Expenditure Assignment in Korea: Does It Spur Regional Concentration? *

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Abstract

Fiscal decentralization and balanced regional development are major reform policies currently undergoing in Korea. The nature of the policies, however, is not clearly understood in the political debate, and sometimes even in the academic debate: the main question is whether fiscal decentralization and balanced regional development can go together. In this paper, it is argued that the design of expenditure assignment in Korea is such that it offers a great incentive for fiscally induced in-migration into a large city such as Seoul. This is because, unlike other countries such as Japan, United Kingdom, and Spain that are surveyed in this paper, local governments in Korea do not provide important publicly provided private goods such as education, police, and welfare programs. For the consistency and success of the two policies, we need to strengthen the link between the fiscal capacity and expenditure responsibilities of local governments. If we focus on transfer of fiscal resources on the one hand, and pursue rigorously market-intervening balanced regional development policies on the other hand, we will end up with having less efficient local public finance system with more regional disparity.

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I. Introduction

Korea had local autonomy system after it became independent in 1945. That system was abolished in 1961, and after 24 years of centralization, the country resumed local autonomy in 1995. The performance of local autonomy has been, however, less than satisfactory. No local governments in Korea have voluntarily changed local tax rates even if they have the power to do so.[1] On the spending side, expenditure assignment is not very clear. The lack of clear expenditure assignment is in fact welcome by both the central and local governments: the central government enjoys the blurred division of responsibilities because it offers room for flexibly exercising its financial powers. The local governments also enjoy it since it allows them to claim that any services they provide are ultimately the responsibilities of the central government.

Another notable aspect in the structure of local governments in Korea is the concentration of population and economic resources around the Seoul metropolitan area. The population living in Seoul region is about 22.7 million, which is 47% of the total population.[2][3] When the magnitudes of fiscal resources are examined, the dominance of Seoul Metropolitan area is even more pronounced. The share of individual income tax revenue collected in this region is 71% and the share of corporate income tax is as high as 85%. The share of local tax is somewhat lower than this, but its share is still more than 50%.

Partly because of disappointing performance of local autonomy, which was initiated with great hope to vitalize local politics and economy, and partly because of the ever worsening regional disparity between Seoul metropolitan area and other regions, fiscal decentralization and 'balanced regional development' are adopted as major reform policy agendas for the new administration in Korea.

Unfortunately, however, how we can achieve both policy objectives, and whether it is even possible to mitigate the centripetal force of Seoul area by fiscal decentralization are not clearly known yet: the heavy concentration of financial resources and population around Seoul region implies that simple devolution only makes the Seoul region even larger. Despite this simple fact, the debate of fiscal decentralization tends to be focused on transfer of fiscal resources to local governments. Also, the policy of balanced regional development is pursued under the premise

[1] Out of 17 local taxes, local governments can adjust tax rates, usually 50% below or above the standard rate, of 11 local taxes.

[2] The population of Seoul is 10.2 million. The population of Gyonggi, the province that surrounds Seoul is close to 9.9 million. Incheon, a third largest city close to Seoul, has a population of 2.57 million.

[3] The extent of the economic agglomeration in Korea is arguably the most pronounced in the world. The population shares of the metropolitan areas of Tokyo, London, Paris, Mexico City, and Kuala Lumpur are,

that the agglomeration effect of Seoul region can be mitigated by a combination of industrial policy and regional policy. Without understanding the nature of agglomeration around Seoul area, however, these policies are more likely to fail than succeed.

In this paper, it will be argued that expenditure assignment between central and local governments is one of the causes of agglomeration of Seoul area because its design is such that it induces fiscally induced in-migration into the region. As Boadway and Flatters (1982) and Boadway and Hobson (1993) argue, different sizes of population do not give rise to differences of net fiscal benefit between regions, when local governments provide publicly provided private goods.[4] However, when local governments provide pure public goods, net fiscal benefit differentials between regions and fiscally induced in-migration into a large city takes place. One can of course argue, as in Krugman and Obstfeld (1994), that free migration between jurisdictions is an effective channel that induces the improvement of individuals' welfare.[5] But this is the case only when the migration is not caused by net fiscal benefit differentials between regions, as is shown in Flatters et al. (1974) and Boadway and Flatters (1982). Therefore if expenditure assignment in Korea is giving rise to net fiscal benefit differential between regions, the efficiency cost of such policy is potentially significant since it not only causes inefficient resource allocation between regions, but also it causes a lot of resources to be devoted to the policies of balanced regional development, which might prove to be unsuccessful.

The reason why expenditure assignment in Korea gives rise to net fiscal benefit differentials between Seoul and other smaller regions is because, unlike other countries such as Japan, United Kingdom, and Spain that are surveyed in this paper, local governments in Korea do not provide important publicly provided private goods such as education, police, and welfare programs.[6] Therefore, in order to make fiscal decentralization go together with less regional disparity, fiscal decentralization should proceed while strengthening the link between the fiscal capacity and expenditure responsibilities of local governments. For example, education service currently provided by the central government can be made to be provided with local governments' own resources. The central government can then use the saved resources to support local education in the poorer regions. At the same time, rich local governments like Seoul can be given more independent decision-making power about education services. In this

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respectively, 27%, 20%, 17%, 21%, and 17% (http://www.citypopulation.de/).

[4] Typical examples of publicly provided private goods are education, police, hospital and welfare programs.

[5] "Is there anything wrong with regional decline? ... In particular, migrants normally raise their own real income substantially by moving. If coal miners from Appalachia can double their real income by moving to Chicago and taking jobs in the service sector, why should anyone object?" (Krugman and Obstfeld, 1994, p. 184).

[6] Another reason is because the city of Seoul collects much higher per capita local tax with the same local tax rates.

way, fiscal decentralization can go together with more balanced regional development.

The paper is organized as follows. In Section II, the systems of local public finance in Korea is overviewed. In section III, local expenditures in Japan, the UK, and Spain are surveyed. In section IV, an analysis of local expenditures in Korea is given with an emphasis on net fiscal benefit created by it. Section V concludes the paper.

Ⅱ. Intergovernmental Transfer System in Three Countries[7]

1. Structure of Government

The total area of Korea is 99,393 square kilometers and the total population in 2002 was about 48.2 million. Administratively, local governments are divided into a total of 16 prefectures. Prefectures are composed of a metropolis (Seoul), six wide-area cities (Busan, Daegu, Incheon, Gwangju, Daejeon, and Ulsan), and nine provinces (Gangwon, Kyonggi, Chungbuk, Chungnam, Jeonbuk, Jeonnam, Gyeongbuk, Gyeongnam, and Jeju). Municipalities consist of cities, towns (Gun), and wards (Gu). Cities have a population of 50,000 or more and towns (Gun) have a population of under 50,000. Wards are municipalities under big cities.

The populations and areas vary greatly from prefecture to prefecture. Out of 48.2 million people in Korea, 10.2 million (21.1%) reside in the metropolis of Seoul. Another 9.9 million (20.5%) live in Kyonggi province, which surrounds Seoul. Also, 12.7 million (26.4%) live in the six wide-area cities. Altogether, 67% of Korea's population live in large cities and their surroundings.

