FINAL REPORT

MARKET STUDY ON FOOD SECTOR IN INDONESIA

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EXECUTIVE SUMMARY

1. Background and objective of the study

Agricultural commodities in Indonesia in particular rice, beef, shallots, chilis, sugar and salt experience big price fluctuations, in which price spikes becoming an annual tradition. These lead to price risks for consumers and producers. Studies report that there are many factors contributing to the price increases including, exchange rate movements, given the internationally traded nature of some of the commodities (i.e., beef), increasing input costs, fuel costs and growth in GDP per capita. Anti-competitive behaviors might contribute to price increases as well. These include anti-competitive mergers, abuse of dominance, cartels and price fixing, vertical restraints and exclusive practices.

The Competition Commission in Indonesia has identified competition of staple foods as a priority area to be focused on in order to deal with high and volatile prices. This study aims to examine structure, conduct and performance in the six food products (rice, beef, sugar, salt, chilis and shallots). The results of the study aims to be utilized to provide recommendations for each food sector on how to address the problems identified and provide solution to improve the functioning of these markets in the best interest of the consumers and the producers from the viewpoint of competition policy.

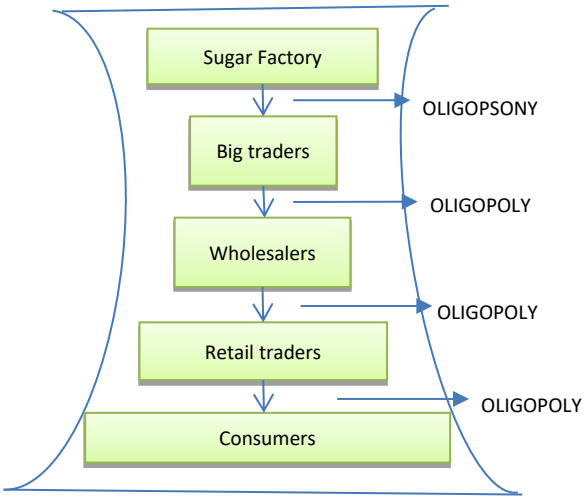
This market study was prepared for the purpose of supporting to draw up policy recommendations, but this is not represent the opinion of specific agency. This study is a collaboration between Institut Pertanian Bogor (IPB) and Komisi Pengawas Persaingan Usaha (KPPU) with the support of Japan Fair Trade Comission (JFTC) and United Nations Conference on Trade and Development (UNCTAD). This study has received financial support from Japan International Cooperation Agency (JICA) and the copyright is in JICA.

2. Market structure and Conduct

2.1. Sugar

Market structure

The market structure of sugar is presented in the figure below. From the sugar factory to the big traders the market structure is characterized by oligopsony and after that level the market structures are characterized by oligopoly.



2.2. Rice

Market structure

Farmers faced an oligopsony market when dealing with traders whoare smaller in number. In addition, the price is mostly determined by the traders. They can be independent or an employee of the rice mills. The independent traders face an oligopsony market when dealing with the rice mill. Meanwhile, the rice mills face an oligopoly market when dealing with the wholesalers. Rice mills have the choice to whom they sell the rice which depends on the demand or price.

Rice Market Structure at Various Market Level

Seller	Buyer	Market Structure
Farmers	Traders	Oligopsony
Traders	Rice Mills	Oligopsony
Rice Mills	Wholesalers	Oligopsony
Wholesalers	Retailers	Oligopoly

2.3. Shallots

Market structure

The market structure of shallots indicates an oligopsony market. This structure is characterized by many sellers and fewer buyers (see table below).

Traders	Buyer	Market Structure
Farmer	Collectors	Oligopsony
Collectors	Large Traders	Oligopsony
Large traders	Wholesalers	Oligopsony
Wholesalers	Sub Wholesalers	Oligopoly
Sub Wholesalers	Retailers	Oligopoly
Retailers	Consumers	Oligopoly

2.4. Chili

Market structure

The market structure of chilisis presented in the table below.

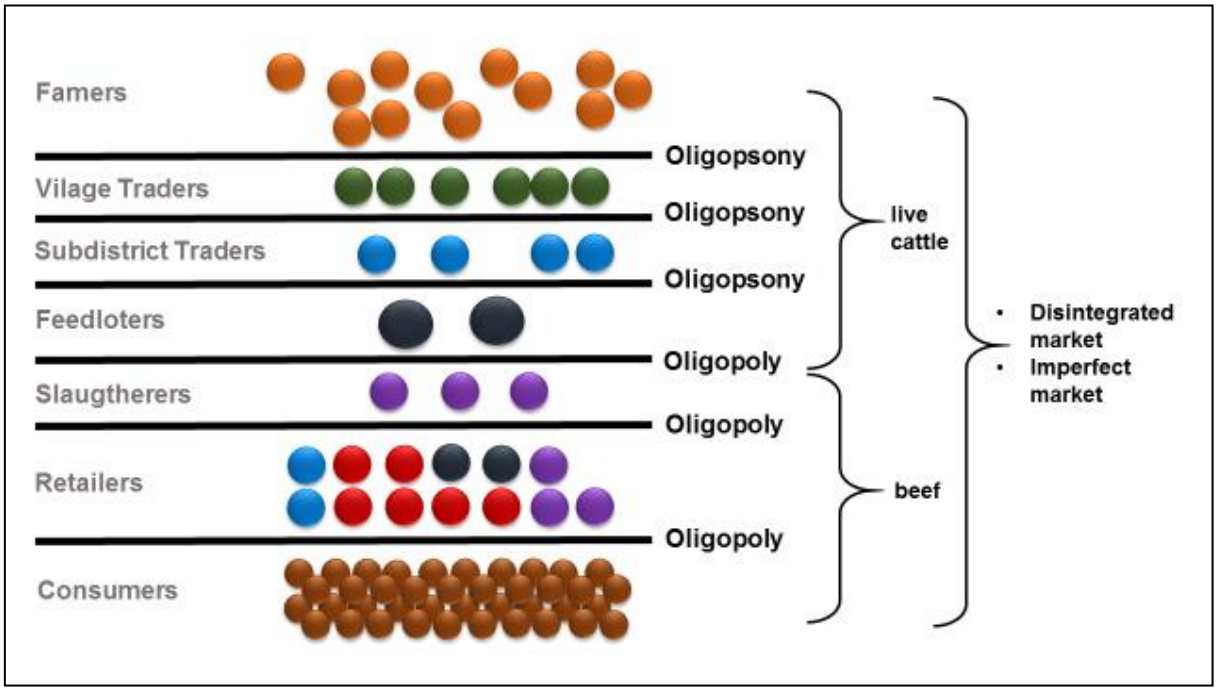
Seller	Buyer	Market Structure
Farmers	Middlemen/collectors	Oligopsony
Middlemen/collectors	Large traders	Oligopsony
Large traders	Wholesalers	Oligopsony
Wholesalers	Sub-wholesalers	Oligopoly
Sub-wholesalers	Retailers	Oligopoly
Retailers	Consumers	Oligopoly

2.5. Beef

Market structure

The market structure of beef is imperfect as the live cattle and beef markets are classified as a disintegrated market. This structure tends to be oligopsony, i.e, the price is determined by fewer

buyers, relative to the sellers. On the other hand, the beef market structure tends to be oligopoly, i.e., the price is determined by fewer sellers in comparison to the buyers.



2.6. Salt

Market structure

Salt farmers face an oligopsony market with traders being limited in numbers.

Seller	Buyer	Market Structure
Farmers	Traders	Oligopsony
Traders	Salt Processor	Oligopsony
Salt Processor	Wholesalers	Oligopoly

Conduct

Sugar

Sales are by an auction system owned by SOEs. Farmers can therefore avoid the control by one party or one company. The number of D1 traders is getting smaller.

Other fraudulent actions that will affect the sugar market are (1) illegally sourced sugar and (2) GKR entering the market,which is illegal and especially occurs in the border areas. Entry into GKR to GKP markets can be caused by excess supply or buyers for GKR being unable to distribute all the GKR they own. Weak supervision by the authorities causes this fraud to occur. However, the starting point of this all is the supply of GKP which is still not enough to cover demands and the high prices of national production and is more expensive than imported sugar.

Rice

The ten largest rice mills in Indonesia are located in the central rice production area. The four largest market shares (CR4) are only 13.7% and when the concentration ratio is below 20 the industry is considered to be highly competitive. The trend of CR4 is increasing, in 2010 the value was 10.82% and in 2014 it increased to 13.7%. However, rice millers cannot sell directly to the wholesalers but, only through the agents.

Shallots and Chilis

For the chili and shallot commodities, the traders depend on the wholesale markets around Jakarta for sales. More than 70% of is sold there. Wholesaler market tradrers have an opportunity to hamper free competition since they may decide to only buy chili and shallots from traders they already know. Only large traders, who are well-known, will be accepted as their suppliers. Limited access between these marketing agencies is due to the existence of bonds between them: funds, family relationships and long-standing relationships. This provides barriers for new entrants (new traders) to sell chili and shallots directly to the wholesale markets.

Beef

In some cases, imported beef enters the traditional market. Traders, have been known to mix imported and local meat and sell by using local meat prices that are higher than imported beef.

In the supply chain of beef, the high risk is in the transporting of live cattle. Because the vehicles used are not designed specifically to transport live cattle, the stress level can be very high. This leads to a decrease in the weight of the live cattle, as well as the quality of beef and unfortunately the death of some cattle. In fact, the weight of live cattle is a determinant of the profit that will be obtained by those in the market.

To return the weight of the cattle to the pre-transported initial weight requires time and money. Consequently, animal cruelty occurs. Examples are the eyes of cattle being covered with chili or balm, so the cattle do not collapse during the trip. To restore the initial weight, the cattle are often forced to drink a lot of water (*glonggongan cattle)*. The practice damages their internal organs and reduces the quality of the meat.

Salt

According to Statistics Indonesia, there are 118 salt processing plants in 2014 which is considered a medium to large enterprise. Meanwhile there are 55 units of micro and small salt processing in 2014 listed. The concentration ratio or CR4 for the industry is 71.96% which means that the four largest plants/firms in the industry holds thismajority of the market share. This number increased from 64.52 in 2013.

Related to the industry conduct, there are several unfair industry activities which affect especially farmers, caused by collusion between the marketing institutions, these activities including:

- Salt farmer numbers are significantly more than the processer. This, coupled with the traders and suppliers being mostly in the employ of the processors, which has the effect that the farmer are generally dictated to regarding the price being offered.
- In the purchasing system, traders and supplier have the authority to determe the weight of the salt purchased. For every sack the tradersassume the weight is 50 kg, although the weight can reach easily 55-60 kg. This activity can not be stopped since all the traders are usually the employee of the supplier. Therefore, farmers have no power and it is controlled by all the traders.
- In salt processing, there is an accusation that they control the supply and price especially among the processors in Madura. These accusations were investigated in 2006 by KKPU.

3. Performance

Price trend

By using monthly price data from January 2012-December 2016 for sugar, rice, chili, shallots and beef the study calculated the mean and coefficient variation for each commodity. The coefficient variation of consumer price was higher than the producer price, showing that consumer prices tended to fluctuate compared to the producer price. From this analysis it can be seen that the trend of price formation at consumer level is determined by the marketing margin.

For rice, the average producer prices in the period of analysis was IDR 4,310 per kg (in the form of unhusked rice or dry mill-rice). The average consumer prices was IDR 9,290 per kg. The co-efficient variation of consumer price was higher compared to producer price indicating that rice prices at the consumer level fluctuated more compared to producer prices. For rice, both for producer and consumer prices have similar trend. As such, in order to reduce price for the consumer, the price for the producer should be reduced as well.

For red and small chili commodities, there is a similar pattern in which consumer prices fluctuated compared to producer prices. Similarly, the prices of shallots and beef at consumer level fluctuated compared to the producer level. For salt, the variation of producer and consumer prices were almost similar.

Red chili, small chili and shallots are dominated by the marketing margin. This can be seen from the CV value of the consumer price that is greater than the CV producer price.

The values of CV at consumer price for red chilli, small chilli and shallots are greater than 20% showing very big fluctuations.

For beef and salt, the values of CVs at the producer prices is almost equal to the values of CVs at the consumer prices. The prices formed are influenced by the producer price and the marketing margin.

3.2. Price asymmetry

The cointegration of producer and consumer prices occurs in the six commodities under study. Then, the causality test is conducted. Among them, causality can be identified for three

commodities, chili, beef and rice. For the other commodities, i.e., shallots, sugar and salt, the causality in which whether producer price (PP) affects consumer price (PP) or vice versa is inconclusive. The values of the Wald test in the short run are significant at the 1% level for chili and the 5% level for beef and rice. As such, we reject the null hypothesis showing that there is evidence of price asymmetry between producer and consumer prices of chili and rice. For chili, the price rises or falls at producer level pass to consumer level but, is not fully transmitted. In the case of chili, the price reduction changes at the producer level is not fully transmitted to a price reduction for the consumer, showing that they are not benefiting from the price reduction at the producers' level. For rice, the price reduction at the production level will not be fully transmitted to price changes at the consumer level. Similarly, we also find evidence of price asymmetry in beef. The price reduction at the consumer level will be fully transmitted to the producer level, but increasing of the price will not be fully transmitted to producer prices. This shows that producers might not benefit from a price increase at the consumer level.

4. Conclusion and Implication

In this market study, some problems from the viewpoint of competition policy were found. Common with six commodities, there are many intermediary venders between producer and the final consumer, which is thought one of cause of the high distribution cost and high consumer price. And the number of players participating in each distribution stage is small and there are few new entrants in each distribution stage. The reason why new entrants are not promoted is not always clear, but there is a need to further survey about the cause that competition is not fully activated in the commodity market.

What is suggested by this market study is that government should actively promote streamlining of disribution of commodities. As one of solution, it should be strengthen the legal system on wholesale market to reduce information asymetry and to realize high transparent market pricing. And although several government agencies are involved in the agricultural sector, it is necessary to review existing regulations cross-sectionaly and improve the regulation that is not functioning well to strengthen competitiveness. And supervision along the supply chain of the commodities should be conducted more intensively by KPPU in order to avoid unfair transactions in the market.

CONTENTS

EXECUTIVE SUMMARY ..... **ii**
CONTENTS ..... **viii**
List of Figures ..... **xi**
List of Table ..... **xiv**
LIST OF ABBREVIATIONS ..... **xvii**
Chapter 1 Background and Study Design **1**
1.1. Background 1
1.2. Study Design 2
Chapter 2 Overview of the Six Commodities **10**
2.1. Sugar 10
2.1.1. Price 10
2.1.2. Production and Consumption 13
2.1.3. Export and Import 16
2.1.4. Government Regulation and Policy 17
2.2. Rice 24
2.2.1. Price 24
2.2.2. Production 26
2.2.3. Consumption 28
2.2.4. Export 28
2.2.5. Import 29
2.2.6. Government Regulation and Policy for Rice 30
2.3. Shallots 32
2.3.1. Price 32
2.3.2. Production and Consumption of Shallots 34
2.3.3. Export and Import 38
2.3.4. Government regulation and policy for shallots 40
2.4. Chili 44
2.4.1. Prices 44
2.4.2. Production and Consumption 46
2.4.3. Export and Import 49
2.4.2. Government Regulation and Policy for Chili 52
2.5. Beef 65
2.5.1. Price 65
2.5.2. Production and Consumption 66
2.5.3. Export and Import 69
2.5.4. Government Regulation and Policy 71
2.6. Salt 76
2.6.1. Price 76
2.6.2. Production 77
2.6.3. Consumption 78
2.6.4. Import 79
2.6.5.Government Regulation and Policy 79
Chapter 3 Market Structure and Conduct **82**
3.1. Sugar 82
3.1.1. Supply chain and market structure 82
3.1.2. Conduct 85

3.2. Rice 90
3.2.1. Supply Chain and Market structure 90
3.2.2. Conduct 93
3.3. Shallot 100
3.3.1. Supply chain and market structure 100
3.3.2. Conduct 107
3.4. Chili 114
3.4.1. Supply chain and market structure 114
3.4.2. Conduct 119
3.5. Beef 125
3.5.1. Supply Chain and Market structure 125
3.5.2. Conduct 133
3.6. Salt 141
3.6.1. Supply chain and market structure 141
3.6.2. Conduct 145
Chapter 4 Performance 150
4.1. Efficiency 150
4.1.1. Price Trends 150
4.1.2. Price Asymmetry 155
4.1.3. Production and Price Risks 158
4.1.3.1. Sugar 158
4.1.3.2. Rice 158
4.1.3.3. Shallots 159
4.1.3.4. Chili 161
4.1.3.5. Beef 163
4.1.3.6. Salt 163
4.2. Cost Structure, Margin analysis 165
4.2.1. Sugar 165
4.2.2. Rice 167
4.2.2.1. Cost Structure and Margin Analysis 167
4.2.3. Shallots 168
4.2.3.1. Cost Structure and Margin Analysis 168
4.2.4. Chili 170
4.2.4.1. Cost Structure and Margin Analysis 170
4.2.5. Beef 172
4.2.5.1. Cost Structure and Margin Analysis 172
4.2.6. Salt 176
4.2.6.1. Cost Structure and Margin Analysis 176
Chapter 5 Practices at the International Level 178
5.1. Sugar 178
5.2. Rice Sector in Japan 179
5.3. Horticulture products: Chili and Shallots 179
5.3.1. Production and International Trade of Vegetables 179
5.3.2. Policies related to vegetable products in several countries 181
5.3.2.1. China 181
5.3.2.2. Thailand 182
5.3.2.3. Malaysia 182
5.3.2.4. The Philippines 184

