

Intergovernmental Distribution of VAT Revenue in Korea: Local Consumption Tax*

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In Korea, local consumption tax (LCT) has been established as a form of VAT revenue share in 2010. LCT takes 5% of the national VAT revenue as the financial base and distributes it to the local governments based on the regional sharing ratio of private final consumption expenditures (vertical equity) and weighting system to mitigate regional financial disparity (horizontal equity). This paper first evaluates current LCT distribution in terms of both equities, suggesting that new distribution indices be needed to satisfy both goals. Before producing them, by reassessing the status and the goal of LCT, this paper suggests LCT as a new local transfer, not a local tax, should pursue another goal, the correspondence between production and incidence of regional value-added which is VAT resource and ultimately LCT base, because its interregional migration is substantial in Korea. Based on such status and goals, new distribution indices are suggested and the findings are evaluated.

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I. Introduction

The sharing issue of value-added tax (VAT) between the central and local governments has emerged as a crucial subject of intergovernmental fiscal relations. VAT is a major target of fiscal decentralization due to its extensive base and voluminous revenue. However, the types of VAT sharing differ across countries. They can be primarily classified into three categories: VAT base sharing, VAT revenue sharing, and simultaneous sharing of VAT base and revenue.

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VAT base sharing means the division of the VAT base between central and local governments. VAT is imposed on a common base by central and local governments at different rates, as in Brazil and Canada (Quebec).¹ VAT revenue sharing refers to the distribution of the VAT revenue raised by the central government based on a specific formula. The central government imposes VAT through its own tax rate and base and distributes the revenues to local governments grounded on their contribution to the revenues, a derivation base.² Finally, a simultaneous sharing of VAT applies both base sharing and revenue sharing at the same time (Zee, 2008: 147-168). This type proceeds in two steps. On the derivation base, a uniform sharing ratio is first applied to all local governments when the actual VAT revenue collected by the central government is distributed. Simultaneously, an additional taxation through different tax rates and bases of local governments is executed in order to reflect the local financial demands that cannot be satisfied solely by revenue sharing with the central government.

The practice of VAT sharing reflects the particular political and economic backgrounds of countries rather than the consistent application of any normative principle (Bird, 2008: 11). Therefore, the types of VAT sharing vary across countries and over time (Liberati, 2011: 384). In Korea, local consumption tax (LCT) has been introduced as a form of VAT revenue sharing in 2010. LCT takes 5% of VAT revenue collected by the central government as the financial base, aiming at distributing it to local governments on the basis of both the sharing ratio of the private final consumption expenditures (vertical equity) and the weighting system in order to mitigate regional financial disparity (horizontal equity).

It is necessary to evaluate LCT's relevant status, goals, and distributional indices in order to carry out the original roles as a new fiscal decentralization mechanism. This paper first tries to evaluate the distributional performance of LCT in terms of its original intentions. The evaluation will primarily focus on the types of the distributional indices, since the performance of LCT is ultimately determined by them. If the current distributional indices do not correspond with the original intentions, new indices will be necessary. Before they are suggested, the status of LCT has to be reestablished because it influences the new goals and indices of LCT.

First, LCT's relevant status needs to be reviewed: whether it is a pure local tax or a new local transfer. Following the review, relevant goals and indices related to its

¹ States in Brazil impose and collect their own VATs with a different tax base from that of the federal government (goods at the manufacturing stage); however, their tax rate is still determined by the central government. Quebec in Canada not only imposes its provincial VAT separately from the federal VAT, but also simultaneously collects the federal VAT and remits the revenue to the federal government. In contrast, in the other three Canadian States, the federal government levies state VATs and conveys revenues to each state government. For more information, see, Bird and Gendron (2001: 293-309).

² In China, although VAT is a central tax, its revenue is shared with local governments on a derivation base, the basis of their point of collection.

new status are suggested. If LCT is evaluated as a new local transfer, not a local tax, it has to not only satisfy its original goals of the vertical and horizontal equity, but also adjust the problems related to the migration of the regional value-added, the tax base of VAT which is the financial base of LCT. The migration of the regional value-added is one of the pending problems, provoking the serious distortion of interregional economic justice in Korea. The reason why LCT, as a new local transfer, has to deal with the problem of regional value-added migration is that the regional value-added is the ultimate base of LCT, and moreover, the existing equalization transfers have overlooked the migration problem despite its gravity on the regional balanced development.

Based on such status and goals new distribution indices will be suggested, on which the current performance of the LCT distribution will be evaluated and the LCT redistribution will be simulated. Through the evaluation of the redistribution simulations, the LCT goal proposed by this paper will be verified.

II. Evaluation of Current Local Consumption Tax

2.1. Background of LCT Introduction

First, in Korea, the central government occupies about 80% of all tax revenues and local governments 20%. Such disproportionate occupation of tax revenues requires ways for transferring some national tax revenues to the local governments. VAT has been considered to be the most appropriate source of the financial decentralization because of its size of revenues³ and the universal tax base across the regions. LCT has been introduced as a means to decentralize VAT revenues.

Second, tax cuts, which have been executed by the Lee Myungbak Administration since 2008, led to a considerable reduction of the local finance. For example, the tax cuts of Comprehensive Real Estate Tax, Income Tax, and Corporate Tax have amounted to approximately \$7.9 billion in 2010, and about \$30.1 billion for the four years from 2008 to 2012 [Table 1]. LCT was introduced to compensate for such reduction of the local finance in 2010.

Third, Korean local tax revenues consist mainly of property-related taxes. Before the introduction of LCT, property tax, income tax, and consumption tax revenues had occupied 66%, 19%, and 15% in local tax revenues, respectively. Such composition has provoked the rigidity in the growth of the overall local tax revenues in that property taxes do not increase elastically, whereas consumption tax revenues do so when the regional economy thrives.

