Cord 2009, **25** (1)

Market Integration and Efficiency in Spatial Markets of Copra in the Philippines

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Abstract

Market integration and efficiency were examined for Philippine copra trading. The Sims' test on the seasonal ARIMA pre-filtered copra mill gate price series was used to determine the causal relationships among ten regions. The Ravallion model described the dynamics in the copra miller markets and provided alternative interpretation of the oligopoly price formation process.

Overall, there was an improvement in pricing efficiency in the mill copra markets for the period covered in this study since FOB competitive pricing were observed. However, inefficiencies in price formation were also evident.

The degree of market integration and efficiency was affected by the level of self-sufficiency, transmission of price information, oligopolistic pricing, and efficiency in the transportation and infrastructure sectors. Many ideas for policy development to improve the efficiency of transport systems have arisen from this study.

Keywords: Market integration and efficiency, Spatial markets, Seasonal ARIMA model, Sims' test, Ravallion model, Market integration factors.

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Introduction

A major lament in the Philippine coconut industry has always been the low copra prices received by farmers. This is attributed to the low world prices for coconut products and high marketing margins of domestic traders. During the regulated market years (1973-1985), the response of the government was directed towards improving export prices and reducing the number of middlemen between producers and end-users of coconut products. The government's response is indicative that prices were assumed to give effective signals for allocating scarce resources in market-oriented reforms to improve the coconut industry. However, prices can serve as effective signals only when markets are integrated. So the questions are as follows: Is market integration evident in the Philippine coconut industry? If it is integrated, what determines the level of its integration?

In an integrated spatial market, prices are determined simultaneously in different locations. In its absence, price information may be conveyed inaccurately, thus distorting producer market decisions and contributing to inefficient product movements. Dynamics of market integration could provide some indication on the extent of price variations among regions and factors contributing to it.

Spatial study of the geographic markets of the coconut industry is relevant because coconut products are bulky and areas of production and consumption are separated, hence making transportation costly. Market integration is a vital precondition for the crucial policy of 'getting prices right' to be effective. This paper describes the dynamics in price formation and causal relationships in the Philippine copra markets. The factors contributing to either integration or non-integration of copra markets are identified and recommendations are given to improve market integration and efficiency in the Philippine coconut industry.

Methodology

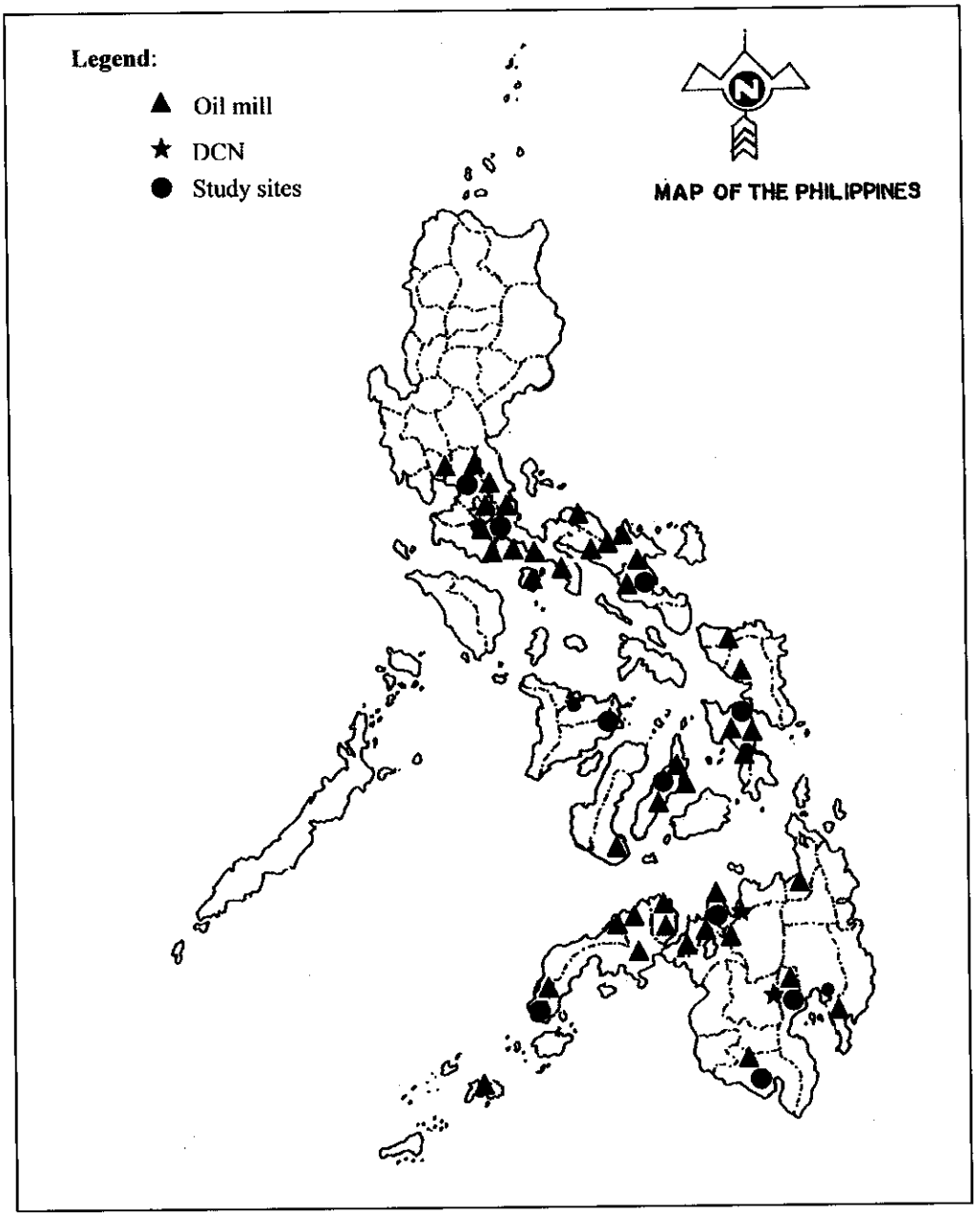
The study covered ten regions in the Philippines, six of which are major coconut producing regions (supply areas) while the other four are minor coconut producing regions (demand areas). However, due to the strategic locations of coconut oil mills in the country, the supply areas also served as demand areas (Fig. 1).

