

Decentralisation and economic growth: evidence from developing countries

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Abstract. *This article is organised into three major logical parts. The first part (subsections Fiscal Federalism and Decentralization: Origins and Essence and Public Administration and Political Science Views on Decentralization) discusses the origins of the fiscal federalism framework and the decentralisation process. This review of fiscal federalism's origins is necessary in order to establish a system of reference for analysis of decentralisation typology and process, which is the second part of this chapter (Major Elements of Decentralization and its Taxonomy). The second part of this chapter also identifies major components of the decentralisation process per se through a review of existing literature in the field. It concludes with the formulation of the first research question of this article: How can the decentralisation process properly be measured and assessed? The third and concluding part of this article (Decentralisation and Economic Growth: Summary of the Current Literature and Theories of Economic Growth) is devoted to a review of the existing literature on the relationship between a nation's degree of decentralisation and its economic performance. This section concludes with the formulation of the second research question of this article: Does fiscal decentralisation cause economic growth or is it a consequence of economic growth? The article concludes with a review of existing economic growth models.*

Keywords: *decentralisation, economic performance, fiscal federalism, measuring decentralisation, models of economic growth.*

Introduction

The concept of decentralisation itself is not new. Even though it has been in focus of practitioners and scholars alike for a better part of the last century, it still suffers from multiple shortages in terms of theory, measurement, and empirical observations.

There are multiple purposes for this manuscript. Its first and most obvious aim is to provide an overview of the original theoretical concepts of fiscal federalism and place the decentralisation process in that system. The term *decentralisation* is used somewhat loosely here, and it incorporates such variables as political decentralisation, economic decentralisation, and regulatory (or administrative) decentralisation. The second purpose of this article is to identify major elements of decentralisation that would allow researchers to measure, analyse, interpret, and compare levels of decentralisation among different countries. This task itself represents a major challenge because previous researchers "have multiplied the conceptualizations of decentralisation; associated the various concepts with different meanings; imbued it with positive normative value; conflated it with other concepts; and ignored its multidimensionality" (Morozov, 2016; p. 2). The last, but not the least, a purpose of this essay is to provide an overview of the literature¹ on the relationship between decentralisation and economic performance. The existing literature on decentralisation and economic growth is extensive, but still inconclusive. It is not yet clear whether decentralisation facilitates economic growth or obstructs it.

1. Fiscal Federalism and Decentralization: Origins and Essence

The concept of *Decentralization* (quite often referred to as *Fiscal Decentralisation* (FD)) has been part of a worldwide "reform" agenda since the last part of the 20th century. The inclusion of the FD concept in the reform agenda was supported by the World Bank, USAID, the Asian Development Bank, and many others; and

relationship with economic growth and other concepts.

¹ This overview is not intended to be exhaustive; See Morozov (2008, 2009, 2016) for the exhaustive review of the literature on decentralisation and its

it has become an integral part of economic development and governance strategies in developing and transitional economies (Bahl, 1999; Arzaghi & Henderson, 2005). According to a 1994 World Bank study, 63 of the world's 75 developing and transitional countries with populations over five million were involved in the transfer of some political power to local government units (Dillinger, cited in Kingsley). According to Diamond (1999, pp 120–121), this "wave of political decentralisation throughout the world since the 1970s has been induced by a variety of pressures, including poor governmental performance, urbanisation, democratic transition, shifts in international donor strategies, and societal demands." Although the wave was somewhat global, "*many of these initiatives often seem to rest more on faith than on strong conceptual foundations or careful analysis*" (Hutchcroft, 2001, pp 23-24).

Any discussion of *decentralisation* first requires a formal definition. Given the complex nature of the concept as well as theoretical discussions of it, it would be appropriate to define fiscal decentralisation as *the transfer by the central government to sub-national governments (states, regions, municipalities) of specific functions with the administrative authority and revenue to perform those functions.*

This definition captures the multitude and complexity of the concept under discussion through a combination of elements from (1) economics (public revenues and expenditures management), (2) public administration (management of public institutions), and (3) political science (relationships between different levels of government).

Traditionally, the economic aspect of decentralisation is analysed through the framework of fiscal federalism. At this point, it is important to distinguish between the concepts of *decentralisation* and *fiscal federalism*. While fiscal federalism is a framework for the analysis of a nation's public sector, decentralisation is a *process of public sector activities' assignment to different levels of government*. Thus, fiscal federalism is the system of reference within which the process of decentralisation or centralization occurs.

The original framework for fiscal federalism can be traced back to Richard Musgrave (1959). Economist Musgrave's framework is generally accepted for the analysis of federalism because his contribution was one of the first generally feasible explanations of the processes. The list of contributors to the field was later expanded to include such scholars as Oates (1971), Bahl (1994), Buchanan & Brennan (1980), Bird (1995, 1998), McNab (1997, 2005), Matinez-Vazquez (1997), and others.

Musgrave addressed issues of fiscal federalism from a traditional economic perspective. The framework for analysis was based on values of Pareto efficiency and equity as well as on three major economic functions of the public sector in an economy: (1) wealth redistribution, (2) macroeconomic stabilisation, and (3) resource allocation (Musgrave, 1959, 1961; Oates, 1977).

The wealth distribution function involves the role of government in changing the distribution of income, wealth, or other indicators of economic well-being to make them more equitable than would otherwise be the case. Simply put, the wealth re-distribution function is directed at the equity aspect, according to which citizens should contribute to the provision of public goods/services according to their ability to pay (also known as *vertical equity*) while people with comparable incomes should be treated comparably (also known as *horizontal equity*). The case for assigning this function to the national government rests on two assumptions: (1) the national government's broad taxing powers can more easily redistribute income; and (2) the ability of taxpayers to move from one jurisdiction to another to take advantage of more attractive spending and taxation policies weakens local government's ability to "*soak the rich and redistribute to the poor*" (Oates, 1993, p. 17) The case for subnational redistributive policies rests on the fact that sub-national governments provide the services most used by low-income families. However, most economists view the national role as primary.

The macro-stabilization function involves the role of tax and spending policies and

monetary policy in managing the overall level of economic activity. It is widely agreed that this macroeconomic function should be assigned to the national government. This suggests that the national government must have a broad-based tax suitable for this role. It is important to note that Oates in his analysis of 58 countries (1993) demonstrated a positive relationship between economic growth and fiscal decentralisation—suggesting some role for local governments in the spending side of the macro-stabilization function, especially in infrastructure development.

The allocation function is government's role in deciding the mix of public and private goods that are provided by the economy or by the government. Each level of government may be more efficient in delivering certain governmental goods and services. The superiority of the national government in delivering national defence or national health research is obvious as is the likelihood that certain services such as fire and police protection are more suitable for local government. In attempting to match local revenues and expenditures in the allocation process, economists are concerned about efficiency, vertical imbalances (mismatches between revenues and expenditures), horizontal equity (fiscal capacity among regions), externalities (spillovers), and tax exportation. Additional public management concerns have to do with both the overlapping of the taxes and the roles and the responsiveness of and accountability for service delivery.

The fiscal federalism framework is most helpful when thinking about which taxes are levied at each level of government, the total taxing authority of each level, and service provision responsibility at each level of government. A commonly cited public finance principle for a well-designed decentralisation process is "finance should follow function" (Bahl, 1999, p. 6). This principle is a restatement of the tax assignment problem that was formulated by Musgrave (1983): "*Who should tax, where, and what.*" Although there seems to be little certainty in taxation issues, the answer to Musgrave's question has been well settled, at least in theory. That answer was restated by Oates (1996, p. 36):

(1) Lower levels of government... should, as much as possible, rely on benefit taxation of mobile economic units, including households and mobile factors of production. (2) To the extent that non-benefit taxes need to be employed on mobile economic units, perhaps for redistributive purposes, this should be done at higher levels of government. (3) To the extent that local governments make use of non-benefit taxes, they should employ them on tax bases that are relatively immobile across local jurisdictions.

Similar recommendations emerge from most discussions of the tax assignment concept.

