

The Co-operative Benefits of Malaysia and Indonesia in Palm Oil

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ABSTRACT

The article has argued that the rising competition between Malaysia and Indonesia is affecting the palm oil industry in totality. The recent phenomenon of palm oil playing a role in Chinese shadow banking has also contributed to the depression in palm oil prices, particularly in 2013. With these in mind, and through the use of Prisoner's Dilemma game theory, the article argues for both Malaysia and Indonesia to institutionalise co-operation, rather than compete strongly, through the setting up of a palm oil producing and exporting countries organisation (POPEC). This is aimed at better management of the supply and inventory of palm oil in the global market in line with global demand conditions.

Keywords: palm oil, competition, Malaysia, Indonesia, game theory, comparative advantage, downstream, upstream, shadow banking.

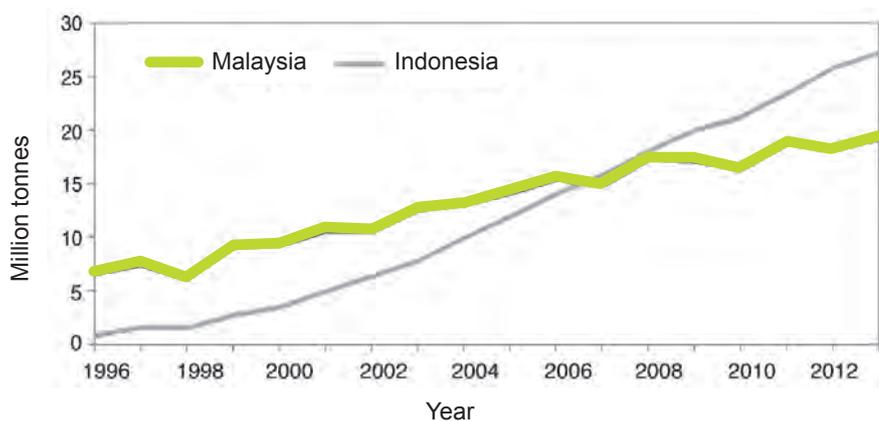
PART I: PALM OIL IN MALAYSIA AND INDONESIA: RISING COMPETITION CAUSING VOLATILITY IN THE SECTOR

Introduction

Lately, competition between Malaysia and Indonesia has intensified in the palm oil space, especially after Indonesia overtook Malaysia as the world's largest producer of palm oil in 2008 (Figure 1), and as the world's largest exporter of palm oil in 2010 (Figure 2). Indonesia has overtaken Malaysia as Malaysia's production

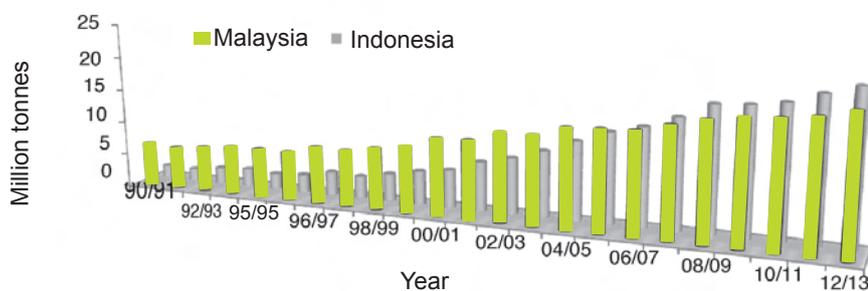
growth slowed in recent years due to diminishing suitable land for planting. Indonesia's elevation as the top producer was mainly caused by significantly large amount of new maturing plantings, as well as more land availability. In addition, Indonesia have also adopted higher yielding seeds for its planting at a quicker pace compared to Malaysia at the latter's own early stage of palm oil development in the 1970s and 1980s, contributing to its high output growth. This is in no small part due to Malaysia's leading role in investing and conducting significant and ground-breaking research and development in the palm oil

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Source: Oil World (January 2013).

Figure 1. Palm oil production from 1996 to 2013.



Source: Oil World (2013).

Figure 2. Palm oil exports from 1990 to 2013.

sector, led by the Palm Oil Research Institute of Malaysia (PORIM), which later merged with the Palm Oil Registration and Licensing Authority (PORLA) to become the Malaysian Palm Oil Board (MPOB).

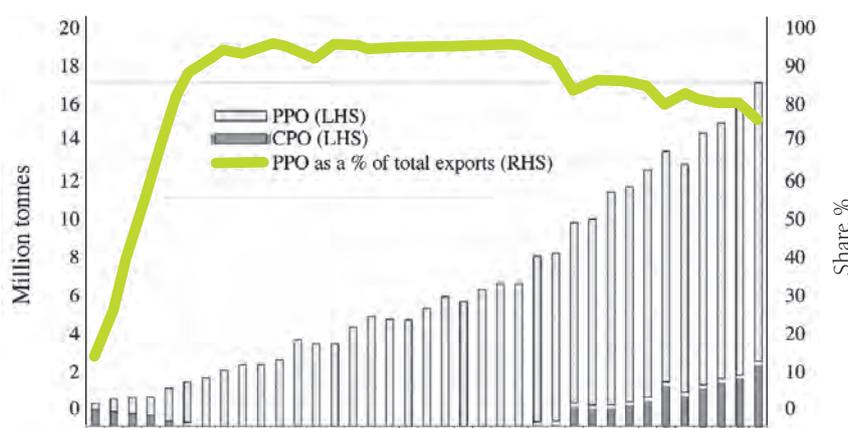
Malaysian Crude Palm Oil (CPO) Exports Rising, Affecting Supply to Downstream

For the last 12 years, most Malaysian downstream refiners have relied on crude palm oil (CPO) imports from Indonesia to sustain their operations amid a lack of CPO supplied by Malaysian plantations. Though Malaysia has an on-going high export duty structure on CPO exports and zero

duties on processed/refined palm oil so as to encourage downstream activities, this was circumvented by the Malaysian government's decision to allow palm oil firms to have a zero export duty quota on CPO exports since 2001. This quota, which essentially covered all of the CPO exports made during a given year, meant that CPO exports began to rise, thus depriving local downstream players from getting the CPO for their own use (Figure 3). By exporting CPO, plantation companies have an added advantage by realising revenue in terms of foreign exchange earnings, especially as the ringgit was fixed against the USD at a high rate of RM 3.80 until July 2005, and remains traded at around RM 3 - RM 3.30 to the USD since then.

Indonesia Changes the Status Quo

This arrangement began to be tested severely when Indonesia decided on 1 September 2011 to restructure its export duty on CPO and processed palm oil (PPO). This was done with the dual aim of developing Indonesia's own domestic downstream palm



Source: Department of Statistics, Malaysia.

