FIRM SIZE, OWNERSHIP AND PERFORMANCE IN THE MALAYSIAN PALM OIL INDUSTRY

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ABSTRACT

The objective of this study is to analyse the effects of market structure components and other performance measures to better understand the dynamics and determinants of performance within the Malaysian palm oil sector. In particular, we consider the effects of firm size and firm ownership on the level of profitability in this sector. Our findings suggest that size is negatively related to performance while privately owned plantation companies are more profitably managed. These results support the recent move by the Malaysian government to postpone the listing of the Federal Land Development Authority (FELDA), a government agency responsible for managing government land schemes and commercial development of plantations. It also lends support to the ongoing strategy of improving the performance of Government Linked Corporations (GLC) in Malaysia.

Keywords: Malaysia, palm oil, privatisation, performance

INTRODUCTION

Malaysia is the world's largest producer and exporter of palm oil, contributing almost 50% of world palm oil production in 2002 and about 58% of world exports. Malaysia has undoubtedly helped shape the status of palm oil in the global market through significant contributions and commitment to the industry. At the same time, the growing global demand for edible oils and fats has further fuelled the Malaysian palm oil industry, which has enjoyed growth over the last

few decades, and is undeniably an important component of the Malaysian economy.

Of the 3.67 million hectares of oil palm planted in Malaysia in 2002, 60% were under private ownership, most of which are run by firms in the private sector. The largest among these companies, which are listed on the Bursa Malaysia or BM (the Malaysian Stock Exchange), are Kumpulan Guthrie Berhad, Golden Hope Plantations Berhad, Kuala Lumpur Kepong Berhad and IOI Corporation Berhad. However, most plantation companies in the industry are not entirely privately run. Permodalan Nasional Berhad (PNB), the Malaysian Government's investment arm, owns sizeable chunks of equity in Golden Hope, Kumpulan Guthrie and Sime Darby Berhad, making PNB a major shareholder in a number of big plantation players. In the public sector, the key player is the Federal Land Development Authority (FELDA), a government agency responsible for managing government land schemes and commercial development of plantations. In 2002, FELDA alone accounted for 17.7% of the total oil palm planted area in Malaysia.

The palm oil industry has been earmarked by the Malaysian Government as a critical player in its aspiration of becoming an industrialised nation (Vision 2020). Under the Third National Agricultural Policy (1992–2010), various policies have been formulated to ensure that Malaysia's position in the world's oils and fats market is not only sustained, but also enhanced and its competitive edge maintained. To pursue this goal the palm oil sector has been identified as a focus area for consolidation and restructuring. The Government's aims are: (a) to create the world's largest oil palm plantation company thereby leveraging economies of scale and hopefully become an efficient model for others to follow, (b) to enhance investors' interest and increase tradability of the stock, and (c) to spearhead efforts in creating large capitalisation stock.

Recent events indicate that activities towards these aim may well be under way. Plans to merge PNB-owned plantation companies and the listing of FELDA on the BM were mooted in the Budget 2004 speech (*The Star,* September 13, 2003). These directives were aimed at shaking-up its holdings in the palm oil sector in its quest to stir interest, preferably foreign, and create large capitalisation plantation stock to leverage economies of scale. This activity is of interest to investors and analysts as they are undecided over whether this will lead to an overall long-run profitability benefit for this sector. Some industry observers are sceptical, however, because the PNB-owned companies and FELDA are not generally regarded as well-managed, with costs higher than average and outputs below average (*The Star,* September 30, 2003). Perhaps, it was for this reason that the new Malaysian Prime Minister postponed the listing of FELDA (*The Business Times,* November 6, 2003) and concentrated on the

efficiency building aspects of government linked companies (*The New Straits Times,* May 11, 2004).

To what extent does the consolidation of government owned companies or the listing of government agencies contribute to financial performance? The objective of this study is to analyse the effects of market structure components and other performance measures to better understand the dynamics and determinants of performance within the palm oil sector. In particular, we consider the effects of firm size and firm ownership on the level of profitability in the Malaysian palm oil sector.

THE MALAYSIAN PALM OIL INDUSTRY: SOME STYLISED FACTS

In the global market for fats and oils, palm oil is the second most important commodity after soy oil. The growing demand for edible oils in the global market has resulted in a significant increase in oil crop cultivation for production of fats and oils, in particular oil palm and soybean. In 2002, the world's production of palm oil was 24.18 million tonnes, comprising about 20% of the total production of oils and fats. Palm oil has achieved impressive growth in production and exports in the last few decades. Production has doubled from 1990 to 2002 (Table 1). From an export perspective, palm oil is the most widely traded oil, accounting for 46% of the world's exports of 17 oils and fats (Ming, 2002).

TABLE 1
WORLD PRODUCTION OF PALM OIL ('000 TONNES)

Country	1990	1995	1998	1999	2000	2001	2002
Malaysia	6,095	7,221	8,319	10,554	10,842	11,804	11,909
Indonesia	2,413	4,008	5,100	6,250	7,050	7,950	8,850
Nigeria	580	640	690	720	740	770	775
Colombia	226	353	424	501	524	548	520
Cote D'ivoire	270	300	275	282	266	247	270
Thailand	232	316	405	570	570	750	650
Papua New Guinea	145	225	210	264	336	330	304
Others	906	2,147	1,486	1,489	1,592	1,625	1,689
Total	**10,867**	**15,210**	**16,919**	**20,630**	**21,920**	**24,024**	**24,967**

Source: Oil Word Annual (1999–2002), Oil World Weekly (13 December, 2002) from www.oilworld.biz and Malaysia data from Malaysian Palm Oil Board (MPOB) (www.mpob.gov.my).