The regions covered in the study were chosen based on the magnitude of coconut area and production in each region as well as the observed trade flows. The major inter-island flows of copra are from the hinterland into Cebu, Manila, Zamboanga, Davao, Cagayan de Oro, and Legaspi. However, the analysis was constrained upon the availability of regional price time series data. Hence, mill gate copra price data of specific areas (city/province) were used to represent the region. The regions included in the analysis were the following:

Region		City/Province
Major coconut producing regions/supply areas (% to total production):		
IV-A	Southern Tagalog (11%)	Lucena
V	Bicol (9%)	Legaspi
VIII	Eastern Visayas (12%)	Leyte
IX	Western Mindanao (9%)	Zamboanga
X	Northern Mindanao (10%)	Cagayang de Oro
XI	Southern Mindanao (17%)	Davao
Minor coconut producing regions/supply areas (% to total production):		
VI	Western Visayas (3%)	Iloilo
VII	Central Visayas (2%)	Cebu
XII	Central Mindanao (6%)	General Santos City
NCR	National Capital Region (0%)	Manila

The study used both primary and secondary data. The primary data were collected through a survey of dealers and millers in the different areas covered. The information from the survey was needed to interpret and draw policy implications from the market integration procedure applied.

Figure 1. Map of the Philippines showing the study sites and location of oil mills



The dynamics in spatial price and causal relationship of copra markets was tested using mill gate copra prices of each region for the period 1991-2003 gathered from the Philippine Coconut Authority (PCA). Additional information on coconut production, area planted, coconut utilization, physical distance, trade flows, transportation and infrastructure facilities were gathered from statistical books, reports, and reference materials from various agencies like United Coconut Associations of the Philippines (UCAP), National Statistics Office (NSO), and Philippine Ports Authority (PPA).

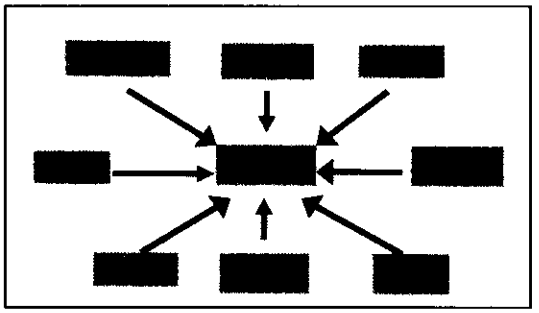
The Sims' test (Arshad, 1990) and the Ravallion model (Faminow and Benson, 1990) were used to test the causal relationships and dynamics in price formation among the regions. To test the influence of selected factors on market integration, a regression model was estimated with the level of market integration as dependent variable. Independent variables consisted of the approximate road or nautical miles between markets, ratio of copra trade volume and copra production, average annual mill capacity, total crude coconut oil exports, total refined coconut oil exports, total oleochemical exports, total copra cake exports, and total desiccated coconut exports.

