INTRODUCTION

Externalities have played an important role in the public economic literature. For example, roads, public transportation, recreation, and cultural facilities are visited, and therefore crowded by residents in nearby jurisdictions. Crime fighting in one jurisdiction could either lower regional crime or push criminals into neighboring communities. Air pollution controls and sewage treatment enhance the environment quality of bordering jurisdictions. Radio and TV broadcasts can be seen away from the local border. Educational and job training expenditures may translate in productivity gains in workplaces outside the community.

In the case of the efficiency of local public goods provision, benefit spillovers or inter-jurisdictional externalities are a widespread feature of many services provided by local governments (Wilson, 1986, 1999).

The significance of spillovers is widely recognized in the fiscal federalism literature (see: for example Oates, 1972;1999). The general conclusion of this strand of literature is that externalities tend to cause a divergence between private and social costs and benefits, and thus lead to suboptimal decision-making. Some authors have also worried about the equity consequences of spillovers (see, e.g., Ladd and Yinger, 1994), but also relating to the design of ‘needs-based’ equalization grants (Bramley, 1990). The general policy prescribed to deal with them is to delegate the authority of decision making to the lower layer of governments.

Indonesia provides a unique opportunity to examine the nature of inter-jurisdictional externalities within a country consisting of central, provincial, and local levels of government. Since her independence in 1945, the administration of the country’s regional public services operated through a hierarchical and parallel system of de-concentrated central government agencies and ostensibly autonomous sub-national governments. Throughout most of its history, Indonesia’s system of regional government administration has been among the most centralized in the world (see for example Davey, 1989) and then drastically decentralized since 2001. Given the significance of inter-regional redistribution performed...
by the tax transfer system and equalization payments, whether a particular local government engages a strategic interaction with another local governments in the surrounding areas is a political and economic issue.

Strategic interaction in setting local taxes and expenditures are two forms of the fiscal competition among local governments beside intergovernmental grants competition. Basically, tax setting and expenditure policies in a region might affect other regions budgets. The root problem of those phenomena is the existence of spatial correlation among local governments. In the broader sense, inter-jurisdiction competition can be defined as rivalry among governments in which each government is trying to win some scarce beneficial resource or in which each government seek to avoid a particular cost (Kenyon, 1997).

In developed countries, a number of empirical studies concerning the issue have been conducted (see for example: Gordon, 1983; Wildasin, 1986; Salmon, 1987; Case et al., 1993; Kelejian and Robinson, 1993; Besley and Case, 1995; Brueckner, 1998; Heyndels and Vuchelen, 1998; Figlio et al., 1999; and Bivand and Szymanski, 1997; 2000). Unfortunately, they tested the fiscal competition partially focusing on either tax or expenditure aspects. In contrast, the similar studies focusing on similar issue in developing countries are rarely.

Some studies in Indonesia have been generally concentrated to the fiscal imbalance between central and local governments (see for example: Uppal and Suparmoko, 1986; Bawazier, 1988; Akhmad, 1990; Kuncoro, 1995; Indonesia Forum, 2000, Sidik, 2001). In a quite similar spirit, our approach has three significant differences. First, we employ spatial statistics method to identify the fiscal interdependency including tax, expenditures, and subsidies among municipalities in a comprehensive way. Second, instead of using a single fiscal regime, we compare the fiscal interdependency among local governments in pre- and post-decentralization periods. Finally, we identify the relationship between fiscal inter-dependency and fiscal equity (disparity) across local governments.

The rest of this paper is organized as follows: Section 2 briefly summarized the existing literature while Section 3 highlighted the previous results. The methodology is described in the next section and to report the main empirical results followed. Finally, some concluding remarks are drawn.

METHODS

The earliest idea of inter-jurisdiction competition (IJC) was delivered by Tiebout (1956). The key actors in his model are individuals (consumer-voters) who decided which (of many) local governments to locate in, based on their needs for government services and the public service/tax packages offered by the various governments. Tiebout assumes that individuals have complete knowledge of the various government revenue and expenditure packages; that individuals free to choose among a large number of communities; and that individuals are fully mobile. Furthermore, he assumes that there is no intercommunity spillover effects occurred and that each community is able to attain its optimal amount at which the average cost of production on particular package of public services is minimized.