While the concentration of population in the metropolitan areas can be regarded as a natural economic phenomenon, the extremely great political and financial influence of the Seoul metropolitan area is likely to be a result of the long period of a centralized political system.[8] Thus, making local governments stronger and more independent while promoting balanced regional development is the most difficult issue faced by Korea now.[9]

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[7] More detailed description of local public finance in Korea can be found in Kim (2003).

[8] See Ades and Glaeser (1995).

[9] Krugman (1991, 1996) writes that economic agglomeration around major cities is a natural result of economic development. Therefore government intervention to mitigate economic agglomeration might not be advisable. The balanced regional development policy can be especially doubtful since its aim is more ambitious than simply correcting negative externalities created by economic agglomeration. However, balanced regional development is an unavoidable policy theme in Korea: all three major candidates for the December 2002 presidential election proposed policy packages for balanced regional development. And the new president promised to establish an “administration capital” outside Seoul

2. Expenditure Assignment

The basic rights and responsibilities of local governments are declared in the Constitution, and The Local Autonomy Act stipulates expenditure responsibilities of local governments. Article 9 of the Act stipulates that, unless otherwise stipulated in law, the following are local public services: (i) local administration; (ii) public services that enhance residents' welfare; (iii) local industrial development of agriculture and commerce; (vi) regional development and local environmental facilities; (v) public services that promote education, sports, culture, and art; (vi) environmental protection, including pollution prevention; and (vii) local civil defense and fire protection.

While the wide range of local responsibilities defined in the Act implies its emphasis of local governments' independence in public services provision, the Act does not make the division of local government responsibilities very clear. More specifically, the Act does not make clear distinction between purely local, delegated or mandated public services: "public services that enhance local residents' welfare" is too broad. More important, the provisional clause "unless otherwise stipulated in law" allows each individual law to define national or local responsibilities regardless of the Local Autonomy Act. Almost 4,000 ordinances, regulations, and laws govern public services and each independently, and vaguely, defines local, delegated, mandated, and national services. Recent efforts to examine all the legislation and to define expenditure responsibilities more clearly have not yet resulted in any consensus on the issue.

A recent episode, however, tells us that there will be some changes in the future. Led by the council of government officials, a movement in Seoul recently opposed the national audit of local public services by Parliament, arguing lack of jurisdiction. As a result, Parliament implicitly exempted from national audit purely local services independently managed by Seoul. While the council of government officials argues that about 70% of public services managed by Seoul are purely local, consensus is still lacking on the criteria to be used to define expenditure assignment. However, if the agreement between Seoul and Parliament is finalized this year, lively discussions will ensue on the nature of expenditure assignments, which might result in more clear-cut definition of central and local government responsibilities.

Apart from making expenditure assignment more clear, a lively discussion is going on, with the new administration's ambitious push for decentralization, about broadening the administrative responsibilities of local governments. Two major issues are education and police services, which are currently provided by the central government. The debates are, however, focused on

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metropolitan region.

the administrative aspects of the change, such as making teachers and policemen local officials or not. This is because it is being assumed that the central government will transfer financial resources to local governments, perhaps by introducing new block grants, so that there will be no extra fiscal burden associated with the new responsibilities. As far as economic effects are concerned, the impact of fiscal decentralization of this kind will not be much because local taxes are not functioning properly in Korea.

3. Revenue Assignment

3.1. Overview

The revenue of local governments consists of local taxes, non-taxes, intergovernmental grants, and local debts. The share of own-source revenue of local governments (Fiscal Independence Index, FII) differs from one local government to another, reflecting their diverse financial profiles. Seoul is financially almost independent, with its FII being 94.7. The average FII of metropolitan cities is much lower, at 66. Provinces' financial capacity is much more lower, with the average FII at 34.6. Compounding the problem of provinces' low average FII is its large variance: the wealthiest province, Kyonggi, has an FII of 70.1; the poorest, Jeonnam, 13.7. Cities with over 50,000 people have an average FII of 47.5, with the highest at 94.8 and the lowest, 14.3. Rural local governments can hardly be regarded as autonomous as they have an average FII of only 19.1.

Table 1. The share of own-source revenue of local governments

	Seoul	Metropolitan Cities	Provinces	Cities	Towns	Wards
Average	94.7	66.0	34.6	47.5	19.1	46.0
Highest	94.7	73.1	70.1	94.8	58.5	93.7
Lowest	-	56.7	13.7	14.3	9.2	21.5

Source: Ministry of Government Administration and Home Affairs;

3.2. Local Tax

The Local Tax Act provides the framework of the local tax system, including taxable items and their rates. There are 15 national taxes and 17 local taxes. It is often argued that local governments do not have independent taxing power as Article 59 of the Constitution stipulates that the rates and bases of all taxes should be determined by law. However, the Local Tax Act allows local governments to determine tax rates within certain limits (usually 50% below or

above the standard rate) for 11 local taxes.

Even if the Local Tax Act guarantees a degree of local autonomy in setting the tax rates of many local taxes, no local government has voluntarily changed them. This is because tax assignment and revenue sharing are not clearly differentiated in Korea. Since local governments and residents see local taxes as an instrument to transfer central government tax resources, local governments have no interest in raising local tax rates. When a local government wants to increase its expenditures, it either argues for transfer of national taxes to local governments or for more intergovernmental grants. An increase in local expenditure, therefore, is often accompanied by an increase in intergovernmental grants rather than in local tax rates.

3.3. Intergovernmental Grants

Intergovernmental fiscal transfers in Korea are administered through three major transfer mechanisms. They are Local Shared Tax (LST), Local Transfer Fund (LTF), and National Treasury Subsidy (NTS). Intergovernmental grants can also be categorized as those of general accounts and the education special accounts. Since the central government is responsible for local education and also provides resources for educational services, the local governments' education budget is separately dealt with as a special account.

Since the local expenditures consist of local taxes and intergovernmental grants, the per capita local expenditure, e_i, can be expressed as

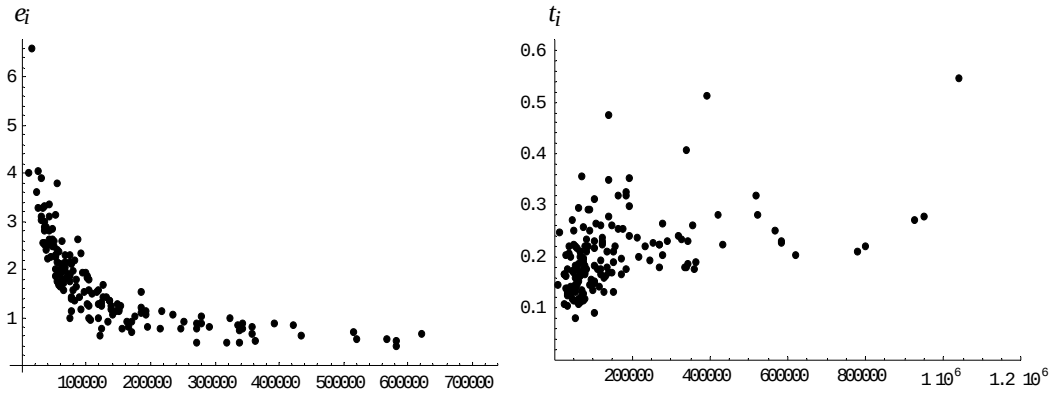
$$e_i = t_i + s_i ,$$

where t_i is per capita local tax revenue and s_i is per capita intergovernmental grants that consist of LST, LTF, and NTS. A most notable feature of local public finance in Korea is the dominant relationship between the per capita local expenditure and population. As is shown in Fig. 1, there is a very tight relationship between per capita expenditures and population.[10] Also, there is positive relationship between per capita local tax and population, although the relationship is not as strong as per capita expenditure. Since local tax rates are the same across local governments, this relationship reflects that per capita local tax base becomes richer as the population size increases. From the above equation, therefore, there are two reasons why per capita local expenditure is inversely related to the population size. On the one hand, the intergovernmental grants is closely related to the population sizes of local governments. On the other hand, per capita tax revenue increases as population increases.[11]

[10] The data used is Seoul, six wide-area cities, 74 cities, and 89 towns.

