IDENTIFICATION OF LEADING SECTORS IN NORTH SUMATERA PROVINCE

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Abstract

Regional economic development is determined by the resource of every region and resulted in commodities. The Economic base theory explains that leading sector and non-leading sector has a role as an economic structure of region. The aim of this research was to identify leading sectors in North Sumatra Province. This research used descriptive analysis method. The GRDP of North Sumatra Province and the country's GDP by Industrial Origin at Constant Basic Prices 2000 period 1999-2014 were used as the data. Location Quotient (LQ) and Dynamic Location Quotient (DLQ) were used to analyze Gross Regional Domestic Product (GRDP) and Gross Domestic Product (GDP) in North Sumatra period 1999-2014. LQ analysis indicated that the basis economic sectors in North Sumatra province were agriculture sector; electricity, gas and water supply sectors; building sector; trade, hotels and restaurants sectors and; transport and communications sectors. As for the non-basis sectors were: mining industries, manufacturers, financial companies, leasing and business services and services sector. Results of the analysis DLQ analysis revealed that mining and quarrying sector, industrial and processing sector and Building sector were expected as basis sectors in the future.

Keywords: location quotient, dynamic location quotient, economic sector

Introduction

In autonomy era, each region is responsible for controlling and monitoring their budget. There is no effective control system for the entire situation. Therefore, the region is expected to select and take an effective implementation of the control system and supervision. Reformation era which has spawned the desire to attain regional autonomy in a clear, tangible and accountable, is demanding a paradigm shift in the implementation of local development and governance. Mardiasmo (2004) suggested that the local government today must change the orientation of vertical accountability be accountable to the public (Horizontal Accountability). Communities as regional stakeholders become interested parties in regional development. Therefore, providing a series of information and explanation of the activities and performance of the local government to local shareholders and stakeholders become very important for the implementation of public accountability. Information and availability of data in this connection obviously become very necessary to evaluate organization's performance. Its data and results will be a feedback for performance improvement in the future. Controlling and monitoring system depends on the conditions and characteristics of each region. In this case, the central government is just a builder and steering (Halim, 2002). At present, its implementation demands activity and community participation as subjects of regional development because the results will be felt directly itself.

The efforts becoming independent country need acceleration in development itself and output equalization. Economic development becomes an important thing to chase the lag from other countries. However, high development should be followed by better wealth equalization. The
economic development aims to increase the wealth of citizen which can be achieved through economic growth. The measurement and GDP growth per capita in a monetary minus inflation rate are an economic benchmark which is used to determine the wealthy of a nation state (Todaro, 2004). GDP is one of economic indicator to determine the progress of development itself.

Development is not just increasing real incomes but also it must be sustainable, steady and accompanied by changes in attitudes and social habits that previously inhibited economic advances. (Hamid, 2005). District development is important in terms of national development and it is a part of integral domestic development in increasing equalization of wealth, stabilization of citizen. The aim of development is the consummate strong foundation to be developed country independently. Regional development should consider special character of every district more (Kuncoro, 2000).

Economic growth is the increase in revenue per capita in the long term (Boediono, 2001). It can be said if the level of economic activity is higher than the results achieved in the previous period. High economic growth and sustainable is the main condition for sustainable development. Population growth means that the economy needs to be increased, then the required income also increased. According to Tambunan (2001), this can only be obtained through an increase in aggregate revenue (goods and services) or GDP each year.

Djojohadikusomo (1994) mentioned that economic growth is characterized by three main characteristics, namely: (1) per capita income growth in the real definition, (2) distribution of the labor force by sector production activities into livelihoods, and (3) the distribution of people in the community. The district development aim is not only to increase participation of citizen but also to strengthen the national unity. Sjafrizal (1997) explained that main policy needs to consider regional development based on the potential of a citizen in the local level. The aim of district development is to increase the regional standard of living and wealth through effective and efficient development to reach regional autonomy (Kartasasmita, 1996). District economic development is a process consist of new institutional establishment, new alternative industrial establishment, recovery of provided labor to produce best goods and services, identification of new markets, knowledge transfer and new company development (Arsyad, 1999).

