

## **ANALYSIS OF THE ROLE OF LEADING MANUFACTURING SECTOR AND ITS IMPACT ON ECONOMIC GROWTH IN EAST JAVA (USING INPUT-OUTPUT TABLE OF 2010)**

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### ***Abstract***

this study aims to analyze the role of the manufacturing sector to the economy in East Java province in terms of output, gross value-added and final demand, analyze the relationship backward (backward linkage) and the linkage to the front (forward linkage) manufacturing sector, analyzing the effect multiplier, analyze the manufacturing sector being the leading sectors (key sectors) in the province of East Java.

The results of the study explained that the most dominant sectors of the manufacturing industry by output, gross value added and final demand is the cigarette industry, the sugar sub-industry, sub-industry of rice and other food industry sub. In terms of linkages between sectors, the manufacturing industry has the influence of the most powerful forward and backward rice subsectors, so grain milling industry (except rice), flour and starch, industrial sub fertilizers and pesticides and animal feed industry. Sub sectors of the manufacturing industry or the priority sectors of the leading sectors narrowed to the sub sectors of fertilizers and pesticides.

*Keywords: Manufacturing Sector, Input-Output Analysis, Linkages, Multiplier, seed sector.*

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## INTRODUCTION

### Background

The economic development towards more advanced through industrialization to improve linkages between sectors. With the growing industrialization may appear and other activities that are components of the industry support. The development of agriculture-based industries, for example, will drive the demand for agricultural products thus increasing the industrial sector linkages with the agricultural sector. In addition, support will also be increased in other sectors such as trade, hotels, restaurants and other services (Hapsari, 2008: 22).

Paramita studies and Salim (2015), proving that the Manufacturing sector is a strategic sector and serve as an engine of development in the Metropolitan area of Bandung Raya because it produces immediate effects and continued high impact on the economy of the Metropolitan area of Bandung Raya. Industries that have the highest relevance in the Metropolitan area of Bandung Raya is the textile industry; industrial rubber, rubber products, and plastic; as well as the food industry.

Development pattern Chenery theory focuses on structural changes in the stages of the process of the economic, industrial and institutional structure of interconnected economy developing countries, which is undergoing a transformation from traditional agriculture to switch to the industrial sector as an economic driving wheel. Chenery research conducted on the transformation of the production structure shows that in line with the increase in income per capita, the country's economy will shift from the original rely on the agricultural sector to the industrial sector (Todaro and Smith, 2006).

Perroux theory known as "Growth Center" (pole of growth) became the basis of the strategy of regional industrial development policies that are widely applied in various countries. Perroux said growth does not appear in the various areas at the same time. Growth occurs only in someplace called growth centers with different intensities. The essence of the theory is as follows Arsyad Perroux (2004: 322). Industrialization is a process of interaction between technological development, innovation, specialization of production and trade between countries, which in turn is in line with rising incomes encourage changes in economic structure in many countries, from an agricultural base into an industrial base.

According to Hirschman if we observe the development process that occurs between two certain periods of time would seem that the various sectors of economic activities progressing at different rates, which in its development will produce sector leaders that will stimulate the development of other sectors. In his opinion, Hirschman grouping sectors of the economy are based on the influence of backward linkages (Backward Linkage) and effect link to the future (Forward Linkage).

In addition to affecting the overall production in the economy, linkages between sectors will also affect the amount of labor required (labor linkage effect) and income. This happens due to produce output in the sector is required manpower and the labor force will get additional income from these activities. It can be concluded that the linkages between sectors in the economy will not only affect production in the sectors of the overall economy but will also affect the amount of labor and income in the economy as a whole. The existence of many previous studies as example, Handoyo (2005), affirmed in his research that the years 1996-2000 the industrial sector in East Java has a strong contribution, and to use the analysis of Table IO East Java in 2000, and the simulation of final demand to increase 10 percent, indicates that the manufacturing industry has backward linkages (backward linkages) and forward linkages (forward linkages), the largest among the other sectors.

East Java as the second largest province in Indonesia still relies on the industrial sector as an economic driver. This sector has replaced the role of agriculture in employment and income source region. However, the industrial sector's contribution to GDP continues to decline. The decrease was possible because the current financial crisis many companies in the manufacturing sector which are characterized by the capital intensive company, has not been able to maintain its business, and despite the current financial crisis has passed, the manufacturing sector is still not stable (Utami, 2013).

Given the role of the manufacturing sector in the development of undeniable able to increase the GDP, as well as the relationships that occur between the manufacturing sector with other sectors that indicate the growth of activity in each well of the manufacturing industry sector, or other sectors. Sector linkages with other sectors of manufacturing industry are one of the important things for the development of a region as well as regional development planning,

therefore, if the manufacturing industry continuously decreased (deindustrialization) it should be wary of.

