitutes only a small share of the resources transferred by the Efficiency criterion. For example, transfers distributed by the Efficiency criterion during the year 2005 were C$180.0 million, while the IBI collection by the 151 municipalities were only C$119.3 million (66.3% of transfers by Fiscal Effort).

Table 13 shows the composition of municipal revenues by tax source between 2001 and 2004. The municipal income tax (IMI) is almost four times higher than the IBI, and constitutes on average 56.2% of the total municipal revenues, being the main municipal own source of revenue.

The previous arguments suggest that IBI collection should not be the only revenue source used for estimating fiscal effort, because it could contain regressive and distorting elements.

Table 13: **Composition of municipal tax revenues, 2001-2004**
(figures in thousands of current cordobas)

	2001	%	2002	%	2003	%	2004	%
IMI	441,664	57.0	455,038	56.2	526,120	55.3	633,084	56.2
Services Fee	90,757	11.7	115,291	14.2	147,665	15.5	169,975	15.1
IBI	102,156	13.2	104,746	12.9	127,408	13.4	145,028	12.9
Registrations and licenses	93,730	12.1	86,877	10.7	101,604	10.7	128,905	11.4
Betterment Levies	30,748	4.0	28,948	3.6	31,107	3.3	33,386	3.0
Special Contributions	12,015	1.6	15,357	1.9	11,264	1.2	9,895	0.9
Vehicles	3,128	0.4	3,270	0.4	6,621	0.7	5,730	0.5
Total	774,198	100.0	809,528	100.0	951,789	100.0	1,126,003	100.0

Source: Yearbook of the Municipal Finances 2000-2004, INIFOM

According to Table 14, the average fiscal effort improved in real terms and the coefficient of variation decreased during 2004, the year in which the Law of Transfers came into force. Unfortunately, it does not seem possible to venture a general conclusion using only this data.

Table 14: **Municipal fiscal effort, 2003 y 2004**
(figures in thousands of current cordobas)

	Revenue IBI 2003	Revenue IBI 2004	Estimated Potential IBI	Fiscal Effort 2003	Fiscal Effort 2004
Total	132,671	154,524	179,214		
Average	879	1,023	1,187	0.78	0.86
Minimum	0	1	44	0	0.01
Maximum	8,796	10,050	11,480	3.26	3.79
Standard Deviation	1,419	1,692	1,801	0.61	0.62
Variation Coefficient	1.61	1.65	1.52	0.77	0.71

Source: own estimation based on INIFOM data.

(iii) Transfers by Population

The Population criterion was introduced by the Law of Municipal Transfers in 2003, and it has been justified as a way to achieve a minimum level of expenditures in per capita municipal services. This modification has clearly been adequate, because population represents in and of itself one measure of the magnitude of expenditure needs that each local government faces. Nevertheless, municipal expenditures should further be adjusted by incorporating an index representing the costs of public service provision in the distribution formula. Naturally, this will depend on the availability of information about the distinctive costs assumed by each municipality.

(iv) Transfers by Execution

Finally, the Execution criterion introduced in 2005 represents a slight modification of the previous (absolute) Equality criterion. The Equality criterion allotted identical transfers to each municipality, independent of wealth, population, or any other distinction across municipalities. The Execution criterion is a bit more restrictive because it rewards municipalities according to the execution or fulfillment (as a proportion) of investment plans. In practice, however, most municipalities spend 100% of their budgets for investments.

Whether the actual criterion is one of Execution or Equality certainly is not the issue, since neither is able to allow the equalization of *per capita* fiscal capacity across municipalities. Indeed, in order to have an equalizing effect, per capita transfers should be negatively correlated with the per capita revenue capacity of municipalities, but this does not seem to be the case. Given the lack of a reliable estimation of municipal fiscal capacity, we use municipal revenues as a proxy for municipal fiscal capacity for estimating this correlation.[14] Table 15 shows the correlation coefficients between these two variables for the period 2002-2004. As it can be observed, the correlation coefficients are high and positive for every year; while their behavior is quite erratic.

Table 15: **"Unequal" effect of transfers by Equality, 2001-2004**

	2001	2002	2003	2004
Correlation coefficient Total per capita revenue – per capita transfers	0.63	0.55	0.90	0.33

Source: own computations based on INIFOM data.

The conclusion of this exercise is quite simple: the Equality criterion, and likely also the Execution criterion applied in 2005 and 2006, have a volatile and unpredictable effect on the distribution of transfers; and in addition, they seem to be quite regressive in their effect on per capita fiscal capacity.

Summarizing, the inclusion of the Execution criterion in the distribution formula suggests that there exists confusion regarding how the design of the transfer system should account for the difference between the size of the municipalities and their per capita fiscal capacity. In turn, the current practice prevents achievement of an effective equalization through a transfer system.

[14] Due to several reasons, actual revenues can differ significantly from fiscal capacity. Nevertheless, we use this variable for this study due to the absence of a more appropriate alternative.

Table 16: **Evolution of budget executions, 2003-2004**

	executed / assigned	
	2003	2004
Average	0.93	1.01
Minimum	0.13	0.49
Maximum	1.00	1.84
Standard Deviation	0.16	0.20
Variation Coefficient	0.17	0.20

Source: own estimation based on INIFOM data.

All indicators in Table 16 suggest that execution levels improved with the implementation of the Law of Transfers; nevertheless, they fail to explain why several municipalities executed investments above the budget during 2004. This might reflect an increase in financing funds (different from transfers) that clearly distorts such a conclusion.

Another fundamental problem with the transfers by Execution is that richer municipalities or those with greater fiscal capacity, are also those with greater managerial ability. Thus they are better prepared to fulfill the investment programs and have, therefore, a greater probability of fully accomplishing the investment commitments associated with transfers. In this sense, the Execution criterion might indirectly punish the smaller fiscal capacity of poorer municipalities, leading to a regressive effect that contradicts the fundamental equalization goal of the transfer system.

Table 17: **Transfers by Equality and Execution, 2004-2006**
(figures in thousands of current cordobas)

	Equality 2004	**Execution** 2005	**Execution** 2006
Total	99,414	179,965	221,022
Average	658	1,192	1,464
Minimum	658	164	751
Maximum	658	1,277	1,547
Standard Deviation	0	202	174
Variation Coefficient	0.00	0.17	0.12
Mode	658	1,277	1,547
Frequency of Mode	151	104	84
Correlation Coefficient: per capita Transfers – total per capita revenues, 2005	0.000	0.380	0.375

Source: own estimation based on INIFOM data.

As mentioned above, during 2004 the transfers were assigned in accordance with the Equality criterion instead of the Execution criterion applied in subsequent years, but this change did not significantly affect the amount of transfers granted to local governments

due to the great proportion of municipalities executing 100% of investment plans (see mode and mode frequency in Table 17). The hypothesis that the transfers by Execution may be regressive is supported by the positive correlation coefficient computed between total per capita revenues in 2005 and the per capita transfer by Execution during 2005 and 2006. This suggests a tendency by richer municipalities of obtaining greater transfers by Execution.

Concluding, among the four criteria defined by the Law, two of them, per capita Fiscal Equity and Population, are suitable for estimating horizontal inequality across municipal governments, although certain adjustments may still need to be applied to these criteria. On the other hand, the other two criteria, Efficiency and Execution, present marked deficiencies in their design, and so their inclusion in the transfer formula produces results which are either questionable (Efficiency) or plainly erroneous (Execution). As discussed in the following sections, it is desirable to remove them from the equalization transfer formula and to design an independent transfer system to encourage fiscal effort.

II.4 The equalizing effect of transfers from an expenditure perspective

In order to achieve the desired equalizing effect, transfers should reduce not only the differences in per capita revenues across the municipalities, but also the differences in per capita expenditures. Economies of scale related to the size of the municipalities, particular geographical or demographic situations and market outcomes may well vary across municipalities and the differences in the costs of providing public services will likely create advantages and disadvantages on the expenditure side of the budget that should be corrected by the equalization transfer system.

(i) Patterns of municipal expenditures

Some characteristics of the expenditure structure for different municipal categories during 2003 and 2004 are reviewed in this section.[15] Total expenditures of each municipality are divided between current and capital expenditures, and tables 18 and 19 show the two most prominent items for each type of expenditures. As expected, given that the categorization of municipalities is done according to their total current revenues, the average total expenditures per municipality decreases as categories decrease in size. Per capita expenditures, however, show a different pattern: while Managua is clearly the richest municipality, followed by municipalities classified as B, the per capita expenditures of the rest of the municipalities does not systematically decrease with size. This observation confirms that the smallest municipalities are not necessarily the poorest, and points to the conclusion that a distribution criterion rewarding smaller municipalities is not justified. Further, it may be particularly important to identify economies of scale from which big municipalities may benefit and small municipalities might be comparatively harmed. The proportion of expenditures devoted to different items in each municipal category could shed light on this issue.[16]

[15] These periods have been selected due to the lack of information for more recent years.

[16] If economies of scale are present, it may be desirable to provide incentives for the consolidation of small municipalities.

Table 18: C**omposition of local expenditures by municipal category, 2003**

			Current Expenditures			Capital Expenditures			
	Number of municipalities	Sample	Personnel expenditures	Services, inputs, output	Total current expenditures	Properties and public utilities	Construction of public infrastructure	Total capital expenditures	Total Expenditures
Totals per category:									
A	1	1	184,778	134,108	369,914	2,694	190,376	261,882	631,796
B	12	12	135,531	43,526	192,391	2,846	169,177	185,850	378,241
C	9	9	49,068	17,484	79,165	8,351	27,971	47,135	126,299
D	23	23	54,963	23,202	88,974	31,529	61,069	114,419	203,392
E	39	39	46,723	23,753	80,775	55,713	50,074	122,834	203,609
F	13	13	10,953	5,110	18,200	14,734	4,264	21,399	39,599
G	23	23	15,039	6,314	24,506	19,727	10,423	42,263	66,769
H	32	32	11,793	4,754	19,081	17,766	11,894	33,770	52,851
sum	*152*	*152*	*508,848*	*258,252*	*873,006*	*153,360*	*525,248*	*829,551*	*1,702,557*
totals per municipality (average):									
A			184,778	134,108	369,914	2,694	190,376	261,882	631,796
B			11,294	3,627	16,033	237	14,098	15,488	31,520
C			5,452	1,943	8,796	928	3,108	5,237	14,033
D			2,390	1,009	3,868	1,371	2,655	4,975	8,843
E			1,198	609	2,071	1,429	1,284	3,150	5,221
F			843	393	1,400	1,133	328	1,646	3,046
G			654	275	1,065	858	453	1,838	2,903
H			369	149	596	555	372	1,055	1,652
National average			*3,348*	*1,699*	*5,743*	*1,009*	*3,456*	*5,458*	*11,201*
average per capita :									
A			180	130	360	3	185	255	614
B			106	34	150	2	132	145	295
C			90	32	145	15	51	87	232
D			67	28	109	39	75	140	249
E			46	24	80	55	50	122	202
F			70	33	116	94	27	136	252
G			40	17	66	53	28	113	179
H			44	18	71	66	44	126	197
National average per capita			*93*	*47*	*159*	*28*	*96*	*151*	*311*
proportion over total expenditures:									
A			29.2%	21.2%	58.5%	0.4%	30.1%	41.5%	100.0%
B			35.8%	11.5%	50.9%	0.8%	44.7%	49.1%	100.0%
C			38.9%	13.8%	62.7%	6.6%	22.1%	37.3%	100.0%
D			27.0%	11.4%	43.7%	15.5%	30.0%	56.3%	100.0%
E			22.9%	11.7%	39.7%	27.4%	24.6%	60.3%	100.0%
F			27.7%	12.9%	46.0%	37.2%	10.8%	54.0%	100.0%
G			22.5%	9.5%	36.7%	29.5%	15.6%	63.3%	100.0%
H			22.3%	9.0%	36.1%	33.6%	22.5%	63.9%	100.0%
National average			*29.9%*	*15.2%*	*51.3%*	*9.0%*	*30.9%*	*48.7%*	*100.0%*

Source: own computations based on INIFOM data.

Table 19: **Municipal expenditure composition by municipal category, 2004**

	Number of municipalities	Sample	Current Expenditures: Personnel expenditures	Current Expenditures: Services, inputs, output	Current Expenditures: Total current expenditures	Capital Expenditures: Properties and public utilities	Capital Expenditures: Construction of public infrastructure	Capital Expenditures: Total capital expenditures	Total Expenditures
totals per category:									
A	1	1	176,200	106,208	338,087	21,326	294,068	483,322	821,409
B	13	13	160,698	60,543	244,700	13,462	335,408	385,030	629,729
C	9	9	53,850	18,903	84,988	16,703	57,288	85,972	170,960
D	25	24	60,954	29,898	107,058	93,656	63,358	177,037	284,095
E	41	41	70,940	29,915	118,618	157,935	96,980	297,137	415,755
F	20	17	19,588	9,314	33,273	59,649	12,428	79,414	112,687
G	19	18	16,146	7,061	28,814	41,477	11,327	56,388	85,202
H	24	23	14,888	5,443	23,232	28,639	11,085	48,003	71,235
sum	*152*	*146*	*573,262*	*267,283*	*978,769*	*432,846*	*881,943*	*1,612,304*	*2,591,072*
totals per municipality (average):									
A			176,200	106,208	338,087	21,326	294,068	483,322	821,409
B			12,361	4,657	18,823	1,036	25,801	29,618	48,441
C			5,983	2,100	9,443	1,856	6,365	9,552	18,996
D			2,540	1,246	4,461	3,902	2,640	7,377	11,837
E			1,730	730	2,893	3,852	2,365	7,247	10,140
F			1,152	548	1,957	3,509	731	4,671	6,629
G			897	392	1,601	2,304	629	3,133	4,733
H			647	237	1,010	1,245	482	2,087	3,097
National average			*3,926*	*1,831*	*6,704*	*2,965*	*6,041*	*11,043*	*17,747*
average per capita :									
A			167	100	319	20	278	457	776
B			114	43	173	10	237	272	445
C			106	37	167	33	113	169	337
D			75	37	131	115	78	217	348
E			64	27	108	143	88	270	377
F			69	33	117	210	44	279	396
G			67	29	119	172	47	234	353
H			73	27	114	141	55	236	351
National average per capita			*102*	*48*	*174*	*77*	*157*	*287*	*460*
proportion over total expenditures:									
A			21.5%	12.9%	41.2%	2.6%	35.8%	58.8%	100.0%
B			25.5%	9.6%	38.9%	2.1%	53.3%	61.1%	100.0%
C			31.5%	11.1%	49.7%	9.8%	33.5%	50.3%	100.0%
D			21.5%	10.5%	37.7%	33.0%	22.3%	62.3%	100.0%
E			17.1%	7.2%	28.5%	38.0%	23.3%	71.5%	100.0%
F			17.4%	8.3%	29.5%	52.9%	11.0%	70.5%	100.0%
G			18.9%	8.3%	33.8%	48.7%	13.3%	66.2%	100.0%
H			20.9%	7.6%	32.6%	40.2%	15.6%	67.4%	100.0%
National average			*22.1%*	*10.3%*	*37.8%*	*16.7%*	*34.0%*	*62.2%*	*100.0%*

Source: own computations based on INIFOM data.

It is clear that the proportion of investment in properties and public utility systems grows as the size of the municipalities decreases. This situation might be the result of greater investment needs in properties and public utility systems in the smallest municipalities, or also of economies of scale in public infrastructure.

Also evident is the large difference in average population by municipality for each category, and the numerous municipalities that do not have enough size to take advantage of economies of scale for investment purposes (see Table 20).

Table 20: **Average population per municipality by municipal category, 2003-2004**

categories	2003	2004
A	1,028,852	1,058,178
B	106,863	108,770
C	60,527	56,444
D	35,559	33,982
E	25,905	26,885
F	12,087	16,737
G	16,207	13,399
H	8,385	8,833
National Average	36,068	38,540

Source: own estimation based on INIFOM data.

Smaller municipalities might, consequently, be forced to spend little in infrastructure at the same time that are not able to spend a greater proportion of their budget in current expenses. In fact, the economies of scale that should be observed in personnel expenditures and current expenditures seems to be rather absent from the Nicaraguan municipalities according to the available data, and in such a case small and medium municipalities might be subject to lower standards of management and performance than bigger municipalities. One suggestion would be to merge the smallest municipalities with each other or with municipalities of greater size, which would improve their managerial capacity while their administrative expenditures are increased less than proportionally.

Even though in practice smaller municipalities spend relatively more on capital investments, the Law of Municipal Transfers provides them with greater flexibility by setting a higher minimum percentage of transfers to be spent on this component. This requirement seems, therefore, unnecessary according to the average expenditure composition of the municipalities. What should be done instead is to support smaller municipalities to cover financial costs associated with the provision of public utilities.

(ii) Relation between transfers and the structure of current municipal expenditures

If the transfers provided to the municipalities have an equalizing effect on current per capita expenditures, then the correlation coefficient among both variables should be negative. If this is not the case, then higher transfers may, on average, be directed to those

municipalities that are already spending more in per capita terms. Nevertheless, if the causes of higher expenditures are either higher remunerations or acquisition costs of services, materials and products, then the provision of a common standard of public services would justify higher transfers, and thus the unequal treatment of municipalities would indeed be desirable.

During the period 2001-2004 the correlation coefficient between current per capita transfers and per capita expenditures is positive and significant, but quite variable. Thus the most favored municipalities have been those that on average spend comparatively more per resident on personnel and acquisition of goods and services. Both categories of expenditures have a similar correlation with transfers and the represent about 86% of overall current expenditures of municipalities.