[11] This relationship is more pronounced when we consider the case of Seoul. Although not depicted in

Fig. 1. The distribution of local expenditure and local tax (per capita, million Won)



When we examine the distribution of intergovernmental grants, we find that the three types of intergovernmental grants are all closely related to population sizes. Among the three, however, LST is the most closely related to population sizes because LST is distributed under the assumption that there is strong economies of scales in the provision of local services. More specifically, the calculation of LST is based upon 'fiscal shortage,' which is the difference between 'Basic Fiscal Needs (BFN)' and 'Basic Fiscal Capacity (BFC).' BFC is 80% of the revenue from local taxes, fees and charges.[12] BFN is calculated with the formula $Z \times c \times \theta$, where Z is workloads such as the number of population and local officials, c is unit cost, and θ is modification factor. The modification factor is meant to reflect special characteristics of local governments, but its main role is to reflect the effect of economies of scales in the provision of local services. Specifically, $Z \times c$ is almost linear function of population, but $Z \times c \times \theta$ is a concave function of population as is shown in Fig. 2.

Since t_i is positively related to the size of population and BFN is inversely related to the population size, the determination of LST is strongly influenced by the population size, as can be confirmed from the left-hand side of Fig. 3. Also, the distribution of LST is dominant in determining that of e_i, as can be seen from the right-hand side of Fig. 3, e_i has a strong inverse relationship with respect to population. Moreover, the distributions of other intergovernmental grants such as Local Transfer Fund and National Treasury Subsidy are not much different from that of LST (Fig. 4). As a result, population is in effect a single factor that determines the amount of local expenditure in Korea.

Fig. 1, the per capita expenditure in Seoul is 0.83 million Won, which is in the lowest range of per capita expenditures. On the other hand, per capita tax revenue is 0.77 million Won, by far the highest among local governments.

[12] Fees and charges were included in the calculation of BFC from 2001. However, they are less than 10% of the local tax revenue. Also, BFC is calculated using the standard tax rate defined in the local tax law.

Fig. 2. The effect of modification factor

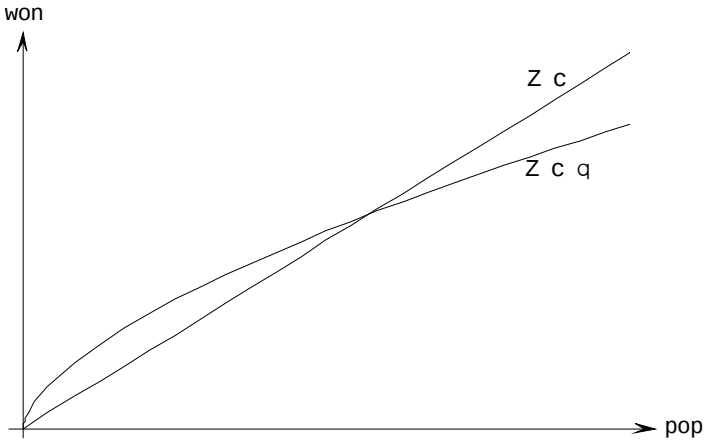


Fig. 3. The Influence of general grants on local expenditure

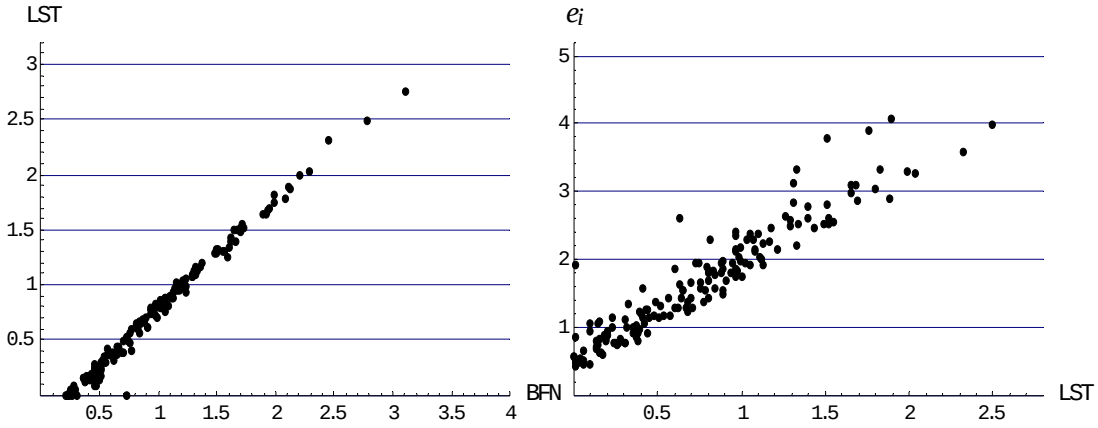
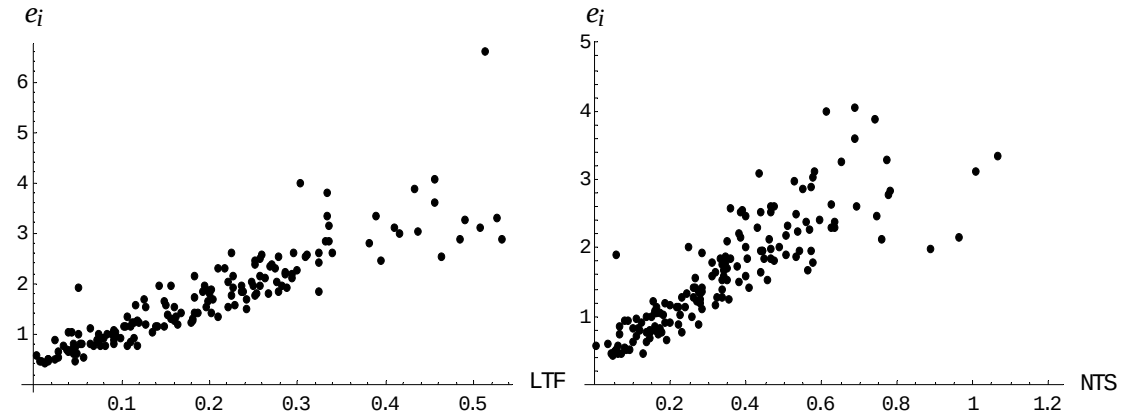