One would be correct in noticing that the discussion of tax assignment follows the previously described framework of analysis in terms of public sector functions in the economy. Such concerns as the maintenance of "integrated economic space" (Ter-Minassian, 1997), "national redistributive equity" (Musgrave, 1983), and administrative economies of tax administration (Vehorn and Ahmad, 1997) have to be balanced against the "principle of fiscal equivalence" (Olson, 1969) that results (at least theoretically) in higher levels of fiscal responsibility (Ter-Minassian, 1997). As Ter-Minassian (1997) summarised the conventional argument by developing Oates' hypothesis: "the best candidates" for sub-national taxes are levies that are (1) on relatively immobile bases, (2) where the base is relatively evenly distributed, and (3) where yields are likely to be stable.

In terms of fiscal federalism this means that if certain expenditure roles are assigned to a level of government, that level must have the resources to meet those responsibilities. Taxes are the main source of "own-source" revenue for governments at all levels. If tax collections or fiscal capacity falls short of expenditure responsibilities, then that level of government must have additional taxing authority, develop user fees, or rely on intergovernmental transfers (such as grants and shared taxes) to support its expenditures. Thus, according to the theory of federalism, the central government should have the basic responsibility for (1) wealth redistribution in the form of assistance to the poor and for (2) the macroeconomic stabilisation function.

In the case of both functions, the basic argument stems from some fundamental constraints on lower level governments. In the absence of monetary and exchange-rate prerogatives and with highly open economies that cannot contain much of the expansionary impact of fiscal stimuli, provincial, state, and local governments simply have very limited means for traditional macroeconomic control of their economies. Similarly, the mobility of economic units can seriously constrain attempts to redistribute income. An aggressive local program for the support of low-income households, for example, may induce an influx of the poor and encourage an exodus of those with higher incomes who must bear the tax burden. Such aggressive pro-poor support in one jurisdiction essentially violates the principle of horizontal equality which is essential in the development of a proper fiscal federalist structure (Bahl, 1999). In addition to these functions, the central government must provide certain "national" public goods (like national defence) that provide services to the entire population of the country. Thus, briefly summarised, the doctrine of fiscal decentralisation lays out the argument according to which central government should be responsible for two (redistribution and macroeconomic stabilisation) out of three functions of the public sector. The third function (resource allocation) should be executed by both sub-national and national governments. The term "sub-national governments" is used here somewhat freely to identify and denote governments below the central one, including state, regional and local governments.

The main argument behind delegation of the allocation function to sub-national governments springs from manuscripts by Tiebout, Buchanan, Brennan, Oates, and others. The basic assumptions of that model could be explained as interplay among the fields of economics (definition of public goods), political science (citizen voting), and public administration (satisfaction of public needs through the public provision of goods and services). Tiebout, in his famous *A Pure Theory of Local Expenditures* (1956), theorised on the

topic of government size growth, provision of public services, and optimal provision of public goods. Basically, the argument is that to care about growth and solve poverty issues, one should be concerned with efficiency—supplying services up to the point at which, at the margin, the welfare benefit to society matches its cost. In the private sector, the market-price system is the mechanism. When the market fails in this objective, there is a case for the public commandeering of resources to supply the activity. Once the public sector gets involved, the efficiency logic is in favour of some form of fiscal decentralisation. The argument is that geographic considerations make local governments necessary mechanisms for setting up a system of budgets that best approximates the efficient solution of equating benefits and costs. This leads to the decentralisation theorem (Koethenbueger, 2008): The governments closest to the citizens can adjust budgets (costs) to local preferences in a manner that best leads to the delivery of a bundle of public services that is responsive to community preferences.

The logic behind the decentralisation theorem stems from the heterogeneity of any society. Different geographic locations will have different local needs and necessities. Such diversity will result in the provision of different bundles of public goods. Such diversity would define the geographic division of the population into clubs of citizens with somewhat homogeneous tastes and preferences. Therefore, no ballots would have to be cast as citizens' true preferences would be revealed through the silent *voting-with-the-feet* of individuals exiting and entering communities according to their satisfaction/dissatisfaction with a specific bundle of public services provided in specific "club." Such a "voting" arrangement was initially noted by Tiebout (1956).

At this point, it is important to discuss conditions that ensure global optimality of excludable public goods' provision because these conditions spring from both the *Club* and *Leviathan* theories as well as from contributions like Oates' *Fiscal Federalism* and others²:

² This list of assumptions is drawn from my reading of Tiebout (1956), Buchanan and Wagner (1970),

Buchanan and Goetz (1972), McGuire (1972), Oates (1972), and Pesticau (1977).

- Full mobility of all citizens;
- Full knowledge of the characteristics of all communities (clubs);
- Existence of communities that would exhaustively satisfy existing citizens' preferences;
- Absence of externalities across communities;
- Absence of economies of scale in public services/goods provision;
- Absence of horizontal inequalities among citizens of different communities.

Clearly, these assumptions are very restrictive. Although the restrictiveness of these assumptions has been long criticised, the internal conflicts among them have only been superficially discussed. The most obvious conflict occurs between the assumption of full citizen mobility and the absence of externalities. These assumptions are mutually exclusive in a society that consists of heterogeneous elements. The general logic here is that citizens of certain qualifications represent potential externality through their simple existence. Thus, the externality occurs the moment these citizens leave one community for another. Empirical evidence of such externality is easily observed in trends and effects of international migration on both receiving and sending countries. Generally, migration has a negative effect on "origin" countries since more educated citizens tend to move to better-developed countries. The resulting "brain drain" further facilitates the decline of "origin" communities. Such out-migration and its consequences violate the assumption of horizontal equality among communities in one state. Such drastic differences are easily observed in developing economies like fSU and Central and Eastern Europe (CEE) countries. The comparison of horizontal imbalances is appropriate since it can be done on the basis of regional per capita GDP, amounts of inter-governmental transfers, and population education (years of) in respective regions. For example, Moldovan local governments are obliged by law to share their revenues with the central government in such a way that part of these revenues is kept locally while the remaining portion belongs to the

central government budget. The percentage of shared revenues is annually defined in budget law. Generally, shared revenues are the cash flows from corporate income tax, personal income tax, and charges from road exploitations. The specific feature of this regulation is that the minimum percentage of shared revenues to be kept by respective local governments should not be less than 50%. In fact, given the economic reality of Moldova, the only local governments that share their revenues with the central government are the municipalities of Chisinau (the capital city) and Balti (the second largest city). All other territorial units keep all their revenues from "taxes on business activity" (Morozov, 2009).

The next assumption of fiscal federalism is that of lack of informational asymmetry. This issue has been the topic of scientific discussion by Niskanen, Khan, Bartle, and others. Lack of information asymmetry implies that the citizenry has the same information as representatives of local authorities. Empirical evidence documented by Niskanen, Khan, and Bartle suggests that in some cases this assumption is unwarranted because of issues of moral hazard, adverse selection, and conflict of interest. Discussion of these issues is a topic for a stand-alone research, and it is far beyond the purpose of this article.

The most criticised of the above-mentioned assumptions is the one about voters' mobility. It would be reasonable to assume that voters move for reasons other than community taxation aspects. The main point of the argument is that citizens follow the income and do not run away from taxes. This is a reasonable assumption if one accepts the adage that "in this world nothing is certain but death and taxes" (attributed to B. Franklin). Thus, citizens should be concerned primarily with making more money, and only secondarily with minimising their tax burden.

An important consequence of federalism for decentralisation comes from Samuelson's *The Pure Theory of Public Expenditures* (1959). Samuelson theorised that, given the economic nature of public goods (non-excludability of consumption and jointness of supply) and political-geographic reality (citizenry in a

jurisdiction and fixed geographic boundaries of that jurisdiction), a public non-market decision needs to be used to reveal citizens' true preferences and to achieve Pareto efficiency. However, many goods are "quasi" public goods. This characteristic of these goods explains the inapplicability of exclusion from consumption criteria used for the definition of truly public goods. Thus, the citizenry can react ("vote") to a specific bundle of quasi-public goods/services provided in a specific jurisdiction not only through voting *per se* but also through leaving communities that provide unacceptable quasi-public services.