5.4. Beef 185
5.4.1. Current market situation of beef in Malaysia 189
5.5. Salt 191
5.5.1. India's Salt Industry 191
Chapter 6 Conclusion and Implication 192
6.1. Conclusions 192
6.1.1. General conclusions: 192
6.1.2. Specific conclusions 193
6.2. Recommendation 195
REFERENCES 196

List of Figures

Figure 1 Framework of the study: market structure, concentration, competition and efficiency.. 3
Figure 2 Structure, conduct and performance paradigm.... 4
Figure 3 The process of forming HPP.... 11
Figure 4 Main cost of production and farmer benchmark price 2012-2016.... 12
Figure 5 Farmer benchmark, auction, and retail prices 2012-2016.... 12
Figure 6 Distribution of gkp ex-cane ownership.... 14
Figure 7 Sources of national sugar supply.... 16
Figure 8 The flow of domestic sugar price formation.... 18
Figure 9 Unhusked rice price level and government minimum price level, January 2008-April 2017.... 24
Figure 10 Unhusked price in farmer and rice mill, January 2008-April 2017.... 25
Figure 11 Rice price in rice mill and consumer, January 2013 – April 2017.... 26
Figure 12 Unhusked rice production at mill level (GKG), 2000-2015.... 26
Figure 13 Ten largest production zone of rice in Indonesia in 2014-2016 (Tonne).... 28
Figure 14 Indonesia's rice consumption per capita, 2010-2016.... 28
Figure 15 Indonesia's rice export, 2012-2016.... 29
Figure 16 Indonesia's rice import, 2000-2015.... 29
Figure 17 Monthly prices of shallots at producer and retail levels from December 2016 to April 2017.... 33
Figure 18 The average price of shallots at the producer level in the provinces in Indonesia, 2014 (IDR per Kg).... 33
Figure 19 Productivity of shallot in the provincial level in Indonesia in 2010-2014 (Ton per Ha).... 35
Figure 20 Production of shallot by province in Indonesia in 2010-2014 (Ton).... 36
Figure 21 The main production province producing shallot in Indonesia (%).... 37
Figure 22 Monthly situation of production and consumption of shallots.... 38
Figure 23 Volume and value of imported shallots in Indonesia in 2001-2013.... 38
Figure 24 Daily prices at retail markets for curly chili from 2010 to 2016.... 44
Figure 25 Daily prices at retail markets for big chili from 2010 to 2016.... 45
Figure 26 Average producer prices of chili in each province in Indonesia in 2014 (IDR per kg) 45
Figure 27 Average production of big chili in each province in Indonesia in 2010-2014 (Ton).... 46
Figure 28 The average of land area planted by big chili in each province in Indonesia in 2010-2014.... 47
Figure 29 The average productivity of big chili in each province in Indonesia in 2010-2014 (Ton per Ha).... 47
Figure 30 Harvest time and off-season of chili in Indonesia.... 49
Figure 31 The volume of imported chili in Indonesia in 2001-Sept 2015.... 49
Figure 32 The volume of exported chili from Indonesia in 2012-2015*.... 51
Figure 33 Beef prices in Indonesia in 2007-2015.... 65
Figure 34 Monthly prices of beef in Indonesia in 2012-2016 (IDR perkg).... 65
Figure 35 The projection between production and consumption of beef in Indonesia in 2007-2017 (tonne).... 67
Figure 36 Distribution system of live cattle form production areas to consumer areas.... 69
Figure 37 The amount of imported beef as required by Indonesia in 2007-2017 (tonne).... 70
Figure 38 The realization of Indonesian import volume in 2010-2016 (tonne).... 70
Figure 39 Salt price in the producer's level, 2000-2014.... 76
Figure 40 Salt price in the consumer's level, 2009-2014.... 77

Figure 41 Indonesia's salt production, 2010-2016 77
Figure 42 Indonesia's salt consumption, 2010-2016 78
Figure 43 Indonesia's salt import , 2010-2016 79
Figure 44 The marketing channels of plantation white sugar 82
Figure 45 Market structure ofplantation white sugar (GKP) 84
Figure 46 Sugar control by private sector, SOEs and farmers 87
Figure 47 Rice Marketing Channel in Indonesia 90
Figure 48 Rice Marketing Channel 90
Figure 49 CR4 Rice Mill Industry, 2011-2014 95
Figure 50 Main buyer of paddy farmers' respondents (in percentage) 97
Figure 51 The types of produces sold by paddy farmers' respondents (in percentage) 98
Figure 52 Percentage of respondents based on sales location of rice 98
Figure 53 The reasons selling to the buyersof rice 99
Figure 54 Place of transaction in rice commodity 99
Figure 55 Payment system of rice 100
Figure 56 Marketing channels of shallots in Brebes Regency 102
Figure 57 Marketing channels of shallots in Nganjuk Regency 103
Figure 58 The place of shallot transaction 111
Figure 59 Main buyer of shallot from farmers (in percentage) 112
Figure 60 The types of produce sold by shallot farmers (in percentage) 112
Figure 61 The sales location of harvested shallots (in percentage) 113
Figure 62 The reasons selling to the buyer (in percentage) 114
Figure 63 Distribution channel of three types chili in Garut District 115
Figure 64 Marketing of curly red chili in Majalengka District 116
Figure 65 Percentage of farmer respondents and main buyer 123
Figure 66 Percentage of respondents based on sales location of chili 124
Figure 67 Beef trading system 126
Figure 68 The chain of beef trade from producer to consumer 126
Figure 69 Market Structures of Live Cattle and Beef based on Actors 133
Figure 70 Inter island cattle trading system 137
Figure 71 Intra island cattle trading system 137
Figure 72 Salt Marketing Channel in Indonesia, 2014 142
Figure 73 Marketing Channel of Salt 143
Figure 74 Concentration ratio (CR4) of the salt processor industry 147
Figure 75 Reason for Selling in Salt Commodity 149
Figure 76 Payment system at the farmer level 149
Figure 77 Monthly data of producer and consumer prices of sugar in January 2012-December 2016 152
Figure 78 Monthly data of producer and consumer prices of rice in January 2012-December 2016 152
Figure 79 Monthly data of producer and consumer prices of red chili in January 2012-December 2016 153
Figure 80 Monthly data of producer and consumer prices of small chili in January 2012-December 2016 153
Figure 81 Monthly data of producer and consumer prices of shallot in January 2012-December 2016 154
Figure 82 Monthly data of producer and consumer prices of beef in January 2012-December 2016 154

Figure 83 Monthly data of producer and consumer prices of salt in January 2012-December 2016 155
Figure 84 Numerous shocks faced by paddy farmers 159
Figure 85 Numerous shocks faced by shallot farmers 160
Figure 86 Some shocks faced by chili farmers 161
Figure 87 Shocks faced by cattle keepers 163
Figure 88 Shocks faced by salt farmers 164
Figure 89 Beef Cattle and Beef Supply Chains 173
Figure 90 Trade Balance for vegetable products in n China in 2003-2012 (Boon, 2013) 180
Figure 91 Trade Balance for vegetable products in several countries in 2001-2011 (000 ton) 181
Figure 92 Beef prices at producer levels in several countries in 2012 (USD per tonne) 188
Figure 93 Beef prices in Malaysia and Indonesian in 2016 (IDR per kg) 189

List of Table

Table 1 Characteritics of oligopsony and oligopoly markets. 5
Table 2 Auction price, retail and distribution of farmer and management margins 13
Table 3 Harvest area and GKP production 13
Table 4 Active sugar cane factory 14
Table 5 Sugarcane production by province and farming category, 2016 (Ton) 15
Table 6 National sugar total needs 15
Table 7 The GKP trade balance based on sugar cane and import 2016 16
Table 8 The development of sugar imports in 2009 - 2014 17
Table 9 Policies related to the domestic sugar market 20
Table 10 Rice production by Province in 2014-2016 (Tonne) 27
Table 11 Rice Policy Summarized 32
Table 12 Monthly prices of imported shallots in retail market in Indonesia in 2008-2016 34
Table 13 Area planted by shallots in each province in Indonesia in 2010-2016 (ha) 34
Table 14 The projection of production, consumption and surplus / deficit of shallot in Indonesia 37
Table 15 The volume of imported shallots in Indonesia based on origin countries in 2012-2015 (Kg) 39
Table 16 Destination countries of exported shallot by Indonesia in 2012-2015 (kg) 39
Table 17 Monthly export of shallots from Indonesia in 2016 40
Table 18 Trade Balance of Shallots per month in 2016 40
Table 19 Consumption per capita of chili in Indonesia in 2008-2012 48
Table 20 Consumption and production of chili in Indonesia in 2016-2020 48
Table 21 The volume and value of imported chili to Indonesia based on origin countries in 2012-2015 50
Table 22 Monthly data of volume and value of imported chili to Indonesia in 2016 50
Table 23 The volume of exported chili to several destination countries in 2012-2015 51
Table 24 Monthly data of volume and value of exported chili in Indonesia in 2016 52
Table 25 Trade balance of chili in Indonesia in 2016 52
Table 26 Laws and regulations related to chili and shallot commodities 55
Table 27 Monthly beef price at consumer level in DKI Jakarta in 2015-2016 (IDR per Kg) 66
Table 28 Production of beef by provinces in Indonesia in 2009-2016 (tonne) 68
Table 29 Policies related price stabilization for beef in Indonesia 71
Table 30 Policies related to import and export of beef 74
Table 31 The main production districts producing salt in Indonesia in 2015 (Tonne) 78
Table 32 Minimum price of raw salt set by the government 81
Table 33 Distribution of GKP production in 2010 and 2015 83
Table 34 Number of producers, traders, and buyers for sugar cane 85
Table 35 Important aspects in the market structure of sugar 85
Table 36 GKP production in 2015 and share of each company 86
Table 37 Name of the Dominant Sugar Trading Company 88
Table 39 Number of producers, traders, and buyers for paddy 91
Table 40 Rice Market Structure at Various Market Level 92
Table 41 Aspect on Market Structure in Rice for Various Marketing Institution 93
Table 42 Ten largest rice Millling units in Indonesia, 2014 94
Table 43 Ten largest rice processors in Indonesia in 2013 94
Table 44 List of Rice Traders in Indonesia in 2017 95
Table 45 List of rice millers in Indonesia in 2017 96

Table 46 Name of big traders of rice in Indonesia in 2017 96
Table 47 Number of rice millers in Indonesia in 2016 97
Table 48 Price Bargaining Position Over the Five Years (2011) and the Last Year (2016) 100
Table 49 Shallot Market Structure In Various Level 104
Table 50 Number of producers, traders, and buyers for shallots 104
Table 51 Shallot Wholesaler in Pasar Induk Kramat Jati 104
Table 52 Shallot Wholesalers in Pasar Induk Cibitung 105
Table 53 Aspects in Market Structure at Various Marketing Actors of Shallot 106
Table 54 Shallot traders in central Market (*Pasar Induk*) and production center in Brebes 108
Table 55 The payment systems of shallot 111
Table 56 Chili Market Structure at Various Market Level 117
Table 57 Number of producers, traders, and buyers for chili 117
Table 58 Chili Wholesalers in Kramat Jati Central Market 118
Table 59 Chili Wholesalers in Cibitung Central Market 118
Table 60 Chili Wholesalers in Kramat Jati and Cibitung Central Market 120
Table 61 Number of farmer respondents and types of chili products sold 123
Table 62 Percentage of farmers respondent and selling reasons 124
Table 63 Place of transaction 125
Table 64 Price bargaining position over the five years (2011) and the last year (2016) 125
Table 65 Market Structure 130
Table 66 Actors' Marketing Functions in the Live Cattle and Beef Markets 132
Table 67 Number of producers, traders, and buyers for beef 133
Table 68 The Largest Meat Slaughterhouse in Indonesia, 2014 134
Table 69 Average number of beef cattle slaughtered at Slaughterhouse (RPH) by province in 2008-2015 (cattle) 135
Table 70 List of feedlotters in Indonesia 136
Table 71 Price bargaining position over five last years (2011) and last year (2016) 138
Table 72 Age of traded cattle 138
Table 73 Type of product traded 138
Table 74 Payment system in cattle trading system 139
Table 75 Type of cattle 139
Table 76 Condition of cattle during transportation process 140
Table 77 Source of cattle price information 140
Table 78 Reasons for selling the cattle to the buyer 141
Table 79 Number of producers, traders, and buyers for salt 143
Table 80 Salt market structure at various market levels 144
Table 81 Aspect on market structure for various marketing institutions 145
Table 82 Large and medium salt Processor plants in Indonesia, 2014 146
Table 83 Ten largest salt processors in Indonesia in 2013 146
Table 84 List of big trader of salt commodity 147
Table 85 Name of salt company in Indonesia 148
Table 86 Coefficient variation of commodities focus in the study 151
Table 87 Cointegration tests 155
Table 88 Granger causality results 156
Table 89 Empirical results of ECM of chili, beef and rice 157
Table 90 Production risk 159
Table 91 Shock effect 160
Table 92 Production and price risks of shallot 161
Table 93 Shock effect faced by chili farmers 162

Table 94 Production risk of chili 162
Table 95 Price risk of chili 162
Table 96 Production and price risk of cattle 163
Table 97 Production risk 164
Table 98 Price risk 164
Table 99 Distribution of margin with reference price Rp 9,100 and HET Rp 12,500 (per kg) 165
Table 100 Details of sugar cane farming costs and cost of production of sugar farmers (ha) 166
Table 101 Details of sugarcane farming costs and BPP of PG Kebon Agung (per ha) 166
Table 102 Margin of Rice Marketing 167
Table 103 Cost Structure of Shallot for the marketing institution in Brebes 2017 169
Table 104 Production cost of Shallot in Brebes Regency 170
Table 105 Chili's Cost Structure for the marketing institution in Garut 2017 171
Table 106 Production cost of chili in Garut Regency 172
Table 107 The Cost Structure of Beef Cattle in Channel 1,2,3 174
Table 108 The Cost Structure of Beef Cattle in Channel 4,5,6 175
Table 109 Marketing channel margin distribution during limited supply 176
Table 110 Marketing channel margin distribution during normal supply 177
Table 111 Growth of area, productivity and vegetable production of several countries in Asia in 2011 180
Table 112 Price policy control elements in The Philippines 184
Table 113 The main exporting countries of beef in the world in 2010-2013 (ton) 185
Table 114 The main importing countries of beef in the world in 2010-2013 (ton) 186
Table 115 Imports of Southeast Asian Countries 189

LIST OF ABBREVIATIONS

ACIAR	: Australian Centre for Agricultural Research
ADF	: Augmented Dickey Fuller
AGI	: Asosiasi Gula Indonesia (Indonesian Sugar Association)
APBN	: Anggaran Pendapatan dan Belanja Negara (National Budget)
APFINDO	: Asosiasi Produsen Daging dan Feedlot Indonesia (Indonesian Meat and Feedlot Producers Association)
ASEAN	: Association of Southeast Asian Nations
ASPIDI	: Asosiasi Pengusaha Importir Daging Indonesia (Indonesian Meat Importers Association)
BAPPENAS	: Badan Perencanaan Pembangunan Nasional
BEP	: Break Event Point
BPP	: Biaya Pokok Produksi (Cost of Production)
BPS	: Badan Pusat Statistik (Central Bureau of Statistics)
BSE	: Bovine Spongiform Encephalopathy
BULOG	: Badan Urusan Logistik (Indonesian Bureau of Logistics)
BUMD	: Badan Usaha Milik Daerah (Regional Owned Enterprises)
BUMN	: Badan Usaha Milik Negara (Indonesian State Owned Enterprises)
CCO	: Cow Calf Operation
CCP	: Central Commission on Prices of Goods and Services
CP	: Consumer Prices
CR4	: Four Firm Concentration Ratio
CV	: Coefficient Variation
CV	: Commanditaire Vennootschap
DPR	: Dewan Perwakilan Rakyat (People's Representative Council)
ECM	: Error Correction Model
ECM-EG	: Error Correction Model-Engle Granger
EU	: European Union
FAO	: Food and Agricultural Organization
FAOSTAT	: Food and Agricultural Organization Statistical
FGD	: Focus Group Discussion
GDP	: Gross Domestic Product
GKG	: Gabah Kering Giling (Milling Unhusked Rice)
GKM	: Gula Kristal Mentah (Raw Crystal Sugar)
GKP	: Gabah Kering Panen (Harvest Unhusked Rice)
GKP	: Gula Kristal Putih (Plantation White Sugar)
GKR	: Gula Kristal Rafinasi (Rafined Sugar)
GMO	: Genetically Modified Organism
HET	: Harga Eceran Tertinggi (Ceiling Prices)
HGU	: Hak Guna Usaha (Cultivation Rights)
HPIR	: Horticulture Product Import Recommendation
HPP	: Harga Pokok Produksi (Farmers Benchmark Price)
HS	: Harmonized System
ICUMSA	: International Comission for Uniform Methods of Sugar Analysis