Results and discussion

Causal Relationships in Spatial Markets

Price formation is efficient if bidirectional price formation exists. A unidirectional causation implies that price formation is inefficient. The Sims' test revealed 16 unidirectional connections and 9 bidirectional influence. One of the major links observed was that of Region VI whose price realization seemed to be influenced by all other regions (Fig 2). Notably, all the other regions had copra price (Table 1), milling capacity (Fig 3), and copra production which were significantly higher than in Region VI.

Figure 2. Regions with unidirectional linkage with Region VI as indicated by Sims' tests, Philippines, 1991-2003



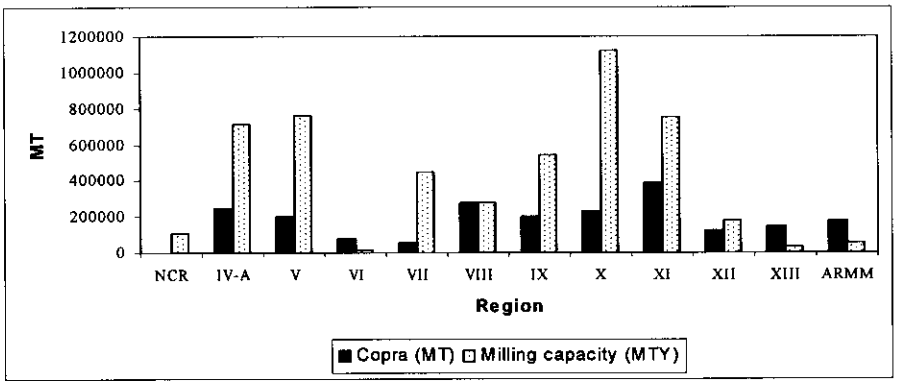
In a competitive market, when prices in all other regions were higher than in Region VI, copra outflow should be observed from Region VI, which would decrease its supply and increase the supply in the destination regions. Consequently, copra price in Region VI would increase and the price in the destination regions would decrease. However, Sims' test showed that only a unidirectional causation existed from all other regions to Region VI, which implies that price formation was inefficient. This can be due to the substantial difference in terms of supply and demand characteristics and oligopolistic nature of copra trading, between Region VI and the other coconut producing regions.

Table 1. Average copra mill gate price by region, Philippines, 1991-2003

REGION	COPRA PRICE (PhP/kg)[1]
NCR	11.22 a
IVA	11.19 a
V	10.28 bc
VI	9.81 d
VII	10.32 bc
VIII	10.52 b
IX	10.25 bc
X	10.14 bcd
XI	10.19 bc
XII	10.11 cd
Stat significance	**
C.V. (%)	14.59

[1] Means with the same letter are not significantly different. ** - significant at 1% probability level
ns - not significant

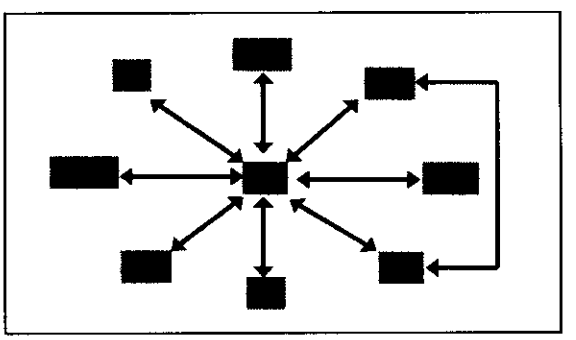
Figure 3. Coconut production (copra term) and milling capacity by region, Philippines, 2003



Similar unidirectional relationship between Region V and six other regions was observed. Region IVA was noted to exert influence over Region XI while NCR was linked with Region VIII.

Another prominent marketing integration relationship involved Region XI (Fig 4). Eight bidirectional connections surfaced from the Sims' test between Region XI and Regions V, VI, VII, VIII, IX, X, XII and NCR. Moreover, Regions VII and IX were also inter-related with feedback. Hence, price formation in these cases was efficient. These observations may be due to the following:

Figure 4. Bidirectional linkage indicated by Sims' test, Philippines, 1991-2003



First, there is high competition for raw materials since most of the regions with bidirectional influences posted significantly higher mill capacity than copra production. As elucidated by the millers and traders, there was a highly significant effect of the overcrowding of mills in supply of copra as this situation led to aggressive competition for raw materials. In order to satisfy their milling requirements, millers have existing buying stations in other copra producing regions.

