AN ANALYSIS OF FACTORS DETERMINING COMPETITIVENESS: THE CASE OF THE INDONESIAN PALM OIL INDUSTRY

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ABSTRAK

Kajian ini menganalisis faktor-faktor yang mempengaruhi daya saing industri kelapa sawit Indonesia di pasar internasional. Kerangka kajian ini menggabungkan pendekatan teori perdagangan neo-klasik dan manajemen strategis dalam menganalisis daya saing internasional pada tingkat industri. Penelitian ini menunjukan bahwa daya saing global industri kelapa sawit di Indonesia dapat dijelaskan oleh produktifitas tenaga kerja, nilai tukar rupiah, dan rasio konsentrasi empat perusahaan. Campur tangan pemerintah dalam bentuk penentuan harga alokasi dalam negeri juga merupakan faktor yang sangat penting dan berpengaruh negatif pada daya saing global industri kelapa sawit di Indonesia.

Kata kunci: *kompetitif, industri kelapa sawit,*

ABSTRACT

This paper analyses factors that determine the competitiveness of the Indonesian palm oil industry including the effect of government interventions. The conceptual framework used in this study combines neo-classical trade and strategic management approaches for analyzing competitiveness at the industry level. This study shows that the competitiveness of the Indonesian palm oil industry can be explained by its labor productivity, the real exchange rates, and the four-firm concentration ratio. It is shown that government interventions--in the form of domestic allocation prices--have significant and negative effects on the competitiveness of the palm oil industry.

Key words: *competitiveness, palm oil industry, value added, net export shares*

INTRODUCTION

Palm oil has two important characteristics in the Indonesian economy. First, palm oil is an important export commodity. Palm oil plays important roles in providing export earnings and in generating employment opportunities for million of farm families. Currently, Indonesia is the second largest exporter of palm oil

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after Malaysia. In 1997, for example, palm oil contributed about 31 percent of total agricultural exports and 3.5 percent of total non-oil exports and there are about 2 millions people work in the palm oil industry. Second, palm cooking oil is primary source of cooking oil, which is considered to be one of the "nine essential commodities" for Indonesian consumers. The availability of the "nine essential commodities" at affordable prices is always key for the government's maintenance economic and political stability.

Due to this position, it is not surprising that the palm oil industry is subject to heavy government interventions. On one hand, government would like to expand Indonesian export shares of palm oil in international markets. Therefore government intervenes in the palm oil industry through investment policy in palm oil production, especially with respect to the small-holder development program. In previous years the government also provided a subsidy for fertilizer, an important input in palm oil production, and an interest subsidy for investment in palm oil production. There are also various incentives, such as infrastructure facilities provided by the government for palm oil investment. These interventions enhenced the performance of Indonesian palm oil industry in international markets. On the other hand, the government intervenes in domestic markets to guarantee an adequate supply of palm oil at affordable prices for domestic cooking oil production. In this regard, government uses a variety of policy measures such as domestic allocation price, export restrictions and an export tax. These interventions have negative effects on the performance of the palm oil industry in international markets.

The objectives of this study are (1) to analyze factors that determine the competitiveness of the Indonesian palm oil industry in international markets, and (2) to analyze the effect of government interventions on competitiveness of the Indonesian palm oil industry. Following this introduction section, the second section presents a conceptual framework for analyzing competitiveness of the industry. The third section briefly discusses the Indonesian palm oil industry. A description of the econometric model, data used and empirical results and discussions are presented in the fourth section. The last section contains summary and conclusions. This study contributes to the literature by combining the conceptual framework of neo-classical trade and strategic management approaches for analyzing competitiveness at the industry level using econometric analysis.