### **Problem Formulation**

Based on the background of the above-mentioned problems, then the problem in this research is:

1. How is the role of the manufacturing sector to the economy in the province of East Java in terms of output, gross value added and final demand?
2. What are the links to the rear (backward linkage) and the linkage to the front (forward linkage) industries large and medium manufacturing in East Java?
3. How can a multiplier effect on the manufacturing sector in the province of East Java?
4. Manufacturing industry sub-sector is the dominant sector (key sectors) in East Java province ?.

### **RESEARCH METHODOLOGY**

Methods do the kind of research is descriptive quantitative research that describes and explains the manufacturer's Industry sector linkages to other sectors as well as how, forward linkages and backward linkages, the impact of the deployment, output and income multiplier effects.

This method is used to analyze the data that has been collected with the related statistical reporting methods in the form of a comparison or ratio, average, and percentage. The study used descriptive statistics to analyze the economic sector as well as a multiplier effect by using input-output analysis in East Java province. The data used in this study using secondary data, the data obtained from the Central Statistics Agency (BPS) of East Java Province.

The data analysis method used in this research is the analysis of input-output. Input-output analysis is a systematic method that measures the interrelationships among several sectors in a complex economic system. So if there is a change in the level of production over a certain sector will have an impact on other sectors. The use of input-output analysis in this study is to investigate the linkages between sectors (connection method), determine the impact of the

deployment (deployment methods) and to determine the multiplier effect (method multiplier effect). The basic structure of the IO table can be described in the table below;

STRUCTURE OF BASIC TABLE TRANSACTION INPUT-OUTPUT WILAYAH

Output Input		Internal Wilayah									Eksternal Wilayah	Output Total	
		Sektor Produksi dalam wilayah (permintaan antara)						Permintaan akhir dalam wilayah					
		1	2	...	j	...	n	C	G	I	E		
Internal Wilayah	Sektor produksi dalam wilayah (input)	1	$X_{11}$	...	$X_{1j}$	...	$X_{1n}$	$C_1$	$G_1$	$I_1$	$E_1$	$X_1$	
		2	$X_2$			$X_{2j}$		$X_{2n}$	$C_2$	$G_2$	$I_2$	$E_2$	$X_2$
		:											
		i	...	...		$X_{ij}$	...	...	$C_i$	$G_i$	$I_i$	$E_i$	$X_i$
		:											
		:											
	n	$X_{ni}$					$X_{nn}$	$C_n$	$G_n$	$I_n$	$E_n$	$X_n$	
	W	$W_1$			$W_j$		$W_n$	$C_w$	$G_w$	$I_w$	$E_w$	$W$	
	T	$T_1$			$T_j$		$T_n$	$C_T$	$G_T$	$I_T$	$E_T$	$T$	
	V	$V_1$			$V_j$		$V_n$	$C_V$	$G_V$	$I_V$	$E_V$	$V$	
Eksternal wilayah	Input primer (nilai tambah)	M	$M_1$		$M_j$		$M_n$	$C_M$	$G_M$	$I_M$	-	$M$	
Total Input		$X_1$			$X_1$		n	C	G	I	E	X	

Description:

$i, j$ : economic sector

$X_{ij}$ : the number of *output* sector  $i$  used as *input* sector  $j$

$V_i$ : total final demand sectors  $i$

$X_j$ : total *input* sector  $j$

$C_i$ : household consumption of the sector  $i$

$G_i$ : government consumption to sector  $i$

$I_i$ : fixed capital formation (investment) in sector  $i$ , the *output* of sector  $i$  the capital goods

$E_i$ : exports of goods and services sector  $i$

$C_j$ : income (wages and salaries) household sector  $j$

$G_j$ : government revenue from the sector  $j$

$j$ : sector operating surplus  $j$

$M_j$ :  $j$  sector *imports*.

Rasmussen, 1956 in Daryanto and Hafizrianda, (2010: 13) proposed the sum of columns (or rows) in the Leontief inverse matrix,  $(1 - A)^{-1}$ , used as a measure of among sectors. So that the backward linkages and forward linkages according to this method are measured by:

$$BL_j^R = \sum_{i=1}^n g_{ij} \dots\dots\dots (1.1)$$

$$FL_i^R = \sum_{j=1}^n g_{ij} \dots\dots\dots (1.2)$$

$BL_j^R$  where:: backward linkages

$FL_i^R$  : Linkage to the front

$g_{ij}$  : Elements of the Leontief inverse matrix,  $G = (1 - A)^{-1}$

Analysis multiplier output which is the impact of increased demand for the end of a sector to the total output of all sectors in the area of research, where in Table IO relationship between output and final demand mathematically is as following:

$$^oM_j = \sum_i b_{ij}$$

Analysis of income multiplier is the multiplier number is a measure of household income to determine changes in direct earnings (wages and salaries) due to change in one unit of final demand in a mathematical sector. secara are as follows:

$$^iM_j = \frac{1}{^i v_j} \sum_i ^i v_i b_{ij}$$

Analysis of the employment multiplier is the impact of increased demand on the output end sector j to increase total employment in the area of research, the multiplier employment or the number of workers absorbed are influenced by the final demand that is used to predict the labor requirements to meet changes in demand for the end of a sector. mathematically as follows:

$$^EM_j = \frac{1}{^E v_j} \sum_i ^E v_i b_{ij}$$

## RESULTS AND DISCUSSION

### 1. Analysis of Manufacturing Sector Role In East Java Province (Output, Gross Value Added and Final Demand).

Judging from the output of the manufacturing industry of large and medium in Table IO In 2010, the manufacturing industry sub-sector which has the biggest output is sub cigarette

industry for Rp.88,057,301.9 million. East Java province itself is the basis of the national tobacco industry because some cigarette factory in Indonesia is the largest in the region, such as PT. Gudang Garam, Tbk of Kediri, PT. HM. Sampoerna Tbk in Surabaya, PT. Bentoel in Malang, and others (Utami, 2013). The output of rice amounting to 57,368,304.52 sub-industry is the second largest after the output sub tobacco industry.

The manufacturing sector that has the largest gross value added amounted to 64,830,997.71 sub tobacco industry amount million or 23.7% of the total gross value added in the manufacturing industry. Sub the sugar industry which ranks second with a gross value of 19,978,295.17 or 0.7% of the total gross value added in the manufacturing industry. The gross value added Lowest occupied by industrial sub rugs, ropes, and other textiles amounted to Rp.174,020 million.

Demand the end of the manufacturing sector, the highest order of sub occupied by the tobacco industry, comprising Rp.88,007,653.40 million or 14.3% of the total contribution of final demand manufacturing industry. The second order is sub-industries Rice for Rp.50,335,443.12 or 0.83%, the third order, namely sub industries other food industry by Rp.39,482,207.89 or 0.064% of the total contribution of final demand manufacturing industry. While the lowest number occupied by Tapestry industry, Cords, and Other Textile for Rp.415,527.28 million or 0.0007% of the total final demand of the manufacturing industry.

## **2. Analysis Input-Output (Linkage Between Manufacturing Sector)**

Results of the analysis of backward linkages and forward manufacture industrial sector in East Java based IO table shows that the manufacturing sector medium and large that have relevance to the highest rear sub rice industry (code sector 43) with a value of 2:48, followed by sub-industry of grinding grains (except rice), starch and starch (code sector 44) with a value of 2:26, the manufacturing sector which is connected to the back room is sub tobacco industry (sector code 50) with value 0.557662872.

Judging from the linkage to the front, the manufacturing sector medium and large that have relevance to the next highest is the sub industry of fertilizers and pesticides that is equal to 3.73, followed by sub-industry animal feed with a value of 3:37, and the manufacturing industry which

is connected to the front of the lower is the sub industry rugs, ropes, and other textiles with a value of 0.009.

#### 10 GREAT VALUE HIGHEST BACKWARD LINKAGE SECTOR MANUFACTURING INDUSTRY EAST JAVA IN 2010

Ranking	Sector	Linkages backwards
1	Rice	2.479542941
2	Rice Milling-Padian (Except Rice), Flour and Starch	2.259601609
3	Forage	2.251184436
4	Tobacco Processed	2.23913869
5	Milk Processing, Product Of Milk and Ice Cream	2.088665082
6	Processing and Preserving Fish and Biota	2.032722208
7	Food Industry Others	1.878340594
8	Primary Metals	1.76897133
9	Cooking Oil and fats and Animal	1.747645097
10	Bread and Cakes	1.724710402

#### 10 GREAT VALUE HIGHEST FORWARD LINKAGE SECTOR MANUFACTURING INDUSTRY EAST JAVA IN 2010

Ranking	Sector	linkages ahead
1	Fertilizer and Pesticide	3.722486047
2	Forage	3.363474809
3	Wood, Articles Of Wood And Cork (Excluding Furniture) And Goods Woven from bamboo, rattan and the like	2.647953002
4	Primary Metals	2.328027377
5	Rice Milling-Padian (Except Rice), Wheat and Pati	1.91417985
6	Items From Other Metals	1.545113658
7	Sugar	1.4561814 37
8	Oleofood And Fats And Animal	1.29039697
9	Milk Processing, Product Of Milk And Ice Cream	1.245552035
10	Cement, Lime, And Other Stuff Metallic	1.0926839351

Figures linkage to the front and to the rear is only going to show the magnitude of the effect caused by a sector of the other sectors. For that need to be equipped with other tools that



can be used to look at the evenness of its effects is the coefficient of variation. The coefficient of variation associated with the index backward linkages ( $V_j$ ) and forward ( $V_i$ ), can be used as one measure of whether a particular sector can be a key sector (seed) or not.

the manufacturing sector that has  $V_j$ 'S room occupied by the sub-industry of milk processing, product of milk and ice cream (sector code 42) of 8.90134565 which means that sub dairy processing industry, the product of milk and ice cream thrust or a strong influence on the sector other -sector and it relates an equal rate.