³ In Korea, VAT is the most voluminous among the national taxes. VAT revenue (\$46,949 million in 2010) is similar to the whole local tax revenues (\$48,779 million).

Finally, regional disparities of local tax revenues are serious in Korea. The imbalance among regions has been intrinsic since the 1960s when the central government executed unbalanced growth strategies concentrating on urban areas rather than the rural ones. In Korea, the Gini coefficient index in local tax revenue (0.146) is higher than that (0.112) of regional GDP. To mitigate such regional imbalance, a new equalization transfer has been desperately needed. Since LCT is expected to play the role, a weighting system is being applied in its distribution.

2.2. Financial Sufficiency and Compensation for Tax Cuts

LCT takes 5% of the VAT revenue collected by the central government as its financial base. In 2010, such collection amounted to approximately \$2.47 billion and occupied about 5.12% of total local tax revenues. Furthermore, after its introduction in 2010, while the portion of property tax revenues in local finance dropped from 66% to 62%, consumption tax revenues increased from 15% to 18%. This reveals the possibility of more elasticity of local tax revenues under the current local tax composition as the regional economy thrives and the tax bases expand.

However, LCT has some negative effects on the local finance. In Korea, Local Share Tax is the most typical local transfer in both vertical and horizontal equity dimension. It takes 19.24% of domestic tax revenue⁴ as the financial base. The LCT, 5% of VAT, reduces the same amount of domestic tax revenue. Accordingly the LCT decreases Local Share Tax and local finance. LCT also increases the financial transfer to local educational finances from the local governments.⁵ When taking such financial changes into consideration, LCT's net increase effect is estimated at approximately \$2.0 billion [Table 1].

LCT has also been introduced to compensate for the local financial losses, which resulted from the various tax cuts initiated by the Lee Myungbak Administration in 2008 by changing tax-related acts. Consequently, whether LCT has provided local governments with financial sufficiency by compensating for local financial reduction provoked from the tax cuts is the first consideration in evaluating the current LCT. Since various tax cuts in 2010 led to about \$7.9 billion financial loss to the local governments, the bottom line of the tax cuts and LCT's introduction is the deficit of approximately \$5.9 billion in local finance [Table 1].

Furthermore, given the extensive tax cuts since 2008, the total amount of all tax cuts reaches around \$30.1 billion until 2012. In all, Korean local governments experience actual financial reduction of about \$24.3 billion between 2008 through

⁴ In Korea, the domestic tax revenue equals the national tax revenues minus ear-marked tax revenues which are preset to finance special projects such as the LCT base, 5% of VAT.

⁵ In Korea, the local finance and the local educational finance are set apart. The former is only supposed to transfer a legally determined ratio of its tax revenue to the latter.

2012. Fortunately, the financial deficit of the local governments is expected to be gradually mitigated because the financial base of LCT is supposed to rise from 5% of VAT revenue in 2010 to 11% in 2014, and moreover, the revenue sharing ratio of VAT is planned to annually increase.

[Table1] Reimbursement Effect of Local Consumption Tax for Tax Cuts (2010)

(Unit: billion dollar)

Effect of Tax Cuts	Comprehensive Real Estate Tax	Share Tax of Comprehensive Real Estate Tax	-2.577
	Income Tax & Corporate Tax	Local Share Tax	-3.642
		Resident Tax	-1.714
	Sub Sum(A)		-7.933
Effect of Local Consumption Tax	Local Consumption Tax		2.471
	Local Share Tax		-0.345
	Transfer to Local Education		-0.13
	Sub Sum(B)		1.997
Net Effect of Local Revenue of LCT	Sum(A+B)		-5.936

Sources: National Assembly Budget Office in Korea, "The Effect of Tax Cuts on Local Finance," *Analysis of Budget Issues*, Vol. 30, 2009.

2.3. Distribution Indices

LCT, which takes 5% of VAT as the financial base, uses both the regional sharing ratio of private final consumption expenditures on derivation base and the weighting system to reflect the financial capacity of local governments as its major distribution indices. First, in the case of the private final consumption expenditures, which are annually published by Statistics Korea, there is a glaring discrepancy between the financial base and the distribution index of LCT. The private final consumption expenditures represent the consumption expenditures of households and non-profit private organizations during a fiscal year, which are officially released based on the level of consumption of residents, irrespective of the place of consumption. The focus is on the consumers' residential place regardless of where the consumption happens. As a result, they include the residents' consumptions outside the residential place and exclude the local consumptions of outsiders. Thus, even though local governments in a jurisdiction attract outside industries and tourists to increase consumption expenditures in their regions, these expenses could not be included in their own private final consumption expenditures. Accordingly LCT does not compensate local governments for services provided to non-resident individuals like commuters and outside tourists who consume on their jurisdictions. However, people can basically consume services anywhere regardless of their residence, producing the administrative workload caused by consumption activities

at the location such as environmental wastes and air pollution. Since LCT was originally intended to deal efficiently with the regional administrative demands, it needs to reflect the actual consumption expenditures within a region rather than the consumption expenditures on the basis of residency.

In addition, the gap between production and incidence (or distribution) of regional value-added is considerably huge in Korea. Koreans often work in industrial areas while they actually reside in urban areas that provide better quality of life. VAT, however, is basically levied on the value-added based on the places of economic activities. Thus, in the case of an industrial area, although the amount of the value-added calculated in the production process is substantial, the private final consumption expenditure may be smaller; because workers live mainly in urban areas. Therefore, under the current LCT distribution, relatively affluent urban areas earn more revenues than the industrial suburbs.

Considering these facts, it is inappropriate to distribute VAT only on the basis of the private final consumption expenditures in a way of the current system. Hence, the regional sharing ratio of VAT revenue can be more relevant as a new LCT distribution index. This perspective is also supported by the fact that most countries adopting VAT revenue sharing distribute it on the derivation base.