Figure 3. Rising Malaysian exports of crude palm oil (CPO) in recent years due to the CPO tax-free quota.

Type of tax in Indonesia	Before 1 September 2011	After 1 September 2011
Export duty on CPO	22.5%	16.5%*
Export duty on PPO		
Palm olein (cooking oil)	17.5%	8%*
Biodiesel	7.5%	2%*
Oleochemicals	15%	9%*

Note: * Assuming CPO price is RM 3200/t. The highest tax rate, which will be triggered if prices rise above RM 3800/t, is 22.5% for CPO, 13% for palm olein, 7.5% for biodiesel and 15% for oleochemicals.
CPO - crude palm oil. PPO - processed palm oil.

Source: Ministry of Trade and Industry, Indonesia (2013; 2014).

oil industry, and encouraging more domestic usage of CPO for downstream activities (Table 1). With this new tax regime, Indonesia widened the tax margin between CPO and palm olein to 7.5% from 5%, and sharply reduced the tax rate on downstream exports. The restructuring of the Indonesian export duty, has shifted the incentive for Indonesian plantation companies to supply CPO to the domestic Indonesian market, rather than exporting them. This had reduced the amount of Indonesian CPO available for exports, which in turn affected the refiners in Malaysia who cannot source CPO domestically due to constrained production. As at December 2013, installed capacity of palm oil refiners in Malaysia is at 26 million tonnes per annum, which is smaller than Malaysia's CPO output of 19.2 million tonnes in 2013.

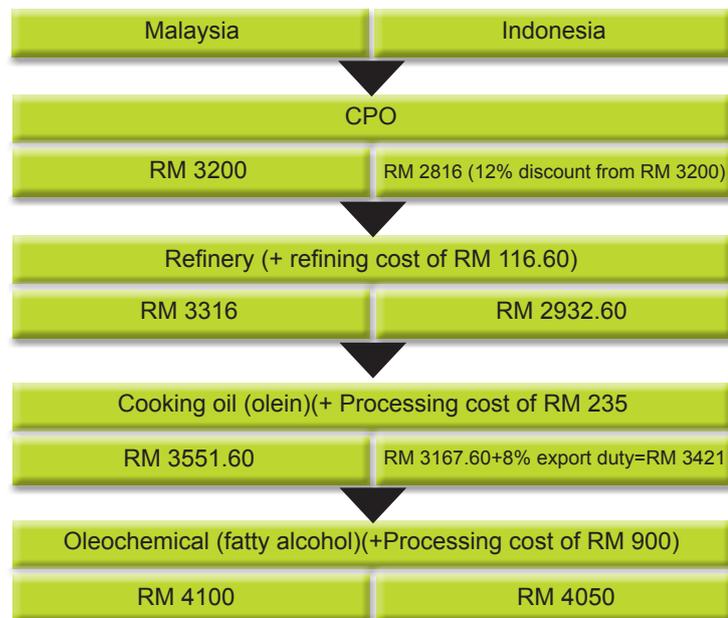
Indonesia's Strategy is to Favour Domestic Downstream

With this restructuring by Indonesia, the incentive for CPO producers was shifted to ensure that they would favour supplying the domestic downstream producers (particularly refined products, oleochemicals and biodiesel) rather than selling CPO through exports.

Thus, if Indonesian planters were to export their CPO, the price that they would earn would be lower than that earned by their Malaysian counterparts, due to the imposition of the export duty. However, should these Indonesian planters decide to sell their CPO domestically, they will not need to pay any export duty and are able to pass on the tax savings to domestic buyers, hence reducing the local price of the CPO.

Indonesian Downstream More Competitive than Malaysia's

This discount offered by Indonesian planters to their downstream buyers could undercut Malaysian planters, while at the same time reduce Indonesian CPO exports to Malaysian refiners. This is shown in Figure 4, with the assumption that Indonesian planters offer discounts of 12% on the CPO for local refiners, and that



Source: Author's calculation

Figure 4. Stylised comparison of crude palm oil (CPO) and processed palm oil (PPO) prices in Malaysia and Indonesia.

the cost of refining and processing is similar for both Malaysia and Indonesia. Despite the imposition of export duties for Indonesian downstream exports, and none for Malaysian downstream exports, the final price for downstream activities in Indonesia is cheaper than Malaysia's, simply as a result of the discount on CPO itself in Indonesia.

Malaysian Downstream Suffers

The net effect of this new tax policy was that it rendered Malaysian palm oil downstream refiners at a significant disadvantage compared to their Indonesian counterparts (Figure 5). The final price for downstream activities in Indonesia is cheaper than that in Malaysia, simply as a result of the discount on CPO in Indonesia. With Malaysia not reacting quickly to address this disparity till much later in 2012, many refiners in Malaysia suffered losses and had, in some instances, forced to reduce their refinery activity, with the utilisation rate dropping to just 65% in April 2013, from 80% in October 2011. Many Indonesian refiners were also able to compete on cost against their Malaysian competitors due to the high margins obtained from the cheaper CPO price, reported to be as much as USD 90/t (Figure 5). As Malaysian refiners do not enjoy the same tax benefits as their competitors in Indonesia, they were in danger of being priced out of the market.

Hollowing Out of Malaysia's Downstream Palm Oil

Thus, the palm oil-based downstream industries in Malaysia, particularly oleochemicals, refinery and biodiesel, run the risk of being 'hollowed out'; that is, firms may decide to relocate to Indonesia, for reasons of better margins



Source: Author's calculation.

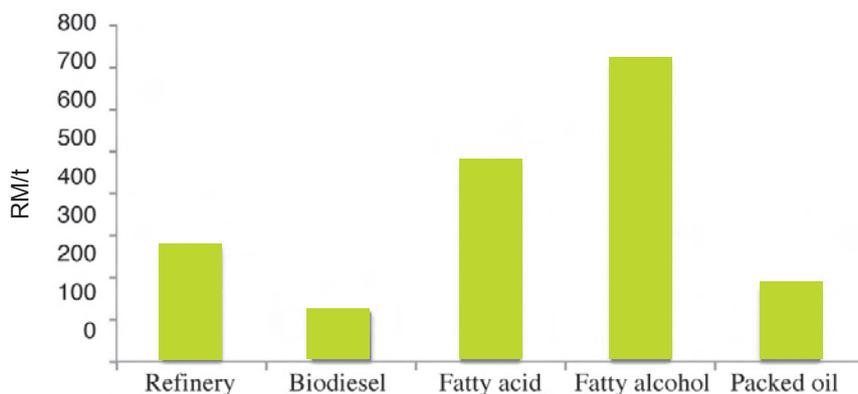
Figure 5. Advantage of Indonesian refiners over Malaysian refiners in terms of margins of processed palm oil before and after the export tax was restructured.

and, more importantly, easier and cheaper CPO availability. A study by LMC International, a consultancy based in London, United Kingdom, found that this policy decision by Indonesia could result in the existing refinery capacity in Indonesia to almost double from the present 24 million tonnes per year to 40 million tonnes by 2016, while potentially displacing the existing refineries in Malaysia. Some Malaysian planters and refiners have recently decided to build refineries and oleochemical plants in Indonesia due in large part to these two factors. This is especially true of the oleochemical industry, with the margin advantage between Malaysia and Indonesia for fatty acid and fatty alcohol, the basic feedstock of the industry, decidedly

in favour of Indonesia in 2012 (Figure 6). This is already seen in the utilisation rate of oleochemical plants in Malaysia, which has steadily declined to 75% as of April 2013, from 87% in October 2011.