Manufacturing industry sector which has the lowest  $V_i$  No sub fertilizer and pesticide industry (sector code 61) equal to 4.522257834, which indicates that the sub-industry has a strong thrust and is relatively evenly distributed for other industrial sectors. In other words, the output of the sub-industry of fertilizers and pesticides are widely used as raw materials for other industrial sectors.

### **3. Analysis of Multiplier**

manufacturing sector that has the highest multiplier output sub-sector dairy processing industry, dairy products and ice cream which is equal to 2.076821939, the value implies that when there is an increase in one unit of final demand for dairy processing industry subsector, the product of milk and ice cream causes an increase in total output by 2.076821939, or in other words the increasing impact of one unit of final demand sub-sector dairy processing industry, dairy products, and ice cream will cause an increase in total output by 2.076821939.

Value income multiplier manufacturing sector the highest lies in the sub-industry of glass and glassware which is equal to 0.302816163, the value implies that if an increase in the final demand of one unit in the sub-industry of glass and glassware, then it will lead to increased revenue in all sectors of the economy by 0.302816163. In the second sequence sub-sectors namely soaps, cleaning items, and cosmetics by 0.228124281, while the third is the industry sub-sector machinery and equipment Ytdl that is equal to 0.221642675.

### **4. Commodity Sector Analysis**

Criteria most superior priority sectors namely criteria "If the value of output, value added, final demand is higher than the average value, if linkages ( $BL > 1$ ,  $FL > 1$ ), if the output

multiplier, income, multiplier and employment multiplier is higher than the average value, the coefficient of variation is smaller than average, if the multiplier output, income, and employment multiplier is higher than the average value ".

The manufacturing industry sector or featured priority, (keysector) in East Java in 2010, contained in the industrial sub fertilizers and pesticides. This is because the sub-industry of fertilizers and pesticides has an output, value-added, final demand is higher than the average value, the value of backward linkage and forward linkage is greater than 1, the coefficient of variation is smaller than average, the output value multiplier and income multiplier is higher than the average value in comparison with the subsectors of the manufacturing industry the other, which means that the sub-industry is a sub manufacturing priorities or excellent potential to be developed in East Java, so that sub-sector industry of fertilizers and pesticides is expected to encourage the growth scores from other sectors in East Java

## **cONCLUSIONS aND RECOMMENDATIONS**

### **conclusion**

Based on the discussion at the previous stages and answer the formulation of the problem, it can be some conclusions as follows:

1. the condition of the role of the manufacturing sector which has an output, value added, and demand the highest end, each selected sub-sectors cigarettes, sugar industry sub and sub rice industry. the condition of all three subsectors of the manufacturing industry has an important role in the economy in the province of East Java.
2. Conditions backward linkage showed sub-sectors of the rice industry, sub-industry of grinding grains (except rice), starch and starch, and sub-animal feed industry has the greatest value, while on the side of the forward linkage shows that the sub-industry of fertilizers and pesticides, sub livestock feed industry and sub-industry of wood, articles of wood and cork (excluding furniture) and wickerwork of bamboo, rattan and the like everywhere have the highest value, it indicates that the sector has a large share of the economy in the province of East Java.
3. Conditions industry sub-sector multiplier shows the processing of milk, milk products, and ice cream has a great multiplier output value. While the highest multiplier value of income

lies in the sub-industry of glass and glassware, industrial sub soaps, cleansers and cosmetics goods, and subsectors of machinery and equipment.

4. Sub-sectors of the manufacturing industry which is becoming a priority sector or leading sectors converging on a sub-industry of fertilizers and pesticides, as sub industry of fertilizers and pesticides has an output, value added, final demand is higher than the average value, the value of backward linkage and forward linkage bigger 1, the coefficient of variation is smaller than average, the output value and income multiplier is higher than the average value in comparison with the sub-sector other manufacturing industries.
5. The direction of development for the manufacturing industry in the province of East Java is more focused on the tobacco industry sub clarified that with the high contribution of the industrial sub to output, gross value added and final demand.