Second, the regions that were linked with feedback had similar sizes, structures, and opportunities to millers and traders. They had comparable sizes in copra production and milling capacity and are vital coconut producing regions (except for NCR). Hence, these connected regions had similar structures that included buying stations, millers, dealers, and farmers. Most of these regions were also interconnected in terms of the presence of mills, which belonged to a few groups of companies. The price formation of these companies was largely influenced by the price set by their main offices, which were passed on to their regional mills and buying stations. Notably, most of these regions are exporters of coconut oil, desiccated coconut, copra meal, husks/fiber, coco chemicals, and coconut food products. As major players in the coconut industry, these millers are well equipped with ports and trading infrastructures, which make inter-regional trade between the important coconut producing regions as well as the major centers of commerce more imminent. The inclusion of Region VII and NCR in the group may be associated with the density and

efficiency of infrastructure available in these regions as well as their inherent role as centers of trade and commerce.

In essence, the two major integration relationships, which surfaced depicted two extreme scenarios. The first one showed a unidirectional causation from the relatively larger regions in terms of supply and demand factors towards a significantly smaller region. The second showcased the influence of the highest coconut-producing region (Region XI) in both unidirectional and bi-directional relationships, with the latter being more prominent than the former. These findings imply that the relative differences in size and structure of markets could hinder price transmission. On the other hand, although we could expect two big markets to be independent whereby price formation would not be well transmitted spatially, markets with similar sizes and sets of opportunities for traders tended to be more efficient in price formation.

Dynamics in Spatial Price Relationships

The market integration test using the Ravallion model showed that perfect basing point pricing systems, which generally resulted from an organized oligopoly arrangement in the form of price leadership or collusion, was not observed in general. This is congruent with the observation that the copra market had evolved into an aggressive trading system comprising of about 3 million farmers whose 2.3 million MT copra production per year passed through more than 2,000 registered copra dealers and 73 mills with nearly 5 million MT capacity per year. This in a way is an indication that monopoly, which was very evident in the milling sector during the 1980s, had somehow diminished and copra marketing had moved on towards a more free enterprise.

However, one case of perfect basing point pricing was observed wherein Region X was the basing point of Region VIII. In this case, price changes are fully and immediately passed on to the other markets with no lagged effect. Consumers and producers are not concentrated at single points and prices differ by transportation costs. Basing point systems generally arise from a noncompetitive institutional structure and are not usually considered desirable (Faminow and Benson, 1990). Hence, the typical conclusion that highly integrated markets are caused by competition and imply an efficient market has been observed to be the reverse. Instead, such markets are caused by collusive basing point pricing and tend to be relatively inefficient. Notably, Region VIII transported the bulk of its produce to Region X due to the presence of buying stations of Region X millers in Region VIII. As such, the base sets the price for the buying stations or mill in the copra source region. With this setup, the Region X plant had to absorb the transport cost for moving copra from Region VIII. Under the perfect basing point system, the delivered price to any buyer location is the base price plus the transportation costs. Compared to a new competitor plant with a high milling capacity in Region VIII who buys and mills copra within the same region, Region X miller was at a disadvantage since it had to shoulder added transport cost. The mill in Region VIII can set higher copra buying price to attract copra producers without sacrificing its net gain. Moreover, the Region X mill had to contend with the stiff competition from various dealers in Region VIII. For 1991-2003, mill price in Region X was lower than mill price in Region VIII by an average of PhP0.38/kg.

Regions that seemed to be interrelated with a less than perfect (incomplete) basing point pricing implied that among themselves, these regions interchangeably served as basing point. These relationships may be elucidated by the size and structure of the mill market in the different regions. Although there were about 73 coconut oil mills in the country as of 2004, several of these mills, which are located in different regions, were subsidiaries or belonged to a very few but big oil mills group or corporations. Most of the head offices of these oil mills are located in the NCR. This