Table 21: **Correlation coefficient of per capita expenditures – per capita transfers, 2001-2004**

	2001	2002	2003	2004
Personnel expenditures	0.87	0.21	0.46	0.32
Services, materials and products	0.77	0.19	0.65	0.25
Transfers and donations	-0.08	-0.06	-0.06	0.09
Others	0.37	0.09	0.17	0.94
Total current expenditures	0.84	0.23	0.86	0.32

Source: own computations based on INIFOM data.

A similar but more exhaustive analysis during the last two years will provide a more complete description of the relationship between current municipal expenditures and transfers. Table 22 provides the correlation of per capita transfers according to the four criteria defined by the law with each classification of municipal current expenditures. Given the lack of expenditures data for these years, we computed an index using the average percentage of expenditures of each municipality with respect to the total for each year during 2001-2004.

Table 22: **Correlation coefficient of per capita expenditures – per capita transfers by criterion, 2005-2006**

	T_{ei} 2005	T_{fi} 2005	T_{hi} 2005	T_{gi} 2005	**Total 2005**	T_{ei} 2006	T_{fi} 2006	T_{hi} 2006	T_{gi} 2006	**Total 2006**
Personnel expenditures	-0.33	0.13	0.00	0.74	**0.42**	-0.32	0.11	0.00	0.75	**0.44**
Services, materials and products	-0.35	0.13	0.00	0.69	**0.38**	-0.35	0.15	0.00	0.70	**0.41**
Transfers and donations	-0.25	0.09	0.00	-0.08	**-0.06**	-0.25	0.15	0.00	-0.09	**-0.05**
Others	-0.12	-0.01	0.00	0.81	**0.44**	-0.12	-0.02	0.00	0.84	**0.48**
Total current expenditures	-0.27	0.08	0.00	0.78	**0.43**	-0.27	0.07	0.00	0.80	**0.46**

Tei: transfers by Fiscal Equity criterion for municipalities i; Tfi: transfers by Fiscal Effort criterion; Thi: transfers by Population criterion; transfers by Execution criterion.
Source: own estimation based on INIFOM data.

In Table 22 we observe, first, that transfers by Fiscal Equity criterion have also an important equalizing effect in terms of per capita expenditures, and second, that transfers by Execution are associated with greater current per capita expenditures. The second effect is apparently dominant; however, there is clearly a reverse causality problem here because greater transfers should induce greater expenditures.

Concluding, there is some evidence that economies of scale may play an important role in the capacity of municipal governments to cover their investment needs; thus in order to equalize the capacity to provide a comparable amount and quality of public services, the size of municipalities should be taken into account in the distribution formula.

II.5 The inclusion of Managua in the transfer system

The current Law of Municipal Transfers establishes that 2.5% of the PGR should be transferred to the municipality of Managua. Even though this decision clearly has a political component, it is still susceptible to technical criticism. Table 23 shows the relative size of Managua in terms of revenue collections with respect to the total at a national level. Although Managua concentrates a great percentage of the population, it seems clear that its per capita fiscal capacity substantially exceeds that of the rest of the country. For example, per capita revenues of Managua during 2004 reached C$803, while the average of the rest of the municipalities reached only C$604 after intergovernmental transfers.

Table 23: **The importance of Managua in total municipal revenues during 2004**
(figures in thousands of current cordobas)

	Managua	Total	Percentage
Population INEC, 2004 (thousands of hab.)	1,058	5,627	18.8
Surface (Square kms.)	267	120,340	0.2
Current Own Revenue			
Registrations and patents	84,161	128,905	65.3
Income Tax	365,160	633,084	57.7
Gasoline Tax	4,659	9,895	47.1
IBI	71,792	169,975	42.2
Use fee	0	33,386	0.0
Municipal services fee	44,088	145,028	30.4
Special contributions	0	5,730	0.0
Others	43,798	63,107	69.4
Total Current Own Revenue	613,658	1,189,110	51.6
Transfers for Current Expenditures	0	66,246	0.0
Total current revenue	*613,658*	*1,255,356*	*48.9*
Capital Revenue:			
Own	51,901	255,814	20.3
Other capital revenue	173,989	1,159,054	15.0
Total capital revenue	*225,890*	*1,414,868*	*16.0*
Total Revenue	**839,548**	**2,670,225**	**31.4**

Source: INIFOM.

The greater capacity to collect current own revenues in Managua is reflected in the income tax, registrations and patents, and the property tax. Through these three taxes Managua collects approximately 44% of the current own revenues at the municipal level in Nicaragua. The uneven pattern of own revenues also leads to unequal per capita expenditures across the municipalities: while Managua spends C$776 per resident, in the rest of the municipalities the average per capita expenditure is lower than C$400. Even in a case in which the provision of public services is comparatively more expensive in Managua, the difference in per capita expenditures seems too large to represent a comparable standard of public services.

The last argument suggests that the portion of the transfer fund reserved to Managua does not match the objective of contributing to reduce the imbalance between the capacity to collect current own revenues and the cost of providing municipal services, as established in Article 3 of Law No. 466. Since the inclusion of Managua's fund in the transfer does not have the same objectives as the transfers for the rest of the municipalities, it could easily be be determined separately. For instance, it would be more transparent to justify the transfers to Managua as a subsidy of the central government to alleviate the fiscal impact associated with its role of national capital. This type of transfer already exists in other countries and they are not related to the equalization transfer system. In general, determination of the transfer funds should be rational and transparent because it is an important element of a successful equalizing transfer system. This topic will be discussed in detail in the next sections.

III. Elements for a Proposal to Reform the Nicaraguan Equalization Transfer System

III.1 Desirable objectives of an equalization transfer system

The main objective of an equalization transfer system is to reduce, or eliminate, the fiscal disparities across local governments. In this section of the report we develop a set of proposals for the reform of the equalization transfer system in Nicaragua. It must be stressed that these proposals fit exclusively in the context of an equalization transfer system, but this does not mean that the Nicaraguan transfer system should not be reformed more widely. It would be desirable to consider the introduction of conditional transfers, which can be used to support other objectives of the central government (different from equalization). Conditional transfers, for example, may be useful to stimulate the municipal spending in areas of national interest, such as the primary health; or could also be used to counterbalance the externalities of local policies, or to stimulate infrastructure spending. In this report we do not address the problems associated with the implementation of conditional transfers, although we do discuss briefly some of the issues related with their importance and their role in a transfer system.

At this point, an important clarification needs to be stressed. As suggested before, the very objective of equalizing fiscal disparities across municipalities excludes the goals pursued in the current system according to the criteria of Efficiency and Execution, and thus such criteria will be omitted from the proposals offered. In particular, the Execution criterion clearly needs to be eliminated. As discussed in section II, this objective translates into equal transfers for almost all the municipalities, since the great majority of municipalities execute their budgets at100% or close to full execution.

Regarding the Efficiency criterion – as also discussed in section II, it is possible to justify its inclusion only on a temporary basis, until the municipalities develop certain revenue collection traditions. Nevertheless, if the Government decides to maintain the Efficiency criterion, it is desirable and we recommend here to implement this policy separately or outside the equalization transfer system, while the funds from which both programs are going to be financed should also be clearly separated.[17] Additionally, all local taxes, not only the property tax (IBI), should be considered in the estimation of fiscal effort. A possibility would be to use the resources administered by FONIM for this purpose.[18] This idea is more rational than the current financing system because such resources have the same temporary character that is recommended for a transfer program intended to stimulate fiscal effort.

[17] A more elaborated discussion about these issues in presented in Appendix III.
[18] Appendix IV provides information about the amount and origin of the funds in 2005.

(i) Definition of fiscal disparities

Fiscal disparity, or fiscal gap, can be defined as the difference between the value of expenditure responsibilities assumed by a government and its fiscal capacity. The fiscal disparities may arise from differences in the expenditure needs or in the fiscal capacity of government units.

Theoretically, both the differences in fiscal capacity and in expenditure needs justify the intervention of the central authority to equalize the conditions under which local governments provide goods and services to the communities. Ideally, the transfer system should address all disparities arising among the central and local governments, and this can be made at once by equalizing fiscal disparities, or alternatively by equalizing fiscal capacities and expenditure needs separately.

(ii) Definition of vertical and horizontal imbalances

Unconditional transfers are conceived of as a tool to improve fiscal imbalances between different levels of government (vertical imbalance or fiscal gap) or between governments of the same level (horizontal imbalance or inequality). Both types of imbalances are captured by the differences in fiscal disparities across governments, which can be defined as the difference between the expenditures that a government must assume in order to provide the public services under its responsibility, and its own revenues.

Vertical imbalances are generated from the different capacity of local governments, usually smaller, to collect the revenues required to cover their expenditure responsibilities or also from differences in the expenditure responsibilities themselves, which determines the need to transfer part of the revenues collected by the central government to the local governments in order to eliminate the imbalance or to close the fiscal gap.

On the other hand, horizontal imbalances are generated by differences in the ability to collect revenues or by differences in the expenditure needs among governments of equal level, which normally respond to differences in the relative wealth of the localities. These imbalances can be reduced by means of transfers between governments of equal level; nevertheless, given the political difficulties associated with a system of these characteristics, in practice it is much more common to use the transfers from the central government with this aim.

A policy oriented to eliminate the vertical imbalances will have, most likely, repercussions in the horizontal imbalances (and vice versa), the reason that it is difficult to isolate both types of imbalances. Conceptually, one might think of a situation in which both are present and a program to reduced the vertical imbalance is carried out. It could be said that the point at which the vertical imbalance disappears is the one where the local government with greater fiscal “comfort,” or the richest, is able to finance its expenditure needs by using only its own revenues. In such a situation all the other local governments will have a positive fiscal disparity, and any further attempt to equalize fiscal disparities across local governments may be considered as a “pure” horizontal equalization. Thus, the point of zero

fiscal disparity for the richest local government, after vertical imbalances have been addressed, would represent the conceptual limit between the vertical and the horizontal imbalances.[19]

Based on the previous reasoning, there exists some agreement in placing the correction of vertical imbalances as a (logically previous) requirement of horizontal equalization, and so it is recognized that a transfer system should first correct for the vertical imbalances, and only later, address the remaining horizontal imbalances by means of additional adjustments. In reality, this does not imply any additional complication because both policies can be carried out simultaneously in the determination of a unique amount of transfers from the central government to each local government.

(iii) Measurement of vertical imbalances

The existence of a vertical fiscal imbalance means simply that the governmental revenues are concentrated at a certain level of government, let's say the central, with greater intensity than the expenditure needs; or equivalently, that the decentralization of fiscal revenues is weaker than the decentralization of expenditures. The correction of this imbalance calls for transfers from the central government to the local governments, and in this sense, such transfers might be seen as one way to measure the imbalance itself. In general, the size of the vertical fiscal imbalance is measured in two different ways. The first is by the consolidated deficit or surplus, excluding financial debt, of each level of government. The consolidated fiscal balance should reflect to some extent the differences in fiscal disparities across different levels of government, although due to the greater access or use of credit that characterizes the central government, it is probable that this measure would magnify its fiscal deficit. The second method requires quantifying the own revenues of local governments in which they do not enjoy any autonomy. The index of fiscal imbalance is computed in this case as one minus the proportion of these non-autonomous own revenues over total local governments' expenditures.

(iv) Definition of fiscal capacity and expenditure needs

Given the priorities established for the intergovernmental transfer program in Nicaragua, the correction of horizontal imbalances might be seen as its fundamental objective. Due to this reason, a suitable measurement of the fiscal disparity of each municipality is essential to ensure the success of the program.

Although the notion of fiscal disparity does not present any complexity, the quantification of fiscal capacity and expenditure needs is associated with important practical and conceptual difficulties. Fiscal capacity may be defined as the "ability" of a government unit to collect revenues, which clearly depends on the size of the tax base from which such revenues are going to be collected. In order to measure and compare the fiscal capacity of different local governments it is necessary to have a common standard of reference. Such a standard is given by a common level of fiscal effort, and so the fiscal capacity of each local

[19] This argument, as well as a complete description of vertical and horizontal imbalances, as well as the methodologies available for their measurement, can be found in Bird and Tarasov (2002).

government is defined as the amount of revenues that can be collected under the same tax structure. Of course, those governments that, exerting the standard fiscal effort, still have a smaller fiscal capacity will be, in principle, at a disadvantage with respect to other governments to cover their expenditure needs. In practice, however, the measurement of the tax base can be seriously limited by the lack of information, by the cost of obtaining it or even by the impossibility of carrying out a precise measurement.

Expenditure needs, on the other hand, might be extremely difficult to define and express in monetary terms. This is mainly because the cost of providing goods and services can vary significantly between localities; thus in the cases where expenditure responsibilities are well defined, the amounts that must be spent to obtain the same standard of quality per capita may well be different. In effect, the concept of standard (of quality) is again decisive in defining local expenditure needs in a meaningful and useful way. Setting a common standard allows making expenditure needs comparable, and as explained below, suggests practical solutions to the problem of apportioning the scarce resources available in the transfer budget.

Additional restrictions to the selection of the measurement methodology come from the need to avoid any form of control over the amount of transfers by local government, and so the measurement methodology should be compatible with positive incentives for local government officials. The ability of local authorities to influence the amount of transfers would distort the equalizing effects of the system, while the existence of perverse incentives, particularly to alter the fiscal policy or the expenditure patterns within a jurisdiction with the intention of increasing the amount of present or future transfers, would prevent access to trustworthy information regarding the capacities and needs of local governments and for that reason would reduce efficiency in the distribution of resources. These problems would obviously put at risk the fulfillment of the main objectives of the transfer system.

In the next discussion we present a critical revision of the methodologies described by the equalization transfer literature in order to measure expenditure needs and fiscal capacity.[20] The variety would depend as much on the objectives that the equalization program is trying to reach as on the availability of information.

(v) Methodologies for measuring expenditure needs

As explained, the very concept of expenditure needs requires of a standard of quality of public services to be applied to the problem of distributing the equalization transfers. Additionally, the definition and quantification of the expenditure needs requires two fundamental elements to be fully operational: the determination of the total amount of transfers and the choice of the methodology by which the relative need of the local governments is going to be defined. The following methodologies might be seen as alternative ways to design a suitable procedure for the allotment of equalization transfers.

[20] The next discussion is based on Boex and Martinez-Vazquez (2007).

1. Lagged expenditure values

This methodology relies on historical expenditure patterns to estimating the expenditure needs of local governments. Whenever local governments have a great deal of discretion in deciding the amount of expenditures incurred during a period, this methodology offers a reasonably realistic estimation of expenditure needs, with the important advantages of simplicity and minimum information requirement. Unfortunately, if local governments have access to financial markets, the use of historical data could also provide perverse incentives to local authorities, because they will eventually "learn" that increasing expenditures in the present will result in higher equalization transfers in the future.

On the other hand, if local government expenditures have been determined in a rather arbitrary way by the central government, then historical expenditure patterns will likely not reflect true expenditure needs and their use will tend to perpetuate the differences in fiscal disparities across local governments instead of reversing them. Additionally, even in those cases where the expenditures of one year suitably represent the expenditure needs of local governments, demographic changes may reduce the validity of historical data. Due to these reasons, the use of this methodology is recommended only as a transitory practice, while a different methodology with better properties becomes feasible.

2. Equality and per capita equality

With a complete lack of information at the local level, the simplest way to assign the transfer fund is to apportion the same amount of resources to each local government. Equal transfers could be justified under the assumption that all the localities have identical needs, but this is almost surely untrue, and does not correspond to the reality of Nicaraguan municipalities. Among the several variables determining the differences in the expenditure needs across localities, the most obvious and important is population. Under equal transfers the most populated jurisdictions will receive less transfer per capita, encouraging a demand for the fragmentation of big jurisdictions while part of their residents choose to emigrate towards less populated jurisdictions where public services are more abundant. All in all, the tendency would be towards a reduction of the gains associated with economies of scale in the provision of public goods and thus a reduction of the overall well-being.

An alternative criterion, equality per capita, would avoid these undesired effects. Of course, in this case it is necessary to count on information about the population of each locality. There is no doubt about the superiority of this approach with respect to the previous one; however, the existence of other variables determining differences in per capita cost across localities could still imply that this methodology is not right to capture expenditure needs. In particular, it is possible that the average costs of provision of a certain standard of public services would change as population increases, in which case the assumption of equal per capita costs implicitly assumed by this approach would be contradicted. Additionally, it can also be the case that demographic characteristics, like the composition of the population by age or the proportion residing in rural areas, may determine differences in the average cost of delivering the standard package of public services.

3. Weighted indexes of relative expenditure need

This is likely the most popular among the methodologies for estimating expenditure needs. It consists of elaborating a weighted index that represents, ideally in objective terms, a synthesis of the factors determining the differences across different localities in the cost of provision of a standard level of public services.

The relative need of each locality and the index can be obtained by the following procedure:

Step 1: determine the aggregated level of sub-national expenditure needs (*SEN*).
Step 2: select the factors explaining the differences in expenditure needs across localities.
Step 3: compute the expenditure needs of all localities according with each factor:

$$r_i^j = F_i^j / \sum_{i=1}^{n} F_i^j ,$$

where r_i^j is the relative expenditure need according to factor *j* for locality *i*, F_i^j is the value of the factor *j* for the locality *i*, and *n* is the number of jurisdictions.

Step 4: determine the relative weight of each factor of relative expenditure need: a^j, which is the same for all localities, and must satisfy:

$\sum_{j=1}^{m} a^j = 1$, where *m* is the number of factors.

Step 5: compute the weighted index of relative expenditure need for each locality *i* (IN_i):

$$IN_i = \sum_{j=1}^{m} a^j \cdot r_i^j$$

Step 6: calculate the expenditure need for each locality *i* (N_i):

$$N_i = IN_i^* \cdot SEN$$

Naturally, the effectiveness of this methodology in capturing the relative expenditure needs will depend on the factors chosen and their weights. Unfortunately, these important decisions might be influenced by political pressures, so it is desirable to base them on statistical methods, which tend to be objective and transparent.

