

## **The Analysis of Leading Sector in Production Center Regions to Developing Economic In the Province Of Maluku**

Izaak T. Matitaputty

*Economic Department Faculty of Economic, Pattimura University*

---

**ABSTRACT :** *The objectives of the research were: (1) to identify the key sectors based on local potential (local specific) archipelago, according to the economic activities Province of Maluku, (2) to analyze the key sectors as the support sector prime mover for other sectors, based on the economic structure of districts/cities in the Province of Maluku, (3) to analyze the sectors of economic activity archipelago districts affecting agglomeration or polarization attraction growth poles to other regions (periphery), according to leading sector districts in the Province of Maluku. Analysis of the sectors areas of excellence in accordance with spatial and local specific location districts was performed by using biplot analysis and was one of multivariate analysis tools that presented the results of the analysis in the space of two-dimensional planes. Through this analysis, the central agglomeration attractiveness of growth pole of the Ambon city was stronger than that of the periphery and the polarization had not been able to encourage or create a new growth poles in other regions. Economic sectors were classified according to the 60 economic sectors I-O table of Maluku Province which could be viewed based on criteria affecting the structure of output, gross added value, multiplier effect and inter-sectors linkages. The result analysis showed that there was no dominant sector in Province of Maluku based on local specific region that was able to create advantages in terms of connectivity among the sectors structures of output, gross value added, multiplier effect and inter-sector linkages.*

**KEY WORDS:** *Leading Sector, Developing Economic*

---

### **I. INTRODUCTION**

Maluku province as one of the provinces in Indonesian archipelago with an area composed of islands separated by seas focuses more on the policy of development of growth pole namely Ambon city, while many areas in the periphery of this province have not received serious attention from various policy of development processes that fit the potential or capacity of the local area. Many development policies have been carried out, but these policies prioritize the development process that is oriented to the concept of continent region (continental) by adopting all policies of continental region to the archipelago area, as if the central region (Java) and other regions (outside Java) are homogeneous, and the policies make Java island as the core for other regions outside Java Island.

Development policy has not given any attention to the aspects of potential of the island although in an autonomous era, there are various centralized policies of development (top-down). On the other hand, the local authorities still have an inability to identify the potential of the selected sectors of the region, so that these concepts only provide aspects of the spread (the spread effect) to the surrounding area in the same region (continental). Another thing that also influences the development of a centralized process with the concept of the land area is the strong influence of policy makers in influencing the process of development. According to the World Bank (2009) for many years a spatial element has not become the major concern so that it is necessary to understand the concept of the approach to economic geography. Changes to the structural shift in the economic area can be adapted to the location of the area in accordance with the leading sector. Thus the regional economy can be the stronger of the region based on the capacity or local potential (local wisdom/specific).

The development of the islands such as Maluku province centered or oriented to the Region Production Centers should be able to identify the leading sectors so that it can improve the region's economy in an equilibrium of location matrix that includes some central development growth (growth poles of development) and the suburbs/ buffer (periphery/ hinterland) to develop the domestic leading sector. Therefore, the leading sectors should be able to obtain strong support from other sectors so that the power - the power of agglomeration, can create support in the future (spread effect). They are not centered on the centers of growth and create new growth centers (new growth poles).

According to Myrdal G, (1976) the failure of the theory of growth poles is because the direction and strategy of regional development policy are oriented more to regional growth centers so that they can rise agglomeration at the growth center. Meanwhile according to Hirschman A, (1958) following the theories of regional development such as, Christaller (1933), Losch (1944), Perroux (1955), Boudeville (1961), Friedman (1964) and Poernomosidi (1970) stated that the importance of the role of growth centers in developing the area as a prime mover was that it should be able to spread the results of development to the surrounding area known as the trickling down effect or according to Poernomosidi, known also as distribution service node. Maluku Province known as the "thousand islands", or "The Spice Islands" has the potential or abundant capacity of local resources (local specific). The wealth of these resources is located in different sectors of economy either managed economically or not. Spatially and potentially, the economic sectors of the Maluku island province have not been able to give serious attention to the potential as a basic capital construction (prime mover) to other sectors.

In accordance with the above description, the subject matters of this research were:

- [1] What were the leading sectors (key sectors) in accordance with the capacity or potential of the region in the development of local economic activity of the islands in Maluku province?
- [2] What were the leading sectors that became the supporting sectors to other sectors in the district/ city of Maluku province?
- [3] What were the leading economic sectors in the district/ city that created new growth (new growth poles) and agglomeration or polarization from the growth center of the islands in the Maluku province?

## II. THEORETICAL FRAMEWORK

**Regional development :** Meyer-Stamer (2003) said that the local economic development was different from the local development or regional development. There is a tendency from some people to see the local development associated with administration areas such as city, county or district development. While regional development is associated with a set of cities that the highest limit is the provincial level. Therefore, the definition of economic development and regional development must have clear limitation so that local understanding of this discussion is only limited on the geographical area that the scope is smaller than that of regional understanding. According to the World Bank (2009), the regional development policy was the government intervention to spread the benefits of economic growth equally to each region. Therefore, policy makers are often compromised because of errors in recognizing the importance of economic geography, so it will be very difficult for investors (producers) to make a decision about where they should conduct their economic activities appropriately. According to Uphoff (1999) in Indonesian, the economic policy was more friendly to the industrial sector before the crisis, but the success of the agricultural sector achieved today is supported by the central government intervention that is more dominant (top-down)