Malaysia is the largest producer of palm oil, contributing about 11.91 million tonnes or 47.7% of total production in 2002, with Indonesia being a close competitor. In addition, Malaysia is also the world's largest exporter of palm oil, accounting for about 57.4% of total exports in 2002 (Table 2).

TABLE 2
WORLD MAJOR EXPORTERS OF PALM OIL ('000 TONNES)

Country	1990	1995	1998	1999	2000	2001	2002
Malaysia	5,727	6,513	7,465	8,911	9,081	10,625	10,886
Indonesia	1,163	1,856	2,002	3,319	4,140	4,940	6,040
Papua New Guinea	143	220	213	254	336	326	330
Cote D'ivoire	156	120	102	101	72	74	78
Singapore	679	399	241	292	240	224	245
Hong Kong	51	275	103	94	158	192	198
Others	276	791	702	801	903	1,110	1,106
Total	**8,195**	**10,195**	**10,898**	**13,862**	**15,027**	**17,581**	**18,966**

Source: Oil Word Annual (1999–2002), Oil World Weekly (13 December, 2002) from www.oilworld.biz and Malaysia data from MPOB (www.mpob.gov.my).

Malaysia exports more than 90% of its palm oil products, representing 4.0% of total export earnings in 2000. In 2001 oil palm crop accounted for 58% of the total cultivated land in Malaysia (Basiron, 2002). It is also an important socio-economic crop for Malaysia, with the industry providing about half of the overall agricultural employment (1.4 million) in the country.

This study is directed towards the analysis of listed palm oil companies. As such, our focus is principally on the upstream producers with interests in plantation activities involving the cultivation of oil palm, production of FFB and processing them into CPO and palm kernel oil. In this area, there are two categories of industry players, namely the privately-owned plantation companies, and the government scheme producers which include FELDA, Federal Land Consolidation and Rehabilitation Authority (FELCRA), Rubber Smallholders' Development Authority (RISDA), the Sabah Land Development Board (SLDB) and smallholders.

Of the 3.67 million hectares of oil palm planted in Malaysia in 2002 (Table 3), 60% were under private ownership, most of which were managed by plantation companies. The private sector has been the main driver for growth in the development and production of palm oil in the last two decades. From 1980 to 2002, the planted area under privately-owned plantations firms had increased by more than 3.9 times, from 557,659 hectares to 2,187,750 hectares, most of these developments being in the states of Sabah and Sarawak.

The sizes of palm oil companies vary considerably, depending on the size of their plantation estates which range from a few hundred hectares to more than 100,000 hectares. Most of these companies are listed on the Main Board of the BM; Kuala Lumpur Kepong Berhad and Highlands & Lowlands Berhad are also listed on the London Stock Exchange while United Plantations Berhad is listed on the Copenhagen Stock Exchange. Based on planted areas, the largest

plantation companies are Kumpulan Guthrie Berhad, Golden Hope Plantations Berhad, Kuala Lumpur Kepong Berhad, and IOI Corporation Berhad.

TABLE 3
DISTRIBUTION OF OIL PALM PLANTED AREA (HECTARES)

Category	1980		1990		2001		2002	
	Hectares	%	Hectares	%	Hectares	%	Hectares	%
Private Estates	557,659	53.05	912, 131	44.94	2,079,341	59.43	2,187,750	59.61
Govt. Schemes:								
FELDA	316,550	30.11	608,100	29.96	612,742	17.51	648,931	17.68
FELCRA	18,851	1.79	118,512	5.84	165,528	4.73	151,330	4.12
RISDA	20,472	1.95	32,582	1.61	48,605	1.39	52,351	1.43
State Schemes	67,281	6.40	174,456	8.60	249,454	7.13	270,786	7.38
Smallholders	70,446	6.70	183,683	9.05	343,342	9.81	359,095	9.78
TOTAL	**1,051,259**	**100.00**	**2,029,464**	**100.00**	**3,499,012**	**100.00**	**3,670,243**	**100.00**

Source: MPOB (cited on www.mpob.gov.my)

Ownership of plantation companies in Malaysia can be broadly grouped as follows:

- Companies with substantial or controlling interests by PNB and its unit trust funds. Kumpulan Guthrie and Sime Darby are examples in this category.

- Non-PNB controlled companies, owned by Malaysian companies or individuals. These include Kuala Lumpur Kepong Berhad, IOI Corporation Berhad, Asiatic Development Berhad and PPB Oil Palms Berhad.

- Companies with substantial or controlling interests by foreign shareholders. Notable examples being United Plantations Berhad with about 43% of its equity held by Danish shareholders and Pamol Plantations Sdn Bhd, which is Unilever's plantation interest in Malaysia.

Government schemes within the palm oil sector account for approximately 30% of total distributed oil palm planted area. Among the public sector agencies, FELDA has played the most significant role in the development of oil palm in Malaysia. In fact, it is the single largest palm oil player in the industry in Malaysia, accounting for 17.7% of the total planted area (Table 3) and about 20% of the palm oil produced in Malaysia in 2002. The contribution to the production of palm oil by other government land schemes such as the FELCRA Berhad, RISDA, SLDB and Sarawak Land Rehabilitation and Consolidation Authority (SALCRA) is less significant. Among these few, FELCRA accounted for 4.6% of the total planted oil palm area in Malaysia.