IDR : Indonesian Rupiah
IMTA : International Meat Trade Association
Inpres : Instruksi Presiden (President's Instruction)
IP Beras : Importir Produsen Beras (Rice Producer Importer)
IT Beras : Importir Terdaftar Beras (Rice Listed Importer)
Kemendag : Kementrian Perdagangan (Ministry of Trade)
Kementan : Kementrian Pertanian (Ministry of Agriculture)
KPPU : Komisi Pengawas Persaingan Usaha (Commission for the Supervision of Business Competition)
KPTR : Koperasi Petani Tebu Rakyat (Smallholder Farmers' Cooperative)
LPG : Liquid Petroleum Gas
MAFF : Ministry of Agriculture, Forestry and Fishery
MAFTA : Malaysia-Australia Free Trade Agreement
MLA : Meat and Livestock Australia
MoC : Ministry of Commerce
MSG : Monosodium Glutamate
MSMEs : Micro, Small, and Medium Enterprises
NaCl : Sodium Chloride/Salt
NSC : National Security Council
NTB : Nusa Tenggara Barat
NTT : Nusa Tenggara Timur
OCSB : Office of the Cane and Sugar Board
OECD : The Organisation for Economic Co-operation and Development
PC : Plant Cane
PCP : Provincial Commission on Prices of Goods and Services
PCPA : Price Control and Anti-Profiteering Act
Permendag : Peraturan Menteri Perdagangan (Regulation of the Minister of Trade)
Permentan : Peraturan Menteri Pertanian (Regulation of the Minister of Agriculture)
PG : Pabrik Gula (Sugar Factory)
PKH : Peternakan dan Kesehatan Hewan (Animal Husbandry and Animal Health)
PKHT : Pusat Kajian Hortikultura Tropika
PMK : Penyakit Mulut dan Kuku (Mouth and Nail Disease)
PNP : Pick n Pay
PNP : Perusahaan Negara Perkebunan
PP : Producer prices
PSDSK : Percepatan Swasembada Daging Sapi dan Kerbau
PTPN : Perseroan Terbatas Perkebunan Nusantara
PUGAR : Pemberdayaan Usaha Garam Rakyat (Smallholder Salt Farming Development)
PVP : Plant Variety Protection
PVT : Perlindungan Varietas Tanaman (Plant Variety Protection)
RAs : Regulatory Authorities
RC : Ratoon Cane
RI : Republik Indonesia (Republic of Indonesia)
RIPH : Rekomendasi Impor Produk Hortikultura (Horticulture Product Import Recommendation)
RKDK : Rencana Definitif Kebutuhan Kelompok Tani (Farmer's Group Needs Definitive

	Plan
RNI	: Rajawali Nusantara Indonesia
RPPLH	: Protection Plan and Environmental Management
RIPH	: Rekomendasi Impor Produk Hortikultura (Import Recommendation for Horticultural Products)
RMU	: Rice Milling Unit
RPH	: Rumah Potong Hewan (Slaughterhouses)
RPPLH	: Rencana Perlindungan dan Pengelolaan Lingkungan Hidup (ProtectionPlan and Environmental Management)
SCP	: Structure-Conduct-Performance
SNI	: Standar Nasional Indonesia (Indonesian National Standards)
SOEs	: State Owned Enterprises
TCD	: Tons of Cane per Day
TOR	: Terms of Reference
TSS	: True Shallot Seed
UK	: United Kingdom
UPSUS	: Special Safeguard Policies
USD	: United States Dollar
VECM	: Vector Error Correction Model

Chapter 1 Background and Study Design

1.1. Background

In Indonesia, food price stability is the one of main issue faced by producers and consumers with big price fluctuations occuring in almost all staple food. These fluctuations cause price risks to both consumers and producers. Higher price will reduce their access to sufficient and good quality food. This increasing price of staple food (particularly rice) will increase the number of households below the poverty line. As such, there is a connection between food price and the poverty issue in Indonesia. Warr (2005) found that raising rice prices caused poverty in Indonesia. This is because rice accounts for a large share of the budget. Similar situations occur in many developing countries, such as Bangladesh, Madagascar and Vietnam in which higher prices of staple foods increased poverty (Barret and Dorros, 1996; Minot and Goletti, 2000; and Ravallion, 1990).

While higher prices of staple foods might increase the incentive for farmers to invest in new farming activities, the spillover effect of increasing pricesis reduced because farmers are consumers as well. Farmers, particularly smallholders of land will not gain a benefit from increasing prices of staple foods. For example, Warr (2005) reported that increasing rice prices in Indonesia only provides benefit for rich farmers. This is a similar situation to the case of price reduction of staple food in which farmers' commitment to produce staple food in the next session will reduce after they have experienced low prices (White et al., 2007). This result was confirmed by Sahara (2012) in the case ofchili production, in which many small farmers avoid planting chili in the next plantation time after they received low prices.

Most agricultural commodities in Indonesia particularly rice, beef, shallots, chili, sugar and salt experience big price fluctuations. It is almost an annual tradition. The Indonesian government represented by the Ministry of Agriculture has issued regulation number 63 year 2016 about price references for the five commodities (salt was not included in the regulation). Large price fluctuations still occur in the markets. For example, the prices of chili (small chili) reached about IDR 150,000-IDR 200,000 in the retail markets at the beginning of 2017. The prices were far above the reference prices set by the Ministry of Trade which was only IDR 29,000 per kg. Similarly in March 2017, the price of shallots at the retail market reached about IDR 40,000 per kg. This price was 25% higher compared to reference price set in the regulation which is only IDR 32,000 per kg.

Previous reports reveal there are many factors contributing to the price increases including exchange rate movements given the internationally traded nature (i.e., beef), increasing input costs, fuel costs and growth in GDP per capita that might drive the demand for food. Besides, anti-competitive behaviors in the value chain of the commodities might contribute to price increases. These include mergers, abuse of dominance, cartels and price fixing, vertical restraints and exclusive practices (OECD, 2013). This increases the need for more supervision by competition authority in Indonesia.

The Competition Commission of Indonesia has identified the staple foods as a priority area to be focused in order to dealing with high and volatile prices.

Ensuring competition at different stages of the supply chain is essential since the chain is a complex series of inter-related markets in which concentration, mergers and acquisitions are increasing and large multi-product retailers might have dominant roles (OECD, 2013). Competition may relate to buyer power, which in turn can relate to vertical relations between actors at each stage of the food supply chain. The competition among traders may also include the overall functioning of the food supply chain. As such a comprehensive study aims to assess market structure, concentration, competition and efficiency of the six commodities is vital.

This study aims to: (1) provide a review of the economic, trade and agricultural policies as well as the regulations that apply to the six food products (rice, beef, sugar, salt, chili and shallots), (2) analyze the market structure and interactions between market players, (3) look into cost and the price trends in the selected products, (4) identify the competition issues and other relevant problems in the markets, (5) provide recommendations for each food sector studied on how to address the problems identified and (6) provide a solution to improve the functioning of these markets in the best interest of consumers.

This study traces the product starting from the producer to the end consumer. The study area is chosen from locations which is considered to be the central production areas of the commodity. The data is collected on each level with several institutions are questioned.

This market study was prepared for the purpose of supporting to draw up policy recommendations, but this is not represent the opinion of specific agency. This study is a collaboration between Institut Pertanian Bogor (IPB) and Komisi Pengawas Persaingan Usaha (KPPU) with the support of Japan Fair Trade Comission (JFTC) and United Nations Conference on Trade and Development (UNCTAD). This study has received financial support from Japan International Cooperation Agency (JICA) and the copyright is in JICA.

1.2. Study Design

In order to reach the expectations of the study, the study team will utilize the method consisting of both quantitative and qualitative work. Secondary and primary data (interviews of key stakeholders and Focus Group Discussion) will be collected to fulfill the expectations of the study. Based on the six expectations above, details of method proceeds in this study will be divided into three phases.

- Phase 1 – Exploratory phase

  There are two objectives in phase 1: (1) to inventory policies and regulations applying to the six commodities in Indonesia and (2) to review organization and structure of the food sector from other developing countries. This phase will be proceeded by conducting literature review and collecting (inventory data) of:

  a) policies and regulations of the six commodities. In Indonesia, there are several forms of regulations and policies issued by Indonesian Parliament House (DPR)-Law, President through Presidential Regulations, Ministry Regulations through Government/Ministry managing the six commodities (Ministry of agriculture, Ministry of Trade, Ministry of Industrial, etc.) and Regional Government through Regional Regulations. There is a possibility that policies and regulations issued by

DPR, President, Ministry and Local Government might be overlap. Bilateral agreements affecting the development of six commodities will also be reviewed.

b) current practices the organization and the structure of the food sector particularly taken from other developing countries.

Output of phase 1:

The primary output of this phase is an interim report discussing the policies and regulations of the six commodities in Indonesia (Chapter II in the study report) and the current practices of the organization and structure of the food sector from other developing countries (Chapter/Section V in the study month).

- Phase 2 – Analyzing the market structure, concentration, competition and efficiency of the six commodities. The objective of Phase 2 is dedicated to accomplish expectation 2, 3 and 4 as outlined in the TOR. Specifically this phase will assess (1) market structure and interaction between players along the value chain of the six commodities, (2) efficiency from the perspectives of costs, margin, price trends and asymmetric prices of the selected commodities, (3) competition issues in the markets of the six commodities. This phase will rely on primary data (Interview with actors along the value chain of the six commodities and Focus Group Discussion) in the selected regions and secondary data (particularly for price trends and symmetric price). In this phase, the study team proposed a framework as presented in Figure 1.

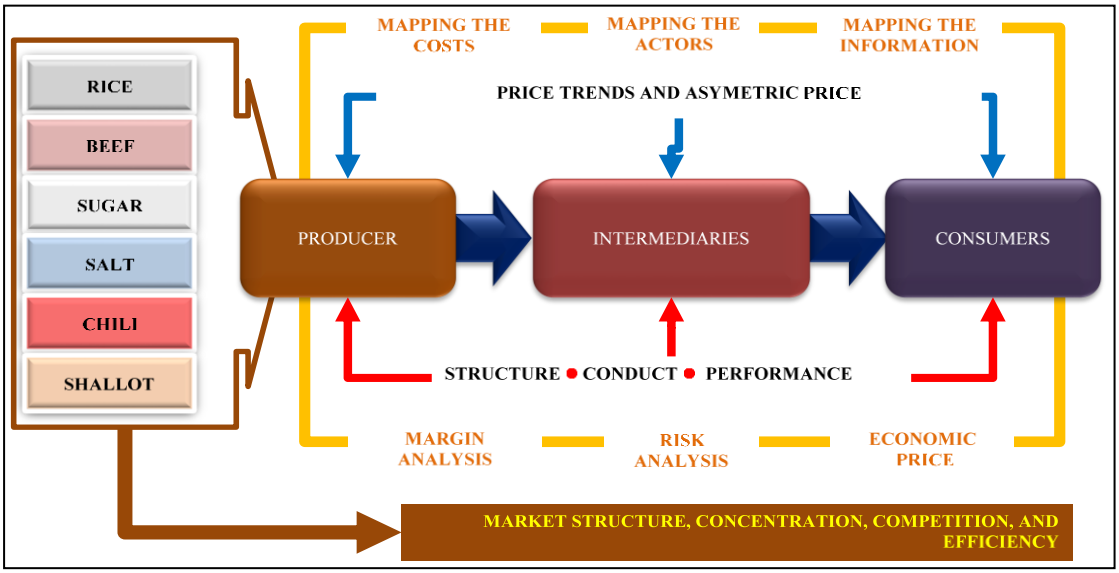
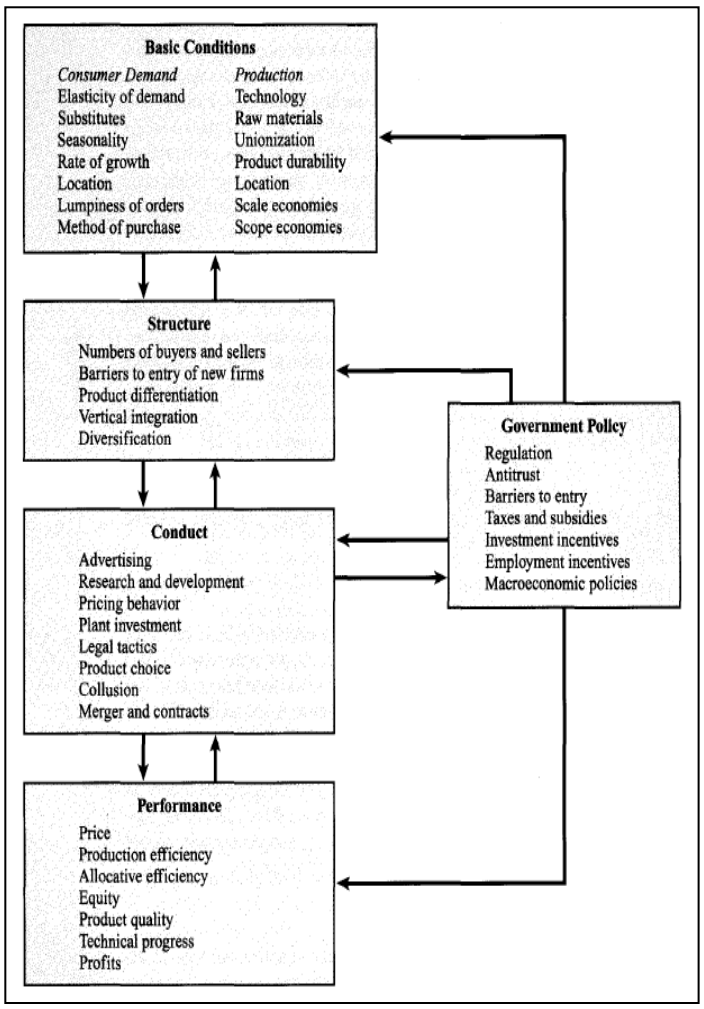


Figure 1 Framework of the study: market structure, concentration, competition and efficiency

The framework proposed by a study team based on the value chain and Structure-Conduct-Performance approaches. The approaches will be applied for each commodity focused in the study. This is because each commodity has specific aspect. For example, rice needs rice millers as the actor in the value chain, while for horticulture commodities (chili and shallots) the roles of processors in Indonesia are not quite as important since consumers prefer to consume horticulture products in a fresh form.

According to Weber and Labaste (2010), value chains are a key framework for understanding how inputs and services are brought together and then used to grow, transform, or manufacture a product; how the product then moves physically from the producer to the customer; and how value increases along the way. The value chain perspective provides an important means to understand business-to-business relationships that connect the chain, mechanisms for increasing efficiency, and ways to enable businesses to increase productivity and add value. It also provides a reference point for improvements in supporting services and the business environment. It can contribute to pro-poor initiatives and better linking of small businesses with the market. In the value chain approach, the study team can map the actor, the costs and information (e.g., price information) among the actors involved in the value chain of the six commodities. The value chain approach will be utilized together with SCP.



Source: Carlton and Perloff (2015)

Figure 2 Structure, conduct and performance paradigm

SCP assumes that market structure determines market conduct which then determine the market performance or social welfare features of the equilibrium (Pepall et.al, 2005; Carlton and Perloff, 2015). Figure 2 describes the relationships among structure, conduct and performance and shows how basic condition and government policy interacts (Carlton and Perloff, 2015). Market structure describes the competitive environment in the market for any good or service (Hirschey, 2008). Baye (2010) explains several factors that affect the market structure including number of firms, relative size of firm, technological and cost consideration, demand condition and the ease which firm can enter and exit the industry. This market structure will affect the market conduct of the industry. Conduct refers to the behavior of the firm in the industry. The firm's conduct is reflected on the strategy and policy facing the competition in the industry (Arsyad and Kusuma, 2014). The indicators of market conduct include, pricing behavior, integration and merger activity, research and development and advertising. This market conduct will determine the market performance. Market performance refers to the profit and social welfare in the industry

(Baye,2010). Market performance is reflected in profitability level, efficiency and firm's growth (Arsyad and Kusuma, 2014).

The study team determined whether market structure include as oligopoly or olygopsony, the study team uses the criteria as presented in Table 1.

Table 1 Characteritics of oligopsony and oligopoly markets.

Number of buyers and sellers	Market power	Difficulty to entry and exit market
1. Henderson and Quandt (1980): Oligopoly: • Anoligopolistic market contains a number sufficiently small sellers, so the actions of any individual seller have a perceptible influence upon his rivals • A market with a small number greater than two sellers Oligopsony: A market with a small number greater than two buyers 2. Pearce (1992): Oligopoly: A market in which the number of sellers is few Oligopsony: A market in which a few buyers face a very large sellers 3. Ferrer (2013) a. Oligopoly - There are a few sellers of the product. b. Oligopsony - There are few buyers of the product.	<u>Oligopoly</u>: Low to high subject to mutual interdependence <u>Oligopsony</u>: Sellers will have to deal with the increased negotiating power of the only few buyers.	Oligopoly: Difficult Oligopsony: Difficult

In this study, the application of value chain and SCP will rely on primary data obtained from field trips for each commodity in the selected regions. The activities in this phase include:

1. Selecting regions to be focused in the study. The value chain approach states that market (demand side) for certain commodity will depend on the supply side (producers and intermediaries involved in the chain. As such, it is important to assess the product flows of the six commodities both from producer and consumer sides. Focusing on the product flows from the main production regions producing the six commodities can be the best strategy proposed in the study. The main production regions for the six commodities are:
   a. Rice : West Java Province
   b. Shallots : Central Java Province
   c. Chili : West Java Province
   d. Salt : East Java Province
   e. Beef : East Java Province
   f. Sugar : East Java Province

   In each province, the study team will focus on the main production district producing the commodity. For example, the main production zone for salt in East Java is in Madura. The information with respect to districts in each province will be determined based on secondary data (production aspect, see detail in Annex).

2. After getting the map of the chain for each selected commodity, the study team will conduct interview with the actors along the chain. The interview will focus on some aspects including:

   a. Assess the costs, margin and information flow of each selected commodity by using the value chain approach. The data collected also will include the system of product handling and logistics connecting from the farmers to the intermediate stage and on to the final users/distributors/consumers. Quantify the structure of costs in the handling, storage and logistical movement of the product/animals through the value chain, variations in these costs among different sourcing/distribution channels and perhaps, differences in costs at different time periods/production seasons.

   b. Assess the market structure, including the size and type of each actor, patterns of intermediation, cooperation and integration, processes for price discovery, etc. and how these serve to promote or inhibit the current performance of the value chains. The SCP approach will be utilized in this stage.

   c. Identify the competition issues and other relevant problem in the markets such as the number of buyers in each stage of the value chains, the existence of rent seekers and at what level of the value chain they inhabit, the supply issue and the existing supporting institutions available along the chain such as cooperative and farmer groups. This will be conducted by using the SCP approach.