Fig. 4. The relationship between other types of grants and local expenditure



Ⅲ. Local Expenditures in Foreign Countries

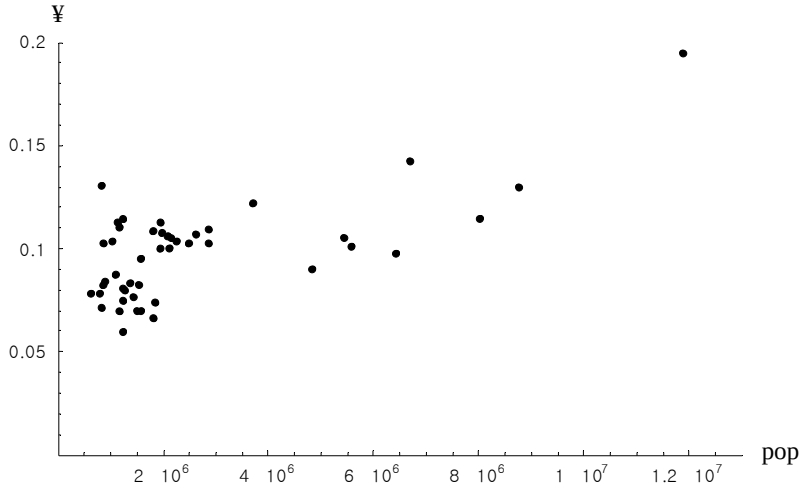
1. Japan

Japan has a two-tier local government system comprising 47 prefectures and 3,232 municipalities. The size and population of local governments in Japan vary significantly. The largest prefecture is Tokyo, with a population of more than 11 million. The smallest prefecture, Totori, has a population of around 600,000. The extent of the variation of population is even greater for municipalities, with the population of the largest being more than 3 million and that of the smallest being 197.

Intergovernmental grants in Japan are similar to those of Korea and administered through three major transfer mechanisms: Local Shared Tax, Local Transfer Tax, and National specific grants. The structure of the general grants, LST, is very much similar to that of Korea and its main function is to fill the gap between the basic fiscal needs and the basic fiscal capacities of local governments. A notable difference between LST in Korea and LST in Japan exists, though, in that the latter covers the costs of police and education services.

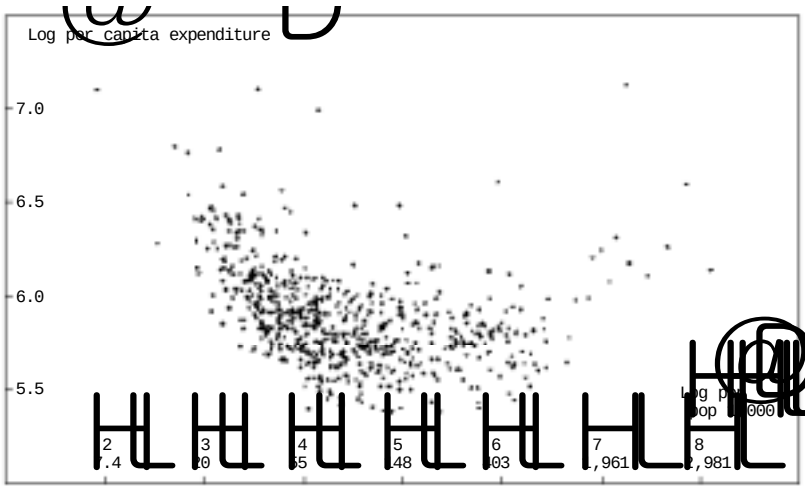
Fig. 5 shows the distribution of the per capita local tax in Japan. The distribution is similar to that of Korea in that it increases moderately as population size increases. The fact that local tax revenue is the highest for the capital city is also similar between the two countries. The per capita local tax of the largest prefecture in Japan, Tokyo, is about two times higher than the median per capita local tax of all prefectures in Japan, while the per capita tax of Seoul is four times higher than the median per capita tax of all cities in Korea.

Fig. 5. The Relationship between local tax and population in Japan (per capita, ¥ million)



While local tax structures of Korea and Japan are similar, the distribution of per capita local expenditures in Japan is quite different from that in Korea. While per capita local expenditures in Korea is inversely related to the size of population, the distribution of the per capita local expenditure in the 679 cities in Japan is U-shaped, as is shown in Fig. 6.[13] Considering the fact that the distribution is Fig. 6 is drawn in log scale, the relationship between local expenditures and population is quite significantly different between Korea and Japan.

Fig. 6. Local expenditure per head vs. population (Japan)



2. United Kingdom

Local government in the United Kingdom is structured in two different ways. In Scotland, Wales and parts of England, a single tier all-purpose council is responsible for all local authority functions. The remainder of England has a two-tier system, in which two separate councils divide responsibilities between district and county councils.

As Fig. 7 shows, there is not a tight relationship between the per capita local tax and the size of population in the United Kingdom. Also, the distribution of general grants (Revenue Support Grant, RSG) depicted in Fig. 8 shows that, for the same type of local governments, the per capita general grants does not have tight relationship with the size of population.[14] Given the fact that the local public goods in the United Kingdom includes education, police, social services and housing, the cost of public good provision in the UK seems to be covered by relatively constant per capita local tax and general grants.

[13] The distribution of local expenditures is from Hayashi (2002).

[14] The service responsibilities of local governments in the United Kingdom are different depending on the characteristics of local governments. So we have two groups of distribution in Fig. 8.

Fig. 7. The Relationship between local tax and population in the UK (per capita, £ thousand)

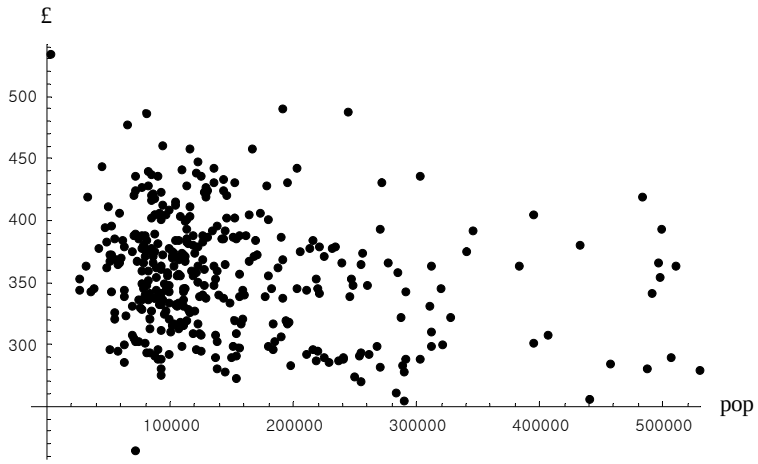
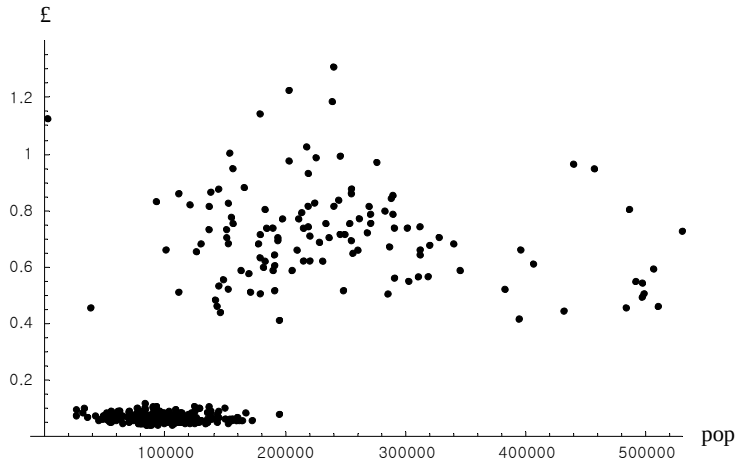