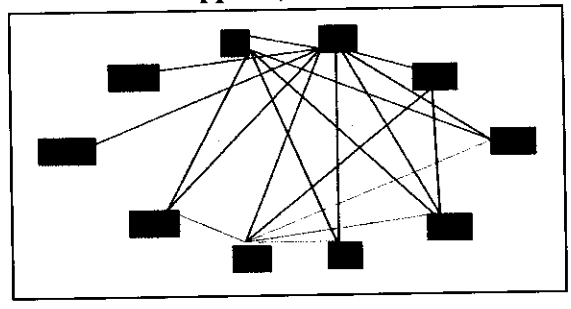
Table 2. Summary of pricing behavior relationship among regions, Ravallion test, Philippines, 1991-2003

REGION	NCR	IVA	V	VI	VII	VIII	IX	X	XI	XII
NCR		BP_{WL}		FOBc	BP_{WL}	BP_{WL}			BP_{W}	
IVA	BP_{WL}		BP_{W}	FOBc	BP_{WL}	BP_{WL}	BP_{W}	BP_{W}	BP_{WL}	
V					BP_{WL}		BP_{WL}	BP_{WL}	BP_{WL}	BP_{WL}
VI	FOBc	FOBc	FOBc		FOBc	FOBc	FOBc	FOBc	BP_{WL}	FOBc
VII			BP_{WL}				FOBc	BP_{WL}	FOBc	BP_{WL}
VIII			FOBc		BP_{W}			BP_{SL}	FOBc	
IX			FOBc		BP_{W}			BP_{WL}	FOBc	BP_{WL}
X			FOBc		BP_{WL}		BP_{WL}		FOBc	BP_{WL}
XI			BP_{WL}		BP_{WL}		BP_{WL}	BP_{WL}		BP_{WL}
XII			FOBc		BP_{WL}		BP_{WL}	BP_{WL}	FOBc	

setup may have contributed to the direction and extent of the loose form of basing point pricing observed and presented earlier. The results imply that lags and feedbacks are evident between the mill regions within the basing point arrangement as well as regions outside the basing point system. The lags and feedbacks resulted from the price adjustments set into motion within the base point system that caused competitive reactions by firms outside the basing point arrangement, which fed back into the base point price determination process, and vice-versa. Initially, as expounded by the millers, the foreign market served as basis for copra pricing. Based on the prevailing price, the head office sets a maximum price for the guidance of its regional oil mills. Then costs as well as competition in the area were factored in to come up with the offered price in the respective areas of operations.

On the other hand, results of the Ravallion analysis indicate that there was improvement in pricing efficiency during the period covered in this study. Out of the 55 pricing behavior relationships, which surfaced from the analysis, 21 cases or 38% showed competitive FOB relationships (Table 2 and Fig 5). This integration represented a dynamic process where initial price reactions and their feedbacks led to additional price changes as the market adjusted toward a new equilibrium. The major FOB competitive connections noted were 1) Region VI which was competitively linked with all other regions; 2) Regions VIII, IX, X, and XII which were integrated under FOB pricing with Regions V and XI; and 3) Region VII which was connected with Regions IX and XI. The presence of other corporations, which had comparable sizes with the oil mill groups of companies as well as local mills with strategic ingenuities to compete, provided a more aggressive price determination process wherein price changes in additional markets were considered.

Figure 5. The major competitive FOB links, Philippines, 1991-2003

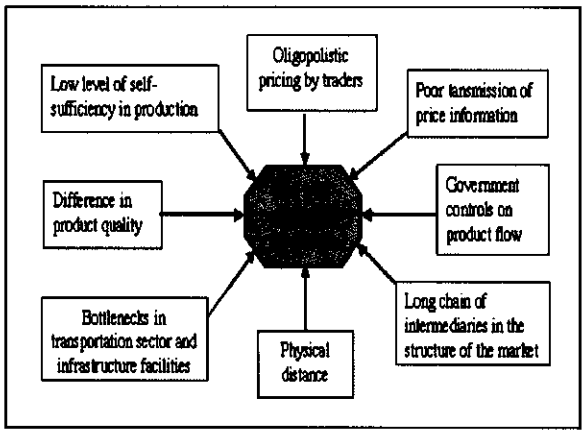


Factors Contributing to the Level of Integration and Efficiency of Spatial (Inter-Regional) Markets

Fig 6 depicts some of the factors that can contribute to low levels of market integration

as noted by Rivera and Helfand (2001), Miljkovic (1999), Baulch (1997), and Arshad (1990).

