

Regional Inequality and Fiscal Decentralization in Korea: Evaluation and Policy Implications

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I. Introduction

Since the late 1980s, Korea has been taking steps to decentralize public administration. The process has been largely motivated by the political objectives to revive local autonomy and grass-roots democracy, which had been suppressed under the military regimes during the 1960s and 1970s. The sweeping revisions of the Local Autonomy Act were made by the 6th Republic in 1988 to revive the system of local autonomy. In 1991, the system of local autonomy was reinstated in Korea by the elections for local council, and since 1995 newly elected governors and mayors have accelerated political decentralization.

Along with the political decentralization, fiscal decentralization was also initiated to strengthen the local autonomy system. One of the major objectives of fiscal decentralization was to expand the fiscal capacity of local governments in order to reduce the vertical fiscal imbalance between the central government and local governments. The objectives have been achieved mainly through both the increase in intergovernmental fiscal transfers and the changes in tax assignment.¹⁾ For instance, the Local Transfer Fund, a broadly defined conditional capital grants, was introduced in 1991. Subsequently, the national tax bases allocated to the Fund have gradually increased since then. The fixed percentage of the total national tax revenues allocated to the Local Share Tax, a form of a vertical tax-sharing system, was raised from 13.27 percent to 15 percent in 2000. Local tax bases were also strengthened through the decentralization of the tobacco tax in 1988 and introduction of motor fuel tax in 2000, among others.

As a result of fiscal decentralization, the local governments' expenditure increased gradually to 9.0 percent of GDP, from its previous level of 6.8 percent in 1990. (See Table A.1) Local governments' share of total public outlays increased also from 48.7 percent in 1995 to 53 percent in 2001, when intergovernmental transfers are subtracted from the central government's expenditure to avoid double counting. On the other hand, the share of local own revenue in total local governments' revenue

¹⁾ Local government expenditure is financed by local revenue and intergovernmental transfers. Local revenue is composed of tax and non-tax revenue. In addition, local governments can issue local bonds as a financing source. Intergovernmental transfers consist of tax sharing (Local Share Tax), conditional grants (National Treasury Subsidies) and more broadly defined capital grants (Local Transfer Fund). For detailed description of local government funding, see [Box A.1] in the

remained stable during the 1990s(See Table A.2), indicating that little progress has been made in terms of revenue autonomy. This mainly stems from the central government's reluctance to deploy tax decentralization initiatives fearing further widening in the horizontal fiscal imbalance among local governments.²⁾ On the whole, fiscal decentralization in Korea has been gradually making headway in the last decade, although the progress achieved so far may not be at a level of satisfactory.

The current Participatory Government has made decentralization and achieving balanced national development two national agendas. While the acceleration of decentralization focuses on narrowing the vertical imbalance in fiscal capacity between the central and local governments, the balanced national development seeks to reduce the horizontal disparity among regions or local governments. However, these two policy objectives do not necessarily go hand in hand, and at times being a cause of conflict for each other. Although the impacts of decentralization on regional inequality are not yet clear, fiscal decentralization can have quite a different impact on regional disparity, depending on the types of instruments used in expanding the local governments' fiscal capacity. If the local governments' fiscal capacity is strengthened by increasing equalization transfers from the central government, the impact on regional inequality may be positive by narrowing the horizontal fiscal imbalance across regions. However, in this case, its contribution to enhancing revenue autonomy would be very limited. On the other hand, if tax is utilized as an instrument of decentralization, the effects on regional inequality can be negative by widening the gap in fiscal capacity between high income regions and low income regions. Hence, in order to make decentralization more compatible with balanced regional development, the policy instruments for decentralization must be carefully selected.

At the same time, regional development policies need to be well designed in order to maximize its effectiveness on reducing regional disparity. Regional disparity is comprised of multi dimensions including inequalities in regional income, regional production capacities, regional infrastructure provision and regional concentration of

appendix.

²⁾ Currently, there is a large degree of variation between local governments in fiscal capacity. For example, while the ratio of locally funded to total local government spending is more than 94 per cent for the Seoul Metropolitan Government, the ratio is below 50 per cent for more than 80 per cent of the local governments. (Lim, 2002)

population and economic powers, among others. To maximize its effectiveness, the policy objectives of regional development need to be defined more clearly, and the responses to the policies from the public and businesses should be thoroughly examined. For instance, if regional inequality mainly stems from the regional gap in production capacity, then we need to raise investments in economic infrastructure so as to establish agglomeration economies in less-developed regions. If the objective is to enhance the quality of life in lagging regions, more priority should be placed on policies promoting social development in those area.

The general perception is that regional disparity is vastly prevalent in Korea, especially between urban and rural areas, and between the Seoul Metropolitan area and others. With regional disparity ongoing, the issue often becomes a political agenda. However, very often the meaning of regional disparity is not clearly defined among its various dimensions, and the dynamics of regional inequality have yet to be understood. Furthermore, the horizontal regional disparity between the Seoul Metropolitan area and other regions is often misinterpreted as a vertical imbalance between the central and the local governments, since most of the central government's public offices are located in the Seoul Metropolitan area. Hence, to effectively tackle the issue, we need to identify the many dimensions and dynamics comprising regional disparity in Korea more clearly, and efficiently design a balanced regional development policy.

The purpose of this study was twofold. First, the paper sought to examine the changes in regional inequality in Korea during the 1990s, when political and fiscal decentralization was initiated. In doing so, we attempted to look at regional disparity from various angles including; regional inequalities, in terms of both per capita GRDP and per capita regional consumption expenditure, and spatial concentration. Second, this paper attempted to identify how the recent efforts in fiscal decentralization affects the fiscal capacity of different regions or local governments. In particular, by measuring regressivity coefficients, we examined how the regional incidence of fiscal variables changed during the 1990s. The paper is outlined as follows. Section 2 estimates the various aspects of regional inequality during the 1990s. Section 3 estimates the changes in regional distribution of fiscal variables measured by the regressivity coefficient, KP index. The final section summarizes the major findings and their policy implications for balanced regional development.

II. Regional Disparity

1. Regional Income Inequality

Since regional disparity is a multi-faceted occurrence encompassing various inequalities in income, production capacity and social infrastructures, there is no single comprehensive method of assessing its various dimensions. A commonly applied method of measurement is comparing per capita income levels across different regions. In the absence of adequate regional income data, in this section, we examined the regional inequality by analyzing the distributions of both per capita Gross Regional Domestic Product (GRDP) and per capita regional private consumption expenditure. While GRDP represents each region's production capacity, private consumption expenditure is more closely related to the standard of living or welfare level of residents in each region. For this paper, data was compiled from annual GRDP and regional consumption expenditure for 16 upper-tier local governments; 7 metro-cities and 9 provinces.³⁾ (Figure A-1)

Table 1 shows major regional data for 16 local governments as of 2001. As shown in the table, Seoul comprises the largest share of population as well as GRDP. However, Ulsan shows the highest per capita GRDP, reflecting the large presence of the automobile industry in the region.⁴⁾ The level of per capita GRDP is higher on average in provinces compared to metro-cities. Furthermore, industrial structures differ between metro-cities and provinces: except in the case of Ulsan and Jeju island, the service sector's industrial share is much higher in metro-cities than in provincial areas. On the other hand, the level of per capita private consumption expenditure is higher on average in metro-cities.

³⁾ The subnational government system in Korea has a two-tier structure. The upper-level subnational governments consist of 16 local governments: 7 metropolitan cities and 9 provincial governments. The lower-level subnational governments consist of 232 local governments including cities, counties (Gun), and districts (Gu).

⁴⁾ Ulsan was part of the Gyeongnam Province until becoming a metro-city in 1997. In our analysis on regional inequality, we treat Ulsan as a part of the Gyeongnam Province for serial consistency.