SIZE, OWNERSHIP AND PROFITABILITY

The study of how and why firms attain profitability levels has been the main pre-occupation of industrial organisation economists for the last three decades. In determining factors influencing performance diversity, literature dealing with such work suggests that industrial performance and performance differences among firms can be explained as arising from various characteristics: those which are firm-specific and those which are industry specific (Capon, Farley & Hoenig, 1990).

Industrial organisation economists point to industry effects (i.e. concentration levels, industry growth) using the structure-conduct-performance model (SCP) as the main factor determining firm profitability (Scherer, 1980; Porter, 1981). On the other hand, the resource-based view (Wernerfelt, 1984; Barney, 1991; Peteraf, 1993) suggests that the explanation for the existence of more or less profitable firms within the same industry must be found in the internal factors of each company (for example, market share, firm size, skill level, etc.). These firm-effect factors favour the achievement and maintenance of competitive advantages of each firm, which eventually lead to different profitability levels among firms belonging to the same industry (Amato & Wilder, 1990).

In this paper, we emphasize the firm effects on performance as our focus is on a single industry. In particular, we highlight the role of size and ownership as determinants of firm performance.

Firm Size and Profitability

Economic theory prescribes that increasing firm size allows for incremental advantages because the size of the firm enables it to raise the barriers of entry to potential entrants as well as gain leverage on the economies of scale to attain higher profitability. For example, in the case of palm oil plantations, a new entrant has little choice but to incur substantial fixed costs in gaining entry to the industry, in the form of acquiring and working the plantation estates, acquiring and maintaining equipment, machineries and acquiring or constructing palm oil refineries in addition to advertising extensively to let customers know that it is in the market. The higher the barrier to entry, the lower will be the threat of potential competition, and the higher the profits that existing firms can earn without inducing entry (Chrystal & Lipsey, 1997).

Empirical evidence, however, has not been able to clearly verify the "size does matter" hypothesis. Much of the early works that tried to prove that size does matter was based on markets in the U.S. and the U.K. in the early 1960s and

1970s. Among the pioneering studies conducted in this field is attributed to Hall and Weiss (1967). Their empirical analysis of Fortune 500 Industrial Corporations for the years 1956–1962 aimed at testing the relationship between profit rates and other appropriate variables such as firm size, concentration, leverage and growth. Results of the study showed that firm size (proxied by the log of firm assets) exhibit a positive relationship with profitability [represented by Return on Equity (ROE) and Return on Assets (ROA)]. They concluded that large firms have all the options of small firms, and, in addition, the capability of harnessing economies of scales and access to capital markets from which small firms are excluded, thus leading to higher profit rates. The Hall and Weiss study, however, considered only firms of optimal size. A comparable study was made by Marcus (1969) who re-evaluated earlier findings against new data within an improved analytical framework. Marcus' study included the entire distribution of firms. Results showed that firm size influences profitability in some, but not all industries. Since profitability is ultimately determined by several complex factors including product prices, factor costs, and the production function, the relationship to size varies among industries and cannot be readily identified. Thus, the hypothesis that size does matter cannot be offered without providing relevant qualifications.

These qualifications are explained in Reinhard's (1983) oligopoly model which suggests that size is positively related to a firm's ability to produce technologically complicated products which in turn leads to concentration. Such markets are supplied by few competitors and are therefore, more profitable. Thus, larger firms have access to the most profitable market segments. The empirical relationship between a firm's size, structure, and profitability has found that size is positively correlated with profitability, with the profit rate of the market positively correlated with the concentration ratio and negatively correlated with the marginal concentration ratio (Collins & Preston, 1969). Prescott and Vischer (1980) show that the positive association between firm size and profitability stems from implementing greater differentiation and specialization strategies, and should therefore lead to higher efficiency. Further studies also suggest that larger firms are able to leverage on economies of scale (Montgomery, 1979; Sidhu & Bhatia, 1993).

However, many of the recent studies that consider the size-profitability relationship tend to show non significant results. In fact, in a meta-analysis conducted by Capon et al. (1990), firm size was considered not significant and further confirmed in an ANCOVA analysis. Poensgen and Marx (1985), for example, test the relationship between firm size and profitability for a sample of 1,478 German manufacturing firms in 31 industries. Results reveal weak size-profitability correlations that are unstable over the study period. These results suggest that firm size is not the major determinant of profitability and that

profitability would depend largely on how well firms cope with size and exploit the opportunities associated with it.

Whittington (1980) even found a negative association between firm size and profitability for U.K. based listed manufacturing companies covering the time period from 1960 to 1974. While no suitable reasoning can be used to explain such a link, organisational theory may perhaps solve part of this quandary. Downs (1967) suggests that larger firms can lead to increased coordination requirements, which in turn, makes the managerial task more difficult leading to organisational inefficiencies and lower profit rates. Further, it has been suggested that increased size tends to be associated with higher bureaucratisation (Ahuja & Majumdar, 1998). Larger firms may have overly bureaucratic management structures, thereby inhibiting swift and efficient decision-making process. It is also possible that with the additional management layers needed to organise an increasingly large and diverse workforce, management may be affected by the agency problems.