CONCEPTUAL FRAMEWORK

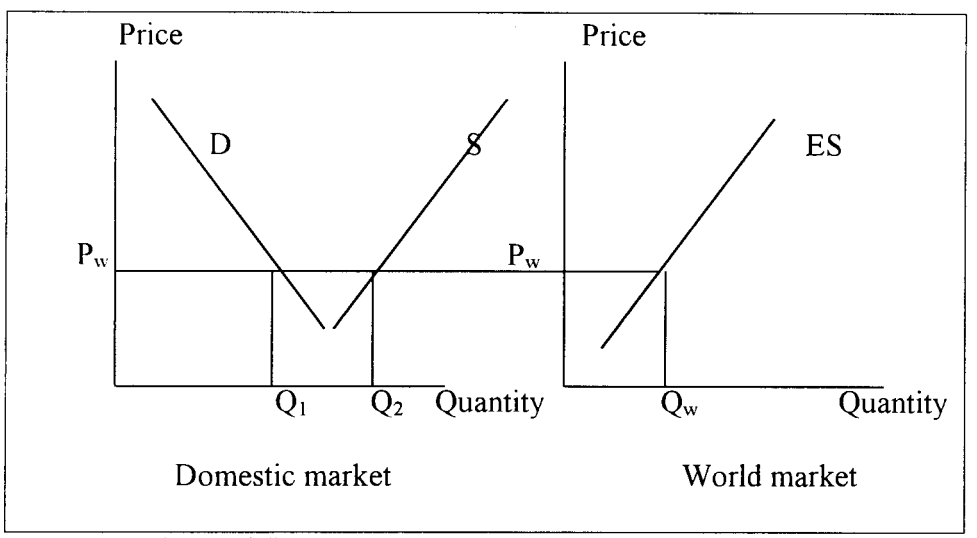
The conceptual framework developed in this study builds on the definition of competitiveness adopted by the Canada's Task Force on Competitiveness in Agri-Food Sector (Agriculture Canada, 1991):

"…..a competitive industry is one that possesses the sustained ability to profitably gain and maintain market share in domestic and/or foreign markets." (p. 3)

The framework considers the case where the market is internationally competitive and the product is homogeneous. In addition it is also assumed that the exporting country is small so that its export cannot affect world price. In this case, domestic firms face a perfectly elastic export demand curve at a given foreign price. Assuming also linear demands and supplies curves, graphical representation of domestic and world markets for the products are shown in two panels of Figure 1.

In the domestic market, S represents the supply curve for the products and D represents the demand curve for the product. If price in the foreign country (P_w) is greater than the autarkic price in the domestic market, firms/industry will export Q_2 - Q_1, the excess supply in the domestic market at price P_w. This excess supply curve, ES, is represented at the right panel.

Figure 1. Domestic and World Markets for the Products



Source: Sharples and Milham, 1990

Competitiveness at the industry level in the world market is shown by the location of the export supply curve ES. Forces determining the industry's competitiveness can be analyzed through two components; the export supply curve, which is shaped by forces within industry; and the export demand curve, which is determined by forces outside the industry (Sharples and Milham, 1990).

This study focuses on the forces that influence the performance of the industry in global markets as represented by the export supply curve. A shift in the export supply curve to the right summarizes the forces within the industry that determine the competitiveness of the industry and any forces that shift the export supply curve to the right are considered to make the industry more competitive.

The conceptual framework for the performance of industries in global markets takes into consideration three important factors. First, individual firms make the strategic decisions that determine competitiveness of sectors or industries. Second, while firms make the decisions, they are affected by public policy. The later affects strategic choice on a wide range of variables. Hence, a conceptual framework must recognize the relationship between the private strategy and public policy. Third, a conceptual framework must incorporate economic and strategic management variables in analyzing and measuring competitiveness of the industry (Van Duren, et al.1994).