The implication of such an expression of preferences is important as it is citizens' expression of their satisfaction with publicly provided services in a specific community. The efficiency and adequacy of locally provided public services are ensured through citizen mobility, voting power, and competition among local governments. This argument is developed and supported by Oates (1972) through his assertion that under the assumption of absence of externalities and various preferences, local governments have an informational advantage over a central authority in the provision of public services, which results in a higher quality of services provided to the public.

In economic terms, the addition of sub-national levels of government results in better preference matching. Thus, a marginal benefit from publicly provided services for citizens equals citizens' marginal cost for the unit of services received. The implication of that argument is twofold. First, provision of public services at the level at which marginal costs equal marginal benefits results in an optimal allocation of public resources. Second, such efficiency in resource allocation processes implies that decisions about these processes should be transferred to the level of government that has the best available information regarding local preferences (Azis, 2008). However, it is important to note that simple assignment of responsibilities to sub-national governments does not address the entire issue of preference matching. The responsibility to provide a service is just one element in preference matching. Such responsibility should be matched by government-receiver's capacity to perform such

functions. What that means is that public function should be based on the economic source of revenue. In other words, decentralisation's success depends on (1) clear assignment of a function to a level of government and (2) a government's capacity to perform that function. This is nothing but a matching of sources of public revenues with objects of public expenditures. Or, as Bahl (1999) put it, "finance should follow the function." This consideration is crucial in developing a decentralisation system, and it will be discussed next.

Although revenue generating and spending are two separate governmental functions, they should be analysed simultaneously. Somewhat comparable to Niskanen's argument in his *Bureaucrats and Politicians*, Brennan and Buchanan (1980) modelled government as a monolithic entity, "Leviathan," that systematically seeks to maximise the total revenues that it extracts from the economy through the excessive tax-pricing of public goods and services it supplies. The government's ability to maximise revenue and hence expenditure, they argue, is limited only by constitutional constraints placed upon its actions. One such constraint would be the decentralisation of the national (central) government's taxing and spending powers, with sub-national units of government taxing and spending "independently" [Brennan and Buchanan (1980), 185].

Decentralisation of taxing and spending powers allows taxpayers to choose among "separate taxing-spending jurisdictions." Through the potential exercise of these options, taxpayers control the behaviour of revenue-maximizing governments along the lines of the Tiebout (1956) model. In a Tiebout-style world, any attempt by one jurisdiction to raise the tax price of local public goods and services it supplies will result in migration of its citizen-taxpayers to an alternative jurisdiction in the pursuit of fiscal gains. Inter-jurisdictional competition for mobile citizen-taxpayers and other economic resources negatively affects governments' excessive tax pricing powers; thus, it is conducive to a more cost-efficient provision of local public goods and services and, thereby, restrains the overall size of the public sector.

To further emphasise the inseparability of tax and expenditure decentralisation in their hypothesis, Brennan and Buchanan (1980) argued as follows: "*Possibility for collusion among separate governmental units must be included in 'other things equal'*" (p. 185). They predicted that, within the constitutionally decentralised fiscal structure, sub-national governments would try to avoid competitive pressures through colluding among themselves or with the national government. One obvious collusion would be an agreement between sub-national governments and the national government. Sub-national governments would yield taxing powers to the national government. The National government would establish a revenue-maximizing, uniform tax system across all jurisdictions. The tax revenues would be then shared among governments, with sub-national governments receiving their shares in the form of intergovernmental transfers (grants) according to Grossman (1989).

Revenue sharing, Brennan and Buchanan (1980) argue, subverts the primary purpose of fiscal decentralisation, which is to create competition between sub-national governments. It removes one major element of the competitive government process, i.e., tax competition, by establishing a uniform tax system across jurisdictions and encourages the expansion of the public sector through the concentration of taxing powers in the hands of the revenue-maximizing national government, evading the constraining influence of expenditure decentralisation. Each sub-national unit of government must have responsibility for raising its own revenue and should be precluded from entering into revenue-sharing agreements with the national or other sub-national units of government [Brennan and Buchanan (1980), p. 183]. The inseparability of revenue-raising and spending responsibilities at the sub-national level of government clearly requires the simultaneous assignment of the national government's taxing and spending powers to sub-national governments.

Thus, this leads to a normative conclusion that expenditure responsibilities at each level of government should be defined as clearly as possible to improve accountability and avoid duplication (Wrede, 2006). Local

governments should have sufficient revenues to meet their expenditures, doing so through a balanced combination of local taxes and grants from the higher-level government. This might sound simple, but finding the revenue-expenditure balance in practice is hard. In some cases, the national governments delegate expenditure responsibilities simply to unload expenditures, without providing the revenues to compensate. That gap then undermines local accountability because local governments can blame poor services on a shortage of funds, or it can make control of local spending difficult because local governments can easily excuse overspending and press for more grants and loans. If revenues exceed expenditures, local revenue collection efforts may decline. To deal with this problem, expenditure assignments should come first, followed by revenue assignments.

Decentralisation also requires taxing power at the local level to link benefits (services) and costs (taxes). Citizens who pay taxes directly to the local government are more likely to hold local politicians and bureaucrats accountable. Weak or nonexistent local taxing power thus weakens the voice chain from the client/citizen side and cuts incentives to strengthen the compact relationship. Dependence on national grants, meanwhile, weakens local revenue-generation efforts and can lead to fiscal mismanagement. Therefore, the piggybacking of local taxes on central taxes seems to provide both horizontal equalisation and incentives to local governments to collect their locally available revenues. This incentive to collect local revenue is based on empirical evidence in property tax collection in the US, where owners of private property are subjected to multiple compounding property tax rates (e.g. the public-school tax rate comes on top of the county tax rate that comes on top of the library tax rate, etc.).

The transfer of power to local governments makes them potential participants in financial markets. To avoid mismanagement and bankruptcy of public authorities, the central government needs to absolutely define sub-national borrowing so as to avoid issues of moral hazard and adverse selection. The national government should monitor local liabilities and

repayment capacities regularly and disclose the information. There should also be penalties for excessive borrowing. A common measure is to intercept national grants when local governments fail to meet repayments. Further, a bankruptcy rule is needed to enable delivery of services even if local government bankruptcy should occur. In the long term, it is also important to strengthen local revenue sources that can be pledged as collateral. In the absence of a strong local revenue base, lenders might be led to think that any sub-national borrowing would be backed by the national government (Litvack and Seddon 1999). This problem is generally regulated through separation of central and sub-national governments by means of the fact that central government would not bail out sub-national public authorities. However, the exploration of this aspect of decentralisation is beyond the purposes of this manuscript

The intermediate conclusion about the economic side of the decentralisation process is that even within the field of economics, the decentralisation process is not a simple phenomenon. Economically, decentralisation must be analysed through tax assignment (revenue sources for different levels of government) and responsibility assignment (the expenditure assignment). While revenues and expenditures are the major elements of a decentralised system, these revenues have to be balanced (hard budget constraint) so that sub-national governments are held responsible for their actions toward their constituents (citizenry and central government). It is also important to note that accountability issues and efficiency (in the Weberian meaning of the term) have not been—discussed in explicit detail within fiscal federalism as they are addressed in political science and public administration theories of the decentralisation process. This is exactly the purpose of the next subsection of the article.

