

A FRAMEWORK STUDY OF FACTORS EFFECTING CRUDE PALM OIL PRICE BEHAVIOR IN THAILAND

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Abstract

This article proposes a framework study to investigate the factors affecting CPO price in Thailand. A methodology of Malaysia Palm Oil Board (MPOB)'s study will be employed to empirical data in Thailand to understand factors that affect Thai CPO price. The factors in this study are classified into two groups: fundamental factors and speculation factions. First, fundamental factors will include 1) palm oil supply consisting of production, stock, and import, 2) palm oil demand (export of oil palm products), 3) price of substitute products (soybean oil (SBO) and rapeseed oil (RSO)), and 4) price of brent crude oil (BCO) due to the impact of biodiesel industry. Second, the speculation factors included in this study are 1) the extreme weather phenomenon (La Nina & El Nino), 2) the impact of natural disasters, and 3) new policies or regulations. Multiple regressions will be used in an analysis to study relationships between factors and CPO price. The empirical data cover five years period, between 2008 and 2012.

Keyword: Crude palm oil, CPO price, Pricing factors, Thailand

1. INTRODUCTION

Palm oil is the largest vegetable oil traded in the world market. In 2012, the trading volume is 38.68 million tons (Ab Rahman, 2012). It is popular because of the lower cost and the high oxidative stability of the refined product when used for frying. Applications of palm oil also can be found in nonfood industries; it is often blended with other fuels to create palm oil biodiesel blends. These applications drive the demand in the market. Ab Rahman (2012) reports that crude palm oil (CPO) was produced in Indonesia amounted 27.00 million tons and Malaysia 18.79 million tons in 2012. In the same year, Indonesia exported CPO 19.00 million tons and Malaysia 17.56; the total palm oil exported by the two countries is 36.56 million tons. Ranked the third of palm oil producer in the world, Thailand approximately produces 1.30 million tons of CPO every year. However, looking at the data between 2004 - 2009, we can see that the production of palm oil is increasing, with the rate of 6.15% per year (Office of Agricultural Extension and Development Region 5, Sonhkha). In 2010, 9% of CPO was exported. Then in 2012, the country was ranked among the top five annual growth rate productions in the world by United States Department of Agriculture (USDA).

As mention above palm oil is attractive because of the lower price. The price of CPO in 2008 – 2010 in Thailand is compared with Malaysia's and displayed in Figure 1. The guideline used for CPO price is that the price costs three baht more than the price of Malaysia CPO. From Figure 1, the prices from these two countries have the same trend and approximately close but in some years the prices are greatly different (e.g., 2010/10, 2011/01, 2011/02, and 2012/07), where should be investigated.