The factors included in the index of relative expenditure needs might reflect demographic characteristics, such as the proportion of children or elderly, who may be seen as especially important "clients" of local governments and thus could represent the sources of the main expenditures that have to be assumed. Other indicators, such as infant mortality, illiteracy or some variables related to poverty, can also be useful to represent the differences in expenditure needs.

The particular goals pursued by the transfer system as well as the expenditure responsibilities assigned by law to the local governments should serve as a guide in the choice of factors. On the other hand, their weights should represent either their contribution to the expenditure needs (if the "client approach" is used), or the importance assigned to

each variable in the political debate (when the approach is focused on the objectives of the transfer system).

4. Per capita (or per client) expenditure norms (top-down)

This methodology consists, first, of the determination of the total amount of resources to be spent in a particular local government program, and second, on establishing a common (average) norm by dividing this amount by the total number of clients that are intended to receive the benefits of the program. The expenditure norm is common to all localities, which in the absence of other variations in cost provision, may be interpreted as the per client expenditure need of the specific service funded by the program. The client-based expenditure norm may have a prescriptive character, forcing local governments to spend according to the established norm, or it may just be optional, in which case the local governments are allowed to decide a different amount of expenditure per client. Even with differences in the cost of provision across localities, it is not difficult to incorporate adjustments to the norm, which is why the method does not impose any limitations in this respect.

Expenditure norms have several important advantages. Due to the structure, this methodology ensures the feasibility of the selected norms, because the total amount of resources to be spent in a certain program is limited to the available budget and defined by political considerations. As a consequence, the expenditure norms can be obtained in a transparent and realistic way. The disadvantages, on the other hand, deal mainly with the determination of the total fund allocated to the different programs. Special care must be taken to represent the true expenditure needs of the population by the programs and their relative budgetary importance, and thus also in avoiding subjective judgments and political pressures; otherwise the equalization objective might be jeopardized.

The methodology of per-client expenditure norms defines individual norms for each program from the available budget at an aggregated level, so it may be understood as a “top-down” approach according to the hierarchy of the government. The next methodology follows the opposite approach, and is usually referred to as a “bottom-up” approach. An examination of its features will permit an even better appreciation of per-client expenditure norms.

5. Traditional (bottom-up or physical) expenditure norms

This methodology consists of completely quantifying the costs of providing each governmental service, by adding up the costs of purchasing or hiring all the inputs required for delivering a public service of a standard level of quality. Although this methodology is intuitively appealing and in theory should provide precise estimations of the expenditure needs, its implementation requires an enormous amount of information about input prices, as well as a comparable effort in defining national standards and updating them to changing market conditions. In practice, this methodology might very easily lead to a situation of non- manageability, which could prevent the fulfillment of its objectives.

Determining the standards of public services without explicitly accounting for the available budget may likely result in unrealistic policies. Indeed, the final decision about the funding of expenditure programs is taken in the context of a political process that does not necessarily ensure the affordability of the standards defined by the law, and often after calculations are complete, it turns out that their costs exceed the budgetary funds available.

Due to these reasons, perhaps particularly meaningful for developing countries, it is possible to say that the "top-down" approach of per-client expenditure norms is superior to the "bottom-up" approach.

6. Representative expenditure system

This methodology is likely the most sophisticated among those currently used for estimating expenditure needs of local governments. Its implementation can be described by the following procedure:

Step 1: Selection of the functions, among those assigned to local governments, that will be subject to equalization.

Step 2: Identification of the main variables affecting the costs of delivering the services associated with each selected function. This may be done by running linear regressions where the dependent variable is the actual spending in the selected functions and the independent variables are those representing the sources of cost differences in the provision of local public goods and services.

Step 3: Estimation of the representative expenditures of each locality by using those coefficients that have been observed to be statistically significant and have the right sign. The representative expenditure is interpreted as the expenditures a locality would incur if it provides a standard package of public services.

The representative revenue system is considered as the most adequate methodology for measuring expenditure needs of local governments, and therefore, it is also the most recommendable procedure whenever its implementation is feasible. Nevertheless, its dependency on very detailed information at the local level usually prevents the adequate implementation of this methodology in countries where statistical information systems are not well developed.

(vi) Methodologies for measuring fiscal capacity

As explained, the measurement of fiscal capacity also requires a standard of comparison, which in this case is a common level of fiscal effort across local governments. If local governments enjoy a significant degree of tax autonomy, the use of current revenues in the computation of fiscal capacity might stimulate them to reduce their own collections because by doing so they would receive greater transfers in the future. As a result, local tax effort would be reduced and the overall tax burden would fall more heavily on the central government, undermining the expected benefits from fiscal decentralization.

1. Lagged own revenues

This methodology assumes that own revenues during a relevant period are representative of the fiscal capacity local governments. There are at least two reasons that this assumption may not be appropriate. The first is the presence of factors that may create a gap between the amount of taxes actually collected and the fiscal capacity of a government. Among these factors we find:

- differences in tax structure and the definition of the tax base (for example, different definitions of taxable income or exemptions criteria), by which two local governments may not collect the same level of taxes even though they have the same fiscal capacity;
- differences in the compliance costs assumed by local governments in order to enforce the tax law;
- differences in the compliance rates across local governments, which may vary across jurisdictions as a consequence of individuals' attitudes.

The second reason is related to the perverse incentives that the use of current revenues may provide to local authorities. If they "learn" that less own revenues in the present might be totally or at least partially counterbalanced in the future with greater transfers, then they could be tempted to reduce their fiscal effort, which in turn might also result in significant political benefits.

2. Basic proxies for ability to tax or ability to pay

The use of this methodology is widespread, and consists of computing fiscal capacity based on variables that can capture the ability that local governments may have in collecting taxes. One example is per capita personal income; however, since local taxes may also be applied to firms, this proxy may not serve as a good approach for estimating local revenue potential. A more comprehensive example is the gross internal product of each locality. Finally, if those components not comprising the local tax base are excluded from the gross internal product, a very acceptable estimation of local revenue potential may be obtained.

3. Representative revenue system

The representative revenue system is a multidimensional measure of fiscal capacity that represents the amount of revenue that would be obtained by a locality if an average level of fiscal effort is exerted. First the tax base of each locality is estimated and then a set of common tax rates, representing an equal level of fiscal effort, is applied to them. Those that turn out to have a lower fiscal capacity with respect to a certain threshold or standard are selected as the beneficiaries of the transfer program.

The information required for a suitable estimation of the tax base is sometimes not available at the local level. In such a case it would be necessary to rely on a simplified version of the methodology based on a proxy measure of the tax base. Still, the estimated fiscal capacity may be very accurate and whenever data availability allows the implementation of this methodology, it would certainly be recommendable.

(vii) Equalization transfers must be unconditional

The theory of public finance suggests that equalization transfers should be unconditional because they represent a complement to the general revenue raising ability of local governments.

Since local governments should in theory represent the interests of local communities, it is economically efficient to assign them a certain degree of authority to decide how the resources will be allocated among their expenditure functions. Moreover, while the degree of autonomy that local authorities should enjoy must be defined at the national level by means of the political process, the equalization transfers are justified solely according to the "objective" criteria of expenditure needs and fiscal capacity, which are intended to represent the ability of the local government to provide standard public services to the population. There is no economic justification to impose additional limitations to their authority, which would likely distort the balance of autonomy among tiers of government defined by the law.

(viii) Conditional transfers and capital transfers [21]

Conditional transfers are subsidies granted by the central government to local governments to stimulate or fund expenditures for matters considered to be in the national interest. These transfers are subject to fulfillment of certain conditions set by the favored government, which is usually that they be spent on a particular function or project.

Conditional transfers may be used to reach a wide range of objectives, among which we find the correction of externalities and vertical imbalances, providing additional funds when access to financial markets is restricted, or helping to cover expenditure needs associated with particular governmental programs of national scope.

[21] The literature about intergovernmental transfers is extensive. For a general illustration and discussion of the basic principles that should shape a transfer system, as well as the different types of transfers available, see, for example, Schroeder and Smoke (2003), Bird and Smart (2001) and Searle and Martinez-Vazquez (2007).

When the transfer fund is established as a share of local expenditures, then we are in the presence of matching grants, which can be limited to a maximum amount from which no additional transfers are granted, or open-ended (limitless), which are more difficult to justify and to observe in practice.

The most important and studied objective of matching grants is the correction of externalities. In the presence of externalities, or when the public services provided by a local government affect other jurisdictions positively (or negatively), the optimal level of provision of services will be superior (inferior) to the one actually provided. Since local governments do not take into account the effects of their policies outside the boundaries of their own jurisdictions, in order to induce them to behave efficiently, the central government may provide transfers or proportional subsidies (or apply additional taxes), in such a way that the marginal cost faced by the local government is equalized with the social marginal benefit at a comparatively greater (smaller) level of production. In general, the essential characteristic of this type of conditional transfer is the reduction of the relative price faced by the local government, and thus the incentive to increase the expenditures in the function or program benefiting from the transfers.

Alternatively, matching grants may also serve to reduce disparities in expenditure needs across local governments when the central government lacks the information required to estimate them. The logic behind this idea is that greater expenditures might respond either to needs or preferences, and in both cases they would deserve more support than those spending less. The problem with this approach, nevertheless, is that the local governments with greater fiscal capacity may be able to spend and benefit more on average without having greater needs or preferences. Thus this approach should be avoided in the presence of differences in fiscal capacity.

Indeed, due to its capacity to affect and correct incentives, matching grants are much more suitable to encourage efficient behavior of local governments than to limit or correct imbalances in their expenditure needs or fiscal capacity.

The last argument may also serve to justify the use of matching grants to finance capital investments. Unlike horizontal equalization transfers, provided to guarantee a common minimum level of public services by means of a fairness criterion, capital transfers should be strictly based on the criteria of social benefit and expenditure efficiency. More than the simple consideration of the historical expenditures and per capita fiscal capacity (which is what is currently considered to determine the amount of capital transfers), what matters in this case is to determine the relative capital needs, the value of the fixed assets already available to cover them, and to estimate the expected costs and benefits associated with the projects. In this sense, developing accurate investment programs and infrastructure maintenance plans is indispensable. Such plans are usually expensive and technically challenging, which is why the municipalities should receive adequate assistance to develop them. Finally, as a way to stimulate local governments to fulfill the commitments associated with their investments and to minimize the losses coming from poor management, proper monitoring and evaluation processes are required after the projects have been executed.

In general, to design a capital transfer system is especially complex, and in practice even in developed countries the information required to implement it optimally might be unavailable. In spite of this, sometimes it is erroneously assumed that capital expenditures are more important, necessary, or efficient, than current expenditures. In reality, all goods and services require an adequate combination of factors through which the existing resources and the available technology are balanced; and the fixed assets created by the investments are useless if there are not enough resources to operate and maintain them. Indeed, the quality of a service depends critically on non-fixed factors, as is the case of the personnel required in health and education.

III.2 Basic structure of an ideal equalization transfer system and options for reform

In this section we present three proposals to reform the equalization transfer system in Nicaragua. The proposals vary greatly in their similarity to the current system – from a completely new system to a system that simply modifies the current one. The proposals also vary with respect to the technical innovations, particularly in regard to the methodologies used in estimating expenditure needs and revenue capacity of the municipalities.

As discussed earlier in this report, the two fundamental steps in the design of an equalization transfer system are (i) the determination of the transfer fund and its sources, and (ii) the structure and formulas to be used in the distribution of the equalization funds. We begin this section with a discussion of these two elements and then we present the three options for reform.

(i) The transfer fund

The size of the equalization transfer fund is necessarily related to the excess of expenditure needs of local governments over own revenues. A relevant question is whether such excess is going to be totally eliminated or only reduced to a certain extent; and naturally the answer will depend on the availability of resources and on the political will to solve the problem. In general, when resources are scarce, fiscal disparities can only be partially reduced, and thus it is important that the public discussion prior to the implementation of the system incorporate quantitative information regarding the magnitude of existing disparities. It will be the political consensus and the degree of interregional solidarity that will finally determine the degree of equalization actually achieved.

In the Nicaraguan case, this subject has not been addressed in an organized fashion, and still in the present reasonable doubts exist with respect to the effective cost of provision of the public services under municipal responsibility. Even though the Law of Municipal Transfers clearly establishes the percentage of the PGR that will annually be allotted among municipalities, some objections have been presented in the literature about the inadequate magnitude of such funds, which would seem to exceed the resources that are effectively required to finance the few services assigned to the municipal governments.

Both the lack of detailed information about municipal expenditures and the difficulties associated with obtaining good estimates of fiscal capacity prevent arriving at a suitable estimation of the existing fiscal gap. Therefore, a definite decision about the desired degree of equalization may have to be postponed, and the following discussion will consequently avoid the problem of determining the transfer fund. Until this issue is clarified, the best strategy is to assume that the "Transfer Fund" is the one currently established in the Law of Municipal Transfers. Thus our approach will be exclusively focused on the design of a rational and efficient transfer system, according to the horizontal equity objective defined by the Law.

Before discussing the way in which the equalization funds should be distributed, there are two issues that need to be clarified. Although the amount of transfer funds established in the Law of Municipal Transfers is arbitrary – it does not respond to good estimates of expenditure needs and fiscal capacity, the practice of using an explicit formula is transparent, ensures stability and predictability of transfers, and is not so vulnerable to political pressures; thus it is the correct way to proceed and the current approach should be conserved. We also propose conserving the current system of vertical financing through which the central government is responsible for financing the transfer fund; in contrast with a system in which the transfer fund is financed through contributions from the richest municipalities (known as a "fraternal" or "Robin Hood" system). In the following section we discuss how the available transfer fund should be allotted among the municipalities.

(ii) Equalization transfers

The basic structure of a horizontal equalization transfer system is always based on the following formula: $D_i = EN_i - FC_i$, where D_i corresponds to the fiscal disparity of municipality i, EN_i to its expenditure needs and FC_i to its fiscal capacity. This formula might be expressed in total amounts per municipality or in per capita terms; however, since the objective is to equalize the ability of local governments to cover per capita expenditure needs, then the latter would be the preferred interpretation and the one we will use in this section.

Whenever the fiscal disparity is positive the expenditure needs will exceed the fiscal capacity of the municipality and a transfer will be necessary in order to improve its fiscal situation. On the contrary, if the result is negative then the municipality will have more resources than it needs (according to the established standards) and no transfer will be justified.

Representing the available equalization transfer fund as X, and the population of municipality i as H_i, the computation of the equalization transfer for municipality i, T_i, can be obtained in a proportional manner as:

$$T_i = \frac{D_i^*}{\sum D_i^*} \cdot H_i \cdot X \ ,$$

where D_i^* corresponds exclusively to per capita fiscal disparities with positive sign. Thus, the computation of the equalization transfers incorporates only those municipalities where per capita expenditure needs are higher than per capita fiscal capacity.[22]

In order to make the objective of horizontal equalization compatible with the right incentives to local authorities, certain general principles must be considered while establishing the measurement methodology:

- Both the expenditure needs and the fiscal capacity of each municipality should be defined by means of impartial criteria which properly represent the objective of horizontal equalization. Such an objective is essentially normative, and therefore it is necessary to avoid both the discretionary decisions and the use of indicators based on historical inequalities across municipalities. In the first case, it is recommendable to use transparent rules or allocation formulas which might minimize the confusion, political pressure and changes in the behavior of municipalities (for example, to collect less or spend more). This point has been well understood by the Nicaraguan authorities and is important to continue in this line. In the second case, it is important to base the measurement of fiscal disparities in variables that suitably represent the objective of horizontal equalization that is being pursued. Such variables must be defined in terms of the population requiring public services instead of the population traditionally benefited by them.
- Local government officials should not have any type of influence on the indicators used to compute fiscal disparities. If they have, they would seek to appear with higher relative expenditure needs or to reduce their tax collection and fiscal effort, thus limiting the effectiveness and benefits associated with the equalization transfer system. The use of historical information tends to be a bad instrument because the current policies are historical in the next periods and the authorities may decide to take advantage of the system without taking into account the costs at a national level.
- To use the transfer system to promote fiscal effort implies necessarily its conditioning. Nevertheless, the equalization transfers must be unconditional and thus fiscal effort should be pursued through another type of instruments. Due to this reason, all the proposals presented in this paper exclude the promotion of fiscal effort as an objective of the transfer program; instead, as discussed in the previous point, they are centered in minimizing the perverse incentives faced by local authorities.[23]

Finally, it is important to emphasize that the extent to which fiscal disparities are reduced across municipalities is the result of political decisions, and depends both on the availability of resources and the will to equalize the conditions in which the local public services are provided. In general, even with abundant and good quality information on

[22] Naturally, there exist a variety of alternatives to allocate X according to the computed fiscal disparities. For instance, those municipalities with higher D_i might receive transfers in a higher proportion. A particular case under this scheme would be to set a maximum fiscal disparity and provide transfers only to those municipalities with the highest D_i until all of them reach such a maximum.

[23] See in the Appendix III a discussion about the pros and cons of incorporating the criterion of fiscal effort in the equalization transfer system.

expenditures and revenues, the will and the capacity of the central and local governments are essential in achieving effective financing and distribution of equalizing resources across municipalities.

(iii) Proposals for reform

In this section we present the methodologies recommended for estimating the fiscal capacity and the expenditure needs of Nicaraguan municipalities. These methodologies are compatible with the principles that should shape an equalization transfer system, and have the additional advantages of being simple and easy to handle. Since only one methodology is proposed for measuring fiscal capacity, the proposals for measuring fiscal disparities differ only in the methodology used to estimate expenditure needs.

