IDENTIFICATION OF ADVANCE COMODITIES USING INPUT-OUTPUT ANALYSIS: SOUTH KALIMANTAN PROVINCE CASE

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ABSTRACT

In the era of regional autonomy required to explore the economic potential in order to enhance regional economic growth. For the development of an economic sector in a region should be done, it would be more effective and efficient if it is based on the consideration of the relationships in all economic sectors in moving the economy as a whole. This study aims to identify the potential economic sectors in the province of South Kalimantan. The analytical method used is the analysis of backward linkages (backward linkage) and forward linkages (forward linkage). The data used are secondary data input-output table of 50 sectors of South Kalimantan province. Based on the analysis will be produced four classifications commodity that is known commodities that have forward and backward linkages high, commodity forward linkage has particularly high but lower backward linkages, commodities that have high backward linkages but low forward linkages, which has been linked to commodities forward and backward linkages low.

Keywords: **South Kalimantan, forward linkage, backward Linkage.**

I. Introduction

More than a decade of regional autonomy has been implemented in Indonesia, an era in which the region has a greater authority in managing the territory. The implementation of regional autonomy provide a logical consequence of the implementation of regional autonomy of each region is required to increase their independence in managing the resources available in order to improve the welfare of society. Therefore, it is very important for the region to explore the potential of local resources through the development of superior commodities to increase local revenue. Development of superior commodities is expected to increase the economic activity of society, which is beneficial to not only increase local revenue but also will improve social welfare and reduce poverty.

Regional development that combines development based regional development (spatial) with a sector-based approach to development is very important. Regional development through a sectoral approach is more emphasis on the selection of economic sectors is expected to contribute high in driving the local economy. While the territorial approach (spatial) emphasizes the spatial aspect in developing an area. Development of regional

development based on looking at the importance of sectoral integration, spatial as well as the integration between development actors within and between regions *(Eko Budi Santoso et al, 2012).* Therefore the development of superior commodities through local economic development strategy in line with development-based regional development, namely by building coherence between sectoral-based development and territorial.

The development of a sector / commodity economy in a particular area would be more effective and efficient if it is based on the consideration of the relationships in all economic sectors in moving the economy as a whole. So they can know how the multiplier effect generated by the sector to the other sectors. So that economic development is accompanied by, the integration achieved between economic sectors.

This alignment will create greater benefit for the GDP, because prosperity to be achieved through economic growth would be higher if all sectors together increase the contribution to economic growth. This means that each sector should not be separated from each other to build the local economy. The successful development of the sector is still dependent policies issued by other sectors, and then every sector in the economy should provide support for related sectors.

Analysis of the linkages between sectors generally use the model input-output (IO). This analysis sees the interconnections between sectors in the economy. Previous researchers in several different areas have conducted several studies. Rizieq Rahmatullah () conducted a study entitled Analysis of Linkages with the Agricultural Sector Other Sectors of Economy in West Kalimantan, Eko Budi Santoso et al (2012) conducted a study entitled Analysis of Regional Sectoral Linkages Seen from the Commodity Sector Region Gerbang Kerta Susila (GKS) Plus on East Java: implications for Urban Development, TohmoTimo (2006) conducted a study on Backward and forward linkages, specialization and concentration in Finish manufacturing in the period 1995-1999. Based on the descriptions authors identify the sectors / commodities featured in South Kalimantan with input-output (I-O) based.

II. Theoritical Framework

2.1 Local Economic Development (LED)

The purpose of local economic development (LED) is to build the capacity of local economies to improve the economic future and quality of life. PEL is the process by which public, business sector and non-governmental sector and government working collectively to create better conditions for economic growth and job creation. Local economic development (LED) offer the opportunity to cooperate between the private sector and the government to boost the local economy.This will increase competitiveness, sustainable growth and promote inclusive growth. PEL covers various aspects including physical planning, economics, and marketing. Also involves the role of government and the private sector in terms of environmental planning, business development, infrastructure, real estate development, and finance.

Implementation of local economic development can be done in each area and throughout the community. LED strategies implemented in the community will increase the competitiveness of the public due to the increasing level of their ability. In turn, will improve the competitiveness of the regional economy as a whole. Such an approach will be successful if it is done through partnerships, by involving all stakeholders that there are communities of individuals, private, and government. This will improve the investment climate and business environment that allows them to improve competitiveness, maintain employment, and improve earnings.