### **Suggestions**

1. Strengthen linkages at all levels of the value chain (value chain) of the industry including the activities of supporting industries (supporting industries), related industries (related industries), industrial infrastructure providers, and other supporting services industry. This can be done by expanding the market for the products of the processing industry, improving infrastructure to support the distribution of the product, conduct a marketing strategy through the development and diversification of products, improve the promotion, improve services and information.
2. The symptoms of de-industrialization in East Java need to watch out, for the government should be doing in anticipation of them is the improvement of infrastructure, because of poor road conditions, supporting causes increased production costs led to a decline in the competitiveness of national industries. Ensure the availability of raw materials, accelerate the pace of innovation and technology transfer.
3. The need for further research on the causes of de-industrialization in the province of East Java, good reviews economically, as well as spatially, so that the known sub-sectors and locations/areas with the strongest potential identified deindustrialization, and how big significance

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## Appendix

**Tapel1: Output, Value Added and Total Final Demand (Million USD).**

code	Sector Industri	Output	Value Added	Total Request End
38	Processing And Preserving Meats	4,127,121.25	1,745,799.34	4,821,717.09

39	Processing And Preserving Fish And Biota	17,549,011.82	5,824,438.70	19,105,643.60
40	Processing and Preservation of Fruits and Vegetables	6,078,888.85	3,217,405.25	13,563,556.46
41	Oleofood And Fats And Animal	5,662,190.91 11,568,520.97		16,104,144.49
42	Milk Processing, Product Of Milk And Ice Cream	36,732,684.41	11,331,756.03	25,534,983.15
43	Rice	57,368,304.52	15,037,207.95	50,335,443.12
44	Rice Milling-Padian (Except Rice), Flour and Starch	21,550,097.29	5,181,413.65	17,477,254.62
45	Bread And Cakes	5,515,394.64	2,149,650.50	6,485,231.95
46	Sugar	25,426,541.61	19,978,295.17	14,736,216.61
47	Food Industry Others	41,147,978.87	12,785,467.71	39,482,207.89
48	Animal Feed	11,410,096.87	2,561,255.80	4,002,817.07
49	Beverages	5,619,295.09	3,248,070.24	5,449,463.24
50	Cigarette	88,057,301.90	64,830,997.71	88,007,653.40
51	Tobacco Preparations	3,674,179.75	296,467.82	2,319,869.65
52	Textiles and Materials Textile	3,455,736.05	1,646,003.51	5,414,920.96
53	Carpets, Ropes, And Other Textile	399,405.70	174,020.10	415,527.28
54	Garment	3,971,379.98	2,101,007.67	16,511,489.40
55	Leather And Articles Of Leather	4,041,058.10	1,484,992.91	3,174,080.27
56	Footwear	3,116,746.91	1,419,974.26	4,657,431.06
57	Wood, Articles Of Wood And cork (Excluding Furniture) And Goods Woven from bamboo, rattan and the like	40,941,742.44	18,020,645.65	12,476,598.42
58	Paper And Articles Of Paper	15,005,219.26	8,278,274.56	11,617,018.43
59	Printing And Reproduction Media Records	6,931,978.18	3,688,657.27	1,222,823.57
60	Basic Chemicals	11,724,093.19	4,427,162.76	10,566,808.46
61	Fertilizer and Pesticide	24,295,261.12	12,761,146.97	17,328,404.13
62	soap, Cleaning Products, and Cosmetics	5,715,978.19	2,949,018.30	18,657,896.31
63	items Results Petroleum Refinery And Other Chemical Goods	8,065,633.39	3,103,003.45	27,627,461.14
64	Pharmaceutical and Medicinal Tradisional I	4,012,435.43	1,853,330.28	4,415,894.14
65	Rubber And Articles Of Rubber	2,660,777.36	1,094,517.20	1,256,549.32
66	Articles Of Plastics	8,566,782.50	2,347,218.59	4,055,510.90
67	Glass And Articles Of Glass	992,845.32	431,321.02	588,808.93
68	Building Materials, Ceramics, and Goods From Clay	1,933,264.64	1,064,833.64	2,061,782.60
69	Cement, Lime, and Other Stuff metallic	27,994,882.06	8,291,465.84	16,667,604.82
70	Primary Metals	39,008,968.00	11,261,312.41	27,457,354.94
71	Articles Of Metals	31,034,389.86	11,837,661.81	22,110,579.18
72	Computers, Consumer Electronics, Communications and Optical	2,960,768.02	1,889,275.31	6,115,619.51
73	Electrical	3,375,551.39	1,983,842.44	5,077,595.89
74	Machinery and equipment Ytdl	6,904,391.19	3,022,582.07	25,819,296.41
75	Tools transport	4,084,842.31	2,382,760.14	29,582,674.55
76	Furniture	31,665,495.94	18,728,245.55	31,118,352.22
77	Other Stuff	824,554.09 4,930,464.94		1,955,996.93
TOTAL		280,917,244.62 613,819,126.61		635,176,664.84

