SEADI DISCUSSION PAPER SERIES

Impact of Export Tax Policy on Cocoa Farmers and Supply Chain

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Impact of Export Tax Policy on Cocoa Farmers and Supply Chain

SEADI Discussion Paper No. 1

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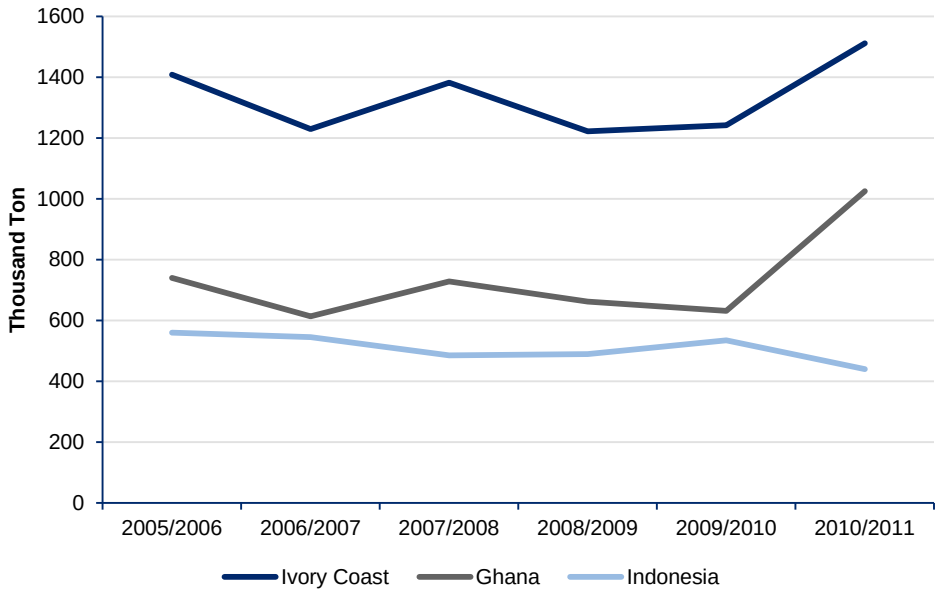
1. Background

Indonesia is the third largest producer of cocoa beans in the world with the estimated production of 440,000 tons in 2010/2011. The largest producer is Ivory Coast with 1.41 million tons of cocoa beans in 2010/2011 (Figure 1-1). In terms of growth during the period of 2005/2006 until 2010/2011, Indonesia's production suffered a decrease by an average of 4.25 percent; meanwhile Ivory Coast and Ghana have a positive production growth of 2.3 percent and 10 percent, respectively.

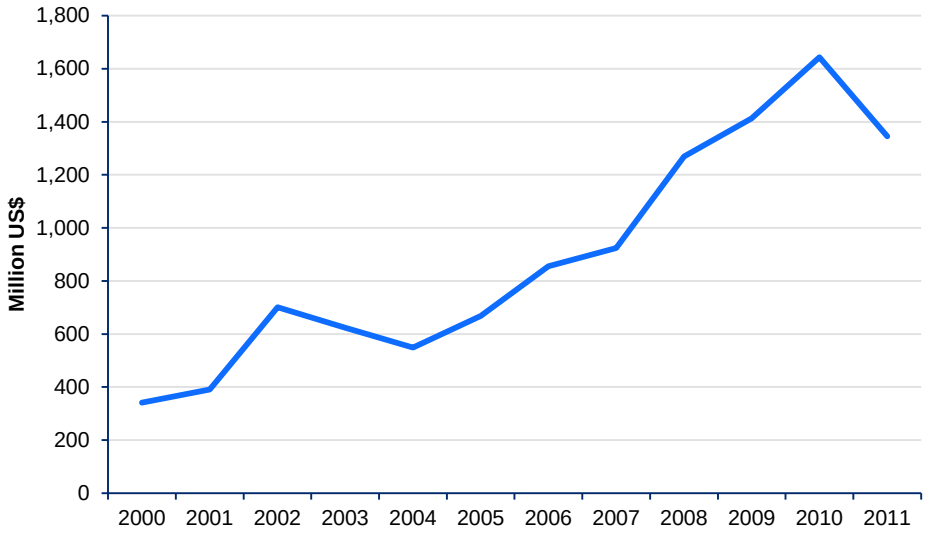
Figure 1-1
Production of Three Largest Cocoa Beans Producer, 2000-2012



Source ICCO, 2012

To be used by the food industry, cocoa beans are processed into intermediate products such as butter, paste, or powder. In 2010, domestic consumption of cocoa beans reached 377,498 tons, or 44.7 percent of production (Media Data 2011). These intermediate products along with cocoa beans and cocoa husks are also important export commodities for Indonesia. The total export value of the six commodities reached more than US$1.3 billion in 2011 (Figure 1-2). During the period of 2000 until 2011, the export value grew at an average of 16 percent with the highest growth in 2002 when exports grew by 79 percent. In 2011, cocoa and cocoa preparations export decreased by 18 percent after reaching a record high of US$1.6 billion in 2010. The significant decrease of export value was caused by two things, first the decrease in the international price of cocoa beans of 4.8 percent and secondly by the implementation of the export tax on cocoa beans in April 2010.

Figure 1-2
Indonesia's Export Value of Cocoa and Cocoa Preparations (HS 18)

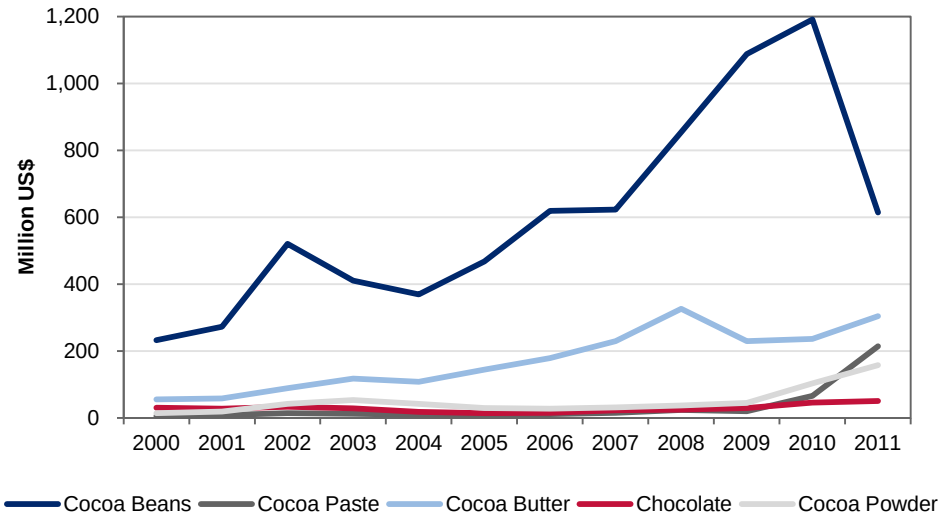


SOURCE: *UN Comtrade, 2012*

The objective in implementing the export tax policy on cocoa beans was to guarantee the availability of cocoa beans in the domestic market for raw materials in the processed cocoa industry which eventually will develop the downstream cocoa industry. The government of Indonesia issued the Ministry of Finance Regulation No 67/PMK.011/2010 and renewed with Ministry of Finance Regulation No 128/PMK.011/2011 regarding the implementation of cocoa beans export tax.