A Reaction from Malaysian Authorities

In January 2013, Malaysian authorities reacted to this rising disadvantage by restructuring the export tax structure. This was done by abolishing the zero export tax quota for CPO, and lowering the export tax for CPO (Table 2). The former was devised presumably to ensure Malaysian downstream players have a sustainable supply of CPO from domestic planters through the removal of the non-tax advantage for the planters, while



Source: LMC International (July 2012).

Figure 6. Indonesian downstream's average advantage over Malaysian manufacturers in 2012 since Indonesia's tax restructuring in 2011.

TABLE 2. THE NEW PALM OIL EXPORT TAX STRUCTURE IN MALAYSIA EFFECTIVE FROM 1 JANUARY 2013

CPO price (RM/t)	Old export tax		New export tax	
	CPO (%)	Processed palm oil	CPO (%)	Processed palm oil
2 250 - 2 400	20.2 to 20.8	nil	4.5	nil
2 400 - 2 550	20.8 to 21.4	nil	5.0	nil
2 550 - 2 700	21.4 to 21.9	nil	5.5	nil
2 700 - 2 850	21.9 to 22.3	nil	6.0	nil
2 850 - 3 000	22.3 to 22.7	nil	6.5	nil
3 000 - 3 150	22.7 to 23.0	nil	7.0	nil
3 150 - 3 300	23.0 to 23.3	nil	7.5	nil
3 300 - 3 450	23.3 to 23.6	nil	8.0	nil
3 450 - 3 600	23.6 to 23.9	nil	8.5	nil
CPO tax free quota	2-5 million tonnes per annum		No longer granted	

Note: CPO – crude palm oil.

Source: MPOB (January 2013).

TABLE 3. THE DIFFERENCE BETWEEN THE NEW PALM OIL TAX STRUCTURES IN MALAYSIA AND INDONESIA

Market price	International price	Malaysia			Indonesia
CPO price (RM/t)	CPO Rott price (USD/t)	New CPO tax (%)	New RBD palm oil tax	Export tax gap (%) [CPO-RBDPO]	Export tax gap (%) [CPO-RBDPO]
2 250 - 2 400	750-800	4.50	nil	4.50	7.50
2 400 - 2 550	800-850	5.00	nil	5.00	9.00
2 550 - 2 700	850-900	5.50	nil	5.50	8.50
2 700 - 2 850	900-950	6.00	nil	6.00	9.00
2 850 - 3 000	950-1000	6.50	nil	6.50	9.50
3 000 - 3 150	1 000-1 050	7.00	nil	7.00	10.00
3 150 - 3 300	1 050-1 100	7.50	nil	7.50	10.50
3 300 - 3 450	1 100-1 150	8.00	nil	8.00	11.00
3 450 - 3 600	1 150-1 200	8.50	nil	8.50	11.50

Note: CPO – crude palm oil. RBDPO – refined bleached deodorised palm oil.

Source: MPOB and Ministry of Trade and Industries, Indonesia.

the latter was probably done in an attempt to help refiners to at least match the high margins enjoyed by Indonesian downstream players (Table 3). The immediate effect of this move is still not apparent, especially as palm oil prices have been hitting low levels since the second half of 2012. In January 2013, CPO prices hit a low of RM 2100/t, and traded at the RM 2500/t range between mid 2013 and mid 2014. This was due to strong supply growth in both Indonesia and Malaysia, as well as some recent developments in China with the role of palm oil in shadow banking, which will be touched upon in Part II of the article.

Still Favours the Upstream

However, two early analyses can be ascertained. First, even after the revised tax policy, the tax gap between CPO and refined palm oil is still bigger in Indonesia than Malaysia by between 3% and 4% depending on the price level of CPO (Table 3). As a result, margins by Indonesian refiners will still be larger than that in Malaysia. Thus, this remedy isn't totally sufficient to help the refiners in Malaysia. More crucially, this indicates that the Malaysian plantation companies at the upstream continue to enjoy preferential treatment compared to the downstream players, which is unlike the situation in Indonesia, where the preference is clearly given towards the downstream sector.

Indonesia's Tax Differentiation Signals Move to High Value-Add Products

Second, the tax policy in Indonesia was devised specifically to ensure that the basic palm oil products [such as CPO and palm fatty acid distilled (PFAD)] are taxed at a higher rate, while

the higher value-added products such as biodiesel and refined palm oil are taxed at a lower rate (Table 4). As Malaysia imposes zero tax on all refined products, regardless of the difference in the value-add of the product, there is a lack of appropriate tax signal that indicates policy priority between high and low value-add products. As such, the inclination by downstream producers in Malaysia is to concentrate on producing basic products. Indeed, as of December 2013, almost 90% of all oleochemical production in Malaysia is in the basic product category, namely fatty acid and fatty alcohol.

It is Clear that, After Dominating Upstream, Indonesia Aims to Now Dominate Downstream

For now, Malaysia may still have an advantage over Indonesia in terms of better transportation and port logistics, as well as longer relationships with key markets such as China and India, thus sustaining its downstream palm oil industry. However, as Indonesia slowly resolves these issues by accelerating spending on infrastructure in the coming years, as well as seeing its companies becoming well established players in the palm oil industry, this will narrow the competitiveness gap in the downstream industry between Indonesia and Malaysia in the near future.

A Revealed Comparative Advantage Analysis can Determine this Competitive Advantage

It is common in trade empirical literature to measure international trade specialisation and competitiveness of exports across countries by using the revealed comparative advantage (RCA) method (Balassa, 1965).

RCA indices monitored over time can point towards directional changes in comparative advantage between countries over a specific product (Muel, 1996). The RCA for a country in a given product is the ratio of the share of total exports that the product represents in the country's export basket and the share of global trade in that product. A product is over represented in a country's export basket if RCA is >1, is equal to the dollar exports of country c for product p , then the RCA of country c in product p is given by the following formula:

$$RCA_{c,p} = \frac{X_{c,p} / \sum_p X_{c,p}}{\sum_p X_{c,p} / \sum_c \sum_p X_{c,p}}$$

The RCA index is made symmetric, obtained as $(RCA-1)/(RCA+1)$; this measure ranges from -1 to +1 (Laursen, 1998).