Nopirin (1996) explained that development of methods to analyze the economy in a district is important. Since, they are a tool to collect data about relevant district economy and its process as well, in which can be used to be guidance for determining action and accelerate existed growth rate. The economic growth is related to provided good and services which can be determined by GRDP from year to year. There are three main components in economic growth, such as: capital Accumulation, citizen growth and technology progress (Todaro, 2000).

Investment conducted by local government mainly not for collecting profits, but to create a high multiplier effect to help citizen inproviding basic needs of goods, public service and development. Current development theory does not explain district economic development both comprehensively and completely, hence, it is needed to construct alternative approach plan. Nopirin (1996) explained that this approach is a synthesis and reconstruction of existed concepts in order to give a basic framework of district economic development.

<table>
<thead>
<tr>
<th>Table 1. New paradigm of regional economic growth theory</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Component</strong></td>
</tr>
<tr>
<td>Vacuum</td>
</tr>
<tr>
<td>Basic Development</td>
</tr>
<tr>
<td>Location Asset</td>
</tr>
<tr>
<td>Knowledge resource</td>
</tr>
</tbody>
</table>

Source: Nopirin (1996)
Soegijoko (1997) stated that regional economic development determined by the resource of every region and resulted in commodities. A natural resource is an asset which can be used to produce goods and services in short term period. The Economic base theory explains that the main factor of economic growth in a certain region has a direct connection between a demand for goods and services from the outside of the region (Arsyad, 1999). Its theory explains also the economic structure of the region such as Leading sector and non-leading sector. Sectors who serve domestic and foreign market include as leading sectors. Meanwhile, sectors that only serve domestic market are called non-leading sectors (Richardson, 1991).

**Materials and Methods**

*Type of data*

The research data consists of secondary data: Gross Regional Domestic Product (GRDP) in North Sumatera Province and Gross Domestic Product Data (GDP) based on business, in 1999-2014 of Constant Basic Price (CBP) 2000.

*Analysis of LQ*

LQ analysis was used to determine the economic leading or basis sectors in a region. Its technical calculation is comparing the percentage contribution of a specific sector in GRDP with the percentage contribution of the same sector in national GDP.

Formula of LQ according to Bendavid-Val in Adisasmita (2005):

\[
LQ = \left( \frac{V^R_I / V^R}{V_I / V} \right)^{(1)}
\]

Where:

- \(LQ\) = Index of LQ Coefficient
- \(V^R_I\) = GRDP of i sector in North Sumatra Province
- \(V^R\) = GDP of i sector at national level
- \(V_I\) = Total of GRDP in North Sumatra Province
- \(V\) = Total of GDP at national level

Criteria of LQ:
- \(LQ \geq 1\) means that sector as basis /leading sector
- \(LQ < 1\) means that sector as non-basis sector

*Analysis of Dynamic Location Quotient (DLQ)*

Suyatno (2002) described that analysis of DLQ is used to overcome the weaknesses of LQ that only describing in a certain time and static. DLQ’s analysis is another variant of LQ that knows the change of a sectoral reposition.

\[
DLQ = \frac{[(1+ g1R) / (1+ gR)]^t}{[(1+ G1) / (1+ G)]^t} \quad (2)
\]

Which:

- \(DLQ\) = Index of DLQ coefficient
- \(g1R\) = GRDP growth rate of i sector in North Sumatra Province
- \(gR\) = GRDP Growth rate in North Sumatra Province
- \(G1\) = GDP growth rate of i sector at national level
- \(G\) = GDP growth rate at national level
- \(t\) = period of analysis
As for calculating the rate of growth:

\[ r = (\frac{P_t}{P_0})^{\frac{1}{t}} - 1 \]

Which:
\[ r = \text{Growth rate} \]
\[ P_t = \text{GRDP at the end of the analysis} \]
\[ P_0 = \text{GRDP in the early years of the analysis} \]
\[ t = \text{Period of analysis} \]

Criteria DLQ:
- DLQ ≥ 1 means that the sector can still be expected to be a basis or leading sector in the future.
- DLQ < 1 means that the sector cannot be expected to be a basis or leading sector in the future.