The effect of export tax is clearly shown in the composition of cocoa product exports (Figure 1-3). The implementation of export tax on cocoa beans decreased cocoa beans export value by 48.3 percent and export quantity by 51.4 percent. On the other hand, export of cocoa paste, cocoa butter, cocoa powder and chocolate increase by 224 percent, 28.6 percent, 53.1 percent and 11.3 percent respectively.

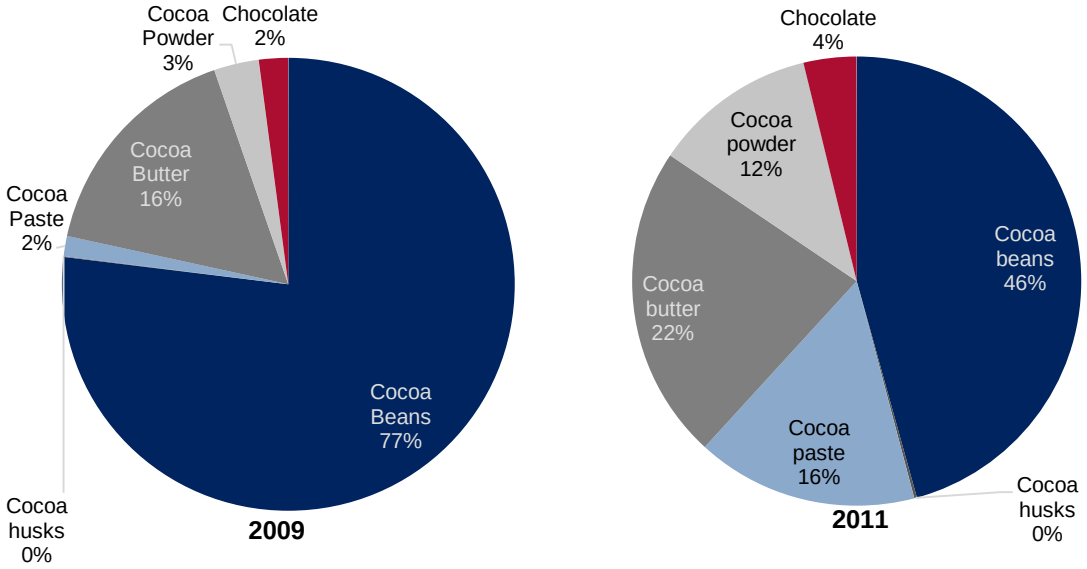
Figure 1-3
Indonesia's Export Value of Cocoa Products, 2000-2011



SOURCE: *UN Comtrade, 2012*

The implementation of export tax also shifted the contribution of cocoa product export from cocoa beans to processed cocoa products (Figure 1-4). Before the implementation of the export tax in 2009, 76 percent of cocoa exports was contributed by cocoa beans. After the implementation of export tax in 2011, the contribution of cocoa beans export decrease significantly only 46 percent. On the other hand, processed cocoa products contribution (cocoa paste, butter, powder and chocolate) increased significantly after the implementation of the export tax.

Figure 1-4
Cocoa and Cocoa Preparations Product Composition for Export, 2009 and 2011



SOURCE: UN Comtrade, 2012

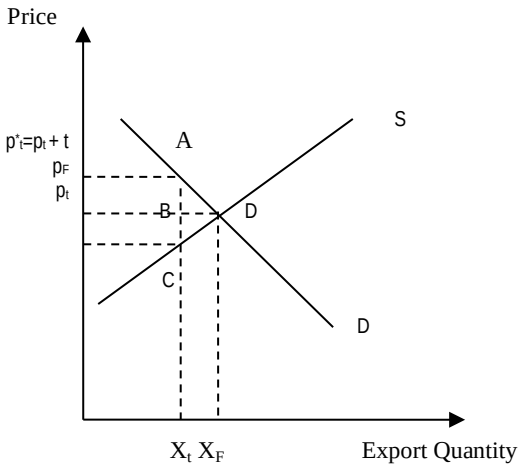
The effect of export tax policy on exports is obvious; meanwhile the effect on the farmer's level is still to be analyzed. This paper examines the effect of the export tax policy on farmers as well as the cocoa supply chain.

2. Literature Review

Theoretically, the export tax policy will lower the domestic price of cocoa beans, which will benefit the downstream cocoa industry because it can get raw materials at lower prices. Meanwhile the effect on farmers remains unclear.

Figure 2-1 illustrates the effect of export taxes at a rate of *t* when the producing country accounts for a large share of world trade. The domestic price of export falls to p_t, reducing the sum of consumer and producer surplus by the area of p_FDCp_t. The tax, however, yields revenue equal to after-tax volume multiplied by the tax rate, or the area of $p^*_tACp_t$. The loss of tax is equal to the area of BCD, while the terms of trade gain equal to the area of $p^*_tABp_F$ (Helpman and Krugman 1989).

Figure 2-1
Imposition of Export Tax



SOURCE: Helpman and Krugman (1989)

Many scholars have analyzed the effect of export tax on specific commodities. Their analyses can be classified into two groups: (1) those calculating the optimum export tax (Akiyama 1992; Trivedi and Akiyama 1992; Yilmaz 1999; Burger 2008; Permani, Vanzetti, and Setyoko 2011) and (2) those analyzing the effect of the export tax on welfare and the economy (Marks, Larson, and Pomeroy 1998; Hasan, Reed, and Marchant 2001; Warr 2003; Susila 2004; Rifin 2010; Nyein et al. 2010; Pradiptyo et al. 2011). All these studies indicate that an export tax will have a negative effect on the economy and decrease its competitiveness.

Piermartini (2004) indicates that the effect of an export tax depends on market power. Countries with market power that implement an export tax have more effect on the

international price, trade volume, income distribution, and terms of trade than a country without market power. Meanwhile, the negative impact on economic growth and national welfare is more severe when the export tax is implemented by a country without market power (Devarajan et al. 1996). If a country with market power implements an export tax, there will also suffer a loss in efficiency because of the distortion impact of the export tax, but its terms of trade will improve because the export price increases (Piermartini 2004).