Malaysia Losing its Competitive Edge in Palm Oil to Indonesia

As a major producer of CPO, Malaysia still enjoys significant RCA for the commodity; however, there has been a gradual decrease in its comparative advantage in recent times, particularly to Indonesia (Figure 7). This isn't surprising given Indonesia's recent status as the largest palm oil producer and exporter in the world.

Malaysia Still Leads in Oleochemical, but Indonesia is Catching Up Fast

As for the downstream industries arising from CPO, particularly oleochemicals, Malaysia has a high degree of specialisation, particularly in basic chemicals such as fatty alcohols and fatty acids. What is interesting is Indonesia's sharp rise in its RCA of oleochemical from negative (*i.e.* more imports than exports) during

the 2002-2006 period to being sharply positive in 2007-2011 (Figure 8), though, to be sure, it is still lower than Malaysia's. With the latest tax restructuring and its effect on margins on oleochemical producers as seen earlier, the next few years should see Indonesia's RCA to go much higher. With the higher competition from Indonesia in the oleochemical space, Malaysia has to leverage on its current position by developing more specialised chemicals with higher value-add products (Figure 9). The days of relying on basic products such as fatty acid and fatty alcohol cannot be sustained amid increased competition from Indonesia, especially as the latter has greater potential for economies of scale and other cost advantages.

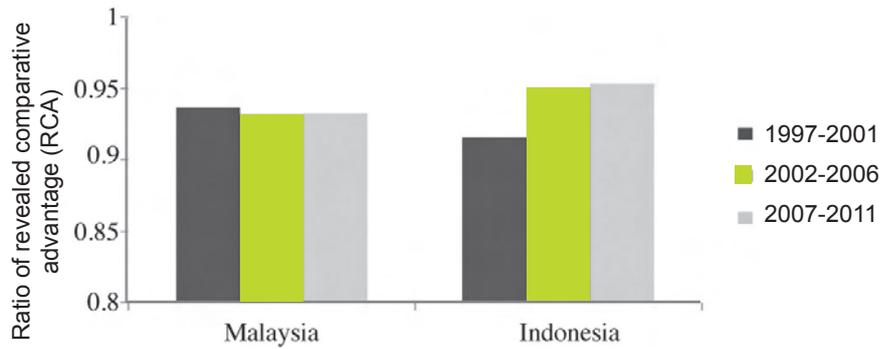
Indonesia's Export Tax Policy has Reaped Immediate Benefits

Pre-export tax revision, Indonesia's palm oil were mostly exported as crude, with a share of about 55% of total palm oil exports. Post-export tax revision, the share of CPO exports declined dramatically to 38% and 32% in 2012 and 2013. In essence, by increasing the share of refined exports to 68% in 2013, Indonesia's export tax policy has achieved its intended aim of increasing its downstream industry. What is surprising is just how quickly this target was met, indicating the potency of the policy on Indonesia's palm oil exports.

PART II: THE ROLE OF CHINESE SHADOW BANKING IN DEPRESSING PALM OIL PRICES

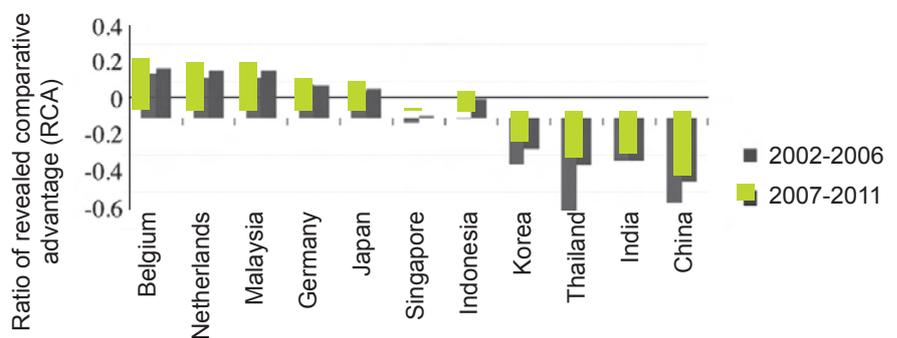
Palm Oil in Chinese Shadow Banking

The involvement of hard commodities in China's shadow banking sector has been well-



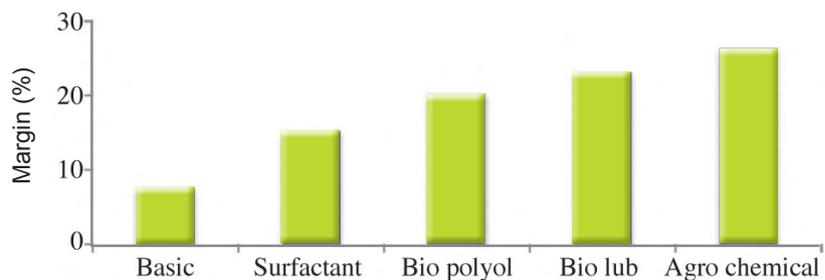
Source: Author's calculation.

Figure 7. Revealed comparative advantage for crude palm oil.



Source: Author's calculation.

Figure 8. Revealed comparative advantage for oleochemical products.



Source: Frost and Sullivan (February 2012).

Figure 9. Margins in the oleochemical space between products.

known, involving over USD 2.2 trillion or 25% of total loans made in China by the traditional regulated banking sector. These typically involve the use of aluminum, steel, iron ore and copper as collateral to procure credit (usually through Letters of Credit). However, a recent development is the use

of perishable commodities, particularly palm oil.

How it Started?

Chinese banks' credit tightening in the aftermath of the 2008 global financial crisis has reduced the availability of credit in

the domestic market, especially for the small and medium enterprises (SME). Compared to state owned enterprise (SOE), SME firms have a harder access to credit from state owned bank. As a result, this led to the growth of shadow banking¹ activities, through many unconventional financing channels such as pawn shops, credit guarantee firms, trust companies and so-called 'underground' banks. Currently, commodity traders are major players in the underground banking sector and, due to its size and high degree of leverage, this is arguably the most unstable component of the shadow banking sector.

