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THE FINANCIAL SELF-SUFFICIENCY OF
LOCAL GOVERNMENTS IN KOREA

presented by

YONG HWAN LEE

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**THE FINANCIAL SELF-SUFFICIENCY OF
LOCAL GOVERNMENTS IN KOREA**

By

Yong Hwan Lee

A DISSERTATION

**Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of**

DOCTOR OF PHILOSOPHY

**Urban and Regional Planning Program
College of Social Science**

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ABSTRACT

THE FINANCIAL SELF-SUFFICIENCY OF LOCAL GOVERNMENTS IN KOREA

By

Yong Hwan Lee

An important activity of local governments in developing countries is to increase the degree of local financial self-sufficiency, which refers to the ability of a local government to raise own-source revenues for public services. The structural mix of local revenue, which means a composition of local revenue raised from various types of revenue sources, is a key factor explaining the ability of local governments to raise public revenue. The characteristics of each local revenue source may also affect the degree of local financial self-sufficiency in a city. Some local governments are in fiscal trouble. Some reasons include 1) insufficient tax base; 2) too great a share of wealth-based revenues; 3) too small a share of non-tax revenues; 4) income inelasticity of revenues; or 5) limited intergovernmental transfers from higher levels of government. The variety and nature of local revenue sources bring different implications about the extent of local financial self-sufficiency in developing countries.

This study examines the relationship between the characteristics and structural mix of local revenue sources and the variations in local financial self-sufficiency across localities in Korea. It also analyzes the relationship between environmental factors such as demographic, socioeconomic, and geographical characteristics and local financial self-

sufficiency. Using the Cobb-Douglas production function in public economics, this study derives a multiple regression model to determine how much the differences in the structural mix of local revenue sources relate to the variations in local financial self-sufficiency across Korean cities. The data pertaining to 68 cities in Korea come from the Financial Yearbook of Local Government, 1994 and the Statistical Yearbook of City Governments in Korea, 1994.

In the model, dependent variables are the variations in local financial self-sufficiency, which are measured by the four types of local fiscal indices. These indices are as follows: the composite share index, composite per capita index, revenue decentralization index, and expenditure decentralization index. Independent variables include the standard deviation among the per capita local revenue types, local revenue variables, and other environmental variables surrounding local governments. The magnitude of various types of local revenue sources is also used. Demographic, socio-economic, and geographical variables such as population, poverty, city size, and history are also employed as independent variables. The results of the empirical analysis show that the differences in standard deviation among the per capita local revenue sources, the per capita Synthesis Land Tax, and the per capita Automobile Tax relate most closely to the variations in local financial self-sufficiency across Korean cities.

To my father

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The published work of Dr. Richard Hula played an important role in helping me formulate the initial ideas and questions that prompted this research. I want to especially thank Dr. Hula for his comments on early drafts of this work, and particularly for his suggestions on the role of local governments in the global trend of decentralization. His comments led me, at several points, to consider federalism and its implications for intergovernmental relations.

The important contribution Dr. Leslie Papke made to this work by way of comments, advice, dialogues and criticisms is greatly appreciated and humbly acknowledged. She shared with me her knowledge on local taxation for revenue generation. Dr. Papke's spirited energy spilled over to refuel my own dwindling energy supplies.

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CHAPTER ONE

INTRODUCTION

I. Background

With the recent trend of decentralization, local governments in developing countries face pressure to increase the level of local service delivery. Since local governments in developing countries have suffered from limited local financial capability (Smoke, 1994; Linn & Bahl, 1992; Linn, 1981), a major issue in urban and regional planning is to promote greater financial self-sufficiency so local governments can provide local services with minimal external funding assistance. In particular, maintaining a proper mix of local financial resources is a key task of local governments in developing countries.

Local officials and planners alike have become aware of the necessity for analyzing the revenue-raising capacity of their localities, no matter how large or small their population, in order to expand local service delivery. Limited governmental capacities of developing countries indicate that local governments need to focus their scarce administrative efforts on those revenue-generating areas where the greatest returns lie, instead of devoting the same effort to all revenue sources. Furthermore, they need to identify the revenue sources that they will have a comparative advantage in raising local revenues from their own sources.

Unfortunately, both theoretical and empirical analyses of local revenue raising capacity in developing countries are lacking. The reasons are the weakness of local autonomy and insufficient practical data for local finance. Local authorities in developing countries are often politically ineffective and technically weak. Thus, they do not have the ability to implement fiscal analyses. Developing countries also do not place an emphasis on organizing data related to local financial resources. This factor makes studies of local fiscal revenue raising capacity nearly impossible. Furthermore, it is difficult to apply the existing experience and knowledge of local finance in developed countries to local fiscal management. The fiscal planning of local governments for promoting local financial self-sufficiency needs to consider the nature of local revenue systems in a specific country.

II. Statement of the Problem

The purpose of this dissertation is to explore the relationship between the magnitude and structural mix of local revenue sources and variations in local financial self-sufficiency. Variation in local financial self-sufficiency is defined as the relative capability of local governments to deliver local public services. A high degree of local financial self-sufficiency occurs when local governments raise adequate revenues from local sources. Thus, it is crucial to know which local revenue source is best for increasing local financial self-sufficiency. Even though various forms of local revenues have flourished, theoretical and empirical analysis about what types or mix of local revenues are most closely associated with the degree of local financial self-sufficiency is

lacking. No consensus exists concerning the optimal choice among local revenue sources.

Many studies of local revenue generation in developing countries have focused on the expansion of scarce local revenue sources. Few studies have examined the effect of the mix of these local sources on the revenue-raising capabilities of a local government in developing countries. In fact, little is known about various local revenue sources other than the property tax in developing countries.

Previous studies examining the fiscal conditions of local governments have mainly focused on socioeconomic variables, such as income, wealth, and population. Many studies on socioeconomic variables relied on a belief that local socioeconomic conditions limit the ability of local governments to raise local revenues. However, each local government has a different structural mix of revenue sources according to its socioeconomic, cultural, historic or political conditions. This revenue mix may be related to the variation of local financial self-sufficiency.

Furthermore, each revenue source has different output elasticity in generating total revenue. The output elasticity is the percentage increase in total revenue resulting from a one-percent increase in a revenue source, holding the quantities of the other revenue sources constant. This output elasticity may determine the degree of local financial self-sufficiency. Thus, local governments that retain adequate local revenue sources with strong output elasticity may have a high degree of local financial self-sufficiency.

Many empirical studies, however, have not paid attention to the relative output elasticity and structural mix of local revenue sources in determining the degree of local

financial self-sufficiency. To overcome the lack of studies explaining the effects of local revenues on the local financial self-sufficiency in Korea, this study focuses on the relative output elasticity of local financial sources and structural mix of revenues for increasing the degree of local financial self-sufficiency.

III. Organization of the Study

A critical factor in local finance in developing countries is to build an appropriate theoretical framework to help local decision-making. This dissertation first sets forth a theoretical framework to analyze local revenues based on a neoclassic economic approach. This approach makes it possible to identify key relationships in local revenue sources and the degree of local financial self-sufficiency. To create an applicable local fiscal framework, each of the following chapters concentrates on a particular research topic.

Chapter Two discusses the current literature relating to local revenue raising capacity in the context of developing countries. Chapter Two also demonstrates the measurements of local fiscal conditions, the fiscal responsibility among the levels of government, and the characteristics of local financial structure in developing countries.

Chapter Three describes types of local revenue sources and their likely effects on local public goods production. The chapter looks at the fiscal indices of local governments and the appropriate index type for local financial self-sufficiency. Chapter Three develops a theoretical framework to investigate the relationship between the characteristics of local revenue resources and the variations in local financial self-

sufficiency in developing countries. Also, the framework explains the relationship between the structural mix of local revenue resources and the degree of local financial self-sufficiency. This theoretical framework is based on the concept of the Cobb-Douglas production function in public economics. The Cobb-Douglas production function is employed to analyze what types of revenue mix produce the optimal level of local financial self-sufficiency.

Chapter Four provides a methodology for an empirical analysis of the degree of local financial self-sufficiency. This chapter presents hypotheses concerning the impact of local fiscal variables on the indices of local financial self-sufficiency in Korea. The analytical method of this study is a statistical analysis using multiple regression models that identify the relationship between the structural mix of local revenue resources and the degree of local financial self-sufficiency. The multiple regression models use empirical data from 68 cities in Korea. Dependent variables are the variations in local financial self-sufficiency, which are measured by the four types of local fiscal indices. These indices are as follows: the composite share index (CPX), composite per capita index (CCPX), revenue decentralization index (DCENX1), and expenditure decentralization index (DCENX2). Independent variables include the standard deviation among the per capita local revenue types, local revenue variables, and other environmental variables surrounding local governments. Standard deviation is considered to explain the structural mix of local revenue sources. The magnitude of various types of local revenue sources is also used. Demographic, socioeconomic, and geographical variables such as population, poverty, city size, and history are also applied as independent variables.

Chapter Five focuses on empirical analyses of local revenue sources. This chapter explains the relationship between the structural mix of local revenue resources and the degree of local financial self-sufficiency. This chapter also identifies the determinants of the variations in local financial self-sufficiency. Interlocal differences in the degree of local financial self-sufficiency and structural mix of local revenue sources are examined to see whether the pattern of differences is related to each other. As a result, the chapter examines what sorts of fiscal policies might be most appropriate.

CHAPTER TWO

LITERATURE REVIEW

I. Overview

The purpose of this chapter is to provide a review of current literature concerning local financial self-sufficiency in developing countries. The studies in this field, compared to similar studies in advanced countries, lack both theoretical rigor and empirical richness. Among a number of potential topics, three subjects for research related to local financial self-sufficiency in developing countries are key.

First, studies on local fiscal stress measurements provide general implications about the degree of local financial self-sufficiency. One element to study in local finance is the measurement of local public financial performance. The local fiscal stress measurements show whether local governments have enough local revenue resources to satisfy local service needs or not. These measurement-related studies have focused on the verification of the relationship between socioeconomic conditions and local fiscal performances. These types of studies include analyses of the measure of the degree of local fiscal crisis, capacity, and stability.

Second, the degree of local fiscal responsibility in multilevel governmental systems is a crucial factor affecting the degree of local financial self-sufficiency. The fiscal responsibility among the levels of government in a country is closely related to the

political and administrative systems of that country. The fiscal role by which a government raises revenue and spends public money is dependent on the assignment of the governmental functions among the levels of government. In particular, the degree of fiscal decentralization is a crucial element in understanding the local revenue responsibility in the context of multilevel governmental systems.

Third, the specific fiscal structure of developing countries is related to the degree of local financial self-sufficiency. The nature of local finance in developing countries is different from the nature of local finance in developed countries. For example, political and economic systems are crucial factors in shaping the local financial behavior. Compared to developed countries, developing countries show undeveloped local economies, administrative systems, and specific cultural characteristics. Moreover, the national public service delivery system and intergovernmental fiscal relations may affect the degree of local financial self-sufficiency of developing countries.

II. Fiscal Stress Measurements

Improving the quality of local government service production is ultimately affected by the relative scarcity of available resources. The allocation of scarce resources has always been a primary concern for every government. A principle issue of much of the research on local public finance is a matter of low fiscal capacity in various governmental jurisdictions. A locality's inability to generate its own revenues will adversely affect the provision of such services as the urban infrastructure. Thus, it is

unlikely that fiscally stressed local governments will be able to perform their developmental functions adequately, given such circumstances.

Measuring local fiscal stress is crucial to understanding the factors related to the local financial self-sufficiency in developing countries. Existing measurement studies (Muller 1975; Nathan and Adams 1976; and Burchell et al. 1984) of local fiscal stress show that various socioeconomic factors influence revenue raising capacity and expenditure decisions of local governments. These studies indicate that local socioeconomic change affects local financial conditions. Local financial stress comes in part from the long-term decline in a local economy. Some measurements have been incorporated by the Congressional Budget Office as allocation formulas for specific federal government urban aid programs; others have been independently developed as fiscal indicators, which are related to assessing the relative merits of these different measurements of the changing local financial environment. Various approaches to measuring local fiscal conditions have been developed along with specific research interests, such as local fiscal crisis, stabilization, and capacity.

Many measurements of local fiscal performance are found in the local fiscal stress or crisis-related studies. Previous research on local fiscal crises developed measurements of the local fiscal performance of major U.S. cities since the 1970s. These studies explain the role of external determinants, such as socioeconomic and demographic changes which impact the local revenue bases. Many studies focused on identifying the relationship between local revenue or expenditure patterns and changing socioeconomic circumstances, such as the change of population size, the magnitude of income, the incidence of poverty, the change of employment rate, housing starts, the age of housing,

and so on. These studies include Muller (1975), Clark et al. (1976), Gramlich (1976), Nathan and Adams (1976), Barro (1978), Municipal Finance Officers Association (1978), Howell and Stamm (1979), Morgan (1980), Burchell et al. (1981), Clark (1981), Fossett and Nathan (1981), Weinstein and Clark (1981), Bradbury et al. (1982), Martin (1982), Clark and Ferguson (1983), Burchell et al. (1984), and Inman (1992, 1995).

According to these studies, local fiscal stress is related to the outmigration of people and industry. In particular, Lim (1982) provides a theoretical explanation of 'disequilibrium adjustment processes' by migrations in local finance. Muller's analysis (1975), which offers an interregional migration model, states that the decline of jobs and industry in older cities causes the local tax base to shrink and increases the cost of providing public services. Fiscal stress, basically, refers to the inability of a government to balance its budget. Inman (1995) argues that fiscal crisis exists when local government's revenue capacity is insufficient to cover the locality's service needs. Inman points out that an unfavorable economy and demographics, reduced external funds, and local policy influence the rate at which the local tax base shrinks.

Fiscal stress may be a result of local budgetary processes. Its extent can be measured by examining fiscal factors surrounding local budgetary processes. Therefore, "fiscal stress is a structural phenomenon, reflecting shifts in the social and economic conditions of the city" (Pagano and Moore 1985:23). Measurements of budgetary distress may include such variables as surplus (or deficits) in an operating budget (Gramlich 1978) and the availability of liquid assets relative to existing claims on those assets (Howell and Stamm 1979). External factors usually influence local fiscal performance. Local budget constraints are dependent on national economic conditions

and are not subject to local control. In this sense, some researchers have identified that fiscal stress is the result of excessive debt requirements (Peterson 1976; Clark and Fuchs 1977; Bahl, Jump, and Schroeder 1978; Aronson and King 1978); poor administrative qualities and mismanagement by public officials (Gerard 1976; Clark and Ferguson 1983); and urban age (Perry and Watkins 1977; Mollenkopf 1983).

Other approaches offer different sets of analytic measures. Nathan and Fossett (1979) presented a widely-cited urban conditions index which was based on the weighting of a community's per capita income, percentage of housing stock built before 1940, and the rate of population change. Fainstein and Fainstein (1976) argue that fiscal stress is affected by the amount of intergovernmental aid that a jurisdiction receives. Matching programs induce local governments to spend more than they otherwise would have.

This existing literature provides no clear criteria for identifying local fiscal stress, because many studies have analyzed the specific socioeconomic conditions of individual cities. Furthermore, these studies have focused on only describing the current crisis. Thus, it is very difficult to apply these measurements to evaluate the degree of local financial self-sufficiency in developing countries.

III. Fiscal Decentralization

In the public finance field, one of the key issues is the verification of the appropriate division of responsibilities among specific levels of government. A country usually has several levels of government such as the federal, state, and local government

in the U.S.A. Each of these levels of government levies taxes and provide services. In addition, higher levels of government sometimes transfer some money to lower levels through intergovernmental systems. There are questions regarding which levels of government provide which services. Do taxes levied by a certain government support enough of the public services that are required by that government? Therefore, the degree of decentralization is a crucial element in understanding the local revenue responsibility in the context of a multilevel governmental system.

Richard Musgrave (1959) has classified three economic functions as the appropriate role for a government. They are 1) stabilization of the economy, 2) the distribution of resources, and 3) the allocation of resources. The stabilization function means a governmental role as an instrument of macroeconomic policy that maintains market price stability, appropriate employment, and economic growth within a country. To achieve the goal of stabilization, a government implements fiscal and monetary policies. Thus, this stabilization function is more appropriate to the federal or central government whose policies can influence the entire territory. The distribution function, which refers to the redistribution of income or other resources between the rich and the poor, is more appropriate to the higher levels of government. Higher levels of government can implement redistribution policies across jurisdictions. State and local governments inherently have limited ability to implement stabilization and distribution functions, because of mobility and diversity among the lower levels of government.

For the allocation function, Tiebout (1956), Oats (1972), and King (1984) argue that decentralized subnational governments are more efficient than national or central government. According to the fiscal federalism theory (Oats 1972), a perfect

correspondence, internalizing benefits in public goods provisions, refers to Pareto efficiency. The decentralized levels of government in the allocation function may enhance economic efficiency because demand is not uniform across communities for public goods and services. Decentralized governments may provide appropriate levels of public services to the individuals with similar demands. Thus, there would be a misallocation of resources if uniform levels of services were provided across large geographical areas. Economic efficiency may be enhanced through decentralized public goods provision because people in small communities may conform with their true preferences.

Politically, decentralization is a normative concept for political governing forms, emphasizing popular participation. Decentralization can be used to strengthen accountability, political skills and national integration. Decentralization brings the government closer to the people. It provides better services to client groups (Wilson 1948; Ylvisaker 1959; Maddick 1963; Smith 1985). Decentralization provides a training ground for citizen participation and political leadership at both local and national levels.

Economically, decentralization improves the efficiency of local public good provisions according to some authors (Tiebout 1956; Ostrom, Tiebout and Warren 1961; Shepard 1975; Magnusson 1981). Market models of local decision-making regard decentralization as a means of expanding the scope of consumer choices for public goods and services. According to the public choice theory, decentralization is essential for increasing social and individual welfare. Like free market competition, competition among local governments provides people with better choices in terms of taxes and public services. People 'vote with their feet' by comparing packages of taxes and services

in different municipalities (Tiebout 1956). Therefore, fragmented localities and decentralization are important elements for increasing the general welfare, according to some points of view.

Previous empirical studies pointed out that population, urbanization, land area, and income factors were significantly associated with fiscal decentralization (Litvack and Oates 1970; Giertz 1976; and Wallis and Oates 1987). Population growth and urbanization lessen the extent of fiscal decentralization. In a cross-sectional study using data from the 1962 fiscal year, Litvack and Oates (1970) found urbanization and population size were negatively related to fiscal decentralization. Wallis and Oates (1987) also argued that the extent of fiscal centralization was negatively related to population size and urbanization.¹ In addition, the geographical size of a government was identified as a factor in the decision for the degree of fiscal decentralization. Also, Giertz (1976) found a negative relationship between fiscal decentralization and land area.

The extent and variation in fiscal decentralization in state and local sectors in the United States were deeply related to general welfare. The magnitude of personal income and income distribution are crucial factors in shaping the variation in fiscal decentralization. Wallis and Oates (1987) explained that fiscal decentralization was positively related to the level of per capita income. In a cross-sectional study of fiscal decentralization using data from the 1969-70 fiscal year, Giertz (1976) found a positive relationship between the Gini coefficient and the extent of fiscal centralization. This result suggested that a higher degree of inequality in the distribution of income was more

related to greater centralization. Therefore, income redistribution may be necessary for fiscal decentralization.

And yet, these studies do not describe which local sources are most closely related to local financial self-sufficiency. Decentralization may generally be associated with a wide range of economic, social, and political objectives. In dividing governmental responsibilities, decentralization as a policy may force local governments to mobilize locally owned resources for national economic development. The policy of decentralization in developing countries has strategic aspects relating to economic growth and development. In practice, these decentralization policies show some contradictions among governmental goals such as efficiency, democracy, and equity in individual socio-political settings.

IV. Local Finance in Developing Countries

1. Local Revenue Sources

The study of local finance in developing countries has been a crucial topic for Third World development related scholars as well as international development organization like the World Bank. Fundamentally, local finances in developing countries have a common theme, weak local revenue resources (Bahl and Linn 1992). The reasons

¹ They performed econometric studies using a measure of fiscal centralization as the dependent variable and land area, population, urbanization, race, region, per capita income, homogeneity of farm and race as independent variables.

are intrinsic poverty and low-income, the weak discretion of local authority, and an unskilled administration (Beier et al. 1976; Renaud 1979; Linn 1979).

Local revenue systems in developing countries often differ substantially from developed nations. A local government in developing countries usually has a weak local economy that comes from intrinsic cultural, and institutional and political characteristics. With this weak local economy, local authorities in developing countries fail to raise enough revenue from their own sources (Bahl and Linn 1983; Davey 1983; Bahl, Miner and Schroeder 1984; Bahl and Linn 1992). The substantial underdevelopment of the local economy is a key factor that causes the weak local revenue base in developing countries.

Unlike industrialized countries, local economies in developing countries usually show weak private savings, informal economic sectors, and undeveloped industries. Generally, industrialization is a key factor indicating a stable local revenue base. However, local revenue bases in developing countries mainly rely on the agricultural sectors that may be much less important or inapplicable to local revenue increases in developing countries. In particular, the lack of home-ownership in developing countries limits the revenue base.

Consequently, the local revenue base in many developing countries is unstable (Bahl and Linn 1983; Davey 1983; Bahl, Miner and Schroeder 1984; Bahl and Linn 1992). With a weak local economy, local authorities cannot effectively mobilize local revenue within their jurisdiction. Local residents who do not have enough local income or savings from the local economy may not be able to pay enough local taxes to even sustain their local governments. Furthermore, this weak local economy tends to cause

insufficient land taxes, income taxes, sales taxes and user charges, which are used to provide stable yields in industrialized countries. In particular, some local economies in developing countries may be dominated by the informal market system such as barter transactions. These informal market systems may make local revenue increases impossible or inefficient (Smoke 1994).

Cultural influences may be constraints in raising local revenue in developing countries and affect local revenue strategies. These are irrelevant or less severe in developed countries (Bahl, Miner and Schroeder 1984; Mawhood 1987). Some religious groups or ethnic groups may possess most or part of the local resources. Attempts by local governments to tax this base may be ultimately impossible.

Institutional underdevelopment can result from the weak financial capacity of the local authority. The policy of central governments in many developing countries has failed to establish appropriate intergovernmental fiscal relations to help raise local revenue. In a study of local government systems in developing countries, Bahl and Linn (1983) found that few countries exhibit an efficient assignment of local authority. Even in areas where sensible and adequate local revenue bases are established, central governments may control local government revenue systems in many ways, including setting tax rates, stipulating tax exemptions, and directly influencing the size of tax bases (Bahl and Linn 1983; Davey 1983; Bahl, Miner and Schroeder 1984; Bahl and Linn 1992).

As noted above, arbitrarily or otherwise improperly administered central control, apparently common in developing countries, can undermine equity and local revenue raising capacity. Furthermore, local authorities in developing countries are typically

more reliant on central government institutions for revenue collection assistance, transfers, and loans than they are in the developed world (Davey 1983; Bahl and Linn 1983; Bahl, Miner and Schroeder 1984; Davey 1988, 1989; Bahl and Linn 1992). It is important to understand whether such reliance is consistent with public finance objectives and how it affects the performance of local authorities and their accountability to their constituents. Central government oriented policies or fiscal control may also obstruct the operation of local revenue systems (Bahl, Miner and Schroeder 1984; Rondinelli, Nellis and Cheema 1984; Rondinelli, McCullough and Johnson 1989; Bahl and Linn 1992). Central government may reserve the most productive revenue sources for its own use. Military use of local land, for example, may limit the raising of local revenues.

2. Financing Local Government in Developing Countries

Revenue diversity and financially weak resources are the characteristics of local financing in developing countries. Linn (1981) indicated that urban financial systems of developing countries had great diversity of revenue and expenditures, and the common feature of a weak financial system.²

Local revenue sources in developing countries generally consist of various types of revenues such as local taxes, user charges, fees, local borrowings, and intergovernmental transfers. Out of these revenue sources, local taxes, user charges, and

² Linn (1981) analyzed the experiences in large cities on the revenue trends of local governments in selected cities of developing countries. The data of the analysis is based on the previous case studies, carried out by the authors in the World Bank study of urban finances in developing countries.

fees are locally owned sources; local borrowings and intergovernmental transfers are external sources.

Financing local governments in developing countries tended to be dependent on the extent of locally raised revenues rather than external revenues. Linn (1981) found that the share of locally-raised revenue in financing total expenditures was typically 60% - 90% with a median of 79% in 17 selected cities. According to Linn's study, local taxes are the main source to locally-raised revenues, contributing over 50%. User and benefit charges share 25% of locally-raised revenues. Therefore, local taxes have played a crucial role in local financing. The magnitude of local tax bases is positively related to the degree of local financial self-sufficiency.

Meanwhile, external sources, especially intergovernmental transfers, have not played an important role in financing local government in developing countries. According to Linn's study (1981), the degree of grant and shared tax financing is about 14% of the total local revenue. It is a very small contribution to the financing of cities in developing countries. In addition, it is lower than the percent found in developed countries.³ It shows that the degree of local self-financing in developing countries has been higher than in developed countries.

Therefore, the changes in the magnitude of local revenue sources will determine the ability of the local government to provide local services to its residents. Where local governments have weak local revenue bases, local governments will suffer from insufficient revenue to sustain their budget balance. In addition, when intergovernmental

³ In the USA, total intergovernmental transfers share 20-30% between the years 1979 - 1991. In Japan, grants and shared taxes share 30-40% between the years 1963-1987.

transfers and borrowing play only minor roles, it is very difficult for local authorities to operate local governments themselves.