Several studies have analyzed specific commodities, such as palm oil (Marks, Larson, and Pomeroy 1998; Hasan, Reed, and Marchant 2001; Susila 2004; Putri et al. 2008; Rifin 2010; Obado 2010), rice (Warr 2001), coconut (Warr 2002), and coffee (Lam 1979). The study of the effect of an export tax on cocoa in Indonesia is limited because the export tax was imposed only in April 2010. From these studies only Pradiptyo et al. (2011) examined the effect after the policy was imposed. But the idea of an export tax on cocoa beans was discussed for several years before the tax was implemented, and several scholars analyzed the theoretical effect of export tax on cocoa beans before it was adopted: Rifin and Nurdiyani (2007), Arsyad (2007) and Arsyad, Sinaga, and Yusuf (2011). Only Pradiptyo et al. (2011) analyzed the actual impact.

Rifin and Nurdiyani (2007) assessed the plan to impose an export tax on cocoa beans, analyzing the market integration between domestic and international prices in Indonesia. Their results indicate that in the short run the domestic and international markets are generally segmented and not integrated. Therefore the domestic price was not affected by the international price and not directly transmitted in the domestic market. In the long run, however, the domestic market has a strong relationship with the international market. The authors concluded that the implementation of an export tax would make the market more disintegrated. Firdaus and Ariyoso (2010) conducted the same analysis. They analyzed market integration between cocoa prices in South Sulawesi, Indonesia, and New York to find factors that affect the Indonesian cocoa price. This study found there was no market integration in either the short run or the long run. Factors that affected the Indonesia cocoa price significantly were the New York Board of Trade (NYBOT) cocoa price, world consumption, and the exchange rate.

Arsyad (2007) and Arsyad, Sinaga, and Yusuf (2011) analyzed the combined effect of the fertilizer subsidy and the export tax on Indonesia cocoa exports and production using the two-stage, least-square (2SLS) method and concluded that the export tax policy would decrease export and production. The authors simulated a 5 percent export tax, which resulted in a decrease in cocoa production of 0.14 percent and a decrease in cocoa exports of 0.63 percent.

Pradiptyo et al. (2011) analyzed the effect of an export tax on farmers and found that the cocoa beans export tax was borne by the farmers fully or partially. This is because exporters are price takers in the world market, therefore they cannot transfer the export tax into the international market but only to the domestic market, which is the farmer. In addition, after the implementation of the export tax, cocoa bean exports did not decrease significantly; the research therefore concluded that the policy had no effect on cocoa bean exports.

In the articles on export taxes for all commodities, two issues are missing. First, the articles do not analyze the effect of an export tax at the micro level such as farms. Second, most of the articles do not calculate the value of the export tax, especially given that it changes every month. This article attempts to fill the gap on these issues. The effect of export tax on farmers will be analyzed and the calculation of export tax value will be presented on a monthly basis.

3. Export Tax Policy

The processed cocoa industry reached its golden period in 2001. At that time there were 40 processed cocoa companies in Indonesia with capacity of 362,186 tons per year (Media Data 2011). In 2001, the government implemented Regulation No 18 2000 regarding the value added tax (VAT) on primary products that required cocoa processing companies pay 10 percent VAT on cocoa beans. In addition, several exporting countries also imposed import tariffs on processed cocoa products.

In 2007, the VAT on primary products was abolished. At the same time, however, world agricultural product prices increased, including for cocoa beans. To address the price increase, the government issued the export tax policy in April 2010. According to the Ministry of Finance Regulation No 67/PMK.011/2010, the export tax of cocoa beans is calculated as follows:

Export Tax = Export Tax Tariff x Check Price x Export Volume x Exchange Rate

This calculation is similar to the export tax policy on palm oil products. The export tax tariff and check price are announced on a monthly basis. The export tax tariff is based on the reference price, which is tied to the world price (Table 3-1). The reference price and check price to be applied in the coming month are usually announced by the Ministry of Trade at the end of each month. The reference price determines the export tax tariff based on the Ministry of Finance Regulation No 67/PMK.011/2010, which states that a higher reference price will induce a higher tariff (Table 3-2). The reference price is based on the average international price for the previous month. For example, the export tax for April 2012 was announced at the end of March 2012 and was based on the average international price for February 2012.

During the period April 2010 to June 2012 the highest tax rate was 15 percent in April 2011, when the reference price was US$3516. Therefore the export tax was US$480.45 per ton. The lowest export tax value occurred in February 2012, when the export tax was 5 percent and the check price was US$1,918, making the export tax value US$95.9 per ton (Figure 3-1).

Table 3-1
Relation between Reference Price and Cocoa Beans Export Tax Tariff

Reference Price (US$)	Tariff (%)
< 2000	0
2000 – 2750	5
2750 – 3500	10
>3500	15

SOURCE: Ministry of Finance, 2010

Table 3-2

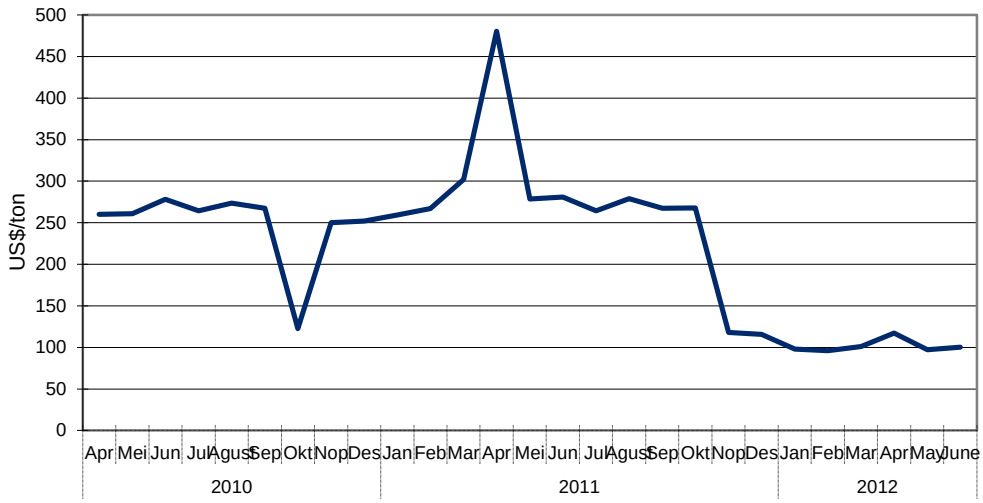
Cocoa Beans Check Price, Reference Price, and Tariff, April 2010–June 2012 (US$/ton)