Proposal FC: ***computing fiscal capacity based on "lagged own revenues"***

Whenever its application is feasible, the representative revenue system proposed by the BIDE is considered as the ideal methodology for estimating the fiscal capacity of local governments. Nevertheless, the lack of detailed information in Nicaragua makes its application extremely difficult, and even though important improvements have been made in estimating the tax base of the IBI, this tax source still represents a small proportion of municipal revenues and so it may not serve as a good predictor of the true fiscal capacity of local governments. The second best alternative would be to consider one or several variables that may serve as a proxy of fiscal capacity, such as the gross regional product or the per-capita income of each locality, but again data unavailability prevents the application of this methodology.

Given the absence of detailed municipal data, we are virtually forced to base the estimation of fiscal capacity only on the historical information available for municipal fiscal revenues. In general terms, the proposed methodology can be described by the following procedure:

Step 1: Select the revenue sources and time periods that would help to estimate the ability of municipalities to collect their own revenues, and for which complete information is available.

Fiscal capacity has been defined as the ability of a government unit to collect fiscal revenues by exerting an standard level of fiscal effort. In general, there are three revenue sources that should be included in the calculation. The most important and complicated is own revenues (collected from the tax base in which the municipal government has authority). Further, if we want to quantify the ability to finance all the expenditures needs of the municipality, we must also consider the recourses received as revenue sharing and all current transfers with the exception of equalization transfers.[24]

[24] Some conditional transfers financing current expenditures may (or should) be excluded if they are meant to finance services that are not considered in the expenditure needs calculations. By the same reasoning capital transfers are also excluded: infrastructure needs are not considered in the computation of expenditure needs.

Thus, the categories considered in the estimation are those classified by INIFOM as current own revenues: registrations and licenses, income tax, tax on vehicles, IBI, user fees, municipal services rates, special contributions, and others.

Step 2: Compute per capita revenues based on the local revenue source *j*, F_j, for each municipality *i* and at the national level. Using H_i to represent municipal population and *N* for the total population in all the municipalities considered, we can define

$$F_{ij} = \frac{municipal\ revenues\ from\ j}{H_i} \quad \text{and} \quad F_{Nj} = \frac{total\ revenues\ from\ j}{N}$$

as the per capita revenue from *j* in each municipality *i* and in the set of all municipalities, respectively. It follows that total current own revenues are given by $\sum_j F_{ij}$ and $\sum_j F_{Nj}$.

Stressing a very important issue, the estimation of fiscal capacity should be based on *potential revenues*. As explained, the use of historical or actual fiscal revenues might result in providing perverse incentives to municipal governments because their fiscal effort is not taken into account, and thus they might be tempted to reduce their own tax collections in order to increase future transfers from the central government. In the cases of revenue sharing and intergovernmental transfers such a problem does not exist because these revenue categories are independent from the municipalities' behavior.

A practical way of facing this problem, which is not ideal but at least feasible given our data constraints, is by considering an average of the relative (with respect to the national level) per capita tax collections for a relatively long period of time as an indicator of local fiscal capacity. The more the periods considered in the average, the more difficult it will be for the local governments to alter the indicator of relative fiscal capacity. In our case, we consider the period 2000-2004.[25]

Step 3: Compute the index of relative per capita fiscal capacity, $IRFC_i$, which can be defined as the historical average (2000-2004) of $\sum_j F_{ij} / \sum_j F_{Nj}$, representing the relation between the per capita revenue of municipality *i* and the national of the selected revenue sources for each period.

The index of relative fiscal capacity of certain municipality can be inferior, equal, or greater than one, meaning that its per capita fiscal capacity is inferior, equal, or greater than the national average. For instance, if $IRFC_i$ is equal to 1.50, then the municipality *i* collects, on average, 50% more per inhabitant than what is collected in local taxes at the national level.

Step 4: Compute the per capita fiscal capacity for each municipality *i* as:

[25] In certain cases in which a municipality tax base has drastically changed during the considered period (for instance, by a municipal territorial division), or in general, if it is known that the historical revenues are not representative of the current revenues, the period considered for the municipality can be adjusted.

$$FC_i = IRFC_i \cdot \textit{aggregate forecast of per capita collections}$$

such that FC_i can be interpreted as the amount of collections that a municipality would have in the projected period if the historical average and the macro-economic growth expectations are maintained.

Given that the transfer fund is allocated in accordance to the PGR during the previous year, and that the budgetary information for each fiscal period is known after the fiscal year has ended, the computation of municipal transfers is in practice carried out with a lag of two years. Accordingly, the period 2000-2004 could serve to assign the transfers of year 2006. Nevertheless, in order to illustrate the effect of our proposals, we will assume that we are calculating the transfers corresponding to year 2005. This will allows us to use information about actual (instead of forecasts) revenue and expenditures, and to make sure that the sum of own revenues and equalization transfers maintains the same proportions that they actually had with respect to the total expenditures during 2005.

Based on information provided by INIFOM for 2005, the *effective* per capita collections at national level (assumed as the forecast required in Step 4) is $164.8 per inhabitant.[26] This is the amount that will be multiplied by the *ICFR* average of each municipality in order to estimate its per capita fiscal capacity. A sample of these computations is presented in Appendix V.

***Proposal EN1*: computing expenditure needs based on "per client expenditure norms"**

The method that we present as "ideal" for the Nicaraguan case consists of establishing the minimum expenditure standard by potential user that the system is able to guarantee for each and every municipality. The concept of potential users or clients deserves special attention: by users or clients we mean all possible recipients of the services provided by a municipal government, which do not necessarily correspond to the total population but could also represent a specific segment, such as the elderly, students, the population of particular geographic area, etc. Additionally, it is important to distinguish between the *potential* users and those actually benefiting from the services, since the last group might exclude eligible users due to, for instance, budgetary limitations. Expenditure needs must be computed taking into account all eligible inhabitants.

Similar to the case of revenues, the expenditures incurred in the provision of municipal services correspond, exclusively, to those classified as *current* expenditures in the municipal budget. Investment expenditures, although clearly related to the standard of quality in public service provision, should not be considered as part of the direct cost associated with the local services because their purpose is to increase the *capacity* of service provision, not the amount of services. Indeed, investment expenditures are related to the infrastructure needs of the municipalities, which are in turn inversely related with their accumulated assets. Moreover, since the amount of these assets is not necessarily

[26] There is a number of municipalities (4 in the 2005) for which revenue data is not available. The reported average was computed excluding their population, so that the total current own revenues was divided only by the number of inhabitants (projected according to INEC, 2001) in the municipalities with data on revenues. The same procedure is used to estimating per capita expenditure needs.

related to the capacity to collect revenues, the inclusion of capital expenditures in the horizontal equalization formula would be inconsistent from a theoretical point of view. Naturally, in spite of its exclusion from the equalization system, the disparities and the financing of infrastructure needs cannot be ignored and they should be addressed separately in a capital transfers system.[27]

Step 1: Determination of the *aggregate* level of sub-national expenditures needs, *SEN*, for all municipalities that are going to be beneficiated by the transfers system.

Similar to the case of fiscal capacity, the SEN will be assumed to correspond to the executed expenditures of the 2005 budget. At first glance, a natural alternative is to use the aggregate *current* expenditures, but for reasons that will be discussed soon, it will be necessary to proceed with a different strategy.

Step 2: Determination of the expenditure needs by municipal function and computation of the expenditure norms by client.

The application of this methodology requires the classification of municipal expenditures in terms of the functions or services that the law has defined as a responsibility of municipal governments, as well as demographic information to identify the amount of users from each of these services.

The methodology of expenditure norms by client requires, first, establishing the total amount of resources that the central government will allocate in each service or municipal function. With this information, as well as with the estimation of the number of clients for each at national level, it is conceptually simple to determine the per client expenditure norm.[28] In order to make the procedure even simpler, it is possible to group those functions with common users, or alternatively, to choose only the most important ones, while the number of users for the remaining functions is assumed to be equal to the population.

Unfortunately, the accounting practice is based mainly on the economic classification by *type* of municipal expenditure, current or capital; while the available information about functional expenditures refers only to the share of "services and materials", which is not very representative because it does not take into account personnel expenditures, transfers, and other expenditures. Since these categories are not explicitly assigned to the expenditure functions it is impossible to know the real share of each municipal service on total current expenditures.

In this context, the implementation of this methodology is not feasible in the short-run, and so the future applicability of this proposal is subject to modifications of current budgetary practices; more specifically, to the development of a functional and comprehensive budget classification. These modifications are, however, straightforward and relatively inexpensive; thus, considering also that this methodology is very simple and rational, this

[27] Basic aspects of capital transfers were discussed at the end of section III.1.
[28] Some complications might appear if there are important cost differences between municipalities and if it is desirable to incorporate them in the determination of the expenditure norms.

proposal is presented as an ideal procedure towards which the reform of the Nicaraguan system should be targeted.

In order to clearly illustrate how this methodology must be implemented, we will present a simulation with fictitious data about 14 localities, identified with letters from the "I" to the "V", with different economic and demographic characteristics. To clarify the explanation, and to distinguish the simulations based on real data from the fictitious exercise, the latter will be presented in gray boxes. The objective of this exercise is to provide a comparison between this proposal, EN1, which cannot be implemented with the available budgetary information, and the proposals EN2 and EN3 that will shortly be explained.

Box 1: *Simulation exercise*, Proposal EN1

We assume that there are three municipal functions or services, let us say: (a) cleaning, (b) sports and recreation, and (c) public infrastructure maintenance. Each of them has a certain amount of potential beneficiaries or clients. Thus, for example, cleaning could be targeted to families and companies, sports and recreation expenditures might benefit young people mainly, and the public infrastructure maintenance will benefit the total population (see the note at the end of the box). For simplicity, a certain share of expenditures for each function and a number of clients per municipality will be arbitrarily assumed (with random procedures). Additionally, only in order to preserve a familiar magnitude, the sample has been constructed such that the per capita average collection is $164.8, as is the case for the 151 municipalities during the year 2005, and it has also been assumed that the per capita collections do not vary with respect to the previous year. Therefore, the per capita average collection turns out to be identical to the estimated per capita fiscal capacity, FC_i, and the latter will be used to complete the computation of per capita fiscal disparities for the three proposals.

The central government might, for example, decide to increase only the expenditures on function *c*, and to set its budget in, let us say, $60 million, in which case the expenditure per client will automatically increase to $128.3. Alternatively, the central government might determine that all the municipalities will receive an amount of transfers that guarantees minimum per client expenditures up to, for example, $71.4 on function *a*, $90.0 on *b*, and $103.9 on *c*.

Table 24: **Data Generated to computing expenditure norms by client**

Municipios (ficticios)	Categoría	**Función *a***		**Función *b***		**Función *c***		Total	
		Gastos (miles de córdobas)	Número clientes	Gastos (miles de córdobas)	Número clientes	Gastos (miles de córdobas)	Número clientes	Gastos corrientes	Población
I	B	6,210	51,387	5,215	36,862	13,575	90,000	25,000	90,000
J	B	4,485	24,711	2,129	23,544	11,386	49,000	18,000	49,000
K	C	718	40,677	3,662	59,863	6,620	105,000	11,000	105,000
L	C	1,225	18,041	3,236	23,766	4,039	48,000	8,500	48,000
M	D	832	19,160	2,757	25,410	2,611	40,000	6,200	40,000
N	D	142	13,316	2,971	13,016	2,887	25,000	6,000	25,000
O	E	401	2,557	1,164	2,276	935	5,500	2,500	5,500
P	E	262	18,773	393	24,129	945	31,500	1,600	31,500
Q	F	420	5,757	183	4,880	896	11,000	1,500	11,000
R	F	220	3,294	453	5,483	1,127	7,500	1,800	7,500
S	G	65	9,151	337	12,828	1,498	18,000	1,900	18,000
T	G	196	8,444	295	15,378	510	25,000	1,000	25,000

Note: Some adjustments might be necessary at the time of calculating the number of clients. Examples might be that a productive company generates more garbage than a family; or that a share of adult population also uses recreation public facilities, or that some public infrastructures only benefit certain industries but not directly the municipal inhabitants, etc. The adjustments will be desirable whenever they are simple and represent an improvement in the expenditure needs estimation.

In practice, the per client expenditure norms can be identified with the average historical expenditure per user, which may be obtained by dividing the total expenditures incurred for each function by the total number of users of the service. This first indicator has the advantage of being feasible, because it is based on effective expenditures incurred in the provision of municipal services in the country. Indeed, the historical average can be a norm by itself, or it could serve as a benchmark to discuss what expenditure functions might require an adjustment in their financing. However, if the potential users are more than those historically benefited, the historical expenditure average can also constitute an ambitious and unfeasible standard. In such a case, the extent to which the differences between per client expenditures across municipalities may be reduced will critically depend on the size of the transfer fund, X.

Step 3: Computation of per capita expenditure norm for each municipal function. It can be obtained by multiplying the per client expenditure norms by the share of clients over the total population in each municipality.

Since the fiscal disparity formula is defined in per capita terms, we need to express the expenditure needs by function in identical terms. This operation is quite simple, and it means that if, for example, 3 users from a population of 9 inhabitants (1/3 of the population) have per client expenditure needs of $60, then each inhabitant has an equivalent expenditure need to $20 (1/3 of the needs by client).

Step 4: Computation of per capita expenditure needs. This corresponds to the sum of the per capita expenditure norms for all municipal functions.[29]

Once the per capita expenditure needs have been determined, four additional steps are required to calculate the amount of municipal equalization transfers. These steps, explained at the beginning of section (ii), are common to all the proposed methodologies, and may be summarized as follows:

Step 5: Computation of per capita fiscal disparities: $D_i = NG_i - CF_i$.

Step 6: Selection of the municipalities with positive fiscal disparities, D_i^* , as exclusive beneficiaries of the transfers system.

Step 7: Calculation of the *Allocation Index*, which is defined for each municipality by: $\frac{D_i^*}{\sum D_i^*}$

Step 8: Computation of the equalization transfers by municipality: $T_i = \frac{D_i^*}{\sum D_i^*} \cdot H_i \cdot X$, where H_i is the municipal population and X is the transfers fund.

As explained, the average per client expenditures might sometimes serve to have a precise notion of the cost of delivering municipal services and the inequalities in the expenditures assumed by different municipalities. Nevertheless, under differences in demand, on the level of prices and economies of scale, the fulfillment of a common per capita norm might require a different level of per client expenditures in each locality. For example, it would be necessary to allow for higher expenditures if the prices or costs in service provision are higher in a remote zone (mountain or island). If the required information is available, it would be optimum to correct the expenditure needs in accordance with these factors.

[29] Table 25 presents a summary of the information obtained from the simulation exercise, as well as the calculation of per capita expenditure needs, the fiscal disparity, and the equalization transfers that will be explained below.

Box 2: *Simulation exercise*, Proposal EN1 (continued)

According to Table 25, the required resources (or the value of X) to finance minimum expenditure standards equal to the averages of fictitious municipalities would be C$30.4 millions. When the transfer fund is less than the calculated transfer needs, then there will necessarily be municipalities where the established norms are not going to be reached. In spite of this, a significant degree of equalization might still be achieved. In order to complete the exercise, it has been assumed that the transfer fund has been fixed at C$20 million. In reality, this decision is independent from the methodologies used to compute fiscal disparities, and thus the resulting allocation index in the table might be used to obtain the amount of transfers per municipality given any level of X. Of course, the value of X will serve to determine the equalizing power of the system.

Table 25: **Computation of per capita fiscal disparities and municipal transfers according to Proposal EN1 (fictitious municipalities)**

Municipalities (fictitious)	Category	Expenditure norms (per client) (1) functions: a	b	c	Clients as a proportion of the population (2) functions: a	b	c	Expenditure norms (per client) (1) * (2) functions: a	b	c	Expenditure needs (*EN*)	Fiscal capacity (*CF*)	Fiscal disparity (*D*)	Required transfers per capita	Required transfers	Allocation index	Transfers
I	B	71.4	90.0	103.6	0.57	0.41	1.00	40.8	36.9	103.6	181.2	311.1	-129.9	0.0	0	**0.00**	0
J	B	71.4	90.0	103.6	0.50	0.48	1.00	36.0	43.2	103.6	182.8	326.5	-143.7	0.0	0	**0.00**	0
K	C	71.4	90.0	103.6	0.39	0.57	1.00	27.7	51.3	103.6	182.6	76.2	106.4	106.4	11,168	**0.37**	7,341
L	C	71.4	90.0	103.6	0.38	0.50	1.00	26.8	44.6	103.6	175.0	177.1	-2.1	0.0	0	**0.00**	0
M	D	71.4	90.0	103.6	0.48	0.64	1.00	34.2	57.2	103.6	195.0	145.0	50.0	50.0	1,998	**0.07**	1,314
N	D	71.4	90.0	103.6	0.53	0.52	1.00	38.0	46.9	103.6	188.5	148.0	40.5	40.5	1,012	**0.03**	665
O	E	71.4	90.0	103.6	0.46	0.41	1.00	33.2	37.2	103.6	174.0	436.4	-262.3	0.0	0	**0.00**	0
P	E	71.4	90.0	103.6	0.60	0.77	1.00	42.6	68.9	103.6	215.1	41.3	173.8	173.8	5,475	**0.18**	3,599
Q	F	71.4	90.0	103.6	0.52	0.44	1.00	37.4	39.9	103.6	180.9	81.8	99.1	99.1	1,090	**0.04**	716
R	F	71.4	90.0	103.6	0.44	0.73	1.00	31.4	65.8	103.6	200.7	106.7	94.1	94.1	706	**0.02**	464
S	G	71.4	90.0	103.6	0.51	0.71	1.00	36.3	64.1	103.6	204.0	33.3	170.7	170.7	3,072	**0.10**	2,020
T	G	71.4	90.0	103.6	0.34	0.62	1.00	24.1	55.4	103.6	183.1	20.0	163.1	163.1	4,076	**0.13**	2,680
U	H	71.4	90.0	103.6	0.58	0.80	1.00	41.2	71.7	103.6	216.5	26.7	189.8	189.8	1,424	**0.05**	936
V	H	71.4	90.0	103.6	0.33	0.46	1.00	23.3	41.0	103.6	167.8	77.8	90.0	90.0	405	**0.01**	266
total:															30,426	**1.00**	20,000

Source: own computations.

