

# Financing indicators for health care decentralization in Latin America: information and suggestions for health planning

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## SUMMARY

This article presents the results from an evaluative longitudinal study with before–after design. The main objective was to determine the effects of health care decentralization on changes in health financing. Taking into account feasibility, political and technical criteria, three Latin American countries were selected as study populations: Mexico, Nicaragua and Peru. The methodology had two main phases. In the first phase, the study referred to secondary sources of data and documents to obtain information about the following variables: type of decentralization implemented, source of finance, funds of financing, providers, final use of resources and mechanisms for resource allocation. In the second phase, the study referred to primary data collected in a survey of key personnel from the health sectors of each country. Taking into account the changes implemented in the three countries, as well as the strengths and weaknesses of each country in financing and decentralization, a rule for decision-making is proposed that attempts to identify the main financial changes implemented in each country and the basic indicators that can be used in future years to direct the planning, assessment, adjustment and correction of health financing and decentralization. Copyright © 2001 John Wiley & Sons, Ltd.

KEY WORDS: rule; decision-making; decentralization; financing indicators

## INTRODUCTION

Decentralization is one of the principal elements of health sector reform in a number of countries. It has increasingly been recognized, at both national and international levels, that management, financing, planning and policy functions in the health sector may be carried out more efficiently and effectively if they are decentralized, transferring responsibility to local level. However, there is growing concern that decentralization has failed to achieve the objectives for which it was introduced

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Contract/grant sponsor: International Development Research Center (IDRC) Canada.

and can indeed have effects that limit health sector development (Hurley, 1995; Arredondo and Parada, 2000). The relationship between decentralization and financial changes in the process of health care reform in Latin American countries is complex. Analysis of recent attempts at decentralization and financial changes requires an understanding of the contradictory forces operating within the political systems, and particularly the bureaucracies, of Latin American countries (De Souza *et al.*, 2000). In these countries strong centralizing tendencies coexist with particular forms of bureaucratic decentralization (Arredondo, 1997a).

The type and degree of decentralization is strongly influenced by dynamic financial aspects, including sources of finance, agents, providers, final destination and mechanisms of financial allocation at the local, regional and national level. Local governments usually have authority to levy taxes. However, in developing countries, much of the national revenue comes from indirect taxes, especially customs and excise revenues, while buoyant local sources of revenue are hard to find (Collins and Green, 1994; Abel-Smith and Dua, 1988). The local governments in these countries are often heavily dependent on grants from central government. In addition, central government often retains control over finance in order to promote geographical equity. The sources of finance of local government may, therefore, not differ significantly from those of local offices of central ministries, though grant allocation is likely to differ (Quentin, 2000).

Many Latin American countries have tried to decentralize their health care systems. A number of different approaches have been taken, with varying results reflecting strengths and weaknesses for each country (Murray, 1999). The results are strongly related to changes made in the mechanisms for allocating financial resources, especially the new financing systems for health services in the context of health care reform (Bossert, 2000). A financing study of health care decentralization quantified the resources involved and analysed the dynamics of the sector. At the same time, the study suggested ways to mobilize and reassign resources within the system at a national and regional level (Aguinaga, 1997). In Latin American countries, public treasury funds are the principal source of financing for central and local government health spending. In addition, compulsory contributions of employers and employees to social security systems or health and welfare funds are the major sources of financing for expenditure on social security health care programmes (Cassels, 1995). This paper focuses on the financing policies of three Latin American countries: Mexico, Peru and Nicaragua.

In Mexico, budgetary resources have been reallocated in several ways. Although total federal government expenditure on health has been reduced, the proportion assigned to the health sector has increased in recent years (Alvarez, 1990). When analysing the delegation of finances in the decentralization of health services in Mexico two constant factors emerge, setting a common pattern between decentralized and centralized health service organization (SSA, 2000a). First, the continuation of separate federal and state sources of finance, without state interference in federal funds (Parada *et al.*, 2000); and second, the maintenance of the federal labour relationship with all state health workers, right up to the level of the director or minister of health. Thus, all decentralized state health services, whether called ministries, departments or institutes became, from the point of view of finance

and control, *de facto* parastatal organisms of both the state and the federal governments (González-Block, 1992).

In Peru, through regional secretariats for health services and municipal clinics there is now considerably more local autonomy, and greater financial and administrative decentralization. Regional secretariats and municipal clinics have their own legal status, control staff, and own their premises and equipment. The directors of these units, who may or may not be health professionals, have been given wide powers to manage the health facilities, staff, equipment and budget. In addition, the management support for municipal clinics and regional secretariats has been strengthened by new sections responsible for finance. The regional authorities did not press for financial devolution, as this would have implied greater responsibility than they could cope with. In spite of the fiscal and administrative reforms intended to strengthen regional governments' revenues, their share of federal fiscal appropriations is still meager, and their tax basis is also weak (Prialé *et al.*, 1997).

In Nicaragua, the constitution states clearly how the national health system should be organized. The structure designed for the health sector is consistent with the federal structure of the Nicaraguan state, with three autonomous spheres of power. A decentralized health system, with only one authority in each sphere of power, seems appropriate. Moreover, decentralization and community participation are explicitly mentioned as directives that the national health system must follow. The only political units in the country that provide health services to the population are at a county level, with some national units. The federal and state governments must provide the necessary financial resources and technical cooperation to ensure that their obligation to health is executed. Since 1986, the implementation of health care decentralization in this country has been seriously obstructed by political changes in the federal government. The lack of policies to strengthen the ability of counties to execute their new functions has seen their weaknesses used as a barrier to implementing decentralization. Also, the lack of a data base of national health accounts, through which analysis could be coordinated, has hampered decision making for health care financing in the context of decentralization (MINSAs, 1997). In appendix A, we give more detailed information about the background and meaning of health care decentralization and financing changes in each country.