However, there is another possible hurdle in directly adopting the regional sharing ratio of VAT revenue as a LCT distribution index in Korea. Since the Korean VAT contains a zero tax rate, various tax exemptions, and a favorable tax rate for small-size businessmen,⁶ its actual regional sharing ratio does not accurately reflect the regional consumptions and economic activities. For example, Ulsan Metropolitan City and Gyeongnam Province, which have large exporting industrial complexes, show a negative sharing ratio of VAT tax revenue. Therefore, an alternative index has to be searched. Since VAT is levied on the value-added, the regional value-added can be substituted for the regional VAT revenue. In Korea, since GRDP (Gross Regional Domestic Products) is estimated by summing up the regional value-added and released by Statistics Korea, it can serve as a substitution index for the regional sharing ratio of VAT revenue. The regional value-added can be a more suitable distribution criterion of LCT in terms of its availability and derivation base in Korea.

2.4. Regional Equity

Korean LCT applies weights to its distribution in order to mitigate regional financial disparity among local governments which is an intrinsic issue in Korea. And since the current distribution index of LCT, the private final consumption expenditures, is originally unbalanced, the regional distribution of LCT can also

⁶ A lower tax rate is applied to the businessmen under the sale size of \$48 thousand in a fiscal year.

produce another regional disparity. Therefore, a weighting system to alleviate it is currently applied in LCT distribution along with the regional share of the private final consumption expenditures by the Local Tax Act. The weighting system works in logic of higher weights for poorer local governments: 100% for the local governments of the capital area, 200% for Metropolitan Cities of the non-capital area, and 300% for Provinces of the non-capital area.

Despite such a weighting system, the three rich local governments of the capital area - Seoul Special Metropolitan City, Incheon Metropolitan City, and Gyeonggi Province - still occupy about 76% of total LCT revenues in 2010. In order to mitigate such an unbalance, the capital area governments are additionally recommended to contribute 35% of their LCT revenues to the Regional Mutual Development Fund (RMDF)⁷, which was established along with the introduction of LCT. However, forcing the local governments to donate a part of their own LCT revenues to RMDF by law may provoke a controversy of the violation of their property rights. In fact, the three local governments are reluctant to donate their shares. Though a weighting system and the donation of the three capital area governments to RMDF can somewhat contribute to regional equity,⁸ they complicate the process of the LCT distribution. Therefore, a new comprehensive and progressive distribution index to replace them is needed.

2.5. Status: Local Tax or Local Transfer?

The status of LCT has been one of the most controversial issues in the Korean local finance system since LCT was first considered for its introduction. The conflict was about whether LCT is a pure local tax or a kind of local transfer. From the perspective of the former, LCT is supposed to improve local financial self-sufficiency so that local governments can reduce the financial reliance on the central government (Choi, 2010: 4). However, proponents of the latter view claim that

⁷ Three local governments of the capital area are supposed to donate 35% of their LCT to RMDF. For 10 years from 2010 to 2019, about \$10 billion is expected to be collected and planned to be loaned to local governments in favorable terms.

⁸ It is necessary to estimate the correlation coefficient value between the degree of regional financial self-sufficiency, representing regional financial capacity in Korea, and regional LCT, which can be distributed on the basis of a pure sharing ratio of the private final consumption expenditures or the application results of both the weighting system and donations to RMDF. First, the correlation coefficient value between the degree of regional financial self-sufficiency and the application result of only a sharing ratio of the private final consumption expenditures is 0.6584 ($p=0.006$), which implies regressivity: more LCT for the richer local governments. Second, the value between the degree of regional financial self-sufficiency and the application results of both weights and RMDF is 0.1988 ($p=0.4607$). Although it shows neutrality between regional LCT and regional financial capacity, its positive value means that there is still a little regressivity in LCT distribution. Finally, the value between the degree of regional financial self-sufficiency and the application products of weights is 0.4299 ($p=0.097$), which expresses a considerable regressivity.

LCT can be identified as a new local transfer (Yoo, 2010: 28). Theoretically, a pure local tax can be defined as the one which satisfies the following six distinct conditions (Bahl and Bird, 2008: 6-7):

1. Local governments can decide whether to levy the tax or not.
2. They can also determine the precise base of the tax
3. They can decide the tax rate.
4. In the case of “direct” taxes, they assess the tax imposed on any particular taxpayer.
5. They administer the tax.
6. They get to keep all they collect

In the real world, many local taxes meet at least one or two of the above conditions. However, since Korean LCT does not satisfy any condition described above, it cannot be considered as a pure local tax.

Furthermore, as in Argentina, although part of the revenue from various taxes accrues to local governments, they are thought of as local transfer if the rates and bases of these taxes are determined by the central government. This interpretation is also valid when there is little connection between the financial amount transferred from the central government and the one collected locally, as in Germany, and when revenues are distributed on the basis of their points of collection, as in China. Considering such interpretation of a local transfer point of view, it seems more appropriate to look upon the Korean LCT as a local transfer. In fact, LCT does not have its own tax base, but only a 5% share of VAT revenue as its financial base.

Additionally, to secure the regional equity of LCT, the weighting system in its distribution and capital area local governments' donation of their LCT to RDMF are being executed. Such weights and donations are considered as intrinsic characteristics of a local transfer among various intergovernmental relations. Such properties of LCT identify it as basically a local transfer, even though it is named as a local tax. There are several taxes similar to it in this regard. For example, although the Share Tax of Comprehensive Real Estate and the Local Share Tax also are titled as taxes, they play the most typical role of local transfers in order to promote regional equity in Korea.