**Timetable 2: direct linkages backward and forward linkages.**

code	sectorIndostri	linkages backward	linkages to the front
38	Processing And Preserving Meats	1.526121194	0.042902824
39	Processing And Preserving Fish And Biota	2.032722208	0.179794572
40	Processing and Preservation of Fruits and Vegetables	1.131765664	0.167060287
41	Oleofood And Fats And Animal	1.747645097	1.29039697
42	Milk Processing, product Of Milk And Ice Cream	2.088665082	1.245552035
43	Rice	2.479542941	0.623547003
44	Rice Milling-Padian (Except Rice), Flour and Starch	2.259601609	1.91417985
45	Bread And Cakes	1.724710402	0.054895659
46	Sugar	0.576342668	1.456181437
47	Food Industry Others	1.878340594	0.794893021
48	Forage	2.251184436	3.363474809
49	Drinks	1.101706617	0.074039983
50	Cigarettes	0.557662872	0.021686901
51	TobaccoProcessed	2.23913869	0.10927329
52	Textiles And Textile Materials	0.906725141	0.67106128
53	Carpets, Ropes, And Other Textile	1.086225088	0.008646991
54	Garment	0.765561353	0.07768513
55	Leather And Leather Goods From	0.84430	1.707223364 31
56	Footwear	1.276121027	0.021338444
57	Wood, Articles Of Wood And Cork (Excluding Furniture) And Goods Woven from bamboo, rattan and the like	1.358330518	2.647953002
58	Paper And Articles Of Paper	0.817339715	0.861045214
59	Printing And Reproduction Media Records	0.855275717	0.793648664
60	Basic Chemicals	1.802348	0.53847457
61	Fertilizer and Pesticide	1.122045882	3.722486047
62	Soap, Goods cleaners, and Cosmetics	0.637480034	0.247201928
63	items Results Petroleum Refinery And Goods Other Chemical	1.23700266	0.781532906
64	Pharmaceutical and Traditional medicine	1.26162711	0.811055515
65	Rubber And Articles Of Rubber	1.127146488	0.81231436
66	Articles Of Plastics	0.974313059	0.860468127
67	Glass And Articles Of Glass	1.399771572	0.446897499
68	Building Materials, Ceramics, and Goods From Clay	0.972451742	0.010994852
69	Cement, Lime, And Other Stuff metallic	0.746394973	0.926839351
70	Primary Metals	1.76897133	2.328027377
71	Articles Of Metals	1.493105313	1.545113658
72	Comp uter, Electronics, Communications and Optical	0.692881151	0.288203752
73	Electrical	0.59602437	0.301351718
74	Machinery And Equipment Ytdl	0.877873784	0.356566495

75	Transport	0.848242115	0.034857408
76	Furniture	0.985320426	0.175822007
77	Other Stuff	0.089226333	1.212002393
TOTAL		31.54099558	52.1229544

**Table 3: linkages of Total backward**

Code Sector	Numbercolumn	ValueMiddle	deviation	coefficient of the diversity of	connection to the rear	Deployment
38	1.780279615	0.01618436	0.157105882	9.707265575	1.255289876	0.668968624
39	1.848591255	0.016805375	0.157101106	9.348265404	1.303456978	0.644228407
40	1.426705727	0.012970052	0.156937563	12.09999484	1.005982005	0.833861692
41	1.78438913	0.016221719	0.157011735	9.679105598	1.258187529	0.667028001
42	2.076821939	0.018880199	0.168059181	8.90134565	1.46438432	0.613429282
43	1.964058686	0.017855079	0.171529087	9.606739177	1.384874018	0.662040925
44	1.835902528	0.016690023	0.178272618	10.68138843	1.294510052	0.736099539
45	1.818203834	0.016529126	0.179529098	10.8613789	1.282030557	0.748503442
46	1.224742633	0.011134024	0.183763495	16.50467936	0.863576157	1.137407084
47	1.778451152	0.016167738	0.19008022	11.75676046	1.254000612	0.810207962
48	2.063723897	0.018761126	0.199103197	10.61253964	1.455148783	0.731354879
49	1.485299389	0.013502722	0.205799052	15.24130141	1.04729688	1.05034238
50	1.230500129	0.011186365	0.208836074	18.66880598	0.867635815	1.28654618
51	1.803833076	0.016398483	0.208519059	12.71575337	1.271897616	0.87629621
52	1.351511575	0.012286469	0.212178806	17.26930727	0.952961986	1.19010082
53	1.422579852	0.012932544	0.217904681	16.8493283	1.003072816	1.161158297
54	1.299634869	0.011814862	0.218221065	18.470047	0.916383291	1.27284886
55	1.829822756	0.016634752	0.217794124	13.09271814	1.290223155	0.902274443
56	1.562003898	0.014200035	0.222996663	15.70395114	1.101381863	1.082225525
57	1.555015973	0.014136509	0.222807474	15.76113854	1.09645462	1.086166549
58	1.334108908	0.012128263	0.222917463	18.37999941	0.940691222	1.266643301
59	1.338780704	0.012170734	0.222511395	18.28249645	0.943985344	1.25992396
60	1.659081069	0.015082555	0.224484033	14.88368721	1.169831779	1.025697677
61	1.420046978	0.012909518	0.224881147	17.41979425	1.001286865	1.200471512
62	1.25741632	0.011431057	0.225792956	19.75258689	0.886614644	1.361234095
63	1.47633804	0.013421255	0.22530174	16.78693549	1.040978159	1.156858545
64	1.515348434	0.013775895	0.224830404	16.32056624	1.06848471	1.124719073
65	1.426822288	0.012971112	0.226844812	17.48846335	1.006064193	1.20520379
66	1.381109569	0.012555542	0.226655531	18.05223056	0.973831776	1.244055366
67	1.564910211	0.014226456	0.225985082	15.88484682	1.103431128	1.094691809
68	1.368966677	0.012445152	0.225957333	18.15625395	0.965269723	1.251224057
69	1.281009308	0.011645539	0.225931819	19.40071777	0.903250255	1.336985309
70	1.754758676	0.015952352	0.225590298	14.14150741	1.237294851	0.974550936