3. FGD to meet with the stakeholders involved in the six commodities (business association, producer association, importer, distributor and relevant government/ministry) in a selected study location.

Besides using primary data, the study team will also use secondary data during phase 2, particularly to analyze price trends and asymmetric price issues for each selected

commodity. This is particularly to assess the efficiency analysis. Price trends at producer and consumer prices will be performed by using trend analysis and graphics. The prices data at the consumer and producer levels will also be used to conduct asymmetric price analysis. Examining price asymmetry is essential to investigate price efficiency along the value chain. Evidence of asymmetric prices show that a group of society is not benefiting from a price reduction (consumers) or increase (producers) that would under conditions of symmetry, have taken place sooner (Meyer and Cramon-Taubadel, 2004). Miller and Hayenga (2001) state that the slow response of price changes between the producer and the consumer levels show inefficiency and inequity of price transmission in the value chain.

Following Rao and Rao, (2005), Reziti and Panagopoulos (2007) and Capps and Sherwell (2007), three steps in assessing asymmetric priceare utilized; (1) checking the cointegration issue, (2) testing causality relationship between producer (farm) and consumer prices, and (3) analyzing asymmetry price.

1. Cointegration issue

The Augmented Dickey Fuller (ADF) test is utilized to confirm the stationary price series data at producer and consumer levels. Next, for each price series that are cointegrated in same order, the application of the Johansen and Juselius, (1990) is utilized to test their cointegration (see equation 1 and 2).

$$P_t = \mu + \sum_{j=1}^{k} \Pi_i P_{t-1} + e_t \qquad (1)$$

where P_t is vector of producer and consumer prices (PP and CP); and e_t is Gaussian residuals

In order to determine the rank of Π and to reach the conclusion about the number of co-integration equations, we re-parameterize the equation (1) into the VECM form (equation 2).

$$\Delta P_t = c + \Pi P_{t-1} + \sum_{j=1}^{k-1} B_j \Delta P_{t-j} + \varepsilon_t \qquad (2)$$

where Π is a matrix of long run and adjustment parameters; B_j is matrix of the short-run parameter; ε_t is vector of i.d; and *jis* the number of lags. Trace statistics will be used in testing the cointegration between producer and consumer prices for each province.

2. Causality test

To investigate the causality between producer and consumer prices, we applied Granger causality test (equation 3 and 4). In equation 3, a regression equation of the producer prices is run as a function of lagged producer and consumer prices. Equation 3 is consisted of consumer prices as a dependent variable and two independent variables, i.e. lagged consumer and producer prices (Granger & Engle, 1987). Following Reziti and Panagopoulos

(2007) and Koutroumanidis, Zafeiriou, and Arabatzis (2009), the causality test is concluded by applying a weak exogeneity test.

$$\Delta PP_t = \mu_1 + \sum_{i=1}^{n1} \beta_{pp} \Delta PP_{t-i} + \sum_{i=0}^{n2} \beta_{pc} \Delta CP_{t-i} + \pi_1 Z_{t1-1} + e_{t1} \quad (3)$$

and

$$\Delta CP_t = \mu_2 + \sum_{i=0}^{n1} \beta_{pp} \Delta PP_{t-i} + \sum_{i=1}^{n2} \beta_{pc} \Delta CP_{t-i} + \pi_2 Z_{t2-1} + e_{t2} \quad (4)$$

The conclusion is indicated below;

(i) if $\pi_1 \neq 0$ and $\pi_2 \neq 0$, there is a feedback long-run relationship between the two variables

(ii) if $\pi_1 = 0$ and $\pi_2 \neq 0$, so PP_t in the long-run causes CP_t

(iii) if $\pi_1 \neq 0$ and $\pi_2 = 0$, so CP_t in the long-run causes PP_t

3. The issue of Asymmetry: ECM

Suppose there is a causality between producer price (PP) and consumer price (PP), assuming that PP cause PC, the ECM-EG model as follow.

$$\Delta PP_t = \mu_1 + \sum_{i=0}^{n2} \beta^{-}_{PC} \Delta CP^{-}_{t-i} + \sum_{i=1}^{n1} \beta^{-}_{PP} \Delta PP^{-}_{t-i} + \pi_1 Z^{-}_{t-1} + \sum_{i=0}^{n3} \beta^{+}_{PC} \Delta CP^{+}_{t-1} + \sum_{i=1}^{n4} \beta^{+}_{PP} \Delta PP^{+}_{t-1} + \pi_2 Z^{+}_{t-1} + \varepsilon_t \quad (5)$$

The plus (+) superscripts on the coefficients and the variables indicate that changes in the variables are positives. The minus (-) superscript indicate that changes in the variables are negative (Rao and Rao, 2005). To test the existence of asymmetric price transmission hypothesis in equation (3) a formal F-test will be utilized as the null hypothesis indicate in equation (4). The evidence of the asymmetric price transmission in the rice supply chain is included if the null hypothesis is rejected.

$$H_0 : \pi_1 = \pi_2$$

Output phase 2:

The primary output of phase 2 will be two reports:

a. Interim report, consists of secondary data analysis and preliminary results of field research
b. Draft final report as a synthesis report presenting field research on market structure of the six commodities (Chapter III in the study report) and the issues

of concentration, competition and efficiency of the selected commodities (Chapter IV in the study report).

- Phase 3 – Proposing policy recommendations for the six commodities

The main objective of this phase is to propose policy recommendations for each selected commodity focusing on how to address the problem identified and provide solution to improve the functioning of these markets in the best of interest of consumers and producers. As outlined previously, not only consumers will receive negative impact when big price fluctuations occur in the food market. Increasing prices will reduce the welfare of the producer as well, considering farmers act as consumers as well. The policy recommendation will be derived from results at phase 1 and 2. These results will be also presented in a focus group discussion (FGD) with key policy makers at national level to have feedback and inputs.

Output:

The output will be a final report that outlines policy recommendations concerning of each product (Chapter VI in the study report). The output will be utilized by competition authority (KPPU) and regulatory authorities (RAs) in understanding, enhancing and promoting competition of the six selected products.

Chapter 2 Overview of the Six Commodities

This chapter provide an overview of the six commodities focused in the study which cover: price, production, consumption and exporting & importing. Important policies with respect to the six commodities are also discussed.

2.1. Sugar

2.1.1. Price

As a commodity experienced with intensive policy intervention in both domestic and international markets, sugar price at both the farmer and retail levels is quite complicated. This price is not purely following the law of supply and demand. This section discusses the mechanisms of sugar price formation and the development, both at the farmer and retail levels.

Prior to trade liberalization in 1998, sugar price at the farmer level was determined by the government through BULOG, the price is known as *provenue* price. The price analysis shows that in determining the *provenue* price, the government considers the retail price target to be achieved, cumulated inflation as the representation of production and transportation costs and the price of fertilizer which represents the production cost (Susila, 2004). All the three variables are positively correlated to *provenue* price. In other words, the increase in production and transportation costs are two considerations in determining *provenue* prices, aside from the retail price. For example, if inflation increases by 1%, then price at the farmer level increases by about 0.84%. Furthermore, if the price of fertilizer increases by 1%, then the price also increases by about 0.60%.

Due to a regulation by the government, sugar price at the farmer level is relatively stable and increasing in line with the changes of those three factors. Thus, the sugar price at the farmer level is relatively predictable, making it easier for farmers to make decisions. In the period 1985-1977, sugar price at the farmer level increased at a rate of 6.6% per year, very close to the inflation rate, which was between 6% -8% per year. Until 1977, the price at the farmer level had not exceeded IDR 1,000 per kg. The maximum price was only IDR 911 per kg.

In 1998-2002, the government released the sugar price at the farmer level on the free market mechanism. Although there were efforts to set *provenue* price as happened in 1999-2000, the policy is no longer effective because the price mechanism that occurs is following the free trade. This happens because BULOG no longer has the sole authority, whether in terms of imports or purchasing the sugar from farmers. Thus, in the regime period of this liberalization policy, the price of sugar is determined more by the free market mechanism that refers to the price of sugar in the international market.

If before the liberalization policy, the price at the farmer level was still below IDR 1,000 per kg, then at the beginning of the period of liberalization, the price immediately jumped to IDR 2,100 per kg. However, this price spike was not beneficial to farmers because the economic crisis that occurred at that time had caused the cost of sugar production to increase sharply. The price was below the average cost of sugar production estimated between IDR 2,300 - 2,800 per kg.

This situation had triggered a decline in farmer area and production at that time, where national production reached its lowest point in 1998 and 1999.

The commerce policy for importing sugar, introduced in September 2002, changed fundamentally the price formation for the farmer. This was the beginning of the Controlled Policy Regime. One of the basic essences of this policy, related to the price of sugar at the farmer level, is that sugar imports can be done if the Farmers Benchmark Price (HPP) at least IDR 3,410 per kg. This policy basically guarantees that the price at the farmer level is at this level. The sugar price each year changes in line with the calculation of the cost of sugar production. Broadly speaking, the process of HPP formation is as shown in Figure 3. The Government uses the various aspects of the sugar palm concession set forth in the Decree of the Minister of Inflammation RI. It is expected that the HPP will be established by the Government through the Ministry of Trade in April before the milling season begins.

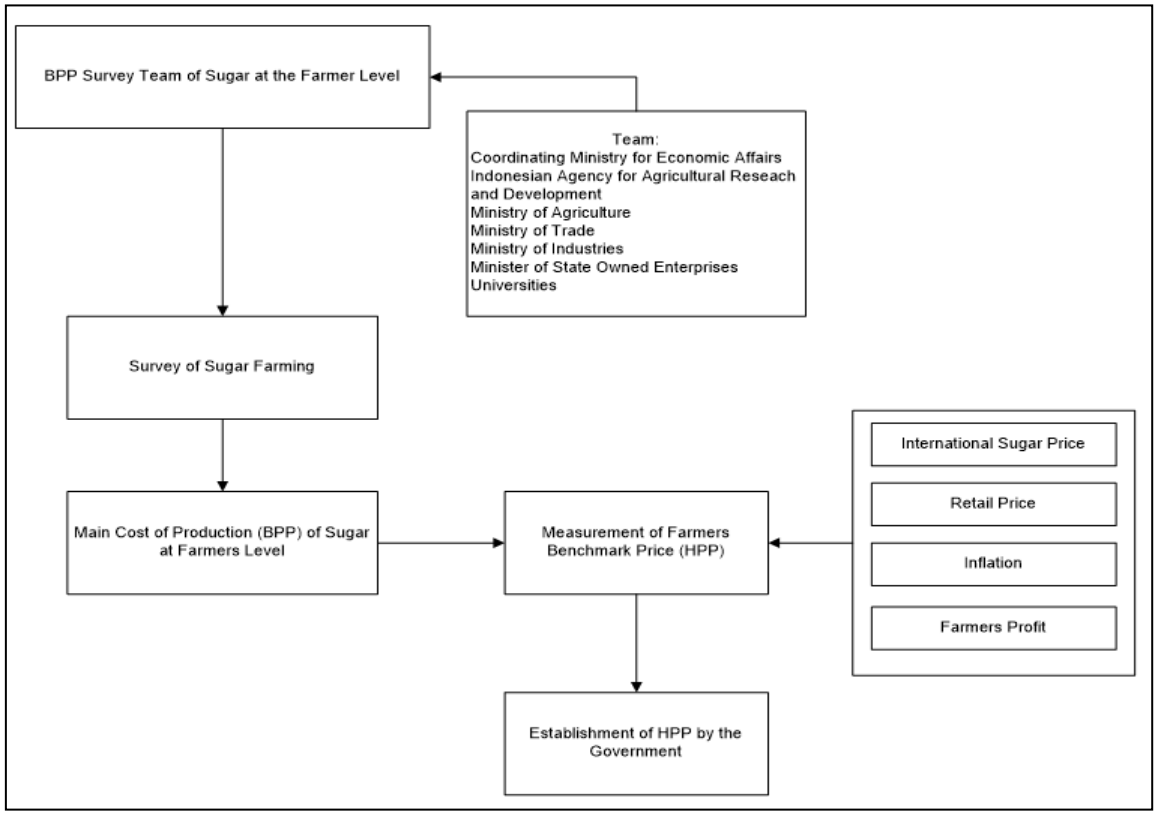


Figure 3 The process of forming HPP

Under that mechanism, HPP over the past 5 years had increased in line with the increase in Cost of Production (BPP) (Figure 4). Farmers also urged the HPP increase is to keep pace with the rise in BPP due to a 10% increase in land rent per year, an increase in wages and an increase in the cost of agricultural inputs & tools. In 2016, with a BPP of IDR 8,790, the HPP is set at IDR 9,100 per kg. In 2017, the Government no longer stipulates the HPP but sets the reference price at the farmer level of IDR 9,100 and the Highest Retail Price (HET) of IDR 12,500 per kg.

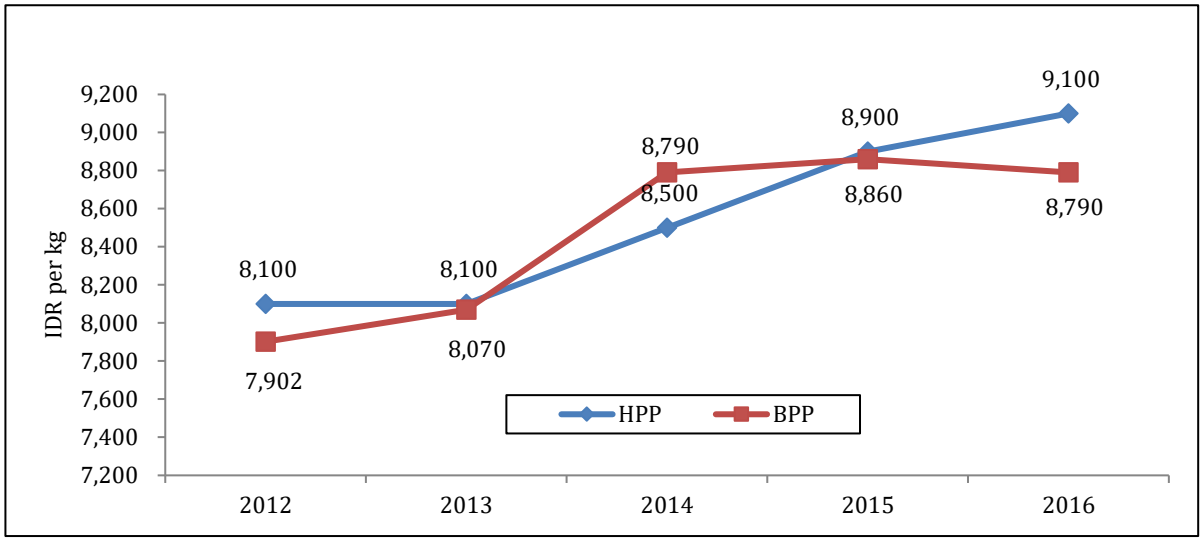


Figure 4 Main cost of production and farmer benchmark price 2012-2016

Data from 2012 to 2016 shows that the change of HPP is relatively small. This is also the case of auction prices as thesehave not increased significantly. The increase in the auction price in 2016 is slightly higher than in previous years, which is around IDR 1,000 per kg. The big increase actually happened for the retail price in 2016. The data shows that the retail price is more affected by the commerce margin.

Margin distribution began to change since 2013, i.e., the margin of commerce is as great as the farmer's margin. In 2016, there is a very striking phenomenon, that is the margin of commerce is 1.5 bigger than the farmer's margin. It seems that the magnitude of this margin caused retail prices in 2016 to be high. The retail price determiner appears to be more influenced by the trader than the auction price. The underlying supply problem seems to be the cause of the commerce margin being enlarged.

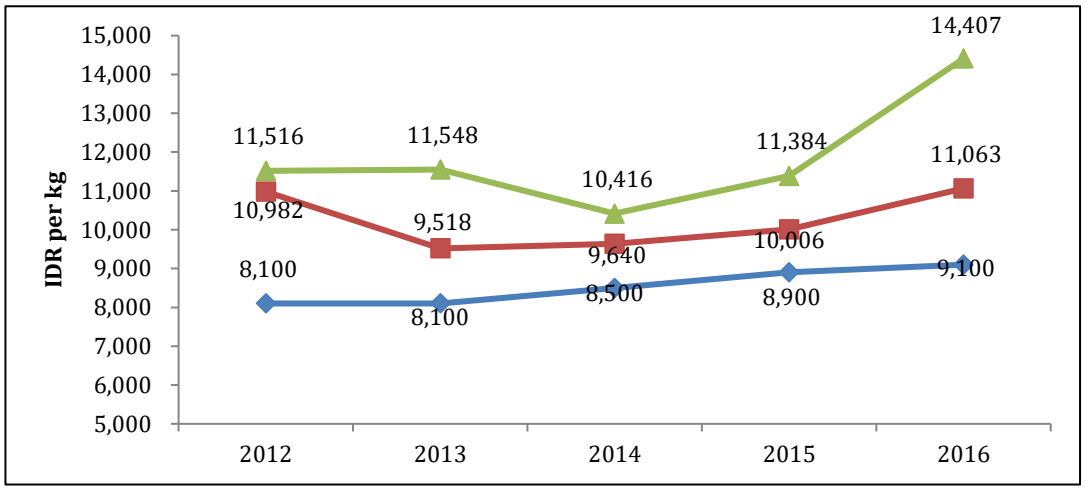


Figure 5 Farmer benchmark, auction, and retail prices 2012-2016

Table 2 Auction price, retail and distribution of farmer and management margins

Year	Price (IDR per kg)			Margin (IDR per kg)			Margin Distribution		
	BPP	Auction	Retail	BPP to Auction	Auction to Retail	Total	Farmers	Commerce	Total
2012	7,902	10,982	11,516	3,080	534	3,614	27%	5%	31%
2013	8,070	9,518	11,548	1,448	2,030	3,478	13%	18%	30%
2014	8,790	9,640	10,416	850	776	1,626	8%	7%	16%
2015	8,860	10,006	11,384	1,146	1,378	2,524	10%	12%	22%
2016	8,790	11,063	13,514	2,273	3,344	5,617	16%	23%	39%

Source: Ministry of Trade, processed

2.1.2. Production and Consumption

Production and consumption

Sugarcane that is milled by a sugar factory is divided into factory-owned sugar grown (HGU) on leased land from the community and sugarcane planted by smallholders. The production of plantation white sugar (GKP) in 2016 had decreased as had the size of the farmed area (Table 3). This production is far below what was obtained in 2015. The decline in sugar production in 2016 is mainly due to reduced cropping and low yield because of less favorable climatic conditions (wet spell).