Local communities respond to their LED needs in many ways, and a variety of approaches, including the development of the region. Development of the region through local Economic Development has an important role in improving regional competitiveness. Improving the competitiveness of the region is characterized by an increase in productivity and efficiency of the industry, the investment climate and capacity to compete *(Iwan Nugroho and Rokhmin Dahuri; 2012, 4).* Therefore, the development of the economic potential of the region will encourage increased investment area, which in turn will increase the competitiveness of the region in the national and international scale.

2.2 Interrelationship between Sector in Regional Economic Development

Economic prosperity of an area can be seen from the capacity or the ability of the regional production, which is determined by how far the case specializes in the region's economy. The principle of specialization is achieving a high level of production efficiency, both in each unit as well as the overall economy. Economy an increasingly specialized area will create linkages between production sectors are becoming increasingly lengthy and complicated, and dependence occurs between sectors are higher.

Strong economic integration, comprehensive and sustainable among all sectors of the economy is key to success of economic development. Economic integration can be seen clearly in the interaction in the input markets. One model that can explain the interaction between economic agents is modeled Input - Output (IO), Interaction in IO models called linkages between economic sectors.

Interrellationship between sectors is a way to see the agglomeration externalities, whether caused by the input source or output.Tabel IO gives a very clear picture of the relationship between the sector with other sectors in the region. With the IO data, can perform linkage analysis between economic sectors of the region as a whole. Thus, if there is a change in the production level of a particular sector, it can be seen its impact on other sectors.

Through analysis of the linkages between sectors can be specified sectors is a leading sector in the economic development of a region. With a network focused on sectors pliers become the leader of the economics of growth that would be better achieved. Dindikasikan sectors as the leading sector has the ability dsya spread and high sensitivity in an economy, so that effect is given twofold. Due to the sector in addition to pushing the aggregate demand (aggregate Demand) higher also increase aggregate supply (aggregate supply) to meet domestic needs *(Daryanto Arief, Yundi Hafizrianda, 2010; 12).* Sectors that have high exposure can be used as a driving source of sustainable regional economic development.

Policies to develop productive sectors are selected according to Hirshman in more detail built by industries which in fact have intertwined relationship between the sector with other sectors, whether in relation to the future (forward linkages) or backward (backward linkages). Sector is interlinked future production sectors in activities supporting the activities of other sectors of production output, while the backward linkages is that in producing the output of the sector also requires inputs from other sectors. This also will impact their relationship with the satellite industry non-satellite industry. The satellite industry is an industry that is interrelated and the location of production is not far from each other while the non-satellite industry is an industry that does not interact directly, usually the location of the production industry is not contiguous (*Setiawan Wahyu, 2013;5).*

2.3. I-O Model

Table IO achieve the underlying shape modern IO table is Table IO developed by Leontief (1947). The purpose Leontief develop IO table is to explain the magnitude of the current interindustri in terms of production levels in each sector. Currently IO analysis has flourished into a standard analysis model to look at the link structure of the national economy, the region and between regions, and used for a variety of forecasting the development of the economic structure.

The format of the IO table consists of a frame sized matrix "xn" dimension which is divided into four quadrants and each quadrant describes a particular relationship (*Glasson in the Sahara and Priyarsono, 2006*). For more details, IO Table format is shown in Table 1.

Table 1. Structure Table Of I-O

Output / input			Internal Region									External Region	Output Total
			Production sector internal region (Intermediate Demand)						Final Demand Internal region				
			1	2	...	j	...	n	C	G	I	E	
Internal region	Production Sector Interanal	1	X_{ij}	...	...	X_{ij}	...	X_{in}	C_1	G_1	I_1	E_1	X_1
		2	X_{2j}	...	...	X_{2j}	...	X_{2n}	C_2	G_2	I_2	E_2	X_2
		:	...	...	...		...						
		i	...	...	...	X_{ij}	...		C_i	G_i	I_i	E_i	X_2
		:	...	...	...		...						
		n	X_{nj}	...	...	X_{nj}	...	X_{nn}	C_n	G_n	I_n	E_n	X_N
	Primary Input (Value aded	W	W_1	...	...	W_j	...	Wn	C_w	G_W	I_I	E_I	W
		T	T_1	...	...	T_j	...	T_n	C_T	G_T	I_T	E_T	T
		V	V_1	...	...	V_j	...	V_n	C_V	G_V	I_V	E_V	V
Ekstern al		M	M_1	...	...	M_j	...	M_n	C_M	G_M	I_M	E_M	M
Total Input			X_1			X_j		Xn	C	X_j	I	E	X

