AN EMPIRICAL ANALYSIS OF ASYMMETRIC DUOPOLY IN THE
INDONESIAN CRUDE PALM OIL INDUSTRY

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A thesis submitted in fulfilment of the requirements for the degree of Doctor of Philosophy

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March 2008
Declaration

I hereby certify that the text of this study contains no material which has been accepted as part of the requirements for any degree or diploma in any university, nor does it contain any material previously published unless due reference to this material is made.

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March 2008
Abstract

The apparent increase in market concentration and vertical integration in the Indonesian crude palm oil (CPO) industry has led to concerns about the presence of market power. For the Indonesian CPO industry, such concerns attract more attention because of the importance of this sector to the Indonesian economy. CPO is used as the main raw material for cooking oil (which is an essential commodity in Indonesia) and it contributes significantly to export earnings and employment. However, dominant producers argue that the increase in economies of scale and scope lead to an increase in the efficiency, which eventually will be beneficial for the end consumers and export earnings. This research seeks to examine whether the dominant producers do behave competitively and pass the efficiency gains to the end consumers, or they enhance inefficiency through market power instead.

In order to identify the most suitable model to measure market power in the Indonesian CPO industry, different market power models are explored. These models can be divided into static and dynamic models. In general, all of them accept the price–cost margins as a measure of market power. However, static models fail to reveal the dynamic behaviour that determines market power; hence the dynamic models are likely to be more appropriate to modelling market power. Among these dynamic models, the adjustment model with a linear quadratic specification is considered to be a more appropriate model to measure market power in the Indonesian CPO industry.

In the Indonesian CPO industry, producers can be divided into three groups, namely the public estates, private companies and smallholders. However, based on their ability to influence market price, smallholders are not considered as one of the dominant groups. By using the adjustment cost model, the market power of the dominant groups is estimated. The model is estimated using a Bayesian technique annual data spanning 1968–2003. The public estates and private companies are assumed to engage in a non-cooperative game. They are assumed to use Markovian strategies, which permit firms to respond to changes in the state vector. In this case, the vector comprises the firms and
their rivals’ previous action, implying that firms respond to changes in their rivals’ previous action.

The key contribution of this thesis is the relaxation of the symmetry assumption in the estimation process. Although the existence of an asymmetric condition often complicates the estimation process, the different characteristics of the public estates and private companies lead to a need for relaxing such an assumption. In addition, the adjustment system—which can be seen as a type of reaction function—is not restricted to have downward slopes. Negative reaction functions are commonly assumed for a quantity setting game. However, the reverse may occur in particular circumstances. Without such restrictions, the analysis could reveal the type of interaction between the public estates and private companies. In addition, it provides insights into empirical examples of conditions that might lead to the positive reaction function. Furthermore, the analysis adds to the understanding of the impact of positive reaction functions to avoid the complicated estimation of the asymmetric case.

As expected, the public estates act as the leader, while the private companies are the follower. Interestingly, results indicate that as well as the private companies, public estates do exert some degree of market power. Moreover, the public estates enjoy even higher market power than the private companies, as indicated by market power indices of -0.46 and -0.72, respectively. The exertion of market power by both the public estates and the private companies cast some doubts about the effectiveness of some current policies in the Indonesian CPO industry. With market power, the underlying assumption of a perfectly competitive market condition—that serves as the basis for the government interventions—is no longer applicable. Hence, many government interventions are unlikely to have the desired effect.

The Indonesian competition law that has been imposed since 1999 might be effective in preventing firms to sign collusive contracts. In fact, even without such an agreement, firms in the CPO industry are likely to exert some degree of market power. As an alternative, eliminating the ‘sources’ of market power might be a better solution. If the
public estates have the aim of maximising welfare, privatisation might improve their efficiency, hence they have ability to suppress the private companies’ market power. However, if in fact, the public estates deliberately reduce output to gain higher profit, privatisation might increase the degree of market power of both groups of companies even further. In such a condition, addressing the long term barriers of entry stemming from the requirement of high investment might be a better alternative to address the market power problem in the CPO industry.
Acknowledgement

First, I wish to thank my supervisor Associate Professor Fredoun Ahmadi-Esfahani, who first introduced me to the market power issue, encouraged me to think more analytically and continuously guided me throughout my candidature. I would also like to thank Dr Nicolas de Roos, who was always critical and helped me to improve my understanding of the concepts and models being analysed in the thesis.

I am indebted to the Australian taxpayers who have financially supported me through the Australian Agency for International Development (AUSAID) scholarship. I would also like to acknowledge the financial support from the Faculty’s Postgraduate Research Support Scheme for financially supporting my trips to conferences.

Special thanks go to Associate Professor Ross Drynan, who has willingly provided his time to help me with many queries on dynamic and computer programming. I am also grateful to Professors Jeff Perloff and Larry Karp for responding to my inquiries about problems in estimation, and providing me with their forthcoming book about market power. I am sincerely grateful to Ms. Lorraine Ryan, for her tireless encouragement in improving my English writing. Without her support, I would have never accomplished the entire thesis. I also wish to thank Mrs Carolyn Tanner and Rudy Ginting, for kindly proofreading and editing my final draft, bringing much clarity in the thesis. I express my deep gratitude to Fortunée Cantrell and Pamela Stern for always being helpful during the entire period of my candidature.

My special thanks to my office-mate Emily Gray, not only for being a great colleague and friend, but also her professional contribution to my thesis. Special thanks must also go to my other colleagues Al Hajj, for helping me with computer programming, and to Chi Truong and Dr Jean–Mark Kutschukian for the valuable discussions about the dynamic model and estimation problems. I would also like to thank all my colleagues in the Wallace Basement. Their hard work was so inspiring and their warm friendship was so comforting.
I would like to express my love to my late father, Ahmad Chalil Harahap, who was always very encouraging and had great faith in me. My greatest appreciation goes to my dearest mother, Hayati Chalil for her unconditional love and continued prayer. I would also like to express my thanks to my brother, Syahrizal Chalil, my sister, Aldina Chalil, my sister-in-law, brother-in-law and my nephews for their love. Finally, I would like to humbly dedicate this achievement to my dearest husband Rosadi Young Adam and my dearest son Ahmad Rasyid Maulana, who always stayed by my side along this long and challenging road. Their love and understanding provided the motivation and strength that I needed to continue and complete the work. Above all, I praise Allah the most merciful, for providing me with this invaluable experience.
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