Month	Check Price	Reference Price	Tariff (%)
April 2010	2603	2900.06	10
May 2010	2608	2905.68	10
June 2010	2783	3084.81	10
July 2010	2643	2941.88	10
August 2010	2738	3038.91	10
September 2010	2673	2972.23	10
October 2010	2452	2744.90	5
November 2010	2500	2794.85	10
December 2010	2519	2814.48	10
January 2011	2593	2890.66	10
February 2011	2671	2970.00	10
March 2011	3021	3329.20	10
April 2011	3203	3516.11	15
May 2011	2786	3088.20	10
June 2011	2811	3113.57	10
July 2011	2643	2941.81	10
August 2011	2791	3093.88	10
September 2011	2673	2972.69	10
October 2011	2679	2978.28	10
November 2011	2359	2649.83	5
December 2011	2316	2606.38	5
January 2012	1962	2243.47	5
February 2012	1918	2197.77	5
March 2012	2022	2304.35	5
April 2012	2345	2061.00	5
May 2012	1941	2221.52	5
June 2012	2006	2287.74	5

SOURCE: Ministry of Trade and Ministry of Finance, various years

Figure 3-1

Export Tax Value of Cocoa Beans, April 2010-April 2012



4. Methodology

To analyze the effect of export tax on cocoa farmers and the cocoa supply chain, a survey of farmers and institutions involved in cocoa supply chain was conducted. The survey was carried out in South Sulawesi province because the province is the largest producer of cocoa beans in Indonesia, with production of 164,444 tons, or 20 percent of Indonesia's cocoa bean production in 2009 (Ministry of Agriculture 2012). North Luwu regency was chosen for the survey because it has the largest production of cocoa beans in South Sulawesi, with 31,667 ton in 2009 (Ministry of Agriculture 2012). The research was conducted in two subregencies (*kecamatan*), Sabbang and Sukamaju. Sabbang is occupied mainly by members of the Bugis ethnic group, while Sukamaju is a transmigration area and occupied mainly by people of Balinese descent. In each subregency, the two villages that are the largest producers of cocoa bean were chosen. In each village, 15 farmers were interviewed, for a total of 60 farmers.

The methodology used in this research includes both qualitative and quantitative approaches. The qualitative approach will be used in analyzing the cocoa supply chain before and after the implementation of the export tax. The quantitative analysis consists of three analyses: marketing system, efficiency analysis, and price linkage.

The marketing system analysis was carried out using the institutional and functional approach of Kohls and Uhl (1998), covering the functions of every institution involved in the cocoa supply chain, from farmers (i.e., producers) to either processors or exporters, before and after the implementation of the export tax on cocoa beans.

The efficiency analysis consists of two analyses: marketing margin and cost-benefit ratio. The marketing margin analysis consists of total margin, which is the difference between the price at the farmer level (producer) and the price for the consumer (or exporter) in every institution in the cocoa supply chain, which is the difference between the selling price and the buying price, including cost during handling. The formula is as follows:

$$M_T = P_r - P_f \; or \; M_T = \sum_{i=1}^{n} M_i$$

$$M_i = P_i - P_{i-1} \; or \; M_i = B_i + \pi_i$$

Where

M_T = Total marketing margin (Rp)

M_i = Marketing margin in institution i, i=1,2,...n (Rp)

P_r = Consumer's Price (Rp)

P_f = Farmer's price (Rp)

P_i = Price in institution i

P_{i-1} = Purchasing price in institution i

B_i = Marketing cost in institution i

π_i = Profit in institution i

Second, the cost-benefit ratio is calculated in every institution involved in the cocoa supply chain.

$$B\ C\ ratio = \frac{\pi_i}{C_i}$$

Where:

π_i = Profit in institution i

C_i = Cost in institution i

The price linkage analysis is utilized to analyze the link between farmer's level price and international price. The analysis will be conducted before and after the implementation of export tax. Verror Error Correction Model (VECM) will be utilized to analyze the price linkage between those three prices. Vector error correction (VECM) is a vector autoregression (VAR) model adding the error correction equation. The error correction equation is added when there is a cointegration in the model. If there are two variables, X and Y, and both variables are cointegrated the first difference of X_t and Y_t can be modeled using a VAR, augmented by including $Y_{t-1} - \theta X_{t-1}$ as an additional regressor (Stock and Watson, 2007):

$$\Delta Y_t = \beta_{10} + \beta_{11}\Delta Y_{t-1} + \ldots + \beta_{1p}\Delta Y_{t-p} + \gamma_{11}\Delta X_{t-1} + \ldots + \gamma_{1p}\Delta X_{t-p} + \alpha_1(Y_{t-1} - \theta X_{t-1}) + u_{1t}$$

$$\Delta X_t = \beta_{20} + \beta_{21}\Delta Y_{t-1} + \ldots + \beta_{2p}\Delta Y_{t-p} + \gamma_{21}\Delta X_{t-1} + \ldots + \gamma_{2p}\Delta X_{t-p} + \alpha_2(Y_{t-1} - \theta X_{t-1}) + u_{2t}$$

5. Effect of Export Tax Policy

The implementation of a cocoa bean export tax since April 2010 is expected to affect farmers. Almost all interview respondents knew the policy. The effect on farmers is mostly on the price they receive—which price is lower, and traders say that it is caused by the export tax. This findings are similar to the research conducted by Pradiptyo et al. (2011).

Farmers made no significant change in operations after the implementation of the export tax policy, however. Farmers did not shift their marketing channel because the price given by buyers was similar and some farmers are attached to buyers by training or contracts. On the buyer's side, no significant changes were made. PT MARS, which buys wet cocoa beans, has been buying the same product before the export tax policy was implemented.

Regarding the determination of purchasing price from farmer's, based on the information from PT Olam, it is based on the international price (NYBOT price), exchange rate, transportation cost to move the beans from North Luwu to Makassar where the processing unit is located, and the term the exporter's called price differential. Basically this price differential is the margin that the exporter obtains.

In the field there is some information that the farmer bears the export tax at the fixed level of 15 percent even though the export tariff differs from between 0 percent to 15 percent. To prove this statement, the price differential is calculated by subtracting the farmer's price from the international price (Figure 5-1).