Source: Nasoetion Lutfi I., Ernan Rustiadi, and Sunsun Saefulhakim , 2000

Specification:
i,j : the economic sector
X_{ij} : number of sector output i is used as the input sector j
Y_i : total final demand sector i
X_j : total sector input *j*
C_i : household consumption of the sector i
G_i : government consumption to sector i
I_i : fixed capital formation (investment) in sector i, i, which becomes sector output of capital goods
E_i : exports of goods and services sector i
C_j : income (wages and salaries) households from sector j
G_j : government revenue from the sector j
I_j : sector operating surplus *j*
M_j: Import sector j

By analyzing the input table - the output, it can be seen linkages between economic sectors in a particular region in a comprehensive manner. Analysis of input - output is based on the real economic situation rather than purely theoretical approach. Table input - output provides can describe the flow of transactions between economic agents. Thus, in case of changes in the level of production on a particular sector, the impact on other sectors can dilihat. BPS (2000), in a model that is open IO and static, transactions used in the IO tables

must meet three assumptions or principles basis, ie homogeneity, proportionality) and Addivitas.

III. Methodology

3.1. Data Source

This research was conducted for the province of South Kalimantan, data used are secondary data Input-Output tables South Kalimantan province based on producer prices in 2000 classification of 50 sectors

3.2. Analysis Method

Analysis of interrelationship between sectors is widely used to determine the dominant sector or mainstay in the economy. Within the framework of input-output models, an industry has two effects on other industries in an economy, is to the increase in demand or supply. Sectors with the highest linkage means having the potential to generate high production output as well. While the sector has a lower linkage means that the potential yield of production is also low. Linkages between sectors can be categorized into two, namely backward linkages (backward lingkages) and forward linkages (forward lingkages).

3.3. The Analysis of Forward Linkage

Forward linkages relating to the supply input of a particular sector to other sectors in the future (from upstream to downstream) or may be called market-oriented. Forward linkages declare the acceptable impact a particular sector because of changes in final demand in the economy. Thus, the concept of forward linkages is receiving because of a change and not as the cause of the change. Summation coefficient sector input to the right or column element will show a direct relationship to forward linkage, so straight forward linkages illustrate the attractiveness of the market. A sector is said to have links to the next higher if IBL> 1. The linkage is formulated as follows:

$$FL_i = \sum_j b_{ij}$$

Specification:
FLD = direct forward linkage
bij = technical coefficient matrix elements

3.4. The Backward Linkages Analysis

This analysis is used to determine the degree of relatedness of a sector to other sectors that contributed to their input. Backward linkages illustrate the interconnectedness of the input requirements of a particular production sector with other sectors as the provider (supplier) of the input. Side of view is as a buyer input, also called input-oriented factors. An industry with higher backward linkages than other industries means that expansion of its production is more beneficial to the economy in terms of causing other induced productive activities. The linkage is formulated as follows:

$$BL_j = \sum_i b_{ij}$$

Specification:
BL = direct bacward linkage
bij = technical coefficient matrix elements

Summation of input coefficients sector down or according to the line element will show a direct link to belakang Suatu sector is said to have backward linkages high if IBL> 1 and is said to have links to the low back when IBL <1.