V. Local Finance in Korea

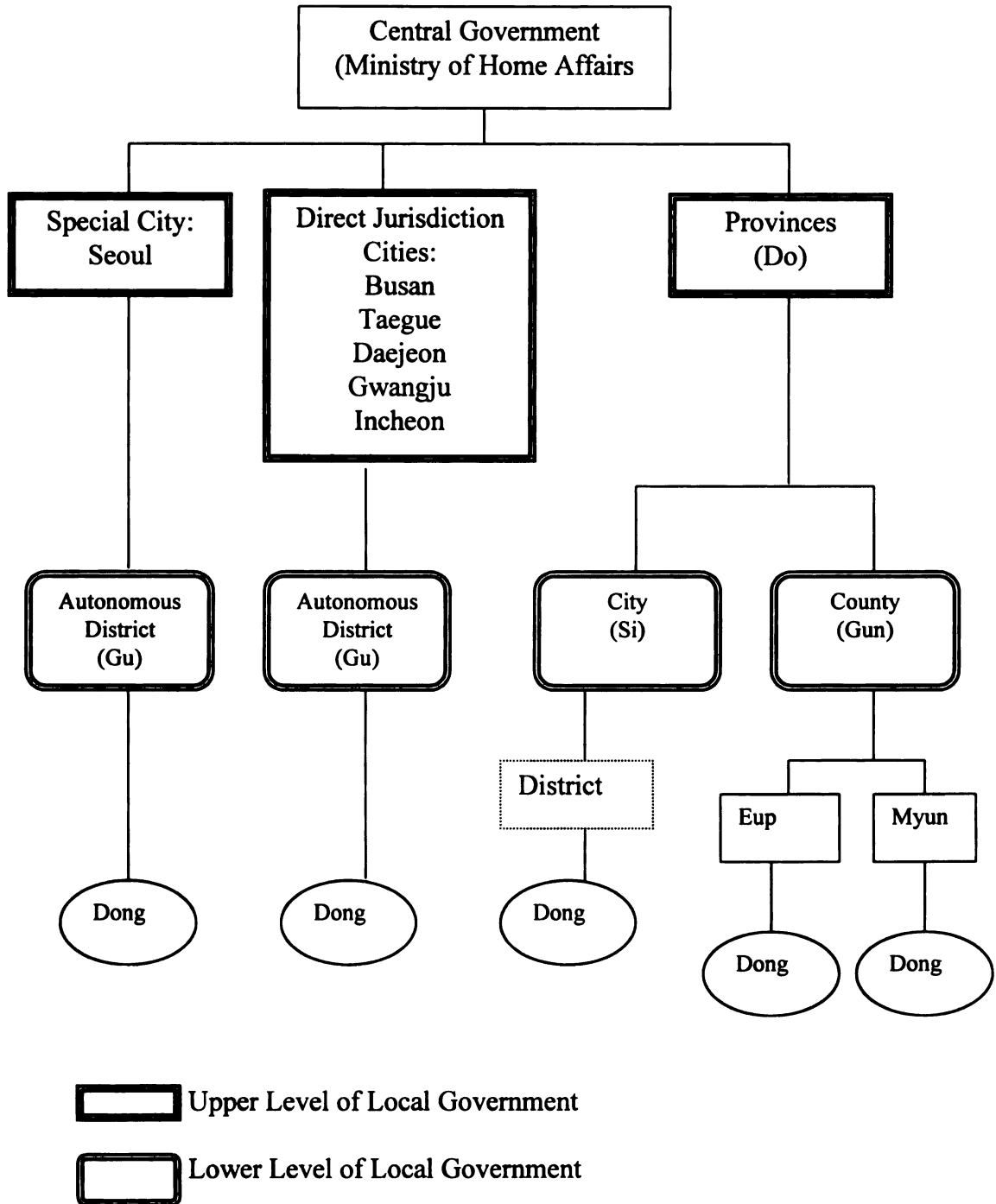
1. Administrative Structure of Local Governments and Decentralization

Korea has a unitary governmental system. Traditionally, the top-down governmental policies of Korea have shaped a centralized administrative system. As a result, the central government has raised and spent most of the government's revenues. Korea's local governments have possessed only a small revenue base. Consequently, local entities have been hard-pressed to generate enough local revenue to run their governmental organizations.

Local governments in Korea are backed by the Constitution. At present, the Local Autonomy Law provides for a two-level system of local governmental structure.⁴ Figure 2.1 illustrates the system of local governments in Korea. The upper levels of local governments consist of a special city (Seoul), five direct jurisdiction cities (Busan, Daegu, Daejeon, Gwangju, and Incheon), and nine provinces. The lower levels of local governments consist of 68 cities, 136 counties, and 56 autonomous districts in 1993. The cities and counties are within the provinces. The autonomous districts are within the

⁴ For a review of Korean local governmental and financial system, see An-Je Kim (1994) and Kazuhisa Ito (1992).

Figure 2.1: Local Government System in Korea



special city and direct jurisdiction cities. The chief executives of all levels of local government are elected directly by their residents. The local councils of all levels of local governments are also established by local general elections. The lower administrative units under the local governments are Gu (district), Dong (urban village), Eup (town), Myun (township), and Li (village).

In reality, Korea has had a highly centralized form of governmental system. Thus, Korean local governments have been limited in their autonomous administration because the traditional top-down governmental policies have regarded local governments as agents of the central government. The Ministry of Home Affairs has the power to supervise every level of local governments. Also, the provincial governments supervise the lower level of local governments such as cities and counties. A special city and direct jurisdiction cities supervise autonomous districts within their jurisdictional boundaries.⁵

The recent trends of decentralization and localization are bringing about strong demands for both greater investments in local economic development and strict implementation of local autonomy. This trend has surely brought about changes in Korea's centralized governmental structure. Since Korea revised the Local Autonomy Law in 1988, there have been some signs of decentralization. Some of the centralized governmental functions have devolved on to the local governments. With the decentralization, the rearrangements of governmental functions and fiscal resources between central and local governments have become imminent issues.

⁵ The Korean Local Autonomy Law also suggests such special organizations as the intergovernmental associations for the upper level of local governments and the intergovernmental associations for the lower level of local governments. The purpose of the intergovernmental associations is to handle or coordinate governmental functions, with spillovers and public functions related to more than two local governments.

The decentralization has changed the central-local governmental relations.

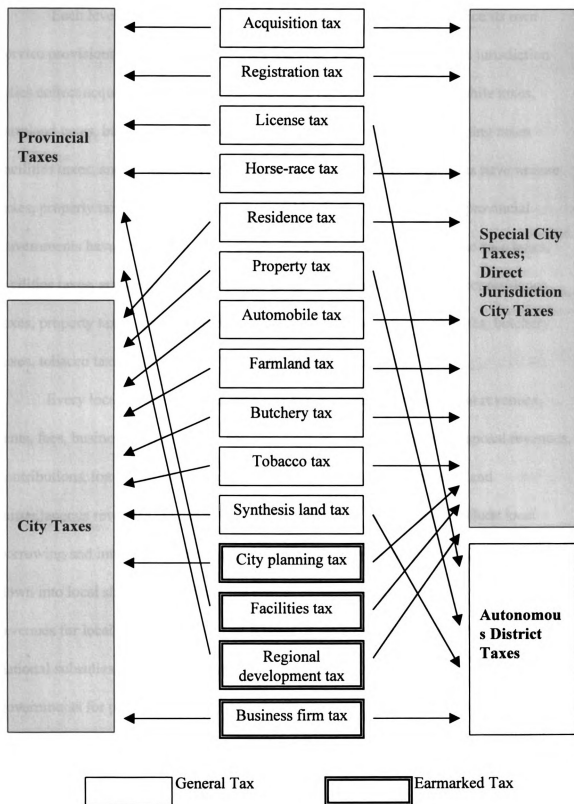
Traditionally, the Korean local governments had worked as the agents of the central government. Nowadays, however, local governments try to work as independent governmental bodies, and thus they compete with other governmental bodies for the public service provisions. Thus, with the advent of decentralization, local governments have experienced greater responsibilities to provide more public services, as well as exercising discretionary power in local policy-making.

2. Local Revenue System

Local governments in Korea have two types of budgetary accounts: the general account and special accounts. The general account covers local functions as well as national functions that are assigned to the local governments by the central government. Financial sources for the general account consist of local taxes, local non-tax revenues, intergovernmental transfers, and local borrowing. The special accounts cover those functions associated with the management of specific projects or funds, which are classified for convenience sake into the categories of local public hospitals, local public enterprises, education, and other special accounts.

Local taxes are the main source of local revenue. Local taxes are classified into the same category as general taxes and objective (earmarked) taxes. General taxes include acquisition taxes, registration taxes, license taxes, horse-race taxes, residence taxes, property taxes, automobile taxes, synthesis land taxes, farmland taxes, butchery

Figure 2.2: Local Tax Systems



taxes, and tobacco taxes. Objective (earmarked) taxes include city planning taxes, facilities taxes, regional development taxes, and business firm taxes.

Each level of local government has its own taxes in order to finance its own service provisions, as illustrated in Figure 2.2. The special city and direct jurisdiction cities collect acquisition taxes, registration taxes, residence taxes, automobile taxes, farmland taxes, butchery taxes, horse-race taxes, tobacco taxes, city planning taxes, facilities taxes, and regional development taxes. The autonomous districts have license taxes, property taxes, synthesis land taxes, and business firm taxes. The provincial governments have acquisition taxes, registration taxes, license taxes, horse-race taxes, facilities taxes, and regional development taxes. Cities and counties collect residence taxes, property taxes, synthesis land taxes, automobile taxes, farmland taxes, butchery taxes, tobacco taxes, city planning taxes, and business firm taxes.

Every local government has such non-tax revenues as property rent revenues, rents, fees, business firm revenues, collection grants, interest, property disposal revenues, contributions, loan collections, transfers from other accounts, allotments, and miscellaneous revenues. Other revenue sources for local governments include local borrowing and intergovernmental transfers. The intergovernmental transfers are broken down into local shared taxes which the central government shares with the national revenues for local governments (13.27 percent of the amount of national taxes), and national subsidies, from which the central government also gives subsidies to local governments for projects.

3. Financial Autonomy of Local Governments

The financial autonomy of local governments is related to the flexibility of revenue sources. It is very important to know whether a local government can raise more revenues to pay for higher levels of local services. The main sources for financial autonomy are local taxes. Regardless of the type of tax, the amount of tax revenue is directly dependent upon both the tax base and the tax rate. The tax base is the price of the unit on which the tax is predicated. The tax rate is the amount of tax paid on each unit. Increasing either the tax base or the tax rate can enhance the amount of the tax revenues collected. Of course, the tax base and the tax rate can be increased simultaneously.

In Korea, however, the regulation of local taxes by the central government limits the local governments' financial autonomy. The national law of local tax controls the type and rate of local taxes. In reality, the national law of local taxes sets a standard and a maximum tax rate, along with the valuation of the tax base. Local governments may be free to raise the rates up to the maximum, with the approval of the Ministry of Home Affairs. In practice, the standard rates are employed.

For the non-tax revenues such as charges, fees and allotments, local governments may impose the appropriate amounts, which are set by the local council. These types of revenues provide local governments with important avenues of raising revenues.

However, local governments may face political unpopularity for raising taxes.

According to the Korean Local Autonomy Law, local governments may increase their revenues through local borrowings. Local borrowing, however, also limits local financial autonomy, since this borrowing is subject to the approval of the central government.

Fiscal relations between the central and local governments are very hierarchical, because the central government provides national funds for lower levels of local governments via upper levels of local governments such as the special city, direct jurisdiction cities, and provincial governments. The central government controls the subordinate units of government. The upper level of local governments also supervises the lower level of such local governments as cities, counties and autonomous districts.

In Korea, local shared taxes refer to those taxes allocated to local governments at a fixed rate from among such taxes collected by the national government as the income taxes, corporation taxes, etc. Depending upon the financial strength of the local government, more shared tax is granted to those local governments that have less tax revenues. Theoretically, this is done in order to equalize, to some extent, financial resources between local public bodies. However, this allocation process is sometimes political, as does not close the gap between fiscally strong and fiscally weak cities.

The local transferred tax refers to all or part of the taxes which are transferred to local governments, such as the local road tax, special tonnage tax, etc., that are collected by the central government as national taxes. On the contrary, national subsidies are given for purposes defined by the central government.

4. Local Financial Capacity and the Revenue Base

In reality, the best method for increasing revenues levied by local governments is to increase the local tax base. Recent studies of local finances in Korea point out vertical

and horizontal fiscal disparity.⁶ The vertical inequality of the tax base causes the different tax amounts among the governmental levels. The amount of national taxes for the central government is larger than the amount of local taxes for local governments. This disparity is related to the centralized government system found in Korea. The horizontal inequality of tax bases across the local governments means that each local government has a different size and composition in their tax bases. These differences cause variations in revenue capacity among local governments in Korea.

Lee (1993) focused on the tax base assignment among various levels of government. Lee assumed that the central government has a larger and better tax base, with higher income elasticity. In addition, the central government of Korea has a well-developed consumption tax system which is called the value added tax. Therefore, Lee argues that a rational tax base assignment is very important to improve local financing abilities.

Unequal local revenue capacity among local governments is a crucial issue in Korea's local finances. The variation in the tax bases across local governments results from the geographic or economic characteristics of local governmental jurisdictions. Whether a local government is in a growing or declining region may cause differences in the size and composition of tax bases. The variation in the level of local economic development may affect the differences in the size and composition of tax bases across local governments. Furthermore, the variation in the tax bases of local governments may be related to the shape of local land use. The specialized use of residential, commercial,

⁶ In Korea, most of the research is related to revenue, especially tax sources of local governments, because local revenue capacity directly affects local autonomy itself.

industrial, or recreational land in local governments may affect the tax bases disparity across the local governments

Ahn (1988) pointed out that local revenue capacity is a function of regional economic development. He argues for a positive relationship between local revenue capacity and the gross regional product (GRP). He hypothesizes that “a low level of gross regional product results in a low level of savings, and that in turn results in a low level of fiscal capability, a low level of public investment, and, financially, a low level of gross regional product” (Ahn 1988: 202).

In his 1988 study, Ahn analyzed how Korean intergovernmental fiscal relations affected the country’s capacity for local governments to generate tax revenues from locally owned resources. He pointed out that the imbalances in regional growth caused the variation in local revenue capacity in Korea. He discussed the unbalanced patterns of regional growth and the fiscal resources that flow among the governmental levels. He analyzed the relationship between the local revenue capacity and the gross regional product, applying a linear regression model. His analysis focused on those provincial governments with weak financial positions.

In general, local governments in Korea depend on the central government to finance their developmental programs. During the rapidly industrializing period, they also became dependent on the central government for their recurrent expenditures, since most regional development projects were led by the central government. Intergovernmental fiscal transfers, therefore, were important sources of financing local governments in Korea.

The unequal revenue resources among local governments are also other factors of unequal financial capacity of local governments in Korea. Local governments that are wealthy in revenue sources have raised sufficient revenues, but others have not. Thus, this unequal capacity to finance development programs and projects has contributed significantly to the existing disparity of the regional per capita gross regional product. A local government with a lower level of development produces a lower revenue capacity.

CHAPTER THREE

THEORETICAL FRAMEWORK OF LOCAL FINANCIAL SELF-SUFFICIENCY IN DEVELOPING COUNTRIES

I. Overview

The review of existing literature in Chapter Two indicates that the following three areas are important for research into local financial self-sufficiency in developing countries. First, local fiscal studies need to develop an accounting framework that will explain the composition of local revenues and expenditures in developing countries. Accounting might be an important instrument for finding the fiscal resources of local governments. An accounting framework provides a mechanism for the mobilization and control of local revenue sources. Thus, a basic understanding of local fiscal accounts is important to the analysis of local financial self-sufficiency in developing countries.

Second, for advanced research, developing countries need to develop new measures of local financial self-sufficiency. Existing theories of local fiscal performance for advanced countries cannot be applied to developing countries' situations because local fiscal structure and characteristics differ from those of advanced countries. This chapter suggests the four types of local fiscal indices that are employed in the measurement of local financial self-sufficiency. These indices are as follows: the

composite share index (CPX), composite per capita index (CCPX), revenue decentralization index (DCENX1), and expenditure decentralization index (DCENX2).

Third, existing theories point out the need for an explanation model of the relationship between the magnitude and mix of local revenue sources and the extent of local fiscal financial self-sufficiency in developing countries. Without this kind of explanation model, existing theories will fail to estimate the relationship between various types of local revenue sources and the degree of local financial self-sufficiency in developing countries. Thus, local governments in developing countries may make appropriate fiscal policies to elevate the degree of local financial self-sufficiency in the delivery local public services.

In this context, this chapter presents the development of an appropriate fiscal framework for the analysis of local financial self-sufficiency, the measures of local financial self-sufficiency, and an estimation model of the relationship between local revenues and the degree of local financial self-sufficiency in developing countries.

II. Local Financial Self-sufficiency

1. Definition

Local financial self-sufficiency is the local financial capacity necessary to support local programs or policies without the assistance of external funds such as subsidies from higher levels of government. Promoting local financial self-sufficiency is an objective of local governments in developing countries in order to sustain local autonomy and

increase local planning capability. In analyzing local financial self-sufficiency, the status of the local government must be scrutinized. Local governments are subunits of an entire multilevel governmental system; the national constitution, statutes, and regulations define the nature of the local financial self-sufficiency.

Among local jurisdictions, the extent of financial self-sufficiency is relative: different communities will require different amounts. Local financial self-sufficiency should be analyzed in the context of a jurisdiction's functional role and the extent of its fiscal or service needs. One key point to consider is the type of services local governments provide. In general, a local government provides both pure local public goods that benefit only local residents and broader public goods that benefit people beyond the local jurisdiction. A local government providing services with externalities will typically need more intergovernmental transfer payments than one that has a more limited role.

In reality, perfect local financial self-sufficiency is not possible. Promoting local financial self-sufficiency really means increasing the amount of locally raised revenues or decreasing the portion of external funds from other levels of government. Local financial self-sufficiency can, however, have a range of more specific definitions in other contexts. The definition of local financial self-sufficiency will be tailored to the needs of the users, the perspective of the analysts, and the nature of the data available.

The purpose of studying local financial self-sufficiency is to evaluate and understand local fiscal resources so that a local government may provide the local services that its residents desire. The focus is on the individual local government and its ability to mobilize local resources to support its service programs. Thus, local financial

self-sufficiency can generally be defined as the ability of a local jurisdiction to raise revenues from locally owned sources. The definition of a “good” level of local financial self-sufficiency will vary with the nature of the jurisdiction and is only valid for a very limited time and space.

2. Fiscal Accounts of Local Government

1) Identity of Local Revenue Sources

In order to understand local financial self-sufficiency, the first task is to scrutinize the governmental fiscal structure in which revenue sources and expenditures are arranged or organized. Identifying revenues and expenditures is basic to understanding the fiscal conditions of each local government, divisions of governmental function and revenue sources. Generally speaking, a country’s fiscal structures are composed of national, state (or provincial) and local fiscal accounts. Each fiscal account has its own revenue and expenditure system. Revenues usually represent the resource mobilization of government and administrative capability for public service delivery. Expenditures offer insight into governmental functions and responsibility, relating to the supply of governmental services.

This study presents a national (federal) fiscal accounts and local fiscal accounts. It helps to analyze the national–local fiscal relationship because considering only a national (federal) fiscal account and local accounts reveal clearly the national-local fund flows. In reality, various types of state (or provincial) governments play different roles along with the different governmental systems in developing countries. This study, however,

doesn't include state (or provincial) fiscal accounts in the national-local fiscal frameworks because the national-state (or provincial) fiscal relations and the state (or provincial)-local relations may cover the national-local financial relations. In addition, national government's influence on the local governments tends to be stronger than state or provincial governments' one in developing countries. Therefore, analysis of national fiscal account is very important to understand the degree of local fiscal self-sufficiency.

At the national level, total national revenue (R_N) is the sum of various national revenue sources. This consists of intergovernmental transfers, national taxes, custom duties, fees, charges, and other miscellaneous revenues.

$$(3.1) \quad R_N = TD_N + TE_N + TI_N + TC_N + DG_N + OT_N + CH_N + MR_N + IS_N$$

where,

- R_N : total national revenue
- TD_N : custom duties
- TE_N : selective sales taxes
- TI_N : individual income taxes
- TC_N : corporation income taxes
- DG_N : death and gift revenue
- OT_N : other taxes
- CH_N : current charges
- MR_N : miscellaneous revenue
- IS_N : insurance trust revenue
- BF_N : national borrowing from the outside of national territory

National expenditures depict a national government's public service or objectives. Total national expenditures (E_N) are equal to the total cost of governmental services. The total is shown as follows in (3.2):

$$(3.2) \quad E_N = IT_N + FP_N + ED_N + SW_N + TR_N + SF_N + EH_N + AD_N + IN_N + GN_N + IE_N$$

where,

- E_N : total national expenditure
- IT_N : intergovernmental expenditures (transfers)
- FP_N : expenditures for federal programs
- ED_N : education services expenditures
- SW_N : social services and income maintenance expenditures
- TR_N : transportation expenditures
- SF_N : public safety expenditures
- EH_N : environment and housing expenditures
- AD_N : government administration expenditures
- IN_N : interest on general debt
- GN_N : general expenditures, n.e.c.
- IE_N : insurance trust expenditures

To identify the local fiscal accounts, the national budget structure is applied to the local level to generalize the accounting structures of local governments. Thus, in the i th local government, total local revenue (R_{Li}) is the sum of all local revenue sources such as local taxes, non-tax revenues, intergovernmental transfers, and local borrowing. In accounting formulas,

$$(3.3) \quad R_{Li} = GF_{Li} + GL_{Li} + TP_{Li} + TS_{Li} + TE_{Li} + TI_{Li} + TC_{Li} + DG_{Li} + LF_{Li} \\ + OT_{Li} + CH_{Li} + MR_{Li} + UL_{Li} + IS_{Li}$$

where,

- R_{Li} : total local revenue in the i th local government
- GF_{Li} : intergovernmental revenue from national (federal) government in the i th local government
- GL_{Li} : intergovernmental revenue from local government in the i th local government
- TP_{Li} : property taxes in the i th local government
- TS_{Li} : general sales taxes in the i th local government
- TE_{Li} : selective sales taxes in the i th local government
- TI_{Li} : individual income taxes in the i th local government
- TC_{Li} : corporation income taxes in the i th local government
- DG_{Li} : death and gift revenue in the i th local government
- LF_{Li} : license fees in the i th local government
- OT_{Li} : other taxes in the i th local government

CH_{Li} : current charges in the i th local government
 MR_{Li} : miscellaneous revenue in the i th local government
 UL_{Li} : utility and liquor revenue in the i th local government
 IS_{Li} : insurance trust revenue in the i th local government
 LB_{Li} : local borrowing in the i th local government

Total local expenditures (E_{Li}) in the i th local government represent the cost of local services to its residents.

$$(3.4) \quad E_{Li} = IT_{Li} + ED_{Li} + SW_{Li} + TR_{Li} + SF_{Li} + EH_{Li} + AD_{Li} + IN_{Li} + GN_{Li} + UE_{Li} + LE_{Li} + IE_{Li}$$

where,

E_{Li} : total local expenditures in the i th local government
 IT_{Li} : intergovernmental expenditures in the i th local government
 ED_{Li} : education services expenditures in the i th local government
 SW_{Li} : social services & income maintenance expenditures in the i th local government
 TR_{Li} : transportation expenditures in the i th local government
 SF_{Li} : public safety expenditures in the i th local government
 EH_{Li} : environment and housing expenditures in the i th local government
 AD_{Li} : government administration expenditures in the i th local government
 IN_{Li} : interest on general debt in the i th local government
 GN_{Li} : general expenditures, n.e.c. in the i th local government
 UE_{Li} : utility expenditures in the i th local government
 LE_{Li} : liquor store expenditures in the i th local government
 IE_{Li} : insurance trust expenditures in the i th local government

Total local revenues and expenditures in the entire nation are the sum of each local government's revenues and expenditures. They are given as follows.

$$(3.5) \quad \text{Total Local Revenue } (R_L): \quad \sum_{i=1}^w R_{Li}$$

(3.6) Total Local Expenditure (E_L): $\sum_{k=1}^m E_{Li}$

2) Substitution: National-Local Relationship

In general, the fiscal relationship between the national government and local governments is represented by the relationship between national fiscal accounts and local fiscal accounts. Intergovernmental transfers can be expressed as a fiscal relationship between national and local governments. Intergovernmental expenditures (IT_N) in national fiscal accounts can be substituted for intergovernmental revenue (GF_L) in the sum of local fiscal accounts and vice-versa. Thus, the amount of intergovernmental transfers may represent the relative fiscal responsibility between national and local governments.

Assuming the national budget is balanced, intergovernmental expenditures (IT_N), as one of the national expenditures, can be expressed by subtracting national costs for national public services from total national revenues. Thus, intergovernmental expenditures (IT_N) is given by

$$(3.7) \quad IT_N = (TD_N + TE_N + TI_N + TC_N + DG_N + OT_N + CH_N + MR_N + IS_N + BF_N) \\ - (FP_N + ED_N + SW_N + TR_N + SF_N + EH_N + AD_N + IN_N + GN_N + IE_N)$$

This means that the national (federal) government provides some money out of the national revenues to local governments.

In the i th local government, total local revenues include intergovernmental revenue (GF_L) that comes from the national (federal) government. This intergovernmental revenue (GF_L) can be expressed by subtracting locally raised revenue

and other local governments' subsidies (GL_{Li}) from total local expenditures. It is given by

$$(3.8) \quad \mathbf{GF}_{Li} = (\mathbf{IT}_{Li} + \mathbf{ED}_{Li} + \mathbf{SW}_{Li} + \mathbf{TR}_{Li} + \mathbf{SF}_{Li} + \mathbf{EH}_{Li} + \mathbf{AD}_{Li} + \mathbf{IN}_{Li} + \mathbf{GN}_{Li} + \mathbf{UE}_{Li} + \mathbf{LE}_{Li} + \mathbf{IE}_{Li}) - (\mathbf{TP}_{Li} + \mathbf{TS}_{Li} + \mathbf{TE}_{Li} + \mathbf{TI}_{Li} + \mathbf{TC}_{Li} + \mathbf{DG}_{Li} + \mathbf{LF}_{Li} + \mathbf{OT}_{Li} + \mathbf{CH}_{Li} + \mathbf{MR}_{Li} + \mathbf{UL}_{Li} + \mathbf{IS}_{Li}) - \mathbf{GL}_{Li}$$

where,

$\mathbf{IT}_{Li}$: intergovernmental expenditures in the i th local government
 $\mathbf{GL}_{Li}$: local subsidies from other local governments in the i th local government

In the local accounting framework, total intergovernmental revenue ($\mathbf{GF}_L$) is the sum of intergovernmental revenues of each local government. Total intergovernmental revenues ($\mathbf{GF}_L$) from the national government can be expressed by subtracting the sum of local revenue from the sum of local expenditures. This is denoted by

$$(3.9) \quad \sum_{i=1}^w \mathbf{GF}_{Li} = \sum_{i=1}^w [(\mathbf{IT}_{Li} + \mathbf{ED}_{Li} + \mathbf{SW}_{Li} + \mathbf{TR}_{Li} + \mathbf{SF}_{Li} + \mathbf{EH}_{Li} + \mathbf{AD}_{Li} + \mathbf{IN}_{Li} + \mathbf{GN}_{Li} + \mathbf{UE}_{Li} + \mathbf{LE}_{Li} + \mathbf{IE}_{Li}) - (\mathbf{TP}_{Li} + \mathbf{TS}_{Li} + \mathbf{TE}_{Li} + \mathbf{TI}_{Li} + \mathbf{TC}_{Li} + \mathbf{DG}_{Li} + \mathbf{LF}_{Li} + \mathbf{OT}_{Li} + \mathbf{CH}_{Li} + \mathbf{MR}_{Li} + \mathbf{UL}_{Li} + \mathbf{IS}_{Li}) - \mathbf{GL}_{Li}]$$

This means local expenditures exceed locally raised revenue. Local governments usually depend on the national government for financial assistance.

III. Development of Local Financial Self-Sufficiency Indices

A major issue in urban and regional planning is the promotion of financial self-sufficiency, which will permit local governments to provide local services without

external funding assistance. The degree of financial self-sufficiency varies widely across local governments in developing countries. The variations in local financial self-sufficiency may exhibit the relative capability of local governments for local public service delivery. Measuring local financial self-sufficiency is crucial to understanding the interlocal differences in local governments' capacity for public service delivery.