Table 3 Harvest area and GKP production

Year	Large Estate		Smallholders Estate		Total	
	Area (000 ha)	Production (000 ton)	Area (000 ha)	Production (000 ton)	Area (000 ha)	Production (000 ton)
2011	192.5	959.4	242.5	1,284.2	435.0	2,243.6
2012	194.9	1,147.5	247.8	1,445.1	442.7	2,592.6
2013	208.7	1,185.3	262.3	1,368.2	471.0	2,553.5
2014	187.1	1,062.8	290.0	1,516.6	477.1	2,579.4
2015	186.8	1,050.2	275.0	1,573.7	461.8	2,623.9
2016	173.9	905.8	266.9	1,297.9	440.8	2,203.7

Source: Statstics Indonesia, *2016*

Of the total production of GKP, private sugar factory produces sugar at 44.5% and state-owned companies at 55.5%. Ownership of sugar is divided into sugar owned by the company (self-owned sugar) and sugar owned by farmers. In 2016, sugar is controlled by State Owned Enterprises (SOEs) by 25.8% or about 570 thousand tons, while the balance is sugar owned by farmers and privately. Sugar owned by farmers and privately is sold freely by auction to D1 level traders meeting the price agreement. This allows the trader to hold sugar up to 74.2% of the total production. The distribution of control of sugar will affect the distribution and price formation ranging from the level of the auction price to the retail price. Figure 6 shows the current proportion ownership of sugar (GKP) ex-cane.

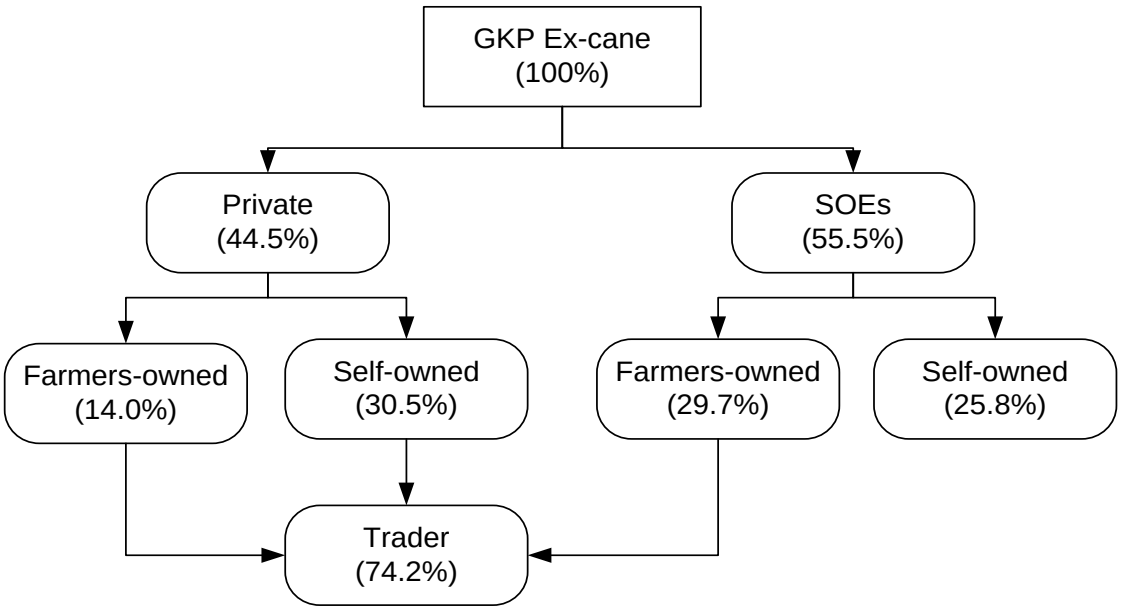


Figure 6 Distribution of gkp ex-cane ownership

There are currently 47 sugar factories from SOEs and 15 private sugar factories primarily using cane. These sugar factories are spread throughout Sumatra, Java, and Sulawesi. State-owned factories are generally factories with relatively old technology. The number of SOEs sugar factories are 100+ years are 33 (73%). Most of SOEs sugar factories have a milling capacity of < 4,000 tcd (34 factories). Several state-owned enterprises are not operating due to lack of raw materials and low efficiency. This closure is in line with the plan of the sugar factories owned by BUMN. This re-structuring is aimed at improving the factory performance, quality and yield.

Table 4 Active sugarcane factory

Company	Location	Total
SOEs		
PTPN II	North Sumatra	1
PTPN VII	South Sumatra	1
PTPN VII	Lampung	1
PTPN IX	Central Java	8
PTPN X	East Java	10
PTPN XI	East Java	15
PTPN XII	East Java	1
PTPN XIV	South Sulawesi	3
PT RNI	West Java	4
	East Java	3
Private		
PT Laju Perdana Indah	South Sumatra	1
	West Java	1
PT Pemuka Sakti Manis Indah	Lampung	1
PT Gunung Madu Plantation	Lampung	1
PT Sugar Group Co.	Lampung	3
PT Madubaru	Yogyakarta	1
PT Kebon Agung	East Java	1
	West Java	1
PT PG Gorontalo	Gorontalo	1
PT Industri Gula Nusantara	Central Java	1
PT Gendhis Multi Manis	Central Java	1
PT Kebun Tebu Mas	East Java	1
PT Sukses Mantap Sejahtera	NTB	1

Source: Ministry of Industry (2017)

Table 5 Sugarcane production by province and farming category, 2016 (Ton)

No	Province	Smallholder	Government	Private	Total
1	Sumatera Utara	5,644	24,593		30,237
2	Sumatera Selatan	1,101	57,861	29,849	88,811
3	Lampung	130,592	76,467	570,054	777,113
4	Jawa Barat	38,490	42,219		80,709
5	Jawa Tengah	268,020	1,682	10,250	279,952
6	DI Yogyakarta	12,246			12,246
7	Jawa Timur	1,233,975	132,941	2,191	1,369,107
8	Gorontalo	5,899		39,233	45,132
9	Sulawesi Selatan	7,627	24,590		32,217
Total		1,703,594	360,353	651,577	2,715,524

Source: Directorate General of Estate Crop, 2016

Production of sugar made from sugarcane is still far from the total consumption of sugar which reached 6 million tonnes in 2016. This consumption consists of plantation white sugar (GKP) for direct household consumption and rafined sugar (GKR) for the food and beverage industry needs. Increased consumption of GKP is relatively small because it is only caused by the increase of population. While the increase in consumption of GKR is greater in line with the development of the food and beverage industry also other industries based on GKR.

Table 6 National sugar total needs

No.	Year	Sugar needs (000 ton)		
		GKP	GKR	Total
1	2011	2,769	2,251	5,020
2	2012	2,735	2,638	5,373
3	2013	2,686	2,815	5,501
4	2014	2,888	2,976	5,864
5	2015	2,928	2,790	5,718
6	2016*)	2,989	3,033	6,002
Growth per year (%)		1,44	5,51	4,05

Source: Ditjenbun, Kemenperin; *) : Preliminary data

GKP Trade Balance

National GKP supply comes from various sources but; for the GKP it is mainly from sugarcane processed by GKP sugar factories. In the case of supply shortages, imports will be either raw sugar or white sugar. The permission for white sugar import is owned only by BULOG. Meanwhile, the importing of raw sugar in the form of special assignment is given to the parties who have a production license. Furthermore, raw sugar is processed in GKP or GKR sugar factories. The results will enter the GKP market. The following illustration shows the current flow of sugar supply.

For example, the GKP trade balance is presented in Table 7. If it is assumed that monthly consumption is fixed and only increases during national holidays. If the overall condition of the 2016 GKP trade balance shows a deficit of ± 815 thousand tons and this supply is only sourced from GKP sugarcane. But if supply also calculates the end of 2015 stock and includes the export-import of GKP, there is a surplus of 275 thousand tons. The problem is that the supply distribution does not occur in accordance with consumption, resulting in a period with a deficit or surplus.

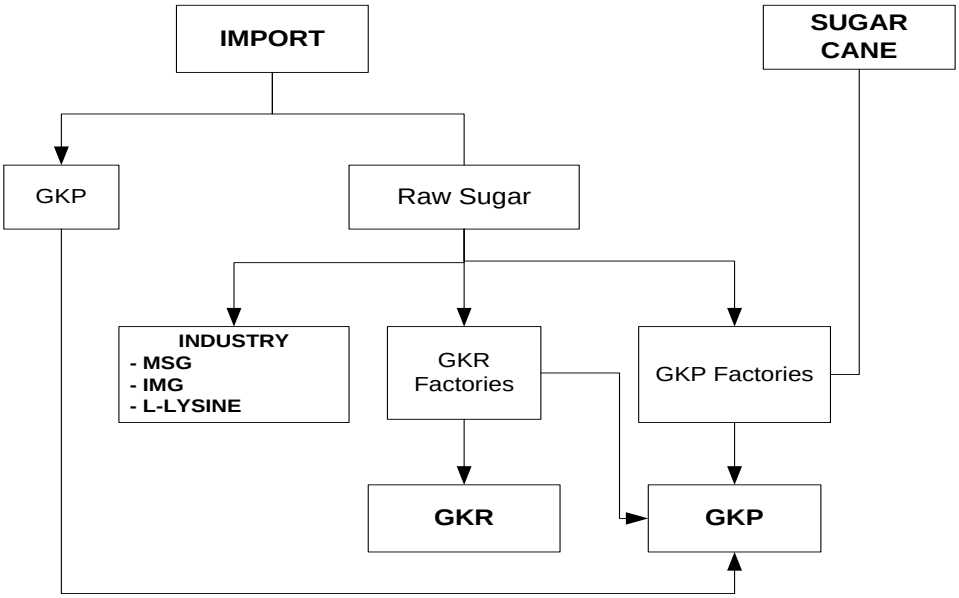


Figure 7 Sources of national sugar supply

Table 7 The GKP trade balance based on sugarcane and import 2016

Month	Supply	Production of ex-sugarcane	Import	Consumption	Stock
Jan	816,592	-		247,461	569,131
Feb	569,131	-		247,461	321,670
March	324,906	3,236		247,461	77,445
Apr	91,371	13,926		247,461	(156,090)
May	15,799	69,640	102,249	247,461	(231,662)
June	119,557	342,728	8,491	247,461	(127,904)
July	255,794	304,438	79,260	296,953	(41,159)
August	457,163	498,322		247,461	209,702
Sep	559,802	350,100		247,461	312,341
Oct	755,886	358,870	84,675	247,461	508,425
Nov	682,025	173,600		247,461	434,564
Dec	523,456	88,892		247,461	275,995
Total	2,478,427	2,203,752	274,675	3,019,024	

Source : Sugar Company and Directorate General of Plantation, processed

A surplus of 275 thousand tons is 1 month of consumption. Therefore, in the following year, so that GKP trade balance if it does not have a deficit, it will require an additional supply of 5 months of consumption.

2.1.3. Export and Import

The non-fulfillment of GKP production to supply the demand of direct household necessities forced the Government to import sugar, in the form of white and raw sugar. Imports of sugar to meet the needs of GKP reach 1 million tonnes in the form of raw sugar. Raw sugar imports are

then processed in some GKR sugar factories and some in GKP sugar factories which have the ability to process the raw sugar.

All of GKR supply are still supplied by GKR sugar factories using raw imported sugar materials from some major sugar-producing countries. The importing of raw sugar is calculated based on the GKR requirement by the industry as evidenced by the contract between GKR sugar factories and the food and beverage industry. The volume of raw sugar imported for GKR factories is currently around 3.2 million tons. If the import of raw sugar for the food and beverage industry is added to GKP needs, the total import reaches 4 million tons. If the sugar requirement is about ± 6 million tonnes, it means more than 66% still can be covered from imports.

Table 8 The development of sugar imports in 2009 - 2014

Year	Import of Raw Sugar (tonne)			White sugar(ton)
	for GKR	for GKP	Total	
2009	2,237	149	2,386	13
2010	2,469	110	2,579	447
2011	2,268	128	2,396	118
2012	2,770	533	3,303	61
2013	2,937	394	3,337	20
2014	2,700	158	2,858	21
2015	2,800	600	3,400	-
2016	3,220			84

Source: Ministry of Trade RI; NSC Journal

2.1.4. Government Regulation and Policy

2.1.4.1. Price

There are three main factors determining the retail price which are HPP, the margin between the price level of consumers and producers and distribution costs. The flow of domestic sugar price formation is presented in Figure 8. This indicates that if the HPP is set by the Government increases, then the retail price will rise. However, the increase of HPP is not immediately transferred to an increased in retail price. Based on the data contained in sub-chapter 2.1, it is seen that the effect of HPP on retail prices is slightly higher in 2016. The price becomes very elastic because of the additional costs of distribution. The further the distance between producers and consumers, the higher the retail price. Data from the Ministry of Trade reviewed by AGI (2015) shows that, in areas with lower transportation cost, the total margin is 15-21%. While in the area with expensive transportation, the margin can reach 50%. The total margin from the producer to the consumer according to this study, is about 20% of the price at the consumer level.

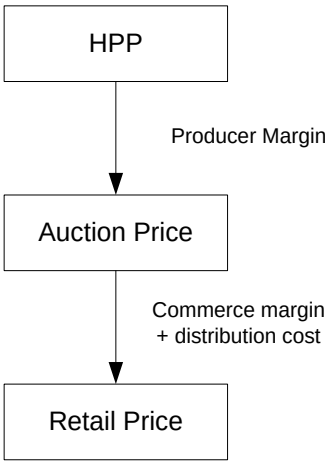


Figure 8 The flow of domestic sugar price formation

In 2016, the margin from producer to consumer was above 20%, it was about 39%, so the retail price became very high. The margin gap from the retail to the producer price increased by about 6% and the margin of commerce increased by about 11%. This is the basis for the Government to take several steps to control prices at the retail level. The steps taken by the Government include:

1) Setting a sugar HET of IDR 12,500 per kg
2) Assigning BULOG to purchase sugar owned by BUMN (PTPN and RNI) at IDR 10,500 per kg.
3) In 2017, BULOG's purchase price is set by the Government at IDR 9,700 per kg (Letter of the Minister of Trade No. 885 of 2017) both for sugar owned by SOEs(PTPN and RNI) and farmer.
4) In order to support price stability, SOEs (PTPN and RNI) and the farmers must sell all of their sugar to BULOG.
5) Giving import permits in accordance with the supply needs of GKP domestic.
6) Conducting price controls in the market and with wholesalers.

The point worth examining the impact of this policy is:

1) If the determination of HET the government is carries it out with consequents and strict supervision, it will have an impact on the stability of the auction price of sugar. Traders will try to keep their trading margins not to be significantly down so that they will try to push down the auction price. If the auction price remains high, the retail price will not be at HET level. Data obtained by the Ministry of Trade which shows that retail prices in early 2017 was still above IDR 14,000 per kg. This is likely due to the lack of sugar stock, so that traders take the margin of commerce more than the normal level.
2) The purchase price of sugar owned by BUMNis set at a price of IDR 10,500 gross (including taxes, etc.) by BULOG. It will affect the income of sugar companies. This is due to the high level of HPP in some of the sugar factories owned by BUMN.
3) Sales of sugar owned by PTPN and RNI, to BULOG may not be able to influence the market, because the control of processed sugar is by SOE's mostly owned by farmers. If the sugar owned by the farmer is sold to the traders and combined with the private sugar which is also sold to traders, then the amount is greater than sugar controlled by BULOG. However, if all plantation white sugar is purchased by BULOG, it will be dominated by them.

4) Imports in the form of processed raw sugar combined with plantation white sugar will be able to cause competition problems for local sugar. If the price that is owned by farmers decreases, then the farmers will switch to other commodities. Data from sugar production in 2016 shows a decline in the sugarcane area compared to 2015. If this happens then the target of self-sufficiency for plantation white sugar will be very difficult.

2.1.4.2. Domestic Sugar Trading Policy

In general, various government policies relating to trade and distribution can be divided into three policy regimes (Table 9). Sugar is a commodity that gets serious attention from the government. Therefore, the government's policy on distribution and price aspects are quite intensive, especially until 1997. During this period, the policy of price stabilization and availability of sugar was very prominent.

The foundation of the price stabilization regime begins with the government policy set in the Presidential Decree No. 43/1971, issued on July 14, 1971. The material or subject matter of this policy concerns to procurement, distribution and marketing. This policy clearly has a very wide coverage because it involves three strategic things. The essence of this policy is to authorize BULOG, to maintain price stability and to supply of sugar. This decree marks the beginning of BULOG's role as a stabilizer institution for the domestic sugar market.

In the period 1970-1980, the amount of BULOG controlled stocks ranged from 50-80% of the total stock. When the TRI program began to take place and the share of farmer's sugar became larger, the stock and supply of sugar from outside BULOG was increasing. Therefore, since 1980, BULOG purchased all domestic sugar production and distributed it to the market. On the other hand, the role of BULOG was stronger as a stabilizing institution (Amang, 1994).