Finally, it is important to stress one of the main advantages of the methodology, which is that the authorities are able to directly define the total amount of transfers by expenditure function, and this implicitly sets a per client expenditure norm which is easily calculated using the number of clients at the national level. Indeed, whenever the central government increases the real resources transferred in order to finance any local government service, the per client expenditure norm increases proportionally. Another advantage of the methodology is that it encourages a transparent discussion of the expenditure priorities for the whole nation.

Proposal EN2: computing expenditure needs based on the "single" expenditure norm

Proposal EN2 modifies Proposal EN1 in two important aspects. The first, which responds to the lack of suitable information about functional expenditure and demographic data, consists of considering only one per capita expenditure norm. The second deals with the practical limitations imposed by the current consensus regarding the objectives of the Nicaraguan transfer system, and consists of incorporating capital expenditures in the determination of the equalization transfers. Although in this document we have insisted on explaining that capital and equalization transfers must be ruled by very different principles and thus they should be administered separately; the separation of both systems is, most likely, not going to take place in the short-run.

If capital expenditures are incorporated into the transfer program, then the objective of equalizing the capacity of municipalities for providing public *services* (as in a traditional equalization transfers system) is clearly abandoned, and it is necessary to replace it with an objective of total expenditure equalization per inhabitant. In order to maintain a necessary correspondence with our fiscal capacity estimation, which is based exclusively on current revenues, we must subtract from the total expenditures the amount of own capital revenue. Without this adjustment, we would be in general overestimating the municipal fiscal disparities, justifying part of the equalization transfers with revenues that they are actually able to collect, and so implicitly favoring the municipalities with greater capacity to collect own capital revenues.

As explained for Proposal EN1, the method of expenditure norm initially defines the aggregate level of sub-national expenditure needs. In this case, we will use expenditure information provided by INIFOM for 2005, from which the per capita expenditure is C$459.4.[50] Considering a population of 4,468,380 inhabitants, the estimated aggregated expenditure is C$2,052.8 millions.[51] This would correspond to Step 1 in Proposal EN1, but

[50] Instead of using directly the sum of expenditures provided by INIFOM, the lack of expenditure information (and/or own capital income) for 12 municipalities has made necessary to calculate, first, the per capita expenditure without considering the population from municipalities with no data, and only then, assuming that the later has the same per capita average expenditure, to estimate the aggregated expenditure needs.

[51] It can be seen from the previous discussion, there is a difference of C$294.6 between expenditure needs and the current own current per capita revenues (C$164.8) considered for estimating fiscal capacity. This difference is explained by the transfers for current expenditures and the "non-own" capital revenues, which have been excluded from the estimation of fiscal capacity. Remember also that own capital revenues have been subtracted from the total expenditures in order to estimate the per capita expenditure needs, and therefore, this category is excluded from both estimations.

in contrast, with this computation in Proposal EN2 we also obtain the expenditure norm. The steps which follow are identical and thus need no additional explanation. The computations made to obtain the municipal transfers in accordance with Proposal EN2 (and using the results from Proposal FC), are provided in Appendix VI.

Box 3: *Simulation exercise*, Proposal EN2

As explained, the computation of per capita expenditure needs has been simplified to the point where what is equalized is a single per capita expenditure norm. From that datum, the calculation of transfers is identical to the one used by Proposal EN1.

In order to make the proposals comparable, the transfer fund will be assumed to have an identical size (C$20 million). The following table presents the information used to define the equalization transfers under this proposal.

Table 26: **Computation of per capita fiscal disparities and municipal transfers according to Proposal EN2 (fictitious municipalities)**

Municipalities (fictitious)	Category	Expenditure Standard per inhabitant	Expenditure needs (*EN*)	Fiscal capacity (*CF*)	Fiscal disparity (*D*)	Per capita necessary transfers	Necessary transfers by municipality	Allocation index	Transfers
I	B	186.5	186.5	311.1	-124.6	0.0	0	**0.00**	0
J	B	186.5	186.5	326.5	-140.0	0.0	0	**0.00**	0
K	C	186.5	186.5	76.2	110.3	110.3	11,585	**0.39**	7,828
L	C	186.5	186.5	177.1	9.4	9.4	453	**0.02**	306
M	D	186.5	186.5	145.0	41.5	41.5	1,661	**0.06**	1,122
N	D	186.5	186.5	148.0	38.5	38.5	963	**0.03**	651
O	E	186.5	186.5	436.4	-249.8	0.0	0	**0.00**	0
P	E	186.5	186.5	41.3	145.3	145.3	4,576	**0.15**	3,092
Q	F	186.5	186.5	81.8	104.7	104.7	1,152	**0.04**	778
R	F	186.5	186.5	106.7	79.9	79.9	599	**0.02**	405
S	G	186.5	186.5	33.3	153.2	153.2	2,757	**0.09**	1,863
T	G	186.5	186.5	20.0	166.5	166.5	4,163	**0.14**	2,813
U	H	186.5	186.5	26.7	159.9	159.9	1,199	**0.04**	810
V	H	186.5	186.5	77.8	108.7	108.7	489	**0.02**	331
Total:							29,597	**1.00**	20,000

Source: own computations.

This proposal, which can be considered as “minimalist” reform to the current system, is equivalent to using only the Population criterion to determine the per capita expenditure needs. In spite of its simplicity, nevertheless, it will be shown that the method has a significant equalizing effect. Additionally, the implementation of this proposal would place the Nicaraguan transfer system in a position where the implementation of Proposal EN1 might become easier.

***Proposal EN3*: computing expenditure needs based on a "weighted index of relative expenditure needs"**

As a second alternative to the methodology of per client expenditure norms in this section we propose the method of weighted indexes of relative needs, which is, to some extent, also feasible with the information currently available about Nicaraguan municipalities. Roughly speaking, the application of this methodology also begins by determining the aggregate level of sub-national expenditure needs (*SEN*), which in our case corresponds to the total expenditures incurred during the year 2005 minus the own capital revenues (C$2,052.8 millions), and then computing the average per capita expenditure needs for all municipalities. The last indicator is further adjusted by the weighted index of relative needs (*IREN*) to obtain the per capita expenditure needs of each municipality.

In order to compute the *IREN*, we select a certain number of variables or factors that explain the differences in the costs of delivering municipal services. These variables would represent the distribution criteria, and each of them must receive a specific weight, corresponding to its share of *X*, in accordance with its relative importance. The first variable, and without a doubt the most important in estimating expenditure needs, is *population* (H_i), which establishes an order of magnitude for the total municipal costs because they invariably growth with population. The second, the *extreme poverty gap* (P_i) can be used to directly represent the higher needs that may be expected from a poorer population, as well as its degree of dependence with respect to the public services provided by the municipal governments. Finally, *area* (A_i) may help to identify the different physical conditions in which the public services are provided. It might be expected that higher distances increase the provision costs, but this is only a conjecture and its validity should be empirically tested.

In order to represent the greater importance of Population, this variable will be assigned a weight of 60%, whereas poverty and area will represent 30% and 10%, respectively. It is important to clarify that these variables as well as the definition of their weights, although apparently reasonable, are not meant to have a normative character. A proper justification of the variables and their weights should be based on rigorous statistical analyses that go beyond the scope of this study.

The *IREN* is computed simply as the weighed sum of the three indexes of relative needs. The expenditure needs by municipalities are obtained by multiplying the *IREN* by the average per capita expenditure needs at the national level. Finally, fiscal disparities can be computed as before, using the fiscal capacity calculated in the Proposal FC and obtaining an index of necessary transfers. Appendix VII provides the details of the calculations made to obtain the equalization transfers by municipality according to this procedure.[52]

[52] Annex VIII provides a sample of the transfers computed according to the system currently used in Nicaragua, which will be compared with the proposals presented in this report.

Box 4: *Simulation exercise*, Proposal EN3

Following the procedures detailed in the main text, the information generated to obtain the indexes corresponding to each variable and the equalization transfers are detailed in the following table.

Table 27: **Computation of per capita fiscal disparities and municipal transfers according to Proposal EN3 (fictitious municipalities)**

Municipalities (fictitious)	Category	Data by criteria			Relative indexes			Weighted relative indexes			Expenditure needs (*NG*)	Fiscal capacity (*CF*)	Fiscal disparity (*D*)	Per capita necessary transfers	Necessary transfers by municipality	Allocation index	Transfers
		criteria:			criteria:			criteria:									
		H_i	P_i	A_i	H_i	P_i	A_i	H_i	P_i	A_i							
Ponderaciones:								0.60	0.30	0.10							
I	B	1	0.08	261.3	1.00	1.10	0.54	0.60	0.33	0.05	183.4	311.1	-127.7	0.0	0	**0.00**	0
J	B	1	0.11	690.0	1.00	1.51	1.44	0.60	0.45	0.14	223.2	326.5	-103.3	0.0	0	**0.00**	0
K	C	1	0.07	270.0	1.00	0.89	0.56	0.60	0.27	0.06	172.5	76.2	96.3	96.3	10,110	**0.33**	6,640
L	C	1	0.15	87.2	1.00	1.93	0.18	0.60	0.58	0.02	223.2	177.1	46.1	46.1	2,213	**0.07**	1,453
M	D	1	0.13	1080.1	1.00	1.65	2.25	0.60	0.49	0.23	246.0	145.0	101.0	101.0	4,038	**0.13**	2,652
N	D	1	0.01	893.5	1.00	0.18	1.86	0.60	0.06	0.19	156.9	148.0	8.9	8.9	223	**0.01**	146
O	E	1	0.06	360.0	1.00	0.79	0.75	0.60	0.24	0.08	170.2	436.4	-266.2	0.0	0	**0.00**	0
P	E	1	0.03	1119.9	1.00	0.39	2.33	0.60	0.12	0.23	177.2	41.3	135.9	135.9	4,281	**0.14**	2,812
Q	F	1	0.01	81.1	1.00	0.14	0.17	0.60	0.04	0.02	122.8	81.8	41.0	41.0	451	**0.01**	296
R	F	1	0.12	171.5	1.00	1.63	0.36	0.60	0.49	0.04	209.9	106.7	103.3	103.3	775	**0.03**	509
S	G	1	0.02	889.3	1.00	0.31	1.85	0.60	0.09	0.19	163.7	33.3	130.4	130.4	2,347	**0.08**	1,542
T	G	1	0.09	454.9	1.00	1.22	0.95	0.60	0.36	0.09	197.6	20.0	177.6	177.6	4,441	**0.15**	2,917
U	H	1	0.05	240.0	1.00	0.69	0.50	0.60	0.21	0.05	159.9	26.7	133.2	133.2	999	**0.03**	656
V	H	1	0.12	120.0	1.00	1.58	0.25	0.60	0.47	0.03	204.8	77.8	127.0	127.0	571	**0.02**	375
Total															30,450	**1.00**	20,000
Average		1	0.08	479.9	1.00	1.00	1.00	0.60	0.30	0.10	186.5	143.4					

Source: own computations.

(iv) Summary of results and comparison of the proposed methodologies

In this section we will evaluate the proposed systems and the system currently in place in Nicaragua. Using the results from the proposals FC, EN2 and EN3 for the 151 municipalities, we compare the performance of what we will call Proposed System 2 (including the FC and EN2 proposals), and Proposed System 3 (with the FC and EN3 proposals), with the current Nicaraguan system.

The main objective of an equalization transfer system is the reduction of the variability of the fiscal disparities. Nevertheless, since we do not have an "objective" measure of expenditure needs and fiscal capacity, an appropriate way to compare the three systems would be to analyze the amounts and variability of the per capita transfers distributed under each system.

Table 28: **Comparison of per capita transfers obtained under Proposed Systems 2 and 3, and the current system**
(figures in cordobas)

	System 2 (NG2 - CF)	System 3 (NG3 - CF)	Current system
Weighted average	161.1	161.1	161.1
Simple average	171.8	174.6	277.3
Maximum	238.5	744.0	1,334.6
Minimum	0.0	0.0	51.2
Standard deviation	56.2	103.5	203.9
Coefficient of variation	0.33	0.59	0.74
Correlation coefficient:			
System 2	1.00	0.64	0.01
System 3		1.00	0.13
Current system			1.00

Source: own computations.

Table 28 provides summary statistics of the per capita transfers obtained under the three systems.[33] The following observations deserve to be highlighted:

- System 2 leads to a lower variability in per capita transfers, which makes it the most attractive system according to this criterion.
- System 2 is also preferable to the other two systems when the maximum amount of per capita transfers are compared. Considering that the average per capita expenditures used in this proposal as an estimator of the expenditure needs is C$459.4, the maximum amount of transfers reached under System 3, and also under the current system, seem to be excessive.
- One important disadvantage of the current system is that it prevents the municipalities with a large fiscal capacity relative to their expenditure needs of being excluded from the benefits of the system. This implies that some resources are being used to support

[33] The results from the application of the three systems for the 151 municipalities are detailed on Appendix IX.

municipalities in relatively good fiscal conditions, reducing the equalizing power of the system. [34]

- The correlation between Proposed Systems 2 and 3 is relatively high, which is not surprising because both systems are structured in a very similar way and are exclusively oriented to reduce the fiscal disparities.
- Consequently, the fact that the current system has such a poor correlation with the two proposals suggests that it is not effectively equalizing the municipal fiscal disparities.

According to the previous observations, Proposed System 2 presents the best performance in terms of the allotment of per capital transfers.

A different approach that may serve to evaluate the effect of the three systems is the effect of transfers on municipal expenditures. Since part of the municipal expenditures during the year 2005 was financed by the transfers from the current system, the actual per capita municipal expenditures during this period can be associated to the application of this system. In the hypothetical situation in which the Proposed Systems 2 or 3 had been applied, however, the expenditures of each municipality would necessarily be adjusted by the differences in the transfers received. Table 29 provides statistical information about per capita municipal expenditures under the current system (historical expenditures) and the adjusted per capita municipal expenditures that would be observed under the two proposed transfers systems.[35]

Similar to the previous analysis, we will summarize the main conclusions:

- System 2 results more effective than the other two systems in limiting (upwards) the maximum per capita expenditures.
- In addition, System 2 also results more effective than the other two systems in limiting (downwards) the minimum per capita expenditures.
- As a result, System 2 admits smaller variability in per capita municipal expenditures than the other systems.
- Proposed System 3 presents in general, and according to the correlation coefficient, a greater proximity to System 2 than the current system, which is why it is preferable also from the viewpoint of per capita expenditures.

[34] For example, the municipality San Juan del Norte, which according to the two proposed systems presents the highest negative fiscal disparity (or equivalent it the richest municipality with respect to its expenditure needs), receives per capita transfers of C$1,334.6 under the current system. Undoubtedly, this is explained by its small population (939 inhabitants), but this fact demonstrates that the current system is wasting resources in municipalities that should not receive additional resources in the context of an equalization program.

[35] In order to approximate expenditure needs under proponed systems 2 and 3, we deduct from actual expenditures per capita for 2005 the amount of transfers per capita actually received and add the amounts derived under systems 2 and 3. A sample of the results obtained are presented in Appendix X.

Table 29: **Comparison between per capita expenditures financed by the current system and proposed systems 2 and 3 (hypothetical)**
(figures in cordobas)

	System 2 (NG2 - CF)	System 3 (NG3 - CF)	Current system
Weighted average	462.9	461.9	459.5
Simple average	470.3	468.4	566.7
Maximum	1,572.5	1,625.5	1,821.1
Minimum	132.8	93.3	118.6
Standard deviation	226.0	241.6	322.0
Coefficient of variation	0.48	0.52	0.57
Correlation Coefficient:			
System 2	1.00	0.96	0.78
System 3		1.00	0.73
Current system			1.00

Note: due to the lack of expenditure data for some municipalities, all of the statistics are refer to a total of 143 municipalities.
Source: own computations.

Under the two approaches selected to analyze the effects of the three alternative transfer systems, Proposed System 2 is undoubtedly the most attractive. It is followed by Proposed System 3, while the current system demonstrates poor equalizing effects.

Box 5: *Simulation exercise,* Comparison of results

Here we provide a brief analysis of the equalization effects of Proposed Systems 1 (FC and EN1), 2 and 3. For simplicity, and considering that our main purpose is to compare the methodologies for estimating expenditure needs, we will assume that the per capita fiscal capacity constitutes a perfect measure of the real per capita fiscal capacity of each municipality. This assumption will allow us to use a direct procedure to evaluate the equalization effects of the three proposals, consisting of comparing the variability of per capita fiscal disparities before and after the transfers have been received. The idea is that whenever the variability of fiscal disparities decreases significantly due to the transfers, then the system has been effective in equalizing fiscal disparities.

Indeed, since fiscal capacity is *assumed* to be correctly measured and it is common for the three systems (the differences among the transfers provided under each system will vary only with the different measures of expenditure needs), the variability of fiscal disparities before and after transfers will correctly describe the equalization effects of each system (see Table 29 and the note at the end of the box). It is important to remember that a negative fiscal disparity represents an excess of per capita fiscal capacity with respect to expenditure needs. What we look for is a reduction of the value of the fiscal disparities and so the effect of each system is obtained by subtracting the per capita transfers from the estimated fiscal disparity under each scheme.