Figure 5-1
Price Differentials of Dried Cocoa Beans, Jan 2006–Dec 2011

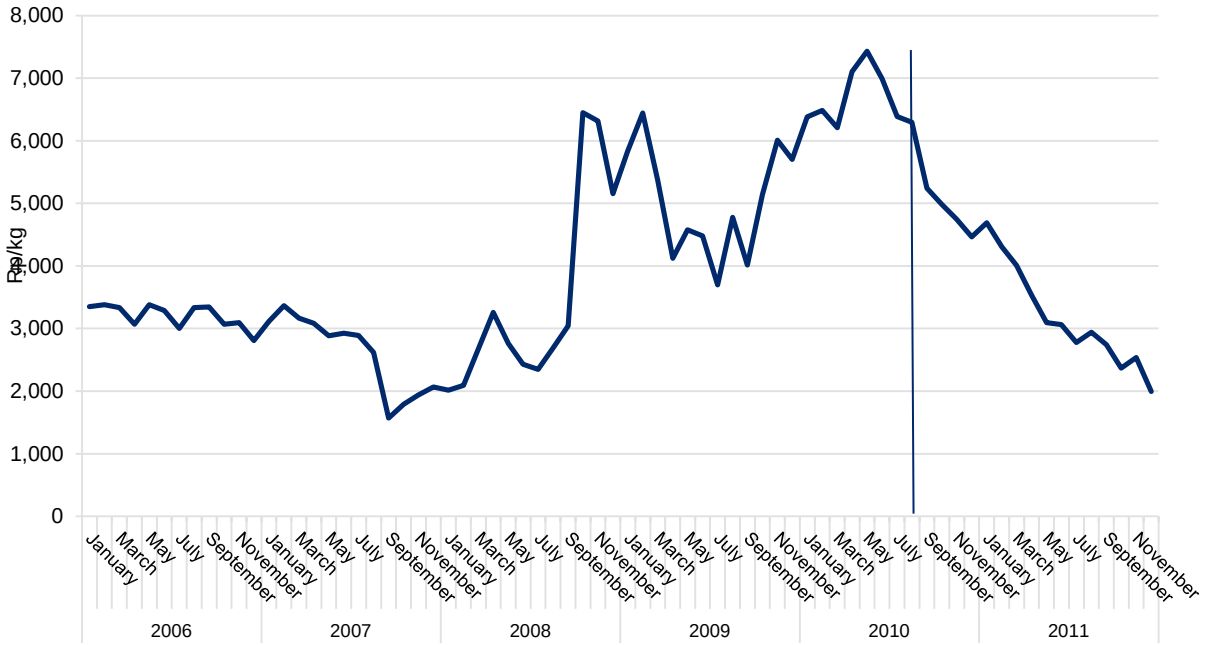
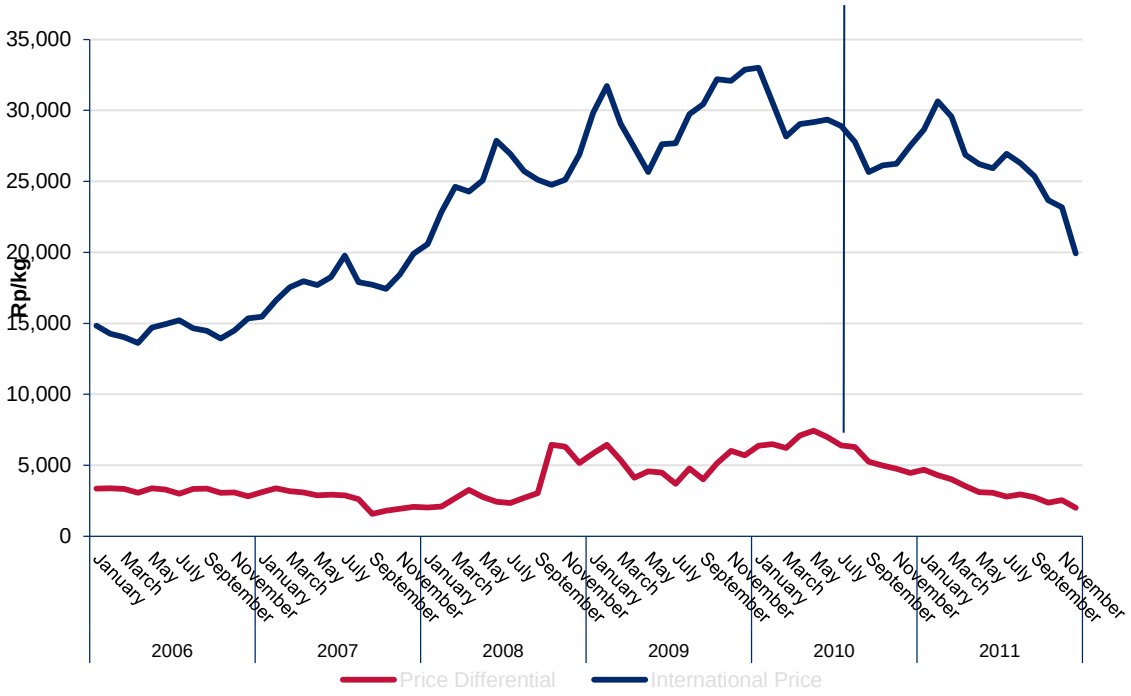


Figure 7 indicates that the price differential decreased after April 2010 when the government implemented the export tax policy on cocoa beans but there was a one off shift that month. This suggests that the implementation of export tax had only a negative effect on the exporter is profits. The decrease in price differential can be caused by the increasing competition between exporter and processing industry to obtain cocoa beans. Referring to the price linkage equation, which shows that the international price is perfectly transmitted to the farmer's price, it indicates that exporter determines the purchasing price based on the international market and when one exporter tries to decrease the purchasing price, the farmer will just shift to another buyer who offers better price because the competition is tight in obtaining cocoa beans.

In addition, the price differential and the international price have a high positive correlation (0.507). Figure 5-2 shows that the differential on price tends to have the same movement especially after the implementation of export tax policy in April 2010. This indicates that a high international price has a positive effect on price differential, or in other words, exporters will gain higher profit when the international price is high; on the contrary, when the international price is low, the exporter will earn less profit to compete with other exporters or the processing industry.

Figure 5-2
Relation between Price Differential and International Price, Jan 2006–Dec 2011



SOURCE: ICCO, 2012

In conclusion, the marketing institution which bears the export tax is the institution which has less bargaining power in the market. From the discussion, the export tax is borne by the exporter which as shown indicated by the decrease in marketing margin when the export tax is imposed. Meanwhile farmers have higher bargaining power because they have the independence to sell their beans to institution which offer better price.