2. Public Administration and Political Science Views on Decentralization

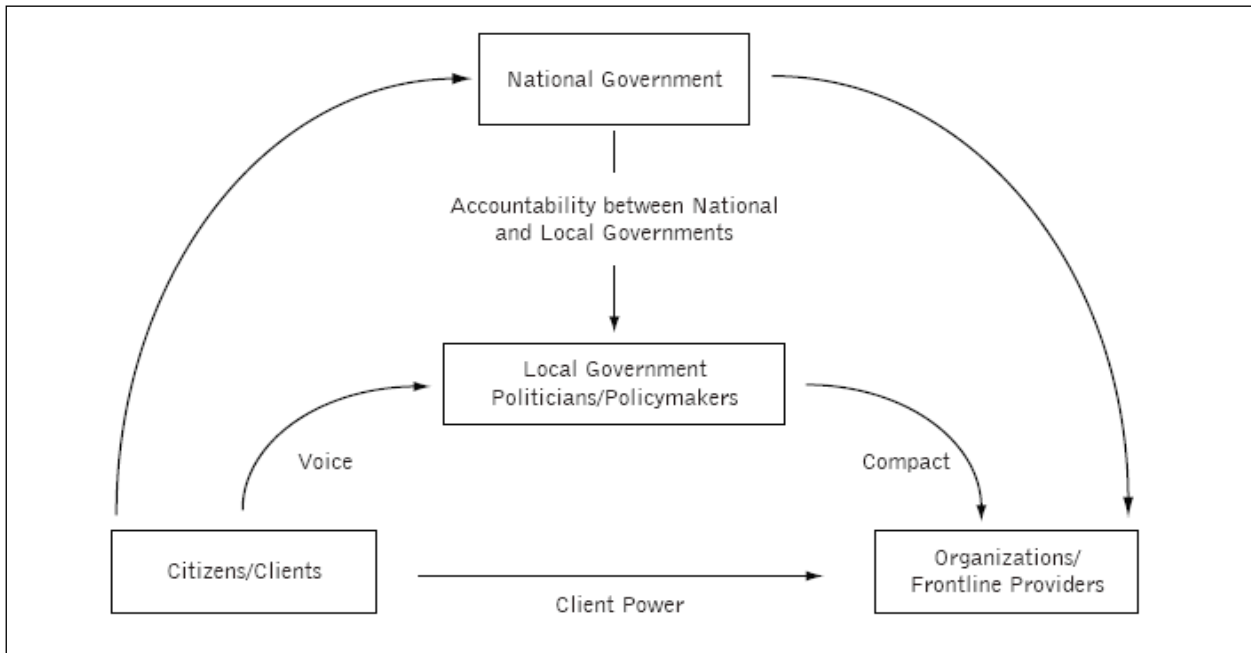
The last two aspects of decentralisation are political and administrative. Political science theories on decentralisation focus on "*mobilisation, organisation, articulation, participation, contestation, and aggregation of interests*" (Schneider, 2003, p. 35). All public sectors perform these processes. The major differences among these systems are context specific. The unifying characteristic of decentralised political systems are the facts that these systems include political actors and issues that are significant at the local level and that the same actors and issues are at least partially independent of their national-level counterparts. One of the existing models of decentralisation is the one developed by the World Bank (2003). The World Bank model assumes two levels of governments (central and sub-national) that are responsible to the citizenry for the provision of public services via public administration institutions:

- Politicians/policymakers who make decisions on quantities, finances, and modes of service delivery;
- Organisations/frontline providers such as ministries, departments, agencies, bureaus, and their frontline service providers; and
- Citizens/clients who are customers of public services.

These actors, as well as the linkages among them, are presented in Figure 1 (World Bank, 2003)

Several aspects of this model deserve specific attention. First, the relationships among actors represent nothing but "mobilization, organization, articulation, participation, contestation, and aggregation of interests" (Schneider, 2003) and preferences for a local mix of public services provided by bureaucracies, "which have been defined as efficient, effective, and rational" (Weber 1968: esp. 926-39, 956-89).

Figure 1: Accountability Chains in Decentralised Contexts (World Bank, 2003)



One can observe that the World Bank's service delivery triangle consists of two different routes: a long one (through central government) and a short one (through what the World Bank calls "local government"). These routes represent mechanisms through which citizens can hold governments (both elected officials and public administration practitioners) accountable for service delivery. Citizens/clients can give mandates to politicians/policymakers to design services to respond to their needs. If politicians/ policymakers cannot fulfil their mandates, this can result in an electoral or some other kind of political backlash (voice). In turn, politicians/policymakers exercise control over civil service management authorities to motivate organisations/frontline providers to serve for clients/citizens (compact). The combination of the voice and compact chains forms the long route of accountability. The short route connects citizens/clients and frontline providers (client power) through a direct accountability relationship. It works if citizens/clients are given a choice among service providers, creating competition. Their participation in service provision will also strengthen client power. Better services require accountability among the actors. Thus, all these

actors are linked through three types of accountability relationships:

- Voice, connecting citizens/clients to politicians/policymakers;
- Compact, connecting politicians/policymakers to organisations/frontline providers; and
- Client power, connecting citizens/clients to organisations/frontline providers.

Compared with centralised systems, decentralisation shortens accountability chains within a local government (Figure 2.1). The voice chain, which connects citizens with the national government under a centralised system, is replaced by a shorter chain with local politicians, which makes for easier monitoring and attribution of responsibility for changes in services. Likewise, the shorter compact chain connecting local politicians to service providers enables effective monitoring of services delivery, which can strengthen local accountability by shortening the voice and compact chains.

Thus, the World Bank's model illustrates that the *political and administrative aspect* of the decentralisation argument is essentially about the quality of governance and its apparatus.

Decentralisation places allocational decision-making closer to the people. This fosters greater responsiveness of local officials and greater accountability to citizens, at least theoretically, because it is expected that local decision makers are more knowledgeable about the problems and needs of their local area than are centralised decision makers. Further, to the extent that there is accountability through local elections, those elections are more likely driven by issues of local allocation, whereas national elections are seldom focused on local service delivery. In terms of public administration and political science, this means that the conventional justification for the government hierarchy in the fiscal federalism is based on asymmetry in policy tools or in information access that is available to different levels of government (Rubinchik-Pessach, 2005; Sandford, 2002). Given that asymmetry of available tools and resources, the addition of local (regional) governments to a one-tier central government can be strictly welfare improving (Rubinchik-Pessach, 2005). While the addition of a sub-national level of government may be welfare improving, it may also be, economically speaking, be inefficient (Prud'homme, 1995; Tanzi, 2008). This is because economic efficiency *may not* be the major local concern. Tanzi (2008) asserts that need for decentralisation "*arose from political (regional) demands for autonomy*" and not only economic efficiency. Thus, decentralisation is a long multi-step and multi-faceted process that affects various levels of government differently.

Diversity in public policy is a second governance argument for fiscal decentralisation. It is valued because it offers citizens a greater choice in public service and tax options when they are deciding where to reside (Tiebout, 1956). In addition, it helps to create "laboratories" for innovation and experimentation, which sometimes serve as models for later implementation by the central government or by example to other local governments. While there is no theoretical reason why a central government could not be

diverse in its solutions, there is great pressure on the central government towards uniform policies and procedures.

Further, fiscal decentralisation is thought to enhance political participation at the local level. This has the potential to enhance democratic values and political stability at the local level. It provides a forum for local debate about local priorities and can be a proving ground for future political leaders. For example, 3 out of the last 5 U.S.A. presidents had also been state governors.

Thus, the intermediate conclusion about political and administrative aspects of decentralisation is that a properly designed decentralisation system would allow the aggregation and the expression of local interests in such a way that sub-national authorities have to respond to these demands. Such a combination of factors theoretically results in improved social welfare (as expressed through citizens' satisfaction with their government). It is important to note, however, that such improvement may be economically inefficient. However, decentralisation is not just about economic efficiency. It is about the combination of economic efficiency, social values (the political component of decentralisation), and an effective apparatus for the achievement of societal goals based on social values.

Major Elements of Decentralisation and its Taxonomy

The complexity and intertwined nature of scientific fields involved in the definition of decentralisation partially explain the existing qualitative taxonomy of the concept under discussion. While decentralisation arrangements are very context specific and vary from country to country, there are several principles which characterise what is empirically considered a "*good*" decentralisation system. The components of a "good" decentralisation system were articulated by Bahl and Martinez-Vazquez (1999) and are summarised in Table 1:

Table 1.
Components of Fiscal Decentralization System by Bahl & Martinez-Vazquez

Component	Desirable Feature
Representation	Popular election of executive and legislative branches
Chief Officers	Locally Appointed
Budget	Local Approval, Hard Constraints
Expenditure Discretion	Significant local control over how money is spent
Revenue Discretion	Significant local control over structures & rates
Borrowing Power	Broad borrowing power, Hard Constraints
Transfers & Grants	Unconditional, Formula Driven
Civil Service	Local discretion over local HR decisions

Not surprisingly, the authors of the previously mentioned table included criteria from all major fields that define the decentralisation process: public administration, political science, and economics. Thus, the existing taxonomy of decentralisation is based on previously mentioned criteria, and that taxonomy will be discussed next. Decentralisation is known to have various degrees. The most often cited aspects of decentralisation are:

- (a) political decentralization
- (b) administrative decentralization, and
- (c) economic (or *fiscal*) decentralization (Tanzi & others, 2008). Based on a review of the literature, the following taxonomy of the decentralisation process seems to be appropriate and exhaustive.