Arsyad (1999), there were several approaches in the area of economic development. Such an approach can be done in two ways, namely, *First* the Sectors approach and *Second* Regional approach. The sectors approach is the approach to economic development which focuses the attention on the sectors of economic activity in the region that is given less attention to the aspect of the overall space (less spatial). While a regional approach is economic development approach that focuses on the utilization of space (one to another) and can utilize the space planning with spatial planning regions. Thus, at the regional approach, the regional economic development approach puts more emphasis on the use of different regions of space between one to another and can connect a variety of interactions that occur in any activity or development activities in the region. Regional analysis is trying to predict the attraction (attractiveness) of a strong region (growth pole) to the other regions (periphery). Basically, a regional approach is based on an assumption that this approach sees the region as a collection or parts of the territory that have the potential/ capacity/ capability and different appeal among their respective territories.

LIPI (2003) simply classified sectors on several levels:

- [1] The primary sector consists of agriculture and mining. The secondary sector consists of manufacturing sometimes including construction. The tertiary sector consists of services, banking and others. BPS (2005) was generally referred to as the field of business sectors and classified into nine sectors namely:
- [2] Sector of Agriculture, Mining, Industrial, Electricity, Building, Trade, Transport, Financial, and Services

**Interregional Changes in Economic Structure and Policy Development Strategies :** Steven (2001), the key factor to the success of economic development quickly obtained from the concept of development with priority on capacity or geographical advantages and characteristics of the region (local specific) and also various

economic policy strategies that are conducive to support an atmosphere of investment. Gaurav and Martin (2002) stated that the great role of the agricultural sector could be seen from the geographical and spatial position and the development of the leading or potential sectors that occur among the sectors. This study shows the agricultural sector and non-agricultural sector that experience fairly basic inequality although the agricultural sector is the leading sector. Daryanto (2003) and Uphoff (1999) showed the great role of the agricultural sector in order to support the economic development of the region as a whole. Douglas (1998) stated that developed countries which had good economic conditions always came from the central region/core region because the central region provided benefits to the periphery regions. Such concepts are usually done on the country/ area of land (land lock state).

### III. RESEARCH METHOD

#### Research Location, Type and Source of Data

Maluku province is an archipelago area with potential or local characteristics that are different (heterogeneous) from among the regions. It consists of the islands with an area of ± 851 000 km<sup>2</sup>, 90 percent of ocean and 10 percent of land. The selected location is in Maluku province because it is one of the largest islands in Indonesian region with its region leading sectors which have not still been exposed optimally by both in the central (core) or the periphery regions. Types and sources of data used were secondary data and primary data, namely the Input-Output table in 2007 Maluku province, PDRB province, PDRB district/ city and other relevant data. The whole data were collected from BPS, BAPPEDA province, district/ city, the relevant agencies in the form of documentary and literary studies.

**Model Specifications :** The approach of the research was carried out by using Biplot analysis model and Input-Output analysis. Biplot analysis method was used to identify and analyze the most leading and the weakest sectors based on the location of the district/ city in Maluku province while the Input-Output analysis was used to determine the connectivity of various criteria analysis built on the structure of output, gross value added, multiplier effect and Inter-sectors linkages. Specification of model was built based on the conceptual framework, *i.e.* how could Maluku province identify the leading sectors that were appropriate to the direction and strategy of regional development policy.

**Analysis of Regional Approach (Biplot Analysis) :** This study used biplot analysis which could present the characteristics of the object of observation at the level of the district/ city, *i.e.* the center of growth in the surrounding region in which the variables were analyzed in a flat space/space dimension (DM). Johnson 2002, biplot analysis was shown in a two-dimensional display. The information shown by the biplot was obtained from the dimensions of a display, namely the approach among objects, the diversity and relationships that influenced each other. Furthermore, this analysis was used to find out the advantages of each object observation (foremost sectors) in which each object (sector) lied in the same direction from a variable, therefore, the object (sector) had the above average value or in other words, it was the foremost sector. Biplot analysis was based on Singular Value Decomposition (SVD). Common form of SVD in Greenacre 1984 could be explained as follows, suppose an X data matrix was nX p size, n was the observations and p was the corrected variable towards the average value. The matrix X had r rank, and could be written as follows:

$$X = ULA \dots\dots\dots (1)$$

U Matrix was a singular vector matrix of NXr size and the A matrix was singular vector matrix of PXR size so that U'U = A'A = I (identity matrix of r dimension). While L was a diagonal matrix of rXr size with diagonal elements (the square from X'X characteristics so that  $\sqrt{\lambda_1} \geq \sqrt{\lambda_2} \geq \dots\dots \sqrt{\lambda_n}$ . This diagonal element was called the singular value of X matrix.