Developing operational measures is necessary to determine the degree of local financial self-sufficiency. The operational measures should be designed to represent a conceptual definition and the extent of financial self-sufficiency of local governments within a country. This study constructs four types of measures that describe the degree of local financial self-sufficiency, using fiscal accounts that were examined in a previous section.

1. Existing Indices

Reviewing existing indices is the first step in developing the operational measures of local financial self-sufficiency. Generally, the following seven types of indices have been considered as measures of local financial conditions. These indices include the local taxes index (LTX; CLTX), local self-reliance index (LSX; CLSX), local general revenue index (LGX; CLGX), per capita expenditure index (CEX), per capita local and state tax efforts index (TFX), and national share index of per capita local and state tax efforts (STFX). These indices have been used for understanding the extent of fiscal responsibility or autonomy of local governments.

The fiscal responsibility of local governments depends on the fiscal relationship between the levels of government. According to the local accounting framework in a previous section, local revenues come from local and intergovernmental sources. Therefore, the relative portion or extent of intergovernmental funds in local finance may represent a local government's degree of fiscal dependency.

1) Local Taxes Index (LTX; CLTX)

Local taxes are important local resources that effect the extent of local fiscal autonomy and flexibility. The index of local taxes is designed to measure the extent of local fiscal autonomy and flexibility. Local taxes used to construct this index are property taxes (TP_{Li}), general sales taxes (TS_{Li}), selective sales taxes (TE_{Li}), individual income taxes (TI_{Li}), corporation income taxes (TC_{Li}), death and gift revenues (DG_{Li}), license fees (LF_{Li}), and other taxes (OT_{Li}). The local taxes index can be expressed as both share and per capita index. Share index (LTX) considers the local proportion of total local revenue. The indices may show the fiscal stability of local governments.

$$(3.10) \quad LTX = [(TP_{Li} + TS_{Li} + TE_{Li} + TI_{Li} + TC_{Li} + DG_{Li} + LF_{Li} + OT_{Li}) / R_{Li}] * 100$$

Per capita index standardizes the degree of local resources, considering population.

Per capita index (CLTX) is given by

$$(3.11) \quad CLTX = (TP_{Li} + TS_{Li} + TE_{Li} + TI_{Li} + TC_{Li} + DG_{Li} + LF_{Li} + OT_{Li}) / Pop_{Li}$$

where,

Pop_{Li} : the number of residents in the i th local government

2) Local Self-reliance Index (LSX; CLSX)

The index of local self-reliance is a good indicator of the local government's fiscal autonomy and flexibility. It is related to the extent of locally raised revenues. Locally raised revenues are the sum of local taxes and non-tax revenues that include current charges (CH_{Li}), miscellaneous revenue (MR_{Li}), utility and liquor revenue (UL_{Li}), and insurance trust revenue (IS_{Li}). Share index (LSX) is the portion of locally raised revenue in total local revenue.

$$(3.12) \quad LSX = [(TP_{Li} + TS_{Li} + TE_{Li} + TI_{Li} + TC_{Li} + DG_{Li} + LF_{Li} + OT_{Li} + CH_{Li} + MR_{Li} + UL_{Li} + IS_{Li}) / R_{Li}] * 100 \\ = \{[R_{Li} - (GF_{Li} + GL_{Li})] / R_{Li}\} * 100$$

Per capita local self-reliance index (CLSX) is given by

$$(3.13) \quad CLSX = (TP_{Li} + TS_{Li} + TE_{Li} + TI_{Li} + TC_{Li} + DG_{Li} + LF_{Li} + OT_{Li} + CH_{Li} + MR_{Li} + UL_{Li} + IS_{Li}) / Pop_{Li} \\ = [R_{Li} - (GF_{Li} + GL_{Li})] / Pop_{Li}$$

3) Local General Revenue Index (LGX; CLGX)

Local general revenues are local revenues without any conditions on the use of the funds. The local general index attempts to capture the local government's capability to establish its own projects to deliver local public services. Thus, this index measures the degree of local autonomy. Subtracting conditional revenues and special purpose revenues

from total local revenues identifies these local general revenues. The share index of local general revenues is denoted by

$$(3.14) \text{ LGX} = [(R_{Li} - CR_{Li}) / R_{Li}] * 100$$

where,

CR_{Li} : Conditional Local Revenues
= Conditional Grants and Special Purposed Revenues

Per capita local general revenue index (CLGX) is given by

$$(3.15) \text{ CLGX} = (R_{Li} - CR_{Li}) / \text{Pop}_{Li}$$

4) Per Capita Expenditure Index (CEX)

Local expenditures represent the distribution of the local government's services.

The per capita expenditures index is a good measure to express the local government's extent of public services. The variables used to construct this index are total local expenditures and the number of local residents. This per capita expenditures index (CEX) is given by

$$(3.16) \text{ CEX} = E_{Li} / \text{Pop}_{Li}$$

5) Per Capita Local and State Tax Efforts Index (TFX)

The index of per capita local and state tax efforts is designed to capture the extent of local residents' tax burden. The tax burden is a good measure of local fiscal performance for each local government. Local residents pay their taxes to various levels of government. The variables used to construct this index (TFX) are local residents' tax

payments to local and state (provincial) governments and the number of local residents.

This index (TFX) is given by

$$(3.17) \quad TFX = (TP_{Li} + TS_{Li} + TE_{Li} + TI_{Li} + TC_{Li} + DG_{Li} + LF_{Li} + OT_{Li} + TSP_{Si}) / Pop_{Li}$$

where,

TSP_{Si} : State or Provincial Government Taxes

6) National Share Index of Per Capita Local and State Tax Efforts (STFX)

Local residents also pay national taxes to the national government. The ratio of per capita local and state (provincial) tax efforts to national tax efforts is one measure of the relationship between local governments and the national government. The magnitude of tax efforts depends on the magnitude of tax bases. Therefore, the national share index of per capita local and state tax efforts (STFX) may capture the extent of the tax base arrangement between governmental levels. Moreover, this index may show the mismatches between tax efforts and public service responsibilities. The index (STFX) comes from the ratio of per capita local and state (provincial) tax efforts to per capita national tax efforts.

$$(3.18) \quad SFTX = [TFX / (TTN_N / Pop_N)] * 100$$

where,

TTN_N : Total National Taxes

2. Indices of Local Fiscal Decentralization

The above indices have their own specific characteristics. Therefore, each index can measure only a specific fiscal characteristic in local governments. To provide comprehensive measures, this section presents composite and decentralization indices for local finance.

1) Composite Indices

The composite indices for local governments are designed to combine characteristics of each index. Share indices and per capita indices have different characteristics from each other. Therefore, both types of indices should be calculated and standardized separately by index type. In this section, the composite share index is the simple average of share indices. The composite per capita index is the simple average of per capita indices. These indices will provide combined measures to evaluate local governments' fiscal responsibility, flexibility, and autonomy.

The variables used to design the composite share index (CPX) are the local taxes index (LTX), local self-reliance index (LSX), local general revenue index (LGX), and national share index of per capita local and state tax efforts (STFX). Thus, the composite share index (CPX) is given by

$$(3.19) \text{ CPX} = (\text{LTX} + \text{LSX} + \text{LGX} + \text{STFX}) / 4$$

The variables used to design the composite per capita index (CCPX) are the per capita local taxes index (CLTX), per capita local self-reliance index (CLSX), per capita local general revenue index (CLGX), per capita local expenditures index (CEX), and per capita local and state tax efforts (TFX). Thus, the composite per capita index (CCPX) is given by

$$(3.20) \text{ CCPX} = (\text{CLTX} + \text{CLSX} + \text{CLGX} + \text{CEX} + \text{TFX}) / 5$$

2) Decentralization Indices

The degree of local financial self-sufficiency should be analyzed in the context of the national financial system and the degree of decentralization. Decentralization means subnational governments have more governmental functions. However, legal or political devolution is not always accompanied by economic or financial decentralization. Thus, it is very important to measure the degree of fiscal decentralization. This helps to identify local fiscal responsibility. To measure the degree of fiscal decentralization, the magnitude of local revenues from own-sources and local expenditures, including intergovernmental assistance, should be considered. In this section, two types of fiscal decentralization indices are formulated to describe the relationship between national and local governments.

The extent of responsibility allowed by the national government for local revenues or expenditures varies widely. Depending on the national-local fiscal relationship, the degree of local revenues or expenditures responsibility also varies. Fiscal assignments of revenues and expenditures between national and local governments

may determine the degree of fiscal decentralization in a local government. One way to consider an intergovernmental fiscal assignment is to examine which level raises the revenue and which provides the services. The indices of fiscal decentralization may be an appropriate measure to determine the extent of local fiscal capacity in developing countries.

a. Revenue Decentralization Index (DCENX1)

This index focuses on total locally raised revenues and total national revenues in a comparative concept. The index of revenue decentralization (DCENX1) is given by the portion of per capita total locally raised revenues in the sum of per capita total locally raised revenues and per capita total national revenues. This index indicates the revenue raising responsibility of each local government compared to the national revenue raising responsibility.

$$(3.21) \text{ DCENX1} : [\text{CLSX} / \{\text{CLSX} + (\text{TRN}_N / \text{Pop}_N)\}]$$

where,

TRN_N : total national revenue

b. Expenditure Decentralization Index (DCENX2)

The index of expenditure decentralization (Decenx2) is given by the portion of per capita local expenditures in the sum of per capita local expenditures and per capita

national expenditures. This index indicates the expenditures responsibility of each local government compared to the national expenditure responsibility.

$$(3.22) \text{ DCENX2} : [\text{CEX} / \{\text{CEX} + (\text{E}_N / \text{Pop}_N)\}]$$

where,

E_N : Total National Expenditure

IV. Theoretical Framework of Local Financial Self-Sufficiency

1. Production Function

For a given technology a neoclassical production function as a single equation explains the maximum output obtainable from specified inputs and emphasizes their substitutability.¹ A neoclassical production function can be expressed by

$$(3.23) \quad X = X(x_1, x_2)$$

where, X = output per annum

x_j = absorption of j th input per annum, $j = 1, 2$

This production function is a form first written by Wicksell.² Cobb and Douglas³ tested it empirically. Let the equation (3.23) be rewritten as a Cobb-Douglas production function

¹ Hans Brems, *Quantitative Economic Theory: A Synthetic Approach*, New York: Wiley, 1968

² K. Wicksell, *Lectures on Political Economy I*, London, 1934: 128.

$$(3.24) \quad X = Mx_1^\alpha x_2^\beta$$

where,

α, β = parameters of a Cobb-Douglas production function

M = multiplicative factor in the production function

In the function, $0 < \alpha < 1$, $0 < \beta < 1$, and $M > 0$. The production function (3.24) is considered with these restrictions: $x_1 \geq 0$, $x_2 \geq 0$, and $X \geq 0$. The two inputs are substitutes but not perfect ones. The parameter M may measure the scale of production, how much output we would get if we used one unit of any input. The parameters α and β measure how the amount of output responds to changes in the inputs.

If $\alpha + \beta = 1$, the function (3.24) exhibits constant returns-to-scale. If $\alpha + \beta > 1$, the function exhibits increasing returns-to-scale. If $\alpha + \beta < 1$, the function exhibits decreasing returns-to-scale. A Cobb-Douglas production function always has the elasticity of substitution one. Therefore, if we may replace x_1 with λx_1 , x_2 with λx_2 , then output becomes λX . We then take the derivatives

$$(3.25) \quad \frac{\partial X}{\partial x_1} = \alpha \frac{X}{x_1}$$

$$(3.26) \quad \frac{\partial X}{\partial x_2} = \beta \frac{X}{x_2}$$

$$(3.27) \quad \frac{\partial^2 X}{\partial x_1^2} = \alpha(\alpha - 1) \frac{X}{x_1^2}$$

³ C. W. Cobb and P. H. Douglas, "A Theory of Production," *Am. Econ. Rev.*, 18, :139-165, Supplement 1928.

$$(3.28) \quad \frac{\partial^2 X}{\partial x_2^2} = \beta(\beta - 1) \frac{X}{x_2^2}$$

$$(3.29) \quad \frac{\partial^2 X}{\partial x_1 \partial x_2} = \frac{\partial^2 X}{\partial x_2 \partial x_1}$$

$$(3.30) \quad = \alpha\beta \frac{X}{x_1 x_2}$$

For positive M , x_1 , and x_2 the equation (3.25) and (3.26) will be positive if and only if α and β are positive; for positive α and β equations (3.27) and (3.28) will be negative if and only if α and β are both less than one. Thus the marginal productivity of any input has been shown to be positive and diminishing with that input if and only if both α and β lie between zero and one. All this was assumed to be the case. Then, equations (3.29) and (3.30) are seen to be positive. Thus, the marginal productivity of any input has been shown to be increasing with the other input.

This Cobb-Douglas production function is useful in many applications because it is linear in logarithms:

$$(3.31) \quad \ln X = \ln M + \alpha \ln x_1 + \beta \ln x_2$$

The parameter α is then the elasticity of output with respect to input x_1 and β is the elasticity of output with respect to input x_2 . These parameters can be estimated from actual data; the estimates may be used to measure returns to scale and for other purposes.

2. Production of Local Financial Self-Sufficiency

As a local production function,

$$(3.32) \quad X = M(x_1)^{\alpha_1} (x_2)^{\alpha_2} \dots (x_r)^{\alpha_r}$$

In production functions, x_j are capital (K), labor (L), production technology (T), and other endowments. For a practical model of local financial self-sufficiency, x_j are replaced with real local inputs. The extent of local financial self-sufficiency (X) as a product of a local government is a function of these local inputs.

In this study, the local financial self-sufficiency is defined as the ability of a local government to raise revenues from locally owned sources. This local financial self-sufficiency is a local output that a local government produces, using local revenue sources. Thus, production theory can provide the explanation of how local governments transform inputs into outputs. Production function provides the relationship between local financial self-sufficiency (output) and local revenue sources (inputs). Production function also shows how each revenue source contributes to the degree of local financial self-sufficiency.

Of course, production function does not show the extent of local demand of self-sufficiency, which may be an important factor to decide the degree of local financial self-sufficiency. In developing countries, however, the degree of local financial self-sufficiency is decided by the characteristics and magnitude of local revenue sources

rather than by the local demand as local residents' preferences. Thus, production function will provide an appropriate explanation of how the degree of local financial self-sufficiency is related to the each local revenue sources.

Suppose a local government uses local revenue for any product. The inputs of local financial self-sufficiency are local revenue sources. Therefore, local production function is given by

$$(3.33) \quad X = M(TA)^{\alpha_1} (TRE)^{\alpha_2} (LF)^{\alpha_3} (TH)^{\alpha_4} (TP)^{\alpha_5} (TET)^{\alpha_6} (TLC)^{\alpha_7} (LGPY)^{\alpha_8} (OT)^{\alpha_9} (TOB)^{\alpha_{10}} (RENT)^{\alpha_{11}} (FEE)^{\alpha_{12}} (CG)^{\alpha_{13}} (NCOT)^{\alpha_{14}} (PD)^{\alpha_{15}} (LBOR)^{\alpha_{16}} (FLOAN)^{\alpha_{17}} (LCOL)^{\alpha_{18}} (TRF)^{\alpha_{19}} (ALLO)^{\alpha_{20}} (NTOT)^{\alpha_{21}} (ST)^{\alpha_{22}} (GN)^{\alpha_{23}} (GP)^{\alpha_{24}}$$

where,

<i>X</i>	: local financial self-sufficiency
<i>M</i>	: multiplicative factor in the production functions
α_i	: parameters of a Cobb-Douglas production function, $i = 1, 2, \dots, z$
<i>TA</i>	: acquisition taxes
<i>TRE</i>	: registration taxes
<i>LF</i>	: license fees
<i>TH</i>	: residence taxes
<i>TP</i>	: property taxes
<i>TET</i>	: tobacco taxes
<i>TLC</i>	: synthesis land taxes
<i>LGPY</i>	: carry-over from previous year of general taxes
<i>OT</i>	: other taxes
<i>TOB</i>	: objective taxes
<i>RENT</i>	: rent revenues
<i>FEE</i>	: fees
<i>CG</i>	: collection grants
<i>NCOT</i>	: other current non-tax revenues
<i>PD</i>	: property disposal
<i>LBOR</i>	: local borrowings
<i>FLOAN</i>	: loan from funds
<i>LCOL</i>	: loan collection
<i>TRF</i>	: transferred from
<i>ALLO</i>	: allotments

<i>NTOT</i>	: other temporary non-tax revenues
<i>ST</i>	: local share taxes
<i>GN</i>	: national subsidies
<i>GP</i>	: provincial subsidies

As a cost (local budget constraints) function,

$$(3.34) \quad C = P^1 x_1 + P^2 x_2 + \dots + P^i x_{2j}$$

For a practical model,

$$(3.35) \quad C = P^1(TA) + P^2(TRE) + P^3(LF) + P^4(TH) + P^5(TP) + P^6(TET) + \\ P^7(TLC) + P^8(LGPY) + P^9(OT) + P^{10}(TOB) + P^{11}(RENT) + \\ P^{12}(FEE) + P^{13}(CG) + P^{14}(NCOT) + P^{15}(PD) + P^{16}(LBOR) + \\ P^{17}(FLOAN) + P^{18}(LCOL) + P^{19}(TRF) + P^{20}(ALLO) + P^{21}(NTOT) \\ + P^{22}(ST) + P^{23}(GN) + P^{24}(GP)$$

where,

<i>C</i>	: total costs (total local revenue)
<i>P^s</i>	: the price of the <i>i</i> th input, and $P^s > 0$, $s = 1, 2, \dots, 24$

For maximizing the production function (3.33) subject to a constraint (local revenue), the Lagrangian expression is set up:

$$(3.36) \quad L = M(x_1)^{\alpha_1} (x_2)^{\alpha_2} \dots (x_j)^{\alpha_i} + \lambda [C - P^1 x_1 - P^2 x_2 - \dots - P^i x_{2j}]$$

For a practical model,

$$\begin{aligned}
 (3.37) \quad L = & M(TA)^{\alpha_1} (TRE)^{\alpha_2} (LF)^{\alpha_3} (TH)^{\alpha_4} (TP)^{\alpha_5} (TET)^{\alpha_6} (TLC)^{\alpha_7} (LGPY)^{\alpha_8} \\
 & (OT)^{\alpha_9} (TOB)^{\alpha_{10}} (RENT)^{\alpha_{11}} (FEE)^{\alpha_{12}} (CG)^{\alpha_{13}} (NCOT)^{\alpha_{14}} (PD)^{\alpha_{15}} \\
 & (LBOR)^{\alpha_{16}} (FLOAN)^{\alpha_{17}} (LCOL)^{\alpha_{18}} (TRF)^{\alpha_{19}} (ALLO)^{\alpha_{20}} (NTOT)^{\alpha_{21}} \\
 & (ST)^{\alpha_{22}} (GN)^{\alpha_{23}} (GP)^{\alpha_{24}} + \lambda [C - P^1(TA) - P^2(TRE) - P^3(LF) - P^4(TH) \\
 & - P^5(TP) - P^6(TET) - P^7(TLC) - P^8(LGPY) - P^9(OT) - P^{10}(TOB) - \\
 & P^{11}(RENT) - P^{12}(FEE) - P^{13}(CG) - P^{14}(NCOT) - P^{15}(PD) - \\
 & P^{16}(LBOR) - P^{17}(FLOAN) - P^{18}(LCOL) - P^{19}(TRF) - P^{20}(ALLO) - \\
 & P^{21}(NTOT) - P^{22}(ST) - P^{23}(GN) - P^{24}(GP)]
 \end{aligned}$$

A first order condition for a maximized local service production is as follows.

Setting the partial derivatives of L (with respect to every input and λ) equal to 0 yields

several equations representing the necessary conditions for a maximum:

$$(3.38) \quad \frac{\partial L}{\partial(TA)} = M\alpha_1 \frac{X}{\partial(TA)} - \lambda P^1 = 0$$

$$(3.39) \quad \frac{\partial L}{\partial(TRE)} = M\alpha_2 \frac{X}{\partial(TRE)} - \lambda P^2 = 0$$

$$(3.40) \quad \frac{\partial L}{\partial(LF)} = M\alpha_3 \frac{X}{\partial(LF)} - \lambda P^3 = 0$$

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$$(3.62) \quad \frac{\partial L}{\partial(GP)} = M\alpha_{25} \frac{X}{\partial(GP)} - \lambda P^{25} = 0$$

$$\begin{aligned}
 (3.63) \quad \frac{\partial L}{\partial \lambda} = & C - P^1(TA) - P^2(TRE) - P^3(LF) - P^4(TH) - P^5(TP) - P^6(TET) - \\
 & P^7(TLC) - P^8(LGPY) - P^9(OT) - P^{10}(TOB) - P^{11}(RENT) - P^{12}(FEE) - \\
 & P^{13}(CG) - P^{14}(NCOT) - P^{15}(PD) - P^{16}(LBOR) - P^{17}(FLOAN) - P^{18}(LCOL) - \\
 & P^{19}(TRF) - P^{20}(ALLO) - P^{21}(NTOT) - P^{22}(ST) - P^{23}(GN) - P^{24}(GP) = 0.
 \end{aligned}$$

The second order conditions state that the Hessian matrix of second order partial derivatives of the Lagrangian with respect to the instruments must be negative definite or negative semidefinite when evaluated at the local maximum.

$$(3.64) \quad \frac{\partial^2 L}{\partial x_j^2} = \begin{bmatrix} \frac{\partial^2 L}{\partial(TA)^2} & \frac{\partial^2 L}{\partial(TA)\partial(TRE)} & \cdots & \frac{\partial^2 L}{\partial(TA)\partial(GP)} \\ \frac{\partial^2 L}{\partial(TRE)\partial(TA)} & \frac{\partial^2 L}{\partial(TRE)^2} & \cdots & \frac{\partial^2 L}{\partial(TRE)\partial(GP)} \\ \vdots & & & \\ \frac{\partial^2 L}{\partial(GP)\partial(TA)} & & \cdots & \frac{\partial^2 L}{\partial(GP)^2} \end{bmatrix}$$

These equations can usually be solved for the optimal $x_1, x_2, \dots, x_j$ and for λ . The first-order conditions represented by equations (3.38), $\dots$ (3.63) can be rewritten in a variety of interesting ways. For example, for any two inputs TA and TRE, we have

$$(3.65) \quad \frac{M\alpha_1 \frac{X}{\partial(TA)}}{M\alpha_2 \frac{X}{\partial(TRE)}} = \frac{P^1}{P^2}$$

Theoretically, the ratio of the marginal productivity of two inputs is in fact identical to the marginal rate of technical substitution between them. Therefore, the conditions for an optimal allocation of production become:

$$(3.66) \quad \text{RTS (TA for TRE)} = \frac{P^1}{P^2}$$

Another result can be derived by solving equations (3.38), . . . (3.63) for λ :

$$(3.67) \quad \lambda = \frac{M\alpha_1 \frac{X}{\partial(TA)}}{P^1} = \frac{M\alpha_2 \frac{X}{\partial(TRE)}}{P^2} = \dots = \frac{M\alpha_{24} \frac{X}{\partial(GP)}}{P^{24}}$$

This equation says that at the production maximizing point, each input should yield the same marginal productivity per dollar input on any input factors.

The value of the Lagrangian is the optimal value of the objective function. The Lagrange multiplier method, therefore, in addition to solving the classical maximization problem, also provides a sensitivity analysis, showing in the values of the Lagrange multipliers, how sensitive the optimal value of the objective function is to changes in the constraint constants. For example, if any Lagrange multiplier were equal to zero at the solution, then small changes in the corresponding constraint constant would not affect the optimal value of the objective function.

3. Limited Production of Local Financial Self-Sufficiency in Developing Countries

In the previous section, the first-order and the second-order conditions are the necessary conditions for the efficient production of local financial self-sufficiency. The ratio of marginal productivity of an input to its cost is equal for all inputs for an efficient production of local financial self-sufficiency. The efficient production condition shows that if the fraction differs from one local government to another, an efficient production

condition and the optimal productivity with respect to local inputs will vary among the different local governments.

The efficient production conditions are based on the constrained maximization model of an industrialized country. This model, however, assumes a flexibility and discretion in fiscal response that local governments in developing countries do not often have. Local governments in developing countries have limitations caused by a weak revenue structure and local fiscal administration (Smoke 1994; Bahl and Linn 1992).

Suppose that a local government uses a number of inputs that can be varied in quantity, with input x being only one of them. A change in the price of input x will result in changes in the quantities used of other variable inputs, which will affect the quantity used of input x . However, local governments in developing countries may not respond appropriately to a change in the price of input x because they have limitations to revenue generation. Therefore, local governments in developing countries may not change the quantities of other variable inputs.

Bahl and Linn (1992) describe local tax or revenue administration in developing countries as being so weak that local governments cannot raise sufficient dollar amounts to provide local services. Local tax administration simply cannot respond to changes in other socioeconomic conditions and local needs. Thus, revenue mobilization and efficiency are not realized. Furthermore, "tax bases given to the local governments are not income-elastic and local government is legally prohibited from increasing rates on the taxes to which they do have access" (Bahl and Linn 1992:423). Local fiscal choice of inputs to produce local financial self-sufficiency will vary, limited to their intrinsic input

characteristics. Therefore, the degree of local financial self-sufficiency of a given local government is related to input composition and magnitude.

1) Mix of Revenue Sources

The recent trend of fiscal decentralization in developing countries has led to increased efforts to raise local government revenues from local resources. Local governments have tried to diversify revenue sources to improve the stability, equity, and efficiency of local revenue systems. The proper mix of local revenue sources is a crucial fiscal choice for local governments to achieve the most optimal revenue mobilization.

A variety of factors might explain the differences in revenue mix across local governments in developing countries. Some local governments in developing countries have undeveloped local economies causing difficulty in raising revenue from their economic activities. Some local governments do not have enough revenues raised by non-property taxes (such as income and sales taxes) and user charges because their residents suffer from relatively low incomes. Some local governments lack the staff and leadership required for adopting and administering new revenue sources. In addition, local governments in developing countries tend to provide fewer services than do local governments in industrialized countries. Fewer local services may cause the loss of local opportunities to apply user charges.

The differences in the type of local revenue mix may bring interlocal fiscal differences in developing countries. For example, revenue generation is likely to be more productive in local areas with higher incomes or in local areas which serve as regional

marketing or tourist centers than in local areas without these characteristics. This may increase fiscal disparities among communities. For example, if the national government requires that all local governments cut property tax rates and shift to sales taxes, this might actually increase the fiscal disparities between rich and poor communities.

a. Own Sources

Property taxes traditionally have been the most crucial revenue source for local governments. Property taxes may be the only major direct revenue source which local governments can hope to retain and develop. They are usually assigned to local governments. In particular, they provide substantial resources in urban areas in developing countries. Property taxes are politically and economically desirable to local governments because their base is visible, allowing local tax administration to be easy. "Revenues from property taxes are frequently substantial, stable, and predictable. The tax base does not fluctuate in face of short-term changes in the economy and revenues are immune from immediate cyclical phenomena" (Davey 1983:49-50). The stability of property taxes is a crucial element for local finances in developing countries.