<Table 1> Major Regional Statistics (2001)

Region	Population (ths.)		GRDP (billion won)		Industrial Structure(%)			Regional Expenditure (billion Won)			GRDP per capita (ths. Won)	Private consump. per capita (ths. Won)
					Agri. & Fish.	Mining & Mnftg	Services	Consump. Expenditure	Gr. Capital Formation	Net Outflow		
Seoul	10,060	(21.2)	114,362	(21.4)	0.4	8.4	91.2	89,153.2	21,871.3	3,810.4	11,368	7,887
Pusan	3,717	(7.9)	32,752	(6.1)	2.1	18.3	79.6	29,652.3	6,612.2	-2,763.3	8,812	7,290
Daegu	2,536	(5.4)	18,375	(3.4)	0.8	23.2	76.0	19,148.8	4,641.5	-5,415.4	7,247	6,879
Incheon	2,557	(5.4)	25,548	(4.8)	1.5	37.9	60.5	19,409.1	6,875.1	-933.6	9,991	6,906
Gwangju	1,339	(3.0)	12,277	(2.3)	2.5	28.2	69.3	10,379.7	2,712.4	-670.6	8,778	6,603
Daejeon	1,420	(3.0)	12,751	(2.4)	0.5	22.1	77.3	11,508.5	5,082.9	-3681.6	8,981	6,817
Ulsan	1,047	(2.2)	27,076	(5.1)	0.6	45.6	23.8	7,965.6	5,967.7	13,919.7	25,871	6,926
Gyeonggi	9,396	(19.8)	111,679	(20.9)	2.4	52.3	45.8	69,388.1	34,657.3	8,897.1	11,886	6,709
Gangwon	1,519	(3.2)	13,739	(2.6)	8.4	18.8	72.8	12,034.4	4,511.7	-2,649.2	9,044	6,648
Chungbuk	1,504	(3.2)	18,951	(3.5)	7.1	44.8	48.1	11,347.3	5,847.2	1,562.6	12,603	6,562
Chungnam	1,890	(4.0)	25,759	(4.8)	12.0	40.1	47.9	14,777.2	10,437.3	799.6	13,627	6,834
Jeonbuk	1,923	(4.1)	17,700	(3.3)	13.5	26.9	59.6	14,806.9	5,455.1	-2,152.3	9,206	6,632
Jeonnam	2,022	(4.3)	26,117	(4.9)	15.1	32.9	52.0	14,861.0	9,240.6	2,084.7	12,918	6,127
Gyeongbuk	2,776	(5.9)	35,514	(6.6)	8.6	42.6	48.9	20,755.3	13,243.3	2,113.2	12,794	6,531
Kyeongnam	3,051	(6.4)	37,261	(7.0)	8.2	44.6	47.2	22,566.3	3,776.4	3,776.4	12,211	6,539
Jeju	528	(1.1)	4,859	(0.9)	16.7	3.8	79.5	3,957.7	351.7	-351.7	9,206	6,342
Total (mean)	47,343	(100.0)	534,720	(100.0)	4.4	33.9	61.6	371,711.5	18,345.1	18,345.9	11,534	6,764

Source: National Statistical Office (2002)

1) Distribution of GRDP

To examine regional inequality in terms of per capita GRDP, we calculated two of the most widely applied measurements of inequality: the coefficient of variation (CV) and GINI coefficient. Again, each measurement is calculated separately for unweighted and weighted cases where each regional deviation is weighted by the region's share in the national population. Weighted measures provide a more appropriate analysis of regional inequality in Korea by taking into account the wide regional discrepancies in population size. Table 2 calculates the different measures of regional inequality of per capita GRDP for the periods between 1989-2001, during which political and fiscal decentralization initiatives were being pushed.

<Table 2> Regional Inequalities (per capita GRDP) in Korea : 1989-2001

Year	CV	Weighted CV	GINI	Weighted GINI
1989	0.1493	0.1592	0.0776	0.0756
1990	0.1490	0.1660	0.0763	0.0769
1991	0.1587	0.1759	0.0809	0.0755
1992	0.1636	0.1761	0.0833	0.0802
1993	0.1535	0.1667	0.0800	0.0793
1994	0.1670	0.1685	0.0870	0.0841
1995	0.1875	0.1829	0.0988	0.0888
1996	0.1993	0.1849	0.1070	0.0982
1997	0.2152	0.1959	0.1163	0.1069
1998	0.2320	0.2066	0.1254	0.1112
1999	0.2406	0.2158	0.1306	0.1171
2000	0.2507	0.2235	0.1363	0.1225
2001	0.2543	0.2269	0.1379	0.1234

In the case of weighted coefficient of variation, the coefficient values fluctuated within the range of 0.15~0.23 during the period between 1989-2001. On the other hand, the values of weighted GINI coefficients fluctuated within the range of 0.075 to 0.124. After examining the absolute values of the inequality coefficients, it is difficult to conclude a standard judgement on the degree of regional inequality. However, by comparing the values to those of other countries, we can determine a relative measurement of regional inequality. Table 3 presents the values of weighted coefficient of variation and weighted GINI coefficient for 7 industrialized countries and 11 non-industrialized countries, calculated by Shankar and Shah.(2001) By way

of an international comparison, we find that the values of both weighted measures of regional inequality in Korea are much lower than those of non-industrialized countries. The disparity at the regional level is similar to the levels in other industrialized countries. When comparing the levels of regional inequality within unitary countries, the degree of regional inequality in Korea is distinctly closer to those of industrialized countries.

<Table 3> International Comparison of Regional Disparities (per capita GRDP)

Country	year	Weighted CV	weighted GINI
Industrial Countries			
- Federal			
· Canada	1998	0.137	0.068
· USA	1997	0.122	0.039
· Germany	1995-97	0.262	0.122
· Spain	1995-97	0.210	0.118
- Unitary			
· France	1995-97	0.267	0.126
· Italy	1995-97	0.264	0.145
· U.K.	1995-97	0.178	0.083
Non-Industrial			
- Federal			
· Brazil	1997	0.468	0.267
· India	1997	0.414	0.227
· Mexico	1998	0.566	0.300
· Pakistan	1998	0.141	0.069
· Russia	1997	0.645	0.280
- Unitary			
· Chile	1994	0.334	0.165
· China	1999	0.987	0.264
· Indonesia	1998	0.722	0.277
· Philippines	1998	0.537	0.262
· Thailand	1997	0.925	0.442
· Vietnam	1997	0.996	0.410
· Korea	2001	0.227	0.123

Source : Shankar and Shah (2001)

Although the degree of regional inequality in terms of per capita GRDP is relatively low by international comparisons, we discover a steady deterioration in the regional distribution of per capita GRDP during the period between 1989-2001. The values of both weighted CV and weighted GINI coefficient show a sharp upward trend. This rising trend in regional inequality becomes more apparent following 1993. To statistically examine the dynamics of regional inequalities over a time period, we tested for a β -convergence in per capita GRDP across 16 regions. β -convergence occurs if relatively low income regions experience faster growth than high income regions. The difference in the growth rate allows the low income regions to close the gap before eventually catching up to high income regions (Barro and Sala-i-Martin 1995). The convergence coefficient, β , for periods [O, T] can be estimated from the nonlinear form of equation ;

$$\left(\frac{1}{T}\right) \cdot \log\left(\frac{y_{it}}{Y_{io}}\right) = \alpha - \left[\frac{(1 - e^{-\beta T})}{T}\right] \cdot \log(y_{io}) + u_i$$

where y_{it} denotes per capita GRDP in region i at time t . β means the speed of convergence ($\beta > 0$) or divergence ($\beta < 0$).

Estimates on Table 4 represent the convergence coefficient, β , for the period of, 1989-2001, and other two sub-periods. The estimated coefficients are statistically insignificant for the entire period and sub-period during 1989-1994. However, the coefficient is significantly negative for the period between 1995-2001, indicating β -divergence. This period coincides with the period in which political and fiscal decentralization was being actively pursued in Korea. However, it is inconclusive whether this diverging trend results from the fiscal decentralization initiatives. Rather, the widening regional inequalities in recent years is likely to be more closely related to the differences in industrial structure across regions.

<Table 4> Estimates of β -Convergence: per capita GRDP

Variable	Period	$\hat{\beta}$ (t-value)	R ²
per capita GRDP	1989-2001	-0.00534 (-0.069)	0.0462
	1989-1994	0.03770 (0.815)	0.2206
	1995-2001	-0.04514*** (-2.181)	0.5176

The recent diverging trend is mainly attributable to the fact that the wealthiest three Provinces in terms of per capita GRDP – Gyeongnam (Ulsan), Gyeongbuk and Gyeonggi - grew at a much faster rate than the other regions. (see Figure A-2) These regions also comprise more than 60 per cent of the country's manufacturing sector - Gyeonggi 32.2 per cent, Gyeongnam 20.5 per cent, and Gyeongbuk 8.3 per cent. In particular, these areas are where the key manufacturing industries are concentrated- for example, semi-conductors and IT hardwares in Gyeonggi and Gyeongbuk provinces, and automobiles in Gyeongnam(Ulsan) area. On the other hand, the per capita GRDP in Seoul, which occupies 31.6 per cent of the country's service industries increased at a much slower rate during the same period, implying that the manufacturing industries still play a dominant role in boosting production capacity in the region. These fast growing areas, which are located in the vicinity of large metro-cities, are relatively well endowed with economic infrastructures which were implemented through the central government's selective growth pole development strategy during the early stages of development. These areas, where industrial activities are highly concentrated, are still reaping the benefits of agglomeration economies already established in those regions.