Political decentralisation occurs when political authority is transferred to local governments to give citizens and elected representatives decision-making power. In this context, political decentralisation means devolution of political authority of electoral capacities to sub-national actors. Typical examples are the "popular election of governors and mayors, (previously appointed by local councils or by central authorities), constitutional reforms that reinforce the political autonomy of sub-national governments, and electoral reforms designed to augment political competition at the local levels" (Tanzi & others, 2008).

Administrative decentralisation (sometimes referred in the literature to as *Regulatory Decentralization*) redistributes authority for planning, financing, and managing public functions among government levels. This type of decentralisation is sometimes loosely

titled "fiscal decentralisation" (Tanzi, 2008). Quite often administrative decentralisation is analysed through the degree of sub-national governments' autonomy. The most often cited taxonomy of administrative decentralisation is the one in which the process of decentralisation is characterised via three related practices: (1) devolution, (2) delegation, and (3) de-concentration (Rondinelli, 1990). These three different concepts describe the same process of authority transfer from central government to local authorities. The differences are in degrees of local governments' autonomy in a specific country.

The last type of decentralisation is *fiscal decentralisation per se*. This type of decentralisation involves the transfer of decision making regarding revenues and spending to sub-national governments. In other words, fiscal decentralisation means a shift of expenditure responsibilities to sub-national governments, financed by a combination of own and other sources of revenues, including intergovernmental transfers. The taxonomy of responsibility assignment may, in fact, significantly reduce the "effective autonomy" of the local governments. Likewise, without own-source revenue at the margin, the local governments may lack incentives for proper accountability because they might be able to leverage the federal government or pass on the consequences of their actions to other jurisdictions (see Ahmad & Brosio 2006; Ambrosiano & Bordignon 2006).

The previously described taxonomy of decentralisation allows for the development and identification of concepts from each field that contributes to the understanding of decentralisation process *per se*:

Table 2. Dimensions of the Decentralization Process

Political Science	Public Administration	Economics
1. A system that allows expression of local preferences	1. Sub-national governments' autonomy from central governments	1. Sources and sizes of sub-national revenues
2. A system that allows <i>representation</i> of citizens' preferences.	2. Accountability of sub-national governments both to central government and to citizens	2. Objects of sub-national expenditures
3. A system that allows transformation of local preferences in policy decisions.	3. Efficiency of implementation of public policies	3. Hard Budget Constraint.

Source: Developed by the author based on Bahl (1999), Tanzi (2008), Oates (1972)

The preceding discussion of the decentralisation process effectively outlines three dimensions for analysis: economic decentralisation, administrative decentralisation, and political decentralisation. An important observation here is that these three dimensions of decentralisation are intertwined. Thus, more decentralisation along one dimension might influence decentralisation along another dimension. Thus, the important observation here is that the decentralisation process should be understood in terms of two distinct but interconnected types of processes. The first type is *intra-dimensional*, and it was previously described in terms of three different dimensions of decentralisation. The second type is related to the interrelations of the three dimensions. Thus, this group of processes is *inter-dimensional*

Fiscal Decentralisation and Economic Growth: Summary of the Current Literature.

Over the last 30 years, most developing countries have embarked on a path of building democratic societies that are based on principles of democracy and a free market. Such announcements have resulted in the commitment of transition countries' public authorities to some sort of decentralisation. Thus, such commitment has resulted in an increased interest in the phenomena of decentralisation *per se*. Studies of decentralisation have used a variety of approaches and methods. Previous efforts to analyse decentralization can be classified into three main categories: (1) research publications that theoretically describe the decentralization process and its essence; (2) analytical studies that interpret decentralization as an independent

variable; and, finally, (3) literature that treats a country's degree of fiscal decentralization as a dependent variable.

An alternative classification of the literature on fiscal decentralisation is according to its focus (Tanzi, 2008). Several manuscripts are dedicated to the analysis of decentralisation outcomes in various countries or provide international comparisons. The foremost drawback of these cross-country comparison studies is the limited availability of comparable data on multiple countries. This weakens the validity of the research. Multiple studies have been conducted using data from various sources like budgets and household surveys. Given the nature of household surveys, assessments of fiscal decentralisation based on this data source represent areas of potentially fruitful research. The existing body of literature on fiscal decentralisation can be broadly summarised in four different groups according to manuscripts' emphases¹: (a) literature on decentralisation and convergence of service delivery levels; (b) studies on preference matching and decentralisation; (c) literature on decentralisation and production efficiency; and (d) research on decentralization and economic growth. The primary focus in the literature is on decentralisation and economic growth. In addition to the analysis of selected articles, the most voluminous groups of literature will be organised into a table identifying each study's major elements, such as dependent and independent variables, decentralisation operationalizations, units of analysis, timeframes of analysis, and major results.

¹ Taxonomy is developed based on readings.

Economic Growth and Fiscal Decentralisation:

The specific feature of the exploration of fiscal decentralisation and economic growth is the scarcity of empirical data analysis. Such a paucity of research can be partially explained by the fact that most of the literature on fiscal decentralisation is influenced by public economics, which has not paid direct attention to economic growth (Martinez-Vazquez & McNab, 2001).

The origins of the literature linking decentralization to growth can be traced to Oates (1993), who argued that the gains from decentralization should also apply to a dynamic framework of economic growth because centrally determined policies do not adequately consider local conditions in the provision of public goods and services, such as those regarding infrastructure and education.

The potential positive impact of decentralisation on societal welfare and economic growth in particular was previously discussed in chapter 1 of this dissertation. The argument for the positive influence of decentralization consists of 4 different hypotheses: (1) the diversification hypothesis (aka decentralization theorem) (Oates, 1972, 1977); (2) the Leviathan (restraint) hypothesis (Brennan & Buchanan, 1980); (3) the productivity enhancement hypothesis (Vazquez & McNab, 2001); and (4) the political and administrative improvements hypothesis (e.g. improved accountability, decreased corruption, increased citizen participation) (Bird, 2001).

At the same time, it is important to note that there are several theoretical drawbacks associated with decentralisation. Potential drawbacks might stem from the following: (1) the reinforcement of regional disparities (Tanzi, 1995; Bahl, 1999); (2) the questionable quality of government decisions because of corruption and accountability issues (Prud'homme, 1994); (3) the necessity for a nation's certain relatively high level of economic wealth (Bahl & Linn, 1992; Prud'homme, 1995); and (4) the possible adverse effect on the macroeconomic stability of a nation resulting from structural imbalances (Tanzi,

1995) and promotion of shadow economies (Zhuravskaya, 2000).

Again, it is important to notice similarities in the argumentation of both positive and negative consequences of decentralisation. Both sides of the scientific inquiry are organised based on concepts of quality and capacity of the administrative apparatus of a country, quality and capacity of political structures (at both national and sub-national levels), and on the economic rationale behind responsibilities and expenditure assignment among different levels of government. Also, this is a sounding similarity with other researchers' discussions of decentralisation and measurement.

The empirical research does not exactly clarify the nature of the relationship between the decentralisation process and economic growth. Before describing empirical studies on the nature of the relationship between decentralization and economic performance, it is important to note that the majority of studies directly linking decentralization and economic growth employ Barro's (1990) endogenous growth model, where economic growth is a function of multiple inputs including private capital, human capital, and multiple public spending². The recent studies are summarised in Table 3.