Figure 6. Factors that can lead to low level of market integration



Level of self-sufficiency in production. Nine of the ten regions covered in this study showed deficit in copra supply because milling capacity far exceeded coconut production. Regression results showed that milling capacity had a significant and positive influence on market integration. Moreover, the higher mill capacity region exerted more influence in the copra price formation on regions with lower mill capacity, but not vice-versa. On the other hand, the price realization became more efficient as regions depicted bidirectional association among them. Overall, integrated and non-integrated regions posted an average relative mill capacity of 1.11 and 2.73, respectively. This implies that integration may be expected for two markets with similar sizes in terms of demand or mill capacity.

Data showed that non-zero trade provided *prima facie* evidence of market integration. The regression results further suggested a direct relationship such that market integration was enhanced with an improved trade flow and coconut production. Moreover, an increase in DCN exports also increased the level of market integration. Husked nuts served as the raw material of DCN. Hence, price formation in husked nut sends feedback to copra price realization and vice-versa (Rivera, 2007).

Transmission of price information. Copra and oil prices are vulnerable to changes in the world supply and demand of vegetable oils and specifically soybean oil (Rivera, 2007). Hence, efficient transmission of world prices to the Philippine coconut industry players is needed for quick and accurate decisions. Millers in the different regions received world market information daily from various sources and were well equipped with various communication gadgets. All millers surveyed described the speed of price information transmission as efficient.

Physical distance. The coefficient of the distance variable had a negative sign as expected but had no statistically significant influence on market integration. The scenario of underutilized mills was mentioned by millers as the main reason for this since mills have to engage in inter-regional transfer of copra to satisfy plant requirement and meet commitments despite distance or transfer costs. Hence, market integration was observed among regions regardless of the distance between them. In addition to this, insufficient copra production in the region relative to mill capacity led to higher mill overhead cost. Each mill groups implement some overhead cost cutting measures in milling and strategies to meet the milling requirement. This may partly explain why areas where mills are abundantly located (Mindanao areas) had comparatively lower mill gate prices primarily because they have to absorb higher overhead costs. The other explanation is anchored on the type of demand in the area whether for domestic or for export.

Bottlenecks in transportation sector and infrastructure facilities. Results showed that it may not be distance per se which influences market integration. Bottlenecks in transportation and infrastructure facilities, which make freight and transfer costs more expensive, could have stronger effect on the

efficiency of the market. Traders noted that on the surface, freight depended on distance but this is not always the case. It is more precise to say that generally the shorter time between loading and completion of discharge, the lower the freight will be. Llanto (2005) reported that the Philippines had the lowest port efficiency index compared to its neighbor countries and a high median number of days to clear customs.

The comparative handling costs in different regions reflected the status of port facilities in each port. Notably, Regions VII and X posted lower handling costs than all other regions. Moreover, PPA noted that to achieve efficiency in port operations, every vessel that docks at the ports should stay at its facilities in the shortest possible time depending on the volume of cargoes to be discharged and loaded. The ratio of service time and cargo throughput (Hour/MT) of selected Philippine ports showed that for foreign cargoes, the more efficient ports were Cagayan de Oro (Region X), Batangas (Region IVA), and Manila South Harbor (NCR). For domestic cargoes, General Santos (Region XII) and North Harbor (NCR) led the other ports with a ratio of 0.02 hour/MT. Hence, such support services in trading are really the areas that should be managed and controlled to keep freight competitive. Moreover, it is appalling to note that, in addition to low efficiency in port areas, some Mindanao copra buyers also reported having to pay about PhP220.00/truck or a total of about PhP3000.00/week as "highway representation" in transporting copra.

Policies aimed at promoting the domestic shipping industry should be looked into as it might have a significant effect on Mindanao's exports. The millers and traders noted that Manila price was higher than that of the source area (e.g., Mindanao) due to the practice of van loading mandated to help boost local transport. If the Mindanao exporters applied van loading, a foreign vessel stays in Manila then a local vessel gets the coconut product (e.g., oil) from the source areas then discharge the vans in Manila. The broker shoulders the local transport cost, making the Manila price higher than the source areas. As already shown in the result of this study, Mindanao prices were comparatively lower than the Luzon regions. Freight costs that were not competitive could further lower Mindanao prices.

Oligopolistic pricing. With the increasing number of players in the industry, the study indicated that pricing efficiency had improved over the period of analysis and FOB competitive pricing or bidirectional relationships were evident. However, anti-competitive behavior in some regions contributed to a less efficient unidirectional links and, in other cases, to absence of integration.

Survey responses of millers and traders revealed some of the other factors that influenced copra price differential between regions.