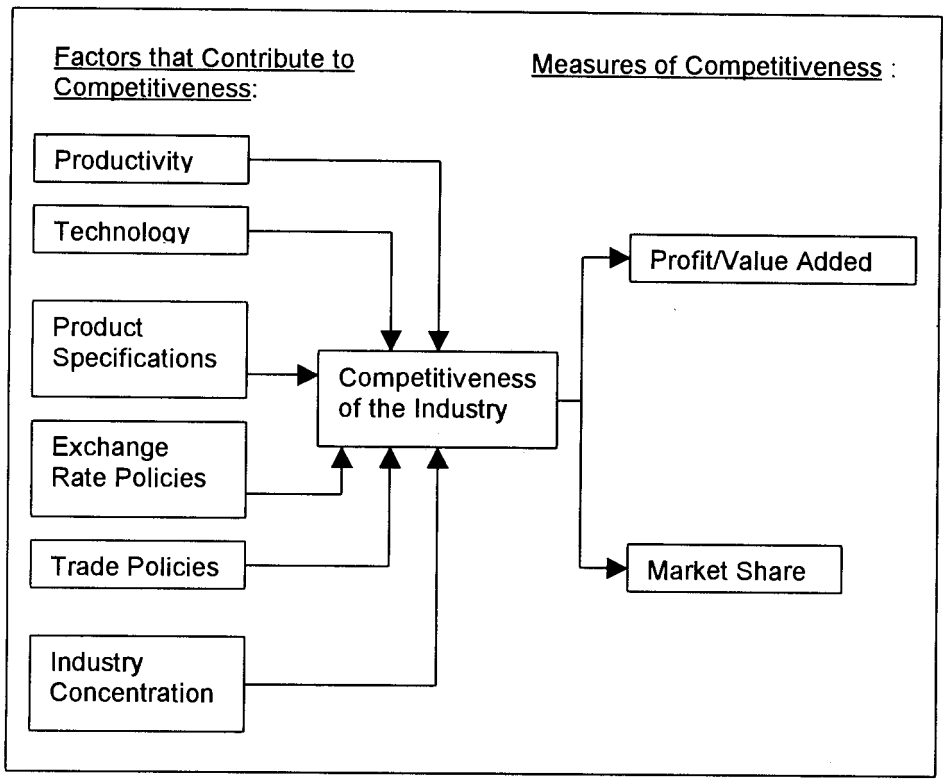
Based on the factors considered earlier, Figure 2 identifies factors that contribute to competitiveness. Furthermore, it is necessary to conceptualize the variables outlined previously with more systematically measurable variables. These provide a more systematic causal relationship between measures of and factors that contribute to competitiveness. This is represented in Figure 2.

The left part of Figure 2 represents variables that contribute to competitiveness of the industry. These variables are derived from the literature of neoclassical economics and strategic management. They provide particular concepts on which to focus in determining what causes the competitive state of an industry. These variables are productivity, technology, product specifications, trade and monetary policies (exchange rate policy), and industry concentration. The following discussions elaborate briefly how these variables mentioned previously affect competitiveness of the industry.

There are two schools of thought concerning industrial competitiveness. Some see that competitiveness as a result of productivity growth due to fundamental choices with respect to innovation and technology policy, and investment in human capital. Others argue that competitiveness depend upon the relative price of domestic and foreign-produced goods which largely determined by the real exchange rate. In the empirical analysis, however, it is found that both variables determine competitiveness of the industry. Real exchange rates influence competitiveness by changing flows of trade among countries. If, for example, the U.S. dollar rises in value to the Indonesian rupiah so that an Indonesian citizen now obtains fewer dollar for rupiah, it is expected that the Indonesian will buy fewer American goods and services than before the dollar appreciated. Under a dollar appreciation, American export industries will suffer because demand from Indonesia will have been choked off. However,

Indonesian export industries will benefit since, by similar reasoning, demand for Indonesian goods and services by American will increase (Hallberg, 1992).

Figure 2. Relationship between Measures of and Factors that Contribute to Competitiveness of the Industry



Source: Modified from Van Duren, et al. (1994)

Productivity is one of the most important determinants of competitiveness. Industrial competitiveness is a relative cost phenomenon, which depends, among other things, on improvement in underlying factor productivity. In this regard the relationship between export growth and the growth of labor productivity is considered to be positive. Productivity induces the industry to improve the level of technical efficiency, to grow to a more efficient size, and to innovate to stay profitable in the market. Consequently, productivity increases the industrial competitiveness (Agricultural Canada, 1991).

Domestic competition is often considered as an important factor in industrial competitiveness. According to Porter (1990a) strong domestic

competition creates pressures on firms to be efficient and to innovate. Porter (1990a) regards "domestic firm rivalry" in a nation as the most important of success in global markets. The presence of strong local rivalry is arguably a "final and powerful" stimulus to the creation and persistence of competitive advantage (p. 82). Sustained competition in domestic markets is also believed to enhance innovation in a way that assures more comprehensive exploration of all conceivable options and paths for progress and precludes bandwagon effect (Brooks, 1985). However, other researchers argue that antitrust policy hampers competitiveness of firms in international markets (Jorde and Teece, 1990). Devotees of this point of view emphasize the reality of global competition and the potential efficiency gains from business combinations. They strongly recommend that antitrust law should recognize the potential efficiency gains from mergers. More explicitly, corporate consolidation and bigness is believed to be essential prerequisites for global competitiveness (Adams and Brock, 1988).