In summary, the tendencies of centralized financial authority on the one hand and decentralized administrative authority on the other coexist in the health systems of Latin American countries. In a complicated and often seemingly confused manner these tendencies both combine and conflict with one another, but the centralizing tendency remains unquestionably dominant (Cercone *et al.*, 2000). Moreover, this centralizing tendency results in the over-concentration of decision-making at the top of the hierarchy and, in turn, generates decentralizing efforts aimed at decongesting the overloaded apexes of decision-making within central ministries of health. Within such an environment, the opportunities for devolution of financial power from central bureaucratic agencies to local health units are unfavourable. In this sense, decentralization of health care finance related to the new local level financial authority and local control of the sources of finance, funds, mechanisms for resource allocation and the final use of resources.

## CONCEPTUAL CONSIDERATIONS

An analysis of the financial aspects of health care decentralization requires the examination of several financial indicators to understand the changes in policies for health care reform (Hernández *et al.*, 1995). The most commonly used conceptual framework includes the definition of health expenditure as activities whose primary purpose is health improvement (WHO, 2000). This definition excludes large programmes which impact on health, but whose primary goal is not health, for example, general food subsidies, housing improvement and large urban water supply projects. However, this definition does leave room for significant differences in how countries account for health-related programmes such as targeted nutritional services and water quality improvement (Ramesh *et al.*, 1997).

Recently, a new and more appropriate method for analysing the financial dynamics in health care has been formulated (Poullier, 2000). This method, called National Health Accounts (NHA), has had recent applications in developing countries. The NHA model incorporates different indicators of economic information related to the production and financing of health systems. This model allows the creation of a register of financial information to be used for understanding the trends in the principal spending indicators facilitating the analysis of the availability of resources in the health system and of the payment capacity of users. The objectives of the NHA analysis are the following: (a) to identify the protagonists and economic entities that participate in the financing of the sector; (b) to identify the funds for the financing of the different social groups; (c) to identify the allocation of resources according to the type of provider and the health programme; and (d) to identify trends and changes in different financing indicators (sources, funds, providers and allocation mechanisms), taking as a guide the reform strategies of the health sector, in this case the process of decentralization.

The NHA model is useful not only for understanding the spending levels associated with financing indicators, but also for identification of the qualitative and quantitative changes in these indicators, as well as identifying the expenditure of households, health institutions and businesses. The core concept of National Health Accounts is defining the flow of funds. Experience in applying this concept in developing countries suggests that approaches used in developed countries such as the USA should be adapted to the specific needs of developing countries. The approach adopted must take into account the more limited data available and be in accordance with the research questions. This requires modifying definitions both of the sources and uses of funds (Berman, 1996). One approach, used in Egypt, Mexico and Colombia, is to formulate the flow of funds in terms of three major levels: the original sources of financing, the financing funds and the health care providers (Frenk, 1994; Frenk *et al.*, 1996). In order to analyse the financial aspects for health care decentralization we add two more levels to this formulation: the final destination or financial resources utilization for different health programmes and the mechanisms for financial resources allocation. Independent of the patterns of decentralization, the five indicators permit the identification of the flows and dynamics of financing for the three countries studied. These indicators are defined as follows.

*The sources of financing.* The primary economic sources that provide the resources to the population for different health care activities. There are four sources of financing, classified according to the origin of the funds, and either as internal or external. In the case of the health system, the internal sources are the government, industry and households. The external ones refer to the exchange that takes place within the health sector, through multilateral or bilateral agencies (Mills, 1991; Hsiao, 1994).

*The financing funds.* Reservoirs of economic resources, whose role is to administer resources and to buy medical services. These funds can be real or virtual. This is an important distinction since virtual funds can only be used in a limited way and are in constant competition with the acquisition of other necessities (Abel-Smith, 1967). In addition, they depend on the preferences of individuals and can be drastically reduced by reduced income, an economic crisis or an adjustment in policy.

*The health service provider institutions.* Government and non-government organizations providing health care services to the population. In relation to sources of finance and consumers, three classifications of provider institutions exist: social security, public assistance and the private sector (Bossert, 1996; Jamison and Mosley, 1991).

*Mechanisms for financing allocation.* The mechanisms for financial resource allocation for health expenditure include legal, political and technical principles. These mechanisms provide the means for financial resource allocation of health care services, and the adjustments necessary for health care decentralization (Bobadilla and Lozano, 1990; Bobadilla, 1998).

*Final destination of resources.* The classification of health expenditure by health service providers, according to its final destination and depending on the financing fund. The decentralization process requires health policy makers at a local level to make improvements on, and design new methods for, the management of the final use of resources. In doing so they must take into account local health priorities and act according to two major variables: system variables (supporting programmes, current expense factors and investment, health services to be provided), and population variables (which include the type of services demanded at a local level: primary care, secondary care and third level care) (Musgrove, 1990; Collins and Green, 1993).

A thorough analysis of the five financial indicators presented above allows us to identify substantial changes that have taken place in the area of financing policy in each country, and thereby assess the feasibility of decentralization. Quantitative and qualitative analysis of these indicators makes it possible to identify strengths and weaknesses related to each indicator. For example, the indicator related to financing sources permits us to identify whether the municipal or state governments of a country have increased or decreased the level of health spending.