III. Search for New Policy Goals of LCT

There have been various analytical approaches in the fiscal literatures on intergovernmental transfers. Examples are an inter-jurisdictional spillover approach (Breton, 1965: 175-187; Oates, 1972), an income redistribution approach (Buchanan, 1952: 208-217; Scott, 1952: 534-536), a fiscal imbalance approach

(Musgrave: 1961), and an efficient mobility of labor approach (Flatters, Henderson, and Mieszkowski, 1974: 99-112; Boadway and Flatters, 1982: 613-633). However, none of these has been integrated into a local transfer (Breton and Fraschini, 2007: 470). Local transfers indeed have a variety of goals according to their economic, political, and institutional situations. Therefore, the goals of LCT, as a new equalization transfer to meet the requirements of local finance in Korea, must be discussed in order to derive new distribution indices.

3.1. Vertical Equity

LCT has to meet the local financial demand from the perspective of vertical equity, which means a reasonable distribution of financial resources between the central and local governments on a derivation base. While national taxes are basically made up of income and consumption taxes which are elastic to economic growth, local taxes are composed of inelastic property taxes. Consequently, economic prosperity actually guarantees more tax revenue to the central government than the local governments (Heller, 1966: 118). As a result, local governments are unable to smoothly satisfy their financial demands without financial assistance from the central government (Pechman, 1996: 213-232).

In particular, the Korean local governments have suffered from considerable financial losses resulting from the taxcut policies of Lee's Administration since 2008 [Table 1]. Thus, the central government is normatively demanded to compensate for the local financial reduction in terms of vertical equity.

Furthermore, it is widely admitted that fiscal decentralization rather than centralization can better promote the national social welfare (Oates, 1993: 240). That is why more financial resources are transferred to the local governments which actually deal with most of the administrative demands.

In supplying and financing local public goods, the application of Lindahl tax (pricing), taxation on the basis of the benefit principle, is necessary. In allocating financial resources for local public goods, following the principle of the market economy as in private goods, may be an adequate practice. For its effective application, it is essential to prevent opportunistic free-riding behaviors and to have enough information to discern residents' preference. Since the central government cannot have such sufficient information nor provide locally differentiated public goods, the plan to operate local finance has to be set by local governments with a comparative informational advantage (Liberati, 2011: 368).

In addition, fiscal decentralization can make local governments more accountable and efficient, because it engenders competition among local governments and makes local residents more informed of political behaviors regarding the financial issues. In all, tax revenues should be distributed to local governments as much as possible for a better and efficient provision of public goods.

3.2. Horizontal Equity

On the other hand, horizontal equity, which is the financial balance among the local governments, is supposed to be a goal of LCT. The national policy objectives include horizontal equity as well as efficiency, transparency, and responsibility, because a balanced regional development is not only an independent policy objective, but also a prerequisite for sound development of the local government system.

Modern welfare states pursue the equal opportunity and social welfare for all nations and regions. In order to fulfill this goal, local governments could try to provide an equivalent quality of life, because they play a substantial role in supplying goods and services to their residents and affect the national welfare level more than any other organizations. Some argue that interpersonal transfers may be more efficient than intergovernmental ones in income redistribution policy (Akerlof, 1978: 8-19). However, if the current unbalance among the local governments is unaffected even by the current equalization transfers, some governments would be permanently deprived and the gap in the welfare level among the local governments would widen. Thus, to supply adequate goods and services for the quality of residents' lives without having to resort to unduly burdensome levels of taxation, the local transfers should be distributed to all local governments.

In fiscal federalism, "who should levy what taxes and how effectively they can do so" have been a major controversy. Here are two fundamental problems. First, the central government can collect most taxes more efficiently than the local governments. Second, potential tax bases available to the latter vary widely across the regions. The first problem gives rise to vertical imbalance; the second problem produces horizontal disparity. To some extent, the first problem may readily be solved if variable surcharges on central taxes are feasible. However, even if vertical imbalance is resolved by adjusting the revenue allotments, horizontal imbalance is invariably worsened by decentralizing taxing powers because those who have more bases to levy taxes are obviously better off than those who have less. Consequently, in countries where interregional disparities are dominant, more tax decentralization entails a need for more balancing transfers to the poor regions (Bahl and Bird, 2008: 6).

Vertical transfers in the case of the unbalanced tax resources between central and local governments necessarily entail horizontal equalization transfers to the financially disadvantaged local governments. Intergovernmental transfers are largely designed and implemented to serve the national equity rather than to meet the efficiency objective. Equalization transfers are an integral part of the existing intergovernmental fiscal relationship.⁹ Promoting horizontal fiscal equity to secure

⁹ Since central government takes over more important roles as a financial equalizer among local

regional balanced welfare level in a country is considered to be an essential element of ideal intergovernmental fiscal system (Brueckner, 2013: 7-10).

In this context, within the EU, the Structural Fund and the Cohesion Fund allocate more than 40% of the EU budget to the regions and states that lag behind in development. The German interstate transfer system is also primarily guided by the principle of per capita tax revenue equalization. Transfers to a state are determined by the difference between per capita tax revenues of the respective state and the average of all states (Köthenburger, 2002: 408-409). Furthermore, Italy has recently changed her Constitution to mandate that equalization should be based on per capita fiscal capacity alone and no longer on needs (Breton and Franchini, 2007: 463-479).

However, recently in Korea, Local Share Tax, the most representative local transfer has decreased owing to the various tax cuts. The reduction of Local Share Tax has resulted in shrinking its equalizing function as well as the decrease in the total local finance. Therefore, new distribution goals of LCT should be not only to compensate for the reduction of Local Share Tax, but also to improve its own equalizing function. Considering that the regional unbalance in Korea has been dominant since the early 1960s, all the intergovernmental transfers in Korea, such as National Subsidies, Decentralization Share Tax, and Share Tax of Comprehensive Real Estate Tax, try to accomplish the goal of horizontal equity. It is an intrinsic nature of the intergovernmental fiscal relationship, at least, in Korea.