Another plausible argument to justify the possibility of a negative firm size-profitability relationship can be found in the concept of X-inefficiency. X-inefficiency, or organisational slack, is a measure of the degree to which costs are higher than they need be. Whilst diseconomies of scale refers more to the inadequacy in matching resource requirements to produce more, X-inefficiency reasons that general managerial or technological inefficiency in larger firms cause higher production costs which end up in reductions in the bottom line i.e. profit rates decline.

Based on previous literature, it is difficult to make a clear, let alone a final prediction of the overall effects of the firm size- profitability relationship. From the studies carried out, the association appears to differ depending on the industry under analysis. Given this ambiguity, it seems prudent to empirically resolve, independently, the association between firm size and profitability on a case-by-case basis and avoid the tendency to generalise.

Ownership and Profitability

In this paper, firm ownership is discussed in the context of it being owned either by the state or privately owned. In this regard, studies that looked at privatization of state owned agencies form the bulk of the literature. The issue of privatization came under the spotlight in the 1980s when the Thatcher government implemented privatisation strategies in earnest in the U.K. Over the last 15 years, governments around the world have implemented various privatisation strategies as part of their economic development endeavours. In Malaysia, for example, the government announced its commitment to the process in 1983. The objective was

to relieve the financial and administrative burdens of the Government and reduce the size and presence of the public sector in the economy. This policy has also tried to promote competition, efficiency, productivity, and facilitate economic growth through private entrepreneurship and investments (Economic Planning Unit, 1991).

In a cross country case study, Galal et al. (1994) evaluated the welfare gains experienced by 12 companies from 4 countries. Their findings suggest that 9 of the 12 cases saw increment in productivity while 11 cases saw an increment in net welfare gains. Ramamurti's (1997) case on the railway industry and D'Souza's (1998) case on the telecommunication sector also found increased productivity and efficiency levels coupled with decreasing employee numbers. Studies that were cross-industry but country specific in nature, (for example, Sun & Tong (2002) on Malaysia; LaPorte & Lopez-de-Silanes (1998) on Mexico and Smith et al. (1996) on Slovenia), all conclude that privately owned firms improved their performance when there were management changes. They also find that the improvements in the profitability of businesses were largely explained by improvements in productivity rather than through higher prices or reduction in the labour force.

In particular, Sun and Tong's (2002) comprehensive study on the privatisation of 24 state-owned firms in Malaysia during the period 1983–1997 concludes that the Malaysian privatisation program has been successful, albeit not as successful as that achieved in other countries. Privatised firms have observed a three-fold increase in absolute levels in total profit, doubled real sales, increased dividend payouts and significantly reduced leverage. In addition, these results were robust across various specifications.

Sun and Tong's findings are similar to the results obtained by other multi-country studies like D'Souza and Megginson (1999) and Boubakri and Cosset (1998). Boubakri and Cosset's (1998) study of 79 newly privatised firms in 21 developing countries that experienced full or partial privatisation between 1980 and 1992 found significant increases in profitability, operating efficiency, capital investment spending, employment and dividends.

Evidence from China, however, does not seem to corroborate the findings in other developing countries. Sun, Tong and Tong (2002) found that state ownership and firm performance was positively related, irrespective of the type of state ownership, i.e. whether proxied by state share ownership or legal person share ownership. However, the relationship between ownership and performance was non linear. In other words, firm performance increases at the initial stage of privatisation, but beyond a certain level, divesting ownership to the private sector results in poorer firm performance. Thus, they suggest that a

certain optimal level of state ownership may actually be conducive to firm performance. Still, there is an overwhelming evidence to suggest that private ownership improves the financial and operating performance of firms.

DATA AND METHODOLOGY

Data

Our sample consists of 30 plantation based public companies listed on the BM for which firm level panel data for three financial year periods (2000–2001 through 2002–2003) were available. In determining the sample population, an exhaustive list of companies listed on BM's plantation sector indices were compiled from the BM directory (see www.klse.com.my). This list was subsequently modified by excluding firms which were:

  i.   In operation but for which the financial data was not available for any of the 3-year period under study.

  ii. Not in operation for the period under study.

  iii. Too diversified that data could not be assigned effectively to its plantation segment. To qualify, palm oil related sales had to be at least 50% of total sales within the group.

It must be noted that most palm oil sector firms are based solely in palm oil related activities, but about a third of our sample population were well diversified into other industries such as property development, manufacturing, etc. Consequently, palm oil related data (apart from total palm oil related sales, total palm oil related assets employed and profit before tax) available in the "segmental information" portion of the annual reports were therefore limited. In order to capture an adequate sample size, firm level data that were not available for palm oil related activities were obtained at the group-wide level. Two exceptions were made. Kuala Lumpur Kepong Bhd and Kumpulan Guthrie Bhd, have been included into the sample population although they contribute less than 50% palm oil related sales to total sales. Their inclusion was justified on the basis of their importance to the Malaysian palm oil sector since they are two of the five largest palm oil players and the fact that relevant data pertaining to firm size and ownership is accurate.