To the extent on Tiebout's rather restrictive conditions are met, goods and services provided by suburban local governments will exhibit both locative efficiency and productive efficiency. In Tiebout's model, local taxes are benefit taxes, proportional to the benefits from government services received by households, rather than taxes based on ability to pay. No redistribution of income takes place in his system of local governments. The Tiebout's model can be criticized for its restrictive assumptions. A crucial shortcoming of his model is that it does not include business firms, so that it is not particularly helpful in illuminating the phenomenon of IJC for economic development.

The Oates-Schwab model (1991) focuses on the mobility of capital rather than households. They assume that the local government’s objective is to maximize the welfare of its constituents, subject to the applicable budget constraints. They also assume that no beneficial or negative spillovers occurred and that a sufficient number of local governments exist to approximate a competitive market. Furthermore, they assume that communities have complete information about the wage benefits provided by the location of business firms in their communities and those firms can correctly evaluate the tax and expenditure packages offered by the various communities. An implicit assumption in their model is that economic development efforts by local governments are costless.

The major result of the Oates-Schwab model is that taxes on both households and business firms become taxes beneficial. In the case of business firms, communities neither subsidize them to locate in their communities, nor tax them in excess of the costs of public services provided to them. Instead firms pay exactly the cost of the public services to them. In this benefit tax equilibrium, communities will have no incentive to further increase subsidies to businesses. If communities were supposed to do so,
the cost in terms of forgone tax revenues or higher public service costs would exceed any benefits in the form of increased jobs or income. Like the Tiebout model, the Oates-Schwab model is devoid of redistribution by local governments. No ability-to-pay taxes are levied only benefit taxes. Inter-jurisdiction competition may not be equitable in the Oates-Schwab world but it is productively and electively efficient.

McGuire (1991) has built an informal model of IJC, which she labels “destructive competition” that has less happy consequences. She assumes that individuals have preferences for redistribution and thus choose revenue systems that rely on ability-to-pay taxes. McGuire further assumes that the nation’s population is heterogeneous in terms of income and mobility. An optimal level of public services and taxes can be computed, one that conceivably could be attained in the case of zero mobility of individuals or businesses.

However, it will never be attained. Any single jurisdiction will have an incentive to cut tax for relatively wealthy and mobile individuals or businesses in order to lure them to relocate. The jurisdiction would hope to be able to use the revenue gained from the incoming wealthy to cut taxes for current residents or to increase public services. The problem is that all jurisdictions will have the same incentive to cut tax for the wealthy and mobile.

McGuire concludes that locative efficiency cannot be achieved in the case of destructive competition. She argues that household mobility will ensure that productive efficiency will be attained, however, as jurisdictions seek to maximize their attractiveness by minimizing the burden of their taxes for given level of public services. In McGuire’s model, both horizontal and vertical inequities result from IJC. Less mobile individuals will encumber a higher tax burden than their more mobile counterparts. Vertical inequities will also result, as high-income taxpayers benefit from selective tax relief.

Wolkoff (1992) asks whether a formal model of economic development programs can explain the existence of some seemingly irrational public policies. In his mind, jurisdictions use economic development subsidies to try to induce potentially mobile firms to stay in the community. Firms are of two types: those that are potentially mobile and those that are not. A central problem in Wolkoff’s model is that the jurisdiction cannot easily distinguish between these two types of firms. Both the firms and the jurisdictions engage in strategic behavior. The community decides on the amount of the subsidy and the probability that it will give a subsidy when a firm requesting one.

The firm decides on the amount of subsidy requested. Wolkoff assumes that the community chooses the amount of subsidy and probability of granting a subsidy in order to maximize the expected value of its action.

Wolkoff’s model explains two types of seeming irrationalities in existing economic development programs. Assuming that all firms request the same subsidy, whether they are potentially mobile or not. The community then has no way of distinguishing between the two types of firms. It turns out that the most advantageous strategy for the community is to offer modest subsidies to all firms. The inevitable result is that some firms with no relocation potential will also receive the subsidy. It seems like a waste of funds from the perspective of community with rational maximizing behavior.

An alternative scenario outlined by Wolkoff is based on a community’s effort to separate potentially mobile from immobile firms. To do this, the community makes subsidy awards become uncertain. Immobile firms then reduce the amount of their subsidy requests. The community ends up avoiding large subsidies to firms that have no possibility of relocating. However, at the same time, the community rejects the requests of, and thereby loses, some mobile firms. In isolation, the fact of providing insufficient economic development subsidies to certain mobile firms appears irrational. Wolkoff’s pointed out that we cannot look at such phenomena in isolation.

