THE OIL AND FAT PROCESSING INDUSTRIES EMPLOYMENT AND INCOME LINKAGES IN INDONESIA

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ABSTRAK

Minyak sawit dan kopra merupakan dua komoditas hasil perkebunan yang penting di Indonesia. Minyak sawit terutama dihasilkan oleh perkebunan besar, sedangkan kopra dihasilkan oleh perkebunan rakyat. Kedua komoditas ini dapat diekspor secara langsung atau dipakai sebagai bahan baku industri minyak dan lemak. Penelitian ini menunjukkan bahwa pengembangan industri pengolahan minyak dan lemak akan sangat berguna untuk mendorong ekspor, pendapatan dan penyerapan tenaga kerja. Industri tersebut memungkinkan terjadinya substitusi ekspor dari komoditas primer ke komoditas sekunder (olahan). Substitusi impor ini sangat penting untuk menstabilkan dan meningkatkan harga ekspor. Disamping itu pengembangan industri pengolahan dalam negeri bermanfaat untuk mengurangi ketergantungan terhadap ekspor (pasar dunia). Penelitian ini juga menunjukkan bahwa industri minyak dan lemak bersifat padat modal. Ia mempunyai daya serap tenaga kerja yang kecil namun menghasilkan nilai tambah yang besar. Sebagian besar tenaga kerja dan nilai tambah yang dibangkitkannya adalah melalui kaitan dengan industri lainnya, khususnya kaitan kebelakang.

ABSTRACT

Palm oil and copra are two important estate produces in Indonesia. Palm oil is primarily produced by the large plantations, whereas copra is primarily produced by the small-holders. The two commodities may be exported or used for raw material of the fat and oil industries. This study shows that developing the fat and oil industry is very important for increasing import, income and labor absorption. The industry enables export substitution process, from primary commodities to secondary (processed) commodities. Developing this processing industry reduces dependence on the world market. This study also shows that the oil and fat industry is capital intensive. It as a rather small employment creation but large income generation. Most of the employment and income are generated indirectly through its linkage with other industries, especially backward linkage.

INTRODUCTION

Agricultural sector has been the most dominant sector in Indonesia. It has major contribution in labor absorbtion, income (value added) generation, and foreign exchange earning. Without neglecting the agricultural sector, the government has been vigorously promoting the other sectors in the economy, especially the industrial sector. The industrial development is designed by stages through a series of five years development plan (PELITA). Since the beginning, the industrial

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development is directed to create a balanced intersectoral growth and to facilitate a smooth structural adjustment in the economy. Accordingly, in the first step the industrial development must be focused on the agro processing industries. With this strategy, the industrial and agricultural sectors will support each other. The linkage between the two sectors is very crucial for this kind of development strategy.

One of the most important agro processing industries in Indonesia is oil and fat industry. This industry produces cooking oil and margarine. Cooking oil is one of basic foods in Indonesia. It has a large domestic demand and also exported considerably. Margarine, on the other hand, is a net imported commodity. Both cooking oil and margarine domestic productions have developed very rapidly in recent years. This development, of course, should contribute significantly to create employment, generate value added, and increase or save foreign exchange earning.

In addition to the direct contributions, the oil and fat processing industry is also important to support development of other sectors in the economy through its backward and forward linkages. Perhaps, its largest backward linkages are with copra and crude palm oil. These two commodities are the main raw materials for the oil and fat industry.

Copra used to be an important export commodity for Indonesia. But as the domestic oil and fat industry develops rapidly, then almost all of the copra now is used domestically. In the same time Indonesia has become a net exporter of coconut oil. Accordingly, the rapid development of the oil and fat industry has enabled Indonesia to substitute its export from copra to coconut oil. This export substitution should be beneficial to increase value added, employment and export earning.

Palm oil is a major non oil export for Indonesia. The international crude palm oil price has been unstable in recent years. Price instability may be a characteristic of primary commodities. Processing the palm oil into final products such as cooking oil and margarine is one way of avoiding the price instability problem.

Because of its importance, the government has promoted the development of fat and oil industry. The industry is protected by controlling domestic palm oil price and allocating the palm oil which is required by the fat and oil industry for raw material.

This study is an attempt to evaluable the role of the oil and fat processing industries to generate employment and income in the Indonesian economy. The analysis is conducted using input-output method. The study is focused on three sectors of the 66 sectors in the 1985 Indonesia Input-Output Table, namely, coconut and copra (sector 9), crude coconut and palm oil (sector 10), and oil and fat industry (sector 28).

