

**UNIVERSITI TEKNOLOGI MARA**

**PRICE DISCOVERY ANALYSIS IN  
CRUDE PALM OIL FUTURES  
MARKET IN MALAYSIA**

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Dissertation submitted in partial fulfilment  
of the requirements for the degree of  
**Doctorate in Business Administration**

**Arshad Ayub Graduate Business School**

**January 2018**

## ABSTRACT

The escalation in vegetable oils prices is a major concern to most of the developing countries as they are a major source of fat in the developing world. Like any other agricultural commodities, Malaysian palm oil is subjected to significant price fluctuations. Due to its position as the main world producer of palm oil and the essential needs for futures market for this commodity, Bursa Malaysia's Crude Palm Oil Futures contract or, better known as FCPO was introduced in October 1980. It is often believed that futures markets potentially provide an important function of price discovery whereby the futures prices movements should contain useful information about the movement of subsequent spot prices. However, there are some evidences of doubts and skepticism on the role of commodity futures in providing its crucial role of price discovery to its stakeholders (Iyer and Pillai, 2010; Soni, 2014). Hence, the investigation of efficiency of FCPO for price discovery tool is important for a better understanding of the futures market role to manage risk associated with high price fluctuation in CPO prices. For that reason, the present work aims to analyse the characteristics of relationship between spot and futures prices of crude palm oil in Malaysian market to examine the efficiency of FCPO contracts to perform price discovery function through co-integration test, causality relationship analysis and price forecasting. The data of the study comprises of daily settlement prices of CPO spot and nearby FCPO prices collected from the Malaysian Palm Oil Board (MPOB) and the Bursa Malaysia Derivative Berhad (BMD), respectively. The long run market efficiency is tested using Engle-Granger and Johansen co-integration procedure while the causality relationship investigated using vector error correction (VEC) and vector auto-regression (VAR) model. For price forecasting, the study compares the performance of auto-regressive integrated moving average (ARIMA) and artificial neural networks (ANN) model to forecast the selected CPO futures contracts prices. Findings from the current study argue that only the one month futures contract is efficient for hedging purposes but the contract should be exercised ten days before the maturity date of the contracts for better hedging benefits. Meanwhile, the causality relationship analysis has revealed that CPO futures contract is not efficient for price discovery purposes since the long run relationship between the two markets are strong from spot to futures market. The results of the study also suggested that technical traders and overall market participants in BMD should use the ANN model to forecast the upcoming prices in FCPO contracts. Findings from the current work should make an important contribution to field of CPO industry as it offers important insights into the efficiency of CPO futures market for price discovery and hedging instrument.

## ACKNOWLEDGEMENT

First and foremost, all praised be the Almighty GOD is so kind for giving me the opportunity to pursue the DBA programme in Universiti Teknologi MARA (UiTM).

I wish to express my sincere appreciation and heartiest gratitude to my main supervisor Associated Prof. Dr. Imbarine Bujang (UiTM Kota Kinabalu), and my co-supervisor, Associated Prof. Dr. Zamali Tarmudi (UiTM Kota Kinabalu) and Associated Prof. Dr. Shafinar Binti Ismail (UiTM Melaka), for their thoughtful comments, valuable guidance and supervision in preparing my dissertation.

I wish to thank to my DBA course lecturers in the Faculty of Business Management, Universiti Teknologi MARA, for their valuable knowledge and assistance during my study. I also wish to express my indebtedness to Prof. Dr. Rosalan Ali, Faculty of Economics and Management, UiTM Shah Alam for his invaluable suggestions at various stages of my research. Special thanks to Dr. Alice Wong from Academy of Languages Studies, UiTM Sabah, who help me in editing the thesis. I also wish to express my gratitude to Dr. Aziz, Dr. Taufik, Dr. Dewi, Dr. Nabila, Mr. Jaratin (UMS) and all lecturers in Faculty of Economics and Management, UiTM Sabah, for thoughtful suggestions which benefited a lot in preparing my thesis.

I would like to express my deep sense of appreciation to my DBA classmates cum my best friends; Ramdan, Mohd. Reza, Abang Faisal, Rosle, Nelson, Junainah, Rozanah, Norain, Noraini, DK, Zarina and Dixcy for their cooperation, consistent support and encouragement.

I want to express deepest gratitude to my parents (Suadik and Normah), father-in-law (Melon), mother-in-law (Alisah), brothers (Diure) and sisters (Maine, Waine, Carine, Suzaine and Frylennie) for prayers and encouragement for my success. Last but not least, special thanks and indebtedness to my wife Mlorene, my son Heizer Mlorie and my daughter Hazelle Cassandra who sacrificed a lot in the course of my study which is never be paid.

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# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

The crude palm oil (CPO) industry has always been critical to Malaysian economic development and stability. In 2014, Malaysia account for 39% of the world palm oil production and 44% of export (MPOB, 2015). Being one of the biggest producers and exporters of palm oil show that Malaysia play a very important role to fulfill the growing global needs for crude palm oil. There are two markets that trade the crude palm oil. The first market is the spot, or cash market which is the organized commodity market that trade in agricultural commodities. In CPO context, the spot market trades the physical market of CPO. Sometimes the spot market is referred to as the “cash and carry market” (Basavaraj and Chowdri, 2013). The second market is the futures market in which underlying assets are rely on CPO commodity in spot market. Futures contract for CPO usually denoted as FCPO contract. Basically, futures trading have four important social benefits. These include competitive price discovery, hedging (or management) of industry price risks, facilitation of financing, and more efficient resource allocation. The present study focuses on the analysis of price discovery mechanism. The findings of the analysis is expected to help in the process of price stabilisation and further safeguard the interests of producers, refiners and others stakeholders in CPO market.

There are several definitions of price discovery from the previous research. Gardner, (1976) postulated that the futures price may serve as the market’s expectation of a subsequent delivery period spot price. Garbade and Silber, (1983) revealed that futures market is said to discover price when futures price leads the spot price. Meanwhile, Geweke, (1982) refers to price discovery as spot market between futures markets, which market moves first in the process of price adjustment. Schroeder and Goodwin, (1991) on the other hand, said that price discovery in futures markets refers to the use of futures prices in determining spot market prices. Price discovery is defined as the process that takes into account the speed at which price of an asset reacts to new information (Booth, Martikeinan, and Tse, 1997). According to Chen and Zheng (2008),