Descriptive statistics for the sample population are given in Table 4. It should be noted that firms in our sample consists of firms which were classified into two categories of firms: privately-owned firms and state owned firms. In this

study, state owned firms are defined as firms that: (a) have 20% or more shareholding controlled by federal or state governments and their agencies, or (b) where government and their agencies are substantial shareholders (top five shareholders) in the firm even at less than 20% of total issued share capital. Of the sample population, 19 were considered privately-owned firms. Eleven were considered public-owned, of which 7 were among the 10 largest firms by oil palm planted hectarage or by palm oil related assets.

TABLE 4
DESCRIPTIVE STATISTICS FOR THE SAMPLE FIRMS

Number of firms	30
Number of state-owned firms	11
Number of privately-owned firms	19
Number of observations	90

	Return on assets (ROA)	Palm oil related assets employed	Palm oil related sales	Age	Shareholders funds
Mean	4.65	760.31	114.88	40.53	632.48
Std. Dev.	4.46	1216.95	145.65	23.12	889.31
Range	23.65	6033.58	628.33	86	3805.82
Maximum	17.74	6038.50	630.38	91	3363.51
75% quartile	6.92	715.68	134.42	43	756.77
50% quartile	5.05	337.87	57.04	36	328.63
25% quartile	2.34	149.65	32.32	26	151.61
Minimum	−5.91	4.92	2.06	5	−442.31

Note: All figures are three year averages (2000–2002); financial figures are presented in RM millions.

Variable Selection

This paper aims to examine how market structure influences firm financial performance in the Malaysian palm oil sector with particular emphasis paid to firm size and ownership. The analysis of data employs the use of a normal linear regression model that consists of both market structure and profit components. In essence, the model encompasses elements of market structure studied by Hall and Weiss (1967) with enhanced performance measures used by Sarkaria and Shergill (2000) as determinants of performance.

Dependent Variable

In ascertaining determinants of financial performance, profitability has been employed as the measure of performance. As such, we have taken the ROA as the proxy measure to represent profitability. Similar to previous studies (Hall & Weiss, 1967; Shepherd, 1972; Bothwell et al., 1984; Amato & Wilder, 1990),

ROA is defined as the average rate of return before tax on year end plantation assets and is computed as follows:

$$ROA = \frac{\text{Earnings Before Tax}}{\text{Total Plantation Assets Employed}} \times 100$$

Determinants of Performance (Independent Variables)

In order to breakdown and understand the variation in performance, several independent variables have been employed in the regression model as determinants of financial performance. While firm size and ownership are the focus of the study, other control variables like capital intensity, price, leverage, skill level, age and firm growth have been included in our model as well.

Firm Size

As discussed earlier, the relationship between firm size and profitability remains unclear. On the one hand, it is generally argued that big firms possess economies of scale (Montgomery, 1979; Sidhu & Bhatia, 1993) and better access to capital markets (Hall & Weiss, 1967) to achieve lower costs and higher returns. However, the opposing view (linked in part to diseconomies of scale) from strategic perspectives suggests that bigger firms are mired with increased coordination requirements and bureaucratisation, thus making the managerial task more difficult (Downs, 1967). The size-profitability relationship is perhaps best explained as a curvi-linear relationship where beyond a certain point, scale economies cease to exist and the relationship then may reverse owing to the problems associated with size as highlighted by Downs. Ahuja and Majumdar (1998) conclude that the arguments remain unclear and must be empirically resolved on a case-by-case basis.

In line with various researchers (Shepherd, 1972; Dalton & Penn, 1976; Amato & Wilder, 1990), the relationship between firm size and financial performance (profitability) is studied, given the expected curvi-linear relationship, using logarithm of total palm oil related assets as the measure for firm size.

Firm Ownership

The Agency view prescribes that incentive and contracting problems create inefficiencies due to public ownership. This is because managers of state-owned enterprises may pursue objectives that differ from those of private firms and face less monitoring. As a result, this has given rise to the claim that private

ownership has advantages over public ownership in terms of being inherently more efficient and profitable. There is an abundance of literature to support this claim (LaPorta & López-De-Silanes, 1998; Megginson, Nash & Van Randenborgh, 1994; Boubakri & Cosset, 1998; Sun & Tong, 2002).

Further, in relation to the performance of partially privatised firms, Sheshinski and López-Calva (1998) and Boubakri and Cosset (1998) both deduce that partially privatised firms have a lower effect on profitability when compared with full privatisation. Sun et al.'s (2002) study on China differs though.

As defined earlier, the palm oil firms in Malaysia are either fully or partially privatised, or privately-owned firms. To distinguish between the three, we employ a dummy variable (0 for partially privatised and state owned firms and 1 for privately owned firms). Based on previous body of evidence, we hypothesise that privately-owned firms perform better that partially privatized or state-owned firms.

Capital Intensity

Sarkaria and Shergill (2000) suggest that firms seeking to improve financial performance must shift from labour intensive to capital intensive methodologies. This would lead to process modernization, improved product quality, wastage reduction and better cost of production. Based on this argument, it is hypothesised that capital intensity associates positively with performance.

It should be noted however that large investments made in fixed assets or for building plants may bind a firm to a certain business even if the business is declining. Moreover, whether capital intensity increases profitability would also depend on the cost of input (Sidhu & Bhatia, 1993).

Capital intensity is measured in this study as the ratio of fixed assets to total palm oil related sales. However, fixed asset data is not available at a segmental level for firms which have more than one line of business. Given this, a more crude approach is taken with data on total fixed assets gathered at a group level from their respective annual reports.