Property taxes, however, have serious weaknesses. Property taxes in developing countries show income inelasticity, problems of equity, problems of base valuation, and political sensitivity (Davey 1983; Bahl and Linn 1992). Thus, property taxes do not tend to respond to the local demands and challenges of inflation and growth. Nowadays, reliance on property taxes in local governments in developing countries has declined.

In the case of rural land taxation, even though it is a stable and historically important source of revenue, its significance has also declined considerably in almost all

countries. It is questionable whether land taxation is an effective instrument in extracting surplus from the agricultural sector. According to Bird's 1973 survey, effective tax rates were almost universally too low to achieve theoretically allocated purposes.⁴ Therefore, this type of local taxation does not work as an efficient revenue source.

Income taxation has been known as a most desirable source of revenue, characterized by a high degree of income elasticity and equity. Every country has derived the highest proportion of its public revenue from income taxation (Davey 1983; Goode 1980⁵). Even though it is most advantageous for local governments to gain some share in the utilization of this revenue source, the local income tax base in developing countries is very small compared to the national income tax base. The attractiveness of income taxation creates obvious problems of competition with the central government. Any form of local income taxation beyond a limited percentage assignment of the national tax yields presents strong administrative and political conflicts. Increase or utilization of income taxation in local governments is mainly based on a political compromise among various levels of the government.

Consumption taxation or "the taxation of goods and services is a lucrative and elastic form of revenue upon which reliance is particularly strong in countries where more direct taxation faces critical problems of assessment and collection" (Davey 1983: 85). Davey argues that it is, therefore, a valuable revenue source for local government wherever the local government has any substantial access to its taxation. Today, many local governments in developing countries tend to raise their revenue from this form of

⁴ Richard M. Bird, *Taxing Agricultural Land in Developing Countries* (Harvard University Press, 1974).

⁵ R. Goode, "Limits to Taxation," *Finance and Development*, 1980, 11-13.

taxation through “assigned shares or surcharging” (Davey 1983; Bahl and Linn 1992). However, sales and excise taxes often tend to be revenue sources of a national or subnational government with a larger jurisdiction, rather than the smaller local governments. Therefore, a key issue concerns the local portion or assignment of this taxation. In addition, local tax administration of consumption taxes creates problems including how to collect the taxes for interlocal sales and how to handle the effects of levy variations upon price levels.

Many local governments in developing countries levy an automobile tax on motor vehicle ownership and use. Automobile taxation is very useful for local governments because the number of automobiles often grows faster than the local population governments in developing countries. Automobile ownership and use are easily taxable and the burden of automobile taxes is likely to fall on persons with higher incomes. Local governments may take advantage of a rapidly growing tax base and recapture the costs of public expenditures required because of automobile use. In developing countries, automobile taxation is the most desirable source of local revenue because automobile taxation shows good revenue performance, administrative ease, political acceptability, economic efficiency, and distributive equity.

Fees and charges may be good local revenue sources. Their acceptability comes from the ease of collection and the appeal of charging service costs directly to the consumer. Fees and charges as “local revenue may well fall below the levels needed to operate a service effectively, particularly in times of inflation, because of political reluctance to increase tariffs or enforce sanctions” (Davey 1983: 99). Local governments in developing countries do not have enough revenue from fees and charges because their

residents, who have low incomes, cannot pay enough to cover the costs of local services. Furthermore, local governments in developing countries tend to provide fewer services than do local governments in industrialized countries. Fewer local services may cause the loss of local opportunities to apply user charges. Therefore, the raising of revenue from fees and charges has some problems of adequacy and elasticity.

b. External Sources

The justification of borrowing is investment in developmental projects beyond the limits of current local fiscal capacity. Local governments with only taxes and charging revenue will often severely curtail or eliminate long-term development. The additional investment enabled by borrowing may well generate extra current revenue, directly or indirectly. Although borrowing normally incurs interest charges as well as capital repayment, the burdens of these are eroded by inflation; indeed, if the rate of inflation exceeds that of interest, it is cheaper in real terms to borrow money. Long-term loans pass on part of the costs of capital assets to the future generations of taxpayers that will enjoy their benefits.

Extensive borrowing by public authorities is criticized on a number of counts. Taxpayers are not faced immediately with the full cost of loan-financed projects; this can weaken financial discipline and accountability. Excessive borrowing, particularly at high interest rates, can build up an intolerable burden of debt service for the future; irresponsible leaders may win cheap popularity or benefits for their supporters by indulging in investments that exceed any reasonable expectation of increases in revenue.

Intergovernmental transfers result from the fiscal imbalance of responsibility among governments, namely vertical and horizontal imbalance. Vertical imbalances stem from financial resource imbalances among various levels of government. Horizontal fiscal imbalances are derived from fiscal disparities among governments at the local level. The magnitude of intergovernmental transfers is significant to total local revenues. This magnitude reflects primarily the flow of shared revenue, grants, and other aid from the higher levels of government to the local level.

As a local revenue source, intergovernmental transfer payments are very dependent on political decisions at higher levels of government. The allocation of resources is an essential attribute of power and one must expect political values to predominate. Bird points out that explicit, objective criteria for intergovernmental transfer payments are needed in developing countries. The allocation of intergovernmental transfer payments in developing countries tends to depend on political influence, vague national objectives, and loose statistical analysis.⁶

2) Environmental Factors in the Production of Local Financial Self-Sufficiency

The differences in environmental conditions surrounding local governments cause the extent of local financial self-sufficiency to vary across local governments. The environmental factors of local production are 1) population size, 2) area, 3) economic development, 4) poverty, 5) city age, 6) regional setting, and 7) local political setting.

⁶ Richard M. Bird, *Intergovernmental Fiscal Relations in Developing Countries* (World Bank Staff Working Paper No. 304, 1978).

Local governments produce local public goods and services with a given quantity of inputs as well as the various environmental factors. Even though individual local government has enough revenue sources as inputs of production, each local government may produce local public goods and services in different production environments and use different production technology.

Differences in each local government's production function, particularly differences in the environmental conditions for providing local public services, cause differences in the production of local services. For example, one of the direct results from differences in the population size is a difference in the local revenue base. Differences in the local revenue base, in turn, bring about differences in the total local revenue across local governments, thus creating a difference in local financial self-sufficiency.

It is easy to see that differences in the political environment and bureaucratic setting can produce different amounts of local financial self-sufficiency. For example, increasing inefficiency in political and bureaucratic decision making is likely to increase the political and bureaucratic input cost. The result of the increased input cost is the shift to a lower level of production isoquant.

It is also well recognized that differences in local economic factors can cause interlocal production differences. Differences in the degree of local economic development also result in a shift of the production isoquant. A growth in the local economy, given input prices, expands the level of the local revenue base. This indicates that an increase in local revenue from local sources can alter the level of local financial self-sufficiency.

It has already been shown that differences in the price of environmental factors cause interlocal differences in local financial self-sufficiency. Differences in the prices of other inputs also differentiate the level of local production. In general, any conditions that do not generate the same production function among local governments cause differences in the production of local services.

CHAPTER FOUR

METHOD OF ANALYSIS

I. Overview

This chapter provides a methodology for an empirical analysis of the degree of local financial self-sufficiency in Korea. The analytical method of this study is a statistical analysis using multiple regressions model that identify the relationship between local financial self-sufficiency and various types of local revenue and environmental factors, such as the demographic, socioeconomic, and geographic factors surrounding local governments in Korea. Based on the relevant literature in Chapter Two and theoretical analyses in Chapter Three, this chapter specifies three types of analytical models: a closed model, which focuses on locally raised revenues; an open model, which considers external revenues including intergovernmental transfers and local borrowings; and an extended model, which considers environmental factors.

II. Hypotheses

This study will analyze the relationship between the degree of local financial self-sufficiency, which refers to the ability of cities to raise own-source revenue and the level of the structural mix of local revenue sources. Nationally, when local own-source

revenues increase, the fiscal function of the government overall is decentralized, which means stronger roles for local fiscal functions. The local government that has enough local resources may be financially independent from higher levels of government.

Promoting the degree of local financial self-sufficiency is an objective of local governments in developing countries in order to sustain local autonomy and increase local planning capabilities. An increase in the per capita amounts of local own-source revenues may relate to an increase in the degree of local financial self-sufficiency, because an increase in the amounts of locally raised revenues means the local government has the ability to support local programs or policies.

Local revenue diversification may be a crucial strategy for promoting the degree of local financial self-sufficiency. Revenue diversification has been suggested as a way to improve the stability, equity, and efficiency of local revenue systems, weakening the financial reliance on property taxes. As a result, local government revenue sources have become more diversified and much local revenue has come from sources other than property tax. Therefore, the hypothesis of this study may be established as follows: in a given city, the level of local revenue diversification relates positively to the degree of local financial self-sufficiency. In addition, the level of revenue diversification is related to the reliance on each of the local revenue sources. Thus, this study establishes three kinds of subsets of hypotheses pertaining to local revenue sources.

The first subset of hypotheses pertains to local tax revenues. In Korean cities, major local taxes are: (1) residence tax, which is levied on all heads of households and corporations with domiciles or offices in each city; (2) building and machinery tax, which is a type of property tax on buildings, ships, airplanes, and machinery; (3) automobile tax,

which is on motor vehicle ownership and use; (4) farmland tax, which is on the harvests from the farm land; (5) tobacco tax, which is an excise tax on tobacco sales; (6) synthesis land tax, which is levied on land and land ownership, and (7) city planning tax¹, which is an earmarked tax on buildings and land in a city.

The buildings and machinery tax, synthesis land tax, and city planning tax are, generally, kinds of property and wealth taxes. In reality, the property and wealth tax is known as a primary local revenue source. However, city governments in Korea have a very inflexible property and wealth tax. The rate and base of property and wealth tax seem to remain unchanged. Differences among local governments in per capita property and wealth taxes are very small. Thus, it is likely that differences in other local taxes rather than the property and wealth tax are most strongly related to the degree of local financial self-sufficiency.

Income and consumption-based rather than wealth-based taxes are generally more elastic to the changes in environmental factors. The residence tax and the farmland tax are considered to be income-based taxes in Korea. To the tax on heads of households and on corporations Korean cities have been altered some power to add a certain percentage of surtax on all tax liabilities of national personal income tax, the corporate income tax, and farmland tax. While this gives them some discretion to maximize wealth-based tax revenues, the surcharge is small and variations in the surcharge are generally used to differentiate between wealthy and less wealthy taxpayers.

Therefore, cities in Korea seem to hold great revenue potential in the residence tax. The tobacco tax is a consumption tax in Korean cities. However, as an excise tax,

¹ Its use is formally designated for city planning activities.

the burden of this tobacco tax is likely to fall on persons with lower income. Thus, the tobacco tax provides limited revenue potentials in Korean cities. The automobile tax may show great revenue performance. A city's number of automobiles often grows faster than its population. A city in developing countries should take advantage of this rapidly growing tax base. Thus,

H1: In a given city, the per capita amount of total local tax revenues relates positively to the degree of local financial self-sufficiency.

H1a: In a given city, the per capita amount of residence tax revenue relates positively to the degree of local financial self-sufficiency.

H1b: In a given city, the per capita amount of automobile tax revenue relates positively to the degree of local financial self-sufficiency.

The second subset of hypotheses concerns the relationship between the degree of local financial self-sufficiency and the level of non-tax revenues. Non-tax revenues in Korean city governments are composed of rents, fees, property disposal revenues, public property rents, collection grants, loan collection, transfers from other accounts, allotments, contributions, business firm revenues, interests, and other miscellaneous revenues. Rents are benefit charges on specific activities or purchases that are generally related to the use of public facilities. Fees are payments normally based on an individual's voluntary consumption of publicly provided goods and services. Property disposal revenues are revenues from the sale of government property. Public property rents are the rent revenues raised from government-created property rights. Collection

grants are intergovernmental payments for local expenditures to collect national or provincial taxes or charges. Loan collections are revenues from the redemption of loans provided by local government. Transfers from other accounts are to bring in some money from accounting changes. Allotment is a kind of special assessment which means it is a compulsory payment imposed on real property for specific benefits generated by public investment or services. Contributions are voluntarily given from individuals or corporations. Business firm revenues are receipts of local public firms. Interests revenues are earnings on deposits in the bank. Miscellaneous revenues come from fines, forfeiture, and sale of unused public property.

Out of local non-tax revenues, the level of the revenues from public property rents, disposal of public property, and allotment show the largest differences among local governments. The revenue from the public property rents and public property disposal comes from the management of public property. The magnitude of a city's public property may be different from other cities. These intercity differences in the magnitude of public property may cause differences in the amount of non-tax revenues. The level of public investment in a city may also be different from other cities. This would result in intercity differences in the level of allotment revenue. Therefore,

H2: In a given city, the per capita amount of local non-tax revenues relates positively to the degree of local financial self-sufficiency.

H2a: In a given city, the per capita amount of public property rent revenue relates positively to the degree of local financial self-sufficiency.

H2b: In a given city, the per capita amount of local revenues from the disposals of public property relates positively to the degree of local financial self-sufficiency.

H2c: In a given city, the per capita amount of allotment revenue relates positively to the degree of local financial self-sufficiency.

The third subset of hypotheses relates to intergovernmental fiscal relations in the Korean governmental system. In Korean cities, the types of intergovernmental transfer payments are: 1) local shared taxes which represent a kind of general revenue sharing, 2) national subsidies which are conditional grants from the national government, and 3) provincial subsidies which are conditional grants from the provincial government.

Local planning is usually interwoven with adjacent localities. The interdependence of local planning produces intergovernmental spillovers. Public goods with spillovers require intergovernmental transfer revenues to ensure that an efficient level of service is provided. There is a belief that intergovernmental transfer revenues are positively related to local government developmental expenditures. Intergovernmental transfer payments, it is thought, stimulate local expenditures. Intergovernmental payments from higher levels of government may give a city government income effects, which means a city government feels the increase in city income. Therefore, the city government increases its expenditures.

On the other hand, assuming that local budgets are balanced, total local expenditures are equal to total local revenues. Thus, an increase in intergovernmental transfer payments may cause a decrease in locally raised revenues. According to this

logic, intergovernmental transfer payments may be negatively related to the degree of local financial self-sufficiency. In this context, a hypothesis is established to test the relationship between the level of intergovernmental transfers and the degree of local financial self-sufficiency in Korea.

H3: In a given city, the per capita amount of intergovernmental transfer payments relates negatively to the degree of local financial self-sufficiency.

H3a: In a given city, the per capita amount of local shared taxes relates negatively to the degree of local financial self-sufficiency.

H3b: In a given city, the per capita amount of national subsidies relates negatively to the degree of local financial self-sufficiency.

H3c: In a given city, the amount of provincial subsidies relates negatively to the degree of local financial self-sufficiency.

III. Analytical Model

I propose a statistical method to find the relationship between the degree of local financial self-sufficiency as a local fiscal condition and various local revenue sources. The following equation expresses the degree of local financial self-sufficiency ($LFSS_{Li}$) as a local fiscal condition index that is affected by various independent variables (X_i). For a local government, the degree of local financial self-sufficiency ($LFSS_{Li}$) is presented by a production function using the neoclassical economic theory.

$$(4.1) \quad LFSS_{Li} = f_{ss}(X_1, X_2, \dots, X_n)$$

Where local financial self-sufficiency is the calculated degree of local financial self-sufficiency as a local fiscal condition index in the i th local government, $X_1, X_2, \dots, X_n$ are factors that are related to the degree of local financial self-sufficiency.

As a dependent variable, the degree of local financial self-sufficiency ($LFSS_{Li}$) is a local fiscal condition measure. It is calculated with Korean local fiscal data. Four types of measures, which were presented in Chapter 3, can then be applied to the above equation. These measures are as follows: the composite share index (CPX), composite per capita index (CCPX), revenue decentralization index (DCENX1), and expenditure decentralization index (DCENX2).²

1. Closed Model

Local fiscal attributes possess local public revenues (R_{Li}), such as local taxes, non-tax revenues, intergovernmental revenues, and local borrowings. The local public revenues (R_{Li}) are denoted by (4.2).

$$(4.2) \quad R_{Li} = f(TH, TBM, TAUTO, TFAR, TBUT, TET, TSL, PRENT, GRENT, FEE, FR, CG, INTR, PD, LTPY, CONT, LCOL, TRF, ALLO, MR, LTDPY, ST, GN, GP, LBOR)$$

where,

TH : residence tax

TBM : building and machinery tax

² Detailed explanations of these indices are in Ch. 3.

TAUTO: automobile tax
TFAR : farmland tax
TBUT : butchery tax
TET : tobacco-spending tax
TSL : synthesis land tax
PRENT: public property rent revenue
GRENT: benefit charges for use of public facilities
FEE : payments for voluntary consumption of public services
FR : receipts of local public firms
CG : grants for collection of national or provincial taxes or charges
INTR : earnings of deposits belonging to the bank
PD : revenues from the sale of government property
LTPY : carry-over of annual surplus
CONT : voluntary contributions
LCOL : loan collection
TRF : transferred from other accounts
ALLO : allotment
MR : revenues from fine, forfeiture, sale of unused public property, etc.
LTDPY: non-tax revenues raised in previous year
ST : local shared tax
GN : national subsidies
GP : provincial subsidies
LBOR : local borrowings

In general, locally raised revenues are positively related to the degree of local financial self-sufficiency by definition. Locally raised revenues consist of local taxes and non-tax revenues; these are also classified as wealth-based revenues, income-based revenues, and consumption-based revenues, even though some revenues have both characteristics. Assuming local property and wealth-based taxes are the basic own-source revenues for local governments, other types of revenue are complementary or substitute. The complementary revenues will be positively related to the degree of local financial self-sufficiency, and, contrarily, the substitute revenues will be negatively associated. Assuming that a local financial system is closed within a jurisdiction, the degree of local financial self-sufficiency is only a function of locally raised revenues. The differences in

local revenue patterns showing how local governments raise revenue from their own-sources makes a difference in local financial self-sufficiency among localities. The local revenue pattern includes local reliance on revenue sources and the extent of revenue mix expressed as a standard deviation³ of the amounts of local revenues. Thus,

$$(4.3) \quad LFSS_{Li} = f(ss(SD_{Li}, LT_{Li} (TH_{Li}, TBM_{Li}, TAUTO_{Li}, TFAR_{Li}, TBUT_{Li}, TET_{Li}, TSL_{Li}), Non-tax_{Li} (PRENT_{Li}, GRENT_{Li}, FEE_{Li}, FR_{Li}, CG_{Li}, INTR_{Li}, PD_{Li}, LTPY_{Li}, CONT_{Li}, LCOL_{Li}, TRF_{Li}, ALLO_{Li}, MR_{Li}, LTDPY_{Li})))$$

where,

- SD_{Li} : standard deviation in the amount of various local revenues in the i th local government
 LT_{Li} : local taxes in the i th local government
 $Non-tax_{Li}$: local non-tax revenues in the i th local government

Transforming this equation to a Cobb-Douglas type function to identify the role or intensity of each variable relating to local financial self-sufficiency provides us with the following:

$$(4.4) \quad LFSS_{Li} = M(SD_{Li})^{\alpha_1} (TH_{Li})^{\alpha_2} (TBM_{Li})^{\alpha_3} (TAUTO_{Li})^{\alpha_4} (TFAR_{Li})^{\alpha_5} (TBUT_{Li})^{\alpha_6} (TET_{Li})^{\alpha_7} (TSL_{Li})^{\alpha_8} (PRENT_{Li})^{\alpha_9} (GRENT_{Li})^{\alpha_{10}} (FEE_{Li})^{\alpha_{11}} (FR_{Li})^{\alpha_{12}} (CG_{Li})^{\alpha_{13}} (INTR_{Li})^{\alpha_{14}} (PD_{Li})^{\alpha_{15}} (LTPY_{Li})^{\alpha_{16}} (CONT_{Li})^{\alpha_{17}} (LCOL_{Li})^{\alpha_{18}} (TRF_{Li})^{\alpha_{19}} (ALLO_{Li})^{\alpha_{20}} (MR_{Li})^{\alpha_{21}} (LTDPY_{Li})^{\alpha_{22}}$$

³ The standard deviation is a measure of spread or variability, calculating the differences from the mean in a given sample. In formula,

$$\text{Standard Deviation (s)} = \sqrt{s^2} = \sqrt{\sum_{i=1}^N (X_i - \bar{X})^2}$$

where, X_i : the amount of i th local revenue

$\bar{X}$: the average amount of local revenues

Large value of standard deviation means that the amounts of local revenues are quite spread out. Small value of standard deviation indicates that the amounts of local revenues are pretty similar.

In this equation, α_1 , α_2 ... and α_{22} mean production elasticity, which explains the extent that the factors contribute to the production process of local financial self-sufficiency.

To examine the relationship between local financial self-sufficiency and local public financing, additional assumptions are required. It is assumed that local financial self-sufficiency ($LFSS_{Li}$) has approximately a log linear relationship with a local government's input revenue sources:

$$(4.5) \quad \log LFSS_{Li} = \log M + \alpha_1 \log(SD_{Li}) + \alpha_2 \log(TH_{Li}) + \alpha_3 \log(TBM_{Li}) + \alpha_4 \log(TAUTO_{Li}) + \alpha_5 \log(TFAR_{Li}) + \alpha_6 \log(TBUT_{Li}) + \alpha_7 \log(TET_{Li}) + \alpha_8 \log(TSL_{Li}) + \alpha_9 \log(PRENT_{Li}) + \alpha_{10} \log(GRENT_{Li}) + \alpha_{11} \log(FEE_{Li}) + \alpha_{12} \log(FR_{Li}) + \alpha_{13} \log(CG_{Li}) + \alpha_{14} \log(INTR_{Li}) + \alpha_{15} \log(PD_{Li}) + \alpha_{16} \log(LTPY_{Li}) + \alpha_{17} \log(CONT_{Li}) + \alpha_{18} \log(LCOL_{Li}) + \alpha_{19} \log(TRF_{Li}) + \alpha_{20} \log(ALLO_{Li}) + \alpha_{21} \log(MR_{Li}) + \alpha_{22} \log(LTDPY_{Li})$$

2. Open Model

Local governments in Korea also raise their revenue from external sources such as intergovernmental transfers and local borrowings. The intergovernmental transfers are composed of national subsidies, provincial subsidies, and local shared taxes. Many studies have argued that the external sources have had an impact on local governments' expenditures so that the amount of these external sources may be related to local financial self-sufficiency. Therefore, an alternative model considering external funds may explain the relationship between local financial self-sufficiency and local revenue sources including intergovernmental transfers and local borrowings. The model that incorporates the external funds provides the following:

$$(4.6) \quad LFSS_{Li} = lfs(SD_{Li}, LT_{Li}, (TH_{Li}, TBM_{Li}, TAUTO_{Li}, TFAR_{Li}, TBUT_{Li}, TET_{Li}, TSL_{Li}), \\ Non-tax_{Li}, (PRENT_{Li}, GRENT_{Li}, FEE_{Li}, FR_{Li}, CG_{Li}, INTR_{Li}, PD_{Li}, LTPY_{Li}, \\ CONT_{Li}, LCOL_{Li}, TRF_{Li}, ALLO_{Li}, MR_{Li}, LTDPY_{Li}), LBOR_{Li}, ST_{Li}, GN_{Li}, \\ GP_{Li})$$

Transforming this equation to a Cobb-Douglas production function type equation:

$$(4.7) \quad LFSS_{Li} = M(SD_{Li})^{\alpha_1} (TH_{Li})^{\alpha_2} (TBM_{Li})^{\alpha_3} (TAUTO_{Li})^{\alpha_4} (TFAR_{Li})^{\alpha_5} (TBUT_{Li})^{\alpha_6} (TET_{Li})^{\alpha_7} \\ (TSL_{Li})^{\alpha_8} (PRENT_{Li})^{\alpha_9} (GRENT_{Li})^{\alpha_{10}} (FEE_{Li})^{\alpha_{11}} (FR_{Li})^{\alpha_{12}} (CG_{Li})^{\alpha_{13}} \\ (INTR_{Li})^{\alpha_{14}} (PD_{Li})^{\alpha_{15}} (LTPY_{Li})^{\alpha_{16}} (CONT_{Li})^{\alpha_{17}} (LCOL_{Li})^{\alpha_{18}} (TRF_{Li})^{\alpha_{19}} \\ (ALLO_{Li})^{\alpha_{20}} (MR_{Li})^{\alpha_{21}} (LTDPY_{Li})^{\alpha_{22}} (LBOR_{Li})^{\alpha_{23}} (ST_{Li})^{\alpha_{24}} (GN_{Li})^{\alpha_{25}} (GP_{Li})^{\alpha_{26}}$$

For the log linear relationship with a local government's input endowments:

$$(4.8) \quad \log LFSS_{Li} = \log M + \alpha_1 \log(SD_{Li}) + \alpha_2 \log(TH_{Li}) + \alpha_3 \log(TBM_{Li}) + \\ \alpha_4 \log(TAUTO_{Li}) + \alpha_5 \log(TFAR_{Li}) + \alpha_6 \log(TBUT_{Li}) + \alpha_7 \log(TET_{Li}) + \\ \alpha_8 \log(TSL_{Li}) + \alpha_9 \log(PRENT_{Li}) + \alpha_{10} \log(GRENT_{Li}) + \alpha_{11} \log(FEE_{Li}) + \\ \alpha_{12} \log(FR_{Li}) + \alpha_{13} \log(CG_{Li}) + \alpha_{14} \log(INTR_{Li}) + \alpha_{15} \log(PD_{Li}) + \\ \alpha_{16} \log(LTPY_{Li}) + \alpha_{17} \log(CONT_{Li}) + \alpha_{18} \log(LCOL_{Li}) + \alpha_{19} \log(TRF_{Li}) + \\ \alpha_{20} \log(ALLO_{Li}) + \alpha_{21} \log(MR_{Li}) + \alpha_{22} \log(LTDPY_{Li}) + \alpha_{23} \log(LBOR_{Li}) + \\ \alpha_{24} \log(ST_{Li}) + \alpha_{25} \log(GN_{Li}) + \alpha_{26} \log(GP_{Li})$$

3. Extended Model

Local financial self-sufficiency may be a product of various surrounding factors including economic, social, cultural, historical, and geographical elements. The factors consist of political and administrative attributes (Pol), local fiscal attributes (Fis_{Li}), local

economic attributes (Eco_{Li}), local social attributes (Soc_{Li}), cultural attributes (Cul_{Li}), historical attributes (His_{Li}), and geographical attributes (Geo_{Li}). Thus, the above equation (4.1) is rewritten as:

$$(4.9) \quad LFSS_{Li} = f_{ss}(Pol, Fis_{Li}, Eco_{Li}, Soc_{Li}, Cul_{Li}, His_{Li}, Geo_{Li})$$

Transforming this equation to a Cobb-Douglas production function type equation:

$$(4.10) \quad LFSS_{Li} = M(Pol)^{\alpha_1} (Fis_{Li})^{\alpha_2} (Eco_{Li})^{\alpha_3} (Soc_{Li})^{\alpha_4} (Cul_{Li})^{\alpha_5} (His_{Li})^{\alpha_6} (Geo_{Li})^{\alpha_7}$$

Assuming that Korea has a unitary governmental system, each local government has the same political or administrative structure. We may say political conditions are the same in any specific year.⁴ Therefore, political attributes may be regarded as fixed -- one for every local government in any specific year.