Results and Discussion

**Analysis of Location Quotient (LQ)**

Analysis of LQ is a method to determine basic sectors and non-sector economic bases in a region. Basis sectors in a region is indicated by LQ value more than one, (LQ > 1), whereas non-basis is determined with LQ’s value less than one (LQ < 1).

**Table 2.** Analysis of LQ economic sectors in North Sumatra province (period 1999-2014) Constant Basic Prices (CBP) 2000

<table>
<thead>
<tr>
<th>No</th>
<th>Sector</th>
<th>Mean percentage of economic contribution (%) period 1999-2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Agriculture</td>
<td>1,80</td>
</tr>
<tr>
<td>2.</td>
<td>Mining and Quarrying</td>
<td>0,13</td>
</tr>
<tr>
<td>3.</td>
<td>Industry and Processing</td>
<td>0,86</td>
</tr>
<tr>
<td>4.</td>
<td>Electricity, Gas, and Water</td>
<td>1,20</td>
</tr>
<tr>
<td>5.</td>
<td>Building</td>
<td>1,03</td>
</tr>
<tr>
<td>6.</td>
<td>Trade, Hotel, and Restaurant</td>
<td>1,04</td>
</tr>
<tr>
<td>7.</td>
<td>transportation and communication</td>
<td>1,35</td>
</tr>
<tr>
<td>8.</td>
<td>Finance, leasing and business services</td>
<td>0,82</td>
</tr>
<tr>
<td>9.</td>
<td>services</td>
<td>0,92</td>
</tr>
</tbody>
</table>

Based on analysis of LQ, sectors as the sector basis (value LQ> 1) include agriculture sector, electricity, gas and water supply sectors, building sector, trade, hotels and restaurants sectors, transport and communications sectors. While, sectors as the non-sector basis (value of LQ < 1) which, namely: mining and quarrying sector; industrial and processing sector; financial, leasing and business services sectors; and services sector.

LQ coefficient values greater over the years indicated a major contribution to the economic sector GRDP (Table 2). The construction sector’s contribution was also increasing every year despite the building sector was the sector of non-basis in the province of North Sumatra.

**Table 3.** Percentage of economic sector contribution to the GDP in North Sumatra province period 1999-2014 Constant Basic Prices 2000 (in %)

<table>
<thead>
<tr>
<th>No</th>
<th>Sector</th>
<th>Mean percentage of economic contribution (%) period 1999-2014</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Agriculture</td>
<td>0,26</td>
</tr>
<tr>
<td>2.</td>
<td>Mining and Quarrying</td>
<td>0,01</td>
</tr>
<tr>
<td>3.</td>
<td>Industry and Processing</td>
<td>0,22</td>
</tr>
<tr>
<td>4.</td>
<td>Electricity, Gas, and Water</td>
<td>0,01</td>
</tr>
<tr>
<td>5.</td>
<td>Building</td>
<td>0,07</td>
</tr>
</tbody>
</table>
6. Trade, Hotel, and Restaurant 0.17
7. Transportation and communication 0.09
8. Finance, leasing and business services 0.07
9. Services 0.09

Optimizing the performance of all sectors is necessary in order to provide higher contribution to boost economic growth in North Sumatra Province. The agricultural sector gave its contribution an average of 0.26% (see Table 3).

Bendavid-Val (1991) gave the measurement to the degree of specialization with the following criteria:
1. If LQ coefficient of a sector is greater than one (LQ > 1), this means the degree of specialization of that sector at the regional level is greater than the same sector at the national level. That sector is a sector basis or leading sector in which must be developed as a regional economic driver.
2. If LQ coefficient of a sector is equal to one (LQ = 1), this means the degree of specialization of the sector at the regional level is equal to the same sector at the national level.
3. If LQ coefficient of a sector is smaller than one (LQ < 1), it means the degree of specialization of the sector at the regional level is smaller with the same sector at the national level. The sector is a sector of non-bases and less potential to be developed as a regional economic driver.
4. If the LQ coefficient of a sector is the higher, the ability of that sector to compete also will be higher as well.