METHODOLOGY

The industrial linkage can be analyzed using an input-output analysis (Hirschman, 1958; Rasmussen, 1956; Hazari and Krishnamurty, 1970; Laumas, 1975; Jones, 1976). The linkage analysis shows the potential of one sector in generating total production in the economy induced by an increase in final demand. Accordingly, the linkage analysis can be used to indentify key sectors in the economy (Laumas, 1975; Schultz, 1977; Rahman, 1987).

In an input-output model, total output is used for intermediate inputs in various industries and final demand. The output balance is as follow:

$$X = A X + F \tag{1}$$

X = Vector of Output
A = Input-output Coefficient Matrix
F = Final Demand

By a simple manipulation the output balance in equation (1) can used to determined the amount of output require to sustain a given sector of final demand:

$$X = (I - A)^{-1} F = C F \tag{2}$$

I = an Identify Matrix
C = $(I - A)^{-1}$ or Leontief Inverse Matrix

The total input required to produce a unit of output in given sector can be measured using the input-output coefficient matrix. This is called the direct input requirement. From this, we can determine the so called the direct backward linkage, that is the total output of all sector in the economy required to produce a unit of output of a given sector. This is column sum of the matrix A elements.

$$DBLC = \sum_{i=1}^{n} a_{ij} \tag{3}$$

DBLC = Direct Backward Linkage
a_{ij} = Input-Output Coefficient of A

Similarly, the total output of given sector required directly to produced a unit of output of all sectors in the economy is called the direct forward linkage. This can be measured as the row sum of the matrix A element:

$$DFLC = \sum_{j=1}^{n} a_{ij} \tag{4}$$

DFLC = Direct Forward Linkage

The total input requirement induced by a unit increase in final demand for a sector (j^{th} sector) is the sum of the j^{th} column element of the C matrix. This is sometimes called the total backward linkage:

$$TBLC_j = \sum_{i=1}^{n} C_{ij} \tag{5}$$

$TBLC_j$ = Total Backward Linkage of Sector j
C_{ij} = Elements of C Matrix

The total output of sector i needed to cope with a unit increase in the final demand can be measured as the row sum of the C matrix elements. This is commonly known as the total forward linkage (TFLC):

$$TFLC_i = \sum_{j=1}^{n} C_{ij} \tag{6}$$

$TFLC_i$ = Total Forward Linkage of Sector i

To make it comparable between sectors, the total backward and forward linkages should be weighted with the corresponding linkage average (Rasmussen, 1956). The total backward and forward linkage indicates are follows:

$$TBLI_j = \frac{TBLC_j}{\frac{1}{n} \sum_{j=1}^{n} TBLC_j} \tag{7}$$

$$TFLI_i = \frac{TFLC_i}{\frac{1}{n} \sum_{i=1}^{n} TFLC_i} \tag{8}$$

In addition to the linkage measurement, the input-output model can be also used to measure the employment and income that can be generated potentially due to an increases in final demand. The total employment that could be generated from an increase in final demand of a given sector is measured by the simple employment multiplier:

$$SEM_j = \sum_{i=1}^{n} C_{ij} L_i \tag{9}$$

SEM_j = Simple Employment Multiplier of Sector j
L_i = Labor Coefficient of Sector i

The type I employment multiplier is measured as (Miller and Blair, 1985):

$$EMI_j = \frac{\sum_{i=1}^{n} C_{ij} L_i}{L_j} \tag{10}$$

The total labor income that can be generated by an increase in final demand is measured by the simple income multiplier:

$$SIM_j = \sum_{i=1}^{n} C_{ij} W_i \tag{11}$$

SIM_j = Simple Income Multiplier of Sector j
W_i = Labor Income per Unit Output of Sector i

Similar to the employment multiplier, the type I income multiplier is measured as:

$$IMI_j = \frac{\sum_{i=1}^{n} C_{ij} W_i}{W_j} \tag{12}$$

The employment and income multiplier we have discussed measure the amount of employment and income generated as final demand increases. They may not be a good measurement for the contribution of a sector in the economy. Perhaps, the better measurement would be using a "with and without" method. That is, the sector contribution of a sector is the difference between total employment and income multiplier if the sector exists with the corresponding multiplier if the sector does not exist (deleted). This kind of analysis was used by Miller and Marfan (1981) for Chile. More specificly, the total employment contribution can be measured as:

$$TEC_j = L' (I - A)^{-1} i - L^*_j (I - A^*_j)^{-1} i \tag{13}$$

TEC_j = Total Employment Contribution of Sector j
L' = Employment Coefficient Vector
A^*_j = The Input-Output Coefficient Matrix if Sector j is deleted
L^*_j = Employment Vector if Sector j is Deleted
i = Identify Vector (Element of Ones)