Palm Oil as the New Source for Financing

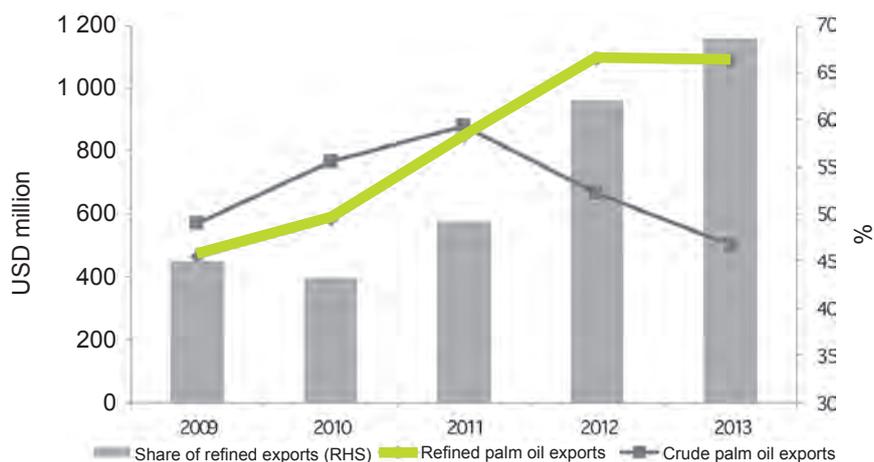
China is the world's biggest market for palm oil, consuming up to 11% of global palm oil production. Despite the recent slowing down of the Chinese economy and high domestic inventory levels (Figure 11), Malaysian palm oil exports to China has been sustained at relatively high levels (Figure 12). While the increase in imports in the fourth quarter 2012 can be attributed to the rush to beat the imposition of new ruling for palm oil standards² effective January 2013, continued strength in volume imported to China since then can be traced to the use of palm oil as collateral for financing.

Why Palm Oil?

Palm oil was chosen due to the proximity of shipping the commodity to China from the

¹ Defined as any financial transaction outside the traditional banking system.

² China's General Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) imposed stricter requirements for palm oil imports effective 1 January 2013 which causes a surge of imports by Chinese traders prior to the ruling.



Source: Ministry of Trade and Industry, Indonesia (March 2014).

Figure 10. Crude and refined palm oil exports from Indonesia (in USD million).



Source: CIMB; Department of Statistics, Malaysia.

Figure 11. China's palm oil inventory.

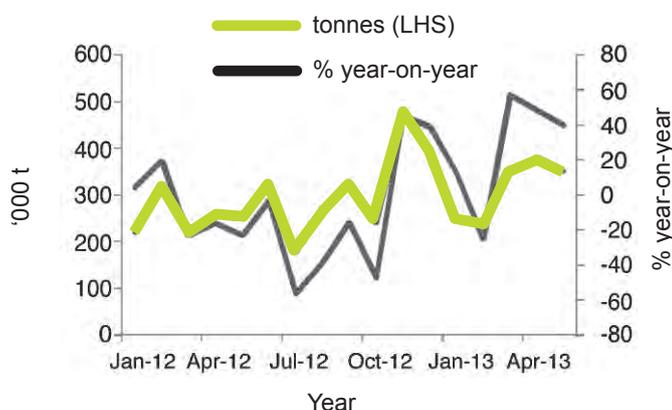


Figure 12. Malaysian palm oil exports to China.

producing countries (six days from Malaysia, seven days from Indonesia) as well as the ability to import in large quantities providing fast, high and continuous amount of collateral. In addition, Chinese government's recent tightening measures³ for importation of metals to reduce credit availability has limited such activities on hard commodities.

Palm Oil as Trade Credit to Finance Loans

Chinese traders imported palm oil for the purpose of accessing financial credit from banks offering 90-180 days of term credit. The imported palm oil is then sold immediately to end-users at a discount to obtain cash instantly. The cash is then used either to give out loans illegally to Chinese SME or invested in sector that provide higher rate of return, especially real estate (Figure 13). The interest rate charged by the Chinese palm oil traders is typically exorbitant (as high as 40% per annum) to make up for the discount sold on palm oil and to offset the interest rates to be paid to the banks. The palm oil traders built good long-standing relationships with Chinese banks which allow them to obtain credit at attractive terms.

Rise in Chinese Palm Oil Inventory

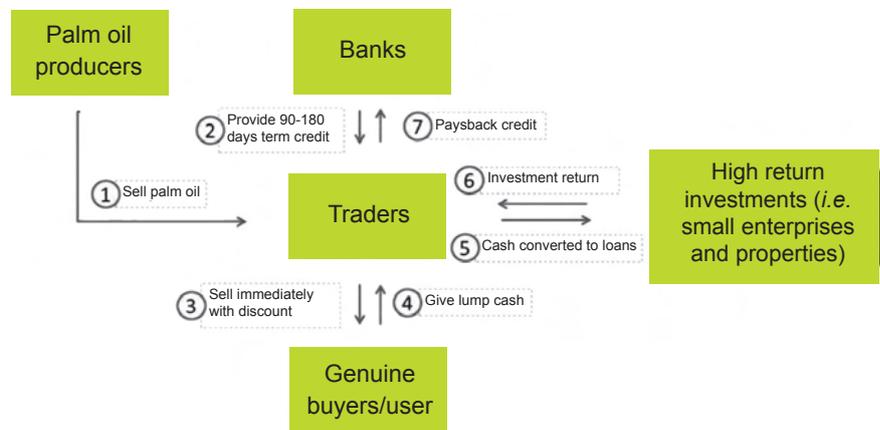
As Chinese economy slowed down recently, demand from genuine palm oil buyers have moderated and the palm oil traders have ended up with large inventory of unsold palm oil. To reduce this current inventory and pay off the

outstanding debt to the banks, these traders have been selling their existing palm oil stock at an increasingly large discount to Chinese buyers in order to obtain cash despite bearing much larger losses.

Palm Oil Price in China Lower than Actual Global Market Price

Due to the discount offered by traders, palm oil price in Chinese domestic market is actually lower relative to the global market price. Figure 14 showed the increasing share of import by these palm oil

traders as a result of their trade financing activities. The share of imports by genuine palm oil end-users declined as the lower domestic palm oil price offered by traders is more attractive than those imported directly. As a result, the discount of palm oil prices exiting the Chinese ports to the domestic market (port price) against the price when the palm oil arising at port (landed price) widened from around RMB 300/t in January 2013 to RMB 823 in May 2013 (Figure 15).



Source: Author's illustration.

Figure 13. How palm oil is used in shadow banking.