The local fiscal elements were presented in the previous section in explaining a closed and open model. The local economic conditions are related to the local financial self-sufficiency ($LFSS_{Li}$). A growing local economy may be an element to support local fiscal autonomy. An independent variable explaining local economic conditions is the number of registered cars in each locality. Today, the car (CAR) in Korea is a symbol of economic development. Social strata are also deeply related to local fiscal autonomy. Severe poverty levels negatively affect fiscal decentralization. The total number of low-

⁴ Each local government reveals political homogeneity geographically. In the 1996 general election, local residents voted with geographical preferences.

income people (POV) will be used as an explaining variable. Older cities tend to have a deteriorating economic and fiscal base; therefore, older cities may be negatively related to the degree of local financial self-sufficiency. As an historical variable, a city's legal establishment year (HIS) will be used for the above equation. Population is the most important factor to consider in local fiscal revenue and expenditure studies. Thus, this study employs per capita concepts in all fiscal variables. A city's geographical size is also an important explanatory variable for the degree of fiscal decentralization. Area (AREA) will be used as an explanatory variable in this study. Regional aspects (REG) are also considered as dummy variables.

A log linear function for local financial self-sufficiency ($LFSS_{Li}$) is as follows:

$$(4.5) \quad \log LFSS_{Li} = \log M + \alpha_1 \log(Pol) + \alpha_2 \log(Fis_{Li}) + \alpha_3 \log(Eco_{Li}) + \alpha_4 \log(Soc_{Li}) + \alpha_5 \log(Cul_{Li}) + \alpha_6 \log(His_{Li}) + \alpha_7 \log(Geo_{Li})$$

IV. Data and Variables

The Republic of Korea is a developing country from which one can gather data to estimate the above equations. Korea can be representative of any developing country with customs. As a newly industrialized country, it has experienced some of the most rapid industrialization and urbanization of any developing country. Korean cities include communities with diverse mixtures of manufacturing, commercial, and residential housing property bases.

A major reason for using Korea is its brief history of political and administrative decentralization; it has passed legislation that allows local autonomy. The act of 'Korean local autonomy,' enacted in 1988, was the backbone of this legislation. In effect,

local autonomy is granted at local governments' discretion for future local economic development. For new local public goods production and service delivery, this trend of decentralization is a crucial factor, which emphasizes the role of local government in raising revenues.

A data set was gathered from a cross-section of Korean City governments⁵. The city government is defined as a legal authority for general administration in an urbanized area. In 1993, Korea has a two-level system of local governmental structure. Figure 2.1 in Chapter Two illustrates the system of local governments in Korea. The upper levels of local governments consist of a special city (Seoul), five direct jurisdiction cities (Busan, Daegu, Daejeon, Gwangju, and Incheon), and nine provinces. On the contrary, the lower levels of local governments consist of 68 cities, 136 counties, and 56 autonomous districts. The cities and counties are within the provinces. The autonomous districts are within the special city and direct jurisdiction cities.

Generally, the category of city governments may include the special city and direct jurisdiction cities, the cities within the provinces, and the autonomous districts. However, each type of city governments has different fiscal structure from each other. The special city and direct jurisdiction cities, which are legally upper levels of local governments, have more sufficient fiscal resources and autonomy than the cities within the provinces. Even though the autonomous districts are the lower levels of local governments like the cities within the provinces, their legal and fiscal status are very limited, comparing to the ones of the cities within the provinces. These city governments cannot be considered as research target for this study together. Therefore, the special city, direct jurisdiction cities, and the autonomous districts are excluded.

⁵ The basic unit of local authorities in urban settings.

Table 4.1: Variables and Definitions

	Variable	Definition	
Dependent	CCPX	Composite index of per capita fiscal Indexes of a city	
	CPX	Composite index of fiscal indexes of a city	
	DCENX1	Decentralization indexes(revenue decentralization) of a city; Proportion of per capita local revenue in the sum of per capita local revenue and per capita national revenue	
	DCENX2	Decentralization indexes(expenditure decentralization) of a city; Proportion of per capita local expenditures in the sum of per capita local expenditures and per capita national expenditures	
Independent	AREA	Per capita geographical size a city	Km ²
	CAR	Per capita cars registered in a city	Vehicle
	DENSITY	The number of local residents per Km ²	Person
	EMP	Per capita total employees in a city	Person
	HIS	Established Year of a city	Year
	POV	Per capita total low-income peoples in a city	Person
	REG1	Dummy Variable of Region GyeongGi	
	REG2	Dummy Variable of Region GangWon	
	REG3	Dummy Variable of Region ChungCheong	
	REG4	Dummy Variable of Region JeonRa	
	REG5	Dummy Variable of Region GyeongSang	
	ALLO	Per capita revenue of allotment in a city	Million Won
	CG	Per capita grants for collection of national or provincial taxes or charges in a city	Million Won
	CONT	Per capita voluntary contributions in a city	Million Won
	FEE	Per capita revenue from payments for voluntary consumption of public services in a city	Million Won
	FR	Per capita receipts of local public firms in a city	Million Won
	GN	Per capita national subsidies in a city	Million Won
	GP	Per capita city & provincial subsidies in a city	Million Won
	GRENT	Per capita benefit charges for use of public facilities in a city	Million Won
	INTR	Per capita earnings on deposits belonging to the bank in a city	Million Won
	LBOR	Per capita local borrowings in a city	Million Won
	LCOLL	Per capita loan collection in a city	Million Won
	LTPY	Per capita temporary non-tax revenues in previous year in a city	Million Won
	LTPY	Per capita carry-over of annual surplus in a city	Million Won
	MR	Per capita revenue from fine, forfeiture, sale of unused public property, etc. in a city	Million Won
	PD	Per capita revenues from the sale of government property in a city	Million Won
	PRENT	Per capita public property rent revenue in a city	Million Won
	SD	Standard Deviation of the amounts of local revenue sources	
	ST	Per capita local shared tax in a city	Million Won
	TAUTO	Per capita automobile tax in a city	Million Won
	TBM	Per capita buildings and machinery tax in a city	Million Won

	TBU	Per capita business firm tax in a city	Million Won
	TBUT	Per capita butchery tax in a city	Million Won
	TET	Per capita tobacco spending tax in a city	Million Won
	TFAR	Per capita farmland tax in a city	Million Won
	TH	Per capita residence Tax (Inhabitant Tax) in a city	Million Won
	TRF	Transfers from other accounts in a city	Million Won
	TSL	Per capita synthesis land tax in a city	Million Won

The availability of data was limited by the administrative jurisdictional boundary of 1993. The result is a sample of 68 cities for a cross section. The set consists of city governments' fiscal data from the '*settled account*' of 1993. I believe this account is substantial enough for this study. The data concerns 68 cities in Korea and comes from the *Financial Yearbook of Local Government*, 1994 and the *Statistical Yearbook of City Governments in Korea*, 1994.

It is sufficient to generally define the variable as a unit or Won (W)⁶ of local revenue and expenditure. Socio-economic variables are available from the *Statistical Yearbook of City Government in Korea*. All nominal monetary terms are in 1993 real Korean Won. Table 4.1 contains definitions for all variables used in the regression estimation.

⁶ Won is a unit of Korean money. \$1 is worth about 790 Won at this time.

CHAPTER FIVE

EMPIRICAL ANALYSIS

I. Overview

This chapter presents the results of the empirical analysis, which attempts to investigate the relationship between the degree of local financial self-sufficiency and the mix of local revenue sources. To induce appropriate results, this study uses three types of analytical models: a closed model, which focuses on locally raised revenues; an open model, which considers external revenues including intergovernmental transfers and local borrowings; and an extended model, which considers environmental factors.

Dependant variables for the empirical models include four types of indices such as the revenue decentralization index (DCENX1), the expenditure decentralization index (DCENX2), the composite share index (CPX), and the composite per capita index (CCPX), which show the degree of local financial self-sufficiency. The results of the empirical analysis illustrate that the interlocal differences in the mixes of local revenue sources exist across Korean cities. These differences are structurally related to differences in the degree of local financial self-sufficiency. In addition, the regression analyses in this chapter present which revenue sources are most closely related to the degree of local financial self-sufficiency in a given Korean city.

II. Empirical Analysis

1. Variations in Local Financial Self-Sufficiency

This study contains a sample of local Korean governments from 1993, some of which are large-sized cities (Type I) which have a population over 300,000, some of which are mid-sized cities (Type II) which have a population between 100,000 ~ 299,999, and the remainder being small-sized cities (Type III) which have a population of less than 100,000. In 1993 there were 13 large-sized cities, 22 mid-sized cities, and 33 small-sized cities.

This study uses four types of fiscal indices in order to measure the degree of local financial self-sufficiency. The indices are the revenue decentralization index (DCENX1), the expenditure decentralization index (DCENX2), the composite share index (CPX), and the composite per capita index (CCPX). Table 5.1 presents the mean levels of these indices in Korean cities in 1993 broken out by city size. The mean level of the composite share index (CPX) in Type I (large-sized cities) is higher than the corresponding mean levels in Type II (mid-sized cities) and Type III (small-sized cities). The mean levels of the composite per capita index (CCPX), the revenue decentralization index (DCENX1), and the expenditure decentralization index (DCENX2) in Type III (small-sized cities) are higher than the corresponding mean levels in Type I (large-sized cities) and Type II (mid-sized cities).

Table 5.1: Mean Levels of Selected Variables by City Size

	All	Large Cities	Medium Cities	Small Cities
Composite Share Index (CPX)	76.150	98.756	63.554	75.643
Composite Per Capita Index (CCPX)	220282.294	201341.832	193956.261	245294.378
Revenue Decentralization Index (DCENX1)	0.233	0.225	0.213	0.250
Expenditure Decentralization Index (DCENX2)	0.263	0.189	0.226	0.317
Area (km ²)	95.382	118.991	92.445	88.040
Density (Persons/ km ²)	2524.291	5685.401	2600.168	1228.421
Per Capita Employment (Persons)	0.126	0.147	0.131	0.114
Poverty Rate (Low Income People/Population, %)	0.038	0.015	0.034	0.050
Per Capita Cars Registered (Vehicle)	0.088	0.069	0.088	0.095
Per Capita Building Floor (m ²)	2.846	2.787	3.167	2.656
Per Capita Total Expenditures*	0.393	0.242	0.315	0.504
Per Capita Total Revenues*	0.481	0.337	0.400	0.592
Per Capita Total Local Taxes*	0.126	0.135	0.119	0.128
Per Capita Local Residence Taxes*	0.018	0.022	0.015	0.019
Per Capita Buildings and Machinery Taxes*	0.008	0.010	0.009	0.008
Per Capita Automobile Taxes*	0.022	0.025	0.022	0.021
Per Capita Tobacco Spending Taxes*	0.041	0.038	0.040	0.043
Per Capita Synthesis Land taxes*	0.018	0.017	0.016	0.019
Per Capita Local Objective Taxes*	0.016	0.020	0.015	0.016
Per Capita Non-tax Revenues*	0.176	0.156	0.149	0.201
Per Capita Temporary Non-tax Revenues*	0.118	0.088	0.103	0.139
Per capita Local Shared Taxes*	0.104	0.012	0.076	0.159
Per capita National Grants*	0.026	0.012	0.023	0.033
Per Capita Provincial and Local Subsidies*	0.038	0.010	0.028	0.055
Local Borrowings*	0.012	0.012	0.005	0.016
Standard Deviation of Revenue Sources	0.023	0.019	0.019	0.027

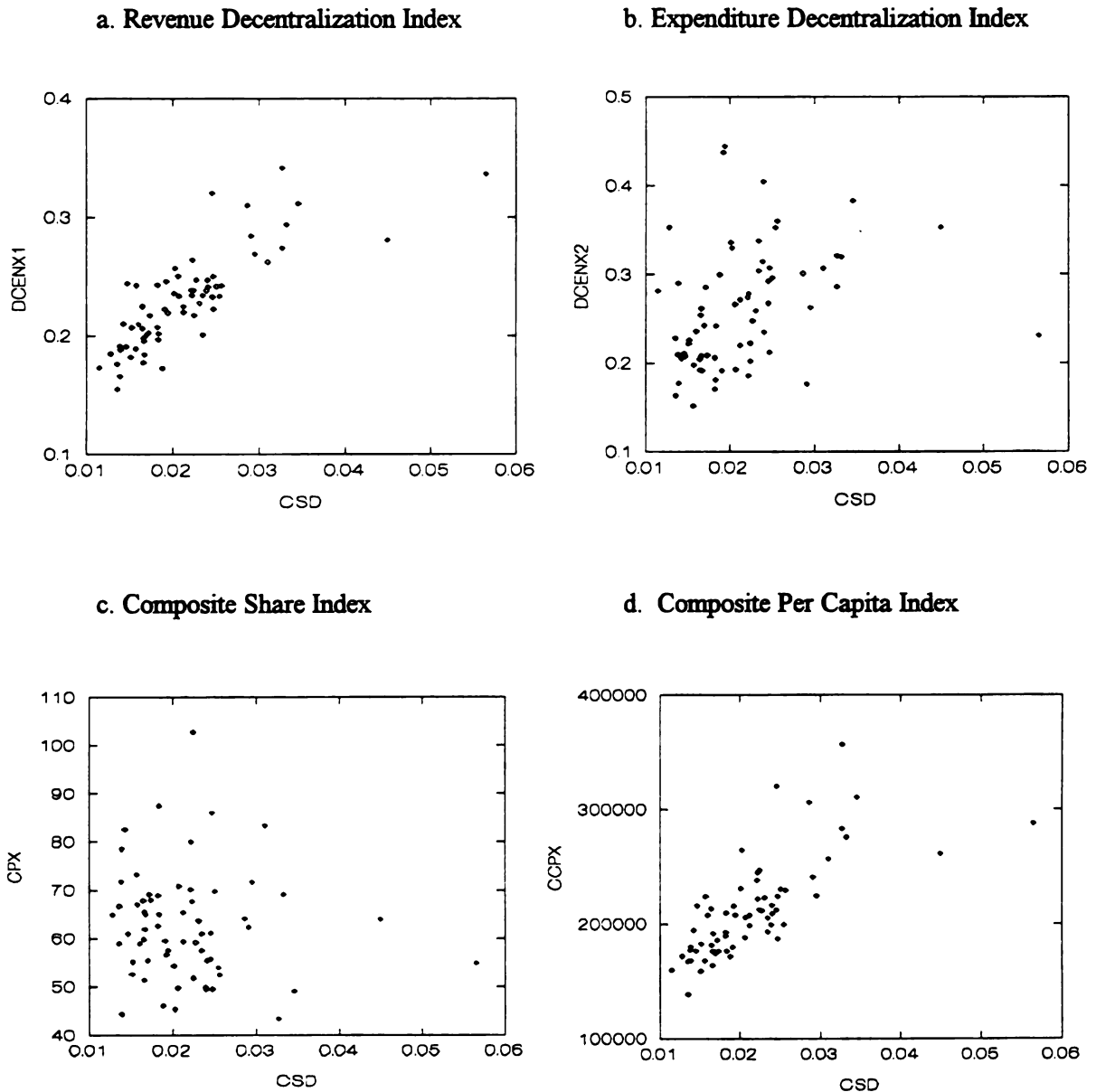
* : Million Won (Won is a unit of Korean money)

Table 5.1 also shows the mean levels of selected local fiscal variables. The mean levels of per capita local residence taxes and per capita local objective taxes (earmarked taxes) in Type I (large-sized cities) are higher than the corresponding mean levels in Type II (mid-sized cities) and Type III (small-sized cities). The mean levels of per capita local borrowings in Type II (mid-sized cities) is lower than the corresponding mean levels in Type I (large-sized cities) and Type III (small-sized cities). The mean levels of per capita non-tax revenues, per capita intergovernmental transfers (local shared tax, national grants, provincial or local subsidy), and standard deviation of per capita local revenues in Type III (small-sized cities) are higher than the corresponding mean levels in Type I (large-sized cities) and Type II (mid-sized cities). The mean levels of per capita property tax, per capita automobile tax, per capita tobacco tax, and per capita comprehensive land tax are poorly differentiated from each other.

The mean level of per capita local expenditures in Type III (small-sized cities) is higher than the corresponding mean levels in Type I (large-sized cities) and Type II (mid-sized cities), for 1993. The mean levels of area, density and per employment in Type I (large-sized cities) are higher than the corresponding mean levels in Type II (mid-sized cities) and Type III (small-sized cities). On the other hand, the mean levels of poverty rate and per capita registered cars in Type III (small-sized cities) are higher than the corresponding mean levels in Type I (large-sized cities) and Type II (mid-sized cities). The mean level of per building floor in Type II (mid-sized cities) is higher than the corresponding mean levels in Type I (large-sized cities) and Type III (small-sized cities).

This result shows that the fiscal structures of Korean cities differ from one another by city size. The heterogeneous fiscal structures of Korean cities may cause the interlocal

**Figure 5.1: Differences in Local Financial Self-Sufficiency
by Revenue Diversification**



* DCENX1: Revenue Decentralization Index
CPX: Composite Share Index

DCENX2: Expenditure Decentralization Index
CCPX: Composite Per Capita Index

**CSD: Standard Deviation of Per Capita Amounts in Local Revenue Sources

differences in the mixes of local revenue sources. In addition, some variations in the degree of local financial self-sufficiency also exist in 1993, as Table 5.1 indicates. Therefore, these interlocal differences in the mixes of local revenue sources may be structurally related to differences in the degree of local financial self-sufficiency.

Figure 5.1 illustrates the differences in the degree of local financial self-sufficiency in Korea by plotting the differences in fiscal indices against the extent of revenue diversification, which is expressed by standard deviation of per capita amounts in local revenue sources. The graphs show a positive relationship between indices of local financial self-sufficiency and the extent of standard deviation of per capita amounts in local revenue sources.

2. Regression Results

This study can test the null hypothesis that each city's financial status is the same for the year of 1993. Based on preliminary regressions run for the purpose of testing this hypothesis, this study performed F tests. These tests indicated that the null hypothesis of homogeneous structures could not be accepted for the 1993 sample. This study determined where fiscal differences accrued, additional socioeconomic variables were included in the regression equation.

The results of the 1993 data refute the hypothesis that per capita fiscal outcomes are the same regardless of city type. On the basis of the test performed, however, this study cannot ascertain whether the non-homogeneity in Korean cities' fiscal structure is primarily a consequence of the fact that most cities are faced with different

socioeconomic and demographic conditions or, rather, are due to the different constraints for revenue mobilization. This study observed some differences in per capita outcomes of local fiscal revenue sources; revenue mix differences may lead to different behavioral parameters and city preferred revenue levels. The conclusion is that these fiscal differences are not due to the socioeconomic profile of the community but, rather, are due to differences in the resource constraints for revenue mobilization.

The data of each city were analyzed so as to determine whether the fiscal structural coefficients were different across local governments (cities). Following the multiple regression procedure used for determining a local government's fiscal structural difference, this study concluded that differences in the magnitude of some local revenue bases caused the differences in the degree of local financial self-sufficiency across cities in Korea. In particular, the differences in the per capita amounts of automobile tax (TAUTO), the per capita amounts of synthesis land tax (TSL), the per capita amounts of miscellaneous revenue (MR), and the degree of revenue diversification (SD) correlated to the differences in the degree of local financial self-sufficiency in Korea during 1993.

Model I only considers local fiscal variables to identify the relationship between local fiscal factors and the degree of local financial self-sufficiency. In Model II, this study expands the independent variables, which explain the external funding sources including intergovernmental transfers and local borrowings. In Model III, socioeconomic variables, which may affect the degree of local financial self-sufficiency, are included. The socioeconomic variables are per capita employment levels (EMP), per capita low-income people (POV), per capita cars registered (CAR), per capita permitted building floor area (BLD), city age (HIS), and density (DENSITY). In addition, the Model III

tries to identify the differences in the degree of local financial self-sufficiency by constructing a new variable of “REG_{*i*}” (Region or Province). The “REG_{*i*}” is a dummy variable which stands for each of the regions in Korea, such as, Gyeonggi, Gangwon, Chungchung, Jeonra, Gyeongsang. These regression models yielded the coefficient estimates presented in Tables 5.2, 5.3, 5.4, and 5.5. Listed for each of the three models are the coefficient’s estimates and their t-values, squared multiple R, and F values.

1) Determinants of the Revenue Decentralization (DCENX1)

Table 5.2 presents the relationship between the revenue decentralization measures and the per capita amounts of local revenue sources. This includes regression coefficients for three kinds of fiscal models such as the closed model (Model I), the open model (Model II), and the extended model (Model III). These models have strong explanatory power. The R² statistics of the models I, II, and III are 0.922, 0.945, and 0.965 respectively.¹ The F statistics of these models are 24.198, 27.220, and 22.100 respectively.² The results for the three models are virtually identical. The per capita external local revenue such as per capita local shared tax (ST), per capita national grants (GN), per capita provincial and local subsidies (GP), and per capita local borrowings (LBOR), and socioeconomic variables have no systematic effect on coefficient estimates for the remaining variables.

¹ The R² statistics give the proportion explained by the regression linear model.

² The F statistics indicate that the data are appropriately fitted to the regression model.

Table 5.2: Determinants of Local Financial Self-Sufficiency (DCENX1)

VARIABLE	MODEL I	MODEL II	MODEL III
CONSTANT	2.084 (4.432)	2.401 (5.703)	2.536 (4.308)
TH	0.026 (0.729)	-0.011 (-0.294)	-0.046 (-1.021)
TBM	0.084 ** (1.736)	0.072 * (1.552)	0.072 (1.284)
TAUTO	0.047 (0.680)	0.130 ** (1.965)	0.186 ** (2.361)
TFAR	-0.002 (-1.061)	-0.002 (-1.292)	-0.002 (-1.113)
TBUT	0.003 (1.137)	0.004 * (1.364)	0.002 (0.597)
TET	0.070 (1.016)	0.052 (0.854)	0.104 (0.920)
TSL	0.052 ** (2.046)	0.066 *** (2.679)	0.078 *** (2.833)
PRENT	0.017 (1.181)	0.015 (1.125)	0.017 (1.039)
GRENT	0.003 (0.291)	0.008 (0.776)	0.020 * (1.555)
FEE	0.063 * (1.328)	0.071 * (1.483)	0.082 * (1.335)
FR	0.001 (0.291)	0.002 (0.565)	-0.001 (-0.382)
CG	0.002 (0.084)	-0.002 (-0.079)	0.009 (0.262)
INTR	-0.014 (-0.661)	-0.009 (-0.477)	0.009 (0.423)
CPD	0.002 (0.280)	0.001 (0.150)	0.004 (0.590)
LTPY	-0.063 (-0.821)	-0.103 * (-1.477)	-0.141 ** (-1.886)
CONT	0.004 (1.161)	0.003 (1.038)	0.003 (0.562)
LCOLL	0.005 * (1.623)	0.006 ** (1.796)	-0.001 (-0.213)
TRF	-0.008 ** (-2.077)	-0.005 * (-1.516)	-0.006 * (-1.567)
ALLO	0.003 (0.871)	0.001 (0.290)	0.002 (0.434)
MR	0.042 ** (2.382)	0.035 ** (2.168)	0.044 ** (1.788)
LTDPY	0.018 ** (2.140)	0.020 ** (2.403)	0.013 * (1.350)
SD1 (SD)	0.452 *** (4.621)		
ST		-0.009 (-0.823)	-0.004 (-0.271)
GN		0.032 ** (1.740)	0.012 (0.523)

GP		-0.011	0.004
		(-0.683)	(0.147)
LBOR		-0.003	-0.004
		(-0.701)	(-0.926)
SD		0.514 ***	0.538 ***
		(5.830)	(4.787)
EMP			0.032 *
			(1.342)
CAR			-0.008
			(-0.322)
POV			-0.001
			(-0.047)
BLD			-0.021
			(-0.908)
REG1			-0.080
			(-0.757)
REG2			0.014
			(0.147)
REG3			0.069
			(0.746)
REG4			0.074
			(0.878)
REG5			0.030
			(0.383)
HIS			0.085
			(1.213)
DENSITY			0.015
			(0.601)
R ²	0.922	0.945	0.965
F	24.198	27.220	22.100

Note: t values are in parentheses.

*, **, and *** indicate significance at 10%, 5%, and 1% level respectively.

It is interesting to note that the coefficient estimates for standard deviations of per capita amounts in local revenue sources (SD) are significantly different from zero. This means that some specialized local revenue sources are highly related to the degree of local financial self-sufficiency. This analysis rejects the ‘external fund shifting hypothesis’ and ‘socioeconomic influence hypothesis’ in favor of a perceived ‘local fiscal benefit hypothesis.’ Since the three models produce such similar results, the following discussion will focus on the linear model, Model I.

The results have interesting implications regarding the relationship between the degree of local financial self-sufficiency and the mix of local own-source revenues. In the closed model (Model I), the most meaningful revenue in 1993, when considering coefficients of local own-source revenues, is per capita building and machinery tax (TBM), whose coefficient is 0.084 and t-value is 1.736. This value is statistically significant at the five percent level. This building and machinery tax (TBM) has the biggest elasticity (coefficient) to the degree of local financial self-sufficiency, expressed by the revenue decentralization index (DCENX1). This result suggests the amount of change in the per capita building and machinery tax (TBM) will most significantly relate to the change of local financial self-sufficiency.

The elasticity of per capita synthesis land tax (TSL) in 1993 is estimated to be 0.052 and is significantly different from zero ($t=2.046$). This means that per capita synthesis land tax (TSL) is an important variable explaining the degree of local financial self-sufficiency. The revenues from per capita user fees (FEE), per capita local loan collection (LCOLL), per capita miscellaneous (MR), and per capita temporary non-tax revenues in the previous year (LTDPY) have positive and statistically significant coefficients. Therefore, these variables also relate positively to the degree of local financial self-sufficiency, expressed by revenue decentralization index (DCENX1). Although per capita tobacco spending tax (TET) shows relatively high coefficient (0.070), it is not statistically significant. On the whole, per capita revenue that is transferred from other accounts (TRF), is negatively related to the degree of local financial self-sufficiency. Its coefficient is -0.008 and t-value is -2.077, which is statistically significant at the five percent level.

Here lies the most fundamental difference across city governments' financial self-sufficiencies. The elasticity (coefficient) of standard deviation of per capita amounts in local revenue sources (SD) for 1993 is 0.452 and significantly different from zero at a 0.01 significance level. This means that standard deviation of per capita amounts in local revenue sources (SD) is the most important variable, which is related to the degree of local financial self-sufficiency.