71	1.674593933	0.015223581	0.224988023	14.77891571	1.180770028	1.018477431
72	1.272973865	0.01157249	0.225162392	19.45669412	0.897584397	1.340842875
73	1.235815526	0.011234687	0.224477548	19.98075742	0.871383745	1.376958288
74	1.368273001	0.012438845	0.223620236	17.97757165	0.964780606	1.238910306
75	1.376364713	0.012512406	0.224820057	17.96777125	0.970486139	1.238234919
76	1.418044217	0.012891311	0.224994822	17.45321488	0.999874702	1.202774669
77	1.535459403	0.013958722	0.224037368	16.04999159	1.08266512	1.106072632

**Table 4: Linkages of Total Fore**

Code Sector	Number of columns	Mean	deviation	coefficient diversity of	connection to the rear	Deployment
38	1.014670889	0.009224281	0.095723445	10.37733419	0.715452833	1.206497533
39	1.073133594	0.00975576	0.09816673	10.06243809	0.75667537	1.169886843
40	1.063112424	0.009664658	0.095668819	9.898830878	0.74960936	1.150865416
41	1.649766079	0.014997873	0.122264949	8.152152306	1.163263703	0.947791742
42	1.547158707	0.014065079	0.140540516	9.992159639	1.090914397	1.161716076
43	1.249739821	0.011361271	0.097685921	8.598150713	0.881201881	0.999644748
44	1.772124731	0.016110225	0.09934928	6.166846308	1.2495398	0.716974583
45	1.019950984	0.009272282	0.09563335	10.3138961	0.719175872	1.199122045
46	1.526536218	0.013877602	0.099216163	7.149373712	1.076373309	0.831205933
47	1.280965378	0.01164514	0.105574733	9.065991004	0.903219279	1.054037152
48	2.336824997	0.021243864	0.112835194	5.311425285	1.647714627	0.617520973
49	1.027993009	0.009345391	0.095911265	10.26294836	0.72484637	1.193198721
50	1.008345864	0.009166781	0.09549788	10.41782108	0.710993006	1.211204651
51	1.032609941	0.009387363	0.095819439	10.20727952	0.728101807	1.186726507
52	1.225460044	0.011140546	0.104250737	9.357776396	0.864082009	1.087960928
53	1.00323711	0.009120337	0.095368232	10.45665618	0.707390781	1.215719727
54	1.025278949	0.009320718	0.09718957	10.42726246	0.722932664	1.212302332
55	1.2864235	0.011694759	0.108452009	9.27355645	0.907067846	1.078169284
56	1.007697754	0.009160889	0.095694159	10.44594719	0.710536018	1.214474669
57	2.170768905	0.019734263	0.114455691	5.799846309	1.530627103	0.67430615
58	1.371073264	0.012464302	0.097561272	7.827254876	0.966755095	0.910018269
59	1.391007094	0.012645519	0.098024181	7.751693002	0.980810603	0.901233237
60	1.199717719	0.010906525	0.095872378	8.790369114	0.845930883	1.02199259
61	2.409215142	0.021901956	0.099046291	4.522257834	1.698757516	0.525770185
62	1.092676221	0.00993342	0.096588974	9.723637218	0.770455038	1.130496918
63	1.341468572	0.012195169	0.095445259	7.826481133	0.945880581	0.909928312
64	1.303704299	0.011851857	0.106421437	8.979304618	0.91925268	1.043958754
65	1.280683278	0.011642575	0.101407536	8.710060585	0.903020368	1.012655699
66	1.436967468	0.013063341	0.097133728	7.435596396	1.013217643	0.864482973
67	1.154879498	0.010498905	0.10713517	10.20441416	0.814315083	1.186393373
68	1.003476066	0.00912251	0.095441857	10.46223687	0.707559271	1.216368553