From the theoretical perspectives, an early study by White (1974) showed that if a country's firms face perfectly elastic export demand and import supply curves, they will export a greater amount when the relevant industry is monopolistic than when it is competitively structured. White's study, however, was based on the assumption that domestic and foreign markets are segmented, each firm perceives each country as a separate market and makes distinct quantity decisions for each market (Brander and Krugman, 1983). In addition, it is also assumed that world market is competitively structured and product is homogeneous. Henderson and Handy (1990) and Kim (1994) argued that if these assumptions are relaxed than the results may not be hold. Further, he also argued that this is a matter of empirical investigations.

There are two widely-used measured of industry concentration: concentration ratio of the top four firm (CR4) and the Herfindahl-Hirschman Index (HHI) (Sughart II, 1997). The four-firm concentration ratio, CR4, is the share of total sales accounted for by the industry's four largest firms, while the HHI is calculated by summing up the squared market shares of all the industry's firms. Both measures have advantages as well as disadvantages. The main advantage of CR4 is its simplicity, while the disadvantage of the CR4 is that it provides no information about the size distribution of the n-firms chosen for constructing the ratio. The HHI has advantage with regard to the fact that it uses information about the market shares of all the relevant firms, not just the four largest, while the disadvantage of the HHI is that more data must be gathered to calculate the HHI (Sughart II, 1997). Considering the limitation of the available data of all firms, this study uses CR4 as measure of market concentration.

Other variables represent government policies toward palm oil industry. These are an export tax, domestic price allocation, and relative domestic prices. It is expected an export tax will have negative effects on competitiveness and so does the domestic allocation prices. Meanwhile, relative domestic prices are expected to have positive effect on competitiveness.

The right part of Figure 2 represents performance of competitiveness as measured by profit and market share. It is argued that no industries or firms will survive without having profit in the long-run. Profitability is also a "forward-looking" indicator of economic performance of industries (Kim, 1994). However, it is difficult to measure competitiveness at the industry level by profit. This is due to differences in accounting procedures, differences in firm sizes, and because multidivisional public companies normally provide only consolidated financial statements (Van Duren, et al., 1994; Martin, et.al., 1991). Value added is proposed as an alternative measure of competitiveness. Value added is appropriate as an indirect measure of profit because it indicates the industry's surplus over material costs (Van Duren, et.al., 1991; Martin, et.al., 1991).

Value added can be calculated by subtracting the cost of purchased inputs from the valued of shipments or the sum of payments to all factors of production utilized in the industry (Cook and Bredhal, 1991). Martin, et.al. (1991) used value added as an indirect measure of competitiveness in their study to compare competitiveness of selected food manufacturing industries in U.S. and Canada and contended that these value added measures are better indicators for profitability than revenues.

Trade performance as measures by market share is the most widely used indicator for competitiveness. Market share is expressed by the industry's market share in world markets. This measure shows the ability of a country's industry to compete in the international market. There are other measures of market shares such as export orientation, import penetration, and relative export measures (Balasa, 1979). This study uses net market shares for its simplicity and the availability of the data.

AN OVERVIEW OF INDONESIAN PLAM OIL INDUSTRY

Production of most Indonesian plantation trees come from three sources: small-holder, government and private estates. Small-holder contributes about 24 percent of total production while government and private estates contributes about 33 percent and 43 percent, respectively (Directorate General of Estates, Ministry of Agriculture, 1997).