Table 30: **Comparison of the effects on fiscal disparities obtained according to the proposed methodologies (FC, EN1, EN2 and EN3)**
(figures in cordobas)

Municipality	Category	Population	FC_i	System 1 (EN1 - FC)		System 2 (EN2 - FC)		System 3 (EN3 - FC)	
				D	*D - T*	*D*	*D - T*	*D*	*D - T*
I	B	90,000	311.1	-129.9	-129.9	-124.6	-124.6	-127.7	-127.7
J	B	49,000	326.5	-143.7	-143.7	-140.0	-140.0	-103.3	-103.3
K	C	105,000	76.2	106.4	36.4	110.3	35.8	96.3	33.0
L	C	48,000	177.1	-2.1	-2.1	9.4	3.1	46.1	15.8
M	D	40,000	145.0	50.0	17.1	41.5	13.5	101.0	34.6
N	D	25,000	148.0	40.5	13.9	38.5	12.5	8.9	3.1
O	E	5,500	436.4	-262.3	-262.3	-249.8	-249.8	-266.2	-266.2
P	E	31,500	41.3	173.8	59.6	145.3	47.1	135.9	46.6
Q	F	11,000	81.8	99.1	33.9	104.7	34.0	41.0	14.1
R	F	7,500	106.7	94.1	32.2	79.9	25.9	103.3	35.4
S	G	18,000	33.3	170.7	58.5	153.2	49.7	130.4	44.8
T	G	25,000	20.0	163.1	55.9	166.5	54.0	177.6	61.0
U	H	7,500	26.7	189.8	65.1	159.9	51.8	133.2	45.7
V	H	4,500	77.8	90.0	30.9	108.7	35.3	127.0	43.6
Maximum			436.4	189.8	65.1	166.5	54.0	177.6	61.0
Minimum			20.0	-262.3	-262.3	-249.8	-249.8	-266.2	-266.2
Standard deviation			128.3	136.3	97.8	128.3	92.4	126.1	93.1

Source: own computations.

Given the small quantity of (fictitious) municipalities considered in this exercise, it is not advisable to pay too much attention to the figures obtained. In fact, the purpose of this exercise is only to show that Proposal EN1 has a similar behavior to proposals EN2 and EN3, which, according to the previous analysis, have already demonstrated superior equalizing power with respect to the current system.

The table shows that the three proposals have a very similar performance, all of them significantly reducing the variability initially observed in fiscal disparities. In this sense, the three systems seem to be successful in focusing the available resources towards the most needy municipalities. This is not surprising because they follow the same procedure to distribute the available transfer funds exclusively across those municipalities with positive initial FC_i.

Note: It is important to emphasize that this methodology of analysis has not been applied to the comparison of Systems 2 and 3 with the current system due to the following reasons: first, we do not have a suitable or "objective" measure of fiscal capacity; second, the actual system uses a fiscal capacity estimation that differs from the one proposed in this report, so they are not comparable, and; third, the actual system does not clearly identify the expenditure needs of the municipalities. Thus fiscal disparities cannot even be computed.

(v) Summary of proposals and critical path of reforms

The reform options provided in this report can be summarized on three levels of a critical path of reforms that might be divided in short, medium and long run:

First level of reforms. In the short run, the reform of the current transfer system may focus on:

- The Fiscal Equity and Population criteria should be maintained as the two fundamental and unique pillars of the equalization transfers system.
- Elimination of the Execution criterion, from which 25% of the transfer funds will be liberated and may be used to reinforce the equalization funds distributed according to the Fiscal Equity and Population criteria, or alternatively, might be used to finance capital transfers with the purpose of improving municipal infrastructure.
- Formal separation of the Efficiency criterion from the equalization transfer system. The funds distributed according to this criterion may serve to stimulate municipal *fiscal effort*, and eventually additional funds obtained by FONIM might be added to this program. In addition, it is important to take into account the size of the municipalities in the distribution formula (either by adjusting per capita measures by the index of fiscal effort or by considering the population on the distribution formula). Alternative methodologies for the stimulation of fiscal effort are presented in Appendix III.
- These reforms will only require the modification of the current Law of Transfers.

Second level of reforms. In the medium term, it might be possible to implement the following policies:

- Redefinition of the Fiscal Equity and Population criteria into an equalization transfer formula based on the calculation of the per capita fiscal disparities according to the proposed methodology FC for the estimation of the fiscal capacity and the methodology EN2 or EN3 for the calculation of expenditure needs. The equalization fund would be maintained as in the *first level* of reforms.
- The transfers provided to stimulate the tax effort of local governments would also be maintained as proposed on the first level, but as long as the tradition of tax collection increases, the transfers should gradually be eliminated. The funds used in this program may then be reallocated into the equalization and/or the capital transfer funds.
- These reforms will only require modification of the current Law of Transfers.

Third level of reforms. In the long run, a desirable structure of the Nicaraguan transfer system might be characterized by the use of methodology EN1 (per client expenditure norms) for the computation of the expenditure needs, while the methodology FC is used to estimate fiscal capacity or perhaps it is possible to substitute the FC methodology by the MDPTM model. These reforms would also require modification of the Law of Municipalities in order to establish a clear allocation of expenditure competitions between the different government levels and a budgetary classification by functions.

A matrix with the summary of the three levels of reform proposed in this section is presented in Table 31.

Table 31: **Critical path of reforms**

	Level 1: Short Run	Level 2: Medium Run	Level 3: Long Run
Proposed s*tructure* of the transfer system	***Separated criteria*** (same structure as current system)	***Per capita fiscal disparities*** DF = **EN2** – FC	***Per capita fiscal disparities*** DF = **EN1** – FC
	Only the Fiscal Equity and Population criteria are maintained.	- Proposal EN2 is equivalent to use the Population criterion to compute expenditure needs. - Implicitly, the fiscal disparity formula defines equal weighs for the population criteria (EN2) and fiscal capacity.	- Proposal EN1 represents the recommended option for measuring per capita expenditure needs. - Alternatively, the MDPTM may be used for estimating per capita fiscal capacity.
Suggested modifications (with respect to the current system)	- Elimination of the Execution criterion. - Formal separation of the Efficiency criterion from the equalization transfer system. - The reform of the efficiency criterion that would be called "Stimulus to the tributary effort": The minimum would be to define the transfer allocation by efficiency in per capita terms.		- Gradual elimination of the program of "stimulus to the tax effort."
Proposed alternatives for *resource allocation*	- Use of funds liberated from the Execution criterion (25% of transfer fund): (i) equalization fund, or (ii) investment stimulus fund. - Use of funds liberated from the Efficiency criterion (25% of transfers fund): Fiscal effort stimulus fund (plus resources from FONIM)		- Use of funds liberated from the fiscal effort stimulus fund: (i) equalization fund, or (ii) investment stimulus fund. - At this level, the method to determine the equalization transfer fund acquires a permanent character.
Formal requirements	- Reform of the Law of Transfers	- Reform of the Law of Transfers	- Reform of the Law of Municipalities (required to clarify the allocation of expenditure competitions) - Budgetary Classification by functions.

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Appendices

Appendix I: Model for Determination of Municipal Tax Potentials (MDPTM)

The estimation of the potential tax revenues is, according to the current law, required for the computation of transfers by Fiscal Equity and Fiscal Effort. The procedure for estimating potential tax revenues is not explicitly defined by the law, and the Nicaraguan authorities are currently trying to implement the Determination of Municipal Tax Potentials' Model (MDPTM) with such a purpose. The MDPTM is an econometric model designed by Boston Institute for Developing Economies (BIDE) to forecast the changes in the behavior of the variables determining revenue collections. Roughly, the model designed for Nicaragua consists of two modules, a labor module describing job market conditions, and a fiscal module meant to explain and predict the changes in the tax base according to the changes in the job market. The MDPTM is a version of the "Show Me Model," one of the main methodologies used for estimating tax revenues in several states of the US. In spite of its general acceptance, however, its application in Nicaragua is not free of difficulties. Mainly due to the lack of detailed information at the municipal level, the MDPTM has been applied without considering the labor module, and so far it has not been possible to obtain the information required in order to incorporate all municipalities. The variables required by the model to fully run the fiscal and labor modules are:

- Population
- Labor force
- Job location
- Unemployment
- Labor force coming from outside the municipality
- Labor force residing in the municipality but working outside
- External labor force
- External employment
- Employment by job location in adjacent municipalities
- Labor force in adjacent municipalities
- Economically active population
- Municipal gross revenues, series from 1995
- Municipal gross expenditures, series from 1995
- Total personal income
- Series of average wages by type of job

The impossibility of obtaining data about all municipalities has forced the application of the MDPTM to be based on a sample of only 30 municipalities in which the required information was formerly collected. Since these municipalities may be considered representative, the results obtained by the model can in theory be applied at the national level. It may be expected that the estimated coefficients from this exercise would provide valuable information about the fiscal and population aggregates, since they are derived from a systemic representation of the relationship between demographic and economic variables. The results of the model may, therefore, result in a high quality estimation of the municipal tax potential (PTM), consisting of municipal current revenues including taxes, rates and special contributions collected by the municipalities during the period and adjusted for inflation. Unfortunately, the lack of information has limited the application and usefulness of the MDPTM, and even though concerted efforts have been made in order to make the system operative, it is still uncertain whether the inputs required by the MDPTM will be fully provided in a regular basis. So far, the development of the municipal cadastral base has facilitated the application of the model to the IBI collections, but when other taxes are considered the estimation procedures which are feasible remain quite rudimentary.

Appendix II: The computation of average per capita fiscal potential and weighting alternatives according to the size of municipalities

The transfers by Fiscal Equity benefit those municipalities in which per capita fiscal capacity is lower than the national average. The appropriate procedure to use in order to determine this average is debatable. Nevertheless, in order to verify the fulfillment of the desired objectives, it is important to consider the consequences of the procedure chosen.

According to the Law of Transfers, the average per capita fiscal capacity is calculated as a *simple average* of the fiscal capacity per capita of the 151 municipalities, without weighting them by population size. In such cases, if there are a number of small municipalities with relatively high per capita fiscal capacity, as is the Nicaraguan case, then the current method will overestimate the average per capita fiscal capacity at the national level. Indeed, according to the information provided by INIFOM for the computation of intergovernmental transfers in 2005, for instance, we can identify nine municipalities with a population average of only 15,885 inhabitants and with potential per capita tributary revenue (calculated on the basis of the municipal tributary potential) of C$439.4. For the overall result, the simple average for all municipalities is C$107.6, while the weighed average is only C$94.1. Thus, since municipalities with per capita fiscal capacity over the average do not receive transfers by Fiscal Equity, the use of the simple average implies the exclusion of those municipalities that are in the range of C$94.1–C$107.6. There are 17 municipalities in that situation with a total combined population of 572,175 inhabitants, equivalent to 12,8% of the population.

In this context, as currently applied, the Fiscal Equity criterion might lead to an excessive premium for those municipalities with low fiscal capacity, and excludes a segment of the population that might be considered as eligible to benefit from this criterion. Additionally, if the distribution transfers are high enough, it is also possible that some of the municipalities actually benefited under the simple average scheme may increase their per capita revenues over the per capita revenues of the municipalities within the excluded segment, a situation that would be difficult to justify in political and economical terms.

As suggested, a simple way to solve this situation is by calculating the *weighted* average of per capita fiscal capacities, which can be obtained simply by dividing the fiscal capacity of all sub-national governments by their total population.

Another approach to solve this problem is to compute the municipal transfer allocation index associated to this concept doing a *weighting by population*, described as follows:

In general, denoting the values of the allocation criterion for each municipality as *ACi*, the calculation of the allocation index by criterion, I_{AC}, can be computed using the following formula:

$$I_{ACi} = \frac{H_i AC_i}{\sum_i H_i AC_i},$$

where, H_i represents the population in municipality *i*. This expression gives the value of the allocation index for the municipality according to the *CAi* variable regardless of its unit of

measurement, *after weighting the population of each municipality i*. By definition $\sum_i I_{CAi} = 1$; thus the index is well defined.

Finally, from the computed allocation index, and defining the total amount of transfers to be assigned according to certain allocation criterion as X_{CA}, it is straightforward to obtain the transfers for each municipality ($T_{CA\ i}$) as: $T_{CAi} = I_{CAi} \cdot X_{CA}$

The main advantage of using weighted averages is that it makes it possible to take into account the size of the municipality in population terms. As a result, the practice of awarding (or punishing) smaller (or bigger) municipalities through the distribution of transfers according to any criterion different from the municipal size, can easily be avoided. Additionally, the same procedure helps to include among the beneficiaries of the system *all* the municipalities that are, in fact, eligible according to the selected standard.

Appendix III: Options to Reform the Efficiency Criterion [36]

In this section, we discuss the merits of including the fiscal effort criterion in the equalization formula, and how this should be done whenever the equalization transfer program is used for this purpose.

The incorporation of a Fiscal Effort criterion in the allocation transfer formula is quite controversial. If local governments provide pure private goods,[37] and no significant externalities are observed across jurisdictions, then a commonly accepted principle is that the equalization transfers system should not attempt to either encourage or discourage fiscal effort, and that any incentives provided in order to improve fiscal effort should be carried out independently of the equalization transfers; for instance, through matching grants.

In general, there is no economic justification for rewarding the communities that have voluntarily decided to consume a higher proportion of public goods. Even worse, the incorporation of this criterion might imply the redistribution of resources from poor local governments to those choosing higher standards of local public goods provision, which might be expected to be relatively richer.

In spite of these arguments, the use of the Fiscal Effort criterion in the distribution formula is relatively common,[38] and, as in Nicaragua, it has been justified as a mechanism to stimulate the local government fiscal effort when it is considered insufficient. Nevertheless, even though the inclusion of the Fiscal Effort criterion in the distribution formula is successful in stimulating tax collections, the previous arguments are still valid, so it would always be advisable to include it only temporarily. In this sense, the different nature and objectives pursued by an equalization transfer system and a program stimulating fiscal effort may also suggest the need to distinguish between their financing sources: the transitory character of the program of fiscal stimulus might be more compatible with less stable financial sources, as international donations, which constitute a feasible and rational option for financing this type of program.[39]

The concept of fiscal effort may be defined as the extent to which a local government exhausts its available tax base. Such level depends not only on the tax effort, but also on the tax rates applied, and the exceptions and allowances, whenever the local government has certain degree of discretion in determining these tax instruments. Further, the level of fiscal effort can be measured as the relation between effective tax collections and the fiscal capacity of each local government. In turn, fiscal capacity should be calculated for a given (and hypothetical) level of tax rates, exceptions and allowances, and for this reason its

[36] The following discussion is based on Boex and Martínez-Vazquez (2007).

[37] A purely private good is exclusive and a rival. By exclusivity we understand that it is possible to exclude potential users from the benefits of the service; while rivalry means that the consumption of a good by one individual prevents other the consumption of the same good by a different individual.

[38] Among developing countries, the followings are examples where the fiscal effort criterion has been introduced into the equalization transfer system: China, Ghana, India, Nigeria, Mexico, Colombia, Nicaragua, Ecuador, Venezuela, and Sri Lanka.

[39] In the Appendix IV, it is briefly describes the quantity and the composition of the external donations and the national fund of municipal investment (FONIM).

measurement is particularly difficult and so indirect methodologies may be needed to compute the fiscal capacity or to estimate fiscal effort.

For example, Nigeria and Colombia reward the increase in revenue collections with respect to previous years, though there are serious problems with this approach. First, those municipalities that have previously exerted a higher fiscal effort have less room to increase their revenue collections and to share the benefits of the program, while those local governments with a lower initial level of fiscal effort will be rewarded. Second, this approach does not consider the fact that the increments in revenue collections are usually explained by the growth of the tax base instead of actual improvements in the collection procedures and fiscal effort. By comparison, what is being developed in Nicaragua, which is based on the estimation of fiscal capacity associated with the IBI, is certainly superior. However, it suffers from other problems already described in this report, mainly related to the quality of the estimations and the small relative importance of this tax with respect to the total own revenues as well as with respect to the amount of transfers distributed under the Efficiency criterion.

Appendix IV: International donations and National Fund of Municipal Investments (FONIM)

International donations of countries and organizations represent an important source of revenues for Nicaragua, contributing a 22.6% of the General Budget of the country in 2005. The following table presents a list of the main contributors.

Table A.1: **International Donations; Budget up to September 2005.**
(figures in thousands of current cordobas)

	Donations 2005	Share
European Union	493,448	17.8%
Government of Japan	399,696	14.4%
Government of Holland	300,115	10.8%
Government of Denmark	171,750	6.2%
Switzerland/FSS	134,863	4.9%
Government of Sweden	134,642	4.8%
World Food Program - WFP	129,214	4.7%
World Bank	127,524	4.6%
Government of Finland	101,727	3.7%
Holland /FSS	86,616	3.1%
Kreditanstalt Fur Wiederaufbau	67,415	2.4%
Inter-American Development Bank - IDB	65,294	2.4%
Agency for International Development	50,982	1.8%
Government of Luxemburg	43,292	1.6%
Central American Bank for Economic Integration - CABEI	34,868	1.3%
World Rehabilitation Fund	31,094	1.1%
Norway/FSS	29,776	1.1%
United Nations Development Program - UNDP	28,585	1.0%
Government of Spain	27,180	1.0%
Government of Taiwan	26,458	1.0%
SIDA - Sweden	26,036	0.9%
GTZ	24,979	0.9%
United Nations Children's Fund - UNICEF	24,505	0.9%
United Nations Population Fund	21,883	0.8%
Swiss Committee	21,685	0.8%
Government of Norway	21,505	0.8%
COSUDE/Sweden	21,384	0.8%
CIDA - Canada	15,667	0.6%
Finland/FSS	11,169	0.4%
Other donors	104,984	3.8%
Total International Donations	2,778,337	100.0%

Source: Budget Execution document, January - September 2005.