The financing sources indicator also shows the changes in the relative weights of each source of financing before and after decentralization has taken place in each country. This conceptual framework allows the identification of countries whose state or municipal governments have increased their levels of health spending, or

where changes have occurred in the contributions from businesses and households. In addition, it allows detection of the countries that implemented new mechanisms for resource allocation and those countries that continued with the same mechanisms in use prior to decentralization. It is therefore important to identify and define the different analytical categories used for the financing sources:

- Households = monetary contributions directly from family incomes
- Enterprises = monetary contributions directly from employers
- Federal Government = monetary contributions from federal taxes
- State Government = monetary contributions from local taxes
- Government Taxes = monetary contributions from federal and local taxes
- Government Credits = monetary contributions from credits with international banks via the federal government
- Government Donations = monetary contributions from donations made by international agencies via federal or local government
- Donations = monetary contributions directly from donations of international and national NGOs

## METHODOLOGY

This study used an evaluative longitudinal design in three Latin American countries. The countries were selected according to various criteria: different economic development (per capita income): high–middle income, low–middle income and low income; experience of a significant period of financial adjustment for health care decentralization; existence of a database in the country to analyse the financial aspects of HCD; reliability of the financial data on health. Multidisciplinary research capacity; relative political stability; importantly, interest in and commitments to using the research results on the part of policy makers was included. Information on these variables was drawn from different bibliographic sources and through interviews via e-mail with officials in the selected countries. Analysis of the data led to the selection of ten countries: Bolivia, Brazil, Mexico, Argentina, Chile, Peru, Nicaragua, Costa Rica, Panama and Ecuador.

To select the three countries ultimately studied, more detailed information on the decentralization and financing policies in each country was taken into account: This information was obtained from the aforementioned interviews, and included the following issues: background to and pattern of health care decentralization; background of national health accounts; changes in the financing policies; reliability of databases; and political support from policy makers. Three countries were selected (one with medium–high income, one with medium–low income and one with low income) which satisfied the basic technical requirements: Mexico, Nicaragua and Peru.

Through discussions with key personnel in the three countries a field-work coordinator was appointed in each country and the field-work strategy was standardized, along with the instruments to be used. Through the bibliographic search and through information given by key informants, a total of 143 information sources (published and ‘grey’) were selected for data collection. Key personnel were

selected according to their level of participation in the decision-making process in the development, implementation, evaluation and/or monitoring of decentralization in each country included in the study. A total of 90 interviews were carried out with key personnel in the three countries. Both the interviews and the bibliographical search adopted guidelines covering five categories of questions: (1) changes in the sources of financing, (2) changes in the financing funds, (3) changes in the level of financing according the type of provider, (4) changes in the mechanisms of financing, and (5) strengths and weaknesses of each financing indicator before and after decentralization. In order to analyse the validity of the information obtained, internal and external validity of the selected indicators was tested. A reliability analysis was also carried out, repeating the interview in 10% of the cases in each country.

For the qualitative analysis the interviews were compiled into a database using the software ATLAS-TI. This procedure followed a series of standardized procedures with precise steps. The analysis of the responses of the informants made it possible to examine their level of knowledge about the strengths and weaknesses of federal and local financing initiatives related to decentralization. The responses were ordered according to the main characteristics of the changes in financing policy, in financing sources, in funds, in the mechanisms for allocating resources, and in the final destination of resources.

The quantitative information was incorporated into a health spending matrix according to the sources and funds of financing for each of the selected countries. In this matrix the trends in health spending for the period 1992–1997 were identified, augmented by information about the type of financing source, and identifying the trends in the financing levels for the different financing sources in each country. Finally, comparisons were made between the qualitative and quantitative analyses to validate the information obtained.

To analyse the changes in financing indicators before and after decentralization, the following criteria were developed: (a) in all three countries, the decentralization process began before 1994; (b) decentralization is an ongoing process and may be considered as an implementation strategy to be consolidated during the coming years; (c) information on financing matters is not considered valid before 1990–1992, which was the base period for the implementation and validation of methods for the integration of national health account systems for the three countries in the study; (d) in 1994, important changes took place in each country reinforcing decentralization process. Based on these criteria, and on the availability, accessibility, validity and reliability of the information on financing indicators, the period of analysis was defined as 1992–1997. In order to compare the results from different countries, the national currency of each country was converted to US dollars.

## RESULTS

### *Analysis of changes in three countries*

Below we present an analysis of health financing in Mexico, Nicaragua and Peru. In addition to the analysis of financial indicators, we also discuss the strengths and weaknesses of each country in organization and financing matters.

Legal aspects govern the implementation of decentralization in each country, alongside the technical-administrative and organizational structures. In the three countries, the legal framework for decentralization originated in 1983, and provides legal guidelines for a gradual implementation of health services decentralization. It takes into consideration both the production and financing of health services. It is noteworthy that in Peru new decentralization laws were still being proposed and approved in 1998 in order to reorganize the progress achieved and implement new mechanisms of financial allocation. In the three countries studied, new administrative organizations have been created. In Mexico they are represented by the COPLADES and SILOS, in Nicaragua by the SILAIS and the COLOS, and in Peru by the ZONADIS, CLAS and the CTAR. These organizations constitute basic units in technical-administrative matters for the implementation, follow-up, monitoring and evaluation of decentralization.

Financial indicators and mechanisms for financial allocation in the period before decentralization were identified, in order to define a point in time from which the implementation of changes in financing policies began. There are similarities in the observations for the three countries studied. Decisions about the production of services, as well as their financing, were exclusively made at a central level, without leaving any margin for action at a local level. These decisions were taken independent of the needs of each state, department, region or county. Nevertheless, before the implementation of decentralization strategies, it is noteworthy that different financial resource allocation proposals were made to counteract the effects of centralized decisions. However, these proposals were only taken into account when decentralization became an explicit strategy aimed at achieving a greater equilibrium between the supply and demand for services.