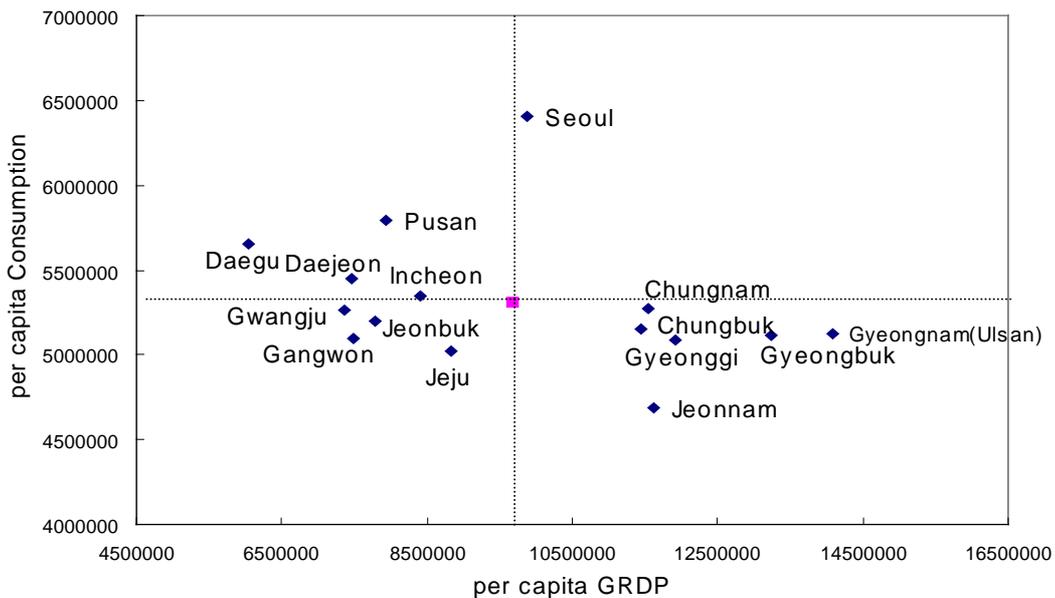
2) Distribution of Regional Consumption Expenditure

GRDP is a size of output produced in a region, which represents regional production capacity. Output produced is distributed among production factors in the form of capital income and labor income. During the distribution process, capital inflows and outflows occurs across regions. Capital income is shifted to the regions with the capital owners. Even labor income can be shifted to other regions if a worker's residence differs from the workplace, or if remittance to other family members in different region occurs. The incomes distributed in a region are spent again in the form of either consumption expenditure or capital formation. Hence, there are inevitable discrepancies between the size of GRDP in a region and the level of income or consumption expenditure in that region.

Indeed, Figure 1 well illustrates the discrepancy between levels of per capita GRDP and per capita private consumption expenditure across regions. No significant correlation can be found between these two variables. However, the

figure does show a distinct difference in the relationship between metro-cities and provinces: metro-cities exhibit high levels of per capita consumption expenditure with relatively low levels of per capita GRDP, while most of the provincial areas exhibit low per capita consumption levels despite their relatively larger per capita GRDP. This implies that residents in provincial areas with high production activities do not necessarily enjoy high standards of living, and that people who can afford to, prefer to live in urban areas where local amenities are well provided. It also implies that, if the ultimate policy objectives of balanced regional development is to improve the quality of life among residents in lagging regions, economic development policies to foster production capacity and to expand employment opportunities in those regions may not be sufficient. Social development policies to improve the quality of life in those regions need to be replenished to achieve the desired policy goals.

[Figure 1] Correlations between p.c. GRDP and p.c. Private Consumption (2001)



If the basic purpose of measuring regional inequalities is to compare the standard of living or welfare level of residents in different regions, it will be more appropriate to compare levels of personal income or consumption expenditure for various regions. Table 5 presents the results of static measures in regional inequality in terms of per capita private consumption expenditure for the period between 1995-2001. When compared to the results in Table 2, we find some interesting differences in regional

distribution patterns between per capita consumption expenditure and per capita GRDP. First, the degree of regional inequality in terms of per capita private consumption is much lower than that of per capita GRDP. Both the weighted CV and weighted GINI coefficients for per capita consumption are lower than half of those for per capita GRDP in 2001, implying that standard of living measured by the level of private consumption expenditure is much more evenly distributed across regions than regional production capacity.

<Table 5> Regional Inequalities (per capita Private Consumption): 1995-2001

Year	CV	Weighted CV	GINI	Weighted GINI
1995	0.0897	0.1342	0.0427	0.0627
1996	0.1008	0.1523	0.0462	0.0698
1997	0.1000	0.1502	0.0459	0.0689
1998	0.0933	0.1384	0.0424	0.0636
1999	0.0876	0.1267	0.0411	0.0588
2000	0.0740	0.0994	0.0379	0.0476
2001	0.0756	0.1058	0.0369	0.0511

Secondly, quite contrary to the case of per capita GRDP, regional distribution of per capita consumption expenditure had actually improved during the period between 1995-2001. Both the coefficients of weighted CV and weighted GINI decreased significantly between 1996 and 2000. The evidence for the decline in inequality over a period of time can also be found from the dynamic β -convergence test. As is shown in Table 6, estimate of the convergence coefficient, β , is strongly positive, indicating that poor regions grew faster than rich regions, and caught up with the rich ones.

<Table 6> Estimates of β -Convergence: per capita Private Consumption

Variable	Period	$\hat{\beta}$ (t-value)	R ²
per capita Private Consumption	1995-2001	0.04120*** (2.270)	0.5893

This convergence in regional per capita consumption level is mainly attributable to the declining gap between Seoul, which takes up the highest level of per capita consumption and largest population share, and other regions. In particular, metro-cities such as Pusan, Daegu and Dajeon, were rapidly closing the gap with Seoul in regards to the level of per capita consumption expenditure. (See Figure A-3) Another likely reason for the convergence is that, with a development of a nationwide capital markets, residents in relatively lagging regions were able to enjoy greater accessibility to financial institutions. Also, inter-regional migration is another likely scenario during this period that further worked to reduce regional inequalities. In any case, we couldn't find evidence backing the presumption that decentralization had negatively impacted regional inequality in terms of per capita consumption level. Contrary to the diverging pattern in regional distribution of per capita GRDP which was partly induced by the government's earlier development strategies, the market-induced change was made toward the direction that the level of per capita consumption is equalized across regions.

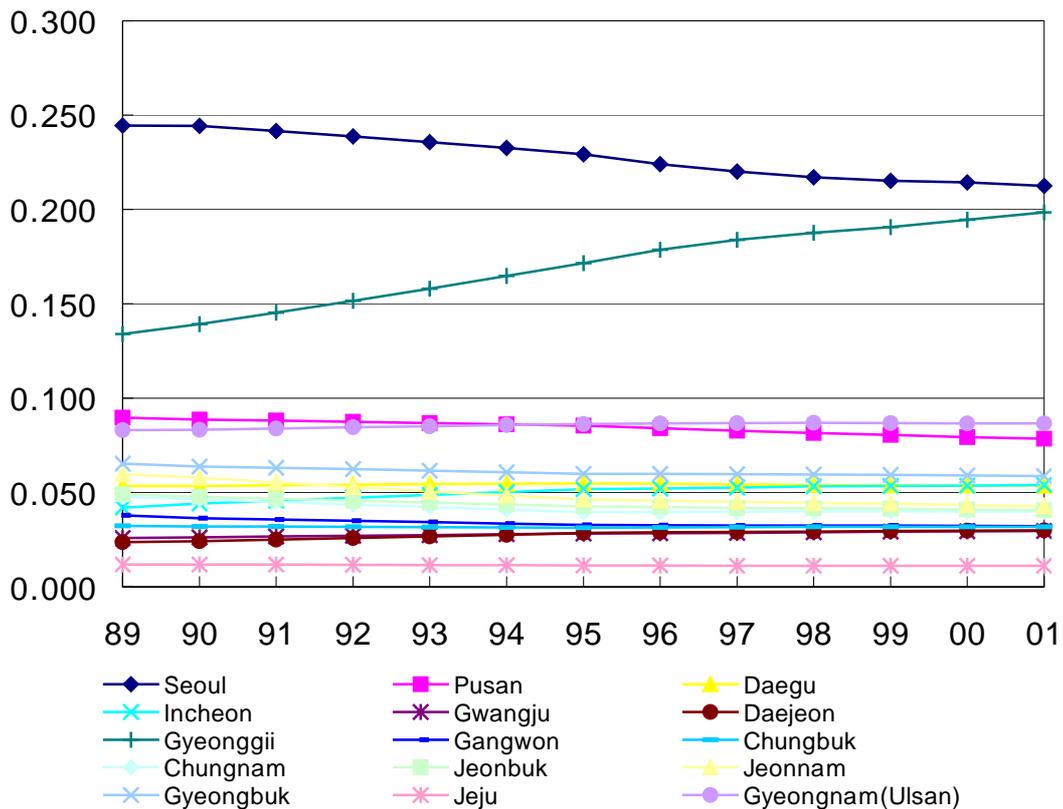
2. Spatial Concentration

Above, we examined the regional disparities in Korea in terms of per capita GRDP and per capita private consumption expenditures. We found that, although regional disparity in terms of per capita GRDP was rising throughout the 1990s, the degree of inequality is much lower compared to those in most developing countries. On the other hand, per capita private consumption expenditure is more evenly distributed among different regions than per capita GRDP, and has been exhibiting an equalizing trend since the mid-90s.