Considering external financing variables, such as local shared tax (ST), national grants (GN), provincial and local subsidy (GP), and local borrowings (LBOR), Model II explains the relationships between these local fiscal variables and the degree of local financial self-sufficiency (DCENX1). The open model (Model II) reveals that per capita automobile tax (TAUTO) and per capita synthesis land tax (TSL) relate positively to the local financial self-sufficiency expressed by revenue decentralization index (DCENX1). The coefficients of per capita automobile tax (TAUTO) and per capita synthesis land tax (TSL) for the open model (Model II) are 0.130 and 0.066 respectively. Both coefficients are statistically significant at the one percent level.

Generally, local shared tax (ST) as a kind of revenue sharing was negatively correlated with local wealth. In Korea, a main purpose of local shared tax is to sustain local fiscal balance of the poor localities, which cannot raise enough revenue to operate general governmental functions. During 1993, in Korea, the degree of local financial self-sufficiency was positively correlated with wealth. This correlation may make it difficult to identify the effect of changes in local shared tax on the degree of local financial self-sufficiency. Therefore, cities in Korea may have resisted increasing

spending in response to such aid revenues as local shared tax so to avoid large future tax increases should the aid formula change significantly.

Most national grants in Korea are matching grants, which require some amount of revenue from the city government. The coefficient for per capita national grants (GN), which is a kind of conditional grant, is positive and significantly different from zero. Its elasticity estimate is 0.032 and t-value is 1.740. Out of external sources, the differences in the per capita amount of this source are only related to the differences in local financial self-sufficiency (DCENX1) over cities. This result verifies, indirectly, the flypaper effect of the national grant in Korea.

Model III explains that the differences in socioeconomic variables are not related to the differences in the local financial self-sufficiency over cities. Similar to Model I and Model II, the differences in standard deviation of per capita amounts in local revenue sources (SD), per capita automobile tax (TAUTO), per capita synthesis land tax (TSL), and per capita miscellaneous revenue (MR) are positively related to the local financial self-sufficiency.

2) Determinants of the Expenditure Decentralization (DCENX2)

Table 5.3 shows that the results of three regression equations explain the relationship between the per capita amounts of local revenue sources and the extent of expenditure decentralization (DCENX2) as a measure of the local financial self-sufficiency. The three models bring different results. As Table 5.3 shows, socioeconomic variables such as per capita employment levels (EMP), per capita low-

income people (POV), per capita cars registered (CAR), per capita permitted building floor area (BLD), city age (HIS), density (DENSITY), and regions (REG_i) have systematic effects on coefficient estimates for the remaining fiscal variables. It is important to note that the coefficient estimates for per capita cars registered (CAR), density (DENSITY), and regions of Gyeonggi (REG_1), Gangwon (REG_2), and Chungchung (REG_3) are significantly different from zero. This analysis may accept the ‘socioeconomic influence hypothesis’ rather than a perceived ‘local fiscal benefit hypothesis’ and ‘external fund shifting hypothesis.’

The extended model (Model III) shows unique results, which explain how socioeconomic factors relate to the degree of expenditure decentralization (DCENX2). Compared to fiscal variables, socioeconomic variables are more closely related to the degree of expenditure decentralization in Korea. First of all, dummy variables (REG_i) of regions have high estimated coefficients. The estimated coefficients for Gyeonggi (REG_1), Gangwon (REG_2), and Chungchung (REG_3) are also statistically significant. On the other hand, the estimated coefficients for Jeonra (REG_4) and Gyeongsang (REG_5) are not statistically significant, even though their values are relatively high. The results for the extended model (Model III) argue that the regional factor in Korea is closely related to the degree of local expenditure decentralization (DCENX2).

Per capita cars registered (CAR) is an important factor for the expenditure decentralization (DCENX2) and statistically significant at the one percent level. It means that there is a positive relationship between the increase in cars registered and the increases in local expenditure. Per capita low-income people (POV) also show a positive coefficient but this is not statistically significant. It is interesting that per capita

Table 5.3: Determinants of Local Financial Self-Sufficiency (DCENX2)

VARIABLE	MODEL I	MODEL II	MODEL III
CONSTANT	1.164 (1.083)	1.714 (1.737)	2.065 (2.000)
TH	-0.084 (-1.033)	-0.022 (-0.265)	0.087 (1.108)
TBM	-0.228 ** (-2.054)	-0.092 (-0.850)	0.106 (1.081)
TAUTO	0.040 (0.249)	0.154 (0.994)	-0.040 (-0.289)
TFAR	0.003 (0.764)	0.002 (0.515)	0.001 (0.283)
TBUT	0.024 *** (3.459)	0.019 *** (2.782)	0.005 (0.780)
TET	0.342 ** (2.168)	0.311 ** (2.160)	0.048 (0.245)
TSL	0.050 (0.853)	0.010 (0.171)	-0.051 (-1.056)
PRENT	0.021 (0.626)	0.027 (0.867)	0.040 * (1.391)
GRENT	-0.013 (-0.509)	-0.005 (-0.220)	-0.021 (-0.946)
FEE	0.246 ** (2.253)	0.070 (0.628)	-0.005 (-0.047)
FR	0.009 * (1.349)	0.007 (1.043)	-0.000 (-0.061)
CG	-0.010 (-0.149)	-0.042 (-0.619)	-0.013 (-0.212)
INTR	-0.077 * (-1.582)	-0.048 (-1.031)	-0.001 (-0.028)
PD	-0.009 (-0.639)	-0.013 (-1.012)	0.004 (0.356)
LTPY	-0.048 (-0.271)	-0.211 * (-1.296)	-0.165 (-1.256)
CONT	0.008 (0.873)	0.005 (0.626)	0.001 (0.092)
LCOLL	0.024 *** (3.401)	0.011 * (1.350)	0.001 (0.187)
TRF	-0.002 (-0.255)	0.000 (0.022)	-0.002 (-0.270)
ALLO	-0.013 * (-1.567)	-0.006 (-0.768)	0.003 (0.488)
MR	0.010 (0.247)	-0.003 (-0.088)	0.001 (0.032)
LTDPY	-0.018 (-0.936)	-0.008 (-0.427)	-0.012 (-0.709)
SD1 (SD)	0.444 ** (1.985)		
ST		0.043 ** (1.741)	0.008 (0.340)
GN		0.045 (1.061)	0.005 (0.130)

GP		0.050	0.122 ***
		(1.278)	(2.756)
LBOR		-0.000	0.004
		(-0.030)	(0.536)
SD		0.504 ***	0.348 **
		(2.438)	(1.765)
EMP			-0.055 *
			(-1.329)
CAR			0.143 ***
			(3.137)
POV			0.063
			(1.268)
BLD			-0.011
			(-0.262)
REG1			0.510 ***
			(2.744)
REG2			0.388 **
			(2.320)
REG3			0.473 ***
			(2.905)
REG4			0.168
			(1.137)
REG5			0.152
			(1.104)
HIS			-0.046
			(-0.374)
DENSITY			-0.113 ***
			(-2.535)
R ²	0.765	0.826	0.937
F	6.652	7.495	12.097

Note: t values are in parentheses.

*, **, and *** indicate significance at 10%, 5%, and 1% level respectively.

employment levels (EMP) and density (DENSITY) are negatively related to the degree of expenditure decentralization (DCENX2) and statistically significant. Per capita permitted building floor area (BLD) and city age (HIS) show negative coefficients but are not statistically significant. These results may explain, indirectly, that the local fiscal decisions are related to the geographical differences, rather than the economic differences.

For fiscal variables, some detailed discussion will follow. The estimated coefficients of standard deviation of per capita amounts in local revenue sources (SD) are 0.444, 0.504, and 0.348 for Model I, Model II, and Model III respectively. These coefficient values are high and statistically significant. The high degree of standard deviation (SD) means that local revenue sources are not diversified. Thus, these results show that there is some specialized local revenue sources strikingly contributing to the degree of local financial self-sufficiency throughout Korean cities.

In general, the roles of local fiscal variables for expenditure decentralization (DCENX2) are not clear in these three estimation equations. The estimated coefficients of tobacco spending tax (TET) as consumption tax are 0.342 and 0.311 for Model I and Model II respectively. They are highly positive and statistically significant. Models I and II show that per capita butchery tax (TBUT), per capita revenues from service fees (FEE), and per capita local loan collections (LCOLL) are positively and significantly related to the degree of expenditure decentralization (DCENX2). However, per capita residence tax (TH), per capita buildings and machinery tax (TBM) and per capita interest revenues (INTR) are negatively related to the degree of expenditure decentralization (DCENX2). In addition, per capita synthesis land tax (TSL) as an example of wealth-based tax seems not to be clearly related to expenditure decentralization.

For external local revenue variables such as local shared tax (ST), national grants (GN), provincial and local subsidies (GP), and local borrowings (LBOR), the results of the open model (Model II) are not in accordance with the results of the extended model (Model III). In Model II, intergovernmental transfer payments (ST, GN, and GP) are positively related to the degree of expenditure decentralization (DCENX2). Out of

external financing variables, only the coefficient of per capita local shared tax (ST) is statistically significant at the ten percent level. On the while, Model III shows that only the coefficient of per capita provincial and local subsidies (GP) is 0.132 and statistically significant at the one percent level.

3) Determinants of the Composite Share Index (CPX)

Composite share index (CPX) equation results are presented in Table 5.4, with separate models for local fiscal variables and socioeconomic variables. These results argue that some local fiscal variables have remarkable effects on the degree of local financial self-sufficiency, when measured by the composite share index (CPX). On the other hand, socioeconomic variables have no important effects on coefficient estimates for the remaining fiscal variables. Therefore, this analysis for the composite share index (CPX) rejects the ‘socioeconomic influence hypothesis’ in favor of a perceived ‘local fiscal benefit hypothesis.’

The estimated coefficients of standard deviation of per capita amounts in local revenue sources (SD) are 0.801, 1.096, and 1.035 for Model I, Model II, and Model III respectively. The coefficients are very high and statistically significant at the one percent level. The high degree of standard deviation (SD) means that there is a low degree of revenue diversification. Therefore, according to the results in Table 5.4, some specialized local revenue sources are highly associated with the degree of local financial self-sufficiency, when measured by the composite share index (CPX).

Table 5.4: Determinants of Local Financial Self-Sufficiency (CPX)

VARIABLE	MODEL I	MODEL II	MODEL III
CONSTANT	10.404 (4.162)	10.687 (4.190)	11.499 (2.911)
TH	-0.169 (-0.893)	-0.116 (-0.533)	-0.123 (-0.408)
TBM	0.292 (1.130)	0.233 (0.830)	0.399 (1.062)
TAUTO	1.052 *** (2.838)	1.108 *** (2.773)	1.534 *** (2.909)
TFAR	0.002 (0.189)	-0.003 (-0.290)	0.007 (0.557)
TBUT	-0.003 (-0.188)	0.003 (0.160)	-0.003 (-0.119)
TET	-0.242 (-0.659)	-0.204 (-0.547)	0.759 (1.003)
TSL	0.042 (0.308)	0.003 (0.022)	-0.091 (-0.490)
PRENT	0.059 (0.758)	0.065 (0.821)	-0.015 (-0.134)
GRENT	-0.131 ** (-2.159)	-0.131 ** (-2.060)	-0.148 ** (-1.720)
FEE	0.218 (0.857)	0.385 * (1.328)	-0.078 (-0.190)
FR	-0.001 (-0.053)	-0.006 (-0.335)	-0.002 (-0.075)
CG	-0.335 ** (-2.154)	-0.447 *** (-2.543)	-0.468 ** (-2.054)
INTR	0.202 ** (1.780)	0.208 ** (1.729)	0.304 ** (2.181)
PD	-0.055 ** (-1.765)	-0.071 ** (-2.093)	-0.050 (-1.089)
LTPY	-1.039 *** (-2.530)	-1.116 *** (-2.650)	-1.132 ** (-2.257)
CONT	0.008 (0.407)	0.004 (0.198)	0.022 (0.720)
LCOLL	0.014 (0.842)	0.008 (0.392)	0.014 (0.479)
TRF	-0.001 (-0.059)	-0.005 (-0.222)	0.017 (0.675)
ALLO	0.005 (0.270)	0.004 (0.183)	-0.005 (-0.211)
MR	0.138 * (1.456)	0.114 (1.175)	-0.025 (-0.151)
LTDPY	0.038 (0.836)	0.005 (0.107)	0.049 (0.735)
SD1 (SD)	0.801 * (1.539)		
ST		0.039 (0.602)	-0.042 (-0.470)
GN		-0.104	-0.092

		(-0.944)	(-0.617)
GP		-0.137 *	0.044
		(-1.352)	(0.261)
LBOR		-0.027	-0.009
		(-1.245)	(-0.332)
SD		1.096 **	1.035 *
		(2.052)	(1.373)
EMP			-0.245 *
			(-1.536)
CAR			0.110
			(0.630)
POV			0.063
			(0.331)
BLD			-0.016
			(-0.100)
REG1			0.104
			(0.146)
REG2			0.068
			(0.106)
REG3			-0.141
			(-0.227)
REG4			0.502
			(0.889)
REG5			-0.038
			(-0.071)
HIS			0.232
			(0.493)
DENSITY			0.061
			(0.360)
R ²	0.489	0.533	0.630
F	1.956	1.803	1.383

Note: t values are in parentheses.

*, **, and *** indicate significance at 10%, 5%, and 1% level respectively.

It is crucial to note that the coefficient estimates for per capita automobile tax (TAUTO), per capita benefit charges for using public facilities (GRENT), per capita intergovernmental grants for collection of national or provincial taxes or charges (CG), per capita revenues from interest earnings on deposits belonging to the bank (INTR), per capita revenues from the sale of government property (PD), and per capita carry-over of annual surplus (LTPY) are significantly different from zero. Out of these variables, per

capita automobile tax (TAUTO) and per capita revenues from interest earnings on deposits belonging to the bank (INTR) relate positively to the degree of local financial self-sufficiency. On the other hand, per capita benefit charges for using public facilities (GRENT), per capita intergovernmental grants for collection of national or provincial taxes or charges (CG), per capita revenues from the sale of government property (PD), and per capita carry-over of annual surplus (LTPY) relate negatively to the degree of local financial self-sufficiency.

Per capita automobile tax (TAUTO) coefficients are 1.052, 1.108, and 1.534 for the closed model (Model I), the open model (Model II), and the extended model (Model III) respectively. The coefficients are very high and statistically significant at the one percent level. These values verify that per capita automobile tax (TAUTO) is the most closely related to the degree of local financial self-sufficiency (CPX). Per capita tax on building and machinery (TBM) for the three models shows relatively high coefficients (0.292, 0.233, and 0.399 respectively), but are not statistically significant. The coefficients for per capita residence tax (TH) are relatively high with a negative sign. However, the values are not statistically significant. Per capita tobacco spending tax (TET) coefficients for the closed model (Model I) and the open model (Model II) also are relatively high, both being negative - about -0.242 and -0.204. The values, however, are statistically insignificant. In the case of per capita synthesis land tax (TSL), the coefficients do not show remarkable results.

The coefficients for per capita revenues from interest earnings on deposits belonging to the bank (INTR) are 0.202, 0.208, and 0.304 for Model I, Model II, and Model III respectively. The coefficients are relatively high and statistically significant at

the five percent level. The per capita revenues from user fees (FEE) and per capita miscellaneous revenues (MR) have significant coefficients for Model II and Model I respectively. Per capita benefit charges for using public facilities (GRENT), per capita intergovernmental grants for collection of national or provincial taxes or charges (CG), and per capita carry-over of annual surplus (LTPY) show negative relationships to the levels of composite share index (CPX). Their coefficients are statistically significant at the five percent level. The coefficients of per capita revenues from the sale of government property (PD) are negative and statistically significant for Model I and Model II.

The open model (Model II), considering external financing variables, such as per capita local shared tax (ST), per capita national grants (GN), per capita provincial and local subsidy (GP), and per capita local borrowings (LBOR), shows that there are no significant relationships at the levels of composite share index (CPX), except per capita provincial and local subsidy (GP), which has a negative coefficient of -0.137 . In Korean cities, per capita local shared taxes (ST) are positively related to the levels of composite share index (CPX), but are not statistically significant. Per capita national grants (GN) and per capita local borrowings (LBOR) have also negative coefficients, but are statistically insignificant.

Model III indicates that the differences in socioeconomic variables are not closely related to the differences in the levels of composite share index (CPX) throughout Korean cities. Only employment level (EMP) has a statistically significant coefficient of -0.245 . Per capita cars registered (CAR), per capita low-income people (POV), city age (HIS), Gyeonggi region (REG₁), Gangwon region (REG₂), and Jeonra region (REG₄) show

positive coefficients, but are statistically insignificant. On the other hand, the coefficients of per capita building floor (BLD), Chungchung region (REG₃), and Gyeongsang (REG₅) are negative but are not statistically significant.

4) Determinants of the Composite Per Capita Index (CCPX)

Table 5.5 presents the results of three equations for composite per capita index (CCPX) as a measure of the degree of local financial self-sufficiency. These results point out that some of the local fiscal variables play important roles in the level of composite per capita index (CCPX) in Korean cities. External variables and socioeconomic variables have no important effects on coefficient estimates for the local fiscal variables. Thus, this analysis for composite per capita index (CCPX) rejects the ‘external fund shifting hypothesis’ and the ‘socioeconomic influence hypothesis’ in favor of a perceived ‘local fiscal benefit hypothesis.’

The differences in the per capita amounts of local revenue sources are closely related to the differences in the levels of composite share index (CCPX). The estimated coefficients of standard deviation of per capita amounts in local revenue sources (SD) are 0.656, 0.608, and 0.609 for Model I, Model II, and Model III respectively. The coefficients are remarkably high and statistically significant at the one percent level. The high degree of standard deviation (SD) in a given city means that there is some specialized revenue sources that raise local total revenues. Therefore, the high coefficients of standard deviation of per capita amounts in local revenue sources (SD)

Table 5.5: Determinants of Local Financial Self-Sufficiency (CCPX)

VARIABLE	MODEL I	MODEL II	MODEL III
CONSTANT	16.633 (35.105)	16.837 (40.855)	16.712 (33.862)
TH	0.037 (1.032)	0.037 (1.060)	0.056 * (1.497)
TBM	-0.035 (-0.719)	-0.003 (-0.063)	0.009 (0.197)
TAUTO	0.118 ** (1.679)	0.221 ** (3.422)	0.224 *** (3.404)
TFAR	0.000 (0.223)	0.001 (0.644)	0.002 * (1.335)
TBUT	0.007 ** (2.268)	0.004 * (1.476)	0.004 (1.279)
TET	0.144 ** (2.064)	0.113 ** (1.872)	0.273 *** (2.885)
TSL	0.082 *** (3.178)	0.090 *** (3.721)	0.063 *** (2.710)
PRENT	0.002 (0.129)	-0.000 (-0.036)	-0.017 (-1.207)
GRENT	-0.002 (-0.177)	0.005 (0.488)	0.002 (0.140)
FEE	0.093 ** (1.922)	-0.002 (-0.047)	-0.047 (-0.909)
FR	0.003 (0.944)	0.003 (1.113)	0.002 (0.598)
CG	0.063 ** (2.146)	0.076 *** (2.685)	0.088 *** (3.091)
INTR	-0.009 (-0.438)	0.009 (0.487)	0.018 (1.021)
PD	-0.005 (-0.766)	-0.004 (-0.791)	0.003 (0.438)
LTPY	-0.208 *** (-2.668)	-0.242 *** (-3.551)	-0.230 *** (-3.679)
CONT	0.005 * (1.376)	0.002 (0.535)	0.004 (0.959)
LCOLL	0.011 *** (3.481)	0.006 ** (1.810)	0.003 (0.753)
TRF	-0.005 (-1.190)	0.001 (0.210)	-0.001 (-0.185)
ALLO	-0.007 ** (-2.034)	-0.006 ** (-1.724)	-0.003 (-1.157)
MR	0.078 *** (4.336)	0.064 *** (4.099)	0.029 * (1.425)
LTDPY	0.006 (0.693)	0.013 * (1.624)	0.003 (0.364)
SD1 (SD)	0.656 *** (6.648)		
ST		0.010 (1.008)	-0.003 (-0.292)
GN		0.058 ***	0.034 **

		(3.293)	(1.854)
GP		0.019	0.016
		(1.182)	(0.751)
LBOR		0.003	0.005 *
		(0.873)	(1.473)
SD		0.608 ***	0.609 ***
		(7.048)	(6.467)
EMP			-0.018
			(-0.888)
CAR			-0.025
			(-1.128)
POV			0.029
			(1.232)
BLD			0.001
			(0.037)
REG1			-0.050
			(-0.559)
REG2			-0.030
			(-0.375)
REG3			-0.051
			(-0.661)
REG4			0.096 *
			(1.367)
REG5			0.015
			(0.221)
HIS			0.080 *
			(1.354)
DENSITY			-0.040 **
			(-1.859)
R ²	0.951	0.967	0.984
F	39.347	46.524	51.406

Note: t values are in parentheses.

*, **, and *** indicate significance at 10%, 5%, and 1% level respectively.

argue that the levels of the composite per capita index (CCPX) are highly related to the differences in the amounts of some specialized revenue sources. Out of local revenue sources, automobile tax (TAUTO), tobacco spending tax (TET), synthesis land tax (TSL), and intergovernmental grants for collection of national or provincial taxes or charges (CG) show positive relations, while carry-over of annual surplus (LTPY) shows negative relations, to the levels of the composite per capita index (CCPX).

Per capita automobile tax (TAUTO) coefficients are 0.118, 0.221, and 0.224 for the closed model (Model I), the open model (Model II), and the extended model (Model III) respectively. The coefficients are relatively high and statistically significant at the five percent level for Models I and II, and the one percent level for Model III. These results suggest that the automobile tax (TAUTO) may be the most important source to raise local revenue in a given Korean city. Per capita tobacco spending tax (TET) coefficients are 0.114, 0.113, and 0.273 for the closed model (Model I), the open model (Model II), and the extended model (Model III) respectively. The values of coefficients are relatively high and statistically significant at the five percent level for Models I and II, and the one percent level for Model III. Per capita synthesis land tax (TSL) is positively related to the levels of composite per capita index (CCPX). Its coefficients are 0.082, 0.090, and 0.063 for Models I, II, and III respectively, and are statistically significant at the one percent level for all models.

Per capita butchery tax (TBUT) shows statistically significant relations with positive coefficients for Models I and II. The coefficients of residence tax (TH) are relatively high with a positive sign. However, the values are not statistically significant, except for Model III. Taxes on building and machinery (TBM) for Models I and II show negative coefficients (-0.035 and -0.003 respectively) but are not statistically significant.

The coefficients of per capita intergovernmental grants for collection of national or provincial taxes or charges (CG) are 0.063, 0.076, and 0.088 for Models I, II, and III respectively. The values of coefficients are positive and statistically significant at the five percent level for Model I, and the one percent level for Models II and III. Per capita miscellaneous revenues (MR) are positively related to the levels of the composite per

capita index (CCPX). Its coefficients are relatively high with 0.078, 0.064, and 0.029 for Models I, II, and III respectively. The coefficient of per capita user fees (FEE) for Model I is statistically significant with 0.093, but its coefficients are negative for Models II and III. The coefficients of per capita revenues from loan collections (LCOLL) are positive for Models I and II, and are statistically significant. The revenues from per capita voluntary contribution (CONT) have significant and positive coefficients for Model I.

On the other hand, per capita carry-over of annual surplus (LTPY) shows a negative relationship with respect to composite per capita index (CCPX) with high coefficients of -0.208, -0.242, and -0.230 for Models I, II, and III respectively. Also, the coefficients of per capita revenue of allotment (ALLO) are negative and statistically significant at the five percent level for Models I and II.

For external financing variables, per capita national grants (GN) show positive and significant results. Its coefficients are 0.058 (significance at the one percent level) and 0.034 (significance at the five percent level) for Models II and III respectively. Per capita local borrowings (LBOR) have a positive and statistically significant coefficient (0.005) for only Model III. These results may say the national grants (GN) and local borrowings (LBOR) are positively related to the levels of the composite per capita index (CCPX).

The extended model (Model III), considering socioeconomic variables, points out that the differences in socioeconomic variables may not be closely related to the differences in the levels of composite per capita index (CCPX) across Korean cities. Only city age (HIS) and Jeonra region (REG₄) have statistically significant and positive coefficients of 0.080 and 0.096 at the ten percent significance level. On the other hand,

population density (DENSITY) is negatively related to the levels of the composite per capita index (CCPX) at the five percent significance level. In addition, the coefficients of per capita lower income people (POV), per capita building floor (BLD), and Gyeongsang (REG₅) are positive but not statistically significant. Per capita cars registered (CAR), per capita employment level (EMP), Gyeonggi region (REG₁), Gangwon region (REG₂), and Chungchung region (REG₃) show negative coefficients, but are statistically insignificant.

III. Summary of Findings

The estimated coefficients presented in the previous section argue that there are strong relationships between the degree of local financial self-sufficiency and the mix of local revenue sources in Korea. In general, the results of the empirical analysis support the initial hypothesis that, in a given city, the level of local revenue diversification relates positively to the degree of local financial self-sufficiency. This analysis also tests the subsets of hypotheses that the interlocal differences in the reliance on each local revenue source explains the differences in the level of local financial self-sufficiency.

This analysis, however, provides some difficulties for the interpretation of the estimated coefficients for each local fiscal variable related to the multiplicity of measures for the degree of local financial self-sufficiency. It is hard to generalize the role of each of the four dependent variables such as the revenue decentralization index (DCENX₁), the expenditure decentralization index (DCENX₂), the composite share index (CPX), and the composite per capita index (CCPX). Despite these difficulties, many fiscal variables

show consistent results when estimating their relationship to the degree of local financial self-sufficiency.

This analysis suggests some useful observations on the role of local fiscal variables and socioeconomic variables. First of all, Korean cities have the high degree of coefficient estimates for standard deviation (SD) of per capita amounts in local revenue sources. This means that some of the specialized local revenue sources are highly related to the degree of local financial self-sufficiency. This result of empirical analysis argues that the differences in the mixes of local revenue sources across Korean cities are related to the differences in the degree of local financial self-sufficiency.

The analyses for the revenue decentralization index (DCENX1), the composite share index (CPX), and the composite per capita index (CCPX) reject the ‘external fund shifting hypothesis’ and ‘socioeconomic influence hypothesis’ in favor of a perceived ‘local fiscal benefit hypothesis’. On the while, the analysis for the expenditure decentralization index (DCENX2) accepts the ‘socioeconomic influence hypothesis’ rather than a perceived ‘local fiscal benefit hypothesis’ and ‘external fund shifting hypothesis’.

Out of local taxes, automobile tax (TAUTO), tobacco spending tax (TET), and synthesis land tax (TSL) show positive relationships to the degree of local financial self-sufficiency. Also, as non-tax revenues, miscellaneous revenues (MR), service fee (FEE) revenues, and local loan collections (LCOLL) are positively and significantly related the degree of local financial self-sufficiency. On the while, carry-over of annual surplus (LTPY) shows a negative relationship to the degree of local financial self-sufficiency.