We briefly mention the changes in financing indicators that were implemented or proposed in each country in order to make decentralization more feasible. In Mexico, there was a stronger devolution of decision-making and the management of financing policies than in the other two countries. Although Nicaragua and Peru implemented budgetary decentralization, the responsibility for resources, funds and financing flow remained at the central level. Two main financial strategies stand out: first, the implementation of new cost-recovery fee systems and second, the implementation of new methods for financial resource allocation at the departmental, state and county levels.

A number of strengths and weaknesses in each country can be identified that had repercussions on the changes in financing policies after decentralization. In Mexico, the main strengths observed were the devolution of financing decisions and the sharing of responsibility for the generation of local financing sources between the state and municipal levels. The main weakness observed for Mexico was the absence of a culture of economic efficiency in the organizational dynamics of local health systems and in human resources. In Nicaragua, the main advantages were new financial allocation mechanisms and budgetary decentralization.

The main disadvantage observed for the three countries studied was their great financial dependency on central level decisions. This was the primary disadvantage in Peru, where financial decentralization consisted of directly allocating financial resources to the regions from the Ministry of Finance, thus maintaining a centralized

system of decision-making. One of the main advantages in financing changes was the implementation of new mechanisms for financing and financial control, with the private sector's participation.

When summarizing the changes in financing policies in the three countries it becomes evident that the strong points for each country were the changes in financing indicators. These changes range from the integration of economic information bases to the implementation of new financing mechanisms, along with the creation of new financing sources and new financial controls. The main weaknesses for each country, however, stem from a strong dependence on central level financing and, therefore, on the negative effect of macro-economic variables on financing at state and municipal levels. These results are analysed in greater detail in the following section where we identify trends in each of the financing indicators for the period 1992–1997.

Table 1 presents the expenditure trends in health, according to financing sources, before and after decentralization (taking 1994 as the dividing line). It is important to emphasize that financing sources represent the origin of financial allocations. It is interesting to note that as of 1994 all three countries experienced significant changes in all financing sources and in total expenditures. In Mexico there was an abrupt fall in the total financial resource which recovered by 1997 though not up to 1994 levels. This fall was accompanied by a significant decrease in the contribution of homes and businesses with respect to total expenditures.

Federal as well as state government contributions showed a positive trend. This positive trend is noteworthy in the case of Mexico, since in this country state government contributions are an important financing source for decentralization. This trend is very important at present as one of the health reform strategies in Mexico is to rethink and consolidate decentralization in those states where it has been suspended or has not yet begun.

In Nicaragua, a slight fall in total expenditure occurred in 1994 which mostly recovered by 1995. An important issue for this country was the reactivation of social security, which accounted for a relatively important fraction of the total expenditure between 1994 and 1997. The contribution of donations remained almost unchanged, while the government contribution diminished after 1994 and recovered in 1997.

Peru also experienced a positive trend in health expenditure over the study period. As of 1994, contributions from homes increased significantly compared with other sources, although as a proportion of total expenditure they exhibited a negative trend. On the other hand, businesses exhibited increased contributions compared with other sources and a positive trend as a fraction of total expenditures. Government sources in all three countries showed a positive trend when compared with other sources and with total expenditure.

It is necessary to mention that in Mexico, both state and federal governments showed positive trends in expenditure, but this trend is much stronger for the state government. With regard to contributions to financing from external cooperation, only in the case of Peru and Nicaragua is information available due to its importance as a source of health financing. External financing is particularly important in the case of Nicaragua where, despite a drop in donations in 1994, around the same average (30%) was sustained over the period of study. Looking at Peru from 1994

Table 1. Trends of health expenditure by sources of financing. Mexico, Nicaragua and Peru (millions of US \$)

Source	Year	1992	1993	1994	1995	1996	1997
<b>Mexico</b>							
Household		7802	9275	9768	5870	6156	6180
Enterprises		4890	5362	5639	3053	3015	3200
Federal Government		3339	3577	3918	2232	2638	3195
State Government		47	228	577	586	753	963
<b>Total</b>		<b>16 078</b>	<b>18 442</b>	<b>19 902</b>	<b>11 741</b>	<b>12 562</b>	<b>14 158</b>
<b>Nicaragua</b>							
Households		nd	12	12	15	16	16
Enterprises		nd	00	9	26	39	48
Government Taxes		nd	34	25	21	81	93
Government Credits		nd	31	24	20	20	24
Government Donations		nd	38	40	38	38	36
Donations NGOs		nd	3	5	6	4	5
<b>Total</b>		<b>93</b>	<b>118</b>	<b>115</b>	<b>126</b>	<b>198</b>	<b>222</b>
<b>Peru</b>							
Households		1247	822	890	690	942	975
Enterprises		855	487	583	797	849	891
Government		720	437	456	585	1095	1253
Donations		18	13	22	28	20	18
<b>Total</b>		<b>2840</b>	<b>1759</b>	<b>1951</b>	<b>2100</b>	<b>2906</b>	<b>3147</b>

**Sources:** Financial indicators for Health Care Decentralization, University of Montreal, 1998–1999. Estimacion del gasto en salud, Centro de Estudios en Poblacion y Salud, SSA, 1995, Mexico Instituto Nacional de Estadistica, Geografia e Informatica. Sistema de Cuentas de M. Cuentas de Bienes y Servicios 1988–1994. INEGI-1996. Cuentas en Salud. FUNSALUD, Mexico, 1997. Informe Anual de la Direccion de Presupuesto, 1992–1998. MINSA-Nicaragua. Estudio Cuentas nacionales en Salud, Banco Mundial-MINSA Nicaragua, 1998. Analisis del Financiamiento del Sector salud. ESAN-AUPHA-SERVERS, Peru, 1997.

onwards, external donations increased 100%, from 1% of the total expenditure, to 2% after 1994.