IV. Analysis and Discussion

4.1. Sector / sub-sector Featured In South Kalimantan Province

A sector is said to be the leading sectors when the sector / subsector in question has a high forward linkages and backward linkages high. When an increase in the output of a sector will lead to an increase in production in the sector / subsector that generate inputs for the sector. And will lead to an increase in final demand or export or can also increase the production of the industry which produces output that is more downstream. Based on the results obtained by the index data processing backward linkages (IBL) and forward linkage index (IFL) of 50 sector / subsector economy can be mapped into four quadrants which includes:

1. Sector / subsector with high IFL and high IBL
2. Sector / subsector with low IFL and high IBL
3. Sector / subsector with low IFL low and low IBL
4. Sector / subsector with IFL high and low IBL

Mapping sectors / sub-sectors are as follows:

Table 3. The relationship between Forward linkage and Backward Linkage to the 50 subsectors Economy

		FORWARD LINKAGES (I F L)	
		LOW	HIGH
BACKWARD LINKAGES (I B L)	HIGH	Other plantation crops, coal mining, Education Services, Restaurant / diner, Excavation, Health Services	Plantation Rubber, Manufacturing and Preservation of food, rubber and plastics industry, Building, Sea Transport
	LOW	Corn Farming, Other Crops Agriculture, Farming vegetables and fruits, Oil, Breeding and Raising of poultry, livestock breeding and cultivation of large, Plantation and nature, Concession other forest products, marine fisheries, inland fisheries, mining petroleum , other non-oil mining, Dried and Salted fish, edible oil industry, Industry Crackers, beverage and tobacco processing industry, textile industry, apparel and leather, Industrial goods of wood, bamboo and rattan, paper industry, printing and publishing, refining industry petroleum, metal industry, machinery, transport equipment and other processing industries, drinking water, Services Accommodation, transport River, Air Transport, transport and Warehousing Support Services, Communications, Government and Defense Services, Entertainment and recreation services, social services and individuals, activities that are not clearly defined	Rice Agriculture, Industry plywood and Sawmill, chemical industry, non-metal mining industry, Electricity, Trade, Transportation, financial institutions, leasing and corporate services

Source: I-O Table South Kalimantan 2000, Processed

Based on this mapping of the leading sectors shows that almost all sub-sectors of the agricultural sector is not the dominant sector, only one (1) sub sector from the agricultural sector became the leading sectors in the province of South Kalimantan namely sub sector

Rubber Plantation. However you need to know that most of the rubber plantations are large plantations whose ownership are private and foreign companies. This means that although the rubber plantations are the leading sectors however multiplier impact is not too large for the welfare of the people of South Kalimantan Province. There is a possibility of a rubber plantation ownership by the community, but it has been owned by a high-income society (the rich people).

Several other sectors that have a high forward linkages and backward linkages height is sub-sectors of Manufacturing and Preservation food, rubber and plastics industry, building, Sea Transport. The sub-sector by sector indutry processing and preservation eat that allows a large multiplier to the public*. First,* the sector requires input from the agricultural sector so that the increase in final demand in the sub-sectors of manufacturing and preservation meal will encourage increased production in the agricultural sector. *Second,* sub-sector and the preservation of the food processing industry are able to absorb the labor force large enough.

Commodities in the agricultural sector tend to have high exposure in one direction, namely to have backward linkages alone or have relevance only forward. Rice agriculture sub-sector, the plywood industry, and Sawmill, chemical industry, non-metal excavation industry, Electricity, Trade, Transportation, financial institutions, leasing and corporate services. The sector only has high forward linkages, but lower backward linkages. Sectors other Plantation Crops, coal mining Educational Services, Restaurant / restaurant, Excavation, Health Services has backward linkages are high but low forward linkages. Means in the event of an increase in final demand in the sector or an increase in exports would encourage the development of other sectors that provide inputs in the production process.

While the sectors, which have low forward linkages and backward linkages, low in South Kalimantan, shows that these sectors are still lagging behind its development compared to other sectors. The conditions require the attention of the government in an effort to enhance the role of these sectors. The low linkage also led to a lack of synergy between the developments of the sector with other sectors.

V. Conclusion

There are some important things as the conclusions of the analysis of linkages between sectors. First, the economic development of the region based on the selected commodities will encourage sustainable economic development, meaning that leading commodities, as a development priority will encourage a higher multiplier not only increase domestic production but will also increase export and employment. Even more will encourage vertical and horizontal interconnects. Second, the agricultural sector needs serious attention because the food supply, low agricultural sector linkages with other sectors of the economy in South Kalimantan shows that the agricultural sector is still lagging behind its development compared to other sectors. Therefore, the government needs to formulate a policy of which is to put agriculture and agriculture-based industry (Agro industry) as one of the priority sectors developed to achieve food self-sufficiency in Indonesia.

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