From Besley and Case (1995), the exit optimum is less important; it did not describe explicitly in their model, but its existence acknowledged. Instead, vote is a key to the accountability of elected officials. Imperfect information is also crucial to the Besley-Case model. Politicians more aware about the cost of providing public services than voters, and voters used the information about tax change in neighboring jurisdictions to evaluate the performance of their incumbents. Politicians come in two types: good politicians who do no rent-seeking and bad politicians who do rent-seeking. Politicians use strategic behavior in their tax-setting in order to influence voters’ opinion regarding whether they are good or bad politicians. Voters will not reelect the incumbents whom they judge by their tax changes, relative to the tax changes of neighboring jurisdictions, are considered bad politicians.

The Besley-Case model is likely most applicable to interstate competition because the smaller numbers of states make the strategic behavior of state politicians are easier to monitor. This model also could apply to suburbs in metropolitan area if only the number of competing suburbs were not too many.
The Besley-Case model does not illuminate the implications of IJC phenomenon for economic development. Their decision to minimize the importance of interstate mobility may imply to an impression that state officials are oversensitive of threats from high-income taxpayers or business to exit.

Breton (1996) formulates a general theory of competitive governments. His model of public finance and politics encompasses a wide range of competitive situations: competition for the support of the governed within governments, competition between governments and other social institutions, competition between governments at different levels (for example, between states and local governments), and competition that is the subject of this paper-competition between governments at the same level, or IJC. He assumes that individuals seek to maximize utility and governments seek to maximize expected consent.

In his treatment of IJC, he includes both implicit competition (Tiebout mechanism) and yardstick competition. Both are generally present in IJC, but in a pure Tiebout world, Breton correctly notes, yardstick competition cannot exist. If the Tiebout model operated perfectly, the population would sort itself by preference for publicly provided goods until each community was homogenous and different from every other community. Then, individuals could not use the performance of neighboring governments to judge the performance of their own governments; governments would be too much different from each other in terms of their public service/tax packages.

That a jurisdiction's policy may be influenced by other jurisdiction's policies has been recognized by several authors (Hettich and Winer, 1984; Salmon, 1987). Still, it has not empirically reached the status of general acceptance. The conventional approach to modeling taxing and spending decisions consist of explaining the level of composition of revenues and expenditures by economic, political, and sociological characteristics of the jurisdiction itself (for survey, see: Inman, 1988). However, a casual look at daily politics suggests that voters and politicians are case sensitive to events outside their geographical boundaries.

Three models have been offered in the local public finance literature to justify the existence of spatial interaction among local governments, and have been tested intensively on local government data in recent years.

The first one is the traditional ‘spill-over’ or ‘externality’ model, which expenditure on local public services in a jurisdiction can have beneficial or harmful effects onto residents in nearby jurisdictions (Gordon, 1983). As an example is local expenditure on police services. Using US county data, Kelejian and Robinson (1993) found that police expenditures in a given county are significantly and positively influenced by neighboring county police expenditures. Since counties inflict a negative externality on their neighbors by spending more on police services due to cross-over between the borders, the need for police services in a given county tends to increase due to increasing of services in neighboring counties.

Second, spatial interaction among local jurisdictions in the form of tax competition arises when public spending was fund through tax on mobile capital by local governments (Wildasin, 1986). Since the level of the tax base in a jurisdiction depends both, on own and other jurisdiction’s tax rates, strategic interaction results. Brueckner (1998) found evidence of policy interdependence in the adoption of growth control measures among California cities. By restricting the amount of developable land, a city government increase land rent both in its own and in nearby cities, thereby generating an externality and strategic interaction in growth control decisions. By using a panel data set of the US states, Figlio et al. (1999) found that decentralized welfare benefit setting deteriorates interstate competition and might induce states to respond asymmetrically to the changes in their neighbors’ policies.

Finally, a recent justification for the existence of interaction at the local level is the political agency - that is yardstick competition model. In such model, the imperfectly informed voters in a local jurisdiction use other governments’ performance as a yardstick to evaluate their own government (Salmon, 1987). Politicians are therefore sensitive to their local tax performance relative to similarly situated states. Then they try not to get too far out of line with policies in those jurisdictions (Oates, 1988). The result is local authorities imitating each other’s behavior.