To promote horizontal equity, LCT currently applies three levels of weights. However, it may create an error of oversimplification to lump all the sixteen local governments, which are confronted with various fiscal conditions, into only three categories. Accordingly, it is necessary to reorganize the local governments more concretely and furthermore, to apply a more definite index, such as the degree of financial self-sufficiency.¹⁰

3.3. Correspondence between Production and Incidence of the Regional Value-added

Finally, another goal of LCT is to secure the correspondence between production

governments in a unitary government system, intergovernmental transfers have stronger equalization effects than in a federal system.

¹⁰ The degree of regional financial self-sufficiency is the ratio of the own revenues of local governments, which are made up of local taxes and local profit-making activities, to total local revenues including the local transfers from the central government as well as their own revenues. It is the most typical financial index that represents the financial capacity of local governments in Korea. Although the degree of financial self-sufficiency has almost the same meaning as per capita local tax, the former is usually used more often than the latter in Korea. In fact, other local transfers pursuing horizontal equity tend to more frequently use the former as their distribution criteria.

and incidence of the regional value-added by compensating for the out-migration of it. The regional economy basically consists of both the production and the incidence of the value-added. However, only the regional production, whose performance is estimated by summing up the regional value-added, has been of unilateral interest in Korea. That is why the value-added produced in a jurisdiction is considered to return to the income or consumption of the jurisdiction. However, the regional production takes into account only the production side of value-added, not the incidence side. However, there is a high probability of mismatch between production and incidence of the regional value-added in Korea. In fact, substantial amounts of the regional value-added move respectively from non-capital to capital area at the national level, from provincial rural to metropolitan area at the local level, and from the adjacent area to Seoul Special Metropolitan City at the capital level (Kim, 2004, 51-76).

The interregional migration of the regional value-added causes unfair allocation of economic resources because the regions suffering from its outflow are deprived of a chance to enjoy the fruits of their regional production, while they take over the diseconomy that arises from the production process of the regional value-added such as environmental pollutions. Such phenomena occur because of the discrepancy between the living (urban areas) and working places of workers (industrial areas). In such situation, they contribute only to the regional production, not to the regional incidence. Since such a discrepancy can damage the interregional economic justice, the central government, as a coordinator of local governments, has to mobilize a remedial policy.

LCT could be a good policy means to take over such a role by internalizing the economic external effects. LCT is expected to adjust the migration of the regional value-added which is VAT base and an ultimate tax base of LCT. In addition, the migration of the value-added is basically one of the most pending problems in the Korean regional economy. Despite the gravity of migration of the value-added on the regional economic justice, any current equalization transfer does not handle it. Even though there are three main local transfers in Korea, their functional roles are limited. Local Share Tax is distributed as an unconditional grant to local governments based on their financial deficiency: more for the poorer. Share Tax of Comprehensive Real Estate Tax is allocated primarily based on their welfare financial demand. Finally, National Subsidies are allocated based on their special target projects. The current local transfers aim at not only providing financial support for their own particular purposes, but also commonly securing horizontal equity across local governments. Therefore, LCT, as a new local transfer, is expected to deal with the issue of the regional migration of the value-added. In this context, internalizing the spillover of economic benefit along with the redistribution of net fiscal benefits is highlighted as the main goal of the local transfer (Shon, Kang, and Jang, 2001: 118).

3.4. Distribution Indices based on New Goals

According to the aforementioned three goals of LCT, four new distribution indices could be operationally defined: the financial reduction rate by the taxcuts of Lee's Administration and the regional sharing ratio of the total value-added to accomplish the vertical equity; the degree of regional financial self-sufficiency to satisfy the horizontal equity; and finally the outflow of the regional value-added to secure the correspondence between production and incidence of the regional value-added [Table 2].

[Table 2] The Policy Goals and the New Indices of Local Consumption Tax

Policy Goals	Contents	Indices	Expected Standardized Regression Coefficient with LCT
Vertical Equity	Redistribution of LCT to local governments based on their financial losses	Financial reduction rate by the taxcuts of Lee's Administration: finLoss	Positive(+): More LCT for higher rate of financial losses
	Redistribution based on their contribution to LCT base	Regional sharing ratio of total value-added (=GRDP/GDP*): rGRDP	Positive(+): More LCT for higher quotient of GRDP
Horizontal Equity	Redistribution for regions experiencing financial deficiency	Degree of regional financial self-sufficiency: finSS	Negative(-): More LCT for the lower degree
Correspondence Between Production and Incidence of Regional Value-added	Compensative redistribution for regions suffering from outflow of regional products	Flowage of regional value-added (GRDP): outVA	Negative(-): More LCT for the more outflow

Note: 1. Regional value-added is officially called GRDP in Korea.

2. GDP is calculated by summing up GRDP.

3. Regression model: $\text{Regional LCT} = a + b_1\text{finLoss} + b_2\text{rGRDP} - b_3\text{finSS} - b_4\text{outVA}$.

Among such four indices, the regional value-added and regional degree of financial self-sufficiency are officially estimated and released in Korea, whereas, the interregional inflow and outflow of the regional value-added have been ignored. In a given region, the interregional flowage of the value-added can be estimated by comparing the value-added based on the place of work with regional income based

on the place of residence. The regional production means value-added which is regionally produced, whereas, the regional income does final regional incidence of the value-added through adjustment for residence. In Korea, only the regional production of value-added is calculated and released annually as GRDP (gross regional domestic products), not regional income. Thus, to measure interregional flowage of value-added, regional income has to be statistically estimated by using a representative proxy index among various regional economic indices related to the regional incidence.