An important observation here is the fact that the measurement of decentralisation in economic models is not much better than that in political science and public administration models. Multiple definitions of decentralisation are present among different researchers. Sometimes the same researcher employs different definitions of decentralisation within the same study (i.e. Yilmaz & Ebel (2002) employ multiple definitions). Such multiplicity does not help assess the degree of decentralisation in different countries. Also, it does not allow for a meaningful comparison of decentralisation status among different nations. At the same time, the unifying theme of the literature on the relationship between decentralisation and economic growth is the fact that decentralisation is analysed through the lenses of existing structures (political, administrative, and economic).

economic growth that assumes decreasing returns to all forms of reproducible capital.

² Lin and Liu (2000) follow Mankiw, Romer, and Weil (1992) and specify a Solow (1956) model of

Table 3.
Decentralisation and Economic Growth Literature – Major Elements

Author(s)	Region	Time	Fiscal Variable(s)	Growth Variable	D Var.	Main Results
Akai & Sakata (2005)	US Counties	1993-2000	n. a.	GDP Growth Rate	Sub-national Autonomy of Fiscal Revenue	Growth is positively related to tax autonomy and to non-bailouts
Arze del Granado, Vasquez, McNab (2005)	45 developed & developing countries	1973-2000	Ratio of education and health exp. to total public exp.	n. a.	Sub-national share of exp. and revenues	Likely increase of expenditure for health and education
Ebel and Yilmaz (2002)	19 OECD countries	1997–1999	Public sector's exp. as % of GDP	GDP growth rate	Multiple operationalizations	Various results for different concepts of D
Faguet (2004)	Bolivia	1991-1996	Investment for Education and infrastructure	n. a.	The sub-national share of exp. and revenues	Increased spending in poorer areas
Jin and Zou (2002)	17 developed & 15 transition countries	1980-1994	Sub-national, national, and Aggregate G size: the ratio of total exp. GDP	n. a.	The sub-national share of expenditures and revenues; regulatory D.	Increase of sub-national expenditure and reduction of national expenditure
Thiessen (2000)	26 mainly developed countries	1975–1995	Annual growth of real gross fixed capital formation (as indicator of investment)	Growth rate of per capita GDP, TFPG	Sub-national share of expenditures and revenues	Non-linear relationship
Thiessen (2003)	14 and 21 OECD Countries	1973–1998	Average annual investment share in GDP	Log. Dif. GDP per working-age person. TFPG	Sub-national share of expenditures and revenues	Growth initially increases but then declines with decentralisation
Davoodi & Zou (1998)	US	1993-2000	n. a.	Per Capita GDP	Sub-national share of expenditures and revenues	Negative Relationship between FD & EG

3. Models Specification: Decentralisation Measurement

Decentralisation is a complex phenomenon created at the intersection of three fields: political science, public administration, and economics. Thus, it is logical to measure fiscal decentralisation along these axes¹. The previous discussion of approaches to the measurement of decentralisation has outlined three aspects of the process: fiscal decentralisation, administrative decentralisation, and political decentralisation. Each of these aspects has been analysed and conceptualised on its own. However, it would be inaccurate to assess any of the facets of decentralisation on its own, because of the interconnectedness of these aspects. Therefore, without too much speculation, it is logical to view decentralisation as a combination of the

fiscal, political, and administrative systems of a nation. Therefore, decentralisation should be analysed as one.

Another reason that decentralisation should be measured as a whole is that it is inherently difficult to measure. Only analysis of the entire system will allow capturing unobserved variances in the degree of decentralisation. Thus, whatever unobserved element of a fiscal nature exists, it will be captured through a combination of the political, administrative, and fiscal descriptors of decentralisation. The same goes for the other two criteria. Also, such an index of indices will allow for meaningful cross-country comparisons because of the consistency of data and methodology. Development of such an index will also allow for testing the hypothesis about the influence of D on economic growth.

Table 4
Dimensions and Specific Variables of Decentralization Process

Dimension	Variable	Source
Economic Decentralization	1 Sub-national Share of Total Expenditures 2 Sub-national Share of Total Revenue	GFS
Administrative Decentralization	1 Share of sub-national Revenues from Taxes 2 Government Efficiency 3 Rule of Law 4 Regulatory Quality 5 Control of Corruption.	GFS & Kaufmann, Kraay & Mastruzzi (1999, 2003, & 2008)
Political Decentralization	1 Voice and Accountability 2 Political Stability	Kaufmann, Kraay & Mastruzzi (1999-2008)

Model of Economic Growth: Measurement and Variables

It has been pointed out that issues of fiscal federalism have been addressed from multiple points of view. The economic framework for analysis was based on values of Pareto efficiency and equity as well as on three

major economic functions of the public sector in an economy. These functions are aimed at improvement of the production process, which was articulated initially by Solow (1956) and later developed in a neoclassical way by Cass (1965), Koopmans (1965), and Barro (1974, 1990). According to that body of knowledge, a

¹ This distinction is not new; the World Bank, among many others, makes exactly this division of the decentralisation concept on its web page

<<http://www1.worldbank.org/publicsector/decentralization/>>.

community's "output is produced with the help of two factors of production: (1) capital and (2) labour" (Solow, 1956, p. 67). The production function is the simple product of these two factors:

$$Y=F(K,L) \text{ (1) ,}$$

Where Y is output; K – capital, L – Labour.

While the size of labour is an important factor in production, its quality is also important. Human capital plays a special role in a number of models of endogenous economic growth. In Romer (1990) human capital is the key input to the research sector, which generates the new products or ideas that underlie technological progress. Thus, countries with greater initial stocks of human capital experience a more rapid rate of introduction of new goods and thereby tend to grow faster. In multi-country models of technological change, the spread of new ideas across countries (or firms or industries) is also important. As Nelson and Phelps (1966) suggested, a larger stock of human capital makes it easier for a country to absorb the new products or ideas that have been discovered elsewhere. Therefore, a follower country with more human capital tends to grow faster because it catches up more rapidly to the technological leader. Thus, the labour factor hypothetically consists of size and education. In other words, (1) is altered to include the size of the labour pool as well as its quality:

$$Y=F(K, \text{pop}, \text{educ}) \text{ (2)}$$

While this basic Cobb-Douglas production function is descriptive of the output at one point in time, it does not address the issue of historically increasing productivity. Solow envisions this criticism and addresses it: "Perfectly arbitrary changes over time in the production function can be contemplated in principle... An especially easy kind of technological change is that which simply multiplies the production function by an increasing scale factor. Thus, (2) is altered to account for it:" (p. 85)

$$Y = A(t)F(K, \text{pop}, \text{educ}) \text{ (3)}$$

Where A(t) was defined by Mankiw, Romer, Weil (1992) as the level of technology. Mankiw, Romer, and Weil (1992) augmented Solow's neoclassical model for economic growth

by including theoretically justifiable variables. This is an important moment since A(t) allows for the logical and sound inclusion of variables that influence the productivity of any economy. Given the fact that the quality of regulations directly influences the efficiency of any economy, it is appropriate to include these indicators in this augmented model. The institutions of accountability and participation are key to the success of decentralised decision making. One of the theoretical consequences of decentralisation is that it results in better preferences' matching and more efficient resource allocation. Thus, the sign of A(t) is positive because of the institutions' quality and the distance between citizens and governing bodies is smaller in a more decentralised setting. The definition of A(t) deserves attention in its own right, as it is one of the most important contributions of this dissertation. It will be addressed later.