The sugar trading policy is considered to have some weaknesses such as uncleared sugar quality specifications. To that end, the government refined the policy by Decree of Minister of Industry and Trade. 527 / MPP / Kep / 2004 junto Decision of Minister of Industry and Trade No. 02 / M / Kep / XII / 2004 junto Decision of Minister of Industry and Trade No. 08 / M-DAG / Per / 4/2005. The essence of the policy was the provision of ICUMSA that clearly distinguished between plantation white sugar, refined sugar and raw sugar.

The fuel price hike at the end of 2005 which was more than 100%, caused the cost of production to increase sharply, especially due to the increasing transportation costs. It is known, that transportation costs have a share of about 30% of the overall cost. Coupled with an increase in other costs such as fuel price increases, production costs increased to around IDR 4,400 / kg. Based on these considerations as well as in the effort to increase food security, increase of regional economic activity and maintain good momentum to achieve food self-sufficiency, the government again raised the benchmark price of farmers through Minister of Trade Decree No. 19 / M-DAG / PER / 4/2006, April 19, 2006. With this policy,the price of sugar was set at IDR 4,800/kg.

This policy continues to grow with the dynamics of the international sugar market and the increasing domestic demand for sugar. Increased sugar prices, which were considered as an extraordinary condition, encouraged the government to issue a regulation about reference prices

of some food commodities. Permendag No. 42 / M-DAG / PER / 5/2016 set Farmers Benchmark Price (HPP) of IDR 9,100 per kg. ByHPP and auction at around IDR 11,000, sugar price should be at the retail level of only IDR 13,000 per kg. In fact, the price at the retail level on average reached IDR 14,000, moreover the highest price reached more than IDR 16,000 per kg. With this incident, the government was assigning BULOG to import sugar and obligate SOEs sugar factories to sell its sugar to BULOG at a set price.

Table 9 Policies related to the domestic sugar market

Name of Policy	Subjects	Aim(s)
Keppres No. 43/1971, 14 July 1971	Procurement, distribution and marketing of sugar	To keep sugar stability as a staple food
Surat Mensekneg No. B.136/ABN SEKNEG/3/74, 27 Mach 1974	Non-PNP sugar control, supervision and distribution	As an explanation of43/1971 which includes sugar of PNP
Kepmen Perdagangan dan Koperasi No. 122/Kp/III/81, 12 March 1981	Domestic sugarcane commerce arrangement	To ensure smooth procurement and distribution of sugar and increase in farmer's income
Kepmenkeu No. 342/KMK.011/1987	Determination of domestic and imported price of sugar	To ensure price stability, devisa, and narrowing income of farmers and factories
Inpres No. 5/1997, 29 December 1997	Farmers-owned sugarcane development program	To Provide roles to business actors in the framework of free trade
Kepmenperindag No. 25/MPP/Kep/1/1998	Commodities in which its commerce is governed	To encourage efficiency and smooth flow of goods
Kepmenhutbun No. 282/Kpts-IX/1999, 7 May 1999	Determination of provenue price of sugar production of farmers	Avoiding losses of farmers and encouraging increasing in production
Kepmenperindag No. 363/MPP/Kep/8/1999, 5 August 1999	Sugar import commerce	Reduction of government budget burden through import of sugar by producers
Kepermenindag No. 230/MPP/ Kep/6/1999, 5 June 1999	Revoke the Minister of Industry and Trade Decree no. 363/MPP/Kep/8/1999	Imposition of import tariff on sugar to protect domestic industry
Kepmenperindag No. 643/MPP/Kep/9/2002, 23 September 2002	Sugar import commerce	Restrictions on sugar importers as only importers of sugar producers and as registered sugar importers for increasing in income of farmers / producers
Kep Menperindag No. 527/MPP/Kep/2004 jo Kep Menperindag No. 02/M/Kep/XII/2004 jo Kep Menperindag No. 08/M-DAG/Per/4/2005	Import regulation, sugar quality, and soil nutrient reference of farmers	Restriction on sugar importers; sugar quality, time of import, and buffer / guarantee price
Kep Mendag N0. 19/M-DAG/PER/4/2006, 19 April 2006	Sugar price determination of farmers	Food security, economic growth, and self-sufficiency in sugar
Permendag 42/M-DAG/PER/5/2016, April 2016	Farmers Benchmark Price Determination (HPP)	Ensures farmers' profits and encourages the development of national sugar
	BULOG assignment in importing white sugar and raw sugar	Increases the supply of sugar to keep retail prices under control
	Purchase of sugar owned by BUMN Company by BULOG	Adding control of sugar by the Government (BULOG) to be able to become market price determinant
Permendag No. 27, tg 4 April 2017	Determination of Highest Retail Price	Control of retail price of sugar

Source: Sudana et al. (2000) and Susila (2005); Ministry of Trade (2017)

2.1.4.3. Production

Policies in the field of production are made with the aim of increasing sugar production based on sugarcane. Sugar production is determined by the area and productivity of sugar per hectare. Therefore, basically national sugar policies are grouped into production policy, arrangement of old sugar factories, and development of sugarcane plantation & new sugar factories:

Production

1) Increased production and quality of sugar through the Government sugar factories, revitalization of private factories and development of sugarcane plantation & new sugar factories.
2) By 2030, the national sugar production will reach 5.9 million tonnes as the result of existing sugar factories co-operating and the new factories developing about 20 units.
3) The quality of sugar produced through this agreement between the sugar factories and the new sugar factories development must meet SNI standards.

Revitalization of Existing Sugar Factories

The existing sugar factories arrangement is intended to improve performance and efficiency. Therefore, the existing factories arrangement must meet the following criteria:

1) The design capacity is at least 4,000 expandable to 6,000 TCD.
2) Factory efficiency (overall recovery) of at least 80%.
3) Guarantee of the availability of sugarcane raw materials according to capacity with maximum effective milling time is 135 days with a minimum time of 120 days.
4) Have adequate working areas in accordance with the needs of sugarcane raw materials.
5) The quality of sugar meets the SNI "gula pasir" as a requirement for the unification of a single sugar market.
6) Diversified products other than sugar.
7) Cost of sugar production is lower than IDR 6,500 per kg.

Improving the productivity and quality of cane

1) Productivity of sugar per hectare of at least 6 tons (productivity of sugarcane minimum is 75 tons per ha with sugar content (rendement) as much as 8.5%)
2) The level of trash and young stem is a maximum 5%

Construction of a new sugar mill

1) The development of new sugar factories and new plantation area outside of Java is 20 units with a minimum capacity of 8,000 TCD, along with the ability to produce sugar at least 127,500 tons per year per factory. To support the operation of the factories, it is required ± 15,000 ha of planted area which intotal area is about 20,000 ha. The total new planted area then is about 300 thousand ha and land needs around 400 thousand hectares.
2) Starting in 2018, at least 2 new sugar factories must be built. New factories should be projected to start in 2019.

3) New sugar factories must have the technology that supports the diversification of sugarcane-based products.
4) Design the construction of a new factory in a cluster consisting of at least 3 sugar factories so that able to support other sugarcane-based industries.

2.1.4.4. Investment

Based on an Integrated and Competitive Sugar Industry Policy Review conducted by the Ministry of Industry (2015), the current investment policies on sugar are:

1. Government Regulation Number 18 of 2015 concerning Income Tax Facilities for Investment in Certain Business Fields and/or in Certain Regions

    - It is a revision of the previous Government Regulation No. 52 of 2011 which includes only 129 companies. Since May 6, 2015, tax discount (tax allowance) can be filed by investors. The government invites the investors or companies wishing to apply for a tax allowance for 143 business sectors covered by the Government Regulation Government Regulation No. 18 of 2015 on Income Tax Facilities for Investment in Certain Business Fields and / or in Specific Areas.

    - The sugar industry includes certain business sectors and areas as referred to in the regulation while the agricultural machinery industry is included in some business sectors.

    - Taxpayers conducting an investment may be granted an Income Tax facility if they meet the following criteria: (i) have a high investment value or for export, (ii) have a large labor absorption; or (iii) have a high local content.

2. Presidential Regulation No. 39 of 2014 concerning Field of Closed and Open Business with Requirements in the Field of Investment

    - Sugar-related business fields in this regulation include: (i) seed industry of sugarcane plantations with less than or equal to more than 25 ha, (ii) plantation business with an area of 25 ha or more or up to a certain area without and by processing unit which is integrated with processing unit that has the same capacity or up to a certain capacity, (iii) research and development of science, technology and engineering, agricultural genetic resources, GMO (genetically modified), (iv) raw sugar industry-reserved for MSMEs, vi) sugar industry (plantation white sugar, rafined and raw sugar) through the development of new factories and expansion, firstly, they must build their own sugarcane plantation in accordance with the legislation.

    - In general, the regulation is balanced in the sense of providing proportional space between the protection of the sugar industry/sugarcane farmers from trade liberalization traps and attracting foreign investment to play a role in accelerating the increase of national sugar production towards self-sufficiency.

    - Sugarcane plantations and factories are not included in the negative List of investment, so that they remain open to domestic and foreign investment, but with certain conditions intended to maintain the existence of the factories. The new

investment also aims to encourage a healthy and dynamic competition with existing sugar factories.

- Foreign capital ownership and/or investment locations for ASEAN countries remains 95% as a maximum level with 5% representing the share of local shares (Indonesian companies) and plantations development involving local farmers. This rule also applies to the sugarcane seed industry, whether with an area of 25 ha or equal and more than 25 ha which open to foreign investment with maximum ownership of 95%.
- Especially for research & development of science, technology & engineering in the form of GMO, the share of foreign ownership can be increased from a maximum of 40% to 95%. Such actions are needed to accelerate a technology transfer of sugarcane production by utilizing the latest biotechnology based research results, particularly through the release of improved varieties.
- Development of new sugar factories to produce various types of sugar (GKM, GKP, GKR or liquid sugar) must build their own garden. This applies for factories which both of integrated with downstream industries producing derivative products (bioethanol / acetic acid / alcohol / L-lysine from drops, biofertilizer from filter cake, bagasse-based co-generation, particle board / multidensity fiber / canvas brake from bagasse, cattle feed from sugarcane, etc.) or not integrated. This limit also applies both for Java and other areas.

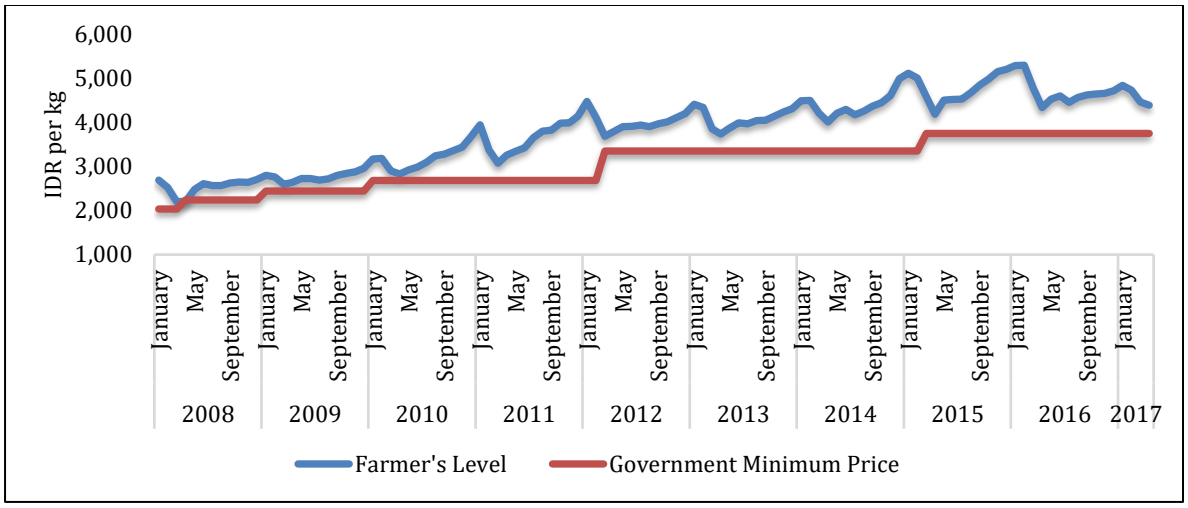
2.2. Rice

2.2.1. Price

The rice price at the farmer is in the form of harvested dry unhusked rice (Gabah Kering Panen per GKP). During the period of January 2008 until April 2017, the highest price occurred mostly in the month of January or February. On the other hand, the lowest price during the year mostly occurred in the month of March or April during the peak of the first harvest (Figure 9). During the same period, the average price increase is 0.55% and the highest increase occurred in 2011 with the average increase of 1.9%.

The government set the minimum price for the farmer in order to avoid a low price especially during the harvest season. In order to insure the price level was not lower than the minimum price, BULOG (government-owned parastatal institution) has the obligation to buy the unhusked rice from the farmer's at certain price level. The minimum price increased gradually and currently the price of harvested dry unhusked rice is set at IDR 3,750 kg for the farmer.

The unhusked rice for the farmer will be dried and decreasing the water content also it will be processed in the rice mill. The unhusked rice in the rice mill is called mill dry unhusked rice (Gabah Kering Giling per GKP). According to the survey conducted by Statistics Indonesia, the conversion rate from the unhusked rice in the farmer's level (GKP) to unhusked rice in the mill's level (GKG) is 83.12%. The reduction is caused by the decrease in the water content and loss during the drying process.



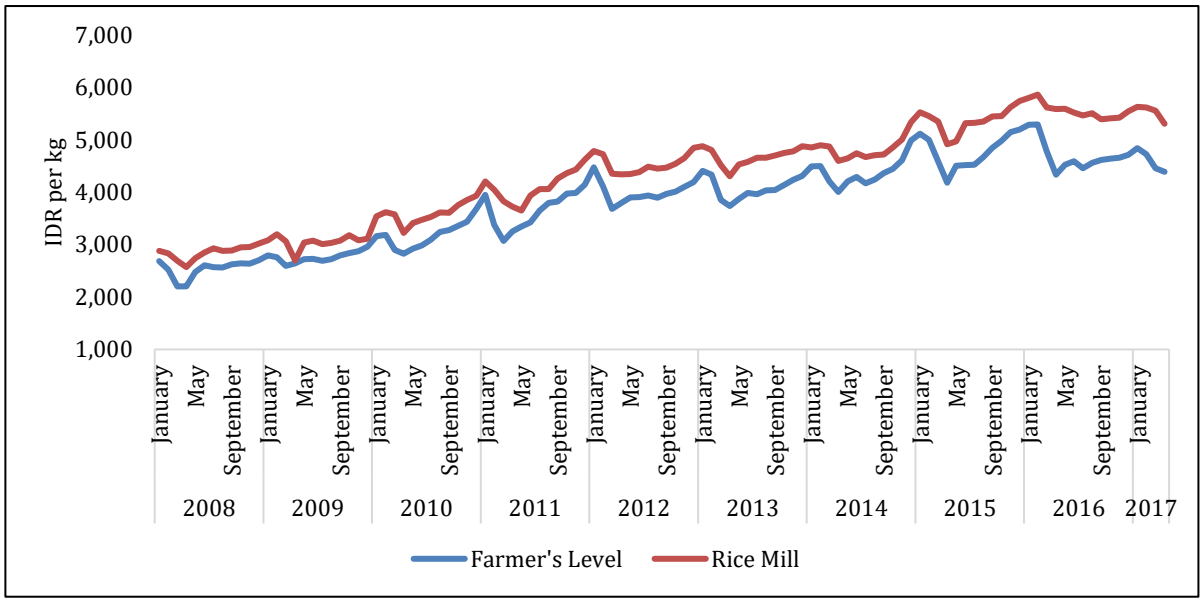
Source: Ministry of Agriculture (2017)

Figure 9 Unhusked rice price level and government minimum price level, January 2008-April 2017

Based on the price of unhusked rice at the farmer and rice mill's level, the price moves in the same direction. Similar to the price at farmer's level, the price at the rice mill will peak during January and February. Meanwhile the lowest price will occur during March or April and during the peak harvesting period (Figure 10).The average increase of mill dry unhusked rice (Gabah Kering Giling per GKP) during the period of January 2008 until April 2017 was 0.62% higher than the average increase of the unhusked rice in the farmer's level (GKP) which raised by 0.55% in the same period. The highest average increase of the dry unhusked rice in the mill level (GKG) price

occurred in 2010 at 2.1%. Meanwhile in 2016, the price tended to decrease with an average of 0.27%.

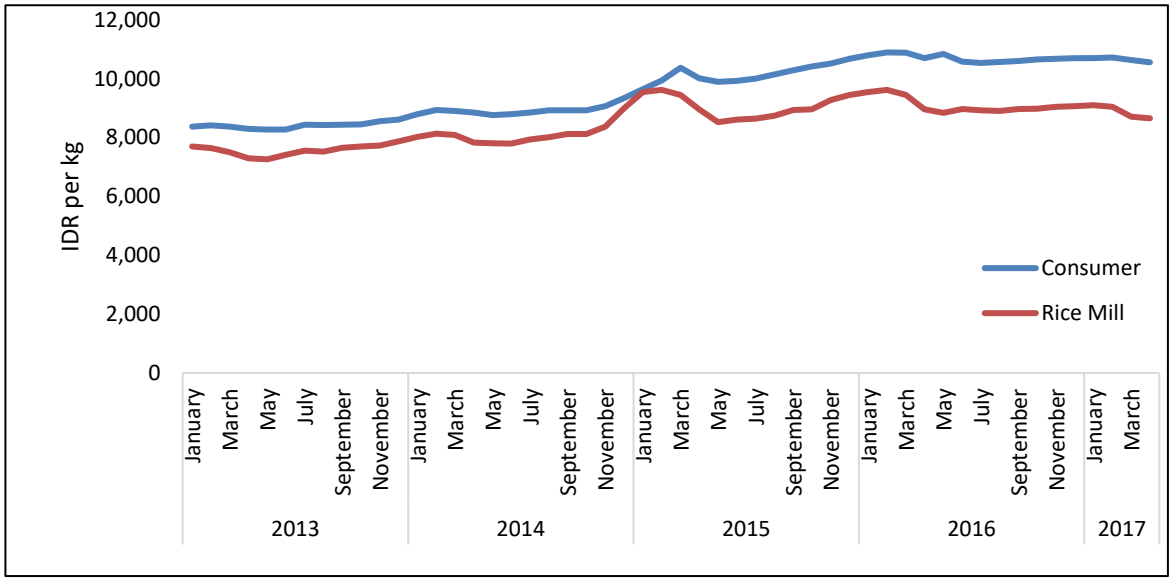
In addition, looking at the price difference between the two levels of price, the price level tends to increase in recent years. In 2008, the average price difference was IDR 321.34 per kg and increased until in 2016 the difference was IDR 857.49 per kg. Considering the conversion between GKP and GKG, the price difference increases. In 2008, the average price difference is IDR 740.85 per kg and increased with the average price difference of IDR 1652.24 per kg in 2016. This shows that the margin for traders have increased significantly during this period.