Price

Price is employed into the model to evaluate the effect of industry pricing of palm oil related commodities to performance. Since palm oil prices are externally determined by world markets, the strength of world prices would affect performance of firms. Naturally, one would expect higher pricing to be associated with higher profitability.

The measure used is a dummy variable which is coded depending on whether annual average CPO prices are greater than RM1,000/tonne (coded 1) or lower than RM1,000/tonne (coded 0).

Leverage

Leverage has been employed widely as a measure of risk in previous studies of financial performance reflecting a trade-off between shareholders' returns and risk (Hall & Weiss, 1967; Scott & Pascoe, 1986; Pant, 1991). The usual supposition is that a leveraged firm with relatively more borrowed capital represents a greater financial risk to equity holders than a firm with relatively low debt (Bothwell, Cooley & Hall, 1984). Depending on the cost of debt, the effect of leverage may be favourable or unfavourable. When the cost of debt is lower than the company's rate of return, shareholders' earnings will be magnified. However, when the rate of return on the company's assets is lower than the cost of debt capital, then the leverage effect will be unfavourable. In line with Sarkaria and Shergill (2000), leverage in this analysis is assumed to arise as firms venture to borrow capital when they expect to earn more than the cost of debt capital, and hence, a positive relationship between leverage and performance is expected.

In order to measure the effect of leverage on performance, the leverage variable has been defined as:

$$\text{Leverage} = \frac{\text{Total Long Term Debt}}{\text{Shareholders Funds}} \times 100$$

Data to calculate the leverage variable is obtained from annual reports. However, it should be noted that long term debt and shareholders funds data is not available at a segmental level (for those firms that are diversified). Group level data has therefore been used to provide a crude approximation of the relationship.

Skill

Skill is employed into the model to measure the impact of human capital on performance. Studies carried out by Siddharthan and Dasgupta (1983) and Kumar (1985) have suggested a positive relationship between the skill of employees and financial performance. Based on this argument, it is expected that the expenditure on employees will lead to an increase in their satisfaction as well as efficiency. Therefore, a positive relationship can be hypothesized between the expenditure on employees and financial performance of the firm.

In line with Kumar (1985), the skill variable has been computed by dividing the staff costs of employees and workers by total palm oil related sales. It should be noted that in the absence of segmental information, only group level data was available for staff costs. Although it would be preferable to have palm oil segment-specific staff related costs, the absence of such information allows the incorporation of group level staff costs as part of a crude proxy for skill.

Age

Like the firm size-profitability relationship, the association between firm age and financial performance has been widely studied. On the one hand, Sidhu and Bhatia (1993) argue that younger firms will be outperformed by older ones. Older firms have the early mover advantage and may possess specific competencies and skills which younger firms may not have developed as yet. In doing so, they are able to grow faster to achieve higher profitability. However, Hannan and Freeman (1989) suggest that older firms are more resistant to changes in a competitive environment and newer technologies which may, as a result of the need to operate in an age-old standardised manner, leave older firms progressively outdated and lead to organization failure. Thus, we would have to rely on our empirical results to provide the type of relationship that exist between firm age and financial performance.

The measurement for age is given by the age of the firm since its incorporation. Incorporation date information was obtained from BM's directory profiles and the firm age was computed accordingly.

Growth Rate

Growth rate is employed in this model as a measure of change in demand. One would therefore expect that high growth should be associated with higher profitability. However, it has been argued that extreme profitability in one period may contribute to reductions in profitability in the following period. Growth may also be achieved via pricing strategies which sacrifice current profitability (Gaskins, 1970).

The proxy measure for growth rate is the annual percentage change in palm oil related sales revenue over the period 2000–2002. Prior studies have used this measure, or one based on the growth of physical output (Hall & Weiss, 1967; Shepherd, 1972). Sales data were obtained from the segmental information section of the annual reports from the respective plantation companies.

RESULTS OF ANALYSIS AND DISCUSSION

The data samples used in this study are yearly fiscal observations of 30 plantation-based public companies listed on BM over the period 2001–2003. ROA, as the proxy for profitability, is the dependent variable of the equation to be fitted. Eight variables, as discussed above are considered to be the prospective determinants of profitability for these plantation-based public companies. The descriptive statistics of variables used in the regression model are reported in Table 5.

TABLE 5
DESCRIPTIVE STATISTICS

Type	Variable	Mean	Std. Dev.	Minimum	Maximum	N
Dependent variables	ROA	4.646	6.198	−11.976	37.788	90
	AGE	39.192	232.975	0.744	92.000	90
	CAP INTENSITY	5.023	4.014	0.939	25.975	90
Independent variables	GROWTH	8.274	70.930	−0.809	670.548	90
	LEVERAGE	0.137	1.028	−3. 731	8.533	90
	SIZE	8.460	0.868	6.520	12.872	90
	SKILL	0.155	0.087	0.027	0.390	90
Independent dummy variables	OWNERSHIP	0.667	0.474	0.000	1.000	90
	PRICE	0.333	0.474	0.000	1.000	90

With the current cross section time series data, a panel data model may be fitted. The first step for fitting a panel data model normally involves determining the most appropriate estimation method by running the Breusch and Pagan's Lagrange multiplier (LM) and the Hausman (H) test. A large value of the LM statistics argues in favor of the panel data estimations against the classical OLS regression with no group specific effects. A large value of the Hausman statistics argues in favor of the fixed effects estimation over the random effects estimation (Greene, 1995).[1] In our computation, an insignificant LM (LM = 1.3300; p-value > 0.1) suggests that one could compute our model using the OLS without having to consider the significance of the H statistics. Hence, a linear multiple regression model in the following form was fitted to guide the rest of the analysis:

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[1] Greene, W. H., 1995, *LIMDEP version 7.0 user's manual* (Bellport, NY: Econometric Software, Inc.).

$$\text{ROA} = f(\text{Age, Capital Intensity, Growth, Leverage, Size, Skill,}$$
$$\text{Ownership, Price, } \varepsilon) \qquad \qquad \text{(Eq. 1)}$$

A general to specific approach was adopted with independent variables being excluded one at a time through an iterative process using the backward elimination procedure, starting from the full model (Eq. 1) where all variables were entered. Explanatory variables contributing the least to the explanatory power of the equation were systematically removed considering the effect of each variable on all other variables. The stepping removal criteria used is 0.10 (a commonly used default criterion). The final equation represents the parsimonious (or "best") regression model (see Kessler & Chakrabarti, 1999).[2] The procedure took five iterations and resulted in a four independent variable solution. The estimations and the corresponding diagnostic statistics are reported in Table 6.

TABLE 6
REGRESSION RESULT

	Beta coefficient	Standard error	Standardised beta	*t*-test statistics	*p*-value
(Constant)	12.816	6.782	n.a.	1.890	0.062
PRICE	2.813	1.237	0.215	2.274	0.025
CAPINTEN	–0.322	0.153	–0.208	–2.0990	0.039
SIZE	–1.246	0.730	–0.175	–1.707	0.092
OWNERSHIP	4.578	1.271	0.350	3.603	0.001

$R^2 = 0.251$; *F*-test = 7.118 (*p*-value: 0.000)

DW = 2.048; Lagrange Multiplier = 0.0802 (*p*-value = 0.7770)

The Durbin-Watson (DW) statistics is greater than the upper bound critical value of 1.611 and an insignificant Lagrangean Multiplier statistics indicate that there is no serial correlation. Based on these, the model specification was considered acceptable. Furthermore, the R^2 of 0.251 is considerably high. The LM of 1.3300 obtained previously belonged to the initial model (Eq. 1). To ensure the poolability of data in the final solution based on four significant independent variables, the LM test was computed again. The new test statistics of 1.28 (*p*-value = 0.2579) supports our OLS estimation.

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[2] Eric H. Kessler and Alok K. Chakrabarti, Speeding up the pace of new product development, *Journal of Product Innovation Management,* Volume 16, Issue 3, May 1999, Pages 231–247. (http://www.sciencedirect.com/science/article/B6VD5-3XBTWWC3/2/ 1bf376b0e316ecae4fb1d74a1303bf04)

[3] One of the main motivations behind pooling a time series of cross sections is to widen the database in order to get better and more reliable estimates of the parameters of our model. (Baltagi, 2001, p. 55)

The model shows that four out of the eight independent variables included in the initial analysis have been selected by the backward elimination procedure. The four independent variables entered into the final solution are all significant at least at the 10% significance level. The magnitudes of the standardised coefficients reveal the relative importance of the independent variables for explaining profitability (ROA).

Our results suggest that *Ownership* is the most important determinant of profitability. The corresponding positive coefficient suggests that privately owned plantation companies have a higher level of profits than government owned ones. In this regard, our results are consistent with previous studies that suggest that privately owned firms perform better than state owned enterprises. Size comes in as the third most important variable in influencing profitability. However, our analysis shows that it is negatively related to profitability. In other words, a firm with a relatively lower asset base tends to perform better than its larger counterpart. Following Shepherd (1972), the concept of X-inefficiencies perhaps provides a plausible explanation for these two relationships. Indeed, these findings are supported by Downs' (1967) assessment of state-owned firms which suggests that larger firms can lead to increased coordination requirements, which in turn, makes the managerial task more difficult and if not managed properly can lead to organisational inefficiencies and lower profit rates.

To understand if X-inefficiencies are a legitimate explanation, we observe that 7 of the 10 largest firms in terms of assets in our sample population are state-owned firms (which in itself would suggest high levels of bureaucracy). Ahuja and Majumdar (1998) associate increased size with higher levels of bureaucratisation, which would seem to corroborate our observation. Equally, a larger firm may have a complex organisational structure making organisational change difficult to implement (Pant, 1991). Industry analysts regard Malaysian state-owned palm oil related firms to be mismanaged – costs are higher than average, while the output is below average (Gabriel & Oh, 2003). These issues would suggest that X-inefficiencies come into play in the larger Malaysian palm oil firms as more time and resources are spent in overcoming bureaucratisation issues.

In this regard, even partial privatisation does not seem to provide any relief. Shleifer and Vishny (1996) have argued against partial privatisation stating that it allows politicians to have an influence on the performance of the firm and give covered subsidies to achieve political goals. It has been said that partial privatisation could solve the monitoring problem by making public, information that was previously not available. This view is shared by Galal et al. (1994) who reported that partial privatisations in Malaysia have yielded positive results largely because it allowed managers to be more responsive to market pressures,

and because private shareholders forced the government to shift towards more economically rational decisions. That policy, as Shleifer and Vishny (1996) asserted, however, would not be enough to solve the problem of political intervention through "side-payments". Boardman and Vining (1989) provide evidence to further support similar findings from a review of the 500 largest non-U.S. industrial firms in 1983, to suggest that state-owned and mixed ownership enterprises are significantly less profitable and productive than are privately-owned firms. They conclude that mixed enterprises are no more profitable than purely state-owned firms, and suggest that full private control, not just partial ownership, is important for achieving performance improvements. Thus, being accountable to a demanding band of shareholders among privately owned firms seems to be a more effective motivation than being accountable to the government.