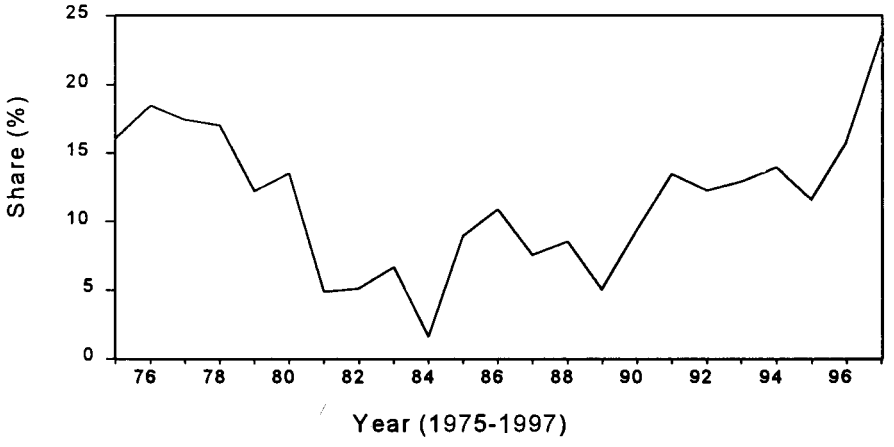
In the early years of palm oil development, most palm oil production was oriented toward international markets. During this period, domestic needs for cooking oil and fatty acid came from copra (from which most crude coconut oil is made). In 1971, 93 percent of total expenditures on crude vegetable oil were devoted to coconut oil. However, coconut oil production only increased at a modest rate of 1.2 percent during the 1979-1994 period. At the same time production of palm oil grew rapidly from only 0.6 millions tons in 1979 to 4.1

millions tons in 1994. Thus, palm oil has become an important source of cooking oil and fatty acid since the late 1970s. Since 1984 the market share of manufactured cooking oil made from palm oil has exceeded the share of coconut oil and made it the largest among the edible oils consumed. Along with this change, the share of palm oil exported declined significantly.

Exports of palm oil fluctuated during this period due to government policies on palm oil exports. Before 1978, the government did not impose trade restrictions (tariff and non-tariff barriers) on palm oil exports so palm oil exports were very high, e.g, ranging from 73 to 94 percent of production. The situation changed in 1978 after the government imposed trade restrictions on palm oil in the form of an export tax and domestic allocation prices for palm oil to guarantee the availability of cooking oil at affordable prices. Therefore, one can see that palm oil exports dropped significantly in 1979 (from 84% of production in 1978 to 55% in 1979).

Throughout the 1970s, Indonesia's exports of palm oil were about 17 percent of total world exports. In the following years (in the period of 1980s), Indonesian exports of palm oil as a percentage of total world exports dropped to less than 10 percent. In particular, the shares declined very significantly from 18% in 1976 to only 1.6 percent in 1984. Indonesia's export share started to recover in the early 1990s when the share increased from a low of 1.6 percent in 1984 to 13 percent in 1991. Indonesia's shares of total world palm oil exports continued to increase in the following years until 1997 when Indonesian export shares reached the highest percentage of 23 percent. Figure 3 shows the shares of Indonesian exports of palm oil in the world from 1975-1997.

Figure 3. Indonesian Net Export Share of Palm Oil, 1975-1997



The market structure of the Indonesian palm oil industry has changed in the last twenty years. The concentration ratio of the four largest firms decreased significantly over time. A decline in the four-firm concentration ratio has been accompanied by an increase in the number of firms in the industry. The number of companies increased significantly from only 24 firms in 1975 to 194 firms in 1997. In terms of value added per worker, plant, and output, there is also substantial change in the structure of the Indonesian palm oil industry. Value added per worker increased dramatically from US $2,518 in 1975 to US $4,872 in 1985. In 1997, the value added per worker became US $11,431, a three-fold increase from 1985. Meanwhile, value added per plant also showed a significant increase from US $201,932 in 1975 to US $2,678,659 in 1997.

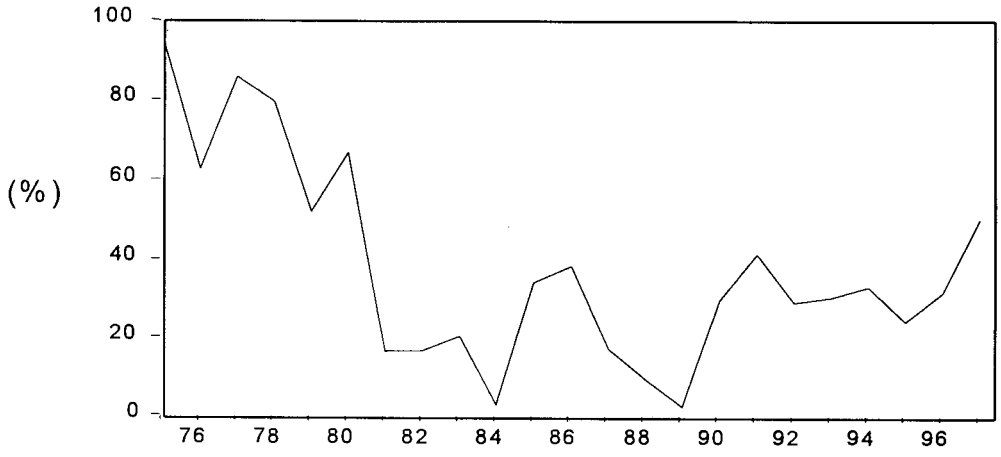
Table 1. Comparisons of Palm Oil Production Costs in 1997 (in US$ per ton)