Similarly, the income contribution is measured using the following formula:

$$TIC_j = W' (I - A)^{-1} i - W^*_j (I - A)^{-1} i \tag{14}$$

TIC_j = Total Income Contribution of Sector j
W' = Labor Income Vector With Sector j
W^*_j = Labor Income Vector Without Sector j

COOKING OIL AND MARGARINE PRODUCTION

As it has been cooking oil industry in Indonesia has developed very rapidly. This development can be seen from its production. The cooking oil consists of coconut oil and frying oil. The frying oil uses primarily crude palm oil as its raw material. The coconut oil, frying oil and margarine production trend is presented in Table 1.

Table 1. Coconut oil, frying oil and margarine production in Indonesia, 1969/70-1987/88 (1000 ton).

Years	Coconut oil	Frying oil	Total cooking oil	Margarine
1969/70	236.0	27.0	263.0	7.5
1974/75	265.0	29.4	294.4	10.7
1979/80	452.0	266.2	716.2	18.5
1984/85	267.1	605.1	872.2	19.1
1987/88	170.1	242.8	412.9	10.1

Source: Nota Keuangan dan Rancangan Anggaran Pendapatan dan Belanja Negara Tahun 1980/1989.

From Table 1 we can see that the cooking oil increased very rapidly during 1969/1970-1984/1985 period. The total cooking oil production increased from 263 thousand tons in 1969/1970 to 872 thousand tons in 1984/1985. It is interesting to note that the increase was mainly due to the sudden jumped in 1979/1980. The production jumped in 1979/1980 was excessively high especially for frying oil. Prior to 1979/1980, the frying oil contribution to total cooking oil production was practically neglectable. But then it increases very rapidly. The frying oil production peaked at 605.1 thousand tons in 1984/1985. Since then, the cooking oil production has always been dominated by the frying oil. The coconut oil production has been falling continuously since 1981.

From the cooking oil production composition it is clear that the cooking oil industry has changed drastically from coconut oil based to palm oil based raw material. The question, of course, why this raw material substitution has changed drastically?. We may answer this question by looking at the production figures.

The frying oil production jumped drastically in 1979/1980 and peaked in 1984/1985. During the 1974-1979 period the world palm oil price had been very low, and even hit the lowest record in 1975. During this low price period the government deviced some protected measures to promote the cooking oil industry. The government has controlled the palm domestic market since 1973. The domestic crude palm oil price is set by the government and the palm oil producers must allocate a certain amount of the palm oil needed at check price. Perhaps during the 1974-1979 period, the cooking oil industry adjusted to the low price. The industry was expanding to take the opportunity of cheap raw material. The world

crude palm oil price increased sharply during the 1983-1984. Moreover, Indonesia also devaluated its currency in late 1986. As the result, the crude palm oil international price has been more expensive than the domestic check price. Consequently, the crude palm oil exportation is more profitable. The sharp falling of frying oil production in 1985/1986 coincided with the sudden jump in palm oil exportation in 1985 (Table 2). This indicates that the domestic cooking oil industry is in competition with the world market in commanding the palm oil. The industry is heavily affected by the world palm oil price.

Although it is not as rapid as the cooking oil, the margarine production also increased rapidly until the 1984/1985 period. It increased from 7500 tons in 1969/1970 to 19100 tons in 1984/1985. Since then, it also dropped drastically like the cooking oil. The reason is the same, that is the increase in world palm oil price which induces palm oil exportation.

From the above discussion we may conclude that the oil and fat industry in Indonesia is really dependent on the world palm oil price. The domestically produced palm oil tends to be exported as its world price increases, which reduces raw material required by the industry. In other words, promoting the palm oil and copra exports will reduce cooking oil and margarine production. The later effect will reduce value added and employment which could have been generated if the palm oil and copra were used domestically by the oil and fat industry.