In Korea, there are four major regional economic indices, such as regional savings, local tax, household consumption expenditure, and GRDP. Among them, GRDP is related to the regional production, while others are associated to the regional incidence. This classification needs to be statistically verified through a factor analysis for its validation by using their longitudinal data from 1993 to 2009. To avoid the possible multicollinearity problem, the data are transformed into a location quotient (LQ).¹¹

First, the principal component analysis produces two factors with eigenvalues larger than 1, resulting that the four regional economic indices can be categorized into two factors. The two factors cover 86% of the variance in the four regional economic indices (the first factor accounts for 59% and the second for 27%, respectively) [Table 3].

[Table 3] Results of the Principal Component Analysis

Classification	Eigenvalue	Difference	Proportion	Cumulative
First Factor	2.3274	1.3029	0.5936	0.5936
Second Factor	1.07138	0.7418	0.2678	0.8614
Third Factor	0.32952	0.1047	0.0824	1.9438
Fourth Factor	0.22473	-	0.0562	1.0000

Second, the factor pattern analysis is performed to identify which factor corresponds to which regional economic index. [Table 4] indicates that savings (0.9183), household consumption expenditure (0.8821), and local tax (0.8571) pertain to factor 1, and GRDP (0.9862) belongs to factor 2. Based on this result, factor 1 can be categorized as regional incidence, while factor 2 as regional production.

Finally, the factor loading of each index indicates that the regional savings (0.9183) is representative of the first factor of the regional incidence, while GRDP (0.9862) is representative of the second factor of the regional production. Regional

¹¹ Pooled time-series analysis, combining time-series data and cross sectional data, can help detect variations resulting from the difference in time and space, reduce bias created by excluding variables, and mitigate multicollinearity by raising the degree of freedom. see, Sayrs (1986: 7) and Hsiao (1986: 215-216).

income, therefore, can be estimated using regional savings, since it has the highest factor loading (0.9183) among the regional incidence indices [Table 4].¹² Then, regional flowage of the regional value-added can be measured by comparing GRDP with the regional income.

[Table 4] Results of the Factor Pattern Analysis

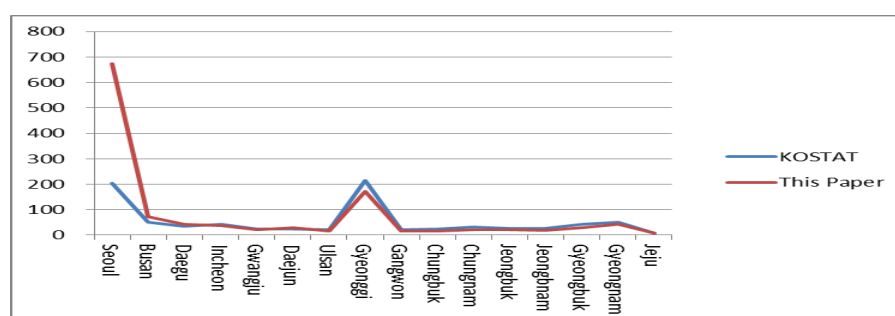
Classification	First Factor	Second Factor	Communality
Savings	0.9183*	-0.0474	0.9224
Household consumption expenditure	0.8821*	-0.1023	0.7663
Local Tax	0.8871*	0.3231	0.7959
GRDP	0.0102	0.9862*	0.9775
Communality	2.697	1.1596	3.4981

Note: These statistics are the results of the varimax factor rotation.

On the basis of the trinity principle of the national income accounts, which indicates the equivalence of production, income, and expenditure in a country, regional income can be estimated using regional savings [Table 5], which is the most representative regional incidence index, by the following formula:

¹² This paper's method of estimating regional income needs to be validated by comparing with another estimating method. In fact, correlation coefficient between the regional income estimated by this paper and that done by using regional average household income officially released by Household Financial Report of Korea Statistics is 0.805. That means the method of this paper is statistically relevant. However, while this paper estimates regional income in terms of incidence of regional value-added, Korea Statistics does it in perspective of fallen income to each household as working earnings, business income, property income, and transfers. Therefore, the size (\$1,241.582 million in 2011) estimated by this paper is larger than that (\$850,189 million) by Korea Statistics. Nevertheless, because the regional redistribution criterion of this paper uses the regional ratio of regional income, not the absolute size, the difference between both does not affect the redistribution results. Korea Statistics also estimates the regional income by multiplying regional average household income extracted through sampling and the number of households together. Furthermore, regional income by Korea Statistics includes only those that can be fallen to each household. On contrary, this paper includes all that can be regionally returned. Despite dispute of correspondence between regional savings and income, this paper could be preferred to Korea Statistics.

[Figure 1] Region Income Estimated by This Paper and Korea Statistics



- Total GRDP in Korea = Total income in Korea = Total savings * Adjustment rate.
- Adjustment rate = Total GRDP (\$1,028,498 millions, Table 5) / Total savings (\$675,205 millions, Table 5) = 1.52324
- Regional income = regional savings * 1.52324
- Flowage or migration of Regional Value-added = Regional income - Regional Value-added

[Table 5] Regional Performances of New Distribution Indices

(Unit: \$ Million, %)