A fraction of the external donations is assigned to support management and investment at the municipal level. For this reason, during 2005 the INIFOM negotiated the implementation of the FONIM, conceived as a mechanism for allocating the external resources across

municipalities. In addition, according to Article 6 of Law No. 466 of Municipal Budgetary Transfers, countries and donor organizations have the option of directly financing municipal development. The purpose of these funds is mainly to finance investment projects and to modernize municipal management.

External donations during the 2005 reached 4.6% of total transfers, which were financed by the government of Denmark with C$31.2 million Cordobas, and by the UNDP with C$4.0 million. According to Law No. 466, and with the aim of promoting municipal investment, these funds were used to finance capital transfers for the execution of investment projects.

Table A.2: **Share of International Donations in the Municipal Transfers System, 2005**
(figures in thousands of current cordobas)

	2005	Rate of participation
Current Transfers (Treasury resources)	204.3	26.4%
Capital Transfers	569.2	73.6%
Treasury resources	534.0	69.0%
International Donations (FONIM)	35.2	4.6%
Total Transfers	773.5	100.0%

Source: Budget Execution document, January - September 2005.

Given the importance of the international donations as well as the insignificant proportion incorporated into the municipal transfers system, a notable increase in these funds was verified in 2006.

Appendix V: Fiscal Capacity assessment according to Proposal CF (sample of municipalities)

Municipality	Current Own Revenue per capita					Relative Revenue Index					*ICFRi* (ave. of index)	*CFi* (*ICFRi* * *164.8*)	*CFi * Hi*	*CFi * Hi adjusted* (*)	*CFi adjusted* (*)
	2000 (C$)	2001 (C$)	2002 (C$)	2003 (C$)	2004 (C$)	2000	2001	2002	2003	2004		(C$)	(C$ thous.)	(C$ thous.)	(C$)
Achuapa	23.1	34.4	32.9	24.3	36.9	0.25	0.35	0.32	0.22	0.29	0.29	**47.4**	672	675	**47.6**
Acoyapa	70.7	83.4	106.5	124.8	130.9	0.78	0.85	1.04	1.13	1.03	0.97	**159.3**	3,564	3,579	**160.0**
Altagracia	24.9	32.7	34.8	44.7	46.0	0.27	0.33	0.34	0.41	0.36	0.34	**56.5**	1,214	1,219	**56.8**
Belén	24.7	25.0	33.8	35.0	43.1	0.27	0.25	0.33	0.32	0.34	0.30	**49.9**	986	990	**50.1**
Bluefields	-	105.0	138.3	145.3	167.8	-	1.07	1.36	1.32	1.32	1.27	**208.7**	10,235	10,278	**209.6**
Boaco	111.4	119.2	127.6	125.0	124.8	1.22	1.21	1.25	1.14	0.98	1.16	**191.3**	10,684	10,730	**192.1**
Bocana de Paiwas	89.3	96.3	49.4	52.4	63.6	0.98	0.98	0.49	0.48	0.50	0.68	**112.7**	6,717	6,745	**113.2**
Bonanza	-	28.5	92.1	114.9	109.2	-	0.29	0.90	1.04	0.86	0.77	**127.6**	2,023	2,032	**128.2**
Buenos Aires	97.4	137.6	136.6	172.1	184.1	1.07	1.40	1.34	1.56	1.45	1.36	**224.8**	1,217	1,222	**225.8**
Camoapa	64.4	65.9	83.5	86.1	81.8	0.71	0.67	0.82	0.78	0.64	0.72	**119.4**	4,757	4,777	**119.9**
Cárdenas	578.0	513.9	538.3	553.5	303.3	6.35	5.22	5.28	5.03	2.39	4.85	**799.8**	5,205	5,227	**803.2**
Catarina	84.5	105.6	163.8	161.6	183.7	0.93	1.07	1.61	1.47	1.45	1.30	**215.0**	1,528	1,534	**215.9**
Chichigalpa	186.7	214.4	229.2	257.1	353.2	2.05	2.18	2.25	2.34	2.78	2.32	**382.2**	18,168	18,245	**383.8**
Chinandega	154.2	145.9	156.1	176.2	185.6	1.69	1.48	1.53	1.60	1.46	1.55	**256.1**	38,383	38,547	**257.2**
Cinco Pinos	18.5	14.8	17.1	17.0	18.5	0.20	0.15	0.17	0.15	0.15	0.16	**27.0**	181	182	**27.2**
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Tipitapa	90.7	103.8	116.5	114.9	129.6	1.00	1.05	1.14	1.04	1.02	1.05	**173.3**	22,330	22,425	**174.1**
Tisma	30.2	38.0	43.8	41.2	42.5	0.33	0.39	0.43	0.37	0.34	0.37	**61.2**	803	806	**61.5**
Tola	45.1	48.2	63.5	66.8	111.5	0.50	0.49	0.62	0.61	0.88	0.62	**102.0**	2,613	2,624	**102.4**
Totogalpa	-	79.8	19.5	17.8	20.8	-	0.81	0.19	0.16	0.16	0.33	**54.7**	569	572	**54.9**
Villa Carlos Fonseca	-	100.3	119.2	91.0	92.3	-	1.02	1.17	0.83	0.73	0.94	**154.2**	5,555	5,579	**154.9**
Villa Sandino	62.2	74.6	98.4	142.4	124.7	0.68	0.76	0.97	1.29	0.98	0.94	**154.3**	2,437	2,447	**155.0**
Villanueva	33.4	31.5	98.9	64.9	69.9	0.37	0.32	0.97	0.59	0.55	0.56	**92.2**	2,833	2,845	**92.6**
Waslala	49.2	55.1	35.2	37.6	42.2	0.54	0.56	0.35	0.34	0.33	0.42	**69.9**	3,312	3,327	**70.2**
Waspán	-	14.5	18.0	27.0	35.9	-	0.15	0.18	0.25	0.28	0.21	**35.1**	1,345	1,350	**35.2**
Wiwilí de Jinotega	29.8	23.7	24.7	29.4	33.5	0.33	0.24	0.24	0.27	0.26	0.27	**44.2**	2,128	2,137	**44.4**
Wiwilí Nueva Segovia	-	40.1	34.8	49.5	41.1	-	0.41	0.34	0.45	0.32	0.38	**62.7**	1,285	1,290	**62.9**
Yalagüina	86.3	43.4	57.3	52.6	27.0	0.95	0.44	0.56	0.48	0.21	0.53	**87.1**	811	814	**87.5**
Weighted average	91.1	98.5	101.9	110.1	126.9	1.00	1.00	1.00	1.00	1.00					
Total													733,308	736,436	

(*) The adjustment of CFi * Hi, and of CFi, is required because given the lack of information for some periods, the sum of relative revenue indices, the ICFRi, will not result in a weighted average equal to one. In practice this adjustment is not necessary; we use it so that the sum of the estimated fiscal capacity matches the total current own revenues in 2005.
Source: own computations.

Appendix VI: Estimated Equalizing Transfers according to Proposals NG2 and CF (sample of municipalities)

Municipality	Expenditure needs NG2 (population criterion) (1)	Fiscal Capacity (2)	Fiscal Disparity (3) = (1)-(2) (3)	Required per capita transfer (4): (3) > 0 (4)	Population. 2005 (5)	Required Municipal Transfer. (6) = (4)*(5) / 1000 (6)	Distribution Index (7) = (6) / sum(6) (7)	**Transfers Proposal 2 (8) = (7) * X** **(8)**	Per capita transfers (9) = (8) * 1000 / (5) (9)
Achuapa	459.4	47.6	411.9	411.9	14,188	5,843	0.004	**3,142**	221.5
Acoyapa	459.4	160.0	299.4	299.4	22,372	6,699	0.005	**3,602**	161.0
Altagracia	459.4	56.8	402.6	402.6	21,468	8,644	0.006	**4,648**	216.5
Belén	459.4	50.1	409.3	409.3	19,761	8,088	0.006	**4,349**	220.1
Bluefields	459.4	209.6	249.8	249.8	49,047	12,254	0.009	**6,590**	134.4
Boaco	459.4	192.1	267.3	267.3	55,849	14,927	0.011	**8,027**	143.7
Bocana de Paiwas	459.4	113.2	346.2	346.2	59,578	20,625	0.015	**11,091**	186.2
Bonanza	459.4	128.2	331.2	331.2	15,850	5,250	0.004	**2,823**	178.1
Buenos Aires	459.4	225.8	233.6	233.6	5,412	1,264	0.001	**680**	125.6
Camoapa	459.4	119.9	339.5	339.5	39,841	13,526	0.010	**7,273**	182.6
Cárdenas	459.4	803.2	-343.8	0.0	6,508	0	0.000	**0**	0.0
Catarina	459.4	215.9	243.5	243.5	7,106	1,730	0.001	**930**	130.9
Chichigalpa	459.4	383.8	75.6	75.6	47,541	3,595	0.003	**1,933**	40.7
Chinandega	459.4	257.2	202.2	202.2	149,890	30,314	0.023	**16,301**	108.8
Cinco Pinos	459.4	27.2	432.2	432.2	6,704	2,898	0.002	**1,558**	232.4
Ciudad Antigua	459.4	64.2	395.2	395.2	4,174	1,650	0.001	**887**	212.5
Ciudad Darío	459.4	107.5	351.9	351.9	33,960	11,949	0.009	**6,425**	189.2
Ciudad Sandino	459.4	201.0	258.4	258.4	71,975	18,598	0.014	**10,001**	138.9
Comalapa	459.4	51.0	408.4	408.4	11,253	4,595	0.003	**2,471**	219.6
Condega	459.4	114.8	344.6	344.6	31,150	10,735	0.008	**5,773**	185.3
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Siuna	459.4	42.3	417.1	417.1	67,039	27,965	0.021	**15,037**	224.3
Somotillo	459.4	87.5	371.9	371.9	31,968	11,890	0.009	**6,394**	200.0
Somoto	459.4	121.3	338.1	338.1	37,850	12,796	0.010	**6,881**	181.8
Telica	459.4	119.7	339.7	339.7	24,573	8,347	0.006	**4,488**	182.7
Telpaneca	459.4	67.1	392.3	392.3	14,335	5,624	0.004	**3,024**	211.0
terragona	459.4	40.3	419.1	419.1	12,322	5,164	0.004	**2,777**	225.4
Teustepe	459.4	72.2	387.2	387.2	27,195	10,529	0.008	**5,662**	208.2
Ticuantepe	459.4	257.9	201.5	201.5	26,129	5,264	0.004	**2,831**	108.3
Tipitapa	459.4	174.1	285.3	285.3	128,840	36,764	0.027	**19,769**	153.4
Tisma	459.4	61.5	397.9	397.9	13,113	5,218	0.004	**2,806**	214.0
Tola	459.4	102.4	357.0	357.0	25,627	9,149	0.007	**4,920**	192.0
Totogalpa	459.4	54.9	404.5	404.5	10,406	4,209	0.003	**2,263**	217.5
Villa El Carmen	459.4	154.9	304.6	304.6	36,027	10,972	0.008	**5,900**	163.8
Villa Sandino	459.4	155.0	304.4	304.4	15,791	4,807	0.004	**2,585**	163.7
Villanueva	459.4	92.6	366.8	366.8	30,713	11,265	0.008	**6,058**	197.2
Waslala	459.4	70.2	389.2	389.2	47,408	18,453	0.014	**9,923**	209.3
Waspán	459.4	35.2	424.2	424.2	38,331	16,259	0.012	**8,743**	228.1
Wiwilí de Jinotega	459.4	44.4	415.0	415.0	48,148	19,982	0.015	**10,745**	223.2
Wiwilí Nueva Segovia	459.4	62.9	396.5	396.5	20,495	8,125	0.006	**4,369**	213.2
Yalagüina	459.4	87.5	371.9	371.9	9,313	3,464	0.003	**1,863**	200.0
Average	459.4	162.3	297.1	319.6					161.1
Total					4,468,380	1,338,695	1.000	**719,860**	

Source: own computations.

Appendix VII: Estimated Equalizing Transfers according to Proposals NG3 and CF (sample of municipalities)

Municipality	**Population Criterion** (a) = 459.4 * 0.6	**Poverty Criterion (*)** (b) = 459.4 * 0.3 * IP	**Area Criterion (*)** (c) = 459.4 * 0.1 * IA	Expenditure Needs (1) = (a) + (b) + (c)	Fiscal Capacity	Fiscal Disparity (3) = (1) - (2)	Required per capita transfer (4): (3) > 0	Population 2005	Required Municipal Transfer (6) = (4) * 1000 / (5)	Distribution Index (7) = (6) / sum(6)	**Transfer Proposal 3 (8) = (7) * X**	Per capita transfer (9) = (8) * 1000 / (5)
	60%	30%	10%									
	(a)	(b)	(c)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	**(8)**	(9)
Achuapa	275.6	118.6	23.6	417.8	47.6	370.3	370.3	14,188	5,253	0.004	**2,834**	199.7
Acoyapa	275.6	164.7	78.3	518.6	160.0	358.7	358.7	22,372	8,024	0.006	**4,328**	193.5
Altagracia	275.6	120.9	12.0	408.5	56.8	351.7	351.7	21,468	7,550	0.006	**4,073**	189.7
Belén	275.6	93.1	14.0	382.7	50.1	332.6	332.6	19,761	6,572	0.005	**3,545**	179.4
Bluefields	275.6	36.2	270.7	582.6	209.6	373.0	373.0	49,047	18,295	0.014	**9,868**	201.2
Boaco	275.6	129.6	61.6	466.9	192.1	274.8	274.8	55,849	15,345	0.011	**8,277**	148.2
Bocana de Paiwas	275.6	211.7	134.7	622.0	113.2	508.8	508.8	59,578	30,311	0.023	**16,349**	274.4
Bonanza	275.6	310.2	107.6	693.4	128.2	565.3	565.3	15,850	8,959	0.007	**4,833**	304.9
Buenos Aires	275.6	67.0	4.3	346.9	225.8	121.1	121.1	5,412	655	0.000	**353**	65.3
Camoapa	275.6	159.8	84.1	519.5	119.9	399.6	399.6	39,841	15,920	0.012	**8,587**	215.5
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Tola	275.6	117.4	27.0	420.1	102.4	317.7	317.7	25,627	8,142	0.006	**4,392**	171.4
Totogalpa	275.6	245.5	7.5	528.7	54.9	473.7	473.7	10,406	4,930	0.004	**2,659**	255.5
Villa El Carmen	275.6	19.8	31.9	327.3	154.9	172.5	172.5	36,027	6,214	0.005	**3,352**	93.0
Villa Sandino	275.6	149.2	38.4	463.2	155.0	308.3	308.3	15,791	4,868	0.004	**2,626**	166.3
Villanueva	275.6	129.4	44.2	449.2	92.6	356.6	356.6	30,713	10,953	0.008	**5,908**	192.3
Waslala	275.6	223.2	75.4	574.2	70.2	504.1	504.1	47,408	23,897	0.018	**12,890**	271.9
Waspán	275.6	609.3	529.7	1,414.6	35.2	1,379.4	1,379.4	38,331	52,873	0.040	**28,519**	744.0
Wiwilí de Jinotega	275.6	266.0	138.6	680.2	44.4	635.9	635.9	48,148	30,615	0.023	**16,513**	343.0
Wiwilí Nueva Segovia	275.6	193.9	22.6	492.1	62.9	429.1	429.1	20,495	8,795	0.007	**4,744**	231.5
Yalagüina	275.6	163.2	4.0	442.9	87.5	355.4	355.4	9,313	3,310	0.002	**1,785**	191.7
Total								4,468,380	1,334,600	1.000	**719,860**	
Simple average	275.6	137.8	45.9	459.4	162.3	297.1	323.6					

(*) There is no information about area and Extreme Poverty Gap for San José of Bocay because it is a new municipality broken off from Cúa Bocay. In order to avoid its exclusion, it has been assumed that its surface corresponds to 50% of Cúa Bocay, and its poverty index was estimated as the average of the rest of the 31 municipalities classified with severe poverty.
Source: own computations.

Appendix VIII: Transfers computed according to the current system (sample of municipalities)

Municipality	Distribution Criteria				Transfers	Per capita transfers
	Fiscal Equity 25%	Fiscal Effort 25%	Population 25%	Execution 25%		
Achuapa	1,468	358	571	1,277	3,675	259.0
Acoyapa	348	1,386	901	1,249	3,884	173.6
Altagracia	2,376	788	865	1,277	5,305	247.1
Belén	2,419	644	796	830	4,689	237.3
Bluefields	0	1,417	1,975	1,277	4,670	95.2
Boaco	0	340	2,249	1,277	3,866	69.2
Bocana de Paiwas	5,733	1,356	2,400	1,277	10,765	180.7
Bonanza	880	2,159	638	1,277	4,955	312.6
Buenos Aires	0	1,147	218	1,277	2,642	488.2
Camoapa	1,696	750	1,605	930	4,981	125.0
Cárdenas	0	1,783	262	1,277	3,322	510.5
Catarina	0	4,944	286	1,277	6,507	915.7
Chichigalpa	0	1,811	1,915	1,277	5,002	105.2
Chinandega	0	376	6,037	1,277	7,691	51.3
Cinco Pinos	978	177	270	1,105	2,531	377.5
Ciudad Antigua	582	1,238	168	1,277	3,265	782.3
Ciudad Darío	1,279	1,596	1,368	1,277	5,520	162.6
Ciudad Sandino	0	1,507	2,899	992	5,397	75.0
Comalapa	0	524	453	1,058	2,036	180.9
Condega	2,823	1,140	1,255	164	5,381	172.8
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Siuna	8,109	1,247	2,700	1,277	13,333	198.9
Somotillo	2,307	282	1,288	1,206	5,083	159.0
Somoto	2,520	979	1,524	1,277	6,301	166.5
Telica	182	1,690	990	1,277	4,139	168.4
Telpaneca	1,300	632	577	1,277	3,787	264.2
Terragona	1,787	310	496	1,277	3,870	314.1
Teustepe	2,733	467	1,095	1,277	5,573	204.9
Ticuantepe	0	2,456	1,052	1,277	4,785	183.1
Tipitapa	529	771	5,189	1,277	7,766	60.3
Tisma	1,232	848	528	1,277	3,885	296.3
Tola	1,553	1,557	1,032	1,277	5,420	211.5
Totogalpa	1,195	893	419	252	2,759	265.1
Villa El Carmen	0	3,555	1,451	1,277	6,284	174.4
Villa Sandino	0	972	636	1,167	2,775	175.8
Villanueva	905	396	1,237	657	3,196	104.0
Waslala	5,399	1,219	1,909	1,277	9,805	206.8
Waspán	5,664	1,569	1,544	1,277	10,054	262.3
Wiwilí de Jinotega	5,907	121	1,939	535	8,502	176.6
Wiwilí Nueva Segovia	2,761	569	825	1,277	5,433	265.1
Yalagüina	891	265	375	1,277	2,809	301.6
Total	179,965	179,965	179,965	179,965	719,860	161.1

Source: INIFOM.