Another dimension of regional inequality is the spatial concentration of population and economic powers. In contrast to relatively even distribution of regional income, spatial concentration, especially in the Seoul Metropolitan area, poses a more serious issue. The regional distribution of the population in Korea is highly skewed; in 2001, almost half of the total population resided in the Seoul Metropolitan area (Seoul, Incheon, and Gyeonggi Province), which occupies only 11.8 per cent of the national territory. Furthermore, the population continues to experience growth in these regions.

As shown in Figure 2, Korea has experienced significant shifts in the regional distribution of the population in the 1990s. Most of the shifts in this period occurred within the Seoul Metropolitan area. The declining share of population in Seoul mostly reflects the increased migration from intracity to suburban areas in Gyeonggi Province. The shift in the share of population is due to the migration to the newly developed residential areas in the vicinity of Seoul, such as Bundang, Ilsan and Pyongchon, which were developed by the central government with the explicit purpose of easing the over population burden in Seoul. These new residential areas in Gyeonggi Province have contributed in sustaining its population share growth by attracting not only migrants from Seoul but from other regions as well. As a result, the population share in the Seoul Metropolitan area has steadily increased from 39.1 percent in 1985 to 46.5 percent in 2001.

<Figure 2> Changes in the Regional Population Shares (1989-2001)



The main reason for the geographically concentrated pattern originates from the government's growth pole approach for regional development, adopted in the early stages of economic development in the 1960s and early 70s. Given the resource constraints, the investments for infrastructure and regional development were channeled into a few designated areas to maximize efficiency, and this strategic targeting resulted in the spatial concentration of industrial activities and increased population in the major urban areas. The government's effort to carry out rural development was very limited, which gradually widened the gaps in production capacity and standard of living between regions, and resulted in the large-scale migration from rural-to urban areas.

During the subsequent development period, the major development goals shifted toward directing greater investments to social infrastructures rather than economic infrastructures in order to alleviate regional imbalances and to improve the quality of life in the lagging regions. The production-oriented development projects such as the industrial complex and transportation infrastructure were replaced by the provision of more housing and utilities. Also, various policy measures were implemented to alleviate the spatial concentration in the areas near Seoul. For instance, restrictions on land use were applied in the Seoul Metropolitan area to allow for the stringent control of its population density. A development charge was imposed on the construction of population-inducing facilities in the area. In addition, incentives, such as corporate tax exemptions and the provision of matching funds were offered to large corporations and their affiliated plants to relocate to other areas.(Kim, Hong and Ha, 2003)

Despite the government's efforts to ease the geographical imbalances, especially between the Seoul Metropolitan area and the rest of the territory, these measures fell short in reversing the immigration trend into the region. The population share in the Seoul Metropolitan area continues to grow, although the rate of population inflow has decelerated since the mid 1990s. This trend implies that benefits gained from the agglomeration economies already established and relatively abundant employment opportunities outweigh the negative congestion costs resulting from the extremely high population density in Seoul Metropolitan area.

As shown in Table 7, economic powers are also highly concentrated in the Seoul Metropolitan area. By 2001, 47.1 percent of the total GRDP is concentrated in this region. This area also occupies 42.8 percent of the mining and manufacturing industries, and 51.7 per cent of the service industries. The share of private consumption expenditures in the area is even greater than its population share and GRDP share. Moreover, according to official statistics (Ministry of Construction and Transportation, 1999), 42.3 percent of universities, 65.9 percent of financial institutions, 69.4 percent of government agencies are located in this region. The over population in the area naturally creates many urban problems from congestion including a shortage in the housing supply, heavy traffic congestion and environmental degradation. In the case of Seoul, the environmental rehabilitation costs amounted to about 4 trillion won in 1999. (MCT)

<Table 7> Spatial Concentration in Seoul Metropolitan Area (1985-2001)

	(Unit: per cent)							
	1990	1995	1996	1997	1998	1999	2000	2001
Population	42.8	45.3	45.5	45.6	45.8	46.0	46.3	46.5
GRDP	46.2	45.7	45.6	45.7	46.4	46.3	47.2	47.1
Industrial Share								
-Agri.& Fishery	15.2	13.0	13.2	13.3	13.4	13.6	14.7	14.8
-Mng. & Mnfg.	44.9	41.6	41.0	41.4	43.0	42.7	43.7	42.7
-Services	53.3	52.9	52.9	53.5	53.4	53.7	54.2	54.0
Prv.Consump.Share	n.a.	48.8	49.1	49.1	49.0	49.0	48.8	48.5
Local Tax Share	45.3	47.0	46.7	47.6	47.9	48.5	48.7	50.3

Source : National Statistical Office(2002).

In summary, spatial disparity rather than regional income inequality poses a more serious challenge in pursuing regionally balanced development. Accordingly, greater emphasis should be placed on regional development policies promoting the geographical decentralization of population and economic powers. Hence, policy measures should be properly designed at achieving these objectives. Enhancing the production capacity in the lagging regions through increased investments on economic infrastructure and formation of industrial clusters may not be sufficient enough to reverse the polarizing trend affecting the population. Policy priorities should be given to measures that provide sufficient government support to raise basic social

infrastructure investments, including public utilities, educational services, and transportation, so as to improve the quality of life in the lagging regions.

III. Regional Incidence of Fiscal Expenditure and Revenue

1. Regional Incidence of Fiscal Variables

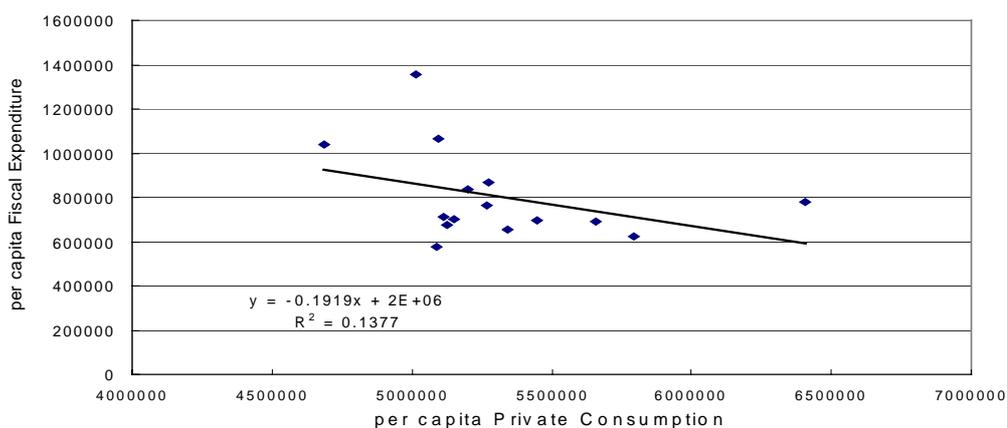
Measuring the impacts of fiscal policies on regional inequality presents a very difficult task. We did not attempt to identify the structural relationships between various fiscal variables and regional inequality. Instead, we attempt to examine how fiscal expenditures and revenues are distributed among regions with different levels of per capita private consumption expenditure. The implicit assumption behind this approach is that, if per capita fiscal expenditures is larger in relatively low income regions, it would contribute to reducing regional inequality by facilitating relatively faster growth in those regions. At the same time, if the levels of local transfer revenue distributed by the central government are higher in low income regions, it would help in narrowing the distance between the low and high income regions. We also attempted to find out how the regional incidence of fiscal variables was affected by the decentralization process during the 1990s.