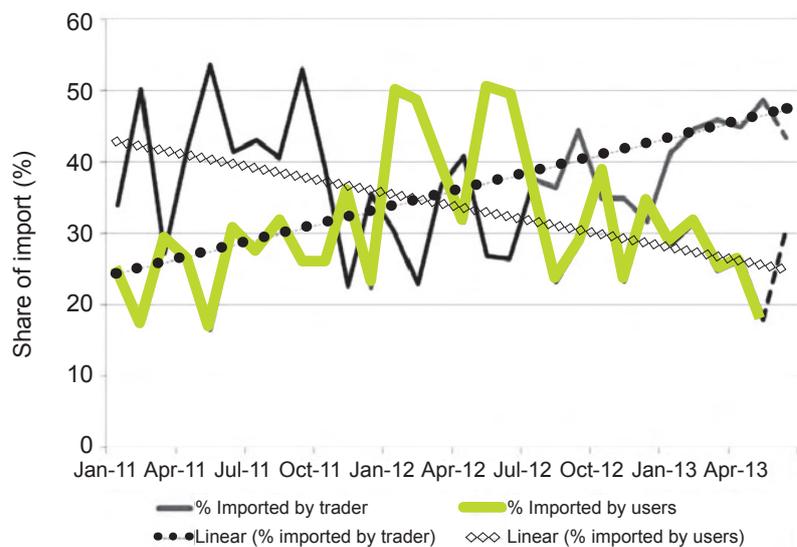
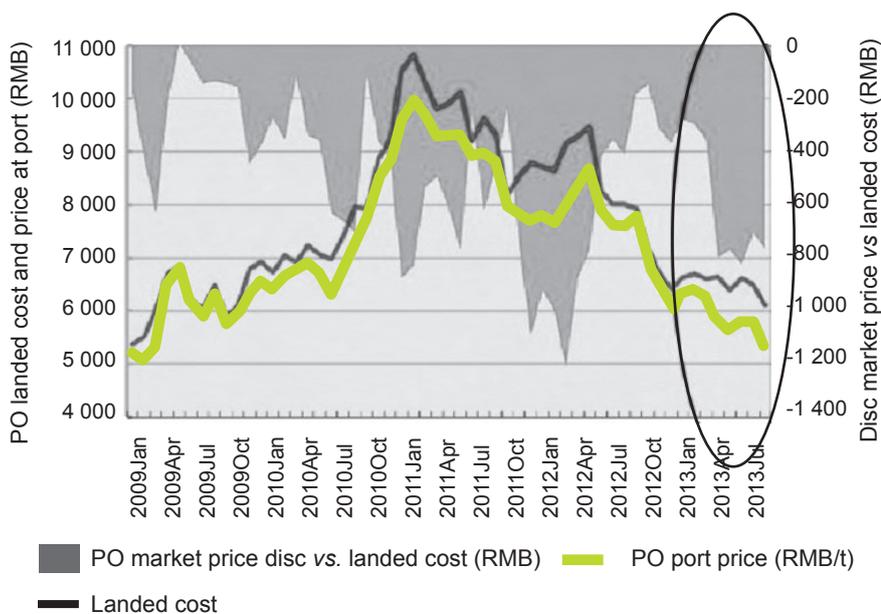


Figure 14. Ratio of palm oil imports by type of importers.

³ On 5 May 2013, Chinese State Administration of Foreign Exchange tightened control on exchange rate facilities. This resulted in restrictions on Letters of Credit issued on importation of metals. However, import of palm oil was not affected.



Source: Ng (2013).

Figure 15. Palm oil market price vs. domestic price in China.

Unsustainable 'Artificial' Demand for Palm Oil

The sustainability of this palm oil trading arrangement is anchored on the continued strength of real demand for palm oil in China, as well as the rate of the palm oil traders' return on investments (i.e.: the sustainability of SME servicing their loans to the traders and the continued strength in the Chinese real estate market). A further slowdown in the Chinese economy could lead to rising debt defaults in the Chinese shadow banking system which could also threaten the conventional banking sector. This could pose a risk to the traders as well as the banks providing the credit. Ultimately, this may lead to lower palm oil imports from Malaysia and Indonesia, as well as increasing pressure for lower palm oil prices as Chinese traders would

rush to sell palm oil at a much larger discount.

Measures to Curb Financing through Palm Oil May Lead to Higher Risk of Default

There could be a possibility that the Chinese government may impose the same⁴ restrictions on palm oil as for hard commodities. However, unlike these hard commodities which have indefinite shelf-life, palm oil deteriorates in quality within four to five months. As a result, the risk for default by traders is higher as the inherent value of palm oil would deteriorate over time if left unsold.

Trade Financing Expected to Continue for Some Time Yet

Thus far, some palm oil traders have already reduced

their palm oil imports, possibly due to unsustainably large credit exposure. However, the practice may continue for some time in the near future and it is crucial for policy-makers, especially in Malaysia and Indonesia, to monitor the developments closely amid its potential risk to palm oil prices and the export performance to China.

PART III: MALAYSIA AND INDONESIA, IT'S TIME TO CO-OPERATE

Status Quo is No Longer Acceptable

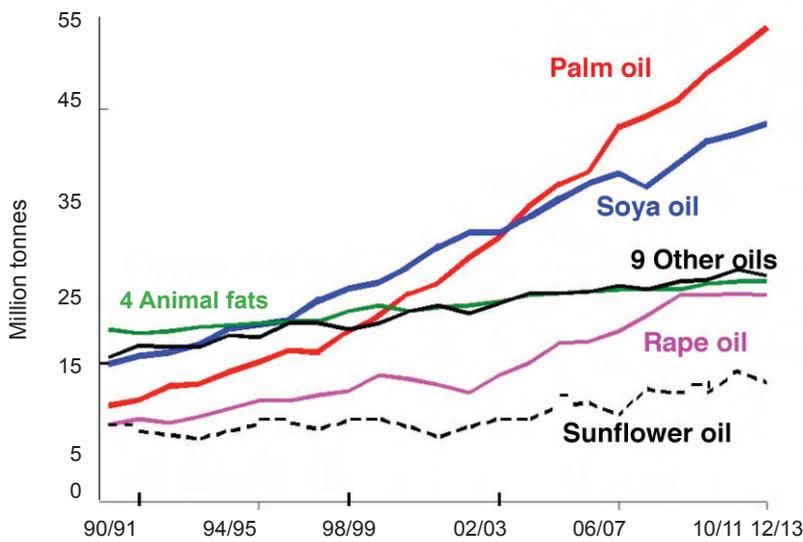
As seen in Part I, Malaysia's major palm oil players need to embark on greater diversification into high value-added at the downstream in order to sustain the development of the palm oil industry. In Indonesia's case, the rising competition with Malaysia may actually end up cannibalising each other's export market for palm oil, rather than expanding the global share of palm oil itself *vis-à-vis* other vegetable oils, particularly soyabean oil and rapeseed oil. This article argues that both countries, rather than seeing each other as the competitor, should realise soyabean oil and, to a lesser extent, rapeseed oil as the real competitors to palm oil for dominance in the global vegetable oil market (Figure 16). Even though palm oil is the largest edible oil produced in the world since 2004, this leading role is not reflected in the pricing structure, judging by the consistent price discounting of palm oil against both oils in recent years, as well as the persistent attack on the environmental sustainability of palm oil planting by certain quarters that is somehow not prosecuted with the same intensity on the two main vegetable oils. This status quo must be challenged,

⁴ On 5 May 2013, Chinese State Administration of Foreign Exchange tightened control on exchange rate facilities. This resulted in restrictions on Letters of Credit issued on importation of metals. However, import of palm oil was not affected.