Fig. 8. The Relationship between RSG and population in the UK (per capita, £ thousand)



3. Spain

The local government in Spain consists of 50 provinces and about 8,000 municipalities. The size of municipalities in Spain is very small, with only 13.3% of the municipalities having populations over 5,000.[15] According to Sole-Olle and Bosch (2003), unconditional grants to local governments are distributed mostly according to weighted population, with the weight increasing with population size. More specifically, 75% of the general grants are distributed depending on weighted population, 14% depending on the average tax effort of each municipality, 8.5% depending on the inverse of fiscal capacity, and the remaining 2.5%

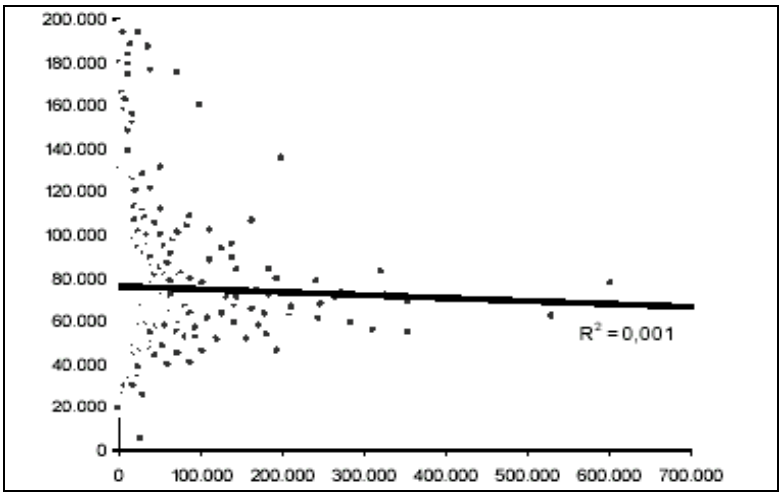
[15] Castells (2001).

depending on the number of public school unit.

The structure of general grants in Spain gives a very interesting contrast to that in Korea. The two countries are quite similar in the sense that population size is a dominant factor that determines the distribution of general grants. However, the weight attached to the population of local governments increases in Spain since expenditure responsibilities increase as the population size increases: when population is lower than 5,000, population weight is one, but it increases to 1.15 as the size of local governments increases to between 5,000 and 20,000. It also increases to 1.3, 1.5, and 2.8, respectively, as the size of local governments increases to, respectively, between 20,000 and 100,000, between 100,000 and 500,000, and above 500,000.

While the per capita general grants and expenditure responsibilities of local governments in Spain increase with population, the distribution of per capita expenditures is not very closely related to the size of population, as can be seen in Fig. 9. However, Sole-Olle and Bosch (2003) finds a positive relationship between per capita expenditures and the size of population, although the relationship is weaker than the weights attached to the formula of the general grants.

Fig. 9. Local expenditure per head vs. population (Spain)



VI. Analysis of Local Expenditures in Korea

1. Estimation of Congestion Parameter

Compared to the countries surveyed in the previous section, the structures of local revenues and local expenditures in Korea are remarkably uniform: local tax rates are the same for all local governments despite the fact that local governments have the power to adjust them; the salaries of local officials are the same for all local governments and set by the central government. Also, such public goods as education, police, and welfare programs, which are mostly local public services in other countries, are all provided by the central government in Korea. Since the burden of these types of public goods are roughly proportional to population size, the fact that these are provided not by local governments, but by the central government means that local expenditures in Korea are less influenced by population size compared to other countries.

To see the extent of "publicness" of local expenditures in Korea, we can hypothesize that total local expenditure of local government i, $N_i \times e_i$, takes the form of $\gamma_0 N_i^{\gamma_1}$, where N_i is the population of government i, and γ_0 and γ_1 are constants. Denoting E_i as the total local expenditure, we have

$$E_i = \gamma_0 N_i^{\gamma_1} . \qquad (1)$$

With this specification, γ_0 is the benefit of local expenditure that accrues to a resident, and γ_1 denotes the congestion parameter that reflects the economies of scales in the provision of local services. More specifically, if the total local expenditure E_i is independent of the population size, or when γ_1 is 0, local services are pure public goods and γ_0 is the same as the total expenditure E_i. If E_i is a linear function of population, or when γ_1 is 1, local public goods are publicly-provided private goods (quasi-private goods), and γ_0 is the same as per capita local expenditure e_i.[16]

Eq. (1) is a highly simplified local expenditure function compared to the more general functional forms used to estimate congestion parameter. The local expenditure function used in such studies as Borcherding and Deaton (1972) and Bergstrom and Goodman (1973) takes the

[16] It is assumed that the benefit of local expenditures are the same across local governments because basic fiscal needs is the dominant factor that determines local expenditure, and also because local tax rates are the same for all local governments.

form

$$E_i = \gamma_0 N_i^{\gamma_1} t_i^{\gamma_2} y_i^{\gamma_3},$$

where γ_2 and γ_3 represent, respectively, the tax-price and income of the median voter.[17] In a recent study on the degree of publicness of publicly provided goods in Japan, Hayashi (2002) adopts a more general functional form of local expenditure:

$$\begin{aligned} Log(E_i) = \gamma_0 + (\gamma_1 + \lambda_n Log(N_i) + \sum_j \lambda_j a_{ji}) Log(N_i) + \gamma_2 Log(w_i) \\ + \gamma_3 Log(z_i) + \sum_j \delta_j a_{ji} + \varepsilon_i, \end{aligned} \quad (2)$$

where w_i is the wages of local public labor, z_i is local service outputs, and a_{ji} is location-specific characteristics that affect local expenditures. Examples of z_i are per capita levels of roads, parks, water and education facilities. Examples of a_{ji} are 'heavy-snowfall area', the ratio of daytime population to nighttime population, percentages of young and elderly. The research focus of Hayashi (2002) is to measure congestion effect of local expenditures implied by the 'U-shaped' per capita local public expenditures as is shown in Fig. 6. Also, since congestion effect is in general different in different local governments, the coefficient of $Log(N_i)$ in Eq. (2) takes a general form that includes $Log(N_i)$ in it.