In particular, socioeconomic variables show important roles for only the expenditure decentralization index (DCENX2). In this case, the variables of cars registered (CAR), Gyeonggi region (REG₁), Gangwon region (REG₂), and Chungchung region (REG₃) show positive and significant coefficients. On the other hand, employment level (EMP) and population density (DENSITY) tend to show the negative relationship to the degree of local financial self-sufficiency.

CHAPTER SIX

POLICY IMPLICATIONS AND CONCLUSION

I. Summary

This concluding chapter discusses the overall results, policy implications and limitations of this study, while providing recommendations for further studies. This study analyzed the relationship between the magnitude and mix of local revenue sources and the degree of local financial self-sufficiency in Korea. The results of this study presented the types or mixes of local revenues that were most closely associated with a high degree of local financial self-sufficiency. These results suggest the optimal mix of local revenue sources, which are associated with an increase in the degree of local financial self-sufficiency in Korean local governments.

This study consisted of establishing a theoretical framework for local financial self-sufficiency and analyzing empirical data. This study proposed three types of analytical models: the closed model that considered only locally raised revenue sources, the open model that considered locally raised revenue sources and external funding sources, and the extended model that considered locally raised revenue sources, external funding sources, and socioeconomic variables.

This study developed four types of measurements for the degree of local financial self-sufficiency. The measures are: 1) revenue decentralization index (DCENX1); 2)

expenditure decentralization index (DCENX2); 3) composite share index (CPX); and 4) composite per capita index (CCPX). In particular, the revenue decentralization index (DCENX1) and expenditure decentralization index (DCENX2) explain the degree of local financial self-sufficiency in the context of national-local fiscal relations.

In the multiple regression models, twenty-five local revenue variables were identified as independent variables. Population density, employment levels, poverty levels, registered cars, the total building floor area, and city age were used as socioeconomic variables. Five dummy variables representing regions in which cities are located were employed in the multiple regression models.

The results presented in the preceding chapters reveal some important aspects of local finance in Korea. The estimated coefficients presented in the chapter on empirical analysis argue that there are strong relationships between the degree of local financial self-sufficiency and the mix of local revenue sources in Korea. The degree of local financial self-sufficiency was strongly associated with a limited number of specialized revenue sources. This empirical analysis result argues that the differences in the mixes of local revenue sources across Korean cities are related to differences in the degree of local financial self-sufficiency. However, the results of the empirical analyses did not support the initial hypothesis that, in a given city, the diversified local revenue sources relate positively to the degree of local financial self-sufficiency.

The analyses for the revenue decentralization index (DCENX1), the composite share index (CPX), and the composite per capita index (CCPX) show that there are no close relationships between external funding variables or socioeconomic variables and the degree of local financial self-sufficiency. On the whole, the analysis for the expenditure

decentralization index (DCENX2) demonstrates that there is a relationship between socioeconomic variables and the degree of local financial self-sufficiency.

Out of local taxes, automobile taxes (TAUTO), tobacco spending taxes (TET), and synthesis land taxes (TSL) show positive relationships to the degree of local financial self-sufficiency. Also, such non-tax revenues as miscellaneous revenues (MR), service fees (FEE), and local loan collections (LCOLL) are positively and significantly related to the degree of local financial self-sufficiency. On the other hand, the carry-over of annual surplus (LTPY) shows a negative relationship to the degree of local financial self-sufficiency.

Socioeconomic variables show an important role only for the expenditure decentralization index (DCENX2). In this case, the variables of cars registered (CAR), Gyeonggi region (REG₁), Gangwon region (REG₂), and Chungchung region (REG₃) show positive and significant coefficients. On the other hand, employment level (EMP) and population density (DENSITY) tend to show negative relationships to the degree of local financial self-sufficiency.

II. Policy Implications

The coefficient estimates presented in this study have important policy implications. High coefficient estimates of standard deviation (SD) demonstrate that a few specialized local revenue sources are positively related to the degree of local financial self-sufficiency. The results, however, are inconclusive regarding the impact of the few specialized local revenue sources on the increase in total local revenues. If the

magnitude of the few specialized sources is not related to income or population change, the special revenue sources will not contribute to an increase in the degree of local financial self-sufficiency. In reality, the nature of income inelasticity in local revenue sources may have caused the limited financial capacity of local governments in Korea.

The result indicating that the degree of local financial self-sufficiency is related to a few specialized revenue sources explains why some local governments suffer from a low degree of local financial self-sufficiency. If a local government does not have adequate revenue bases for the specialized sources, this local government is financially in a trap to generate revenues.

In order to achieve the current goal of a high degree of financial self-sufficiency, there may be a need for local, provincial, or national policy reform in Korea. The results of this study can be used to suggest the implications for increasing the degree of local financial self-sufficiency in local governments that possess insufficient revenue source. Good fiscal planning also requires some strategies for mobilizing revenue resources that will shape the fiscal future of a local government.

1. Local Policy Implications

Local governments in Korea need to preserve their revenue options in order to retain individual identity and autonomy. Local governments need to design their own revenue portfolios to extract revenue from the entire local economic base. The designing revenue portfolios will make the optimal mix of local revenue sources possible, thus

increasing local self-sufficiency. The results of this study can help them design an appropriate revenue portfolio.

This study suggests that while local governments are afforded limited flexibility in the setting of tax rates, they can have a significant impact on their tax base. This study further suggests that they should focus on an increase in the wealth-based revenue sources, especially the synthesis land tax bases, which are closely related to the degree of local financial self-sufficiency. For example, appropriate land use planning may be a good strategy for increasing the tax base of local governments. Land use planning is a means of achieving the long-term maximization of land values. By creating zoning and density controls land use planning enables land to move more readily to its highest and best use. Within limits, localities may also choose to promote 'high rateable land uses.' These are land uses that have higher values and therefore contribute more to the tax base. Local governments may need inducements to induce a change to high rateable land uses such as retail and industrial rather than residential.

Infrastructure maintenance and development are also necessary to local fiscal planning because the public capital stock is related to increases in the value of wealth-based revenue sources. Local governments need to cooperate with the national government so that national money can be invested in the local capital stock.

Local governments should improve the administrative skills of wealth-based tax assessment and collection--even though national government has typically had the responsibility for tax rate decisions. These skills include the listing and valuation of property. In reality, the administrative skills vary widely among local governments. The quality of these skills is in general poor. The wealth-based taxation is inherently difficult

and time-consuming. Furthermore, administrators are often inadequately trained. The result of these poor skills at the local level is that some property is not assessed to its full value and assessments are not kept up to date. Furthermore, the degrees to which tax payments are current vary widely among cities. Therefore, the improvement of administrative skills will help increase in the amount of wealth-based tax revenues and improve local self-sufficiency.

Local governments must create strategies to utilize public property, including public land and buildings, in order to obtain long-term financial help for their residents. In managing its property, local governments should continually monitor the potential of all public property to generate rental revenue. This may include the lease and development of public properties. Local governments may sell and lease public properties as incentive programs for industrial and commercial developments.

Local governments should preserve the automobile tax and tobacco tax within their jurisdiction. The automobile tax will be the most desirable source of revenue for local governments because the number of automobiles is rapidly growing, the tax is easily administered, and the burden of taxation is likely to fall on persons with high incomes. A strategy for enhancing the automobile tax base is to sustain a good road system and automobile facilities. The better road systems and automobile facilities will help increase automobile ownership and use within the local jurisdiction.

The tobacco tax will also be useful for local governments to increase their own local revenues. Local governments, however, should pay greater attention to devices that adjust prices for low-income customers in the expanding tobacco tax system, because tobacco taxation tends to be regressive.

For revenue diversification, increasing non-tax revenues is a good choice. With the popularity of telecommunications, including cable systems, local governments may want to consider purchasing and operating a cable system or charging a fee for an exclusive franchise. It may help increase the local revenues.

2. Provincial Policy Implications

Increasing the degree of financial self-sufficiency is a worthy goal, but some localities have such inadequate revenue bases that they will be unable to generate sufficient revenues. Therefore, augmenting local revenue bases is crucial. The expansion of local revenue bases is mainly related to the extent of economic development. Local economic growth requires various types of development projects. In reality, most economic development projects in Korea are large in scale. The effects also spread across local boundaries.

Therefore, it is very difficult for a local government to carry out economic development projects alone. However, economic development may be an appropriate function for provincial governments. Provincial governments can efficiently carry out large-scale economic development projects. These economic development projects, guided by provincial governments, will help increase local revenue bases.

Provincial governments may wish to consider coordinating local land use. In a decentralized governmental system, local governments must be very competitive to obtain and increase local tax bases. For example, local governments may expand excessively commercial land and recreational facilities to increase local revenues. This

inter-local competition will cause inefficient land use in the province or nation.

Therefore, provincial governments should focus their attention on coordinating local land use or development.

Furthermore, provincial governments may introduce a tax base sharing system where a certain percentage of provincial or local taxes are shared with local governments according to some reasonable distribution criteria. This system may be employed for taxes on commercial land and property that is developed by provincial governments, or large-scale economic development projects.

3. National Policy Implications

According to the results of this study, intergovernmental transfer payments, such as local shared taxes, national grants and provincial subsidies, did not show significant relations to the degree of local financial self-sufficiency. The national government, however, must induce desirable local fiscal health and provide for local autonomy, in harmony with the policies of other governmental levels. For example, such incentives as grants from the national government will lead to changes in the level of local resource mobilization.

One objective of national grants may be to positively encourage local authorities to raise their own revenue. An increase in national grants will decrease the tax price of local expenditures and allow local officials to increase their own local taxes. Matching grants may have this effect to the extent that the local contribution is not diverted from other expenditures.

General-purpose grants may well have an inherent incentive element that weights in favor of authorities raising higher levels of per capita revenue. Local shared taxes, as general-purpose grants, have the goal of equalizing expenditures across local governments in Korea. The national government should consider the interlocal differences in the magnitude of growing revenue sources, such as the automobile tax base.

Currently, the transfer of national tax bases to local governments is a hot issue within the decentralizing governmental system in Korea. This tax base reassignment will rely on political decisions to formulate what the new sources of revenues will look like. In addition, the transfer of income and consumption tax bases to local governments is also very difficult in practice. Alternatively, the central government may consider indirect subsidies to local governments. For example, if local residents invest in local property in declining areas, the central government may reduce the income tax of the local residents. This kind of indirect subsidy will bring about increases in the local property values.

III. Limitations and Recommendations

This study was designed to analyze the degree of local financial self-sufficiency by taking a cross-sectional analysis. The results of this cross-sectional analysis may only be relevant for 1993. This study provided the coefficient estimates of local revenue sources with which Korean cities can be compared to each other. Cross-sectional studies have an inherent problem. The results of a cross-sectional analysis are based on

observations made at only one time. Cross-sectional analyses do not provide causal processes that occur over time. Therefore, this analysis may not provide an accurate prediction of the future relationship between the mix of local revenue sources and the degree of local financial self-sufficiency. To elevate the prediction accuracy of this kind of study, time series data and analysis will be needed. Time series data for individual regions could indicate the effect of incentives, correlating changes in the incentive elements with fiscal performance.

For an appropriate revenue choice, a government should consider such policy objectives as economic efficiency, fairness, revenue performance, and low administrative costs. This study focused only on the revenue performance of local revenue sources, and related these to the degree of local financial self-sufficiency. Further study will need to consider these policy objectives in order to arrive at comprehensive solutions.

In comparing revenues across local governments, the need for public services may be important. The need for services may vary from location to location, according to the levels of service provision in previous years. Different local governments may need different levels of new service provisions. Therefore, the analysis of service needs may be necessary for an accurate analysis of financial self-sufficiency in any given local government. Also, many of the local services are intergovernmental. Positive or negative externality exists in providing public services. Thus, the existence of adjacent local governments affects the decision regarding the levels of public services to be provided. The analysis of local financial self-sufficiency might require an economic boundary that considers adjacent communities.

This empirical analysis used data regarding revenues and expenditures, which are products of the local budgeting process. The local budgeting process might be political rather than technical. The political process in local budgeting is very complicated. This study did not extensively consider local political processes in budgeting. Thus, in future studies, the budget process from each local government could be analyzed individually as a case study before it is compared with that of other communities.

BIBLIOGRAPHY

BIBLIOGRAPHY

- Abney, Glenn, and Thomas Lauth. "The Line-Item Veto in the States: An Instrument for Fiscal Restraint or an Instrument for Partisanship?" *Public Administration Review* 35, 1985.
- Advisory Commission on Intergovernmental Relations. *Financing Public Physical Infrastructure*. Washington, D.C.: GPO, 1984.
- Advisory Commission on Intergovernmental Relations. *Studies in Comparative Federalism: Australia, Canada, the United States and West Germany*. Washington, D.C.: GPO, 1981.
- Advisory Commission on Intergovernmental Relations. *Summary and Concluding Observations*. Washington, D.C.: GPO, 1978.
- Agnew, John A. "Political Decentralization and Urban Policy in Italy: From "State-Centred" to "State-Society" Explanation." *Policy Studies Journal* 18 (Spring 1990): 768-7784.
- Ahn, Choong Yong. "Financing Local and Regional Development: The case of the Republic of Korea." B. Prantilla, ed. *Financing Local and Regional Development in Developing Countries*. Nagoya, Japan: United Nations Centre for Regional Development, 1988.
- Aizenman, Joshua and Peter Isard. "Externalities, Incentives, and Failure to Achieve National Objectives in Decentralized Economies." *Journal of Development Economics* 41 (1993): 95-114.
- Akin John S. "Estimates of State Resource Constraints Derived from a Specific Utility Function. An Alternative Measure of Fiscal Capacity. Reply." *National Tax Journal* 38, 4(December 1985): 507-508.
- Akin, John S. "Estimates of State Resource Constraints Derived from a Specific Utility Function: An Alternative Measure of Fiscal Capacity." *National Tax Journal* 32, 1979.

- Akin, John S. "Fiscal Capacity and the Estimation Method of the Advisory Commission on Intergovernmental Relations." *National Tax Journal* 26, 1971.
- Akin, John S. "Fiscal Capacity and the Estimation Method of the Advisory Commission on Intergovernmental Relations." *National Tax Journal* 26, 2 (June 1973): 275-291.
- Ali, Agha Iqbal, Catherine S. Lerme, and Robert A. Nakosteen. "Assessment of Intergovernmental Revenue Transfers." *Socio-Economic Planning Science* 27, 2 (1993): 109-118.
- Anton, Thomas J. *American Federalism & Public Policy*. New York, New York: Random House, 1989.
- Aronson, J. Richard, and Arthur E. King. "Is There a Fiscal Crisis Outside of New York?" *National Tax Journal* 31, 2 (June 1978): 153-163.
- Aronson, J. Richard, and Eli Schwartz. "Financing Public Goods and the Distribution of Population in a System of Local Governments." *National Tax Journal* 26, 2 (June 1973): 137-160.
- Aronson, J. Richard, and Schwartz Eli. eds. *Management Policies in Local Government Finance*. Washington, D.C.: The International City Management Association, 1987.
- Auten, Gerald E. and Edward H. Robb. "A General Model for State Tax Revenue Analysis." *National Tax Journal* 29, 4 (December 1976): 422-435.
- Axelrod, Donald. *A Budget Quartet: Critical Policy and Management Issues*. New York: Martin's Press, 1989.
- Bahl, R. W. and J. F. Linn. "The Assignment of Local Government Revenues in Developing Countries." in C. E. McClure, ed.. *Tax Assignment in Federal Countries*. Canberra: Australian National University, 1983.
- Bahl, R. W. and J. F. Linn. *Urban Public Finance in Developing Countries*. New York, NY: Oxford University Press, 1992.
- Bahl, R. W., J. Miner, and L. Schroeder. "Mobilizing Local Resources in Developing Countries." *Public Administration and Development*. Vol. 4 (1984): 215-230.
- Bahl, Roy and Johannes Linn. "Fiscal Decentralization and Intergovernmental Transfers in Less Developed Countries." *Publius: The Journal of Federalism* 24 (Winter 1994): 1-19.

- Bahl, Roy W. and Walter Vogt. *Fiscal Centralization and Tax Burdens: State and Regional Financing of City Services*. Cambridge, Massachusetts: Nallinger Publishing Company, 1975.
- Bahl, Roy W., Richard D. Gustely, and Michael J. Wasylenko. "The Determinants of Local Government Police Expenditures: A Public Employment Approach." *National Tax Journal* 31, 1 (March 1978): 67-79.
- Bahl, Roy, and David Puryear. "Regional Tax Base Sharing: Possibilities and Implications." *National Tax Journal* 29, 3 (September 1976): 328-335.
- Bahl, Roy, Bernard Jump, and Larry Schroeder. "The Outlook for City Fiscal Performance in Declining Regions." in *The Fiscal Outlook for Cities*, ed. by Roy Bahl. pp. 1-48. Syracuse: Syracuse University Press, 1982.
- Bailey, Robert W. *The Crisis Regime*. Albany, N.Y.: State University of New York Press, 1984.
- Bails, Dale G. "The Effectiveness of Tax-Expenditure Limitations: A Re-Evaluation." *The American Journal of Economics and Sociology* 49, 1990.
- Ballinger Pub. Co. *Fiscal Crisis in American Cities - the Federal Response*. Cambridge, Mass. : Ballinger Pub. Co. 1979.
- Barnes, William and Britany Orlebeke. "The causes identified by cities for growing fiscal stress. (Special Report: City Fiscal Conditions, 1991)." *Nation's Cities Weekly*, July 8, 1991.
- Barro, Stephen. *The Urban Impacts of Federal Policies: Volume 3, Fiscal Conditions*. Santa Monica, Calif.: Rand Corporation, 1978.
- Baumol, William. "On Taxation and the Control of Externalities." *American Economic Review* 62, 1972.
- Beaton, W. Patrick. "The Determinants of Police Protection Expenditures." *National Tax Journal* 27, 2 (June 1974): 335-349.
- Beier, G., A. Churchill, M. Cohen, and B. Renaud. "The Task Ahead for the Cities of Developing Countries." *World Development* 4 (1976): 363-409.
- Bennett, Robert J, "Decentralization, Local Governments, and Markets: Is There a Post-Welfare Agenda in Planned and Market Economies?" *Policy Studies Journal* 18 (Spring 1990): 683-701.

- Bennett, Robert J, ed. *Decentralization, Local Governments, and Markets*. Oxford: Clarendon Press, 1990.
- Bennett, Robert J, ed. *Local Government and Market Decentralization*. Tokyo, Japan: United Nations University Press, 1994.
- Benson, Earl D., Barry R. Marks, and K.K. Raman. "Tax Effort as an Indicator of Fiscal Stress." *Public Finance Quarterly* 16, 1988.
- Benton, J. Edwin and David R. Morgan. eds. *Intergovernmental Relations and Public Policy*. New York, NY: Greenwood Press, 1986.
- Berry, William D. "The Confusing Case of Budgetary Incrementalism: Too many Meanings for a Single Concept." *Journal of Politics* 52, 1990.
- Bird, Richard M. "Intergovernmental Fiscal Relations in Developing Countries." World Bank Staff Working Paper No. 304, 1978.
- Bird, Richard M. *Taxing Agricultural Land in Developing Countries*. Harvard University Press, 1974.
- Boadway, Robin W. *Intergovernmental Transfers in Canada*. Candian Tax Foundation, 1980.
- Bolton, Patrick and Joseph Farrell. "Decentralization, Duplication, and Delay." *Journal of Political Economy* 98, no. 4 (1990): 803-826.
- Boyer, William W. and Byong Man Ahn. *Rural Development in South Korea*. Newark, NJ: University of Delaware Press, 1991.
- Bradbury, Katharine L., Anthony Downs, and Kenneth Small. *Urban Decline and the Future of American Cities*. Washington, D.C.: Brookings Institution, 1982.
- Braun, Bradley M. "Measuring Tax Revenue Stability with Implications for Stabilization Policy: A Note." *National Tax Journal* 41, 4(December 1988): 595-598.
- Brazer, Harvey E. "Anatomy of a Fiscal crisis : The Michigan Case." *Public Budgeting and Finance*, Winter 1982 : 130 - 142.
- Brazer, Harvey E. and Deborah S. Laren, eds. *Michigan's Fiscal and Economic Structure*. Ann Arbor:University of Michigan Press. 1982.
- Break, George F. *Financing Government in a Federal System*. Washington, D.C.: The Brookings Institution, 1980.

- Brecher, Charles and Raymond D. Horton. "Retrenchment and recovery: American cities and the New York experience." *Public Administration Review* 45, 2 (March-April 1985): 267-274.
- Brems, Hans. *Quantitative Economic Theory: A Synthetic Approach*, New York: Wiley, 1968
- Buchanan, James M. "Public Finance and Public Choice." *National Tax Journal* 28, 4 (December 1975): 383-394.
- Buchanan, James. "An Economic Theory of Clubs." *Economica* 32, (Feb. 1965): 1-14.
- Buchanan, James. "Public Finance and Public Choice." *National Tax Journal* 28, 1975.
- Burchell, Robert W. and David Listokin, eds. *Cities Under Stress*. New Brunswick, N.J.: Rutgers University, Center for Policy Research, 1981.
- Burchell, Robert W. and David Listokin. *The fiscal Impact Handbook*. New Brunswick, NJ: Center for Urban Polich research, 1978.
- Burchell, Robert W., James H. Carr, Richard L. Florida, James Nemeth, Michael Pawlik and Felix R. Barret. *The new Reality of Municipal Finance*. New Brunswick, New Jersey: Center for Urban Policy Research, 1984.
- Burns, Andrew. *Regional Welfare Impacts of Some Alternative Fiscal Arrangements*. Economic Council of Canada, 1992.
- Cahill, Anthony G. and Joseph A. James. "Responding to municipal fiscal distress: an emerging issue for state governments in the 1990s." *Public Administration Review* 52, 1 (Jan-Feb 1992): p88-94.
- Caputo, David A. and Richard L. Cole. *Urban Politics and Decentralization*. Lexington, Massachusetts: Lexington Books, 1974.
- Carmichael, Paul. "Analysing Political Choice in Local Government: A Comparative Case Study Approach." *Public Administration* 72 (Summer 1994): 241-262.
- Carr, James H. ed. *Crisis and Constraint in Municipal Finance : Local Fiscal Prospects in a Period of Uncertainty*. New Brunswick, N.J. : Center for Urban Policy Research, Rutgers, The State University of New Jersey, 1984.
- Cheema, G. Shabbir and Dennis A. Rondinelli, eds. *Decentralization and Development*. Beverly Hills, CA: SAGE Publications, 1983.

- Cheema, G. Shabbir. "Strengthening Urban Institutional Capabilities: Issues and Responses." *Urban Policy Issues*. Manila, Philippines: Asian Development Bank, 1987.
- Chubb, John E. "The Political Economy of Federalism." *American Political Science Review* 79, 1985.
- Cigler, Beverly A. "Challenges Facing Fiscal Federalism in the 1990s." *PS: Political Science & Politics* (June 1993): 181-186.
- Clark, Cal and B. Oliver Walter. "Urban political cultures, financial stress, and city fiscal austerity strategies." *Western Political Quarterly* 44, 3 (Sep. 1991): 676-698.
- Clark, Gordon L. "Autonomy of the National Labor Relations Board." *Policy Studies Journal* 18 (Spring 1990): 721-738.
- Clark, Terry N. "Introduction: Community Development and Fiscal Strain." *Urban Affairs Papers* 3:1-12.
- Clark, Terry N. and Lorna C. Ferguson. *City Money : Political Processes, Fiscal Strain, and Retrenchment*. New York : Columbia University Press, 1983.
- Clark, Terry N. and Lorna C. Ferguson. *City Money: Political Processes, Fiscal Strain, and Retrenchment*. New York: Columbia University Press, 1983.
- Clark, Terry Nichols, et al. *How Many New Yorks? The New York Fiscal Crisis in Comparative Perspective*. Chicago: University of Chicago, 1976.
- Cobb, C. W. and P. H. Douglas, "A Theory of Production." *Am. Econ. Rev.*, 18: 139-165, Supplement 1928.
- Conyers, Diana. "Decentralization and Development: A Review of the Literature." *Public Administration and Development* 4 (1984): 187-197.
- Conyers, Diana. "Decentralization: The Latest Fashion in Development Administration?" *Public Administration and Development* 3, no. 3 (1983): 97-109.
- Crane, Randall. "The Practice of Regional Development in Indonesia: Resolving Central-Local Coordination Issues in Planning and Finance." *Public Administration and Development* 15 (1995): 139-149.
- Crook, Richard C. "Four Years of the Ghana District Assemblies in operation: Decentralization, Democratization and Administrative Performance." *Public Administration and Development* 14 (1994): 339-364.

- Davey, K. J. "Municipal Development Funds and Intermediaries." Policy Planning and Research Paper No. WPS 32, Washington, D.C.: The World Bank, 1988.
- Davey, K. J. "Strengthening Municipal Government in Developing Countries." Policy Planning and Research Paper No. INU 47, Washington, D.C.: The World Bank, 1989.
- Davey, Kenneth. *Financing Regional Government: International Practices and Their Relevance to the Third World*. Chichester: John Wiley and Sons, 1983.
- Davis, Daniel, David Hulme and Philip Woodhouse. "Decentralization by Default: Local Governance and the View from the Village in the Gambia." *Public Administration and Development* 14 (1994): 253-269.
- Derthick, Martha. *The Influence of Federal Grants*. Cambridge, Massachusetts: Harvard University Press, 1970.
- Dilger, Robert Jay. *National Intergovernmental Programs*. Englewood Cliffs, New Jersey: Prentice Hall, 1989.
- Downing, Paul B. "User Charges and the Development of Urban Land." *National Tax Journal* 26, 4 (December 1973): 631-637.
- Elazar, Daniel J. "International and Comparative Federalism." *PS: Political Science & Politics* (June 1993): 190-195.
- Elder, Harold W. "Exploring the Tax Revolt: An Analysis of the Effects of State Tax and Expenditure Limitation Laws." *Public Finance Quarterly* 20, 1992.
- Ellickson, Bryan. "A Generalization of the Pure Theory of Public Goods." *American Economic Review* 63, 3(June 1973): 417-432.
- Fainstein, Susan and Norman Fainstein. "The Federally Inspired Fiscal Crisis." *Society* 13: 27-32.
- Fisher, Ronald C. *State and Local Public Finance*. Glenview, Illinois: Scott, Foresman and Company, 1987.
- Fisher, Ronald. "A Theoretical View of Revenue Sharing Grants." *National Tax Journal* 32, 2 (June 1979): 173-184.
- Gatti, James F., and Leonard J. Tashman. "Equalizing Matching Grants and the Allocative and Distributive Objectives of Public School Financing." *National Tax Journal* 29, 4 (December 1976): 461-476.