PALM OIL PRODUCTION TREND AND THE ROLE OF THE DOMESTIC INDUSTRY

Palm oil production is one of the most rapid growing among the agricultural commodities. This rapid growth is posible due to the massive government extensifications program, especially through the Nucleaus Estate System (NES). The NES program started effectively since 1979. The palm estate area jumped drastically from 250 thousand hectares in 1978 to 624 thousand hectares in 1985. As the result, palm oil production also increase rapidly. In Table 2 we can see the oil production increased from 721 thousand tons in 1980 to 1208 thousand tons in 1985.

Unfortunately, the sharp increase in the palm oil production coincided with the drastic falling and highly unstable international palm oil price. This price problem has made the increase in palm oil production was not followed by proportional increase in its export. The palm oil export, in contrary, was falling drastically (Table 2). As we can see from the table the palm oil export fell from 503 thousand tons in 1980 to 196 thousand tons in 1981. The volume of export hit its lowest level at only 128 thousand tons in 1984. As international price increased sharply in 1984, the palm oil export also jumped to 567 thousand tons in 1986.

Table 2. Palm oil productions and its uses in Indonesia, 1980-1987 (1000 tons).

Year	Production	Export	Domestic uses
1980	721 (100)	503 (70)	218 (30)
1981	800 (100)	196 (25)	604 (75)
1982	887 (100)	260 (29)	627 (71)
1983	983 (100)	346 (35)	637 (65)
1984	1148 (100)	128 (11)	1020 (89)
1985	1208 (100)	519 (43)	689 (57)
1986	1350 (100)	567 (42)	783 (58)
1987	1477 (100)	471 (32)	1006 (68)

Source: Central Bureau of Statistics, Directorate General of Estate Crops.
Remark: Figures in parenthesis are percentage.

Clearly, the crude palm oil production usage was switched drastically in 1981, from mainly export to mainly domestic consumption. The palm oil export share in total production fell from 70 percent in 1980 to only 25 percent in 1981, and 11 percent in 1984, but then it increased to 43 percent in 1985. The crude palm oil domestic consumption is mainly used by oil and fat industry.

The above evidence indicates the important roles of the oil and fat processing industry in absorbing palm oil excess supply. The processing industry plays as a buffer to the international price instability. In this regard, the oil and fat domestic industry contributes in helping the palm planters. This kind of role tells us one example how important a processing industry for agricultural sector development is. This also gives us a lesson how danger it is if the agricultural export commodities do not have a sufficient domestic demand. If domestic demand is too small, then the commodity must be exported even if international price is very low. The international price fluctuation will be transmitted directly and wholly to the farmers. This, of course, is very dangerous. Since the international prices of primary agricultural commodities are generally highly unstable.

COOKING OIL PROCESSING INDUSTRY AND EXPORT SUBSTITUTION

As it has been mentioned, copra is raw material of the cooking oil industry. The coconut-based product export used to be dominated by copra. But, as the domestic cooking oil industry has been developing rapidly, Indonesia is now a net exporter of coconut oil. In other words, the cooking oil processing industry facilitates export substitution from copra (raw material) to coconut oil (processed product). The export substitution evaluation among the coconut-based products can be seen in Table 3.

Table 3. Export value of coconut based products in Indonesia, 1974-1985 (1000 US$).

Products	1974	1978	1982	1983	1984	1985	1986	1987
Copra	100	—	—	745	26	418	1211	2981
	(0.4)			(2.0)	(0.1)	(0.3)	(2.3)	
Copra cake	25897	34142	34000	31757	20000	30300	35674	39181
	(99.6)	(99.3)	(99.0)	(86.0)	(34.8)	(20.2)	(67.7)	
Desiccated	—	242	360	1354	5211	4650	—	—
coconut		(0.7)	(1.0)	(3.7)	(9.1)	(1.1)		
Coconut	—	—	—	2838	32174	114550	15777	nda
oil				(7.7)	(56.0)	(76.4)	(30.0)	
Total	25997	34384	34360	36689	57411	149918	52662	nda
	(100)	(100)	(100)	(100)	(100)	(100)	(100)	

Source: FAO Trade Yearbook, 1974-1985.
ASEAN Statistical Yearbook, 1986-1987.
Remark: Figure in parenthesis is percentage.

From Table 3 we can see that the coconut-based product export changed gradually from copra cake dominated to coconut oil export started in 1984. The coconut oil export contribution jumped drastically from non-existent in 1982 to 76.4 perent in 1985. In the same time the copra cake contribution fell from 99 percent in 1982 to only 20.2 percent in 1985. The coconut oil has dominated the coconut product export value since 1984.