Price of other products. NCR and Region IVA copra price was generally higher than all other regions. Copra cake price is a direct determinant in deriving the copra price. NCR can buy copra at a higher price because of the higher copra cake price in the region due to its high demand as a major coconut product export. On the other hand, Region IVA also had a very high demand for copra cake but mainly for domestic consumptions. There was basically no storage cost for the mill because of the high demand for copra cake as buyers were just waiting for the availability of the product.

Type of mills predominant in the region. Prices in Luzon (NCR & Region IVA) were based on local market while prices in Mindanao were mostly based on the export market. Hence, traders from Visayas islands tended to sell their copra to Luzon where the price was higher than in Mindanao. Within Luzon, the competitors of exporters were the local mills. Exporters sometimes could not compete locally since the local mills based their price on immediate demand. Hence, for the domestic market, the current price is also the selling price. This means that local mills incur lower costs than exporters because of the fast

turnover of inventory. On the other hand, if an exporter makes a three-month forward sale, export price is fixed for three months. Hence, the exporters need to increase the buying price of copra to meet milling requirements and to fulfill the contract. Within Mindanao, mills that export copra products mainly followed the export price based on the price set forth by their main/head offices. The main offices, mostly located in NCR, set the maximum price and sent it to their buying stations and mills where the buying price depends on the level of local competition. On the other hand, though some local mills in Mindanao also implemented their own pricing strategies, they tended to follow the price set by the exporter mill in their region.

Positioning of exporters. When exporters have short selling position and domestic sellers have long position, domestic sellers can incur losses. They may have bought copra at a higher price but sell at lower price since price may go down when exporters set a new position.

Marketing strategy of buying stations and big traders. Regions where buying stations and big traders compete in copra procurement tended to have higher copra price than regions with oil mills. Take the case of Cebu. Mill price in Cebu was lower than those from its neighboring regions (Regions VI and VIII) because buying stations and big traders bought from Regions VI and VIII, effectively competing with oil mills in those regions thereby raising copra price.

Conclusion

The dynamics in the spatial copra markets in the Philippines indicated an improvement in the price formation as 38% of the markets are linked under FOB competitive pricing. However, an incomplete cartel may be in operation as other markets were interrelated only by a loose form of basing-point pricing. The causal relationships showed that inefficiencies marked the inter-regional copra trading since there are more unidirectional influences (16 markets) than bidirectional relationships (9 markets).

Recommendations

Results of the study highlighted areas and factors that contribute to either the integration or non-integration of markets. The following are recommendations geared towards improving the spatial integration and efficiency of copra trading in the Philippines.

Increase Coconut Production/Productivity and demand creation

Coconut production should be increased and demand in selected regions should be created to enhance the flow of price information and meet the current and emerging demands in the coconut industry. The program should incorporate areas on 1) planting and replanting of available improved and high-yielding coconut varieties; 2) creation of demand for coconut to enhance competition and improve price; and 3) promotion of high-value coconut products to arrest the dwindling interest in coconut farming.

Survey showed that farmers who had planned to cut and convert their coconut plantation had renewed interests in conserving their plantation as they got involved in the production and distribution of new products like virgin coconut oil and coconut sugar. To aid the farmers in farm planning and programming, they can be provided with "menu-type" guide packages. This package could contain information on improved varieties and specific coconut products with their respective best economic opportunities, (e.g.) varieties good for coconut sap (toddy) production which yield higher quantities of coconut sugar and honey; varieties that may yield white sugar compared to the usual brown coconut sugar produced; varieties that are best for food beverage, i.e., coco champagne or sap drink; and varieties that are best for the production of other highly demanded products with global market like virgin coconut oil. The varieties in the farmers' plantations that are tested for copra production should likewise be explored for these economically important products. With the renewed interest and

involvement of farmers and marketing support from the government and other stakeholders, the total utilization of the coconut palm not only for copra production could be realized.

Increase Investment to Improve Market Infrastructure and Facilities

The results of the study elucidated that bottleneck in transportation system which makes freight and transfer cost expensive strongly affected the efficiency of the markets. Hence, efforts towards improving the efficiency and competitiveness of Philippine ports should be hastened. The government should study how it could effectively bring down the freight costs by focusing on the factors that are responsible for making freight cost expensive. These areas should include the major source of expenditures; fuel cost, cost of borrowing, taxes, and subsidy of passenger carriage operations.