Figure 3 depicts the correlations between the regional distributions of per capita fiscal variables and per capita consumption in 2001 on scattered diagrams. As shown in Figure 3.a, there was a significant negative correlation between the levels of per capita fiscal expenditure and per capita private consumption across regions, indicating that per capita fiscal expenditures were more concentrated among relatively low income regions in 2001. Figure 3.b shows that the regional distribution of per capita local transfer revenue, which includes general grants and other conditional grants, was more negatively correlated with the distribution of per capita consumption. This negative correlation was strong enough to outweigh the positive correlation between per capita local tax revenue and per capita regional consumption.

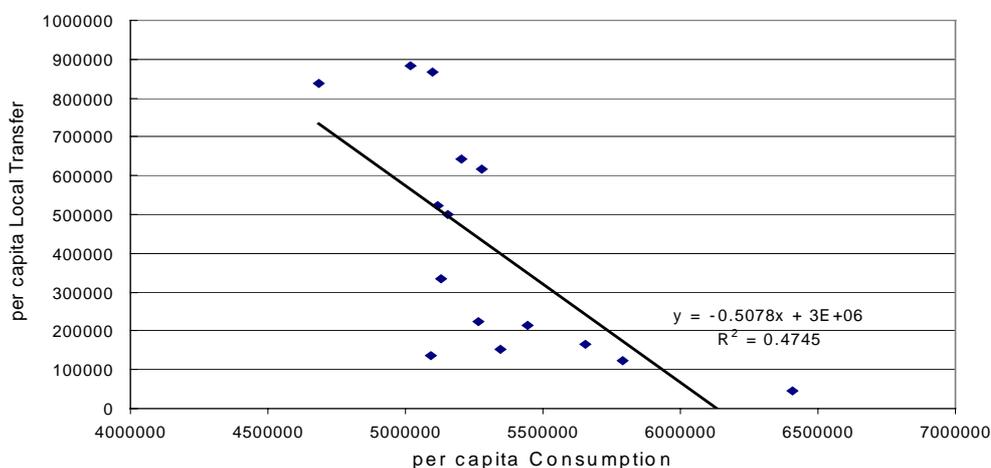
Figure 3 indicates that the local revenue transfer revenue was crucial in enabling the low income regions to share higher levels of per capita fiscal expenditure. General grants (Local Share tax) is designed basically to compensate for the disparity in generating tax revenues and meeting the fiscal needs in each region, thereby allocating more public resources to low income regions where tax revenue-raising capacities are small. Other conditional grants, such as National Treasury Subsidies and Local Transfer Fund, are allocated in line with national policy priorities, one of which is to facilitate the balanced growth by alleviating regional disparities. Accordingly, local transfer revenues were allocated by the central government in a regressive way. On the other hand, the central government was reluctant to increase the local tax-raising powers fearing further widening gap in fiscal capacities between low and high income regions.

<Figure 3> Correlations between Fiscal Variables and Private Consumption (2001)

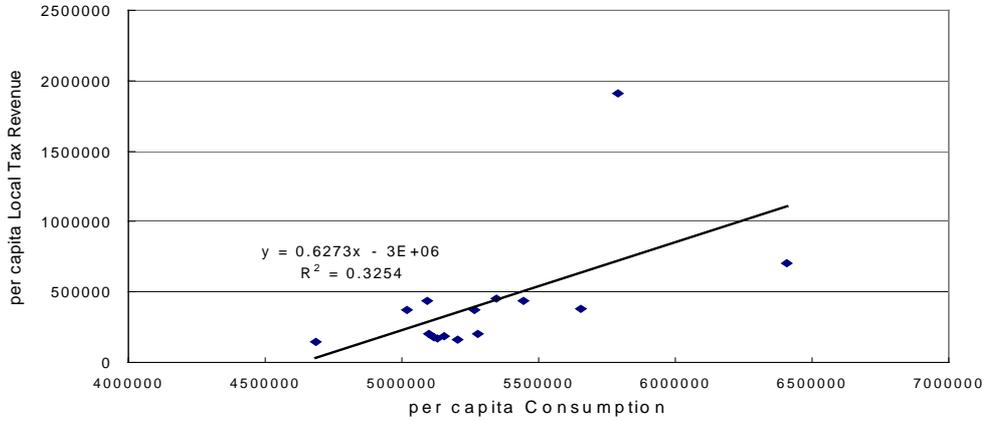
a. Fiscal Expenditures



b. Local Transfer Revenue



c. Local Tax Revenue



To trace out the impacts of decentralization process on regional incidence of fiscal variables, we need to identify how the relationship between per capita consumption and per capita fiscal variables across regions has changed over time. To look at this we estimated the pooled regression of the equation,

$$\left(\frac{E}{P}\right)_{it} = \alpha_i + \delta_t + (\beta_0 + \beta_1 \cdot t)\left(\frac{C}{P}\right)_{it} + \varepsilon_{it}, \quad (i : \text{regions}, t : \text{year})$$

where δ_t is year dummies, and E/P and C/P are per capita fiscal variable and per capita consumption, respectively. In the above equation, the coefficient β_1 measures the time trend of changes in relationship between dependent and independent variables.

Table 8 presents estimates of coefficient β_1 for the cases in which we apply per capita regional fiscal expenditure and per capita local transfer revenue, respectively, as explained variables. In both cases, the estimates of β_1 are significantly negative, which indicates that the negative slopes in both Figure 3.a and Figure 3.b became steeper over time during 1995-2001. In other words, during the decentralization process the level of per capita fiscal expenditures, as well as the level of per capita local transfer revenues, allocated in relatively low income regions

became larger in proportion. From these results, it can be said that the decentralization had an influence on regional incidence of fiscal expenditure and local transfer revenue in a regressive way by allocating more public resources in relatively low income regions.

<Table 8> Changes in Local Incidence of Fiscal Variables : Estimates

Dependent Variables	Period	$\hat{\beta}_0$	$\hat{\beta}_1$	R ²
per capita Expenditure	1995-2001	-0.05594 (-0.9426)	-0.01737*** (-2.2237)	0.8951
per capita Transfer Revenue	1995-2001	0.02543 (-0.5312)	-0.03558*** (-5.6472)	0.9554

2. Regressivity of Regional Incidence

To measure the regressivity of regional incidence of fiscal variables quantitatively, we calculated KP indices developed by Khetan and Poddar (1976). KP Index relates the distribution of income to the relative distribution of fiscal variables. KP index is defined as

$$KP = \frac{1-G}{1-F}$$

where G denotes the GINI coefficient for regional distribution of per capita income - in our case, per capita consumption. Fiscal concentration coefficient, F , can be interpreted as a GINI coefficient for the Lorenz curve of fiscal variables which maps the cumulative proportions of fiscal variables against the cumulative proportions of population, moving from the lowest income to the highest. KP index is based on the share deviations of fiscal variables from the income shares. If the shares of fiscal variables are equal to the income shares for all regions, the value of KP index would be 1. (Proportional Case) If the shares of fiscal variables are less than the income share for low income regions, KP index would be less than 1. (Progressive Case) Likewise, if the shares of the bottom income regions is larger than their income shares, KP index would then be greater than 1. (Regressive Case) That is, the higher (lower)

the value of KP index is, the fiscal variables are more progressively (regressively) distributed among regions with different levels of per capita income or consumption.

In this chapter, we calculated the KP indices for per capita fiscal expenditures distributed across regions for the period between 1995-2001. The indices are also calculated for three sub-categories of fiscal expenditure: social development expenditure, economic development expenditure and general administration expenditure. Social development expenditure covers the public expenditures on major social initiatives such as education and culture, health and environment protection, social security, housing and development of local communities. On the other hand, economic development expenditures include public investments on major economic infrastructures for industrial and economic development and transportation.

The estimates of regressivity coefficients, KP indices for the seven-year period from 1995 to 2001 are presented in Table 9. As expected, all of the fiscal expenditure variables are regressively distributed across regions, indicating that shares in per capita fiscal expenditure of low income regions is larger than their shares in per capita consumption. The changes in the degree regression of total fiscal expenditure exhibits a slightly decreasing trend, despite year to year fluctuations. As for the sub-categories, it is difficult to find systematic changes in the regressivity of expenditures on both economic and social development. On the other hand, the degree of regressivity has distinctively strengthened over time in the case of general administration expenditure.