Classification	Regional LCT	Vertical Equity		Horizontal Equity	Correspondence between Production and Incidence of Value-added		
		Local Financial Reduction	GRDP (Regional Value-added): A		Regional Savings	Regional Income: B	Flowage of Regional Products: (B-A)
Seoul	395.4	395	248,383	90.4	348,693	531,144	282,761
Busan	201.4	370	56,182	55.8	37,717	57,451	1,269
Daegu	133.0	239	32,714	50.7	24,523	37,354	4,640
Incheon	73.4	211	47,827	75.7	22,659	34,514	-13,313
Gwangju	79.6	155	21,745	42.9	16,458	25,070	3,324
Daejeon	88.0	115	23,218	54.5	11,282	17,186	-6,032
Ulsan	66.2	177	52,408	59.3	9,917	15,106	-37,302
Gyeonggi	343.0	1,392	198,948	64.1	95,938	146,137	-52,810
Gangwon	110.0	662	26,311	21.4	10,561	16,086	-10,224
Chungbuk	106.3	430	30,105	25.4	10,068	15,336	-14,769
Chungnam	145.9	720	57,974	28.1	12,490	19,025	-38,949
Jeonbuk	124.3	634	29,471	17.5	12,966	19,750	-9,721
Jeonnam	119.4	930	52,387	10.4	12,470	18,995	-33,393
Gyeongbuk	189.0	942	67,712	19.1	17,619	26,838	-40,874
Gyeongnam	252.7	739	74,280	32.5	27,093	41,268	-33,012
Jeju	43.4	167	8,833	24.9	4,752	7,238	-1,595
Sum	2,471	8,278	1,028,498	-	675,206	1,028,498	0

Source: Homepage of Korea Statistics (<http://kostat.go.kr/portal/korea/index.action>).

Note: 1. Net Revenues of Local Consumption Tax is calculated by subtracting the decrease in other type of tax revenue, ever since the introduction of LCT (Total Local Consumption Tax Revenue - Decrease in Local Share Tax revenues - Transfers to Local Education Special Account in 2010).

2. GRDP and Regional Income are data from 2008 and the degree of financial self-sufficiency is from 2009.

3. Outflow of Regional value-added = Regional Income – GRDP (Regional Value-added).

4. The official data of regional income are not released in Korea. They have been estimated here by using the statistical methods, suggested by Kim (2004).

IV. Application of New Distribution Indices

4.1. Evaluation of Current LCT Distribution by New Indices

LCT, as a new local transfer, is expected to contribute to three goals: vertical equity, horizontal equity, and correspondence between production and incidence of regional value-added. It is necessary to evaluate whether the performance of the current LCT distribution indices, which are composed of the private final consumption expenditures and the three weights, correspond with these goals before applying the new distribution criteria for redistributing LCT [Table 2].

First, to support vertical equity, which means the redistribution of LCT based on both the financial reduction from the tax cuts and the contributions to the LCT financial base, positive standardized regression coefficients of regional LCT are supposed to be found between both regional financial reduction and GRDP (regional value-added). Second, to enhance the horizontal equity, which indicates the redistribution for securing the balance in the regional financial condition across local governments, a negative coefficient is required between the regional LCT and the regional degree of financial self-sufficiency, because the local governments with a lower level of financial self-sufficiency should receive more LTC. Finally, to achieve the correspondence between production and incidence of the regional value-added, which represents the policy measures for matching regional production and incidence, a negative coefficient is anticipated between the regional LCT and the migration of GRDP, because the regions suffering from GRDP outflow is expected to receive more LCT [Table 2].

The regression analysis [Table 6] between the current LCT distribution and the new redistribution indices shows that LCT has contributed to only vertical equity, not both correspondence between production and incidence of the regional value-added as well as horizontal equity. Even in the case of vertical equity, the current LCT reflects only regional value-added, not regional financial reduction from the tax cuts. The standardized regression coefficient of regional value-added (0.830) implies that GRDP has extensively affected LCT distribution so that local governments yielding more GRDP have received more LCT. On the other hand, the coefficients between LCT and regional financial reduction, financial self-sufficiency, and outmigration of value-added are not statistically significant. That means that because the current LCT does not play the expected role as a new local transfer, it is demanded to be redistributed based on the new distribution indices extracted from its new status and goals

In summary, the current distribution practices of LCT have mainly been grounded on a derivation base. LCT is actually distributed based on GRDP, which is the tax base of VAT. As a result, it is concluded that only vertical equity has been

accomplished among the three policy goals. Therefore, new distribution indices are needed to contribute to the other goals without significantly sacrificing vertical equity.

[Table 6] Determinants of Current LCT Distribution

Vertical Equigy		Horizontal Equity	Correspondence Horizontal between production and incidence of value- added
Regional financial reduction	Regional value-added	Regional financial self-sufficiency	Regional outmigration of value-added
0.364	0.830**	-0.005	-0.248

Note: R square= 0.898, F= 24.35(p<.00), DW= 1.991, **: p<0.05.

4.2. LCT Redistribution Based on New Distribution Indices

Before applying the new redistribution indices, certain premises are required in advance. Weights among the four indices are the same as it is. LCT in 2010 (\$2,471 million) can be equally divided into four indices. Based on the regional sharing ratio of each index, each one fourth of the LCT has to be regionally allotted.¹³

The results redistributed by the new indices indicate that the affluent regions, such as Seoul (\$-210.3 million), Busan (\$-110.7 million), Daegu (\$-62.8 million), Gyeongnam (\$-38.2 million), and Daejeon (\$-22.4 million) face a decrease in their LCT reallocations, while deprived regions, such as Jeonnam (\$111.8 million), Ulsan (\$ 84.5 million), Chungnam (\$72.9 million), and Gyeongbuk (\$62.4 million), experience an increase [Table 7]. These redistributions have come out from the fact that the indices of the GRDP outflow, the financial reduction from the tax cuts, and the degree of financial self-sufficiency were newly applied in redistributing LCT. In fact, GRDP generally moves from the poor to the rich regions and the degree of financial self-sufficiency is higher in the wealthier ones.