Recently, the extent to which geographic proximity or either similarity criteria matter, although is also an empirical question that has attracted some interest by applied economists. Case et al. (1993) estimated a public expenditure equation using a panel data set of the US states’ budget over the period of 1970-85. While they can reject the hypothesis of expenditure spillovers among geographical neighbors, they found a strong empirical evidence to support the mimicking hypothesis: state expenditures are similar in terms of demographic composition.

Besley and Case (1995) presented a political agency model where voters and politicians are case sensitive to events outside their boundaries and tested their yardstick competition hypothesis on US states’ income taxes from 1960 to 1988. They found that geographic neighbor’ tax changes have a positive and
significant effect on a given state’s tax changed. Heyndels and Vuchelen (1998) tested the tax imitation hypothesis at the level of Belgian municipalities and found strong positive spatial correlation in local income tax rates between neighboring authorities.

Bivand and Szymanski (1997; 2000) showed that there was spatial dependence in the cost of domestic garbage collection in the UK districts due to contracts based on the performance comparison and that spatial interaction were substantially reduced after the introduction of CCT (Compulsive Competitive Tendering), that imposed standard contracting rules and reduced the scope for local authorities to pursue idiosyncratic policies. Murillo (2003) tested for strategic interaction among US states in the determination of tax rates on capital income. He found that states have a positively sloped reaction function to the tax policies of rival states when tax rates are chosen simultaneously.

To sum up, those various studies suggest that geographical proximity definitely matters to analyze fiscal interdependence among regions. In line with those studies, we will try to apply their approaches to analyze the fiscal competition in Indonesia and try to provide a deeper explanation. Furthermore, it could stimulate other researchers to re-estimate by using more sophisticated devices. Final objective is that the figure of local government budget will be more comprehensive for policy makers to address the related issues.

There are many indices to describe how great the inequality is. One of them is Entrophy Index developed by Theil in 1967. The most significant characteristic of the Entrophy Index is that the index can distinguish between- and within-region inequality.

In the context of regional (fiscal) disparity in Indonesia, it could be formulated as follows (Kuncoro, 2002: 89):

$$\text{ETI}(y) = S_{i=1}^{N} y_{i} \cdot \log \left[\frac{y_{i}}{N}\right] \quad (1)$$

where ETI(y) is the overall spatial disparity Entropy Index for per capita regional income (or fiscal variables), y, is the share of municipality income (fiscal) in province i on the total per capita real income (fiscal) in Indonesia, and N is the number of total municipality in Indonesia.

Furthermore, a standard empirical model of local public finance determination is usually expressed, in a linear specification, as:

$$Y = X^2 + \mu \quad (2)$$

where y is a vector of public finance variables of N local governments, X is a (N×K) matrix of explanatory variables, \( \beta \) is vector of parameters to be estimate, and \( \mu \) is an error term that is assumed to be identically and independently distributed across the observations.

To formally test the presence of spatial autocorrelation due to spatial lag or error dependence, it’s necessary to perform several specification tests. The literature on spatial econometric testing is widely and has suggested several ways for identifying these effects (see, for example: Anselin, 1988). The first specification test proposed is the Moran (1950) I’s test. The Moran’s I statistic for testing the null hypothesis that there are no spatial effects.

In general, spatial autocorrelation takes the form as follows:

$$e_i = W e_i + n_i \quad (3)$$

where \( e_i \) is mean difference of a given variable, let say \( X_i \), from mean value in the corresponding group in the period t. The component of \( e_i \) could be also the residual generated from the regression model. The form of I represents the coefficient of autocorrelation, W is a weight given to geographically nearer regions, and n is the new disturbance terms.

The statistical test of spatial autocorrelation could be done in the following steps. (see: Anselin, 1999). The first step is to construct a (NxN) matrix linking all regions based on the location. Second, put 0 (null) in the main diagonal of the matrix connecting the same region. Third, put 1 (one) in the matrix when the two regions have a border. Forth, each element in the matrix is then normalized so that sum of total is 1 (one). Fifth, the sum of the row is used as weight (W) in the Moran’s I statistics calculation:

$$MI = \frac{[\bar{e}, W_{ij} (e_j)] \cdot [\bar{e}, W_{ij}]}{[\bar{e}, (e_j)^2 / n]} \quad (4)$$

where \( W \) is a row-standardized weights matrix, N is the number of observations, K is the number of independent variables, and M = 1 – X’X’-1X’.