<Table 9> K-P Indices of Local Fiscal Expenditures

Year	Total Expenditure	Social Development	Economic Development	General Administration
1995	0.9181	1.0203	0.7398	0.9199
1996	0.9086	0.9357	0.8163	0.9019
1997	0.9324	0.9722	0.8574	0.8972
1998	0.8905	0.9296	0.8144	0.8672
1999	0.8966	0.9140	0.8444	0.8611
2000	0.8886	0.9017	0.8338	0.8576
2001	0.8950	0.9548	0.8173	0.7894

It is particularly interesting to note that, the degree of regressivity in economic development expenditure was the largest among the three sub-categories throughout the periods. In contrast, the degree of regressivity in social development expenditure was significantly weak, almost proportional across regions. This distinction implies that the low income regions tended to emphasize economic development more than social development. The likely reason is that the central government and/or local governments has placed more priority on expanding investments in economic infrastructure in lagging regions to achieve the policy objective of a more regionally balanced development. It can also be deduced that the importance in reducing the degree of social development gaps across regions was relatively neglected, despite the shift in major development policies towards this direction.

We also calculated the regressivity coefficients for local transfer revenue, which is presented in Table 10. The degree of regressivity in total local transfer revenue is much larger compared to fiscal expenditure. The values of regressivity coefficients fluctuated between 0.69-0.75 without distinct systematic changes over time. Only the National Treasury Subsidies, which are conditional grants that provide funding under very specific purposes, showed a declining trend over time in its degree of regressivity, indicating that the equity enhancing role of the grants was gradually reduced between 1995 and 2001.

It can also be noted from Table 10 that, among various grants, the Local Share Tax was more regressively allocated across regions than other conditional grants such as the National Treasury Subsidies and Local Transfer Funds. One important policy implication can be derived from this result: Increasing the shares of Local Share Tax in total local transfers by shifting part of the conditional grants to general grants would be preferable on the grounds of both efficiency and equity. Not only would this substitution improve efficiency in the provision of local services by enhancing the local expenditure autonomy but it would also have a positive impact on regional equity by increasing the fiscal shares of low income regions. Hence, this approach deserves serious consideration for redesigning the local transfer system in such a way that would strengthen the role of the Local Share Tax. On the other hand, the role of

conditional grants should be limited to financing projects with large inter-regional spill-over effects and nationwide externalities.⁵⁾

<Table 10> K-P Indices of Local Transfer Revenues

Year	Total	Local Share Tax	Subsidies	Local Transfer Fund
1995	0.6955	0.6989	0.6790	0.7654
1996	0.6934	0.6895	0.6826	0.7857
1997	0.7088	0.6914	0.7061	0.7671
1998	0.7234	0.6796	0.7307	0.8050
1999	0.7524	0.7314	0.7614	0.7656
2000	0.7277	0.6877	0.7330	0.7924
2001	0.7497	0.7144	0.7575	0.7644

VI. Summary and Policy Implications

The purpose of this paper was to examine from various angles the shifts in regional inequality in Korea during the 1990s, and to identify how the recent efforts of fiscal decentralization affected the local government's fiscal capacity, and thereby regional disparity, across different jurisdictions. The empirical analysis presented in the earlier sections and their policy implications can be summarized as follows.

First, we found that the regional inequality in terms of per capita GRDP and per capita regional consumption expenditure exhibited distinctly different patterns with respect to the degree of inequality as well as their dynamic movements. It implies that decisions that determine the location of firms and people are likely to be influenced by different factors. The rising regional inequality of per capita GRDP is mainly attributable to the regional concentration of manufacturing industries in the areas where agglomeration economies are already established. On the other hand, the market-induced changes seemed to be made toward the direction that the level of per capita consumption expenditure was equalized across regions during the 1990s. Although further research is required to explain this phenomenon structurally, policy

⁵⁾ One study found that only one-fifth of the 344 projects financed by National Treasury Subsidies actually demonstrated such an effect. (Kim, 2000)

implications could be quite different depending on which variable is targeted for balanced regional development. If the ultimate goals of regional development policy is to raise the quality of life in lagging regions, the current government's emphasis on increasing economic investments to promote the development of industrial clusters in those regions may not be sufficient.

Second, it seems that spatial disparity, rather than regional per capita income inequality, especially between the Seoul Metropolitan area and other regions poses more serious challenges in pursuing regional balanced development. Accordingly, greater emphasis should be placed on regional development policies promoting the geographical decentralization of population and economic powers. To achieve this, the current government announced a bold plan to relocate the entire central government located in the Seoul Metropolitan area to some location in the southern part of the national territory. While this radical measure is to some extent expected to alleviate the population burden in the Seoul Metropolitan area, this physical relocation alone cannot provide a permanent solution to the issue of spatial concentration. Additional investments in social infrastructure as well as economic infrastructure in lagging regions is required, so that market-induced changes in the regional distribution of population and economic powers can occur gradually.

Third, we found that intergovernmental transfers are allocated among regions so that the level of per capita fiscal expenditure is higher for the low income regions in terms of per capita consumption expenditure. Furthermore, this equity-enhancing role of intergovernmental transfers was strengthened when fiscal and political decentralization initiatives were being actively pursued. This implies that the current system of intergovernmental transfers, despite its various problems which will be discussed in a later session, played an important role in ensuring horizontal equity among different jurisdictions. We also found that the equity-enhancing role of Local Share Tax, general grants, was more effective than other conditional grants. This finding derives an important policy implication; in that, increasing the shares of Local Share Tax in total intergovernmental transfers by shifting part of the conditional grants would not only improve efficiency by providing more fiscal autonomy to local governments, but it would also have a positive impact on enhancing regional equity.

Lastly, the regressivity analysis on the sub-categories of per capita regional fiscal expenditure revealed that the degree of regressivity in social development expenditure is much weaker than economic development expenditure. The likely reason is that the central government and/or local governments has placed more priority on investments for economic development, compared to social development, in lagging regions to achieve the policy objective of balanced regional development. However, our analysis above indicates that more priority should be placed on policies that narrow the social development gaps across regions to alleviate regional disparity in terms of welfare and spatial concentration of population.

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[Box. A1] Local Government Funding in Korea

Tax Revenue: Local tax revenue is provided by 17 taxes, with those related to property accounting for three-fifths of the total. The central government administers both the assessment rules and actual property tax rates, leaving local governments with limited discretion in practice. But the “flexible tax rate system” allows local government to vary rates by up to 50 per cent of the centrally determined tax rate for 11 local taxes, including the resident tax and the tobacco tax. However, local governments have rarely used this power to raise their tax revenues.

Non-Tax Revenues: Local governments receive revenue from their stakes in, and operation of, profit-oriented businesses, local public enterprises and public land development, as well as from various fees and charges.

Tax Sharing: Local Share Tax is a vertical tax-sharing system designed to equalize vertical and horizontal disparities with respect to tax-raising capacities and needs. It sets a fixed percentage (15 per cent) of the total national tax income that goes to the local level. The equalization formula between local governments is based on the concept of “standardized fiscal deficiency”, which is calculated as the difference between standardized fiscal needs and standardized fiscal revenue. The standardized fiscal need is calculated on the basis of a complicated formula taking into account demographic, geographic, and social and economic characteristics. The standardized fiscal revenue is calculated through a simpler formula, mostly reflecting 80 per cent of actual tax revenue and current non-tax revenues of a local government, which may discourage local government efforts to raise more revenue. While 10/11ths of the total amount is a general transfer, based on normal criteria, a small fraction (1/11th), called Special Local Share Tax, is earmarked, which functions more like conditional grants.

Conditional Grants: National Treasury Subsidies, which are matching-grants, are provided to local governments for specific projects. They are allocated in line with national policy priorities for each economic sector based on annual evaluations of local needs by the central government. In 2001, National Treasury Subsidies accounted for 45 per cent of all central government transfers and 13 per cent of total local income.

Conditional Capital Grants: The Local Transfer Fund is somewhere between tax sharing and conditional grants in Korea and is often called “block” grants because of its relatively broad objectives. It was introduced in 1991 to stimulate local capital investment in infrastructure and is financed by specific shares of national taxes. Currently, all liquor tax, 15.3 per cent of the special agriculture tax and 14.2 per cent of transportation tax are transferred to local governments through this Fund. The revenues may be spent on road maintenance (70 per cent), farming and fishing development, water purification, regional development and youth education.

Other Funding: There are two tax-equalisation schemes between upper and lower-level local governments that resemble the Local Share Tax. These schemes aim to offset horizontal disparities among autonomous districts (Metropolitan City Revenue Sharing) and cities or counties (Fiscal Compensation Fund). In addition, the Local Subsidy is a conditional grant transferred from upper-level to lower-level local governments.

Source: Reprinted from OECE(2003), p.110.