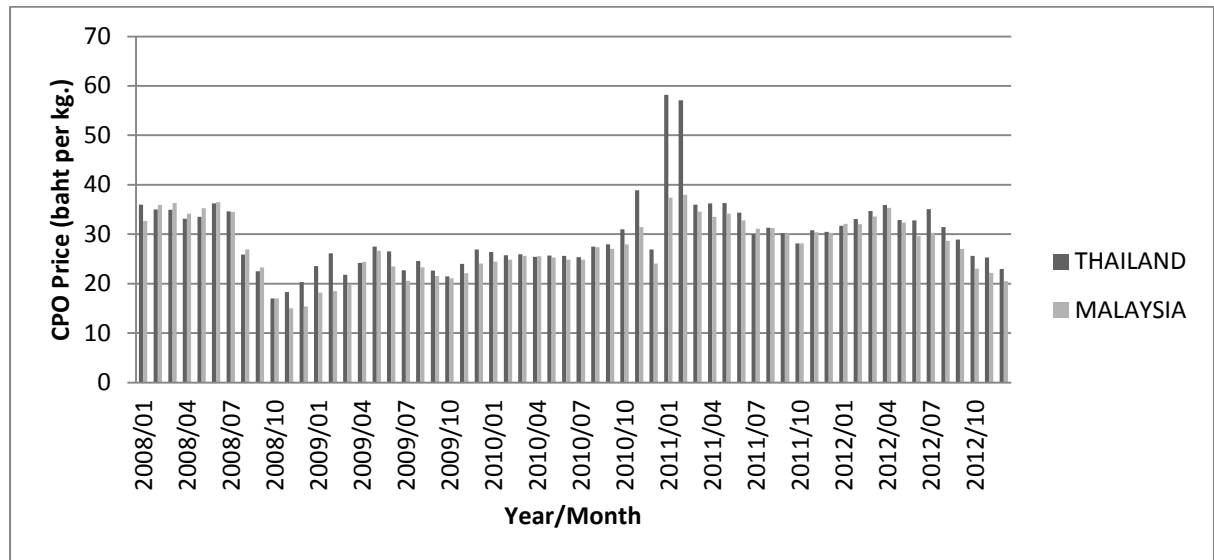


Figure 1: A comparison of CPO Price in Malaysia and Thailand.

CPO price is depending on a lot of factors that vary according to time. The affecting factors on CPO price can be classified into two groups: fundamental factors and sentimental factors (or speculation factors). Few articles studied these factors (Ab Rahman, 2012; Tanakorn, 2012; Tattaya, 2009). Ab Rahman (2012) of Malaysia Palm Oil Board (MPOB) studies fundamental factors directly driving CPO price movement in Malaysia. These fundamental factors are 1) palm oil supply consisting of production, stock, and import, 2) palm oil demand (export of oil palm products), 3) price of substitute products (soybean oil (SBO) and rapeseed oil (RSO)), and 4) price of Brent crude oil (BCO) due to the impact of biodiesel industry.

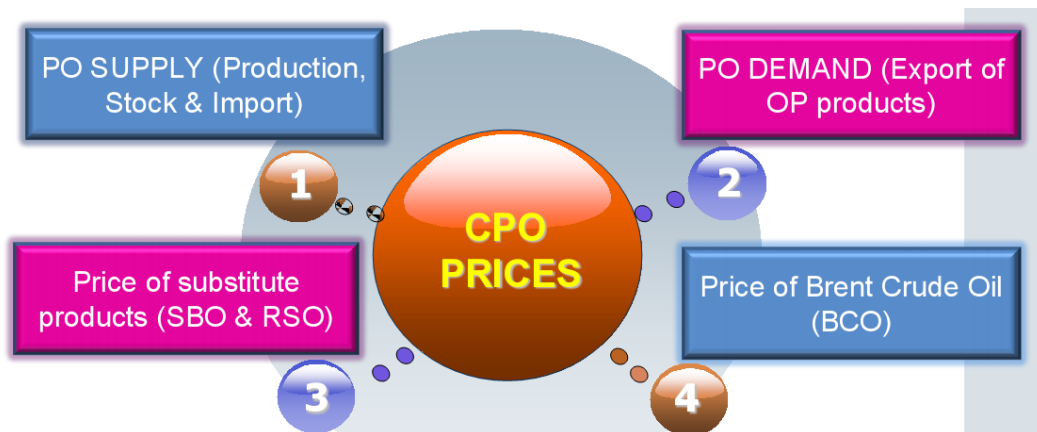


Figure 2: Fundamental factors directly drive CPO price movement (Ab Rahman, 2012).

Besides the four fundamental factors, CPO price is also depended on market sentiments or the speculation factors that is very difficult to predict by economists. However, the factors can sometimes give higher impact on CPO price behavior as compared to fundamental factors. Examples of the speculation factors are 1) the extreme weather phenomenon (La Nina & El Nino), 2) the impact of natural disasters, and 3) new policies or regulations of importing countries.

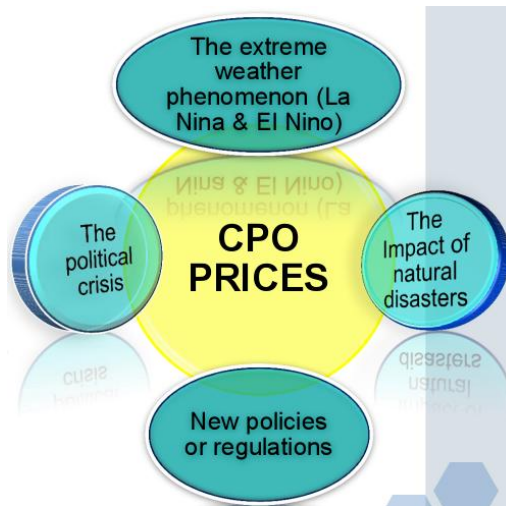


Figure 3: Speculation factors driven CPO price movement (Ab Rahman, 2012).