TABLE 4. THE TAX STRUCTURE OF INDONESIA'S PALM OIL PRODUCTS

Base price (USD)	FFB & PK (%)	CPO (%)	CPKO (%)	PFAD (%)	RBD palm olein (%)	RBD palm oil (%)	RBD palm stearin (%)	Biodiesel (%)
750	40.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
>750-800	40.0	7.5	7.5	3.0	2.0	0.0	0.0	0.0
>800-850	40.0	9.0	9.0	4.0	3.0	0.0	0.0	0.0
>850-900	40.0	10.5	10.5	5.0	4.0	2.0	2.0	0.0
>900-950	40.0	12.0	12.0	6.0	5.0	3.0	3.0	0.0
>950-1 000	40.0	13.5	13.5	7.0	6.0	4.0	4.0	2.0
>1 000-1 050	40.0	15.0	15.0	8.0	7.0	5.0	5.0	2.0
>1 050-1 100	40.0	16.5	16.5	9.0	8.0	6.0	6.0	2.0
>1 100-1 150	40.0	18.0	18.0	10.5	9.0	7.0	7.0	2.0
>1 150-1 200	40.0	19.5	19.5	12.0	10.0	8.0	8.0	5.0
>1 200-1 250	40.0	21.0	21.0	13.5	11.5	9.0	9.0	5.0
>1 250	40.0	22.5	22.5	15.0	13.0	10.0	10.0	7.5

Note: FFB – fresh fruit bunch. CPO – crude palm oil. PFAD – palm fatty acid distilled. CPKO – crude palm kernel oil. RBD – refined bleached deodorised. PK – palm kernel.
 Source: Ministry of Trade and Industry, Indonesia (2014).



Source: Oil World (2013).

Figure 16. Global production of edible oils (million tonnes).

together, by both Malaysia and Indonesia, especially as they are confronted with a major structural issue: the rising supply of palm oil compared to all edible oils.

Rising Supply of Palm Oil

Due largely to the supply acceleration from Indonesia, palm oil exports have accounted for

the largest share of global oil and fats exports since 2000, far exceeding other vegetable oils (Figure 17). With the rising acreage and yield improvement, especially in Indonesia, it is not unreasonable to think that this share will rise even further in future years.

Too Much can be a Bad Thing

While the rising output of palm oil is a testament to its status as a ‘golden crop’, this could potential lead to CPO being priced persistently at depressed levels and at substantial discounts compared to other edible oils such as soyabean, rapeseed, corn and sunflower. While the discounts have been on-going for quite some time, palm oil has tended to be priced at a level lower than that of soyabean, sunflower, rapeseed and corn, due mainly to supply constraints of these vegetable oils,

amid lower yields relative to palm oil that serves to put a floor on their prices from dropping relative to palm oil. In addition, these vegetable oils enjoy the end-user perception of high quality among consumers compared to palm oil, resulting in a price premium that further perpetuates the discount on palm oil.

Palm Oil Prices under Pressure from Unique Supply Fundamentals

If the structural, long run production growth (as opposed to temporary, cyclical growth) rises substantially above what the global market can absorb or consume, the potential is high for CPO prices to experience high volatility with mostly pressure on the downside, escalating the discount with the other edible oils. This has already occurred between June 2012 and July 2013, with palm oil prices dropping sharply from a peak of RM 3600/t to a low of RM 2200/t, amidst rising supply, and build up in inventory in key demand markets, especially China (as seen in Part II).

Inventory is a Key Factor in Determining the Movement of CPO Prices and the Nature of Palm Oil Itself

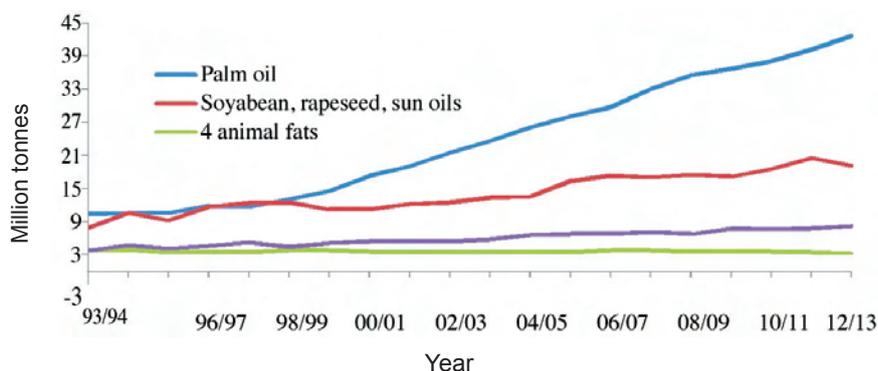
Unlike the other edible oils, which can be imported as grains and stored until crushed or processed into edible oil when needed by the buyer, palm oil has to be exported in liquid form and is subject to deterioration after being stored for a number of months. As such, a palm oil buyer has to have two firm expectations when making a purchasing decision, namely, the direction of CPO prices

and how soon can the purchased CPO be consumed (*i.e.* not stored), to prevent deterioration. While the pricing decision is common for the other vegetable oils, the inventory dilemma is perhaps unique to palm oil. In the producer countries, the palm oil inventory in Malaysia and Indonesia is much higher than that of US soyabean, contributing to the relatively lower pricing of CPO (*Figure 18*). In the consumer

nations, the demand from China stagnated in 2013 as the palm oil inventory in China was at record high and buyers there are not inclined to import more CPO amid the fear over storage deterioration.

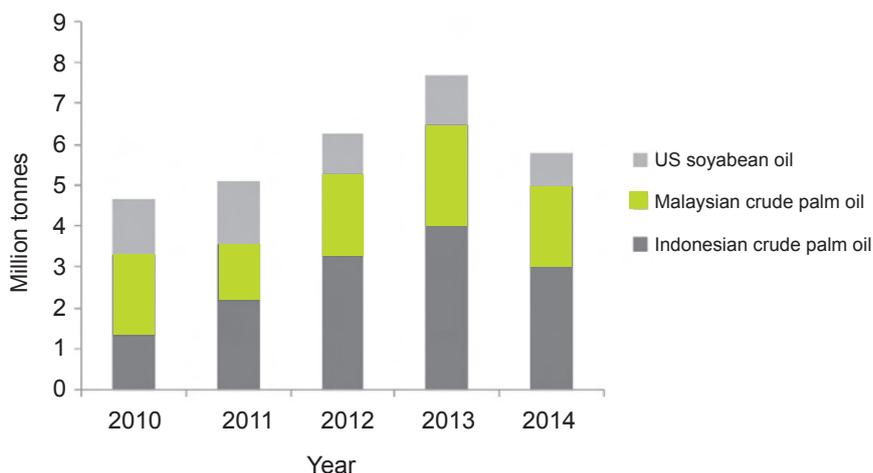
Prisoner's Dilemma

While Malaysia and Indonesia compete with each other in the palm oil space, there is an elevated



Source: Oil World (2013).