69	1.346143361	0.012237667	0.100936925	8.248053011	0.949176814	0.958941422
70	1.944948417	0.017681349	0.121452671	6.868970752	1.37139921	0.79860551
71	1.64424002	0.014947637	0.119554116	7.998195257	1.159367233	0.92989227
72	1.1107727	0.010097934	0.098368815	9.741479644	0.783215015	1.132571327
73	1.124459272	0.010222357	0.096896577	9.478887952	0.79286553	1.102041692
74	1.138428678	0.010349352	0.098735231	9.540233468	0.802715474	1.109173891
75	1.015255231	0.009229593	0.095344241	10.33027581	0.715864858	1.201026395
76	1.059028237	0.009627529	0.09947205	10.33204325	0.746729566	1.201231883
77	1.040991175	0.009463556	0.096704523	10.21862417	0.734011484	1.188045467

**tapel 5: Output multiplier, multiplier and coefficient Income wages / salaries.**

code	Sector Industri	coefficient of wage / salary	Output Multiplier	Income Multp
38	Processing And Preserving Meats	0.099956836	1.780279615	0.177951117
39	Processing And Preserving Fish And Biota	0.061739514	1.848591255	0.114131125
40	Processing and Preservation of Fruits and Vegetables	0.145699738	1.426705727	0.207870651
41	Oleofood And Fats And Animal	0.049969059	1.78438913	0.089164246
42	Milk Processing, Product Of Milk And Ice Cream	0.030294459	2.076821939	0.062916198
43	Rice	0.079762682	1.964058686	0.156658588
44	Rice Milling-Padian (Except Rice), Flour and Starch	0.071076706	1.835902528	0.130489904
45	Bread And Cakes	0.080212445	1.818203834	0.145842575
46	Sugar	0.121714966	1.224742633	0.149069508
47	Industry Other Food	0.037143447	1.778451152	0.066057806
48	Forage	0.022676563	2.063723897	0.046798166
49	Beverage	0.110345372	1.485299389	0.163895914
50	Cigarette	0.114028675	1.230500129	0.1403123
51	Tobacco Processed	0.013946116	1.803833076	0.025156465
52	Textiles and Materials Tech stil	0.066832251	1.351511575	0.090324561
53	Carpets, Ropes, And Other Textile	0.091267591	1.422579852	0.129835436
54	Garment	0.139344359	1.299634869	0.181096788
55	Leather And Articles Of Leather	0.088361994	1.829822756	0.161686788
56	Footwear	0.12288183	1.562003898	0.191941897
57	Wood, Articles Of Wood And Cork (Excluding Furniture) And goods Woven from bamboo, rattan and the like	0.104359917	1.555015973	0.162281337
58	Paper And Articles Of Paper	0.093294275	1.334108908	0.124464723
59	Printing And Reproduction Media Records	0.094628225	1.338780704	0.126686442
60	Basic Chemicals	0.032686818	1.659081069	0.054230081
61	Fertilizer and Pesticide	0.082831319	1.420046978	0.117624365
62	Soap, goods cleaners, and Cosmetics	0.181423032	1.25741632	0.228124281
63	items Results Petroleum Refinery And Other Chemical Goods	0.043891508	1.47633804	0.064798702
64	Traditional MedicinesPharmaceutical And	0.048704914	1.515348434	0.073804914
65	Rubber And Articles Of Rubber	1.426822288 0.133538198		0.093591331

66	Articles Of Plastics	0.030257492	1.381109569	0.041788911
67	Glass And Articles Of Glass	0.193503858	1.564910211	0.302816163
68	Building Materials, Ceramics, and Goods From Clay	0.100902195	1.368966677	0.138131743
69	Cement, Lime, And Other Stuff Metallic	0.050887422	1.281009308	0.065187261
70	Primary Metals	1.754758676	0.05712544	0.100241361
71	Articles Of Metals	0.083687798	1.674593933	0.140143078
72	Computers, Consumer Electronics, Communications and Optical	0.087418381	1.272973865	0.111281314
73	Electrical	0.084061152	1.235815526	0.103884076
74	Machinery And Equipment Ytdl	0.161987173	1.368273001	0.221642675
75	Transport	0.121033634	1.376364713	0.166586423
76	Furniture	0.138085935	1.418044217	0.195811961
77	Other Stuff	0.07765333	0.119233536	1.535459403