*Defining a tool for health planning.* This proposal is based on a decision-making tree (Figure 1) which was developed based on the results of the analysis of financial indicators for decentralization. In order to make health planning suggestions, for any Latin American country, one must first ask: what is the degree of decentralization and then determine the financial decentralization pattern. This study has observed three financial decentralization patterns in Latin America: in Mexico there is a financial devolution pattern, in Nicaragua a pattern of financial deconcentration and in Peru a pattern of financial delegation.

Having defined the financial decentralization pattern the next question is whether a system of national health accounts exists. If no such system is in place, the decision has to be made to implement a system of national health accounts in order to incorporate financial indicators into the decentralization process. If it does exist, then it will be necessary to determine if the financial indicators are separated by financing sources, funds, amounts by provider type, and according to final destination and by explicit mechanisms for financial allocation.

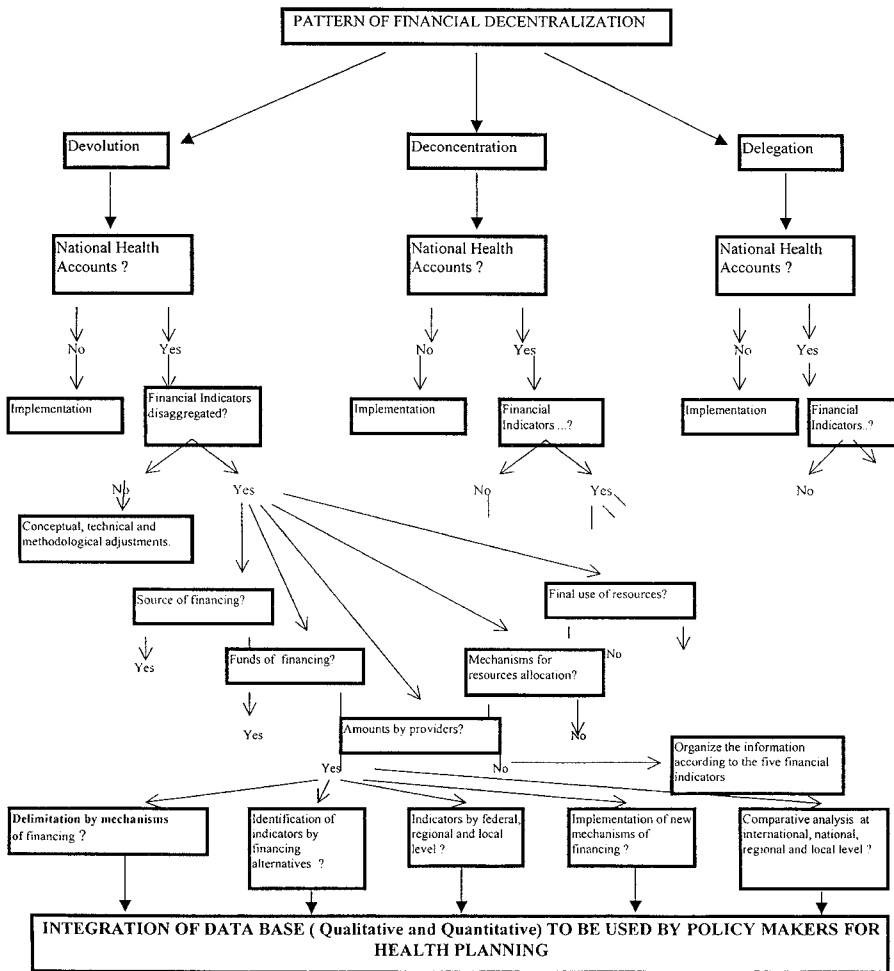


Figure 1. Decision-making tree for health planning, financing indicators and decentralization in the context of health care reform in Latin American countries.

If financing indicators are not separated, the conceptual-technical and methodological framework described in this study needs to be adopted in order to organize the financial information according to pertinent indicators and to evaluate and monitor the decentralization process from the perspective of feasibility and financial sustainability. If the financing indicators are separated according to the five required indicators, the approach will be the definition of financing mechanisms; identification of indicators according to their financing alternatives; definition of indicators at federal, regional and local levels; identification of new financing mechanisms and financial allocation; and finally, a comparative analysis of all indicators developed at regional and local levels.

The different information levels must be integrated in order to make informed decisions as to adjustment, changes or new planning elements needed to carry out

the implementation, monitoring and evaluation of financial changes within the context of decentralization. This analytical tool contributes to determining the financial feasibility of decentralization and, later on, its financial sustainability, in the context of the characteristics of a particular country.

## DISCUSSION AND CONCLUSIONS

The aim of this study was not to judge decentralization as a success or a failure, but rather to identify, within a context of social reform, the effects of decentralization on health financing and through this to identify a rule for decision-making as a suggestion for health planning. Therefore, the discussion and conclusions presented below concentrate on findings related to the financing indicators which were used and the application of the proposed analytical model.

Once decentralization was implemented, the main outstanding issue was how to end the historically legitimized financial and technical dependency of the local level on the central level. Another problem was the implementation of mechanisms for more efficient and equitable financial allocation. These two aspects have been the most difficult ones in the decentralization process, and have made periodic adjustments to the decentralization proposal necessary both in its conceptual outline and in the methodological strategies for its implementation.

The devolution of budget decisions at state and local levels and the sharing of financial responsibility between the different participants (providers and consumers), have made delegation of financial policy decision-making possible. However, this has led to an ever-increasing gap between available resources and population needs. At the same time, this shared financial responsibility has created scope for new conceptual and methodological frameworks in the evaluation and monitoring of health financing. A typical example is the application of the analytical model discussed here. Progress has also been made in the separation of financing sources and funds. The power to separate financial resources according to their source (federal, state and local governments, as well as consumers) becomes an important analytical tool in the planning, evaluation and monitoring of policies, particularly for the analysis of equity and allocative efficiency and use.