Considering these more sophisticated empirical specification, it is certainly possible that Eq. (1) suffers from specification error due to simplification. Despite this shortfall, we use Eq. (1) to estimate congestion effect of local public expenditures in Korea for the following reasons. Firstly, the median-voter model adopted in the demand estimates of local public services is not really applicable in Korea since local expenditures are not determined by popular votes as in the United States. Moreover, since local tax rates are the same for all local governments, tax-price is the same for all local governments except for the different levels of tax bases such as property value assessment. However, most of the difference in the latter is compensated by the general grants. As a result, tax-price plays a negligible role in determining the level of local expenditures in Korea.

Secondly, while such variables as w_i, z_i, and a_{ji} in Hayashi's study are generally important

[17] See Reiter and Weichenrieder (1997) for a recent detailed survey on demand estimates for local public goods.

to avoid misspecification of local expenditures, it can be argued that they are much less important in the case of Korea: the wages rates of local public labor are the same for all local governments; the variation of basic public services such as education facilities and roads is very little once the size of population is taken into account, as can be confirmed from Fig. 3. Likewise, such variables as 'heavy-snowfall area', the ratio of daytime population to nighttime population, percentages of young and elderly might have significant coefficients in the local expenditure estimation, but their sizes are expected to be negligible. In summary, although there must be better specification of local expenditures that captures congestion effect more accurately, the tight relationship between population and per capita local expenditure shown in Fig. 1 implies that the simple specification in Eq. 1 might perform reasonably well. So we now proceed with the following specification to estimate the congestion parameter γ_1:

$$Log(E_i) = \gamma_0 + \gamma_1 Log(N_i) + \varepsilon_i, \tag{3}$$

Using 2001 data of 170 cities and towns, the estimates of γ_1 is 0.55 with the t-value and R^2 being 26.3 and 0.8, respectively. Therefore, since $e_i = \gamma_0 N_i^{\gamma_1 - 1}$, the cost of per capita local expenditure decreases 4.5% if the size of population in a given local government increases by 10%.

2. Net Fiscal Benefits of Local Expenditures

The fact that congestion parameter of local expenditure in Korea is far below 1 has a very important implication on the regional policies in Korea. As was mentioned previously, the agglomeration of population and economic resources around the capital region in Korea is probably the most pronounced in the World. It is not clear whether this phenomenon is conducive to economic growth or not. However, there are very strong government policies including regulation and fiscal incentives that induce migration of production facilities and population out of Seoul region.[18] However, since the provision of public services becomes noticeably cheaper as the population size grows, there is a strong fiscal incentive imbedded in the local public finance structure in Korea that induces in-migration into large cities such as Seoul.

To see this in a more formal way, consider the net fiscal benefit (NFB) that is defined as the difference between the benefit that accrues to a resident from local expenditures and local tax

[18] A best recent example is the new president's campaign promise to establish a new administration capital outside Seoul metropolitan area.

burden.[19]

$$NFB_i = e_i N_i^{1-\gamma_1} - t_i . \quad (4)$$

Following Boadway and Hobson (1993), define comprehensive income as

$$I_i = w_i + NFB_i - H_i , \quad (5)$$

where w_i is income from labor and H_i is housing cost.[20] If there is no intergovernmental grants, $e_i = t_i$, and Eq. (4) becomes:

$$NFB_i = (N_i^{1-\gamma_1} - 1)t_i .$$

Thus, if γ_1 < 1, we have the following relationship:

$$NFB_i > NBF_j \Leftrightarrow N_i > N_j .$$

This relationship becomes stronger as the value of γ_1 approaches 0. Therefore, with the estimated value of γ_1 being 0.55 in Korea, in-migration into large cities will continue unless housing costs (wages) in large cities are high (low) enough to compensate for the high net fiscal benefits in the large cities. That is, migration between region i and region j stops when the following condition holds:

$$I_i - I_j = (w_i - w_j) + (NFB_i - NFB_j) - (H_i - H_j) = 0 . \quad (6)$$

Therefore even if the size of NFB differential between region i and j is significant, adjustments of housing costs and wages will ultimately ensure the condition for migration equilibrium, $I_i = I_j$. However, as is argued by Boadway and Flatters (1982) and Boadway and Hobson (1993), fiscally induced migration between regions is not socially desirable because of the problems of misallocation of resources and horizontal inequity between regions. Therefore, consider the case where the central government provides intergovernmental grants to ensure the

[19] See Boadway and Flatters (1982) and Boadway and Hobson (1993) for detailed discussions on the meaning of the net fiscal benefit.

[20] Housing costs is not considered in Boadway and Hobson (1993). It is considered here because housing cost differentials is an important equilibrating force for migration equilibrium.

same level of NFB, b, across local governments. Substituting $e_i = t_i + s_i$ into Eq. (4), s_i that makes NFB equal to a constant level b is:

$$s_i = N_i^{\gamma_1 - 1}(b + t_i) - t_i . \tag{7}$$

When γ_1 approaches 1, local public goods are quasi-private goods and s_i becomes a constant b. In this case, s_i that guarantees equal NFB is simply per capita subsidy equally distributed to all local governments. Thus, as far as per capita grants to local governments are equal, NFB differentials and fiscally induced migration do not take place.

When γ_1 is 0, Eq. (7) implies that

$$s_i = \frac{b}{N_i} - t_i + \frac{t_i}{N_i} .$$

Therefore, when large cities enjoy economies of scales in the provision of local public goods, intergovernmental grants that stop fiscally induced migration need to be disproportional to the size of population. It is worth noting that net fiscal benefit, b, can be made to be 0 if local tax revenue can be transferred from local governments to the central governments, or when $N_i s_i = -N_i t_i + t_i$. This result simply means that, if local public goods are pure, it is better for the central governments to take the whole national tax resources and provide public goods directly. In other words, when publicly provided goods are all pure, decentralized provision of public goods is not necessary at least from the viewpoint of economic efficiency.

If reducing NFB, or transferring tax resources from local governments to the central government is not politically feasible, equalizing NFB_i across all local governments requires that the NFB_i be equal to the highest NFB, or to the level of NFB enjoyed by the largest local government. This of course does not hold if in the large local government. Letting 1 denote the largest local government, we have $NFB_1 = (t_1 + s_1)N_1^{1-\gamma_1} - t_1$. Denoting s_i^* as the intergovernmental grants that make NFB_i equal to NFB_1, we have

$$s_i^* = (\frac{N_1}{N_i})^{1-\gamma_1}(t_1 + s_1) + \frac{t_i - t_1}{N_i^{1-\gamma_1}} - t_i . \tag{8}$$

Eq. (8) now shows the general relationship between population sizes and intergovernmental

grants that stop fiscally induced inter-regional migration. If γ_1 = 1, $s_i^* = s_1$, and s_i^* does not have to be related to population sizes, as noted earlier. Thus, when local public services are all quasi-private goods, intergovernmental grants do not have to vary across local governments as far as equalizing net fiscal benefit caused by different sizes of economies of scales are concerned. Of course, the amount of grants will vary across local governments even if local public goods are quasi-private goods when equalization of fiscal capacities or fiscal needs is pursued.