Taking a closer look at the redistribution performances produced by the new indices, the results show an overall improvement according to the standardized regression coefficients [Table 8]. All the coefficients show the marks (+ or -) and

¹³ In applying each criterion to its distribution, the degree of financial self-sufficiency is measured as its subtraction from 100. The outflow of GRDP is measured as the regional sharing ratio of total outflows. GRDP is measured as its regional sharing ratio of total GRDP. In order to noticeably improve the regional correspondence between production and incidence of the value-added, regions with an outflow have to receive additional shares, whereas, regions with an inflow have to return their shares. However, Korea does not have a negative grant system, as does Germany, where the local governments surpassing a certain standard have to return their grants. Therefore, in this paper, the regions with an inflow are only excluded from the redistribution of LCT without having to pay back additionally.

the significant statistics which have been expected as a new local transfer of VAT [Table 2]. Only the coefficient of regional value-added (GRDP) diminishes (0.830 \rightarrow 0.469). It means that new indices slightly weaken the derivation principle in redistributing LCT. However, the other indices improve significantly. In summary, these findings indicate that the new distribution indices, which are derived from the status and goal of LCT as a new local transfer of VAT, are able to better fulfill the policy goals, except a little sacrifice of vertical equity, than the current indices which are based on the final private consumption expenditures and the three weights.

[Table 7] Redistribution of Local Consumption Tax by the New Criterion

(Unit: Million Dollar, %)

Classification	Current LCT (A)	Redistribution of Local Consumption Tax by New Criteria					Effect of Redistribution (B-A)
		Local Financial Reduction	Regional Products	Financial self-sufficiency	Outflow of Regional Products	Sub Total (B)	
Seoul	395.4	29.5	149.2	6.4	0	185.1	-210.3
Busan	201.4	27.6	33.7	29.4	0	90.7	-110.7
Daegu	133.0	17.8	19.6	32.8	0	70.2	-62.8
Incheon	73.4	15.7	28.7	16.2	28.2	88.8	15.4
Gwangju	79.6	11.6	13.1	38.0	0	62.7	-16.9
Daejeon	88.0	8.6	13.9	30.3	12.8	65.6	-22.4
Ulsan	66.2	13.2	31.5	27.1	78.9	150.7	84.5
Gyeonggi	343.0	103.9	119.5	23.9	111.7	359.0	16.0
Gangwon	110.0	49.4	15.8	52.4	21.6	139.2	29.2
Chungbuk	106.3	32.1	18.1	49.7	31.2	131.1	24.8
Chungnam	145.9	53.7	34.8	47.9	82.4	218.8	72.9
Jeonbuk	124.3	47.3	17.7	55.0	20.6	140.6	16.3
Jeonnam	119.4	69.4	31.5	59.7	70.6	231.2	111.8
Gyeongbuk	189.0	70.3	40.7	53.9	86.5	251.4	62.4
Gyeongnam	252.7	55.1	44.6	45.0	69.8	214.5	-38.2
Jeju	43.4	12.5	5.3	50.0	3.4	71.2	27.8
Total	2,471	617.7	617.7	617.7	617.7	2,471	0

[Table 8] Determinants of LCT Redistribution

Vertical Equity		Horizontal Equity	Correspondence between production and incidence of value-added
Regional financial reduction	Regional value-added	Regional financial self-sufficiency	Regional outmigration of value-added
0.323**	0.469**	-0.185**	-0.455**

Note: Rsquare = 0.988, F = 8441 (p < .00), **: p < 0.05.

V. Conclusion

LCT is considered to be an effective policy tool for expanding the local finance and diversifying the local tax resources in Korea. As a new local transfer, LCT is expected to pursue the following three goals: vertical equity, horizontal equity, and correspondence between production and incidence of the regional value-added. Based on such goals, new distribution indices, such as regional value-added (GRDP), local financial losses from the tax cuts of Lee's Administration, degree of regional financial self-sufficiency, and flowage of regional value-added, would be respectively produced. According to the findings in this paper, the existing distribution indices, which are composed of private final consumption expenditures and three weights, have satisfied only the goal of vertical equity, not horizontal equity and correspondence between production and incidence of the regional value-added. In contrast, the new redistribution indices can come closer to fulfilling the goals, except a slight sacrifice of vertical equity.

One possible problem related to adopting these new indices is that it may negatively influence the original intentions of LCT to secure independent tax revenue of local governments. In Korea, however, balancing the regional disparity and securing the correspondence between production and incidence of the regional value-added have top priority. Diversifying such distribution indices to attain the policy goals is considered essential or desirable in order to develop the local finance systems in Korea.

Finally, VAT revenue sharing adopted in Korea may have a higher possibility of producing dysfunctions of moral hazards or soft-budget constraints compared to other VAT sharing types, owing to the absence of correspondence between revenue-raising efforts and public spending. In this perspective, a recent study points out that it is not fiscal decentralization per se that matters, but "what form it takes".¹⁴ It means that while the decentralization of the tax base can lead to a smaller government, the decentralization of tax revenue, which is a kind of transfer from the higher government, can provoke "raiding the fiscal commons", increasing the overall public budget, and finally destroying the fiscal system (Rodden, Eskeland, and J. Litvack, 2003; Oates, 2005: 360). It would be an interesting research topic in the future to see whether Korean LCT generates these negative outcomes.

Furthermore, to prevent these potential flaws that Korean LCT may entail, control mechanisms need to be established. Above all, information concerning local government revenues and spending policies should be available to residents or voters. If all voters are well informed about the financial activities of their local

¹⁴ Tax base decentralization intrinsically brings corruption, as well as regional disparity and duplication of taxation administration. For more information on the relationship between decentralization and corruption. See, Martinez-Vazquez, Granado, and Boex (2007).

governments, it can make local politicians accountable. Since local politicians know their reelection depends solely on the positive evaluation of the voters, they will have to try to be transparent and efficient. The citizen participation budget system may institutionally guarantee sufficient and timely provision of the information (Robbins, Simonsen, and Feldman: 2008: 564-575; Shah, 2007; Simonsen and Robbins, 2000). Therefore, the opening of information to the public as well as the control system on the operation of LCT is needed for its successful management.

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