Source: Ministry of Agriculture (2017)

Figure 10 Unhusked price in farmer and rice mill, January 2008-April 2017

The unhusked rice will be processed in mills to produce rice ready to be consumed. Then, the rice will be transferred from the rice mill to the traders to sell to the consumers. Looking at the price at these two levels, the price difference has the tendency to increase over the years. In 2013, the average difference was IDR 838 per kg and in 2016, the difference increased by 90% to IDR 1,598 per kg. This indicates that the margin gained by the traders has increased siginificantly. The increase can be caused by the increase of profit or the increase in the cost of moving the rice from rice mills to the consumers.

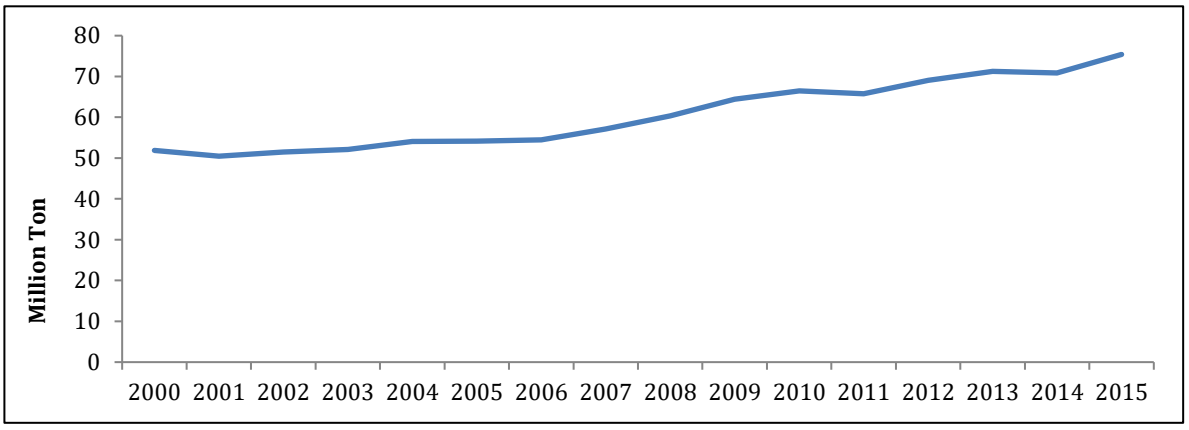


Source: Ministry of Agriculture and Ministry of Trade (2017)

Figure 11 Rice price in rice mill and consumer, January 2013 – April 2017

2.2.2. Production

The unhusked production in mill level (GKG) during the period of 2000 until 2015 has an average increase of 2.6% (Figure 12). The highest increase occurred in 2009 with an increase of 6.75%. Meanwhile, the highest decrease occurred in 2001 with a figure of 2.8%. This increase was due to a larger harvested area and productivity. During the same period, the harvested area increased in average by 1.22%, meanwhile productivity increased on average by 1.31%. By the conversion rate of 58 % from unhusked rice in farmer's level (GKP) rice, in 2015 reached 52.6 million tonnes of rice.



Source: Statistics Indonesia (2017)

Figure 12 Unhusked rice production at mill level (GKG), 2000-2015

Based on Table 10, the largest rice producers are East Java, West Java, Central Java, South Sulawesi, South Sumatera, North Sumatera, Lampung, West Sumatera, West Nusa Tenggara, and South Kalimantan. These provinces contribute around 80.1 percent to the total rice production in Indonesia, by an average growth rate of 6.7% per year.

Table 10 Rice production by Province in 2014-2016 (Tonne)

Province	Rice Production by Province (Tonne)					
	2014		2015		2016	
	Value	Percentage	Value	Percentage	Value	Percentage
Aceh	1,820,062	3%	2,331,046	3.1%	2,205,056	2.8%
North Sumatera	3,631,039	5%	4,044,829	5.4%	4,609,791	5.8%
West Sumatera	2,519,020	4%	2,550,609	3.4%	2,503,452	3.2%
Riau	385,475	1%	393,917	0.5%	373,536	0.5%
Jambi	664,720	1%	541,486	0.7%	752,811	0.9%
South Sumatera	3,670,435	5%	4,247,922	5.6%	5,074,613	6.4%
Bengkulu	593,194	1%	578,654	0.8%	642,754	0.8%
Lampung	3,320,064	5%	3,641,895	4.8%	4,020,420	5.1%
Kepulauan Bangka Belitung	23,481	0%	27,068	0.0%	35,388	0.0%
Kepulauan Riau	1,403	0%	959	0.0%	627	0.0%
DKI Jakarta	7,541	0%	6,361	0.0%	5,342	0.0%
West Java	11,644,899	16%	11,373,144	15.1%	12,540,550	15.8%
Central Java	9,648,104	14%	11,301,422	15.0%	11,473,161	14.5%
DI Yogyakarta	919,573	1%	945,136	1.3%	882,702	1.1%
East Java	12,397,049	17%	13,154,967	17.4%	13,633,701	17.2%
Banten	2,045,883	3%	2,188,996	2.9%	2,358,202	3.0%
Bali	857,944	1%	853,710	1.1%	845,559	1.1%
West Nusa Tenggara	2,116,637	3%	2,417,392	3.2%	2,095,117	2.6%
East Nusa Tenggara	825,728	1%	948,088	1.3%	924,403	1.2%
West Kalimantan	1,372,695	2%	1,275,707	1.7%	1,364,524	1.7%
Central Kalimantan	838,207	1%	893,202	1.2%	774,466	1.0%
South Kalimantan	2,094,590	3%	2,140,276	2.8%	2,313,574	2.9%
East Kalimantan	426,567	1%	408,782	0.5%	305,337	0.4%
North Kalimantan*)	115,620	0%	112,102	0.1%	81,854	0.1%
North Sulawesi	637,927	1%	674,169	0.9%	678,151	0.9%
Central Sulawesi	1,022,054	1%	1,015,368	1.3%	1,103,168	1.4%
South Sulawesi	5,426,097	8%	5,471,806	7.3%	5,727,081	7.2%
Southeast Sulawesi	657,617	1%	660,720	0.9%	696,954	0.9%
Gorontalo	314,704	0%	331,220	0.4%	344,869	0.4%
West Sulawesi	449,621	1%	461,844	0.6%	548,536	0.7%
Maluku	102,761	0%	117,791	0.2%	99,088	0.1%
North Maluku	72,074	0%	75,265	0.1%	82,213	0.1%
West Papua	27,665	0%	30,219	0.0%	27,840	0.0%
Papua	196,015	0%	181,769	0.2%	233,599	0.3%
Indonesia	**70,846,465**	**100%**	**75,397,841**	**100%**	**79,358,439**	**100%**

Figure 13 shows the largest rice producer in Indonesia. In the period 2014-2016, the largest produces rice are East Java, West Java, and Central Java. Those provinces give an average contribution of 47.5% of the total rice production in Indonesia by an average growth rate of 6.1 percent per year. It shows that rice supply in Indonesia still relies on production from Java Island.

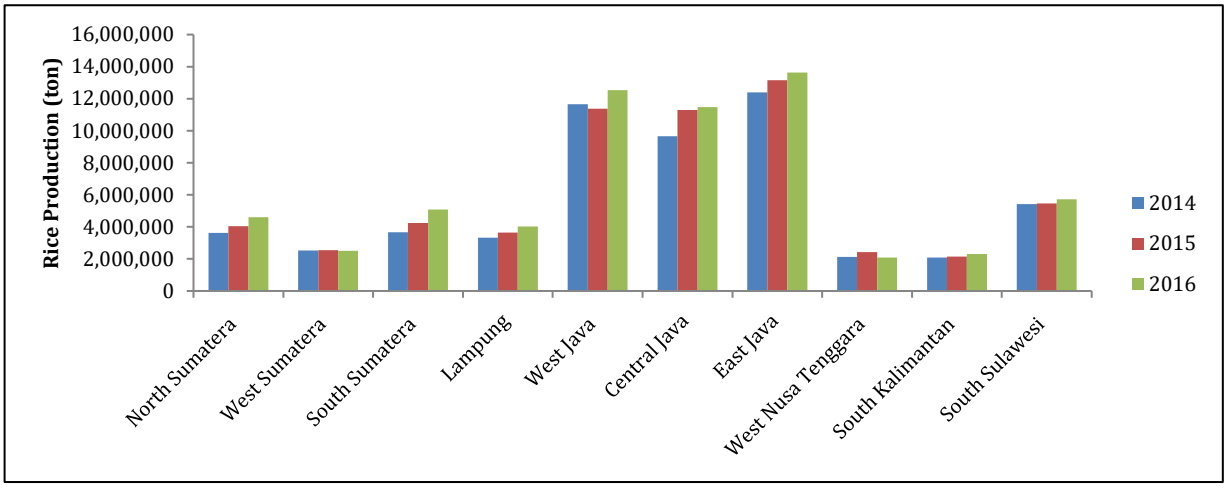
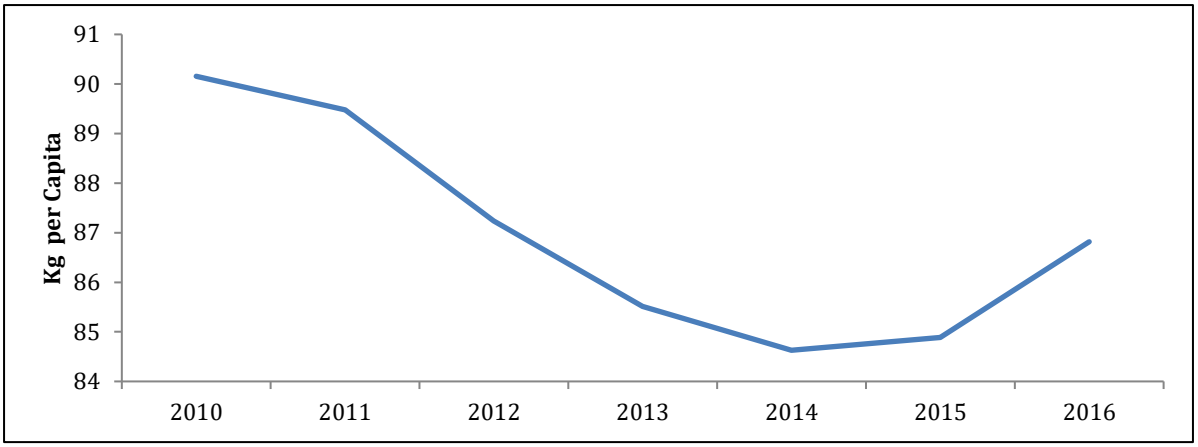


Figure 13 Ten largest production zone of rice in Indonesia in 2014-2016 (Tonne)

2.2.3. Consumption

Rice is the staple food of the Indonesian people, which makes it important to Indonesia's livelihood. In 2016, the Indonesia's rice consumption reached 86.82 kilograms per capita per year (Figure 14). Based on the trend from 2000 to 2014, rice consumption per capita has a decreasing trend but; in 2015 and 2016 the consumption per capita increase by 0.3% and 2.27%, respectively.



Source: Ministry of Agriculture (2017)

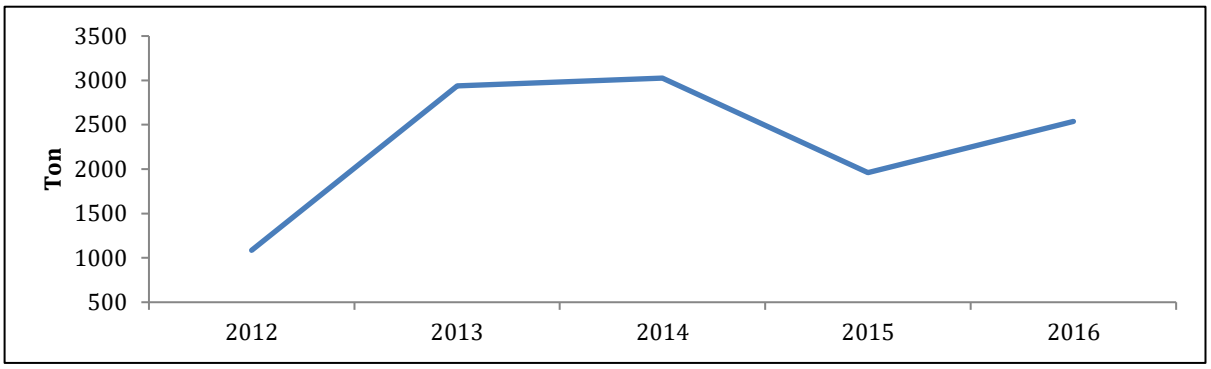
Figure 14 Indonesia's rice consumption per capita, 2010-2016

2.2.4. Export

Although Indonesia imported its rice to fulfill the domestic needs,it also conducted rice exports for premium rice such as organics. According to the Ministry of Trade Regulation No. 19/M-DAG/PER/3/2014, rice is only allowed to be exported when the domestic demand is met and the product is considered to be premium rice.

The export quantity is still relatively small; just below 3000 tonnes per year. Based on the growth, in average during the period of 2012 to 2015, the export grew by 42%. The highest increase

occurred in 2013 when export increased by 170%, meanwhile, in 2015 rice exports declined by 35% (Figure 15).



Source: Ministry of Agriculture (2017)

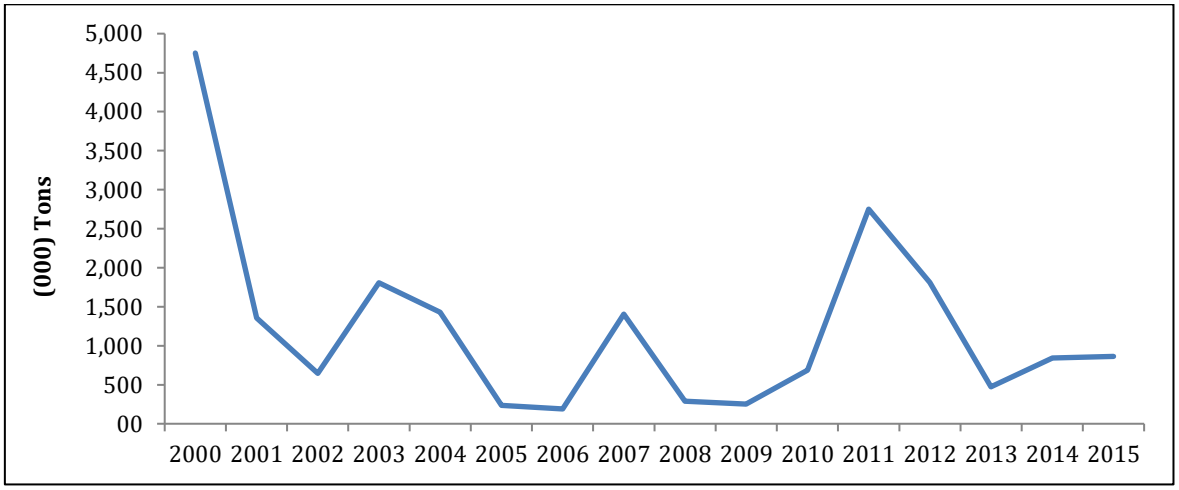
Figure 15 Indonesia's rice export, 2012-2016

2.2.5. Import

According to the Ministry of Trade Regulation No. 19/M-DAG/PER/3/2014, rice importing can be conducted for three purposes: price stabilization, industrial needs and dietary needs. The first purpose needs strict conditions meanwhile, the second and third purposes are more relaxed since the rice is premium.

During the period of 2000 to 2015, imports on average increased by 61.8% (Figure 16). This high number is caused by a high increase in 2007 and 2011 by the increase of 642% and 300%, respectively. Meanwhile in 2001, import decreased significantly by 71%.

Indonesia's rice import came from several countries, in 2015 59% of Indonesia's rice imports came from Vietnam. Followed by Pakistan with 21% and Thailand with 14.7%.



Source: Statistics Indonesia (2017)

Figure 16 Indonesia's rice import, 2000-2015

2.2.6. Government Regulation and Policy for Rice

2.2.6.1. Price

The government implemented the Ministry of Trade Regulation No. 27/M-DAG/PER/5/2017 regarding the determination of price at the farmer's level and the reference selling price in consumer's level for nine products including rice, corn, soybean, sugar, cooking oil, shallots, meat, chicken and chicken eggs. The objective of this regulation is to guarantee the availability, stability and price certainty of these products.

This regulation guarantees the price at the producer's level. In the case of rice, BULOG has the duty to buy the unhusked rice from the producer at a determined price. The determined price for harvested dry unhusked rice (GKP) is IDR 3,700 per kg meanwhile, the price of the mill dry unhusked rice (GKG) is IDR 4,600 per kg. The reference price of rice for the consumer is set at IDR 9,500 per kg.