However, decentralisation is not the only contributor to economic growth. Technology level *per se* is an important contributing factor. The technological change factor itself comprises two sub-factors: the technology level of a country and the decentralisation level. Thus, (3) must be altered to account for this distinction and, therefore, we have:

$$Y = A(t)*T(t)*F(K, \text{pop}, \text{educ}) \text{ (3)}$$

where T(t) is the technology level of a country measured as an investment. It is generally known fact that any economy consists of two sectors: public and private. The relationship between these two sectors is regulatory in nature, allowing the public sector to perform its major three economic functions. Public economists' general hypothesis has been that economic development is facilitated through the enhancement of positive externalities (e.g. positive externalities of education) and minimization of negative externalities (e.g. pollution prevention). Martinez-Vazquez and McNab support this observation:

"The economic growth is fuelled by the growth in quantity and quality of economic inputs (labour, capital, and natural resources) and by technological change in the private sector. The

role of the public sector is to facilitate, or not to impede, this process.” (1997, p. 5)

At this point, it is important to mention the nature of public goods. Usually, government output is treated as a final consumption good (Grossman, 1987). Many of the goods and services government provides are in little demand in and of themselves. Their value comes from the fact that these goods and services increase the productive capabilities of the private sector. The most obvious government outputs that are immediately remembered are executive and judicial services. Such goods would have little economic value if there were no private sector. Their value is derived from the greater output produced by a private sector secure in the knowledge that the rights of the producer over the fruits of his labour are protected.

Government's regulatory functions may possibly be perceived in a similar manner. If regulations are designed to limit the

misallocation of resources arising from externalities, then the demand for regulations derives from the demand for the greater private sector output that is a consequence of the efficient allocation of resources. Finally, to the extent individual utility functions are independent, many government transfer payments may be viewed as intermediate goods. Transfer payments may be either input into the attainment of social harmony or inputs that increase the productivity of certain segments of the labour force resulting in greater private sector output.

Thus, we are in a position to develop a simple model of government influence on output by rewriting equation (3) by including government contribution (government's share in an economy) to the output. Thus, we have:

$$Y = A(t)*T(t)F(K_p, \text{pop}, \text{educ}), G \quad (4)$$

In this way, MRW model presented here and used in this dissertation may be summarised in Table 5.

Table 5. Economic Variables of the Model

Type of Variable	Concept	Operationalization	Sign
Dependent Variable	Economic Growth	growth of income per working age person	n.a.
Independent Variable	Capital	initial income per worker	Positive
Independent Variable	Human Capital	School Enrollment Ration	Positive
Independent Variable	Technology	Investment/GDP	Positive
Independent Variable	Natural Growth	Population growth Technology Level Growth Depreciation Rate of Capital	Positive

An important caveat is that G here refers to the contribution of the central government to the economy. This conceptual model allows measurement and evaluation of the degree of fiscal decentralisation as well as the directionality of the causal relationship between fiscal decentralisation and output. It is important to note that the above-mentioned model is very close to one developed by Kriz and Morozov

(2007). However, the currently developed model is a significant theoretical improvement because it includes qualitative characteristics of governance that the 2007 model did not have. It also includes specification of the quality of the labour force that was also absent from the 2007 model.

Methodology:

We have used Confirmatory Factor Analysis for our Decentralization Index. Then we've checked for robustness of our results of the model. The newly developed index was used in the panel data in the exploration of the directionality of the relationship between decentralisation and economic growth. Panel data included 40 countries over 8 year period.

Results:

World Bank Group establishes the classification criteria according to country's 2007 gross national income (GNI) per capita. The groups are: (1) low income, \$935 or less; (2) lower middle income, \$936–3,705; (3) upper middle income, \$3,706–11,455; and (4) high income, \$11,456 or more. The final sample of this article consists of 40 countries. These countries belong to 4 general groups:

Table 6. Income Groups Composition

Income Group	Countries	n
Income Group 3 GNI \$936–3,705	Bolivia, Bosnia & Herzegovina, Colombia, Congo, Republic of, El Salvador, Honduras, Morocco, Mali	8
Income Group 4 GNI \$3,706–\$11,455	Argentina, Chile, Lithuania, Moldova, Poland, Romania, Russia, South Africa, Ukraine	9
Income Group 5 GNI > \$11,455, OECD	Australia, Austria, Belgium, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Slovak Republic, Spain, United Kingdom, United States	21
Income Group 6 GNI > \$11,455, NonOECD	Estonia, Israel	2
Total		40

The next section will analyse the importance of decentralisation for economic growth. Figures 2.1-2.3 present the evolution of economic and political-administrative

components of decentralisation, and aggregate decentralisation index organised by income group:

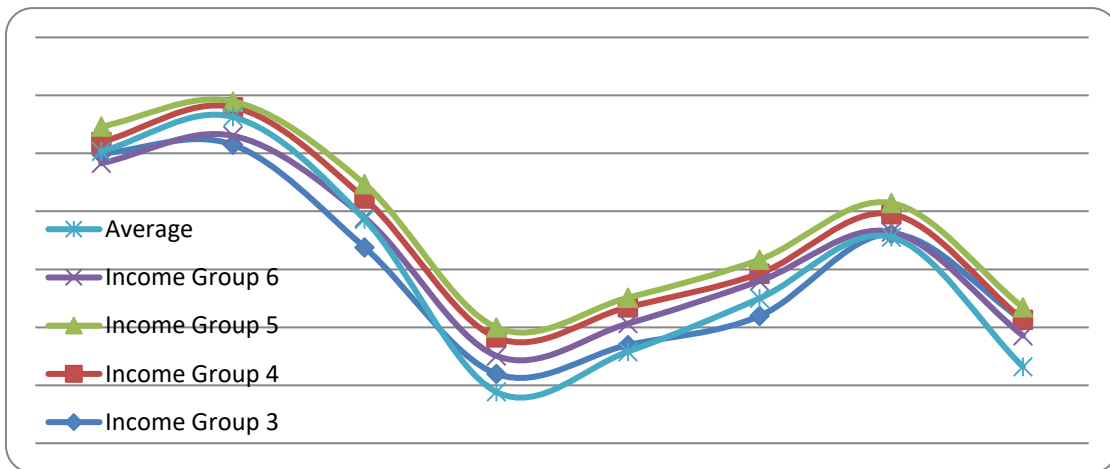


Figure 2.1. Evolution of Economic Dimension of Decentralization Process by Income Group 2000-2007

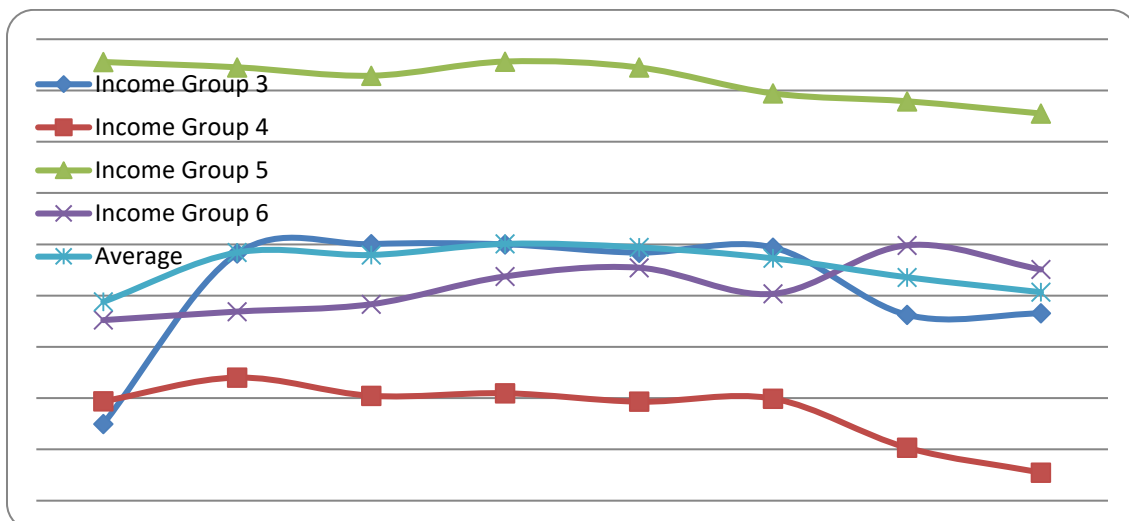


Figure 2.2. Evolution of Administrative-Political Dimension of Decentralization Process by Income Group 2000-2007