The export substitution from copra to coconut oil is beneficial in terms of support earning and value added generation. As we know the coconut oil international price is more inflexible downward than the copra price. In other words, the terms of trade between coconut oil and copra increases to the benefit of coconut oil. This may be another general characteristic of agricultural commodities.

From this discussion we may conclude that the cooking oil processing industry is very important to facilitate export substitution generates a higher and more stable export earning. This would also be beneficial for the development of both coconut production and the economy in general.

EMPLOYMENT AND OUTPUT MULTIPLIER

As expected the direct backward linkage of the fat and oil industry is higher than its forward linkage. Total direct backward linkage is 0.775328, where as total direct forward linkage is only 0.096163. The very small direct forward linkage is due to the fact that the oil and fat are mainly used as final consumption or exported.

If we look at by sector, we can see that the largest direct backward linkage is for the small holder cooking oil and palm oil, with coefficient 0.436295 or about

56.3 percent of the total direct backward linkage. The second largest linkage is for coconut and copra sector, with coefficient 0.167631 or about 21.6 percent of the total direct backward linkage (Table 4).

Table 4. Direct backward linkage of the oil and fat industry in Indonesia, 1985.

Sectors	Coefficient	Share (%)
Smallholder coconut oil and palm oil	0.436295	56.3
Coconut and copra	0.167631	21.6
Trade	0.089141	11.5
Transport	0.019076	2.5
Chemical industry	0.007702	1.0
Others	0.055483	7.2
Total	0.775328	100.0

The high direct backward linkages with the smallholder coconut and palm oil and the coconut and copra sectors indicate the important role of the oil and fat industry in deriving demand for the copra and palm oil. In other words, increasing oil and fat production is very vital to increase the domestic demand for copra and crude palm oil. As it has been mentioned earlier, although the copra and crude palm oil are exportable commodities, a large domestic demands for them are needed as a buffer for the unstable world prices and demand.

The total direct and indirect linkages of the oil and fat processing industry would further reveal its intersectoral linkage in the economy. The linkage coefficient are presented in Table 5.

Table 5. Total intersectoral linkage of the oil and fat industry in Indonesia, 1985.

Linkage criteria	Backward	Forward
Direct coefficient	0.7753	0.0962
Direct and indirect coefficient	2.18	1.17
Direct and indirect index	1.22	0.66

The total backward linkage is 2.18, or with index of 1.22. This indicates that the oil and fat industry has a relatively high backward linkage. The total forward linkage, however, is only 1.17 or with index 0.66. This means that the oil and fat industry has a relatively low forward linkages.

The high backward linkage indicates that the oil and fat industry has a small pushing effect to the economy. This linkage structure may also imply that the role of the oil and fat processing industry in the economy is highly dependent on the

existence of final demand for its output. To the extent that, the final demand depends on the domestic consumption then we may say that the oil and fat industry is highly sensitive to the domestic economic growth, and with low ability to stimulate the economic growth.

The high backward linkaged means that the oil and fat industry uses a large amount of raw material and capital in the production process. This would imply that the industry is highly capital intensive. In other words it requires a relatively large working and fixed capital. We all know, capital is really scarce and quite expensive in Indonesia. Therefore, the lack of capital would be one of the most important constraint for expanding the oil and fat industry. A capital intensive industry is also labor saving. Accordingly, the oil and fat industry may not have a high direct employment creation.

EMPLOYMENT AND INCOME MULTIPLIERS

In addition to foreign exchange earning and saving, the oil and fat industry is also expected in increase income (value added) and to create employment. Its potential to generate income and employment can be evaluated using the multiplier coefficient.

The simple employment multiplier is 0.49 person per one million rupiahs worth of final demand in 1985. This level of multiplier is really very small. But the type I employment multiplier is quite highly which reaches 10.82. This type I employment multiplier means that for every person initially employed in the oil and fat industry will induce a total of 10.83 person employed in the whole economy. The high type I, but small simple employment multiplier indicates that most of the employment creation generated indirectly, i.e. via the linkage with other sectors.

The simple income multiplier of the oil and fat industry is 0.2420, which indicates for a rupiah worth of final demand for the oil and fat industry would create a total 0.2420 rupiahs of new household income. The type I income multiplier 3.65 is really high. This again shows that most of the income induces by the oil and fat industry generated indirectly through its linkages with other sectors.