<Table A.1.> Share of Local Governments in Overall Expenditure and Taxes

(Unit: Percent of GDP)

	Expenditure			Tax Revenue		
	National (A)	Local (B)	(A) : (B)	National (C)	Local (D)	(C) : (D)
1990	15.0	3.5	80.9:19.1	18.2	6.8	72.9:27.1
1995	15.0	4.1	78.8: 21.2	19.3	7.3	72.7:27.3 (51.3:48.7)*
1996	15.5	4.2	78.9:21.1	20.0	7.9	71.7:28.3 (50.5:49.5)
1997	15.4	4.1	79.0:21.0	20.4	8.4	70.9:29.1 (49.6:58.1)
1998	15.3	3.9	79.8:20.2	23.7	8.5	73.6:26.4 (46.5:53.5)
1999	15.7	3.9	80.3:19.7	24.9	7.8	76.1:23.9 (46.5:53.5)
2000	17.8	3.9	81.9:18.1	24.4	8.8	73.4:26.6 (48.8:51.2)
2001	17.4	4.8	78.2:21.8	25.3	9.0	73.8:26.2 (47.0:53.0)

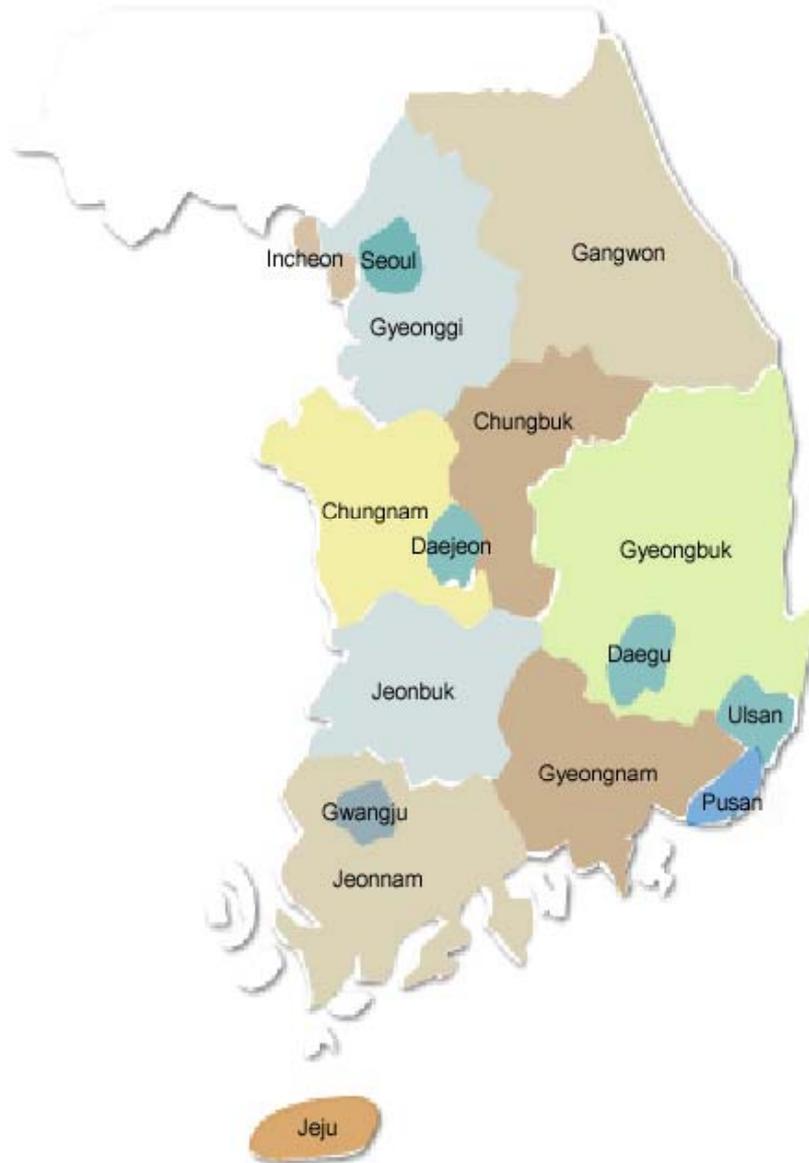
* Numbers in parenthesis refer to cases where all the intergovernmental transfers are subtracted from the central governments' outlays to avoid double counting.

Source: *Summary of Tax in Korea*, Ministry of finance and Economy, various issues, *Government Finance Statistics in Korea*, Ministry of Finance and Economy, various issues

<Table A-2> Local Governments' Revenue

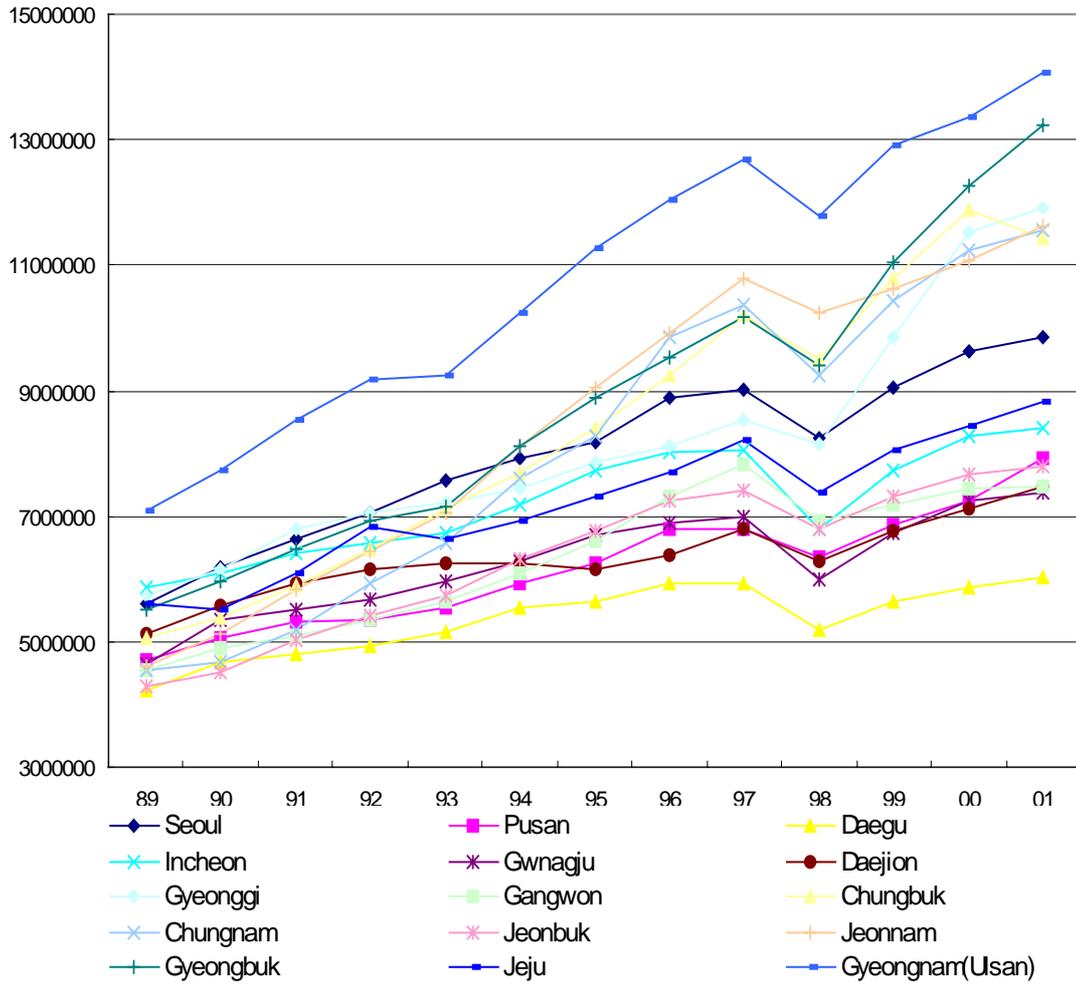
		1990	1991	1992	1993	1994	1995
Local Own Revenue	Local Tax Rev.	63,786 (32.9)	80,351 (33.1)	94,652 (35.8)	110,258 (37.9)	132,278 (35.6)	153,169 (33.6)
	Local Nontax Rev.	46,250 (23.9)	70,165 (28.9)	76,758 (29.0)	73,669 (25.3)	92,681 (24.9)	107,821 (23.6)
Transfer Revenue	Local Share Tax	27,647 (14.3)	35,524 (14.2)	39,251 (14.9)	44,124 (15.2)	48,600 (13.1)	56,713 (12.4)
	Subsidies	45,547 (23.5)	42,515 (17.5)	34,861 (13.2)	44,513 (15.3)	62,644 (16.8)	83,793 (18.4)
	Local Transfer Fund	- (0.0)	5,570 (2.3)	534 (0.2)	603 (0.2)	17,062 (4.6)	18,701 (4.1)
	Adjustment Grants	7,217 (3.7)	9,315 (3.8)	11,369 (4.3)	11,912 (4.1)	13,153 (3.5)	15,497 (3.4)
Local Borrowings		3,403 (1.8)	- (0.0)	6,790 (2.6)	5,721 (2.0)	5,820 (1.6)	- (0.0)
etc.		- (0.0)	- (0.0)	- (0.0)	- (0.0)	- (0.0)	20,414 (4.5)
Total		193,850 (100.0)	242,440 (100.0)	264,285 (100.0)	290,800 (100.0)	372,038 (100.0)	456,108 (100.0)
		1996	1997	1998	1999	2000	2001
Local Own Revenue	Local Tax Rev.	173,947 (31.6)	184,977 (29.8)	171,483 (27.3)	185,685 (27.7)	203,614 (28.5)	266,397 (30.6)
	Local Nontax Rev.	160,580 (29.2)	188,589 (30.4)	175,462 (28.0)	178,210 (26.6)	176,922 (24.8)	196,389 (22.6)
Transfer Revenue	Local Share Tax	65,238 (11.9)	67,857 (10.9)	70,363 (11.2)	65,354 (9.8)	82,450 (11.5)	122,100 (14.0)
	Subsidies	95,508 (17.4)	108,233 (17.5)	137,744 (22.0)	167,499 (25.0)	166,233 (23.3)	188,084 (21.6)
	Local Transfer Fund	25,744 (4.7)	28,764 (4.6)	28,795 (4.6)	29,061 (4.3)	37,134 (5.2)	46,281 (5.3)
	Adjustment Grants	18,871 (3.4)	20,852 (3.4)	16,262 (2.6)	17,857 (2.7)	22,495 (3.1)	23,437 (2.7)
Local Borrowings		9,763 (1.8)	18,615 (3.0)	23,965 (3.8)	21,941 (3.3)	11,631 (1.6)	10,263 (1.2)
etc.		- (0.0)	2,289 (0.4)	2,950 (0.5)	3,833 (0.6)	13,835 (1.9)	17,893 (2.1)
Total		549,651 (100.0)	620,176 (100.0)	627,024 (100.0)	669,440 (100.0)	714,314 (100.0)	870,844 (100.0)