	Columbia	Cote d'Ivoire	Indonesia	Malaysia	Nigeria	World Average
Establishment	71.2	69.5	64.3	60.7	224.5	72.1
Cultivation	91.2	136.1	72.5	75.7	113.7	79.3
Harvesting/ transport	78.9	33.8	40.5	45.1	90.7	47.3
Milling costs	106.1	105.3	82.6	98.3	130.7	96.6
Kernel milling costs	6.9	7.7	7.2	7.6	8.2	7.5
Kernel oil and meal credits	(58.2)	(54.0)	(60.0)	(61.9)	(65.6)	(61.5)
Total	296.1	298.4	206.2	225.5	502.2	241.6

Source: PT Purimas Sasmita in Casson (1999)

Indonesia continues to be one of the most efficient producers of palm oil in the world. It is estimated that production costs average at around US $200/ton significantly lower than those of other producing countries as shown in Table 1. Meanwhile, current palm oil prices are well above US $400/ton and projected to remain high for the foreseeable future (Larson, 1996). In addition, palm oil also continues to be one of the most profitable tree crops for Indonesia. The Financial Internal Rate of Return (FIRR) for palm oil is the second highest (22%) after cashew (26%) followed by rubber (17%) and coconut (15%) (Winrock International, 1996). West (1987) defines competitiveness as the ability to produce and sell profitably in foreign or domestic markets. Thus, trade performance measured by net export orientation ratio--defined as the difference between export orientation ratio and import orientation ratio--can be used to assess the competitiveness. Figure 4 presents a positive net export orientation ratio throughout the period of 1975-1997, which shows that the industry is competitive.

Figure 4. Net Export Orientation Ratio, 1975-1997



EMPIRICAL MODEL, RESULTS AND DISCUSSION

Empirical Model

Based on the conceptual framework developed earlier, this section develops model specification and analysis of the factors determining competitiveness of the Indonesian palm oil industry. As mentioned earlier, the competitiveness in the global market is represented by net export shares and value added generated from the palm oil industry. The explanatory variables for this analysis can be categorized into two groups: (1) behavioral variables and (2) policy-related variables. The behavioral variables include real exchange rates, relative of world to domestic prices, labor productivity, and industry concentration. Meanwhile, the policy-related variables consist of export tax and the domestic allocation prices.

The model is specified as follows:

$$NXS_t = \beta_0 + \beta_1 RER_t + \beta_2 PR_t + \beta_3 LP_t + \beta_4 CR4_t + \beta_5 ETX_t + \beta_6 DPL_t + \mu_t$$

$$VA_t = \alpha_0 + \alpha_1 RER_t + \alpha_2 PR_t + \alpha_3 LP_t + \alpha_4 CR4_t + \alpha_5 ETX_t + \alpha_6 DPL_t + \varepsilon_t$$

where,

NXS_t = Indonesian net export share of world export in period t.

VA_t = value added of the industry in period t.

RER_t = real exchange rates in period t.

PR_t = relative of world to domestic prices in period t.

LP_t = labor productivity in period t.

$CR4_t$ = four-firm concentration ratio in period t.

ETX_t = export tax in period t.

DPL_t = domestic allocation prices in period t

μ_t and ε_t = error term.

The hypothesized signs of the variables are as follows.