- Gerard, Karen. "The Locally Inspired Fiscal Crisis." *Society* 13 (1976): 33-35.
- Giertz, J. Fred. "Decentralization at the State and Local Level: An Empirical Analysis." *National Tax Journal* 29, 2 (June 1976): 201-209.
- Giertz, J. Fred. "Decentralization at the State and Local Level: An Empirical Analysis." *National Tax Journal* 29, 2 (June 1976): 201-209.
- Gilson, Lucy, Peter Kilima and Marcel Tanner. "Local Government Decentralization and the Health Sector in Tanzania." *Public Administration and Development* 14 (1994): 451-477.
- Goode, R. "Limits to Taxation." *Finance and Development*, 1980.
- Gramlich, Edward M. "The 1991 state and local fiscal crisis. (includes comments and discussion by Robert J. Gordon)." *Brookings Papers on Economic Activity*, 2 (Fall 1991) :249-288.
- Gramlich, Edward M. "A Comment on O'Brien's "Grants-In-Aid"." *National Tax Journal* 25, 1 (march 1972): 107-109.
- Gramlich, Edward. "State and Local Budgets the Day after It Rained: Why Is the Surplus so High?," *Brookings Papers on Economic Activity I*. 1978: 15-65.
- Gramlich, Edward. "New York City Fiscal Crisis: What Happened and What Is To Be Done?" *American Economic Review* 66 (1976): 415-28.
- Greene, Kenneth V. "Collective Decision-Making Models and the Measurement of Benefits in Fiscal Incidence Studies." *National Tax Journal* 26, 2 (June 1973): 177-185.
- Groves, Harold M., and C. Harry Kahn. "The Stability of State Local Tax Yields." *American Economic Review* 42, 1(1952): 87-102.
- Groves, Sanford M. *Evaluating Financial Condition : a Handbook for Local Government*. Washington D.C. : International City Management Association, 1986.
- Hedge, David M. "Fiscal Dependency and the State Budget Process." *Journal of Politics* 45, 1983.
- Hendrick, Rebecca. "Top-down budgeting, fiscal stress and budgeting theory." *American Review of Public Administration*, March 1989 v19 n1 p29(20).

- Hinchliffe, Keith. "Conflicts between National Aims in Papua New Guinea: The Case of Decentralization and Equality." *Economic Development and Cultural Change* 28 (1980): 819-838.
- Hirsch, Werner Z. *The Economics of State and Local Government*. New York, New York: McGraw-Hill Book Company, 1970.
- Hirsch, Werner Z. *Fiscal Pressures on the Central City; the Impact of Commuters, Nonwhites, and Overlapping Governments*. New York: Praeger Publishers, 1971.
- Horne, Jocelyn. *Indicators of Fiscal Sustainability*. International Monetary Fund, 1991.
- Howell, James M. and Charles F. Stamm. *Urban Fiscal Stress : a Comparative Analysis of 66 U. S. Cities*. Lexington, Massachusetts: Lexington Books, 1979.
- Howell, James M. and Charles F. Stamm. *Urban Fiscal Stress: A Comparative Analysis of 66 U.S. Cities*. Lexington, MA: Lexington Books, 1979.
- Hula, Richard C., ed. *Market-Based Public Policy*. New York: St. Martin's Press, 1988.
- Inman, Robert P. "Can Philadelphia Escape Its Fiscal Crisis with Another Tax Increase?" *Business Review of the Federal Reserve Bank of Philadelphia*. September-October 1992: 5-20.
- Inman, Robert P. "How to Have a Fiscal Crisis: Lessons from Philadelphia." *AEA Papers and Proceedings*. Vol. 85, No. 2 (May 1995): 378-393.
- Inman, Robert P. "Dissecting The Urban Crisis: Facts and Counterfactuals." *National Tax Journal* 32, 2 (June 1979): 127-142.
- Inman, Robert P. "How To Have a Fiscal Crisis: Lessons from Philadelphia." *American Economic Review* 85, 2(May 1995): 378-383.
- Inman, Robert P. "Limits on the Size and Growth of Government: the Economic Case Limits to Government." *American Economic Review* 72, 1982.
- Ito, Kazuhisa. "The Reinstatement of Local Fiscal Autonomy in the Republic of Korea." *The Developing Economies* 30, 4 (December 1992): 404-429.
- Jackson, Peter M., ed. *Current Issues in Public Sector Economics*. London: The Macmillan Press, Ltd.
- James, Louis J. "The Stimulation and Substitution Effects of Grants-In-Aid: a General Equilibrium Analysis." *National Tax Journal* 26, 2 (June 1973): 251-265.

- Joyce, Philip G., and Daniel R. Mullins. "The Changing Fiscal Structure of the State and Local Public Sector: the Impact of Tax and Expenditure Limitations." *Public Administration Review* 51, 1991.
- Kamer, Pearl M. *Crisis in Urban Public Finance : a Case Study of Thirty-Eight Cities*. New York, N.Y. : Praeger, 1983.
- Kaplan, Marshall and Franklin James. eds. *The Future of National Urban Policy*. Durham: Duke University Press, 1990.
- Kennett, Stephen. *Local Government Fiscal Problems : a Context for Inner Areas*. London : Social Science Research Council, 1980.
- Kidwell, D. S. and Trzcinka C.A. "The Impact of the New York City Fiscal Crisis on the Interest Cost of New Issue Municipal Bonds." *Journal of Financial and Quantitative Analysis* 18 (Sep. 1983): 381-399.
- Kim, An-Je. "Decentralization and Local Autonomy in Korea." in *Local Government and Market Development*, edited by Robert J. Bennett, 132-149. Tokyo, Japan: The United Nations University Press, 1994.
- Kincaid, John. "Fiscal Capacity and Tax Effort of the American States and Issues." *Public Budgeting and Finance* 9, 1989.
- King, David N. *Fiscal Tiers: The Economics of Multi-Level Government*. London, UK: George Allen & Unwin, 1984.
- Kochen, Manfred and Karl W. Deauchs. "Toward a Rational Theory of Decentralization: Some Implications of a Mathematical Approach." *American Political Science Review* 63 (Sept. 1969): 734-749.
- Kochen, Manfred and Karl W. Deauchs. *Decentralization*. Cambridge, MA: Oelgeschlager, Gunn & Hain, Publishers, Inc., 1980.
- Ladd, Helen F. "State-Wide Taxation of Commercial and Industrial Property for Education." *National Tax Journal* 29, 2 (June 1976): 143-153.
- Ladd, Helen F. *America's Ailing Cities : Fiscal Health and the Design of Urban Policy*. Baltimore: Johns Hopkins University Press, 1989.
- Ladd, Helen F., and John Yinger. "The Case for Equalizing Aid." *National Tax Journal* 47, 1 (March 1994): 211-224.

- Lake, Robert W. and Joanna Regulska. "Political Decentralization and Capital Mobility in Planned and Market Societies: Local Autonomy in Poland and the United States." *Policy Studies Journal* 18 (Spring 1990): 702-720.
- Lee, Young-Hee. *A Desirable Strategies of the Central-Local Tax Base Assignments in Korea*. Korean Research Institute for Local Administration. Seoul, Korea, 1993.
- Levin, Jonathan. *Measuring the Role of Subnational Governments*. International Monetary Fund, 1991.
- Levine, Charles H. *The Politics of Retrenchment : How Local Government Manage Fiscal Stress*. Beverly Hills : Sage Publications, 1981.
- Levy, Franky, and Edwin M. Truman. "Toward a Rational Theory of Decentralization: Another View." *American Political Science Review* 65 (March 1971): 172-179.
- Lindholm, Richard W., and Hartojo Wignjowijoto. *Financing and Managing State and Local Government*. Lexington, MA: Lexington Books, 1979.
- Linn, J. F. "Policies for Efficient and Equitable Growth of Cities in Developing Countries." Washington, D.C., World Bank Staff Working Paper 342, 1979.
- Linn, Johannes F. "Urban Finances in Developing Countries." Roy Bahl, ed. *Urban Government Finance*. Beverly Hills: CA, Sage Publications, 1981: 245-283.
- Lim, G. C. "Disequilibrium adjustment processes in the local tax-expenditure system, *Environment and Planning* 14 (1982): 471-476.
- Litvack, James M., and Wallace E. Oates. "Group Size and the Output of Public Goods: Theory and an Application to State-Local Finance in the United States." *Public Finance* 25: 42-60.
- Lyons, Thomas S. and Roger E. Hamlin. *Creating an Economic Development Action Plan*. New York: Praeger, 1991.
- Maass, Arthur, ed. *Area and Power: A Theory of Local Government*. Glencoe, Illinois: The Free Press, 1959.
- Maddick, H. *Democracy, Decentralization and Development*. Bombay, India: Asia Publishing House, 1963.
- Maddick, H. *Democracy, Decentralization and Development*. Bombay, India: Asia Publishing House, 1963.

- Magann, Julia Halcomb. *Municipal Financial Disclosure : an Empirical Investigation*. Ann Arbor, Mich. : UMI Research Press, 1983.
- Magnusson, W. 'Metropolitan reform in the Capitalist City.' *Canadian Journal of Political Science* 14, 3 (1981).
- Magnusson, W. 'Metropolitan reform in the Capitalist City.' *Canadian Journal of Political Science* 14, 3 (1981).
- Marcuse, Peter. *Public Crisis for Private Profit : on the Usefulness of the Urban Fiscal Crisis*. New York : Columbia University Graduate School of Architecture and Planning, 1980.
- Maro, Paul S. "The Impact of Decentralization on Spatial Equity and Rural Development in Tanzania." *World Development* 18, no. 5 (1990): 673-693.
- Martin, Joan K. *Urban Financial Stress : Why Cities Go Broke*. Boston, Mass. : Auburn House, 1982.
- Mawhood, P. "Decentralization in the Third World in the 1980s." *Planning and Administration* 14, No. 1 (1987): 10-22.
- McDougall, Gerald S. "Local Public Goods and Residential Property Values: Some Insights and Extensions." *National Tax Journal* 29, 4 (December 1976): 436-447.
- Meyer, John R. and John M. Quigley. *Local Public Finance and Fiscal Squeeze : a Case Study*. Cambridge, Mass. : Ballinger Pub. Co., 1977.
- Meyering, Mary Vanderlaan. "Political Structure Centralization and Social Policy: A Cross-National Study." Ph.D. diss., Michigan State University, 1979.
- Mikesell, John L. *City Finances, City Futures*. Ohio Municipal League Educational and Research Fund, 1993.
- Mikesell, John L. *Fiscal Administration: Analysis and Applications for the Public Sector*. Pacific Grove, California: Brooks/Cole Publishing Company, 1991.
- Miller, Stephen M., and William K. Tabb. "A New Look at a Pure Theory of Local Expenditures." *National Tax Journal* 26, 2 (June 1973): 161-176.
- Mills, Anne. "Decentralization and Accountability in the Health Sector from an International Perspective: What Are the Choices?" *Public Administration and Development* 14 (1994): 281-292.

- Mills, Edwin S., and Wallace E. Oates. *Fiscal Zoning and Land Use Controls*. Lexington, MA: Lexington Books, 1975.
- Mollenkopt, John. *The Congested City*. Princeton: Princeton University Press, 1983.
- Montanaro, Edward. *The Use of Fiscal Indicators to predict Financial Emergencies in Florida Local Governments*. Tallahassee, Florida: Advisory Council on Intergovernmental Relations, 1980.
- Morgan, David R., and Michael W. Hirlinger. "The Dependent City and Intergovernmental Aid: the Impact of Recent Changes." *Urban Affairs Quarterly* 29, 2 (December 1993): 256-275.
- Morgan, W. Douglas. "An Alternative Measure of Fiscal Capacity." *National Tax Journal* 27, 2 (June 1974): 361-365.
- Morgan, W. Douglas. "The Measurement of Fiscal Crisis: Another Procedure." *National Tax Journal* 38, 4 (December 1985): 489-491.
- Morris, Susanne R. (Susanne Rockne). *Budget Cutback : an Empirical Test of Budgeting Theory in Conditions of Fiscal Stress*, 1988.
- Mullen, John K. "Property tax exemptions and local fiscal stress." *National Tax Journal*, Dec 1990 43 n4 p467-479.
- Muller, Thomas. *Growing and Declining Urban Areas : a Fiscal Comparison*. Washington, D.C.: The Urban Institute, 1975.
- Municipal Finance Officers Association; Peat, Marwick, Mitchell & Co.; and the University of Georgia, Institute of Government. *Is Your City Heading for Financial Difficulty: A Guidebook for Small Cities and Other Governmental Units*. (Prepared by Philip Rosenberg and C. Wayne Stallings). MFOA, Chicago, 1978.
- Musgrave, R. A. *The Theory of Public Finance*. New York: McGraw-Hill, 1959.
- Musgrave, Richard A. and Peggy B. Musgrave. *Public Finance in Theory and Practice*. New York, NY: McGraw-Hill Book Company, 1984.
- Nathan, Richard and Charles Adams. "Understanding Central City Hardship," *Political Science Quarterly* 91: 47-62.
- Nathan, Richard and James Fosset. "Urban Conditions: The Future of the Federal Role." *Proceedings of the 71st Annual Convention of the National Tax Association/ Tax Institute of America*. Columbus, Ohio: National Tax Association, 1979.

- Nicholson, Walter. *Microeconomic Theory*. New York: The Dryden Press, 1985.
- Niskanen, William. "Bureaucrats and Politicians." *Journal of Law and Economics* 18, 1975.
- Norris, M. W. "Local Government and Decentralization in the Sudan." *Public Administration and Development* 3, 3 (1983): 209-222.
- Noto, Nonna A. "Simplifying Intergovernmental Transfers; The Lessons of Community Development Block Grants." *National Tax Journal* 30, 3: 259-267.
- Oates, W. E. *The Political Economy of Fiscal Federalism*. Lexington, MA: Lexington Books, 1972.
- Oates, Wallace. *Fiscal Federalism*. New York, NY: Harcourt Jovanovich, 1972.
- Olson, Kent W., and James W. Kleckley. "Severance Tax Stability." *National Tax Journal* 42, 1 (March 1989): 69-78.
- Ostrom, E., C. M. Tiebout and R. Warren. "The Organization of Governments in Metropolitan Areas: A Theoretical Inquiry." *American Political Science Review* 55, 4 (1961).
- O'Toole, Jr., Laurence J. ed. *American Intergovernmental Relations*. Washington, D.C.: A Division of Congressional Quarterly Inc., 1993.
- Pagano, Michael A., and Richard J. T. Moore. *Cities and Fiscal Choices*. Durham: Duke University Press, 1985.
- Pammer, William J. *Managing Fiscal Strain in Major American Cities : Understanding Retrenchment in the Public Sector*. New York : Greenwood Press, 1990.
- Perkins, George M. "The Demand for Local Public Goods: Elasticities of Demand for Own Price, Cross Prices, and Income." *National Tax Journal* 30, 4 (December 1977): 411-422.
- Perry, David and Alfred Watkins, eds. *The Rise of Sunbelt Cities*. Beverly Hills: Sage, 1977.
- Perry, J. Harvey. *Background of Current Fiscal Problems*. Toronto, Canada : Canadian Tax Foundation, 1982.
- Petersen, John E. "Simplification and Standardization of State and Local Government Fiscal Indicators." *National Tax Journal* 30, 3 (September 1977): 299-311.

- Peterson, Douglas D. *City Fiscal Conditions in 1986*. Washington, D.C. : National League of Cities, 1986.
- Peterson, John E. *Changing Conditions in the Market for State and Local Debt*. Washington, D.C.: U. S. Government Printing Office, 1976.
- Raimondo, Henry J. *Economics of State and Local Government*. New York, New York: Praeger, 1992.
- Rasmussen, Jon. "The Allocative Effects of Grants-In-Aid: Some Extensions and Qualifications." *National Tax Journal* 29, 2 (June 1976): 211-219.
- Reilly, Gilbert J. "Estimates of State Resource Constraints Derived from a Specific Utility Function. An Alternative Measure of Fiscal Capacity. Comment." *National Tax Journal* 38, 4(December 1985): 505-506.
- Renaud, B. "National Urbanization Policies in Developing Countries." Washing, D.C., World Bank Staff Working Paper 347, 1979.
- Robinson, Susan G. ed. *Financing Growth*. Chicago, Illinois: Government Finance Research Center of the Government Finance Officers Association, 1990.
- Rondinelli, D. A., J. R. Nellis and G. S. Cheema. *Decentralization in Developing Countries*. World Bank Staff Working Paper No. 581, Washington, D.C.: The World Bank, 1984
- Rondinelli, D. A., J. S. McCullough and R. W. Johnson. "Analyzing Decentralization Policies in Developing Countries: A Political Economy Framework." *Development and Change* 20 (1989): 57-87.
- Rondinelli, Dennis A. "Decentralization, Territorial Power and the State: A Critical Response." *Development and Change* 21 (1990): 491-500.
- Rondinelli, Dennis A. "Government Decentralization in Comparative Perspective: Theory and Practice in Developing Countries." *International Review of Administrative Sciences* 47 (1981): 133-145.
- Rondinelli, Dennis A. "Implementing Decentralization Programmes in Asia: a Comparative Analysis." *Public Administration and Development* 3, 3 (1983): 181-207.
- Rondinelli, Dennis A. and G. Shabbir Cheema, eds. *Urban Services in Developing Countries*. London: The MacMillan Press ltd., 1988.

- Rondinelli, Dennis A., James S. McCullough and Ronald W. Johnson. "Analysing Decentralization Policies in Developing Countries: A Political-Economy Framework." *Development and Change* 20 (1989): 57-87.
- Rose, Richard and Edward Page. *Fiscal Stress in Cities*. Cambridge, New York: Cambridge University Press, 1982.
- Rosen Harvey S., ed. *Fiscal Federalism: Quantitative Studies*. Chicago, Illinois: The University of Chicago Press, 1987.
- Rosen, Harvey S. *Public Finance*. Homewood, IL: Richard D. Irwin, Inc., 1992.
- Rubin, Irene S. *The Politics of Public Budgeting*. Chatham, New Jersey: Chatham House Publishers, Inc., 1990.
- Rubin, Irene S., editor. *New Directions in Budget Theory*. Albany, New York: SUNY Press, 1988.
- Rubin, Irene. *Running in the Red : the Political Dynamics of Urban Fiscal Stress*. Albany:State University of New York Press, 1982.
- Russell, Clifford S. and Norman K. Nicholson., eds. *Public Choice and Rural Development*. Washington, D.C.: Resources for the Future, 1981.
- Rutgers, The State University. *Cities under Stress : the Fiscal Stress of Urban America*. New Brunswick, N.J. : Center for Urban Policy Research, Rutgers, The State University, 1981.
- Rutgers, The State University. *The New Reality of Municipal Finance : the Rise and Fall of the Intergovernmental City*. New Brunswick, N.J. : Center for Urban Policy Research, Rutgers, The State University of New Jersey, 1984.
- Sage Publications. *Cities in Stress : a New Look at the Urban Crisis*. Beverly Hills, Calif.: Sage Publications, 1986.
- Samoff, Joel. "Decentralization: The Politics of Interventionism." *Development and Change* 21 (1990): 513-530.
- Samuelson, Paul. "Diagrammatic Exposition of a Theory of Public Expenditure." *Review of Economics and Statistics* 37, 1955.
- Samuelson, Paul. "The pure Theory of Public Expenditure." *Review of Economics and Statistics*, 1954.

- Scarpaci, Joseph L. and Ignacio Irrarrazaval. "Decentralizing a Centralized State: Local Government Finance in Chile Within the Latin American Context." *Public Budgeting & Finance* (Winter 1994): 120-136.
- Schokkaert, Erik. "Fiscal preferences and fiscal knowledge at the local level." *Journal of Economic Psychology* 9, 1 (March 1988): 29-46.
- Schwallie, Daniel P. *The Impact of Intergovernmental Grants on the Aggregate Public Sector*. Westport, Connecticut: Greenwood Press, Inc., 1989.
- Semboja, Joseph and Ole Therkildsen. "Decentralization, Participation and Spatial Equity in Rural Tanzania: A Comment." *World Development* 22, no. 5 (1994): 807-810.
- Sharp, Elaine B., and David Elkins. "The Impact of Fiscal Limitation: A Tale of Seven Cities." *Public Administration Review* 47, 1987.
- Shefter, Martin. *Political Crisis, Fiscal Crisis : the Collapse and Revival of New York City*. New York : Basic Books, 1985
- Shepard, W. B. "Metropolitan Political Decentralization: A Test of the Life-Style Values Model." *Urban Affairs Quarterly* 10, 3, 1975.
- Shepard, W. B. "Metropolitan Political Decentralization: A Test of the Life-Style Values Model." *Urban Affairs Quarterly* 10, 3 (1975).
- Silkman, Richard H., and Dennis R. Young. *Subsidizing Inefficiency*. New York, New York: Praeger, 1985.
- Simonsen, William. "Changes in Federal Aid and City Finances: A Case Study of Oregon Cities." *Publius* 24 (Spring 1994): 37-51.
- Slater, David. "Debating Decentralization - A Reply to Rondinelli." *Development and Change* 21 (1990): 501-512.
- Slater, David. "Territorial Power and the Peripheral State: The Issue of Decentralization." *Development and Change* 20 (1989): 501-531.
- Smith, B.C. *Bureaucracy and Political Power*. Sussex: Wheatsheaf Books, 1988.
- Smith, B.C. *Decentralization: The Territorial Dimension of the State*. London, UK: George Allen & Unwin, 1985.
- Smoke, Paul J. *Local Government Finance in Developing Countries: The Case of Kenya*. Nairobi: Oxford University Press, 1994.

- Snyder, James C. *Fiscal Management and Planning in Local Government*. Lexington, MA: Lexington Books, 1977.
- Standish, Bill. "Power to the People? Decentralization in Papua New Guinea." *Public Administration and Development* 3, 3 (June 1983): 223-238.
- Stephens, G. Ross. "State Centralization and the Erosion of Local Autonomy." *Journal of Politics* 36 (Feb. 1974): 44-76.
- Stiglitz, Joseph E. *Economics of the Public Sector*. New York: W.W. Norton & Company, 1988.
- Stine, William F. "Is Local Government Revenue Response to Federal Aid Symmetrical? Evidence from Pennsylvania in an Era of Retrenchment." *National Tax Journal* 47, 4 (1994): 799-816.
- Stocker, Frederick D. "Diversification of the Local Revenue System: Income and Sales Taxes, User Charges, Federal Grants." *National Tax Journal* 29, 3 (September 1976): 312-321.
- Stohr, Walter B., and D. R. Fraser Taylor, eds. *Development from Above or Below? The Dialectics of Regional Planning in Developing Countries*. New York: John Wiley, 1981.
- Tabb, William K. *The Long Default : New York City and the Urban Fiscal Crisis*. New York : Monthly Review Press, 1982.
- Tester, Frank J. "Fiscal crisis, environmental protection and the state: a New Zealand case study." *Alternatives* 14 (May-June 1987): 35-42.
- Tiebout. C. "A Pure Theory of Local Expenditure.." *Journal of Political Economy* 64 (1956): 416-424.
- United States. Congress. House. Committee on the Budget. Task Force on Community Resources and General Government. *Fiscal Problems Facing Municipalities : Hearing before the Task Force on Community Resources and General Government of the Committee on the Budget, House of Representatives, Ninety-fourth Congress, Second Session, February 24 and 26, 1976*. Washington : U.S. Govt. Print. Off., 1976.
- United States. Congress. Senate. Committee on Government Operations. Subcommittee on Intergovernmental Relations. *Title II the Public Works Employment Act of 1976 (Public Law 94-369) and Its Impact on Fiscal Problems of the Cities : Hearing before the Subcommittee on Intergovernmental Relations of the Committee on Government Operations, United States Senate, Ninety-fifth*

Congress, First Session, January 14, 1977. Washington : U.S. Govt. Print. Off., 1977.

University of Chicago. *How Many New Yorks? : the New York Fiscal Crisis in Comparative Perspective.* Chicago : Univ. of Chicago, 1976.

Vintage Books. *The Fiscal Crisis of American Cities : Essays on the Political Economy of Urban America with Special Reference to New York.* New York : Vintage Books, 1977.

Viscount, Francis. *City Fiscal Conditions and Outlook for Fiscal 1985.* Washington, D.C.: National League of Cities, 1985.

Wallis, John Joseph and Wallace E. Oates. "Decentralization in the public sector: an empirical study of state and local government." ed. by Harvey Rosen. *Fiscal Federalism: Quantitative Studies*, 1987.

Walzer, Norman, and David L. Chicoine, eds. *Financing State and Local Governments in the 1980s.* Cambridge, Massachusetts: Oelgeschlager, Gunn & Hain, Publishers, Inc., 1981.

Watson, Douglas J., and Thomas Vocino. "Changing Intergovernmental Fiscal Relationships: Impact of the 1986 Tax Reform Act on State and Local Governments." *Public Administration Review* 50 (July/August 1990): 427-434.

Weicher, John C. "Aid, Expenditures, and Local Government Structure." *National Tax Journal* 25, 4 (December 1972): 573-583.

Weiher, Kenneth. *America's Search for Economic stability.* New York, New York: Twayne Publishers, 1992.

Weiler, Hans N. "Education and Power: The Politics of Educational Decentralization in Comparative Perspective." *Educational Policy* 3, 1 (1989): 31-43.

Weinstein, Bernard L. and Robert J. Clark. "The Fiscal Outlook for Growing Cities." in *Urban Government Finance: Emerging Trends*, ed. Roy Bahl. 105-26. Beverly Hills: Sage, 1981.

Weitzman, Joan. *City Workers and Fiscal Crisis : Cutbacks, Givebacks and Survival : a Study of the New York City Experience.* New Brunswick, N. J. : Institute of Management and Labor Relations, Rutgers, The State University of New Jersey, 1979.

Wicksell, K. *Lectures on Political Economy I.* London, 1934.

Wildavsky, Aaron. *The New Politics of the Budgetary Process*. Boston, MA: Scott, Foresman, and Co., 1992.

Wilford, W. T. "A Comment on "The Stability, Growth, and Stabilizing Influence of State Taxes"." *National Tax Journal* 28, 4 (December 1975): 452-458.

Williams, Martin. "The Impact of Revenue Sharing Funds on Local Expenditures." *Urban Analysis* 6 (1979): 49-58.

Williams, William V., Robert M. Anderson, David O. Froehle, and Kaye L. Lamb. "The Stability, Growth and Stabilizing Influence of State Taxes." *National Tax Journal* 26, 2 (June 1973): 267-274.

Wilson, C. H. *Essays on Local Government*. Oxford: Blackwell, 1948.

Ylvisaker, P. "Some Criteria for a 'Proper' Areal Division of Governmental Powers," in A. Mass. ed. *Area and Power: A Theory of Local Government*, New York: The Free Press, 1959.

Zimmerman, Dennis. "On the Relationship Between Public Goods Theory and Expenditure Determinant Studies." *National Tax Journal* 28, 2 (June 1975): 227-239.

Zodrow, George R., ed. *Local Provision of Public Services: The Tiebout Model after Twenty-Five Years*. New York, New York: Academic Press, 1983.

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