Suwannawat (2012) and Tattaya (2009) study factors affecting CPO prices in Thailand. The factors used in these studies are 1) price of palm oil, 2) price of Malaysia CPO, 3) price of diesel, 4) price of soy bean oil, 5) stock of palm oil, and 6) export value of palm oil. We see that even though there are studies about factors and CPO prices in Thailand, as of our knowledge, there is no research that compiles both of fundamental factors and speculation factors as seen in Ab Rahman (2012). Palm oil market in Thailand is uniquely different from one in Malaysia and other countries. For example, the factor of new policies and regulation in Ab Rahman (2012) pay attention on importing countries only. But in Thailand, there are more policies that could affect CPO price such as intervening policies from government, support alternative energy policies, international trade policies, and agriculture policies. Therefore, if we employ factors and methodology of Ab Rahman (2012), we need to adapt them to information in Thailand. Hence, the objectives of this research are following: 1) to highlight the impact of price behavior on Thai palm oil supply and demand and 2) to examine fundamental and market factors on CPO price behavior in between 2008 and 2012, or 60 months.

2. A FRAMEWORK STUDY

To identify factors affecting CPO price behavior, the empirical data from 2008 to 2012 is used.

2.1. Palm Oil Supply Factors

$$CPO\ Production + PO\ Closing\ Stock + PO\ Import = PO\ Supply$$

Palm oil (PO) supply is the summation of three components: CPO production, PO closing stock, and PO import. In Malaysia, the first two amounts are major supply components because the volume of PO import is not large enough as compared to the other two (Ab Rahman, 2012). And we need to study whether or not PO import is another major supply component in Thailand.

CPO Production

CPO production has a seasonal pattern every year; low season, moderate season, and peak season. In Malaysia, the low season is from November to February – this is monsoon raining season, the moderate season from March to August, and peak season is in either September or October. Monsoon season causes flooding in lower land, disrupts harvesting fresh fruit bunches (FFB), delays harvesting and collecting FFB. The delay causes FFB to become overripe or rotten, therefore, leads to the decline of CPO production. We need to identify seasonal pattern in Thailand.

CPO Production Model: To use multiple regressions

1. To identify significant factors affecting CPO production. Factors to be investigated are monsoon rains, El Nino event, amount of mature area, amount of rainfall etc.
2. To identify correlative relationship between CPO production and CPO price. Based on an economic theory, the relationship of the two is negative.

Palm Oil Closing Stock

Three components affecting the stock are CPO production, PO import, and PO export. CPO production has positive relationship with PO stock; i.e., if CPO production increases, PO stock increases. For PO import and PO export, we need to study trend of import and export, then statistically investigate the relationship of each factor with PO closing stock. Finally, when PO stock decreases, CPO price increases and vice versa.

PO Closing Stock Model: To use multiple regressions

1. To identify significant factors affecting PO closing stock. Factors to be investigated are CPO production, PO import, and PO export
2. To identify correlative relationship between PO closing stock and CPO price.

Palm Oil Import

We will study the relationship between PO import and CPO production. We hypothesize that the relationship should be negative. Then we will investigate the relationship between PO import and CPO price.

PO Import Model: To use multiple regressions

1. To identify correlative relationship between PO import and CPO production.
2. To identify correlative relationship between PO import and CPO price.