Appendix IX: Per capita Transfers according to proposals, NG2, NG3 and the current system

(figures in cordobas)		*FCi*	Proposal NG2		Proposal NG3		Current System
Municipality	Population		NG2	Per capita transfers	NG3	Per capita transfers	Per capita transfers
Achuapa	14,188	47.6	459.4	221.5	417.8	199.7	259.0
Acoyapa	22,372	160.0	459.4	161.0	518.6	193.5	173.6
Altagracia	21,468	56.8	459.4	216.5	408.5	189.7	247.1
Belén	19,761	50.1	459.4	220.1	382.7	179.4	237.3
Bluefields	49,047	209.6	459.4	134.4	582.6	201.2	95.2
Boaco	55,849	192.1	459.4	143.7	466.9	148.2	69.2
Bocana de Paiwas	59,578	113.2	459.4	186.2	622.0	274.4	180.7
Bonanza	15,850	128.2	459.4	178.1	693.4	304.9	312.6
Buenos Aires	5,412	225.8	459.4	125.6	346.9	65.3	488.2
Camoapa	39,841	119.9	459.4	182.6	519.5	215.5	125.0
Cárdenas	6,508	803.2	459.4	0.0	426.9	0.0	510.5
Catarina	7,106	215.9	459.4	130.9	325.9	59.3	915.7
Chichigalpa	47,541	383.8	459.4	40.7	343.7	0.0	105.2
Chinandega	149,890	257.2	459.4	108.8	372.0	61.9	51.3
Cinco Pinos	6,704	27.2	459.4	232.4	386.1	193.6	377.5
Ciudad Antigua	4,174	64.2	459.4	212.5	481.7	225.2	782.3
Ciudad Darío	33,960	107.5	459.4	189.2	452.9	186.3	162.6
Ciudad Sandino	71,975	201.0	459.4	138.9	289.9	47.9	75.0
Comalapa	11,253	51.0	459.4	219.6	533.1	260.0	180.9
Condega	31,150	114.8	459.4	185.3	428.5	169.2	172.8
Corinto	19,385	721.8	459.4	0.0	301.7	0.0	178.3
Corn Island	8,011	972.4	459.4	0.0	298.2	0.0	306.8
Desemboc. Río Grande	4,225	55.8	459.4	217.0	691.5	342.9	621.8
Dipilto	4,561	663.5	459.4	0.0	438.1	0.0	766.1
Diria	6,647	63.7	459.4	212.8	350.4	154.6	464.7
Diriamba	56,244	114.0	459.4	185.7	345.5	124.9	82.4
Diriomo	26,133	62.9	459.4	213.2	367.1	164.1	252.8
Dolores	7,718	357.2	459.4	55.0	318.5	0.0	408.9
El Almendro	15,985	152.8	459.4	164.9	492.3	183.1	318.6
El Ayote	13,909	252.8	459.4	111.1	557.1	164.2	304.9
El Castillo	13,262	122.6	459.4	181.1	585.9	249.9	192.6
El Coral	7,387	226.2	459.4	125.4	457.4	124.7	368.9
El Crucero	21,259	169.7	459.4	155.8	309.2	75.3	193.5
El Cuá	44,831	47.9	459.4	221.3	812.2	412.3	181.5
El Jicaral	14,157	141.2	459.4	171.1	410.7	145.3	463.1
El Jicaro	23,841	124.7	459.4	180.0	457.6	179.6	209.8
El Rama	57,103	136.1	459.4	173.9	642.1	272.9	111.2
El Realejo	11,550	139.5	459.4	172.0	350.2	113.6	247.7
El Rosario	5,121	74.3	459.4	207.1	341.0	143.8	662.8
El Sauce	33,510	70.3	459.4	209.2	426.9	192.4	158.4
El Tortuguero	11,203	96.4	459.4	195.2	667.4	307.9	458.1
El Tuma - La Dalia	66,950	65.8	459.4	211.6	489.2	228.4	176.5
El Viejo	90,412	191.7	459.4	143.9	456.2	142.7	58.5
Esquipulas	18,121	71.4	459.4	208.7	438.0	197.8	236.0
Estela	118,909	296.7	459.4	87.5	387.8	49.1	56.3
Granada	115,645	206.0	459.4	136.3	364.3	85.4	63.2
Jalapa	53,449	86.6	459.4	200.5	459.4	201.1	157.5
Jinotega	87,871	212.8	459.4	132.6	444.6	125.0	64.3
Jinotepe	42,188	266.5	459.4	103.8	343.5	41.6	93.5
Juigalpa	60,450	281.6	459.4	95.6	411.5	70.1	77.5
Kukra Hill	8,937	132.9	459.4	175.6	466.9	180.2	504.8
La Concepción	30,453	37.3	459.4	227.0	344.1	165.5	214.2
La Concordia	7,997	53.4	459.4	218.3	409.5	192.1	342.9
La Conquista	4,216	54.6	459.4	217.7	376.1	173.4	604.9
La Cruz de Río Grande	16,254	92.3	459.4	197.4	692.1	323.5	524.4

Municipality	Population	*CFi*	Proposal NG2		Proposal NG3		Current System
			NG2	Per capita transfers	NG3	Per capita transfers	Per capita transfers
La Libertad	11,681	183.3	459.4	148.5	496.0	168.7	197.9
La Paz Centro	33,747	187.7	459.4	146.1	402.9	116.1	165.6
La Paz de Carazo	5,351	39.3	459.4	225.9	364.0	175.2	980.1
La Trinidad	21,403	207.1	459.4	135.7	397.5	102.7	116.1
Laguna de Perlas	10,674	140.8	459.4	171.3	502.0	194.8	295.0
Larreynaga	32,062	122.9	459.4	180.9	420.3	160.4	139.7
Las Sabanas	5,621	24.4	459.4	233.9	474.7	242.9	458.0
León	181,941	254.4	459.4	110.2	372.7	63.8	52.8
Macuelizo	5,815	124.6	459.4	180.0	503.4	204.3	530.3
Masatepe	35,590	72.9	459.4	207.8	334.4	141.0	174.1
Masaya	162,868	142.9	459.4	170.2	328.7	100.3	51.2
Matagalpa	132,809	235.2	459.4	120.6	410.1	94.3	60.6
Mateare	27,142	192.9	459.4	143.3	311.9	64.2	207.6
Matiguás	42,608	99.0	459.4	193.8	545.0	240.6	167.0
Morrito	7,368	113.6	459.4	185.9	480.6	197.9	360.8
Moyogalpa	9,731	157.6	459.4	162.3	343.3	100.1	279.5
Mozonte	6,619	163.3	459.4	159.3	485.1	173.6	435.9
Muelle de los Bueyes	25,951	129.7	459.4	177.3	484.6	191.5	216.3
Murra	17,782	48.5	459.4	221.0	481.1	233.4	244.7
Muy Muy	17,317	124.2	459.4	180.3	473.7	188.5	281.6
Nagarote	35,288	587.8	459.4	0.0	359.4	0.0	126.5
Nandaime	42,179	149.3	459.4	166.7	377.7	123.2	106.1
Nandasmo	10,688	38.8	459.4	226.2	335.9	160.3	480.9
Nindirí	35,358	308.1	459.4	81.3	334.9	14.4	132.1
Niquinohomo	17,988	41.5	459.4	224.7	346.2	164.3	186.0
Nueva Guinea	117,187	94.9	459.4	196.0	584.2	263.9	77.4
Ocotal	34,743	340.3	459.4	64.0	366.1	13.9	106.6
Palacagüina	11,981	98.0	459.4	194.4	418.0	172.6	315.7
Posoltega	17,949	87.9	459.4	199.8	406.2	171.7	271.2
Potosí	11,966	247.4	459.4	114.0	348.1	54.3	292.7
Prinzapolka	5,664	211.4	459.4	133.3	1,404.8	643.7	1,096.9
Pueblo Nuevo	23,643	71.7	459.4	208.5	431.7	194.2	202.3
Puerto Cabezas	56,122	224.0	459.4	126.6	896.5	362.7	92.0
Puerto Morazán	15,351	155.3	459.4	163.5	422.0	143.9	207.0
Quezalguaque	10,339	86.1	459.4	200.7	376.1	156.4	404.9
Quilalí	27,336	88.8	459.4	199.3	486.6	214.6	212.3
Rancho Grande	22,861	37.6	459.4	226.8	500.5	249.7	228.8
Río Blanco	40,231	90.5	459.4	198.4	481.3	210.8	179.4
Rivas	40,769	237.2	459.4	119.5	333.1	51.7	106.1
Rosita	19,302	118.4	459.4	183.4	597.4	258.4	257.6
San Carlos	40,328	124.9	459.4	179.9	534.2	220.8	156.2
San Dionisio	21,741	23.6	459.4	234.3	453.6	231.9	228.2
San Fernando	8,100	259.2	459.4	107.7	422.3	88.0	383.6
San Francisco de Cuapa	7,135	175.9	459.4	152.4	454.8	150.4	636.7
San Francisco del Norte	6,739	31.3	459.4	230.2	403.6	200.8	368.5
San Francisco Libre	10,103	120.5	459.4	182.2	338.8	117.7	269.2
San Isidro	16,751	119.0	459.4	183.1	424.7	164.9	216.6
San Jorge	8,592	159.7	459.4	161.2	319.1	86.0	341.0
*San José de Bocay**	30,564	33.2	459.4	229.2	657.6	336.8	182.3
San José de Cusmapa	6,635	26.4	459.4	232.9	505.0	258.2	389.0
San José de los Remates	9,234	63.2	459.4	213.0	449.4	208.3	320.0
San Juan de Limay	13,464	79.1	459.4	204.5	481.4	217.0	273.1
San Juan de Oriente	4,335	48.3	459.4	221.0	331.0	152.5	724.4
San Juan de Río Coco	24,451	214.1	459.4	131.9	444.8	124.4	133.9
San Juan del Norte	939	2,310.7	459.4	0.0	536.9	0.0	1,334.6
San Juan del Sur	17,104	284.3	459.4	94.1	373.1	47.9	162.0
San Lorenzo	24,743	63.4	459.4	212.9	482.1	225.8	225.2
San Lucas	12,658	49.4	459.4	220.5	488.5	236.8	293.5
San Marcos	35,014	81.2	459.4	203.4	344.2	141.9	174.3
San Miguelito	17,664	95.0	459.4	196.0	544.7	242.5	292.8

Municipality	Population	*CFi*	Proposal NG2		Proposal NG3		Current System
			NG2	Per capita transfers	**NG3**	Per capita transfers	Per capita transfers
San Nicolás	6,815	63.0	459.4	213.2	514.7	243.6	405.5
San Pedro de Lóvago	9,028	172.1	459.4	154.5	433.2	140.8	275.6
San Pedro del Norte	4,534	20.9	459.4	235.8	417.1	213.7	420.8
San Rafael del Norte	17,887	62.3	459.4	213.5	434.9	201.0	230.1
San Rafael del Sur	43,797	543.8	459.4	0.0	315.8	0.0	115.7
San Ramón	26,187	92.3	459.4	197.4	475.9	206.9	124.9
San Sebastian de Yalí	22,959	77.7	459.4	205.3	458.6	205.5	208.7
Santa Lucía	11,728	30.9	459.4	230.4	400.7	199.5	335.5
Santa María	4,318	78.8	459.4	204.7	528.7	242.7	715.7
Sta. María de Pantasma	37,013	51.7	459.4	219.2	489.5	236.2	199.0
Santa Rosa del Peñon	9,823	38.8	459.4	226.2	418.6	204.9	315.1
Santa Teresa	21,290	49.8	459.4	220.3	364.5	169.8	244.7
Santo Domingo	14,778	155.3	459.4	163.5	500.4	186.2	157.1
Santo Tomás	22,144	195.4	459.4	142.0	424.3	123.5	200.5
Santo Tomás del Norte	8,572	15.9	459.4	238.5	405.9	210.3	338.1
Sébaco	33,044	166.3	459.4	157.6	410.9	131.9	182.0
Siuna	67,039	42.3	459.4	224.3	774.0	394.7	198.9
Somotillo	31,968	87.5	459.4	200.0	426.3	182.8	159.0
Somoto	37,850	121.3	459.4	181.8	441.8	172.8	166.5
Telica	24,573	119.7	459.4	182.7	407.2	155.0	168.4
Telpaneca	14,335	67.1	459.4	211.0	487.2	226.6	264.2
Terrabona	12,322	40.3	459.4	225.4	447.6	219.7	314.1
Teustepe	27,195	72.2	459.4	208.2	484.9	222.6	204.9
Ticuantepe	26,129	257.9	459.4	108.3	295.7	20.4	183.1
Tipitapa	128,840	174.1	459.4	153.4	350.1	95.0	60.3
Tisma	13,113	61.5	459.4	214.0	356.8	159.3	296.3
Tola	25,627	102.4	459.4	192.0	420.1	171.4	211.5
Totogalpa	10,406	54.9	459.4	217.5	528.7	255.5	265.1
Villa El Carmen	36,027	154.9	459.4	163.8	327.3	93.0	174.4
Villa Sandino	15,791	155.0	459.4	163.7	463.2	166.3	175.8
Villanueva	30,713	92.6	459.4	197.2	449.2	192.3	104.0
Waslala	47,408	70.2	459.4	209.3	574.2	271.9	206.8
Waspán	38,331	35.2	459.4	228.1	1,414.6	744.0	262.3
Wiwilí de Jinotega	48,148	44.4	459.4	223.2	680.2	343.0	176.6
Wiwilí Nueva Segovia	20,495	62.9	459.4	213.2	492.1	231.5	265.1
Yalagüina	9,313	87.5	459.4	200.0	442.9	191.7	301.6
Total	4,468,380						
Weighted average		164.8	459.4	161.1	454.8	161.1	161.1
Average		162.3	459.4	171.8	459.4	174.6	277.3
Maximum		2,310.7	459.4	238.5	1,414.6	744.0	1,334.6
Minimum		15.9	459.4	0.0	289.9	0.0	51.2
Standard Deviation		226.1	0.0	56.2	151.6	103.5	203.9
Coefficient of variation		1.39	0.00	0.33	0.33	0.59	0.74

Source: own computations and INIFOM.

Appendix X: Municipal Expenditures after transfers (sample of municipalities)

Municipality	System 2 (S2) g05 - $T_{i\,SV}$ + $T_{i\,S2}$	System 3 (S3) g05 - $T_{i\,SV}$ + $T_{i\,S3}$	Current System (SV) Per capita expenditure 2005 (g05)
Achuapa	168.6	146.8	206.1
Acoyapa	649.5	681.9	662.1
Altagracia	317.0	290.2	347.6
Belén	293.1	252.4	310.3
Bluefields	429.9	496.7	390.8
Boaco	507.8	512.3	433.3
Bocana de Paiwas	400.9	489.2	395.4
Bonanza	490.1	616.8	624.5
Buenos Aires	946.1	885.8	1,308.7
Camoapa	491.3	524.3	433.8
Cárdenas	915.3	915.3	1,425.8
Catarina	874.8	803.2	1,659.6
Chichigalpa	590.9	550.3	655.5
Chinandega	410.7	363.8	353.2
Cinco Pinos	370.5	331.6	515.6
Ciudad Antigua	459.5	472.2	1,029.3
Ciudad Darío	505.8	502.9	479.1
Ciudad Sandino	652.7	561.7	588.8
Comalapa	nd	nd	nd
Condega	384.2	368.1	371.6
.	.	.	.
.	.	.	.
.	.	.	.
Siuna	342.1	512.4	316.6
Somotillo	689.2	672.0	648.2
Someto	488.1	479.1	472.8
Telica	132.8	105.2	118.6
Telpaneca	262.8	278.4	316.0
Terragona	183.4	177.7	272.0
Teustepe	nd	nd	nd
Ticuantepe	320.7	232.7	395.5
Tipitapa	274.3	215.8	181.1
Tisma	nd	nd	nd
Tola	274.0	253.4	293.5
Totogalpa	362.8	400.8	410.4
Villa El Carmen	326.5	255.7	337.1
Villa Sandino	681.0	683.6	693.1
Villanueva	355.4	350.5	262.2
Waslala	196.7	259.3	194.2
Waspán	463.9	979.9	498.2
Wiwilí de Jinotega	302.3	422.1	255.7
Wiwilí Nueva Segovia	398.9	417.2	450.8
Yalagüina	388.8	380.5	490.4

nd: there is no available data to obtain the estimation. $T_{i\,S}$: per capita transfers for municipality *i* according with system *S*.
Source: own computations.