If γ_1 = 0, or if there is no congestion effect in the provision of local public goods, Eq. (8) becomes

$$s_i^* = \frac{N_1}{N_i}(t_1 + s_1) + \frac{t_i - t_1}{N_i} - t_i .$$

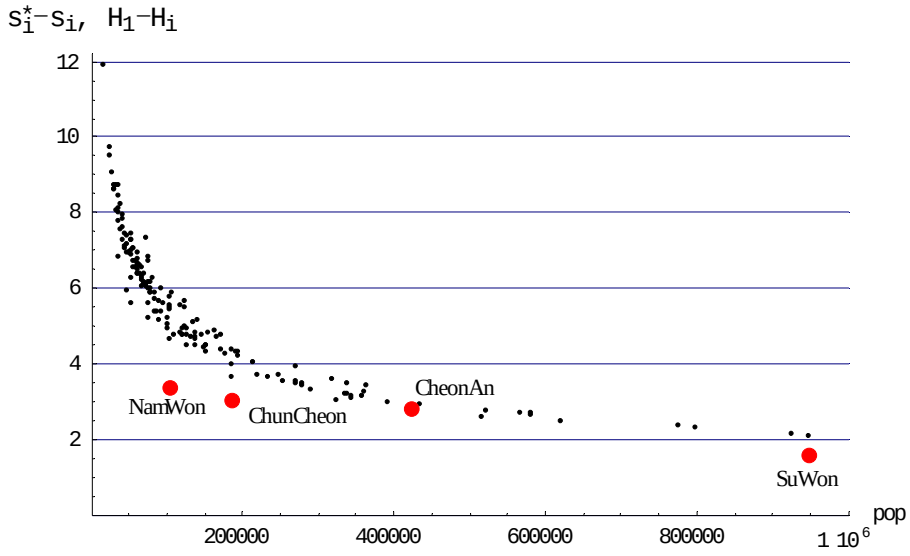
Therefore the grants that guarantee equal NFB across local governments is proportional to the sizes of the local tax, grants, and population of the largest local government (t_1, s_1, N_1), and disproportional to the population of grantee local governments, N_i.

In the general case where $0 < \gamma_1 < 1$, s_i^* does not have to be as strongly proportional to (t_1, s_1, N_1) as in the case where γ_1 = 0. However, the positive relationship between s_i^* and (t_1, s_1, N_1) is still very strong as far as γ_1 is not close to 1. To see whether the actual intergovernmental grants in Korea resembles s_i^*, we can calculate the difference between s_i^* and s_i. Note that, from Eq. (6), migration into the largest local government, Seoul, dose not take place as long as the comprehensive income differentials between Seoul and other regions are 0. Therefore if s_i^* and s_i are the same, NFB differentials disappear and adjustments of wages and housing costs are not necessary for fiscally induced migration between regions to stop. On the other hand, if s_i is less than s_i^*, migration into Seoul will continue until housing costs (wages) increase (decrease) enough to compensate for the NFB differentials. Since wages in Seoul metropolitan region are not empirically lower than those in other regions, the housing costs differentials, $H_1 - H_i$, will be the main equilibrating forces for migration equilibrium, in the case when s_i is less than s_i^*.

To get the NFB differentials between Seoul and other regions, γ_1 = 0.55, the population, per capita tax revenue, and per capita grants of Seoul are plugged in Eq. (8). The result is shown in

Fig. 10, where the vertical axes represents ($s_i^* - s_i$). The results shown in Fig. 10 imply that the actual grants are far below s_i^* and the differences become significantly large as the population size of local governments decreases. For example, compared to a resident living in the city of SuWon, CheonAn, ChunCheon, and NamWon, whose population is, respectively 948,065, 421,428, 183,605, 103,571, the resident in Seoul enjoys, respectively, additional NFB of 2.1 million Won, 2.9 million Won, 3.6 million Won, and 4.7 million Won.

Fig. 10. NFB and housing costs differentials (million Won)



3. Interpretation of Results

This result is apparently quite surprising since per capita NFB differential between Seoul and a smaller city can be as large as 15% of the annual household income, which is around 30 million Won. Assuming four persons in a household, this means that a household in Seoul enjoys NFB differentials as high as 60% of annual household income compared to a household living in a small city. This may look somewhat unrealistic. However, if we think of as much large housing cost differentials between Seoul and other regions, NFB differentials between Seoul and small cities look more plausible.

In Fig. 10, housing cost differentials between Seoul and four cities mentioned above are also shown. In calculating the housing cost differentials, several assumptions are made. Firstly, it is assumed that a household consists of four persons. Second, a household rents an apartment of size 30 “pyong”, which is about average sized apartments in Seoul. Third, since renters deposit a fixed amount of money to landlords during residency rather than paying monthly rents, it is

assumed that 10% of the money deposited is the annual cost of housing.[21] Under these assumptions, the per capita housing cost differentials between Seoul and other four cities, SuWon, CheonAn, ChunCheon, and NamWon, are, respectively, 1.6 million Won, 2.8 million Won, 3.1 million Won, and 3.4 million Won.

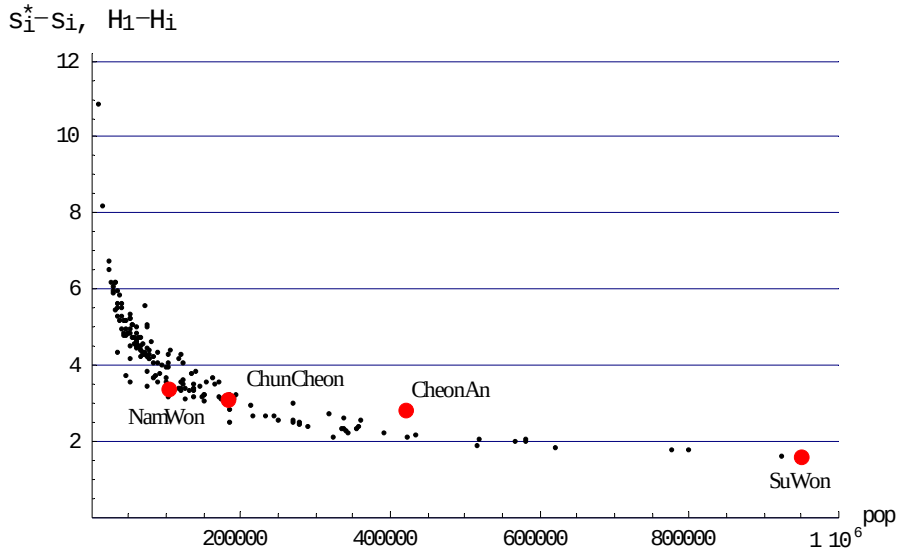
If we take these results at the face value, the housing cost differentials make the NFB enjoyed by Seoul less attractive, but pressure for fiscally induced migration into Seoul still remains, especially for residents living in rural areas whose population is small. Of course, costs of bad environments in Seoul such as bad air quality, accident, and heavy traffic congestion can play an important role of deterring migration into Seoul in addition to housing costs. But recent migration data shows that the centripetal force of Seoul is quite strong yet.