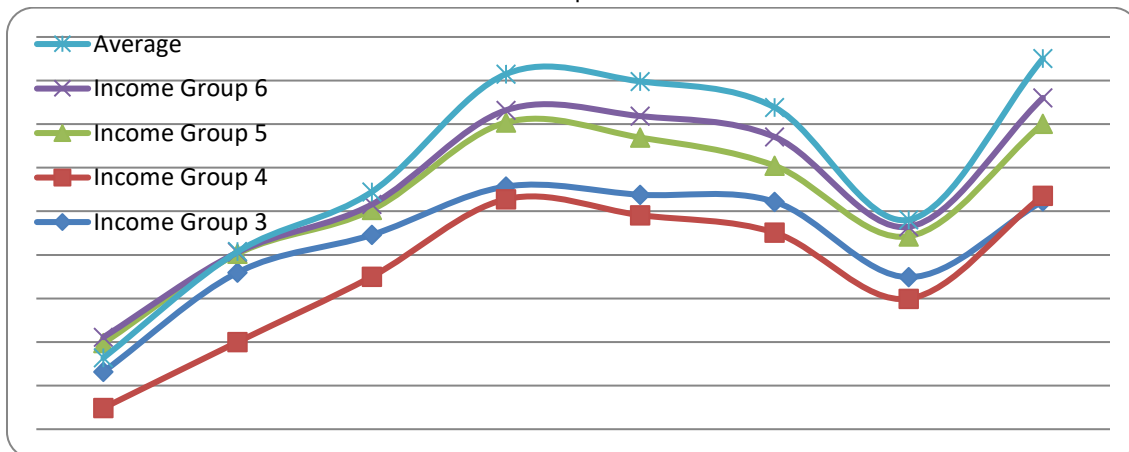


Figure 2.3. Evolution of Decentralization Index by Income Group 2000-2007

The evolution of the index of decentralisation can be described through a generally positive trend (series "Average"). This is representative of the fact that international organisations such as the World Bank and IMF have been promoting and advocating decentralisation throughout the world. Also, it is important to notice that ANOVA analysis revealed that in decentralisation indexes at least one of the groups is statistically significantly

different from the others. This is perfectly normal because developing countries are different from developed countries. Thus, our index distinguishes between countries of different levels of development. Such a finding improves the validity of our operationalization of the decentralisation process. The following table presents descriptive statistics of decentralisation index organised by income group:

Table 7. Statistical Description of Decentralization Index Organised by Income Groups 2000-2007

Group		2000	2001	2002	2003	2004	2005	2006	2007
Group 3	Mean	-0.54	-0.08	0.09	0.31	0.27	0.25	-0.10	0.25
	Std.D.	1.18	0.14	0.36	0.29	0.32	0.34	0.51	0.76
Group 4	Mean	-0.17	-0.32	-0.19	-0.06	-0.09	-0.14	-0.10	0.02
	Std.D.	0.42	0.38	0.39	0.26	0.28	0.16	0.13	0.27
Group 5	Mean	0.23	0.06	0.01	0.14	0.10	0.07	0.16	0.28
	Std.D.	0.73	0.85	0.82	0.80	0.79	0.91	1.00	1.18
Group 6	Mean	0.03	0.01	0.03	0.06	0.10	0.13	0.05	0.12
	Std.D.	0.16	0.21	0.18	0.18	0.20	0.28	0.11	0.21

One of the important questions in the development of any new measurement instrument is its quality compared to that of existing measurement instruments. Ideally, the new instrument should exceed the "old" measurement tools in its accuracy and adequacy. The universally used measure of decentralisation is the sub-national share of revenue and/or expenditures. This measurement instrument is criticised for its parsimony and inclusion of only the economic aspect of decentralisation.

Thus, the first and foremost contribution of this essay is the fact that we developed a measurement instrument that (1) captures the multidimensional nature of decentralisation and (2) does so in a statistically accurate manner.

Our goodness-of-fitness statistical results indicate that our model is a good fit for

the data under analysis. Additionally, the goodness of fit analysis was performed on the traditional measures of decentralisation (sub-national shares of revenue and/or expenditures). In all three cases, our chi-square results and RMSEA results clearly indicated that these measures did not properly fit the data (chi-square was 0.00 and RMSEA was 0.22 for these runs). Thus, based on these results, our proposed decentralisation measurement is superior to other alternatives currently available. Finally, the correlations among independent variables for the index of decentralisation clearly indicate that our instrument correlates with existing measures while improving the richness of the measurement tool by adding political and administrative dimensions to the equation. Table 8 presents these correlations:

Table 8. Decentralization Index Independent Variable Correlations

SGE	SGR	SGT	G_Ef	R_Qal	R_L	Cor	VA	P_S	ec_i	pa_i	ind	
1	0.83	0.37	0.18	0.09	0.16	0.2	0.14	0.09	0.89	0.27	0.09	SG_E
	1	0.32	0.12	0.03	0.09	0.13	0.09	0.02	0.89	0.21	0.14	SG_R
		1	0.02	0.02	0.02	0.02	0	0.01	0.41	0.03	0.05	SG_T
			1	0.95	0.98	0.97	0.92	0.82	0.22	0.81	-0.07	G_Eff
				1	0.95	0.92	0.93	0.84	0.14	0.75	-0.12	R_Qal
					1	0.98	0.93	0.84	0.2	0.8	-0.09	R_L
						1	0.9	0.8	0.24	0.86	-0.08	Cor
							1	0.88	0.17	0.72	-0.05	VA
								1	0.1	0.7	-0.08	P_St
									1	0.3	0.15	ec_i
										1	-0.04	pa_i
											1	ind

Estimation results using a combined index of decentralisation.

Based on the previously described evidence that the fixed effects method is appropriate, the specification of the model was developed. One of the important considerations in panel data analysis is heteroskedasticity. White's covariance matrix was employed because of its heteroskedasticity consistency. Table 9 presents the results of the model.

In the estimations, almost all explanatory variables exhibit a significant impact on the economic growth rate. Two

potentially controversial variables that have a negative sign (index and d_l_Enroll) are statistically insignificant. The implications of this finding are at least twofold. First, based on sample evidence, the decentralisation index is not a statistically significant contributor to economic growth rate. Second, in the true population, the relationship between index and growth rate may be of any value (positive, negative, or zero). At this time and with the current data set that covers 40 countries over 8 years, there are not enough data to answer this question.

Table 9. Economic Growth Model Summary Using Aggregated Decentralization Index¹

Variable	Coefficient	std. error	t-ratio	p-value
const	0.01915	0.00272	7.02800	2.73e-011 ***
index	-0.00050	0.00455	-0.11020	0.9123
d_l_Enroll	-0.03991	0.02633	-1.51600	0.131
d_l_Econ_Pop	0.13095	0.13134	0.99700	0.3199
d_l_Saving	0.05922	0.01469	4.03100	7.71e-05 ***
d_l_Gov	0.18851	0.03449	5.46500	1.28e-07 ***
d_l_K_Form	0.11001	0.01601	6.87100	6.79e-011 ***
Model Summary (Panel Fixed Effects)				
Mean dependent var	0.037		S.D. dependent var	0.03
Sum squared resid	0.079		S.E. of regression	0.02
R-squared	0.660		Adjusted R-squared	0.59
F(43, 215)	9.692		P-value(F)	0.00
Log-likelihood	680.297		Akaike criterion	-1272.60
Schwarz criterion	-1116.094		Hannan-Quinn	-1209.67
rho	-0.003		Durbin-Watson	1.59

¹ Calculations were performed in Gretl. Initial datasets are available upon request.

The important piece of evidence proving the validity of our model is the fact that the results are comparable to these by Solow and by Mankiw, Romer, and Weil. These results are consistent with both theoretical and empirical findings. Specifically, the capital formation and savings rate have a positive and statistically significant influence on economic growth. Additionally, we see that government participation in the economy also has a positive and statistically significant influence on economic growth. This finding is consistent with the existing theory on government involvement in an economy.

Conclusions

In this essay, we have attempted to develop a measurement instrument that would capture the multidimensional nature of decentralisation in a statistically accurate manner. Our goodness-of-fit statistical results indicate that our model is a good fit for the data under analysis. The correlations among independent variables for the index of decentralisation clearly indicate that our instrument correlates with the existing measures while improving the richness of the measurement tool by adding political and administrative dimensions to the equation.

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