Mathematically, Moran’s I statistics lies between -1 and 1 (-1 ≤ MI ≤ 1). As indicator, the value of the Moran’s I statistics closes to +1 shows that the stronger the spatial positive autocorrelation, in the sense that the observation values tend to close to each other in the corresponding location. On the contrary, the value of Moran’s I statistics close to -1 indicates negative spatial autocorrelation, in the sense that the observation values do not tend to close to each other in the corresponding location. Meanwhile, the value of Moran’s I statistics close to zero presenting that the observation values are randomly distributed (independent) among regions.

In theory, the mean value of the Moran’s I statistics is \( E(MI) = -1/(n-1) \) and the standard deviation
is \( SD_{(M_t)} = (2/\hat{\lambda}_W w_i)^{1/2} \). The test of significance Moran's I statistics is done by comparing between the MI-calculated and \( E(M_t) \):
\[
MI_{calculated} = \frac{[MI - E(M_t)]}{SD_{(M_t)}}, \tag{5}
\]
It will be normally distributed (distribution Z-statistics). The significance of Moran's I statistics give a signal that spatial effect plays an important role in the subsequent analysis.

**RESULTS AND DISCUSSION**

Before presenting the results, a word about data is in order. Data on actual municipal Gross Domestic Product (GDP) per capita without oil and gas in refer to constant price of 1993 published by Central Bureau of Statistics were used to test the existence of polarization among Indonesian municipalities. Data of fiscal performance from the same sources are taken from Regional Financial Statistics. All variables were transformed into actual per capita term.

The samples period of 1988-2003 covered 80 percent of total municipalities, were divided into 2 sub-periods, 1988-2001 and 2001-2003, in efforts to provide more complete picture about the dynamics of relative income and fiscal distributions before and after fiscal decentralization. Separating this period is also required by Chow test. Table 1 configures the complete definition of all economic variables, which will be used in this study.

<table>
<thead>
<tr>
<th>Notation</th>
<th>Definition</th>
<th>Detailed Variables</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>LOR</td>
<td>Local Own Revenue</td>
<td>Local taxes and charges, local government owned enterprises profit, and other revenues</td>
<td>Real per capita (million rupiah)</td>
</tr>
<tr>
<td>RS</td>
<td>Revenue sharing</td>
<td>Tax and non tax revenues sharing, including land and building taxes, personal income taxes, forest, fisheries, and oil and gas revenues.</td>
<td>Real per capita (million rupiah)</td>
</tr>
<tr>
<td>TT</td>
<td>Total Transfer</td>
<td>RS + AF</td>
<td>Real per capita (million rupiah)</td>
</tr>
<tr>
<td>TR</td>
<td>Total Revenue</td>
<td>LOR + RS + AF</td>
<td>Real per capita (million rupiah)</td>
</tr>
<tr>
<td>OE</td>
<td>Operating Expenditures</td>
<td>Realization of operating expenditures</td>
<td>Real per capita (million rupiah)</td>
</tr>
<tr>
<td>CE</td>
<td>Capital Expenditures</td>
<td>Realization of capital expenditures</td>
<td>Real per capita (million rupiah)</td>
</tr>
<tr>
<td>TE</td>
<td>Total Expenditures</td>
<td>OE + CE</td>
<td>Real per capita (million rupiah)</td>
</tr>
<tr>
<td>Y</td>
<td>Regional Income</td>
<td>Regional GDP without oil and gas</td>
<td>Real per capita (million rupiah)</td>
</tr>
<tr>
<td>P</td>
<td>Regional Price Deflator</td>
<td>Ratio between RGDP in current price and RGDP in 1993 = 100</td>
<td></td>
</tr>
</tbody>
</table>

Table 2 shows Theil's Entrophy index of the selected fiscal variables and income per capita during last 16 years. In general, all of indices consistently increase. Looking merely at the magnitude, the Theil Entropy index of per capita regional income (Y) was the greatest. In contrast, the Theil Entropy indices for revenue sharing (RS) and LOR were the lowest. It indicates that RS and LOR were relatively distributed equally; in comparison with the disparity of per capita regional income which was distributed unequally.