The columns of A matrix were called singular vector lines that were the foundation of orthonormal of X matrix rows in p-dimensional space. Columns of U matrix were called column singular vector that was the orthonormal of X matrix columns in n dimensional space. The explanation of the equation (1) became:

$$X = UL^\alpha L^{1-\alpha} A' \dots\dots\dots (2)$$

According to Jolife (1986) in Sartono, et al (2003), suppose G = UL<sup>α</sup> with G was the matrix of nXr size and H' = L<sup>1-α</sup> A' with an H' as the matrix with pXr size. α was the value of factorization of 0 ≤ α ≤ 1, so that the equation (1) became

$$X = GH' \dots\dots\dots (3)$$

In general, the step to create Biplot was as follows (Anonymous, 2000). The transformation of matrix X, Determine the singular matrix of decomposition value (SDV) ULA '. Calculating the weighting factor of λ for the rows and columns

$$\lambda_{r,1} = \sigma_1^r, \quad \lambda_{r,2} = \sigma_2^r \\ \lambda_{c,1} = \sigma_1^{1-r}, \quad \lambda_{c,2} = \sigma_2^{1-r} \dots\dots (4)$$

Where  $\sigma_1$  and  $\sigma_2$  are the first and second singular value and  $\lambda$  is a split factor. Calculate the values of each matrix row. The value of each line was calculated by using:

$$x_{r_1} = u_{i1} \lambda_{r,1} \quad y_{r_1} = U_{i2} \lambda_{r,2} \dots \dots \dots (5)$$

Calculate the values of each column of the matrix. The value of each column was calculated by using:

$$x_{c_1} = A_{i,1} \lambda_{c,1} \quad y_{c_1} = A_{i,2} \lambda_{c,2} \dots \dots (6)$$

Then all values that were connected by straight lines connected the values (X, Y) for the rows and columns to describe the state of each variable (Amenta, 1998).

**Sectoral Approach Analysis :** This analysis was conducted to answer the problems on the determination of the selected sectors (key sectors) and the impact of final demand sectors of the islands based analysis methods which are based on Input-Output tables (IO) Maluku Province in 2007.

**Output Structure Analysis :** The aspects of the output structure had some similarities with the aspects of gross value added. The output structure could be interpreted as the value of production of goods or services produced from sectors of the economy of a region. Thus, the structure of the output in this study was to see the largest economic sectors based on the classification of 60 sectors of the economy in Maluku province and contributed 10 biggest sectors to the creation of output.

**Analysis of Gross Value Added :** The aspects of gross value added could be found out from Maluku Province economy through wages and salaries, business surplus, depreciation and indirect taxes so that they affected or created the amount of gross value added. In other words, this analysis was the service rewards to the produced production factors from production activity. This study showed the 10 biggest sectors that created gross value added of the 60 sectors in Maluku province.

**Multiplier Effect Analysis :** The aspect of the multiplier effect was one of the analyses (IO) which was often used to assess the impact of changes in exogenous variables (final demand) of a sector to the creation of the output, income and employment. The multiplier analysis in this study used type I. Type I multiplier was obtained from the inverse matrix of open Leontief I-O model. The formulation of the multiplier for output, revenue (income) and labors was as follows:

a) Mathematically the multiplier effect of output was as follows:

$$MXT_j = \sum_{i=1}^n D_{ij}$$

where:

$MXT_j$  = simple output multiplier of j sector.

$D_{ij}$  = the matrix element of the inverse Leontief

b) Mathematically, the multiplier effect of income was as follows:

$$MI_j = \frac{\sum_{i=1}^n a_{n+1,j} \cdot b_{ij}}{a_{n+1,j}}$$

where:

$Mi_j$  = income multiplier of type I to j sector.

$b_{ij}$  = the matrix element of open Leontief inverse =  $(I - A) -1$

$a_{n+1,j}$  = input coefficient salary / household wage of j sector.

c) Mathematically, the multiplier effect of the labor was as follows:

$$MLI_j = \frac{\sum_{i=1}^n w_{n+1,i} \cdot b_{ij}}{w_{n+1,j}} \cdot w_{n+1,i} = \frac{L_i}{X_i}$$

where:

$MLI_j$  = the labor multiplier of type I, j sector.

$W$  = the coefficients row vector of the labor (person/ rupiah unit)

$W = [W_{n+1,1}, W_{n+1,2}, \dots, W_{n+1,n}]$

$W_{n+1,i}$  = the labor coefficient of i sector (person/ rupiah unit)

$W_{n+1,j}$  = the labor coefficient of j sector (person/ rupiah unit)

$X_j$  = the output total (units of rupiah)  
 $L_i$  = the component of labor to i sector.  
 $B_{ji}$  = the matrix element of open Leontief inverse

**The Analysis of Inter-sectoral Linkages :**The aspect of inter-sectoral linkages (linkages between sectors), is one of analyses (IO) which is used to determine how many connections or relationship among sectors of economic activity during the activity performed in the study period. The meant relevance is how the relationship among economic sectors in the province of Maluku has backward linkages and forward linkages. This linkage is a picture of the relationship between raw materials or raw materials and finished goods sales. The formulation of linkage analysis to the forward and backward is as follows:

$$F_i = \frac{\sum_{j=1}^n X_{ij}}{X_i} = \sum_{j=1}^n a_{ij}$$

$$B_j = \frac{\sum_{i=1}^n X_{ij}}{X_j} = \sum_{i=1}^n a_{ij}$$

where:

$F_j$  = direct forward linkage  
 $X_{ij}$  = the numbers of i sector output used by j sector  
 $X_i$  = the output total of i sector  
 $a_{ij}$  = matrix element of technical coefficient  
 $B_j$  = direct backward linkage  
 $X_{ij}$  = the numbers of i sector output used by j sector  
 $X$  = Total input of j sector  
 $a_{ij}$  = matrix element of technical coefficient

Based on the classification of 60 sectors of the economy in Maluku province, the research was carried out to find out which sectors had the biggest backward and forward linkages above the average of other sectors.