Net Export Shares (NXS) and Value Added (VA): Indonesian net export shares of world palm oil exports (NXS) and value added generated from the Indonesian palm oil industry (VA) are used as the primary dependent variables. Net Export Shares is calculated as Indonesian net exports divided by the world's export while Value Added is expressed as the difference between industry's revenue and the cost of its purchased materials and services. It is hypothesized that net export shares (NXS) and value added (VA), as measures of competitiveness in global markets, are significantly related to specified independent variables as follows.

Real Exchange Rates (RER): The variable is a composite index of the Indonesian currency (Rupiah) expressed in terms of the currencies of the major palm oil importing countries. A depreciation of the rupiah encourages exports, hence, real exchange rates are anticipated to have a positive coefficient.

World Prices Relative to Domestic Prices (PR): The variable is constructed by dividing world price of palm oil (CIF Rotterdam) by Indonesian domestic prices. If the world price increased relative to the domestic price, exports will increase and net export share will be larger. Therefore, this variable is expected to have a positive sign.

Labor Productivity (LP): This variable is expected to have a positive sign. It represents productivity of the industry over time. This variable is constructed by dividing value of output by the number of employees in the industry.

Four-Firm Concentration Ratio (CR4): This variable measures domestic seller concentration and is expected to have a positive effect on export shares. This variable is constructed as the share of total production accounted for by the four largest firms.

Export Tax (ETX): It is expected that an export tax will increase the supply of palm oil in the domestic market relative to the export market. Hence, the export tax discourages exports and is expected to have a negative impact on exports and result in lower net export shares. Data on export tax are from 1984-86 and 1994-1997.

Domestic Allocation Prices (DPL): Before an export tax was established, the government imposed domestic allocation prices for palm oil together with a quantitative allocation scheme. This variable is also expected to have a negative effect on export and lower net export shares. Data on this variable are from 1978-1994.

Data Sources and Empirical Results

This study uses data from various sources and covers the periods of 1975-1997. Data of value added, labor productivity, capital-labor ratio, and industry concentration were obtained from *Large and Medium Manufacturing Industry* published by the Indonesian Central Bureau of Statistics from 1975 to 1997. In addition, export and import data were obtained from *Exports and Imports* published by the Indonesian Central Bureau of Statistics. Meanwhile, the real exchange rate is calculated based on data from the International Monetary Fund (IMF). Data on domestic allocation prices, world prices, and world export come from *Oil World Statistical Update* published by Oil World and *Palm Oil Data* published by the Indonesian State Marketing Board.

The OLS estimation is presented in Table 2. No heteroscedasticity and autocorrelation was detected in this model. From the ordinary least squares estimates it is found that for the net export share and value added equations, all the signs for coefficients are consistent with the expected hypothesis except for the world prices relative to domestic prices (PR). The variables that are not significant in both equations is the export tax and for the world prices relative to domestic prices (PR).

On policy variables, domestic allocation prices--as expected--had a negative and significant effect on both the net export shares and value added generated from the palm oil industry. This policy was accomplished by determining domestic quotas and export allotments of palm oil for each producer of palm oil, and domestic prices. From the exporters' point of view, this policy in effect isolated the Indonesian palm oil industry from the world markets and limited the access of Indonesian palm oil exports in the world markets.

An export tax has expected negative sign, although it is not significant in both equations. The export tax was effective in 1984-1986 and 1994-1997. Thus, the time frame for the tax may not be long enough to have any effect on net export share and value added of the industry. A closer look at the relationship between export tax and net export share reveal that in the years when the export tax was not instituted, the Indonesian net export share were considerably large. This is particularly true in the early years of this study (1975-1978). When export tax was imposed together with domestic allocation prices during the period 1984-1986, the net export share dropped to the lowest level of average of 6.3% in 1984. Furthermore, during the period of 1994-1997, when

only the export tax was imposed, the net export share started to recover although its percentage was still lower as compared with the early years of the study.