The government should likewise evaluate the effects of the level of its support programs for domestic shipping in comparison to the other support programs affecting the shipping operations, that is, the fuel tax subsidy enjoyed by airline companies and the better subsidies of foreign shipping lines. Also of importance is the monitoring of the implementation of the deregulation by the government of the freight rates for containerized cargoes. Along this line, it may be noteworthy to monitor the implementation and effect of government policies like the Domestic Shipping Development Act which aim to promote the development of the domestic shipping industry as it might have a significant effect on other sectors, say, the Mindanao export sector.

Literature cited

Arshad, F.M. 1990. The Integration of Palm Oil Market in Peninsular Malaysia. *Indian Journal of Agri. Econ*, **45**(1):21-30.

Baulch, B. 1997. Transfer Costs, Spatial Arbitrage, and Testing for Food Market Integration. *Amer. J. Agr. Econ.* **79**:477-487.

Baulch, B. 1997. Testing for Food Market Integration Revisited. *The Journal of Dev Studies,* 33(4):512-534.

Box, G., and G. Jenkins. 1976. Time Series Analysis: Forecasting and Control. 2d. ed., Holden-Day, San Francisco.

Faminow, M.D. and B.L. Benson. 1990. Integration of Spatial Markets. *Amer. J. Agr. Econ* 72:49-62.

Llanto, G.M. et al. 2005. Competition Policy and Regulation in Ports and Shipping. Discussion Paper Series No. 2005-02, February 2005

Maritime Industry Authority. A discussion Paper On the issue of Higher Domestic Shipping Freight Rates Compared With Foreign/Oceangoing Freight Rates

Miljkovic, D. 1999. Transporting the Export-Bound Grain by Rail: A Study of Market Integration. http://agecon.umn.edu/cgi_bin/Pdf_view.pl_papered=1833

Rivera, G.G., and S.M. Helfand. 2001. The Extent, Pattern, and Degree of Market Integration: A Multivariate Approach for the Brazilian Rice Market. *Amer. J. Agr. Econ.* **83**(3):576-592.

Rivera, S.M. 2007. Market Integration and Efficiency in the Philippine Coconut Industry. *Unpublished Ph.D. Dissertation, University of the Philippines at Los Baños.*

Sinharoy, S. and S.R. Nair. 1994. International Trade and Pepper Price Variations: A Cointegration Approach. *Indian Journal of Agricultural Economics*, **49**(3):417-425.

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The results and discussions should provide data organized into tables, figures and photographs, suitably compared and discussed with earlier published findings.

All data must be presented in metric units.

For abbreviations, consult the B.S. (British Standards) on "Letter symbols, signs, and abbreviations". Abbreviations are alike in singular and plural. The placing of a dot (stop) after a standard abbreviations should be avoided unless the abbreviation form is likely to be taken for another word, e.g., in for inch, where a full stop would be necessary.

In the text, references should be quoted according to the Harvard system, in which the author's name and date are given in parenthesis, e.g. (Magat, 2003) except when the author's name is part of a sentence, e.g. Magat (2003) reported ..... When there are two authors, both name should be given, e.g. (Magat and Margate, 1990). If there are more than two authors, give the first author's name only followed by the words *et al.* e.g. Magat *et al.* (1989).

The **table** should carry appropriate titles, **which should be typed in bold letters**. Each table should be self-explanatory, numbered consecutively. Try to avoid presenting table that is too large to print across the page. Use - (dash) when no observation was taken and 0 for zero reading. Express values less than unity as 0.25 and not .25.

The **figures should** be restricted to the display of results when large number of values can be comprehended more easily; tables and figures should not reproduce the same data. Numbering and lettering should be kept to an absolute minimum

The **photos and plates** should be of high quality and be able to make a definite contribution to the value of the paper.

The **acknowledgment** should follow the section on discussion and immediately precede references.

Only **references** quoted in the text should be listed. References in the text should be arranged chronologically.

Reference to publications in periodicals should be cited in the following order surname of author, followed by the initials, year of publication, title of paper, name of journal (italics), volume (in bold Arabic letters), and number in bracket and after a colon the first and last pages of the reference (without the prefix "pp.") e.g. Morin, J.P, Sudharto, P.S., Purba, R, Desmier de Chenon, Kakul, T., Laup, S., Beaudoin-Ollivier, L. and Rochat, D. 2001. A new type of trap for capturing *Oryctes rhinoceros* (Scarabaeidae: Dynastinae), the main pest in young oil palm and coconut plantings. *Cord* **17**(2): 13-21.

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