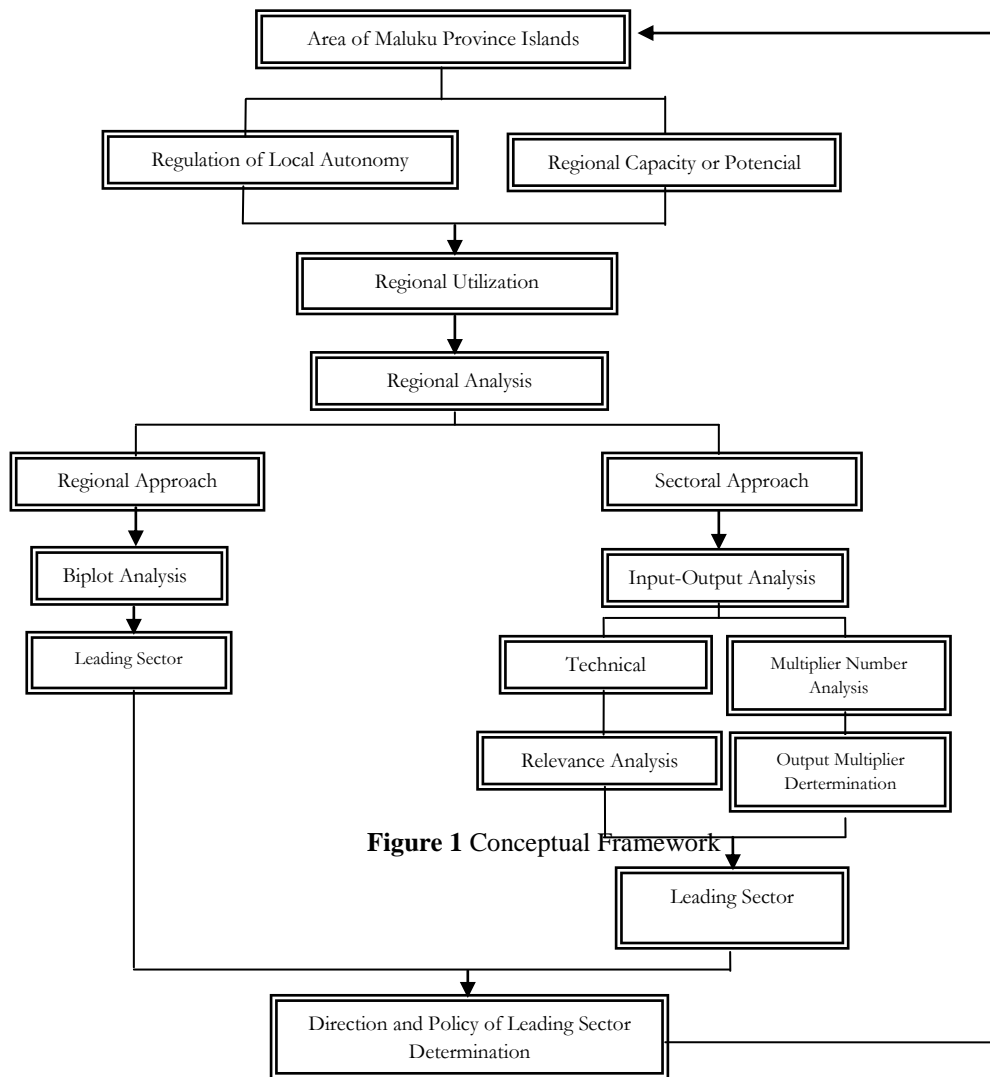


Figure 1 Conceptual Framework

#### IV. RESULTS

##### The Identification of Leading Sector in Maluku Province

The development process of the regional economic sectors was generally based on some aspects by ignoring the potential or regional local capacity. This is in line with the Wibisono's opinion (2005) that the development of the region or sub-region development in Indonesia was very important because of some various reasons such as political aspects, geographic disparities, spatial dynamics and reasons for decentralization (autonomy). Juoro (1989) emphasized the importance of the various approaches in the area of economic development that often resulted in the agglomeration of economic activity in one region only, central region (core). Thus, the archipelago region, such as Maluku province no longer considered Ambon as the only central region of growth pole, and it needed to create new centers of growth (new growth poles) based on the strength of the potential or capacity of any new growth center by identifying leading sectors territory.

Taken from Biplot analysis, it could be taken conclusion that the leading sectors in Maluku Province were agriculture, service in group 1 (DM.1.) and trade, hotel and restaurant group 2 (DM.1.). While the leading sub-sector consisted of fisheries sub-sector in group 1 (DM.1), and in group 2 (DM.1) the leading sub-sectors were the plantation and transport. Agriculture and other sub-sectors in Maluku province indicated that the sector/ sub-sector still showed little diversity, namely the percentage of Maluku province in developing the sector and sub-sector in each region (district / city) was almost the same. While the service sector and transportation sub-sector were the leading sectors/ sub-sectors in Maluku province and Ambon City. The weakest sectors in other region in this province showed the level of influence or agglomeration attractiveness of central region (growth poles) of Ambon city to suburban areas (periphery).