Table 2. The OLS estimation for the Net Export Share and Value Added Equations

Independent Variables	Dependent Variables			
	Net Export Share		Value Added	
	Coefficient	t-statistics	Coefficient	t-statistics
Intercept	0.35	0.06	5.89	0.89
ETX	-0.007	-0.39	-0.03	-1.37
DPL	-0.01**	-2.23	-0.02***	-2.70
LP	0.258**	2.28	0.72***	5.48
RER	0.11**	2.09	0.19***	3.05
PR	-4.71	-1.36	-6.23	-1.54
CR4	0.14***	2.36	-0.25***	-3.58
R^2 Square	0.7491		0.9582	

Note:
*** = significant at 0.01 level
** = significant at 0.5 level
* = significant at 0.1 level

Export tax has a negative effect, although it is not significant, on the value added of the industry. As in the case of quantity export restrictions and domestic allocation prices, export tax on palm oil is also intended to limit exports. As export tax increases, exports will decline since it reroutes palm oil from the export market to the domestic market at prices lower than would otherwise be obtained. As consequences, value added of the industry also decreases. However, this variable is not significant due possibly to the time frame for the tax may not be long enough to have any effect on value added of the industry.

Comparing the effectiveness of these two policy variables in influencing competitiveness of the industry, it is clear that domestic allocation price policy is are more detrimental to exports. This is true for the net export shares as well as value added equation. When domestic allocation prices along and quantitative export restrictions were in place, Indonesian palm oil market was isolated from the world market creating inefficiency in the palm oil industry and distorting resource allocation in the economy. It is also believed that the export tax is a better policy than domestic allocation prices along with quantitative restrictions on three aspects. First, it is more transparent; second, it reduces government

trade bureaucracies and possible rent seeking activities; and third, it creates government revenues. Thus, the effect of the export tax was less harmful than domestic allocation prices along with quantity export restrictions to industry competitiveness.

Turning to the behavioral variables, world prices relative to domestic prices also have a negative although it has not significant effect on competitiveness of the Indonesian palm oil industry. As mentioned earlier, this variable is expected to have a positive sign. However, domestic prices were fixed in some periods of the study, so the negative sign of relative prices coefficient likely reflects the fact that domestic allocation prices have been an effective policy tool in restricting Indonesian palm oil exports. Thus, exporters cannot respond appropriately to variations in world prices.

Industry concentration (CR4) is the most significant explanatory variable in the net export shares equation. The four-firm concentration ratio has a positive and significant coefficient in the net export share equation. The result is different for the value added equation. In the value added equation the coefficient for the four-firm concentration ratio was negative and significantly different from zero. Thus, an increase in industry concentration has a negative effect on the competitiveness of the industry as measured by value added generated from the palm oil industry.

The results seem inconsistent assuming that both net export share and value added generated from the palm oil industry are the true indicators of the competitiveness of the industry. Other studies, however, have conflicting results on the role of market power in explaining export performance. Pagoulatos and Sorensen (1976) found that export propensity is positively related to domestic market power. Meanwhile, Henderson and Handy (1990) found that exports are negatively related to home market concentration. In addition, Lyons (1981; 1989) argued that the effect of domestic market power is difficult to identify, except in the case of pure monopoly, and that the result is very sensitive to the specification of the trade equation. Thus, viewed from this perspective, the differences in the sign of the net export shares and value added of the industry equations are not surprising.

The real exchange rate has the expected sign and its coefficient is significant at the 5 percent and 10 percent level in net export shares and value added of palm oil industry equations, respectively. Another study has shown the positive effect of real exchange rates in explaining export performance of the Indonesian palm oil industry (Winrock International, 1996). Fluctuations in exchange rates influence the competitiveness of the industry through a change in the relative price of domestic and foreign-produced goods. Overvalued exchange rates impede exports, and as a consequence, cause a loss of competitiveness for the industry.

Labor productivity has the expected sign and its coefficient is significant in both equations. Competitiveness of the industry depends, among other things, on improvements in underlying factor productivity. This is because productivity induces the industry to improve the level of technical efficiency and also the level of scale efficiency at the same average costs. Thus, it is expected that labor productivity will have positive effect on competitiveness of the industry.

CONCLUSION

This paper analyses factors that determine competitiveness of the Indonesian palm oil industry. The conceptual framework used in this study combines neo-classical trade and strategic management approaches for analyzing competitiveness at the industry level.

This study shows that competitiveness of the Indonesian palm oil industry can be explained by labor productivity, real exchange rates, and the four-firm concentration ratio. It is shown that government interventions--in the form of domestic allocation prices--have significant and negative effects on competitiveness of the palm oil industry. The results also show that domestic allocation prices have more detrimental effects on exports than the imposition of an export tax.

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