Figure 17. Exports of oils and fats (in million tonnes).



Note: SBO – soyabean oil.
CPO – crude palm oil.
Source: Oil World (2014).

Figure 18. Inventory of palm oil and soyabean, as of 1 January (in million tonnes).

risk that this is not going to be the most optimum conclusion for either country. This is perfectly illustrated by the game theory named ‘the Prisoner’s Dilemma’, which was originally designed by Merrill Flood and Melvin Dresher in 1950 and refined by Albert W. Tucker. Simply put, the Prisoner’s Dilemma goes like this: two criminals are arrested, but the police can’t convict either on the primary charge, so they plan to sentence them to a year in jail on a lesser charge. Each of the prisoners, who can’t communicate with each other, is given the option of testifying against the other. If one decides to testify, and the other remains silent, the latter gets three years in jail, while the former gets freed. If they both testify, both gets sentenced to two years in jail. If both remain silent, they each get one year in jail. In game theory, betraying your partner, or ‘defecting’ is always the dominant strategy as it always has a higher payoff in a simultaneous game. This is known as a ‘Nash Equilibrium,’ after Nobel Prize winning mathematician John Nash. In sequential games, where players know each other’s previous behaviour and have the opportunity to punish each other, defection is the dominant strategy as well. However, in terms of an

overall strategy, the best outcome for both players is actually mutual co-operation.

Competition in Palm Oil Reduces Gains to both Malaysia and Indonesia in the Long Run

Palm oil is unique in that there are two overwhelmingly large producer nations in Malaysia and Indonesia. As such, this article can extend the analogy of the two prisoners in the Prisoner’s Dilemma to Indonesia and Malaysia (Table 5). While a country may be tempted to choose the dominant strategy in ‘betraying’ the other and capturing the benefit from palm oil almost entirely for itself (for example, by changing tax rules or devising rules that overtly favours the upstream), the strategy cannot work permanently in the long run. This is because the gain is only realised, in the short run, from ‘cannibalising’ the other party, that is, gaining from a fellow producer of palm oil. Meanwhile, the greatest (long run) benefit actually goes to the producers of other edible oils, due to the cannibalising among the two palm oil rivals that have affected the greater palm oil industry. This is clearly evident in the persistent and wide price discount of palm oil to these other edible oils, amid the rising

supply and inventory of palm oil compared to the other edible oils. This is further exacerbated by the unique storage deterioration factor that limits palm oil’s inventory longevity, further depressing its price relative to other edible oils.

Game Theory Strongly Suggests Co-operation between the Two Producers

For the sustainable development of the palm oil industry and better supply management, the two major producers, Malaysia and Indonesia, have to begin to actively co-operate. It is only through co-operation that the gains of the palm oil sector can be shared together, by limiting rules and practices that only serve to undercut each other, and also unifying these two countries in fighting for the collective interest of the palm oil industry against the other edible oils. With the rising influence of consuming nations such as China in the pricing of palm oil, the time is appropriate for the two producer nations to begin addressing the issue of structural price discount of palm oil. The only way this can be achieved is through institutionalised co-operation, especially as Malaysia and Indonesia together dominate the palm oil production, at about 80% of total global supply.

TABLE 5. OUTCOME OF PALM OIL’S ‘PRISONER’S DILEMMA’ BETWEEN MALAYSIA AND INDONESIA		
‘Prisoner’s Dilemma’ in palm oil	Indonesia (co-operate)	Indonesia (don’t co-operate)
Malaysia (co-operate)	Mutual benefit with short-term wins, earning long-term trust	Short-term benefits to Indonesia with long-term costs to palm oil industry
Malaysia (don’t co-operate)	Short-term benefits to Malaysia with long-term costs to palm oil industry	Long-term loss of relationship and trust between Malaysia and Indonesia, leading to high costs to the palm oil industry.

Source: Author’s illustration.

A Palm Oil Producing and Exporting Country Organisation (POPEC), Fostering Co-operation for the Long-term Success of the Sector

Malaysia and Indonesia have to strengthen the co-operation publicly through an institutional set-up of a Palm Oil Producing and Exporting Country Organisation (with the acronym POPEC) modelled after OPEC, the Organisation of Petroleum Exporting Countries, that manages the supply of crude oil among key oil producers. Owing to palm oil's status as a rising global supplier of edible oil (compared to other edible oils), and greater susceptible to deterioration due to its limited storage time, the requirement for better supply and marketing management of palm oil is imperative in reducing the price discount to other edible oils. OPEC was set up in 1960 primarily to regulate supply between its members to prevent rampant price undercutting of an undifferentiated or common commodity (in this case, crude oil), while sharing data and knowledge and strengthening the countries' bargaining position in the global market.

Similarly, a Palm Oil Producing and Exporting Country Organisation would also Prevent the Undercutting of Palm Oil Prices among Indonesia and Malaysia

This will be done by sharing data on production, inventory and exports, as currently done by member countries in OPEC. In addition, policy co-ordination between the two countries in terms of inventory management would be enhanced, supporting prices. An example of potential co-ordination was the large scale biodiesel mandate in Indonesia which was enacted in Indonesia in early 2014, in tandem with the implementation of B5 biodiesel blending in Malaysia, scheduled to be completed in July 2014. The mismatch in timing and scaling of the implementation between the two nations is a demonstration of the need for a POPEC that can significantly reduce this friction, helping to support palm oil prices. A POPEC will enable an environment of mutual co-operation and shared interest, showcasing unity and bargaining strength by the two member countries towards the global edible oil market. Such an

organisation would enable the gains from palm oil to be maximised between the two nations, instead of cannibalising each other, while reducing the susceptibility of palm oil prices from external pressures.

CONCLUSION

The article has argued that the rising competition between Malaysia and Indonesia is affecting the palm oil industry in totality, especially in the downstream sector. The recent phenomenon of palm oil playing a role in Chinese shadow banking is also contributing to the depression in palm oil prices, particularly in 2013. Through the use of Prisoner's Dilemma game theory, the article argues for both Malaysia and Indonesia to institutionalise co-operation, rather than compete strongly, through the setting up of a palm oil exporting countries organisation, to better manage the supply and inventory of palm oil in the world market, with respect to global demand conditions.

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