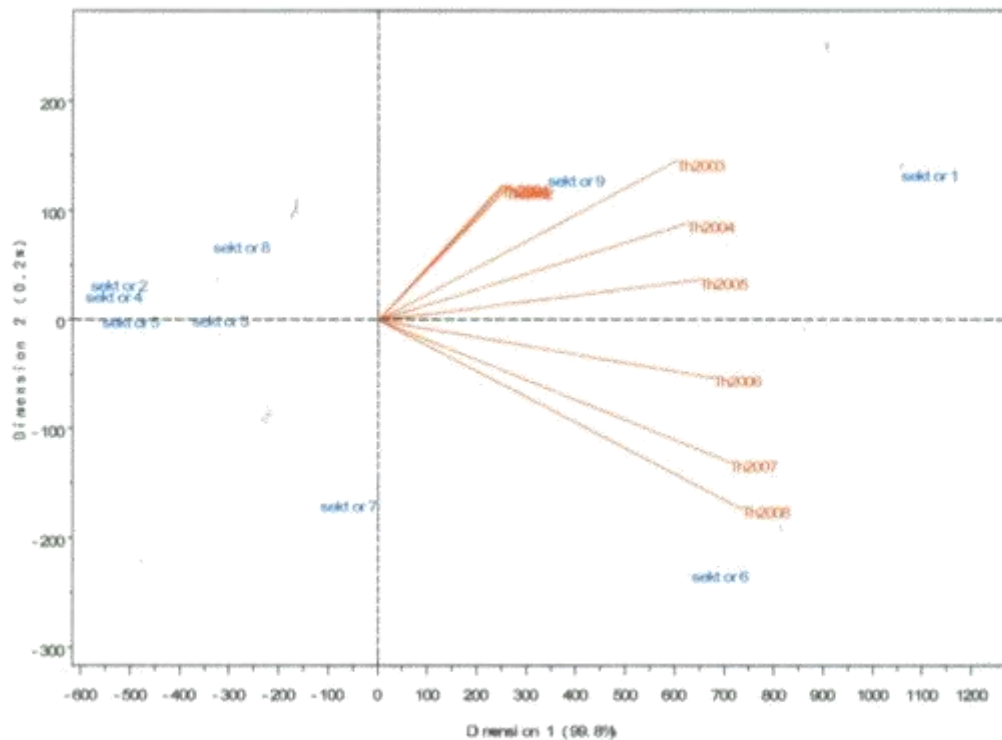


Figure 2 the Leading Sector in Maluku Province, Economic Sector

**Determination of leading sector in Maluku Province Islands :**Based on the criteria for structural analysis and the output of gross value added, the results of connectivity between these two criteria showed that there were six leading sectors; wholesale and retail trade sector (44), fisheries (21), public administration and defense (56), water transportation (48), land transportation (47) and rental buildings (54). Based on the biggest 10-sector classification from multiplier effect analysis results, such as the output of multiplier, income and employment, it could be concluded that the results of the connectivity among the three criteria of the analysis showed that there were four leading sectors; plywood industry sector (33), industry of bread, biscuits and the like (28), other food and beverage industry (30), and rice milling industry (25). (Table 1)

The connectivity among the sectors was one of the requirements that must be owned by the central growth (growth pole). According to Daryanto and Hafizrianda (2010) growth pole must refer to a sector that could give spread effect to forward and backward linkages, therefore, it could be able to drive the region's economy as a whole. The sectors that had relevance to the forward and backward linkages in Maluku Province archipelago that were in line with the calculation results showed the biggest 10 sectors of forward and backward linkages as the key sectors. This analysis showed that shellfish industry sector (36) had a forward linkage value of 2.0655 and the backward linkage value of 2.0398, in woven fabric industry sector (31), this had a forward linkage value of 1.3305 and the backward was 2.0198. The other sector, paper and printing industries (9) had forward linkage value (1.8402) and backward (1.7852).

Leading sectors output areas based on the criteria of structure, gross value added by the multiplier effect did not show positive connectivity to the biggest sectors of the output structure and gross value added, and also the connectivity of the structure of output and gross added value by inter-sectoral linkages also showed positive connectivity. Thus, so far the determination of the leading sectors has been more directed to the interest of the increase in PDRB and economic growth as well. It could be seen that from the results of the analysis (IO) based on the above criterion, it showed the different leading sectors among each criteria analysis performed with output structure, gross value added with the multiplier effect, the structure of output, gross value added by inter-sectoral linkages and among the structure of output, gross value added, multiplier effect and Inter-sectoral linkages.