The reason why there is such strong pressure of migration into Seoul area can not be solely explained by NFB differentials. Especially, a positive agglomeration effect in Seoul metropolitan area, which is not clearly understood yet, may be playing an important role in attracting labor and capital into this region. However, net fiscal benefit that is caused by centralized provision of important public services such as education and police should not be ignored. As noted in the previous section, Seoul does not receive general grants from the central government except for education grants. Education, however, is the most typical local services. Therefore, if provision of educational services is decentralized, and the education grants are cut down for rich local governments, as in the case of other countries such as Japan, United Kingdoms, and the United States, NFB currently enjoyed by Seoul might be significantly reduced. Since the central government's educational grants to Seoul is about 2 trillion Won, and it's population is about 10 million, the per capita education grant Seoul is currently receiving is about 0.2 million Won. If the per capita cost of education in Seoul is increased by this amount, the migration pressure into Seoul will be significantly reduced and as a result housing costs will also be reduced.

Note from Eq. (8) that the NFB differentials between Seoul and other regions is proportional to the amount of grant to Seoul, s_1, by the factor of $(N_1 / N_i)^{1-\gamma_1}$. Therefore, if the education subsidy to Seoul is reduced, the impact on lessening NFB differentials will be quite greatly felt in small cities, as is shown in Fig. 11. This figure shows that, when s_1 is reduced by 0.2 million, s_i^* for the four cities are reduced by, respectively, 0.57 million Won, 0.82 million Won, 1.03 million Won, and 1.44 million Won.

[21] The opportunity cost a renter is faced with when living in a rented house is the sum of interest rate and

Fig. 11. NFB differentials with decentralized education services (million Won)



An important implication of decentralizing the provision of quasi-private public goods such as education, police, and welfare programs is that, by making the congestion parameter close to 1, it mitigates the problem of fiscally induced migration into a large metropolitan area.[22] It also lowers significantly high housing prices in the big city. If we assume 100% capitalization of benefits from public spending, the total value of housing in Seoul reduces by 28.6 trillion Won if educational subsidy of 2 trillion Won is cut annually.[23] While the actual result can be different from this simple calculation, depending on the extent of capitalization, the fact that NFB, population, and housing prices of Seoul are all closely interrelated should be more appreciated than now since economic cost of distortions created by 'balanced regional development policy' that includes regulation and other fiscal incentives to deter migration into Seoul is potentially significant.

V. Conclusion

Even though a large amount of resources are transferred from central government to local governments in Korea, the reason why such amounts of transfers are necessary is not clearly

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transaction costs.

[22] This point was actually discussed in the literature long time ago. Flatters et al. (1974) and Boadway and Flatters (1982) show that unstable migration equilibrium can occur when congestion parameter is less than 1. Note also that decentralizing the provision of quasi-private public goods does not necessarily mean that inter-regional equity is worsened since intergovernmental grants to equalize the basic service levels of education and welfare programs will be still in place.

[23] A discount rate of 7% is assumed. Land value in Korea is about two and half times the GDP, which is about 600 trillion Won in 2003. The land value in Seoul is about 32% of the total land value, implying that the land value in Seoul is about 480 trillion Won. This means that the capitalized value of 28.6 trillion Won is about 6% of the land value in Seoul.

known. General grants that is called “Local Transfer Tax” in Korea can best be regarded as equalization grants because it takes into account fiscal needs and fiscal capacities of local governments. However, it is called a “tax” rather than grants, implying the ambiguity of its nature by its own name. Two other types of intergovernmental grants, Local Transfer Fund and National Treasury Subsidy can be called, in a broad sense, block grants and conditional grants. However, the distributions of these two types of grants closely follow that of general grants: per capita amounts of the three types of intergovernmental grants in Korea increase as the population of the local governments decreases, and the relationship is very tight.

In this paper, it was argued that the reason why intergovernmental grants are so disproportionally related to the sizes of local governments is due to, although not explicitly recognized by policy-makers, the strong centripetal force of the large city created by the nature of expenditure assignment in Korea: since expenditure responsibilities of important publicly provided private goods are assigned to the central government, the congestion effect in the consumption of local public goods is not high, which in turn results in net fiscal benefits, the size of which being proportional to the size of population of a local government.

Under this circumstance, the large flow of fiscally induced in-migration into Seoul region can be easily expected. There maybe of course more fundamental reasons for the agglomeration of Seoul region, since agglomerations of metropolitan regions are observed all around the world. However, part of the reason we have such a large-scale in-migration into Seoul metropolitan area should be attributed to the fact that the net fiscal benefit enjoyed by Seoul is quite sizable.

The current structure of intergovernmental grants seems to be designed so that they can compensate for the net fiscal benefit differentials created by the difference in the population sizes between Seoul and small cities. And the new administration’s current efforts to vigorously pursue both transfer of financial resources to local governments and balanced regional development are also motivated by the wish to stop, or at least mitigate, the strong tendency of in-migration into Seoul region. However, these policies seem to be misdirected: rather than tackle the root cause of the in-migration problem, they are only trying to soothe the symptom that is caused by ill design of expenditure assignment.[24] They are not only very expensive policies, but also liable to be unsuccessful because of the market-intervening nature of the balanced regional development policy.

[24] Although not discussed in this paper, an increase in land value taxation and internalizing environmental externality costs in big cities are equally important policies to have optimal size of population in big cities.

References

Bergstrom, T. and Goodman, R., 1973, "Private Demands for Public Goods", American Economic Review 63, 280-296.

Ades, A., and E. Glaeser, 1995, "Trade and Circuses: Explaining Urban Giants", Quarterly Journal of Economics 109, 195-228.

Borcherding, T. and Deacon, R., 1972, "The Demand for the Services of Non-federal Government", American Economic Review 62, 891-901.

Boadway, R. and Flatters, F., 1982, "Efficiency and Equalization Payments in a Federal System of Government: A Synthesis and Extention of Recent Results", Journal of Canadian Economics 15, 613-33.

Boadway, R. and Hobson, P., 1993, Intergovernmental Fiscal Relations in Canada, Toronto: Canadian Tax Foundation.

Castells, A., 2001, "The Role of Intergovernmental Finance in Achieving Diversity and Cohesion: the Case of Spain", Environment and Planning C: Government and Policy 19, 189-206.

Flatters, F., J. Henderson, and Mieszkowski, P., 1974, "Public Goods, Efficiency, and Regional Fiscal Equalization" Journal of Public Economics, 3, 99-112.

Hayashi, M., 2002, "Returns to scale, congestion and the minimal efficient scales of the local public services in Japan", Financial Review 61 (In Japanese).

Kim, J., 2003, "Local Government Finance and Bond Market Financing in Korea", in Y. H. Kim (ed.), Study on Local Government and Bond Market Financing, Asian Development Bank, *forthcoming*.

Krugman, P., and Obstfeld, M., 1994, International Economics: Harper & Collins.

Krugman, P., 1991, "Increasing Returns and Economic Geography" Journal of Political Economy 99, 483-499.

Krugman, P., 1996, The Self-Organizing Economy, Blackwell: Cambridge.

Reiter, M. and Weichenrieder, A., 1997, "Are Public Goods Public? A Critical Survey of the Demand Estimates for Local Public Services", FinanzArchiv 54, 374-408.

Sole-Olle, A and Bosch, N., 2003, "On the Relationship Between Local Authority Size and Expenditure: Lessons for the Design of Intergovernmental Transfers in Spain", Working Paper, University of Barcelona.