With respect to the financial decentralization pattern and its relation to financing changes, one pattern dominates in each country but it is always mixed with different decentralization modes. For example, in Mexico the dominant pattern is that of delegation, mixed with deconcentration and devolution variants. In Nicaragua and Peru, however a devolution pattern mixed mainly with deconcentration and privatization variants could be identified. This was particularly marked in the case of Peru, where the private sector played an important role in regulating the decentralization process.

In the three countries, the new alternatives for financing sources include mechanisms for local fee recovery. In Nicaragua and Peru only a small number of departments for which this financing source is being consolidated exist and it is expected to be promoted further in the short to medium term. In Mexico, the fee recovery system is in force in all the decentralized states (more than 50% of the states in the country),

and this mechanism is expected to be implemented with greater success in Mexico during phase II of decentralization.

Using the results from the application of the conceptual and methodological model, a decision-making tree was developed for the follow-up and monitoring of financing policies during decentralization. This methodological tool, as discussed previously could be used in any particular country depending on the decentralization pattern and the financing policy underpinning it.

The proposed decision-making tree could be used as an analytical framework for the formulation, implementation and assessment of the financial aspects before and after health care decentralization and to provide a conceptual framework for assessing financial changes and decentralization. This is not to suggest that it is a theoretical construct removed from reality. Rather, the proposal is for a theoretically informed understanding of the main financial changes connected to decentralization. This understanding can be used as a basis for developing effective processes of decentralization appropriate to health policy objectives. In particular, it can be applied to health financing indicators and in clarifying the degree of compatibility at national, regional and local levels between the sources of finance, funds, providers, new mechanisms for resource allocation, and final use of financial resources.

Recognizing the difficulty of establishing direct causal links between different forms of decentralization and changes in financing, the model facilitate the search for plausible links between the different components of decentralization and other important events. Equally, acknowledging the difficulty of arriving at universal conclusions, the decision-making tree emphasizes the need for examining the specific conditions under which identifiable changes in health financing and forms of decentralization achieve the desired effect. This is essential if one is to avoid drawing overly optimistic conclusions about the transferability of lessons from one country to another.

The different components investigated in this study may be used to analyse the financial changes in the health sectors in Latin American countries at different stages of decentralization. For countries with mature decentralization, all five financial indicators of the framework can be used.

For countries that have only just formulated their policies and the means for their implementation, or where implementation has just begun, it is arguably not appropriate to look for change beyond organizational structures and processes. In these situations, the analysis should refer only to the way in which the components of the framework can contribute to the design of instruments and methodologies for the assessment and analysis *a posteriori*.

Little is known about how to demonstrate the effectiveness of institutional patterns, political processes and financial processes because so little time has been invested in developing consensus on what indicators and criteria constitute success in these fields. The proposed decision-making tree was designed for rapid rather than exhaustive analysis and assessment. It is intended particularly for the study of the effects of decentralization on health financing policies, applying financial indicators. Primarily it is a tool for retrospective analysis and must therefore rely on currently available information. Thus in order to understand the macroeconomic dynamics of

health systems in the context of decentralization the changes in the five main financial indicators are emphasized.

Our results highlight two key problems that impede decentralization, both in the three countries studied and in other Latin American countries. These weaknesses are: a lack of human resources trained in health economics who can design and implement changes in financing policies, and the absence of resource independence of local levels from the centre. These problems exist even in Mexico, where the local health system has considerable financial independence from the central authorities. In addition, in the three countries studied we observed two events that had a negative effect on the financial changes proposed by the decentralization process: first, the political situation that coincided with changes in the main macro-economic variables; second, in Peru and Mexico a slight drop in financing of the fund for public assistance and social security occurred.

The main advantages observed were the following: the sharing between the central level and local levels of responsibility for financing and the production of services; the implementation of new organizational structures for the follow-up of financial changes at the local level and with participation of the public and private sectors in the planning, allocation, use and monitoring of resources; the development and implementation of new financial allocation mechanisms based on epidemiological, economic and organizational criteria, taking as a basis the efficiency principle; the development and implementation of new monitoring mechanisms in the allocation and final use of resources, based on the equity principle and using the technique of a per-capita adjustment factor corrected at the local, departmental or regional level; changes with positive trends in contributions from homes, despite economic crises existing in the three countries under study; and finally, the promotion and generation of a greater economic ambit with the introduction of new financing and health services economic evaluation schemes at all decision-making levels.

The utilization of the proposed decision-making tree will allow a greater understanding of the effectiveness with which fair and efficient financial changes are carried out to achieve a decentralization process that is congruent with health reforms. This will depend on the following aspects: the appropriate government level for the decentralization process; changes in the roles of different government levels; the contextual feasibility of income and expenditure in relation to changes in financing; the coherence between the decentralization pattern, financial changes and local conditions with respect to the health system and health needs; the redistribution of authority at all levels; community participation; and finally the compatibility between the type of decentralization and the principles of equity, efficiency and effectiveness.

## ACKNOWLEDGEMENTS

The authors express their gratitude to André-Pierre Contandriopoulos for his suggestions on how to strengthen the analysis model used in this study. A special

acknowledgement is made to the International Development Research Center (IDRC-Canada) which provided funding for this study.