**Analysis of Dynamic Location Quotient (DLQ)**

Location Quotient (LQ) have weaknesses. They are static and only provide an overview at a particular time. Therefore, another variant of LQ is used, coefficient Dynamic Location Quotient (DLQ), to determine re-positioning of the sectors.

Data in Table 4 above showed the value of the coefficient DLQ towards economic sector in North Sumatra province, which there are three sectors into a leading or basis sector in the future. The sectors which have a coefficient DLQ> 1, these sectors are the mining and quarrying sector, industrial sector and processing sector and building sector. Conditions in these three sectors is much more nuanced, important thing that distinguishes these three sectors are where the mining - quarrying and manufacturing sector, in the beginning, are the non-leading then they turned into a leading sector in the future, while the construction sector is a leading sector that continues its role in the future.

**Table 4.** Analysis of LQ and DLQ on economic sectors in North Sumatra province.

<table>
<thead>
<tr>
<th>No.</th>
<th>Sector</th>
<th>Coefficient</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>LQ</td>
<td>DLQ</td>
</tr>
<tr>
<td>1.</td>
<td>Agriculture</td>
<td>1.80</td>
<td>0.90</td>
</tr>
<tr>
<td>2.</td>
<td>Mining and Quarrying</td>
<td>0.13</td>
<td>542,09</td>
</tr>
<tr>
<td>3.</td>
<td>Processing Industry</td>
<td>0.86</td>
<td>1.24</td>
</tr>
<tr>
<td>4.</td>
<td>Electricity, Gas and Water</td>
<td>1.20</td>
<td>0.00</td>
</tr>
<tr>
<td>5.</td>
<td>Building</td>
<td>1.03</td>
<td>312388,56</td>
</tr>
<tr>
<td>6.</td>
<td>Trade, Hotel and Restaurant</td>
<td>1.04</td>
<td>0.02</td>
</tr>
<tr>
<td>7.</td>
<td>Transportation and Communications</td>
<td>1.35</td>
<td>0.00</td>
</tr>
<tr>
<td>8.</td>
<td>Finance, Leasing and Business Services</td>
<td>0.82</td>
<td>0.38</td>
</tr>
<tr>
<td>9.</td>
<td>Services</td>
<td>0.92</td>
<td>0.86</td>
</tr>
</tbody>
</table>

Based on analysis of LQ, basis and non-basis sectors are static, whereas based on analysis of DLQ are dynamic. Analysis LQ only provides an overview at a particular time, while analysis DLQ can be used to predict the direction of growth sectors of the economy in the future. In other words, leading or basis sector is dynamic area that is determined not only by the growth of the sector itself, but also greatly affected other sectors. Local economy is largely determined by the growth of other economic sectors and regions nationwide, hence, cooperation between economic sectors and inter-regional cooperation is needed (Wiriyamarta & Mulyo, 2009).
Conclusion

Therefore, it can be concluded that there were 5 basis sectors (LQ> 1) based on analysis of LQ in North Sumatra Province during period 1999 - 2014 Constant Basic Prices 2000, namely: agriculture sector; electricity, gas and water supply sectors; building sector; trade, hotels and restaurants sectors and; transport and communications sectors. While, the non-basis sectors (LQ <1) were the mining and quarrying sector; industrial and processing sector; financial, leasing and business services sector; and services sector. Based on Analysis of DLQ. There are three sectors into a sector basis in the future: the mining and quarrying sector, industrial and processing sector; and the building sector. The government of North Sumatera should increase the efficacy of basic sectors in their region, especially in the agricultural sector to improve its contribution and support economic development. Integrative planning among sectors should be strong and increase the growth and build strong cooperation in all economic sector. Last, cooperation among districts should be strengthened in terms of increasing the citizen wealth and create active participation of citizen in development.

References