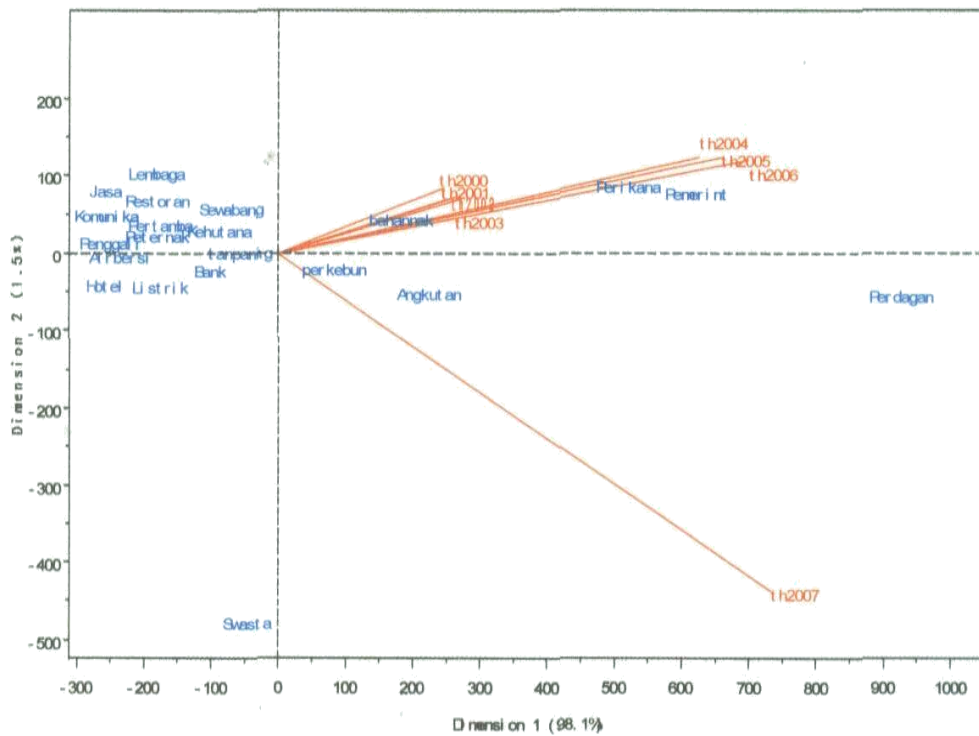


Figure 3 the Leading Sector of Sub Economic Sector in Maluku Province

The results of the analysis of input-output connectivity criteria based on the analysis of the structure of output, gross value added, multiplier effect and inter-sectoral linkages indicated that the local government had not been able to identify the leading sectors in Maluku Province. It could be seen that the leading sectors obtained were partial because the criteria of structure analysis output, gross value added, multiplier effect and inter-sectoral linkages had the advantage of different sectors to one another. Consequently, the results of connectivity from the analysis linkage criteria done towards the leading sectors based on these criteria showed no regional economic sectors which became dominant sector in this region. It could be concluded that Maluku Province has not been able to identify the leading sectors of its region based on the local potential it has.

Table 1

The Determination of leading Sectors on 10 Biggest Sectors with the Criteria, Output Structure, Gross Value added, Multiplier Effect, Inter-sectoral Linkages in Maluku Province

No	Code	Sector	Value
1	44	Wholesaler and retailer	1.589.164
2	21	Fisheries	1.167.713
3	56	public administration and defense	937.168
4	48	Water transportation	237.998
5	47	Land transportation	205.383
6	54	Rental building	205.138
7	33	plywood industry	1.8862
8	28	industry of bread, biscuits and the like	1.6962
9	30	industry of bread, biscuits and the like	1.6121
10	25	Industry of rice milling	1.5377
11	44	Wholesaler and retailer	1.090.154
12	21	Fisheries	902.204
13	56	Public administration and defense	835.498
14	48	Water transportation	143.136
15	47	Land transportation	154.11
16	54	Rental building	161.294
17	33	Playwood industry	2.1812
18	28	Industry of animal and vegetable oil	1.7871
19	30	industry of bread, biscuits and the like	1.7093
20	25	Industry of rice milling	1.8046
21	33	Plywood industry	12.7934



22	28	industry of bread, biscuits and the like	4.9105
23	30	industry of bread, biscuits and the like	4.112
24	25	Industry of rice milling	3.4125

No	Code	Sector	Forward Linkage
25	36	Shellfish industry	2.0398
26	31	Woven fabric industry	2.0198
27	37	paper and printing industry	1.7852
28	36	Shellfish industry	2.0655
29	31	Woven fabric industry	1.3305
30	37	paper and printing industry	1.8402

Source: I-O Table, Maluku Province 2007, Processed Data

**Inter-sector Linkages :**Inter-sectoral linkage analysis is one of the main common analyses used with input-output model. This analysis basically considers the impact on output from a fact that basically sectors in the economic structure of each region influence one another. The inter-sectoral linkage may include forward linkages and backward linkages. Forward linkage is the connection between the sale and good sale. Whereas the backward linkage is a linkage relationships with raw material or feedstock

Forward linkage index indicates that the sectors having spread sector index that is greater than one indicates that they have above average power to spread. Similarly, the index of the backward linkages has the same meaning as forward linkage index which indicates that if the backward linkage index has a value that is bigger than one, it indicates that the sector has an above average degree of sensitivity as a whole. Inter-sector Linkage can be broken down as follows, (1) forward direct linkage (2) backward direct linkage (3) forward coverage (4) backward coverage. Thus, according to Jhingan (1993), he argued that local government (policy makers) could develop and determine a plan that fits to inter-sector linkage analysis based on the effect of a change in one sector to the other sectors in economic structure of a region.