## REFERENCES

- Abel-Smith B. 1967. *An International Study of Health Expenditure and Health Financing*. Public Health Papers, No. 32. World Health Organization: Geneva; 23–26.
- Abel-Smith B, Dua A. 1988. Community financing in developing countries: the potential for health sector. *Health Policy Plann* 3: 95–108.
- Aguinaga A. 1997. Situación de la salud en Perú y sus tendencias: la reforma sectorial. *Seminario Internacional de Las Reformas en Salud*. Dep. Leg. 0796-97. 1ra. Edición MINSA-Perú, Lima; 23–31.
- Alvarez R. 1990. Implementing decentralization of health services: a case study from Mexico. In *Health System Decentralization. Concepts, Issues and Country Experience*, Mills A. et al. (eds). World Health Organization: Geneva; 67–71.
- Arredondo A. 1997a. Costs and financial consequences of México's epidemiologic profile change: information for policy makers. *J Health Policy* 42: 39–48.
- Arredondo A. 1997b. Financial indicators for health care decentralization in developing countries: A framework for analysis. *Health System Sci* 1: 345–364.
- Arredondo A, Parada I. 2000. Conceptos básicos para el análisis do mercado de servicios de salud. In *Gerencia y Economía de Servicios de Salud*. CIESS: México; 163–174.
- Berman P. 1996. *National Health Accounts in Developing Countries: Appropriate Methods and Recent Applications. Data for Decision Making*. Harvard School of Public Health: Harvard; 31–48.
- Bobadilla JL. 1998. *Assessment Issues. Closing the Equity Gap. Searching for Essential Health Services in Low and Middle Income Countries. A Review of Recent Studies on Health Priorities*. No. Soc-106. Interamerican Development Bank: Washington, D.C.; 25–48.
- Bobadilla J, Lozano R. 1990. Future changes in demographic, epidemiologic and social factors. In *The Epidemiological Transition and Health Priorities, Health Sector Priorities Review*. The World Bank: Washington, D.C.; 14–16.
- Bossert T. 2000. *Political Science Evaluation of Research on Health Reform in Latin America*. Regional Forum on the utilisation of research on the health sector reform in Latin America Brazil. Working Paper. Panamerican Health Organization; 3–11.
- Bossert T. 1996. *Decentralization. Health Policy and Systems Development: An Agenda for Research* Jaovsky K (ed.). World Health Organization: Geneva; 17–28.
- Cassels A. 1995. Health sector reform: key issues in less developed countries. *J Int Develop* 7: 329–347.
- Cercone J et al. 2000. *Asociación Público-Privada Para la Atención a la Salud. El Desafío de la Reforma en Salud*. Foro de Europa y América sobre las Reformas del Sector Salud. Banco Mundial-IESE; 6–11.
- Collins C, Green A. 1994. Decentralization and primary health care: some negative implications for developing countries. *Int J Health Serv* 24: 459–475.
- Collins C, Green AT. 1993. Decentralization and primary health care in developing countries ten key questions. *J Manag Med* 7(2): 58–68.
- De Souza L, Shardonofsky S, Brouselle A et al. 2000. *Comparación del Desempeño de Diferentes Sistemas de Salud de los Países de la OCDE y de América Lautina*. Cap. # 3. Contandriopoulos A et al. (eds). Entendiends las transformaciones de los Sistematas de Salud: una perspectiva Canadiense, Département Administration de la Santé, Université de Montreal. Montreal. 87–109.
- Frenk J et al. 1996. *Health and Economy: Proposals for Progress in the Mexican Health System: Final Report*. Second Edition. FUNSALUD: México; 11–19.
- Frenk J. 1994. Dimension of health system reform. *Health Policy* 27: 19–34.

- Gonzalez-Block MA. 1992. La decentralization de los servicios de salud en Mexico: Alcances y limitaciones. *Sal Pub Mex (Supl)* **34**: 117–125.
- Hernández P, Arredondo A, Ortiz C, Rosenthal G. 1995. Challenges for health economics in Latin American Countries. *J Public Health-Revista de Saúde Pública. Brasil* **29**(4): 326–332.
- Hsiao W. 1994. Marketization—The illusory magic pill. *Health Econ* **3**: 351–357.
- Hurley J. 1995. Geographically-decentralized planning and management in health care: some informational issues and their implications for efficiency. *Soc Sci Med* **41**: 3–11.
- Jamison D, Mosley H. 1991. Disease control priorities in developing countries: health policy responses to epidemiological change. *Am J Public Health* **81**: 15–22.
- Mills A. 1991. *The Financing and Economics of Hospitals in Developing Countries: Key Issues and Research Questions*, Technical Report PHN. World Bank-Population and Human Resources Department: London; 68–71.
- MINSA-Nicaragua 1998. *Politica Nacional de Salud 1997–2002. Decentralizacion y autonomia*. Gobierno de la República de Nicaragua-Ministerio de Salud. 42–49.
- Murray C *et al.* 1999. *A Critical Examination of Summary Measures of Population Health. A Typology of Summary Measures of Health*. GPE Discussion Paper No. 2. World Health Organization: Geneva; 4–5.
- Musgrove P. 1990. The economic crisis and its impact on health and health care in Latin America and the Caribbean. *Int J Health Serv* **17**: 411–441.
- Parada I *et al.* 2000. Financiamiento en programas de farmacodependencia en México: 1990–1994. *Sal Pub Mex* **42**: 118–125.
- Poullier J-P. 2000. *Estimates of National Health Accounts (NHA). Methodological Considerations*. GPE Discussion Paper Series : NO. 27. EIP/GPE/FAR. World Health Organization: Geneva; 17–29.
- Prialé R *et al.* 1997. *Programa de Fortalecimiento del Sector Salud: Modernizacion del Financiamiento en Salud. Analisis del Financiamiento del Sector Salud*. MINSA. 1ra. edición oficina de Financiamiento, Inversiones y Cooperación Externa, Ministerio de Salud de Peru, Lima.
- Quentin TW. 2000. *Poverty and Policy in Latin America and the Caribbean*. World Bank Technical Paper. World Bank: Washington; 53–58.
- Ramesh G, Chellaraj G, Murray Ch. 1997. Health expenditures in Latin America and the Caribbean. *Soc Sci Med* **44**: 157–169.
- SSA. 2000a. Recursos para la salud en unidades de la Secretaría de Salud. Sistema Nacional de Salud. *Sal Púb Méx* **42**: 252–259.
- SSA. 2000b. Información básica sobre recursos y servicios del Sistema Nacional de Salud. *Sal Púb Méx*. **42**: 68–76.
- World Health Organization. 2000. *World Health Report 2000, Health Systems: Improving Performance*. Chapter 4: What resources are needed. World Health Organization: Geneva; 73–77.