2.2. Palm Oil Demand Factors

Export-Orientated or Import-Oriented Market

CPO demand comes from both internal market and export market. The Department of International Trade Promotion reports that, in between 2008 – 2012, the major countries imported CPO from Thailand are Germany, Malaysia, Myanmar, Netherlands, China, etc. The CPO export between 2008 and 2012 is illustrated in Figure 4. Though we know that Thailand is ranked among the top five annual growth rate productions in the world, it is difficult to conclude from the figure that Thailand is more export-oriented or import-oriented. We will study the portion between export and import to determine market behavior. If Thai CPO price behavior is more export-oriented, the price will depend more on the demand of the world demand than the domestic factor. And regression will be used to find correlation of relationship between the factor and CPO price.

Palm Oil Demand Model – Market Behavior:

1. To identify market behavior, whether it is export or import market
2. To use multiple regression to identify correlation of relationship between the factor and CPO price

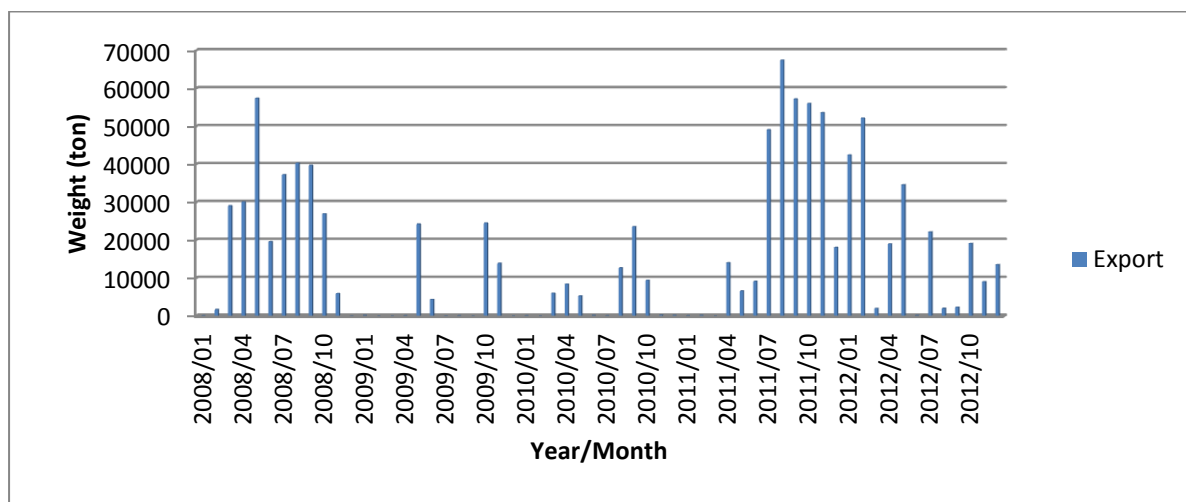


Figure 4: Export of crude palm oil of Thailand, 2008 – 2012.

2.3. Substitute Products Factor

CPO demand in the world market also depends on behavior of the substitute products, e.g., soy bean oil (SBO) and rapeseed oil (RSO). Ab Rahman (2012) shows that CPO price in the world market depends on SBO and RSO price behavior. The wider the gap between CPO and substitute products, the higher the PO demand that leads to increase CPO price. Total OP export product is depended on CPO price, soybean oil price, CPO production, PO stock, and the export product from previous period.

Palm Oil Demand Model – Substitute Products: To use multiple regressions

1. To identify significant factors influencing PO export product
2. To identify correlative relationship between PO export product and CPO price and PO stock
3. To identify correlative relationship between price of substitute products and CPO production

2.4. Brent Crude Oil (BCO)

If Thailand exports biodiesel product, we will identify a relationship between CPO price and BCO price. In Malaysia, this relationship is proved; there is a strong positive relationship between two prices since Malaysia has exported palm mythyl ester and implemented B5 program.

Palm Oil Demand Model – BCO: To use multiple regressions to identify correlative relationship between BCO and CPO price.

2.5. Factors Affecting CPO Price Behavior: Empirical Study

All the demand factors, supply factors, and models mentioned above will be studied using empirical data between 2008 and 2012.

3. CONCLUSION

We studied factors affecting CPO price in Malaysia. We will use the same methodology from Malaysia study to investigate fundamental factors and speculation factors contributing to CPO price in Thailand. We propose a framework of study in this paper.

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