**Forward linkages and Forward Spread :**Based on the classification of 60 sectors of the economy in Maluku province, 10 sectors has the index of above average forward linkages compared to other sectors and the forward spread is shown in Table 2 as follows:

**Table 2**  
The 10-Sector Level of Linkages with the Highest Forward level of Spread

No	Code	Sector	Forward Linkage	Forward Spread
1.	44	Wholesaler and retailer	2.5302	0.6010
2.	24	Petroleum refining industry	2.4422	0.5682
3.	19	Timber	2.3962	1.2094
4.	39	Industry of cement and nonmetallic minerals	2.2711	1.4348
5.	1	Rice	2.2355	1.6785
6.	36	Shells industry	2.0655	0.8953
7.	38	Industry of chemical fertilizer and rubber products	1.9076	1.2137
8.	37	Paper and printing industry	1.8402	0.9185
9.	42	Water	1.6708	0.7785
10.	31	Woven fabric industry	1.3305	0.9135

Source: Input-Output Table, Maluku Province, Updating 2007. Processed Data

The sectors included in the category of top 10 sectors that have the highest forward linkage index are a wholesaler and retail sector (44). The number is 2.5302 with a forward rate of spread index of 0.6010. Thus, the increase of the output of wholesalers and retail sector may reach a value of 2.5302 times higher than the average increase in output of other sectors if the whole economic sectors experience the increasing demand by 1 unit each. When the wholesalers and retail sectors show a value of 0.6010, it can be indicated that this sector affects

the creation of the output of the economic sectors in the province of Maluku. Other sectors that have the highest index of forward linkage but they have the lowest forward spread are sector of the petroleum refining industry (24), shellfish industry (36), paper and printing industry (37), water (42 ) and woven fabric industry (31). Those sectors show that they experience the increasing output as large as the forward linkage index compared with an average increase in output of other sectors if all economic sectors respectively have an increasing demand by 1 unit each. Other economic sectors that have the highest forward linkage index or the highest forward spread above the average, that is, greater than one, are timber sector (19), industry of cement and nonmetallic minerals (39), rice (1 ), industry of chemical fertilizer and rubber products (38). Thus, the sectors that have the highest index of the forward spread over the average indicate that these sectors have sufficient power to the overall spread of economic sectors in Maluku province. Table 3 shows 10 sectors with the highest forward spread.

**Table 3**  
The 10 Sectors of the Highest Forward Spread level and the Forward Linkage Level

No	code	Sector	Forward Linkage	Forward Spread
1.	13	Cloves	0.1014	1.7673
2.	1	Rice	2.2355	1.6785
3.	7	Low land vegetable	0.0721	1.6326
4.	21	Fisheries	0.1635	1.4657
5.	39	Industry of cement and nonmetallic minerals	2.2711	1.4348
6.	14	Cacao	0.2740	1.3708
7.	30	Other food and beverage industry	0.8254	1.3384
8.	28	Industry of bread, biscuits and the like	0.6444	1.3298
9.	8	Orange	0.0699	1.2825
10.	2	Corn	0.0926	1.2815

Source : Input-Output table, Maluku Province, Updating 2007. Processed Data

As shown in Table 3, it shows that there are two sectors that have the highest level of forward spread or forward linkage above the average, that is, greater than one. They are rice sector (1), industry of cement and nonmetallic minerals (39). The ten sectors with high spread level like shown in table 3 indicate the need of suggestion among sectors so that they can give the impact of increase above the average of the other sectors. In other words, these ten sectors have considerable influence in affecting the economic growth of the region as a whole in Maluku province. Rice and the cement industry sector and nonmetallic mineral sector not only have quite high spread power and forward linkages power but also they have greater influence than other sectors that use output into two sectors as suggestion compared to the suggestion of other sectors.

**Backward Linkage and Backward Spread** :Index of backward linkages has the same meaning as forward linkage index. When the backward linkage index has a value, greater than one, it means that the degree of sensitivity of the sector is above average degree of sensitivity as a whole. By measuring the index of linkage and spread, it can be seen the diversity of dependence among sectors. A high index of dissemination in a sector means the sector is only dependent on one or a few sectors. While if the index of spread in one is low, this indicates that the sector is dependent equally to all economic sectors of the area concerned.

Based on Table 4, it shows the 10 sectors with the highest backward linkage index and backward spread index:

**Table 4**  
The 10 Sectors of the Highest Backward Linkage Level with Its Spread

No	Code	Sector	Backward Linkage	Backward Spread
1.	35	industry sector of other goods made from timber and other forest products	3.0650	0.7311
2.	33	layer timber industry	2.8358	0.9860
3.	34	sawmill industry	2.7930	1.0849
4.	43	construction	2.7718	0.7400
5.	28	industry of bread, biscuits and the like	2.3732	0.5510
6.	30	other food and beverage industry	2.0874	0.8164
7.	36	shellfish industry	2.0398	1.8600
8.	29	sugar industry	2.0290	1.0695
9.	31	industry of woven fabric	2.0198	1.0229
10.	27	animal and vegetable oil industry	1.9783	1.7922

Source: Input-Output table, Maluku Province, Updating 2007. Processed Data

The sectors that have the highest degree of backward linkages can be seen in Table 4. The results of the backward linkage analysis showed sectors that have the highest index of backward linkages such as, industry sector of other goods made from timber and other forest products (35), layer timber industry (33), the sawmill industry (34), construction (43), industry of bread, biscuits and the like (28), other food and beverage industry (30) and shellfish industry (36), sugar industry (29) and industry of woven fabric (31). The nine sectors of industry have backward linkages index above the average, greater than one above two. Of the ten sectors mentioned above, there are sectors which have low index value spread of under one, for example, wood production industry and other forest products (35), plywood industry (33), construction (43), industry of bread, biscuits and the like (28), other food and beverage industry (30). With the low spread of the index value, it indicated that the five sectors with the spread index of about 0.5510 - 0.9680 but has high backward linkages value above the average of the sectors could support the increasing output of all economic sectors in the regions of Maluku Province. The increase is above the average, two-fold, compared to the average ability of other economic sectors.