TOTAL EMPLOYMENT AND INCOME CREATION

The previous linkage and multiplier analysis measure the roles of the oil and fat industry in the economy if there are changes in final demand of output of the industry. For a more comprehensive analysis, now, we shall discuse its total contribution on employment and income generation, using the "with" and "without" method. That is, to measure the contribution due to the existence of the industry

in the economy. For the sake of comparison we also analyze two of the most related sectors, namely the coconut and copra sector and the smallholder coconut oil and palm oil sector. Their estimated employment and income contributions are presented in Table 6.

Table 6. Total employment and income multiplier contribution of the oil and fat industry and its related sectors in Indonesia, 1985.

Sectors	Employment	Income
Oil and fat	0.43787	0.23624
	(0.6099)	(0.8634)
Smallholder coconut oil and palm oil	0.60402	0.21443
	(0.8413)	(0.7837)
Coconut and copra	0.7379	0.14281
	(1.0178)	(0.5219)

Remark: Figure in the parenthesis is the index.

From Table 6 we can see that the oil and fat industry contribution to the total employment multiplier is very small. It is only 0.43738, or an index 0.6099. This, again, confirms the previous findings that the oil and fat industry is capital intensive. It has a low direct employment creation. As the Table 6 shows, the oil and fat employment contribution is the lowest among the three sectors evaluated. The largest employment contribution is for coconut and copra sector. The employment index for the coconut and copra sector is 1.0278. This indicates that this sector has a higher than average employment contribution of the whole industries in the economy.

With regard to labor income creation we can see that the oil and fat industry contributes the highest level among the three industries, which is followed by the smallholder coconut oil and palm oil industry and the coconut and copra industry or sector, respectively. This evidence indicates that there is a systematic inverse relationship between employment and income generation in the oil and fat processing industries. The higher level processing industries generate less employment but more income. In other words, industrialization tends to boost a rapid economic growth in the expense of low labor creation. This is natural, since the higher level processing industries are generally more capital intensive.

The total income multiplier index in the three oil and fat related industries are all below one. This indicates that their income multiplier contributions are below the average level in the whole economy. The fat and oil industry are, certainly, have relatively small labor income contribution. This, of course, is partly related to the small employment contribution of the coconut and copra industry, which is much higher than its income contribution. This can be explained by the low wage rate in the industry.

CONCLUSION

The oil and fat industries in Indonesia is undergoing a rapid structural change. The cooking oil industry expands rapidly. Its composition has changed from coconut oil domination to frying oil domination. More specificly, the cooking oil expansion is almost solely due to the expansion of the frying oil processing industry. The frying oil mainly uses crude palm oil as its raw material. In the same time, the margarine industry also expands rapidly.

From this study we can also see that the oil and fat industry expansion is induced by the drastically falling of palm oil and copra prices in the 170's. The low palm oil international price makes it more profitable processing the crude palm oil into frying oil and margarine than exporting it. This evidence shows the existance of "The price induced agroprocessing development", similar to the well known "induced innovation". The price induced agroprocessing development hypothesis deserves further empirical verification to make it a more general theory of industrial development process.

The rapid cooking oil industry expansion has enables Indonesia to substitute its export commodities from primary commodities to processed commodities. The coconut product exports have changed from copra to coconut oil. This export substitution is clearly beneficial for increasing value added, employment and foreign exchange earning. Moreover, the export substitution from primary products to processed products would stabilize the export volume and export earnings since the processed commodity prices are generally more stable than the primary commodity prices.

The Indonesian oil and fat industries are considered to be quite fragile. Their production is heavily dependent on crude palm oil international price. It seems that the oil and fat industries are merely a buffer for the crude palm oil producers during the period of international price falling. The crude palm oil will be mostly exported when price is high, and will be mostly used domestically if price is low.

The cooking oil industry development gives us an example how important agro processing industry for an agricultural export commodity is. The agro processing industry expands domestic demand. The large domestic demand is very important to reduce dependency on foreign markets. The large domestic demand, therefore, can be used as the last resort oulet during a low international price level.

The lesson from the cooking oil industry can be generalized to other processing industries. The government should promote the processing factories of the main agricultural exports such as rubber, coffee, tea, and cocoa. The export products should be substituted gradually from primary or semi-processed products to semi-processed, or better yet to final products. In other words, the commodity development strategy should be export substitution through agro processing development.

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