Among the control variables that were significant in our study are the dummy variable *Price* (coded 0 to represent low price and 1 for high price), and capital intensity. As expected, price carries a positive sign. Capital intensity, however, shows a negatively relationship with profitability. It is known that the palm oil industry is relatively labour intensive. With increasing cost of labour, these plantation companies have been involved in importing cheaper foreign labour and promoting the mechanisation of labour intensive processes. Our findings suggest that mechanisation (represented by an increase in fixed assets) may not necessarily contribute to financial performance. The utilisation of cheaper foreign labour might be a better short term approach towards improving profitability. However, it must be noted that mechanisation may be pursued as a long term strategy towards improving financial performance. Since our data involve only a three year period, it may mask the benefits of capital intensification. One should also note that the capital intensity data for several of our sample firms were based on aggregate group data rather than their palm oil operations only. As such, this result should be interpreted with caution.

CONCLUSION

This study has found empirical evidence that firm size and the firm ownership are important determinants of financial performance in the Malaysian palm oil sector. Contrary to the conventional economic theory which advocates that larger firms leverage economies of scale to realise higher returns, the findings of this study suggest that larger plantation firms suffer from inherent organisational problems which result in X-inefficiencies, raising the cost of production above the optimum levels and lowering possible profitability to the firm. Given the higher levels of bureaucracy associated with larger firms, which not surprisingly

are comprised predominantly of state-owned firms, the negative relationship for firms in the Malaysian palm oil sector is not out of the ordinary.

Organisational inefficiencies seem to be a root cause of the positive firm ownership-profitability relationship found in the regression analysis. Privately-owned firms were adjudged to outperform state-owned firms, which in the case of our analysis represented the partially privatised firms on the BM, but still controlled significantly by government shareholdings. Our findings lend support to industry analysts who have highlighted that profitability is higher in privately-owned firms. Based on theory, it is suggested that state-owned firms are distracted by political pursuits rather than focusing on business directives on maximising returns to the firm. While partially privatised firms are noted to solve part of the monitoring problems, it cannot fully negate the effects of political interference from the government.

Based on our findings, the implications for the Malaysian palm oil are far-reaching and mainly directed at the actions mooted recently by the Malaysian Government. In its efforts to create the world's largest oil palm plantation company to attract investor interest in local bourse, the Government's strategic thrust has resulted in the formulation of two initiatives: (a) the listing of its FELDA Holdings Sdn Bhd, and (b) the rationalisation of its listed government-linked companies in PNB. These initiatives draw certain contradictions with the findings of this study.

Firstly, as it stands firm size has a negative correlation with profitability. Larger firms would therefore be harder to manage and result in loss of organisational effectiveness stemming from overcoming problems in bureaucratic management structures (thereby inhibiting swift and efficient decision-making process), general managerial and technical inefficiencies. These organisational problems lead invariably to higher production costs which depress overall profitability. Given either of the Malaysian Government's plans comes to fruition, the resulting colossus will struggle to meet market expectations in making the required returns.

Second, our findings show that privately-owned firms perform better than state owned-firms for reasons based around the inefficiencies that are created from the incentive and contracting problems due to public ownership. So skewed is this analysis in favour of privately-owned firms, that there is sufficient empirical evidence to suggest that even partially-privatised firms are judged to perform less profitably than privately-owned firms (Boardman & Vining, 1989; Schleifer & Vishny, 1994). Given this outcome, the proposed listing of FELDA and rationalisation of PNB government-linked companies will still not be able to outperform other privately-owned plantation companies on the BM.

In line with the findings of this study, it would be recommended that the Malaysian Government ideally dispense with the notion of creating large capitalisation stock. Granted this may serve the purpose of attracting investors in the short-run, but over the long term, the lower performance capabilities of the larger unmanageable entity would face insurmountable challenges.

Our study would also recommend that the Government ideally consider the complete privatisation of its plantation holding. However, this is a rather far-fetched notion. The Malaysian Government sees this sector as a major contributor toward the government coffers, which in turn, enables them to pursue more socio-economic pursuits. Further, the issue of land is very sensitive, one in which the Government cannot afford to lose too much of. For example, it would be unprocurable for a foreign investor to have control over vast amounts of land in Malaysia. It is therefore unreasonable to suggest that the Malaysian Government will allow full privatisation of this sector.

Given the politico-socio environment in Malaysia, partial privatisation would have to be the norm. At least, this forces managers to be more accountable and force them to respond to market pressures. It also appears that larger firms will have to tackle the inherent inefficiencies that plague them and perhaps tackle the agency view issues head-on and address the firm-size profitability and firm ownership-profitability trends found in this study. In this regard, the ongoing strategy of improving the performance of Government Linked Corporations (GLC) by introducing several market based key performance indicators (KPI) and sourcing for qualified and successful managers (Malaysians or otherwise) to head these companies is supported by our findings.

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