Other sectors that have backward linkages index value above the average, greater than one, are animal and vegetable oil industry (27), rice milling industry (25), industry of textile materials of leather and footwear (32) and industry of paper and printed materials (37). These four sectors include sectors that are able to encourage the increase of all sector output. Of the ten economic sectors that have the highest value of backward linkages, there are five sectors which have backward spread index above one *i.e.* sawmilling industry sector (34), shellfish industry (36), sugar industry (29), industry of woven fabric (31), animal and vegetable oil industry (27). By having backward spread of index value and high index of backward linkages, it could be interpreted that the increase in demand to the five sectors was very influential on the rise of economic output in the region of Maluku Province. The economic sectors of Maluku province that have the highest backward spread and their level of association can be shown in Table 5 as follows:

**Table 5**  
The 10 Sectors of the Highest Spread level and Their Backward Linkage Level

No	Code	Sector	Backward Linkage	Backward Spread
1.	36	shellfish industry	2.0398	1.8600
2.	27	animal and vegetable oil industry	1.9783	1.7922
3.	10	Fruits	0.2329	1.7819
4.	9	Banana	0.2075	1.7743
5.	15	Nutmeg	0.2723	1.7646
6.	25	rice milling industry	1.9391	1.7470
7.	12	Coconut	0.2389	1.6565
8.	3	Cassava	0.2163	1.5115
9.	14	Cocoa	0.3945	1.4955
10.	5	Nuts	0.2297	1.4278

Source: Input-Output Table, Maluku Province, Updating 2007. Processed Data

The above table shows the ten sectors with the highest level of backward spread, but there are three sectors that have high levels of backward spread and linkages that are different from other seven sectors, namely shellfish industry sector (36), industry of animal and vegetable oil (27) and rice milling industry (25). The sectors that have the highest level of backward spread but low level of backward linkages are fruits (10), banana (9), nutmeg (15), coconut (12), cassava (3), cocoa (14), and nuts (5). These sectors are usually identified that the demand levels of these sector have less impact to the increase of economic output in Maluku Province. As an archipelago area which has abundant natural resources, sectors that have the highest spread must be taken into account by the local government, moreover, the sectors are local specific sectors. The five sectors that have the highest backward spread have been the leading sectors of the region since the colonial period, therefore, it is expected that the local government would be able to manage the potential natural resources (local specific) to become the leading sectors in the area of Maluku province.

## V. CONCLUSION AND SUGGESTION

### Conclusion

Based on the background, scope of the problem, objectives and discussion, it could be summarized as follows:

- [1] Maluku province as an archipelagic region has not been able to identify the leading sectors in its area.
- [2] Based on the location of the district/ city in Maluku Province, agricultural sector, fisheries sub sector, is still dominated as the leading sector.
- [3] Due to the strong appeal of agglomeration, Ambon City becomes the Growth pole
- [4] The understanding of the development paradigm of the islands (archipelago) to the direction and strategy of economic development policy in the Maluku Province is still low.

### Suggestion

The results of research conducted could provide inputs in the form of suggestions and recommendations in the establishment of a wide range of economic development policy of the islands as follows:

- [1] The economic development of the islands should be based on the aspect of the potential or capacity of the region (the specific local) and not partially based on criteria analysis conduct moreover it must be carried out comprehensively.
- [2] The leading sectors especially sectors that have the continuous potential support aspects or capacity of local regions should be directed to create new growth centers (new growth poles) on each of the islands in Maluku province.

## REFERENCES

- [1] Arsyad, L. 1999 Introduction to Planning and Economic Development. BPFU-UGM, Yogyakarta
- [2] BPS. 2005 Statistics Indonesia, Various Publications, Jakarta.
- [3] Daryanto, A. 2003 Disparity in Urban Development - Rural in Indonesia. Agrimedia 8 (2): 30-39
- [4] Daryanto, A and Hafizrianda, Y. 2010 Analysis of Input-Output and Social Accounting Matrix. For Regional Economic Development. IPB Press. Bogor.
- [5] Gaurav, D and Martin, R. 2002 Is India's Economic Growth Leaving the Poor Behind. Prospectives Economic Journal. 16 (3): 17-48.
- [6] LIPI. 2003 Local Economic Development Policy in the Era of Regional Autonomy. Center for Economic Research, Jakarta.
- [7] Meyer-Stemer, J.2003.The PACA Book of Concepts.Available at [www.mesopartner.com](http://www.mesopartner.com)
- [8] Steven, R., Jeffrey. S and Jong, WL 2001 The Determinants and Prospects of Economic Growth in Asia. International economic Journal. 15 (3): 24-56
- [9] Uphoff, 1999 N. Rural Development Strategy for Indonesian Recovery: reconciling Contradiction and Tensions. Agro-Socioeconomic Research. Bogor
- [10] Wibisono. 2005 The Sources of Regional Economic Growth. Journal of Indonesian Economy and Development 5 (2): 91-120
- [11] World Bank. 2009 Reorganizing Economic Geography / World Bank. World Development Report. Jakarta