<Figure A-1> Local Governments (Upper-Tier) in Korea



<Figure A-2> Changes in per capita GRDP(1989-2001)

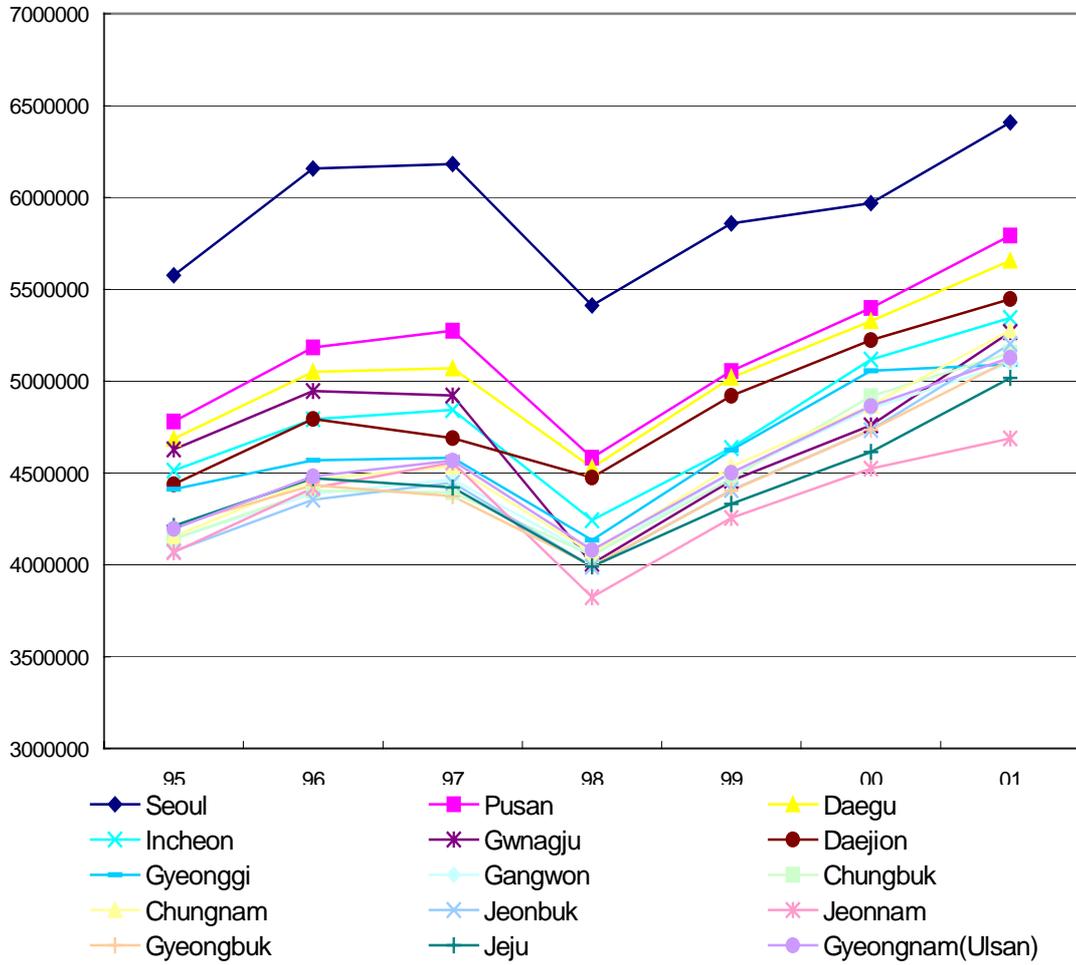
(1995 constant price)



Source : National Statistical Office(2002)

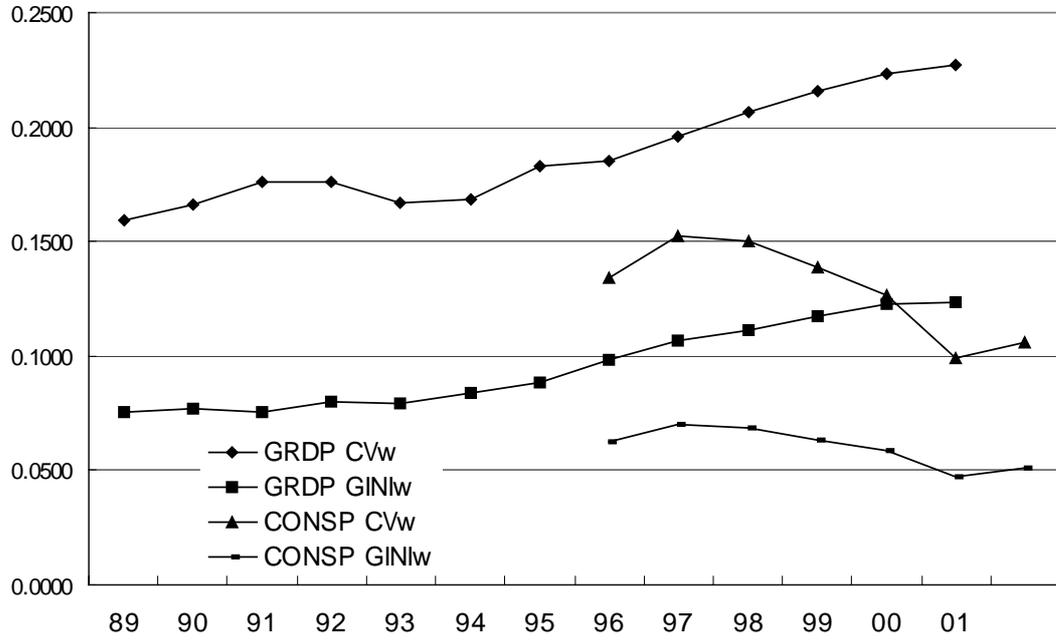
<Figure A-3> Changes in per capita Regional Private Consumption (1995-2001)

(1995 constant price)



Source : National Statistical Office (2002)

<Figure A-4> Changes in Regional Inequalities (1989-2001)



<Figure A-5> Spatial Concentration in Seoul Metropolitan Area (1989-2001)