#### APPENDIX A: MEANING OF HEALTH CARE DECENTRALIZATION AND FINANCING CHANGES IN EACH COUNTRY.

**In Mexico**, decentralization is justified on at least the following grounds: (a) the need to organize a national health service to overcome the differences between the health services offered by the two social security institutions and those services provided to the general population not entitled to the benefits of the social security; (b) to strengthen the operational efficiency and management of health services at the level of the state governments; (c) to link planning of the health services more closely to overall national planning.

By 1986, the Ministry of Health had consolidated plans for the national health system.

By 1987 services had been handed over to 12 of the 31 states. In these states, there is care for the people not covered by social security systems, who represent 42% of the population residing outside the Federal District. These 12 states contain one-third of all the primary care

facilities available in the 31 states, half of the hospital beds, and 45% of the human resources for health sector. Implementation of decentralization in Mexico is still an ongoing process in some states, and discussing its outcomes in health is premature. The Ministry of Health aimed to reinforce the participation of the health sector within the COPLADES (state level planning committees) under the coordination of the state minister of health or, in still-centralized states, of the federal delegate. The COPLADES were chosen as the most efficient way of linking resources to the priorities set through the state plans, with the participation of representatives of the whole health sector and authorities at the federal, state and municipal levels.

Analyzing financial delegation in the decentralization of health services in Mexico, two constant factors set a common pattern between decentralized and centralized health service organization: the continuation of separate federal and state sources of finance-without the state meddling with the federal funds; and the maintenance of the federal labor relationship with all state health workers- right up to the director or minister of health. Thus, all decentralized state health services, whether called ministries, departments or institutes became -from the point of view of finance and control- *de facto*, parastatal organisms of both the state and the federal governments.

Summarizing, the decentralization of health services in Mexico continues to be implemented. The case of Mexico is characterized by a pattern of devolution mixed with variants of administrative deconcentration. This pattern has also undergone drastic changes with respect to health services financing.

In the case of **Nicaragua**, up until 1991, the Health Ministry (MINSAs) was organized by Regional Health departments, whose administrative structure had proportional similarity to the central level structure. This form of organization in the MINSAs was being modified with the creation of the SILAIS (Local Integral Health Care Systems) in 1991–1992.

In spite of this legal base of the new organizational form, administration of budget resources was still being done in a centralized manner, allocating funds in the same way as in previous years. SILAIS were established in 14 states of the country, with a total of 19 SILAIS.

The decentralization of the health system was conceived as a planned transfer process, from the central level towards the SILAIS. In this sense, the SILAIS' authorities will plan health actions and execute the budget according to their local needs within the framework of the National Health Policy, while the MINSAs' central level keeps the capability to regulate, monitor and evaluate the health process, thus preserving the system's unity.

Since 1993, budgetary decentralization meant that the SILAIS became the centers responsible and in charge of financial management.

As of 1998, the implementation of the 1993–1997 program has been carried out for the decentralization of the "goods and services" categories. However, the budgeting for human resources and the purchase of medicines has not been totally decentralized.

There is no doubt that decentralization has been one of the structural measures of greater dimension and depth in the health reform process in Nicaragua. One consequence of this is the need to create an economic environment which motivates the assistance rendering institutions to be more efficient and develop improvements in their health systems. Service decentralization and changes in resource allocation to those institutions from the SILAIS, are precisely that incentive.

**In Peru**, the antecedent for decentralization goes back to the ministerial resolution of December, 1985, where the legal framework was approved that oriented the health sector's actions in order to achieve decentralization of services through delegation of authority and responsibility to the most peripheral establishments at a local level.

In accordance with this health policy guideline, the basic organizational scheme implemented in 1986, considers the Health Areas (HA) as decentralized services, constituting basic work units whose jurisdictional scope, programmatic and budgetary nature, and organizational structure, must be defined at the local level.

In 1994, the MINSAs implemented a novel system for decentralized negotiation in health centers with community participation. This decentralized system, within the shared administration's framework, allows for institutions and people from the community to organize

themselves in non-profit civil associations, in the so-called Local Health Administration Committees (CLAS). The first 13 CLAS were installed in 1994 and presently, 548 function, managing 611 health establishments in the whole country. The MINSA's authority on the management of personnel and physical infrastructure (equipment, installations and buildings) is transferred to the CLAS when the contract is signed. The transfer of funds is carried out according to the program. The MINSA only executes the normative and control actions to guarantee the good use of resources.

In 1997, the Administration for the Negotiation of Agreements was formed. The starting point for this proposal was constituted by the health policy guidelines for 1995–2000 which outline the restructuring of the health sector.

In 1998, the decentralization framework instituted a new organizational structure for local and regional coordination. The element added to the decentralization process is the creation of the Transitory Boards for Regional Administration (CTAR) in each of the country's departments, that are charged with the monitoring of the decentralization process, its evaluation and carrying out adjustments in the sectors or institutions when it is necessary.

In this context of decentralization, the budget is configured with a programmatic structure which involves the sector's objectives and priorities, through the collection of budgetary proposals from the directors of national institutes, the MINSA and regions, depending on the different instances which have been implemented in order to continue decentralization (CLAS, ZONADIS, HA AND CTAR).