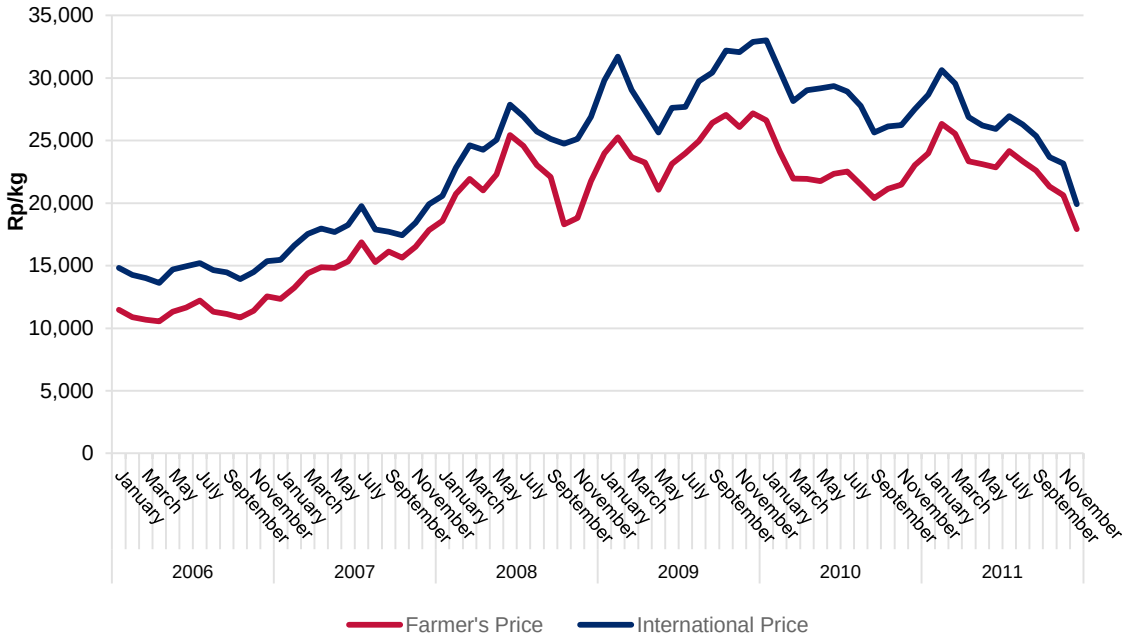
The other effect of the export tax is the increase in capacity of processing company either in the form of new investment or re-opening of previous companies which closed before the

implementation of export tax. In South Sulawesi, in 2011 five processing companies reopened their factories with a capacity of 79,000 tons of cocoa beans per year (of the total 380,000 tons in all of Indonesia) (Media Data 2011). Because cocoa bean production increased by only 24,612 tons, competition among processors in obtaining cocoa beans from farmers has become more intense. In addition, there has also been a shift from exporting cocoa beans to selling cocoa beans to processing companies. This is proven by a decrease in Indonesia's cocoa bean exports of 48 percent in 2011 (UN Comtrade 2012).

6. Link between the Farmer's Price and the International Price

The farmer's price and the international price move in the same direction (Figure 6-1). The international is based on the NYBOT price of dried cocoa beans gathered by the International Cocoa Organization (ICCO). Meanwhile, the farmer's price is based on the purchasing price of one exporter operating in North Luwu (PT Olam). This indicates that the farmer's price is determined by the international price. In the field, farmers receive daily information about the price from exporters using short message service (SMS), which is based on the NYBOT price.

Figure 6-1
International Price and Farmer's Price of Dried Cocoa Beans



SOURCE: ICCO and PT Olam, 2012

To analyze the price linkage, a VAR or VECM method was used. The data for the analysis was recorded during the period January 2006 to December 2011. Before estimating the VAR or VECM model, a unit root test was conducted to detect data stationarity using an Augmented Dickey Fuller test (Table 6-1). Table 6-1 indicates that both data are stationary after first differencing.

Table 6-1
Unit Root Test

Variable	ADF test	p-value
Farmer's Price	-1.001	0.936
D(Farmer's Price)	-5.266	0.000
International Price	-0.875	0.953
D(International Price)	-6.068	0.000

The next step is to conduct a cointegration test to determine whether both prices have long-run equilibrium (Table 6-2). The result indicates that both prices do not have long-run relation because in the field, the farmer's price is determined by the previous day's New York price; therefore the relation is in the short run rather than in the long run. The same result was also obtained by Firdaus and Ariyoso (2010) using the Ravallion method and by Mananyi and Struthers (1997), who found no cointegration between spot and futures prices in the London cocoa market.

Table 6-2
Johansen Cointegration Test

Hypothesized No. of CE	Trace		Max Eigen	
	Trace Statistic	p-value	Max Eigen Statistic	p-value
None	8.599	0.773	6.066	0.781
At most 1	2.533	0.671	2.533	0.671

Because no cointegration exists, the VAR model is in the first difference form. In addition because the international price affects the farmer price in the same period, the model is as follows:

$$\Delta LFAR_t = c + \Delta LFAR_{t-1} + \Delta LINT_t + \Delta LINT_{t-1} + \varepsilon_t$$

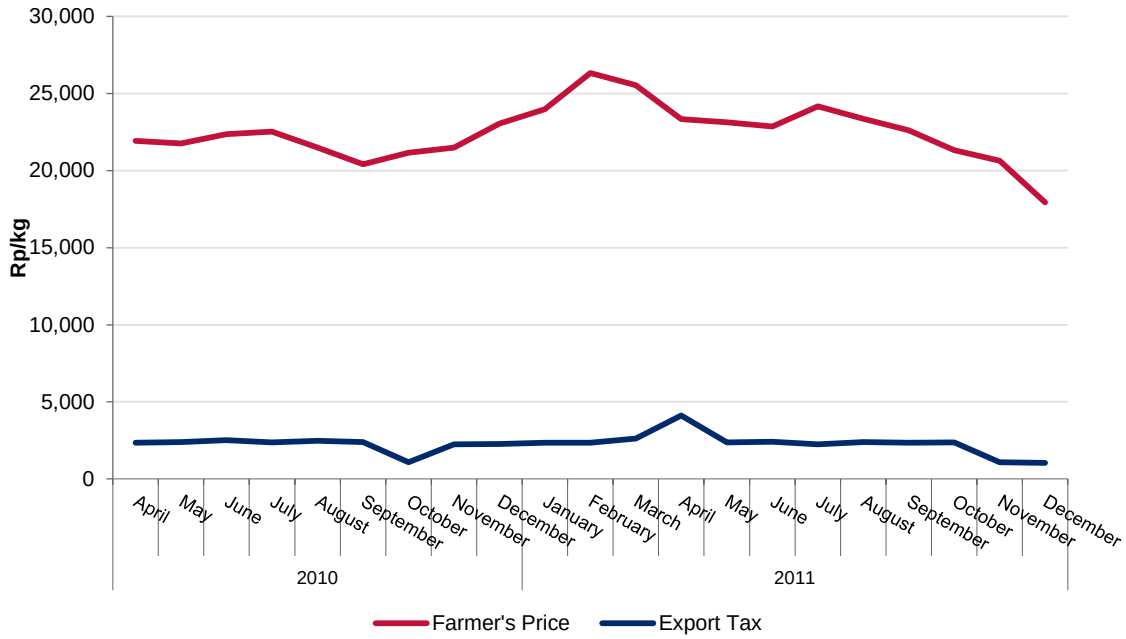
The result is shown in Table 6-3. The R^2 is high, at 84.6 percent, which shows that the model can interpret the variation of the dependent variable by 84.6 percent. The result shows that only one variable—the international price—is significant in the same period. The coefficient of international price is 1, indicating that a change in the international price will change the farmer's price in the same amount, or in other words the international price is perfectly transmitted to the farmer's price. This confirms field survey responses that the farmer's price is based on the international price (New York price) on a daily basis.