<table>
<thead>
<tr>
<th>Year</th>
<th>RS</th>
<th>AF</th>
<th>TT</th>
<th>LOR</th>
<th>OE</th>
<th>CE</th>
<th>TE</th>
<th>Y</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>1.8124</td>
<td>2.4720</td>
<td>2.5253</td>
<td>1.7970</td>
<td>2.4221</td>
<td>2.1300</td>
<td>2.5652</td>
<td>6.0402</td>
</tr>
<tr>
<td>1989</td>
<td>1.8920</td>
<td>2.5255</td>
<td>2.5818</td>
<td>1.8407</td>
<td>2.4575</td>
<td>2.1191</td>
<td>2.5930</td>
<td>6.0621</td>
</tr>
<tr>
<td>1990</td>
<td>2.0220</td>
<td>2.6138</td>
<td>2.6779</td>
<td>1.8776</td>
<td>2.4584</td>
<td>2.3005</td>
<td>2.6637</td>
<td>6.0722</td>
</tr>
</tbody>
</table>
would be a materialization of fiscal centralization policy which had been implemented previously. The Z-value in the corresponding periods was less than

Table 3 delivers the result of spatial correlation test for selected variables. The Moran’s I statistic values of all the variables were positive. These positive values of Moran’s I statistics imply that the spatial autocorrelation is getting stronger to the same direction and the observation values tend to become similar among regions in a particular area. Compared to LOR, the value of Moran’s I statistics was the lowest among the four variables tested.

In term of significance, the calculated Moran’s I statistics values, except for LOR, were bigger than the Z-table normal distribution at 95 percent confidence level. It indicated that spatial correlation was mattered especially in total expenditures, intergovernmental transfers, and per capita regional income. Implicitly, it could be interpreted that local government expenditures in a particular region positively affects fiscal behavior in the geographically nearby areas. This was in line with the previous studies conducted by Ladd, 1992; Heyndels and Vuchelen, 1998; Revelli, 2000; Sole, 2001.

<table>
<thead>
<tr>
<th>Year</th>
<th>LOR</th>
<th>Z-test</th>
<th>TT</th>
<th>Z-test</th>
<th>TE</th>
<th>Z-test</th>
<th>Y</th>
<th>Z-test</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>0.0572</td>
<td>1.2672</td>
<td>0.3705</td>
<td>8.6669</td>
<td>0.3967</td>
<td>9.2850</td>
<td>0.2359</td>
<td>5.4888</td>
</tr>
<tr>
<td>1989</td>
<td>0.0434</td>
<td>0.9396</td>
<td>0.3955</td>
<td>9.2579</td>
<td>0.4404</td>
<td>10.3180</td>
<td>0.2091</td>
<td>4.8557</td>
</tr>
<tr>
<td>1990</td>
<td>0.0404</td>
<td>0.8696</td>
<td>0.4659</td>
<td>10.9210</td>
<td>0.4865</td>
<td>11.4065</td>
<td>0.2127</td>
<td>4.9389</td>
</tr>
<tr>
<td>1991</td>
<td>0.0530</td>
<td>1.1674</td>
<td>0.5317</td>
<td>12.4761</td>
<td>0.4690</td>
<td>10.9948</td>
<td>0.2000</td>
<td>4.6395</td>
</tr>
<tr>
<td>1992</td>
<td>0.0488</td>
<td>1.0692</td>
<td>0.5273</td>
<td>12.3705</td>
<td>0.4103</td>
<td>9.6083</td>
<td>0.1880</td>
<td>4.3568</td>
</tr>
<tr>
<td>1993</td>
<td>0.0457</td>
<td>0.9950</td>
<td>0.5646</td>
<td>13.2526</td>
<td>0.5111</td>
<td>11.9882</td>
<td>0.1795</td>
<td>4.1560</td>
</tr>
<tr>
<td>1994</td>
<td>0.0589</td>
<td>1.3060</td>
<td>0.6044</td>
<td>14.1936</td>
<td>0.5813</td>
<td>13.6477</td>
<td>0.1425</td>
<td>3.2812</td>
</tr>
<tr>
<td>1995</td>
<td>0.0628</td>
<td>1.3981</td>
<td>0.5803</td>
<td>13.6235</td>
<td>0.5543</td>
<td>13.0097</td>
<td>0.1499</td>
<td>3.4572</td>
</tr>
<tr>
<td>1996</td>
<td>0.0581</td>
<td>1.2882</td>
<td>0.5924</td>
<td>13.9091</td>
<td>0.5343</td>
<td>12.7556</td>
<td>0.1345</td>
<td>3.0916</td>
</tr>
<tr>
<td>1997</td>
<td>0.0677</td>
<td>1.5138</td>
<td>0.4956</td>
<td>11.6213</td>
<td>0.4698</td>
<td>11.0127</td>
<td>0.0943</td>
<td>2.1435</td>
</tr>
<tr>
<td>1998</td>
<td>0.0586</td>
<td>1.2992</td>
<td>0.3894</td>
<td>9.1129</td>
<td>0.4057</td>
<td>9.4999</td>
<td>0.1057</td>
<td>2.4117</td>
</tr>
<tr>
<td>1999</td>
<td>0.0592</td>
<td>1.3139</td>
<td>0.3340</td>
<td>7.8061</td>
<td>0.3388</td>
<td>7.9185</td>
<td>0.1026</td>
<td>2.3387</td>
</tr>
<tr>
<td>2000</td>
<td>0.0732</td>
<td>1.6444</td>
<td>0.2994</td>
<td>6.9874</td>
<td>0.2977</td>
<td>6.9467</td>
<td>0.0896</td>
<td>2.0308</td>
</tr>
<tr>
<td>2001</td>
<td>0.0900</td>
<td>2.0422</td>
<td>0.3342</td>
<td>7.8091</td>
<td>0.3253</td>
<td>7.6091</td>
<td>0.1861</td>
<td>4.3122</td>
</tr>
<tr>
<td>2002</td>
<td>0.1451</td>
<td>3.3421</td>
<td>0.1994</td>
<td>4.6259</td>
<td>0.2891</td>
<td>6.7444</td>
<td>0.1901</td>
<td>4.0686</td>
</tr>
<tr>
<td>2003</td>
<td>0.2066</td>
<td>4.7947</td>
<td>0.0351</td>
<td>0.7437</td>
<td>0.2809</td>
<td>6.5514</td>
<td>0.1964</td>
<td>4.5543</td>
</tr>
</tbody>
</table>