Table 6-3
Estimation Result

Variables	Coefficient	p-value
Constant	0.003	0.414
$\Delta LFAR_{t-1}$	0.095	0.426
$\Delta LINT_t$	1.001	0.000
$\Delta LINT_{t-1}$	-0.201	0.121
R^2	0.846	
F-stat	120.657	0.000

Regarding the effect of the export tax value on the farmer's price, both values are shown in Figure 6-2, which shows no common trend between the values. When correlation analysis is conducted on the relation between both values, however, it finds that both values (farmer's price and laged export tax) are correlated and significant at the 10 percent level, although the relation is low (0.384). The laged export tax is used because the value of the export tax is determined by the previous month's international price. The positive correlation shows that the effect of the export tax is not through the domestic price to farmers, as shown in Figure 6-2, but through the international price. The international price affects the domestic price and the export tax. The small correlation value shows that the export tax has a slight relation to the farmer's price although the international price is well transmitted to the domestic price. The slight relation of the export tax to the farmer's price is because Indonesia is not a major cocoa bean producer, and therefore the export tax is not perfectly transmitted to the domestic price.

Figure 6-2
Farmer's Price and Export Tax Value



SOURCE: ICCO, 2012

7. Cocoa Marketing Channel in North Luwu Regency

Sixty farmers were interviewed from two subregencies (Kecamatan), Sabbang and Sukamaju. These subregencies are the production center of cocoa beans in North Luwu Regency. In comparing the characteristics between respondents in these subregencies, we found the subregencies similar in terms of age and land ownership, but in terms of education and land area, there are differences between respondents in the subregencies.

In terms of age, 83 percent of the respondents are in the age range of 31–41 years old. In Sukamaju, most respondents are second-generation farmers who inherited their land from their parents. All of the respondents in both subregencies owned their land.

For the education level, there are significant differences among the farmers in these two subregencies. In Sukamaju, all of the respondents have only elementary school education. On the other hand in Sabbang, 90 percent of the respondents have junior high school education and even 10 percent of them have senior highschool education and no respondents have elementary education.

Fifty percent of respondent in Sabbang subregency had more than 2 hectares of land planted in cocoa, while in Sukamaju only 13 percent had plots of more than 2 hectares. Sukamaju was a transmigration area where every farmer received 2 hectares of land, and because the farmers interviewed in Sukamaju are second-generation farmers, they inherited less than 2 hectares (depending on the number of siblings that their parents had). Farmers with more than 2 hectares usually accumulated the land by purchasing from other farmers.

The research plan for this study was to analyze the marketing channel before and after the implementation of the export tax. During the field survey, however, we found no change in the marketing channel caused by the export tax policy. Therefore only the recent marketing channel will be discussed here.

In the regency, several cocoa commodities are sold by farmers or farmers' organizations. These commodities are wet, dry, and fermented cocoa beans. Each commodity has a single marketing channel. Unlike in areas such as Southeast Sulawesi (Komisi Pengawas Persaingan Usaha 2009), Papua (Wally 2001) or Lampung (Slameto 2003), the exporters and processing industry have more dominance than village and subregency traders. These exporters and processing industry are mainly multinational companies from the United States and Europe. There are five main multinational exporters in Sulawesi accounting for 80 percent of cocoa purchases; EDF and Man, Olam, Cargill, ADM, and Continaf (USAID 2006). In all of Indonesia, 13 multinational companies are involved in the cocoa bean trade. Six of the

companies purchase directly from farmers, while the rest purchase cocoa beans from traders (Media Data 2011).

In North Luwu Regency are three primary marketing channels involving several institution such as traders, processing industry, and exporters. The first marketing channel is used in Sukamaju subregency, while the second and third marketing channels are used in Sabbang subregency. The first marketing channel is for wet beans in Sukamaju subregency. It can be described as follows:

Farmer → Processing Industry → Domestic or Foreign Consumer

The farmers in this marketing channel sell their beans in wet form because it is more practical. The farmers feel that selling dry beans is more difficult because it takes time to dry the beans, and drying reduces the weight by 30 percent. In addition, for dry beans the requirements for obtaining a good price—such as water content, bean cleanliness, and bean quality— are more complicated than for wet beans, for which the price is determined only by bean cleanliness.

The processing industry purchases wet cocoa beans directly from farmers, and only one company conducts this activity in North Luwu Regency. This is the American company PT MARS. Farmers are paid several days after the wet beans are tested for dirt or other external objects, which determine the price.

PT MARS has a processing unit in the regency that processes wet cocoa beans into fermented cocoa beans. The fermented cocoa beans are then exported or sold to domestic buyers. The reason the company purchases wet cocoa beans rather than dried or fermented cocoa beans is that the company wants to produce high-quality output. Therefore it purchases wet cocoa beans to control the quality of the drying and fermenting process. To keep farmers loyal, PT MARS also gives loans to farmers that can be repaid during harvesting period.

Looking at the farmer's margin,for comparability, we used a selling price of cocoa beans converted into dried beans, which is assumed three times as high as for wet beans. The price of wet beans that farmers obtained in March 2012 was Rp 7,031 per kg. Therefore the assumed price for wet beans is Rp 21,093 per kg, and the cost of producing the beans Rp 12,327 per kg, giving a profit generated of Rp 8,766 per kg for dried beans, or Rp 2,922 per kg wet beans. The margin for the processing industry was not calculated because of the a difficulty in obtaining the data and in calculating the cost of producing cocoa paste and powder from wet beans.

Table 7-1
Marketing Margin of Marketing Channel 1 in March 2012

Items	Rp/kg
Selling Price	21,093
Cost	12,327
Farmer's Profit	8,766
BC Ratio	0.711

The second marketing channel involves selling fermented beans. The marketing channel of this product is as follows:

Farmers → Farmer's Organization → Processing Industry → Domestic or Foreign Consumer

In this channel the farmer either sells the dry beans to the farmer's organization (called Gapoktan Pada Idi Pada Elo) or ferments his own beans and then sells them to the farmer's organization. The local government encourages farmers to sell fermented cocoa beans because they have higher value added, giving fermentation tools (a wood box) to farmers' organizations. The fermentation process takes six to seven days. The price of fermented beans is Rp 2,000 to Rp 3,000 per kg, higher than for dried beans.

After the fermentation process, the cocoa beans are shipped to PT Bumi Tangerang Mesindotama in Tangerang, Banten. This company has a formal contract with the farmers' organization. Each shipment is about 500 kg to 1 ton of fermented cocoa beans. Although the price is higher than for dried cocoa beans, payment to the farmers takes two to three months, after the buyer receives the shipment, because payment is made only after 1.5 to 2 tons of fermented cocoa beans have been shipped. PT Bumi Tangerang Mesindotama is the second-largest cocoa processing company in Indonesia, with a capacity of 80,000 tons per year and 90 percent of its production exported (Media Data 2011).

Farmers sell dried cocoa beans to traders in the third channel. The marketing channel is as follows.

Farmers → Village Trader → Subregency Trader → Exporter → Foreign Consumer

The advantages of this channel is that farmers are paid immediately, rather than after two to three months, as in the second channel. Because farmers often need cash for everyday use, to obtain quick cash, farmers sell their low-quality (high water content) dried cocoa beans to village traders. The village traders then sell the dried cocoa beans to subregency traders. The subregency traders dry the beans to meet the requirements of the exporter. The exporters, which are all foreign companies, have their representatives in North Luwu. The dried cocoa beans are transported to Makassar to be fermented, and are then exported to be processed in other countries. Most companies have their processing units in other countries such as Malaysia. Their Indonesia operations produce only fermented cocoa beans.

Looking at the marketing margins, in the second marketing channel, PT Bumi Tangerang Mesindotama pays for beans at a price set in advance by contract. In March 2012, the contract price was set at Rp 24,500, which includes fermentation cost and transportation cost, to ship the fermented beans. The farmers' organization buys the cocoa beans from farmers for Rp 23,000 per kg. Farmer costs are Rp 13,414 per kg. The farmers make a profit of Rp 9,586 per kg. Farmers in the second channel obtain higher profit than those using the first marketing channel and a slightly higher cost-benefit ratio.

In PT Bumi Tangerang Mesindotama, the fermented beans are processed to cocoa powder and according to the information obtained from the farmers 'organization, PT Bumi Tangerang Mesindotama makes a profit of approximately Rp 1,000 per kilo of fermented beans purchased.

In the third marketing channel, farmers in Sabbang subregency sell their cocoa beans to village traders in the form of dried beans that still have high water content, at a price of Rp 18,000 per kg. The price is lower than when selling to farmers' organization because the quality is lower. The cost is similar to that in the second marketing channel; therefore the cost-benefit ratio is lower than for marketing channel 2 (Table 7-2).

Table 7-2
Marketing Margin of Marketing Channel 2 and 3 in March 2012

	Marketing Channel 2	Marketing Channel 3
FARMER		
Selling Price	23,000	18,000
Cost	13,414	13,414
Profit	9,586	4,586
BC Ratio	0.714	0.342
FARMER'S ORGANIZATION		
Purchasing Price	23,000	
Cost	1,325	
Profit	175	
Selling Price	24,500	
BC Ratio	0.132	
VILLAGE TRADER		
Purchasing Price		18,000
Marketing Cost		250
Profit		250
Selling Price		18,500
BC Ratio		1.000
SUBREGENCY TRADER		
Purchasing Price		18,500
Marketing Cost		400
Profit		1,100
Selling Price		20,000
BC Ratio		2.750
PROCESSING INDUSTRY		
Purchasing Price	24,500	
Marketing Cost	500	
Profit	500	
Selling Price	25,500	
BC Ratio	1.000	
EXPORTER		
Purchasing Price		20,000
Marketing Cost		605
Profit		1,145

	Marketing Channel 2	Marketing Channel 3
Selling Price		21,750
BC Ratio		1.892

Village traders sell dried beans to the subregency traders after bearing the cost of transportation from farmer to the subregency trader. The subregency trader buys the beans from village traders for Rp 18,500 per kg of dried beans. To meet exporters' requirements, the subregency traders dry the beans once more, incurring additional costs.

The exporter buys the dried beans from the subregency traders for Rp 20,000 per kg. Besides buying from subregency traders, exporters also buy from partner farmers. These farmers are given extension and input to produce better-quality cocoa beans.

The exporter then transports the dried beans to facilities in Makassar, about an 8-hour drive from North Luwu. This cost is borne by the exporter. From Makassar, the dried beans are exported or fermented. In Table 7-2, it is assumed that the exporter sells the beans dried.

In recent years, exporters have become dominant in purchasing cocoa beans, especially in Sulawesi, purchasing directly from farmers. The role of local traders has diminished over the years, causing many to shift to dealing in palm oil. Besides exporters, processing companies have also increased their role in purchasing, buying wet beans directly from farmers. To guarantee the supply of cocoa beans, exporters and processing companies keep in close contact with farmers using personal connections or frequent visits.

Several exporters have partnerships with farmers. Besides guaranteeing supply from the farmers, the partnership is also used to guide farmers to produce higher quality and larger quantity. Although farmers partner with exporters, they are under no obligation to sell to the partner exporter. Price information is very transparent—farmers even receive SMS messages every day about the price so they can compare prices between exporters.

All cocoa beans end up being sold to an exporter or a processing company. As both ultimately export some product, this implies that the effect of the international price is significant in determining pay for farmers. This was verified in our field work and other research.

8. Conclusion

There are three marketing channels in North Luwu Regency and three cocoa products are sold. The first marketing channel, farmers, sold wet cocoa beans to a cocoa processing company, PT MARS. This marketing channel is viewed as the most convenient by the farmers. The second marketing channel involves the farmers' group's fermenting the cocoa beans that are then sold to PT Bumi Tangerang Mesindotama. This channel has the highest profit for farmers. The last channel involving local traders is dried beans. In this channel, farmers receive money directly after selling the cocoa beans.

The farmer's price is determined by the international price. The international price is nearly perfectly transmitted to the farmer's price. This caused the farmer have a higher bargaining position than exporters after the implementation of the export tax in April 2010. With the implementation of the export tax, the margin of exporterd decreased because of fierce competition in obtaining cocoa beans from farmers.

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Appendix. Photos

Cocoa Beans in Sukamaju Subregency

Cocoa Field in Sukamaju Subregency

Farmer in Sukamaju Subregency

Farmers' Group in Sukamaju Subregency

Fermentation Box Operated by Farmers' Group

Fermentation Box Owned by Farmers

Fermented Cocoa Beans in Sabbang Subregency

Cocoa Beans Dried by Farmers in Sabbang Subregency

Dried Cocoa Beans Purchased by Exporter PT Armajaro

Dried Cocoa Beans Purchased by Exporter PT Armajaro