Source: CBS (recalculated)

Note: critical value of Z-table for α = 5 percent is 1.645
     critical value of F-table for α = 5 percent is 4.54

The absence of spatial effect on LOR collection would be a materialization of fiscal centralization.
Z-table value in 95 percent level of confidence. In those periods, objects, items, and tariffs in LOR had been decided by central government and equally implemented for all local governments.

In accordance with fiscal decentralization era since 2001, the spatial effects would have been significant. It was confirmed by Chow test using 2001 as breaking year.

Those phenomena indicate that the surrounding areas influence realization of the LOR collection. It seems that realization of the LOR collection in a particular local government would become a reference for others to determine realization of the LOR collection in the next period. In the long run, it would induce local tax competition among local governments and in turn stimulate the high cost economy (Saad, 2003).

Further, we discovered that there was a close relationship between unequal economic variables distribution and their spatial correlations, as described in figure 1. It is notable that in general the increase in LOR unequal distribution associates with the increase in LOR interdependence among regions. Second, the increase of local government expenditures in total were un-equally supported by transfers associate with the decrease in their interdependences among regions. This condition was strengthening especially after 1998. Third, the increase in regional income disparity correlates to its interdependence in the opposite direction. However, after regional autonomy era, this correlation changed to parallel direction. Those indicate that fiscal equalization in regional autonomy and fiscal decentralization era requires a declining of the degree of fiscal interdependence among municipalities. On the contrary, the regional income equalization using local government expenditures instrument, induced by intergovernmental transfers, requires an increasing of the degree of fiscal interdependence among municipalities.

CONCLUSION

By using panel data on the Indonesian local government, this paper has explored the source of spatial auto-correlation in local public finance. The results of the analysis found that the fiscal competition among municipalities were greater compared to the pre-fiscal decentralization period.

It seems that the local tax setting and local government expenditures decisions in a particular municipality were mimicking on the behavior of neighbor regions. Furthermore, the spatial interaction is negatively correlated to the fiscal disparity. Those imply that in the regional autonomy era, the local
governments tend to increase both their local own revenue intensively and intergovernmental grants, in order to finance their expenditures. In the long run, this could lead to the high cost economy, worsening fiscal dependency and inefficiency in local government expenditures.

Above findings suggested that the distribution of intergovernmental transfers among regions should consider as local tax effort and minimum standard of services have to play an important role in spending the local government expenditures efficiently.

REFERENCES