In order to control the rice price in the consumer level, the government issued the Ministry of Trade Regulation No. 57/M-DAG/PER/8/2017 in August 2017. The regulation determined the maximum price level for theconsumer and divided the quality of rice into medium & premium. In addition, the regulation divided the location into eight areas which each has a different maximum price. For example in Java, Lampung and South Sumatera the maximum price of rice for medium is IDR 9,450 per kg meanwhile, the premium price is IDR 12,800 per kg. The impact of the regulation is hard to find medium quality rice in the market, especially when the price of unhusked rice is relatively high, because the rice is still not harvested. On the other hand, super market serves the high end consumer, the rice price is set to the maximum price.

2.2.6.2. Production

The government supports on rice production is through a subsidy on fertilizer. This subsidy is given for farming staple food crops including rice. It is based on the regulation of President's Instruction (Inpres) No. 7 2005 and revised through President's Instruction (Inpres) No. 15 2011. By this regulations, its stated that the fertilizer subsidy is to support government programs and the fertilizer subsidized include urea, SP 36, ZA and NPK which can be from domestic production or imported.

In addition, the Ministry of Trade Regulation No. 15/M-DAG/PER/4/2013 regulates how the subsidized fertilizer is transported to farmers. The regulation divided the distribution level into four. The first lineis the fertilizer producer's warehouse or port for imported fertilizer. The second line is located at the producer's warehouse in the capital city of destination. The third lineis the producer's warehouse in the regency of destination and the fourth line is in the warehouse of the wholesaler in the village of destination.

The responsibility of calculating the amount of subsidized fertilizer needed by every regency in Indonesia is under the responsibility of the Ministry of Agriculture which sets on an annual basis. This calculation is based on the Farmer's Group Needs Definitive Plan (Rencana Definitif Kebutuhan Kelompok Tani/RKDK) which is how much is needed by the farmer's group for the next period. In 2017, the subsidized fertilizer allocation is based on the Ministry of Agriculture Regulation No. 4/Permentan/SR.310/3/2017.

2.2.6.3. Export

Indonesia's policy on rice exporting is based on the Ministry of Trade Regulation No. 19/M-DAG/PER/3/2014 which came into force on April 3rd 2014. In this regulation, exporting rice is allowed when the domestic needs already fulfilled. In addition, there are several rice products and requirements that must be met when exporting:

- Non organic rice with 5% broken can be exported by government-owned firm or private firm with the approval of the Ministry of Trade and has a recommendation by the Ministry of Agriculture.
- Non organic rice with maximum 25 % broken can only be exported by BULOG with the approval of Ministry of Trade and a recommendation of the coordination team.
- Black, sticky rice and organic rice with a maximum 25 % broken can be exported any time with the approval of the Ministry of Trade and a recommendation of the Ministry of Agriculture.

2.2.6.4. Import

Indonesia's policy on rice importing is based on the Ministry of Trade Regulation No. 19/M-DAG/PER/3/2014 which implemented since April 3, 2014. Basically, rice importation is allowed for these purposes:

- Price stabilization, emergency situation counter measures, poor people and food vulnerability. For this purpose there are several requirements
  - Rice with maximum 25% broken and can only be imported by BULOG
  - Rice import can only be conducted after considering these conditions
    - ✓ Stock in BULOG
    - ✓ Price difference between the actual rice price and the minimum price set by the government
    - ✓ Rice surplus condition
  - Rice import can only be conducted one month before the peak harvest, during the peak harvest and two months after. During these conditions, rice importation can be conducted only after the approval of the coordination team.
  - BULOG can conduct importing only after receiving the approval of a coordination team meeting
- Fulfilling the demand of industry as raw materials which still cannot be produced domestically. By this purpose, there are several requirements as follow:
  - Only three types of rice are allowed:
    - ✓ Rice by 100% broken
    - ✓ Sticky rice by 100% broken
    - ✓ Japonica rice by maximum 5% broken
  - Rice import can only be conducted by firms listed as Rice Producer Importer (IP Beras)
- Demand for health or dietary needs for certain segment and rice grants. There are several requirements as follow:
  - Only five types of rice are allowed
    - ✓ Whole sticky rice

- ✓ Thai Hom Mali rice by maximum 5% broken
- ✓ Steamed rice
- ✓ Japonica rice by maximum 5% broken
- ✓ Basmati rice by maximum 5% broken
- ✓ Only firms with Rice Listed Importer (IT Beras) can conduct import

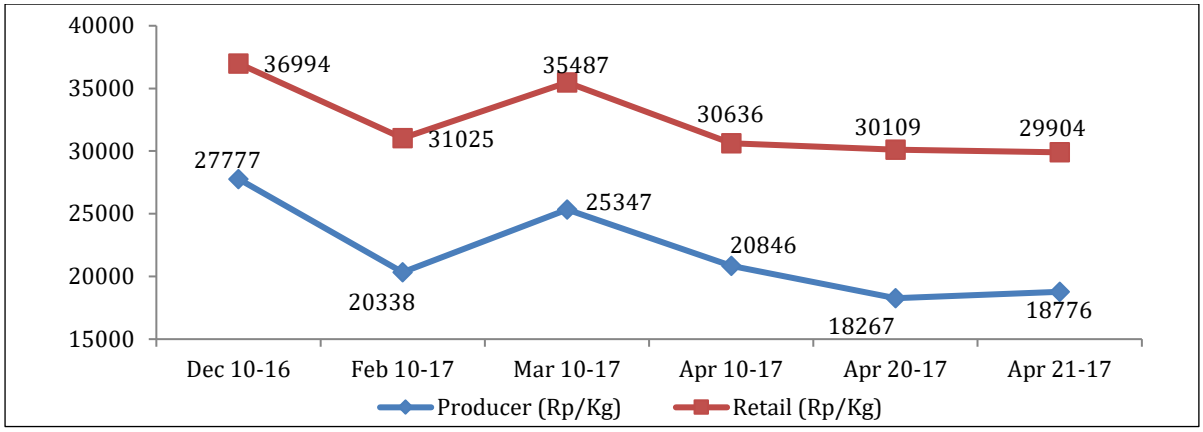
Table 11 Rice Policy Summarized

Regulation	Description
Ministry of Trade Regulation No. 27/M-DAG/PER/5/2017	Price determination in farmer's level and reference selling price in consumer's level.
Ministry of Trade Regulation No. 57/M-DAG/PER/8/2017	Determine the maximum price level for consumers and divide the quality of rice into medium & premium and also into eight areas.
President's Instruction (Inpres) No. 15 2011	The fertilizer subsidy is to support government programs and the fertilizer subsidized includes urea, SP 36, ZA and NPK.
Ministry of Trade Regulation No. 15/M-DAG/PER/4/2013	The regulation divided the distribution level into four lines. The first line is the fertilizer producer's warehouse or port for imported fertilizer. The second line is located at the producer's warehouse in the capital city of destination. The third line is the producer's warehouse in the regency of destination and the fourth line is in the warehouse of the wholesaler in the village of destination.
Ministry of Trade Regulation No. 19/M-DAG/PER/3/2014	Exporting rice is allowed when the domestic needs are already fulfilled.
Ministry of Trade Regulation No. 19/M-DAG/PER/3/2014	Rice import is allowed for price stabilization, fulfilling industry demands and the demand considering special dietary or health needs.

2.3. Shallots

2.3.1. Price

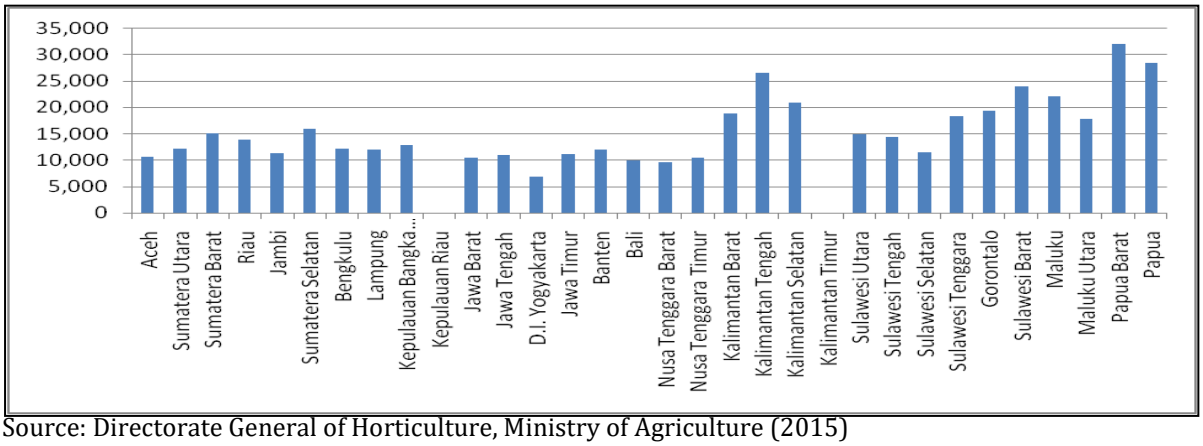
The shallot price is determined by the demand and supply in Indonesia. When the demand for shallots is higher than its supply, the price will increase. For example, when Idul Fitri is celebrated in Indonesia, the demand for shallot is relatively high leading to an increasing price. Conversely, when supply for shallots is higher compared to its demand (e.g., during the harvesting time), the price will decrease. The average monthly prices of shallots at the producer and retail levels from December 2016 to April 2017 are presented in Figure 17. The price tends to fluctuate while the price trend at retail and producer levels being relatively similar. When the prices of shallots at the retail level decrease, then the price at the producer level also decreases.



Source: Ministry of Agriculture (2017)
https://aplikasi.pertanian.go.id/smshargakab/lhk04.asp

Figure 17 Monthly prices of shallots at producer and retail levels from December 2016 to April 2017

The issue of the shallot price occurs among many regions of Indonesia (Figure 18). Based on Figure 18, the prices of shallots at the producer level differ significantly among the provinces of Indonesia. This is because the main production zones of shallot are only in certain regions, i.e., Brebes (Central Java) and Nganjuk (East Java). The highest shallot prices at the producer level occurred in Papua, Sulawesi, Maluku, and Kalimantan Provinces.



Source: Directorate General of Horticulture, Ministry of Agriculture (2015)

Figure 18 The average price of shallots at the producer level in the provinces in Indonesia, 2014 (IDR per Kg)

In order to fulfill the domestic demand for shallots, particularly outside the harvesting time, the Indonesian Government allows imported shallots. The prices of imported shallots were lower compared to the domestic shallot. For example, in December 2016, the average price of imported shallots at retail level was only IDR 8,910 per kg (Table 12) versus IDR 36,994 for domestic shallots (Figure 18).

Table 12 Monthly prices of imported shallots in retail market in Indonesia in 2008-2016

Month	Price (IDR per kg)						
	2008	2009	2010	2011	2012	2013	2016*
January	3,870	15,605	12,864	3,430	1,027	19,536	
February	3,654	11,268	1,609	5,919	1,272	17,782	
March	3,807	12,422	6,931	3,572	3,601	3,856	
April	3,888	17,451	4,274	3,853	1,997	3,000	
Mei	3,984	6,847	0,884	3,793	1,773	1,650	
June	4,148	12,744	1,614	6,094	3,770	2,416	2,797
July	4,773	10,596	5,065	5,778	5,339		13,770
August	3,761	8,436	6,225	4,165	4,474		11,880
September	3,672	10,647	5,924	4,166	4,329		11,880
October	5,980	2,470	4,136	4,064	3,955		
November	6,269	26,747	3,950	4,735	3,992		4,244
December	5,906	10,000	4,655	7,346	5,694		
Average	4,476	12,103	4,844	4,743	3,435	8,040	8,910

Source: BPS (2014), *Kementan (2017)

2.3.2. Production and Consumption of Shallots

In 2000-2010, the production of shallots increased by 3.36% per year. The growth of production came from an increase in land area planted for shallots. During this period, the harvested area and productivity increased by 2.87% and 0.63% per year respectively. The land area planted by shallots in each province is presented in Table 13. In the period 2010-2014, the largest shallot plantation area is in Java Island, spreading mainly in three provinces: Jawa Tengah, Jawa Timur and Jawa Barat. Another province, outside Java, became the main production zone for shallots is Nusa Tenggara Barat. There were no shallots planted in Jakarta, but this province has the highest demand for shallots in Indonesia.

Table 13 Area planted by shallots in each province in Indonesia in 2010-2016 (ha)

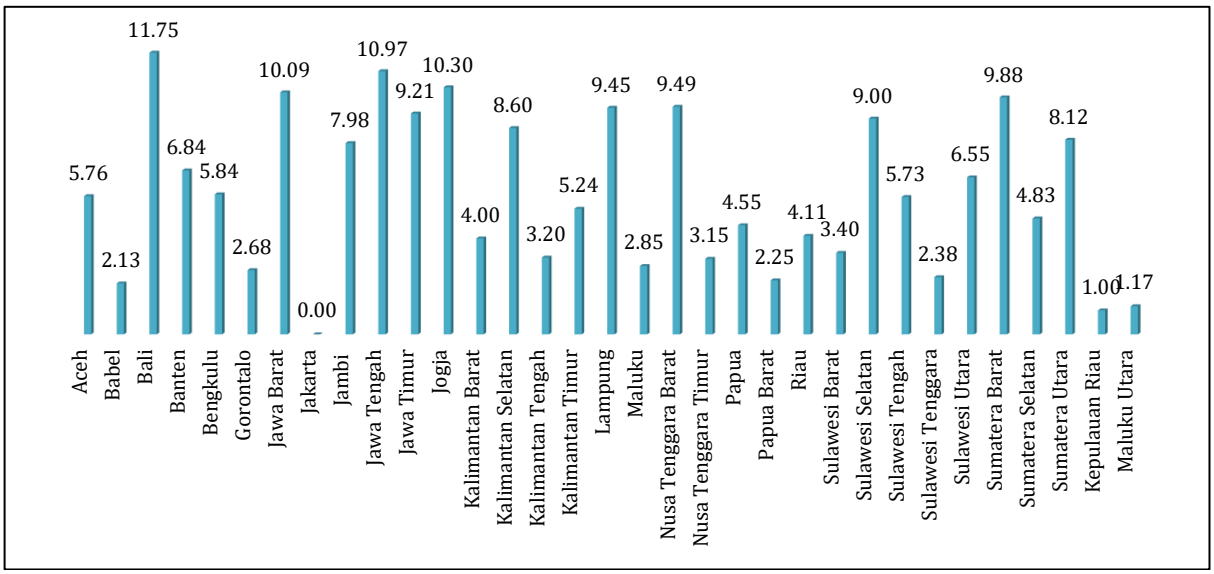
Province	2010	2011	2012	2013	2014	2015	2016
Aceh	666	788	808	547	851	776	741
Babel	0	0	6	0	4	4	18
Bali	1,013	817	766	658	911	765	1,470
Banten	69	102	157	202	208	112	127
Bengkulu	109	82	116	116	84	87	60
Gorontalo	119	69	80	72	38	59	189
West Java	12,168	10,009	11,438	11,257	12,532	12,333	14,046
Jakarta	0	0	0	0	0	0	9
Jambi	174	803	769	213	628	527	776
Central Java	45,538	35,711	35,828	36,715	46,233	42,631	53,331
East Java	26,507	20,940	22,323	26,030	30,652	30,783	36,173
DI Yogyakarta	2,027	1,271	1,180	893	1,287	1,029	1,305
WestKalimantan	0	0	0	0	1	2	19
South Kalimantan	0	1	0	8	39	148	247
CentralKalimantan	0	0	3	8	55	29	76
EastKalimantan	11	5	11	9	48	34	77
Lampung	69	55	39	24	102	195	290
Maluku	170	135	181	176	166	151	128
WestNusa Tenggara	10,159	9,988	12,333	9,277	11,518	14,524	18,251
EastNusa Tenggara	923	917	725	844	935	1,231	1,057
Papua	128	143	179	153	150	196	185
WestPapua	77	77	62	47	21	132	73
Riau	0	0	0	3	14	41	75

Province	2010	2011	2012	2013	2014	2015	2016
WestSulawesi	131	133	86	66	99	90	127
SouthSulawesi	3,180	4,633	4,518	4,569	5,218	7,019	9,393
CentralSulawesi	1,280	1,381	1,765	1,307	1,315	1,670	1,798
South EastSulawesi	213	98	76	88	82	84	153
North Sulawesi	720	654	680	303	274	310	425
WestSumatera	2,699	3,340	3,670	4,144	5,941	5,505	5,953
SouthSumatera	31	8	5	30	24	96	103
NorthSumatera	1,360	1,384	1,581	1,048	1,003	1,238	1,538
Kepulauan Riau	0	1	0	0	0	3	0
NorthMaluku	0	122	134	130	271	322	212

Source: Ditjen Hortikultura, Kementerian Pertanian, (2011-2015)

The average productivity of shallots in Indonesia is still low. In the period 2010-2014, the national average of shallot production was only 5.83 tonne per ha, while the potential production per ha should be 20 tonne per ha. The highest shallot productivity was in Bali (11.75 tonne per ha) followed by Jawa Tengah (10.97 tonne per ha), Jogjakarta (10.30 tonne per ha, and Jawa Barat (10.09 tonne per ha). According to PKHT (2015), there are several factors causing the low productivity of shallots in Indonesia including:

1. Lack of certified seed in the market
2. Lack of seed commercialization. After seed producers registered their seed to the Ministry of Agriculture, they face a capital problem to produce and market the seed
3. Lack of farmers' skill to utilize certified seed. The seeds need longer seedling time before they are moved to the shallot plantation area. Farmers still prefer to utilize seed in the form of mini bulbs.
4. The number of seed breeders for shallots is very limited in Indonesia
5. Pest and disease



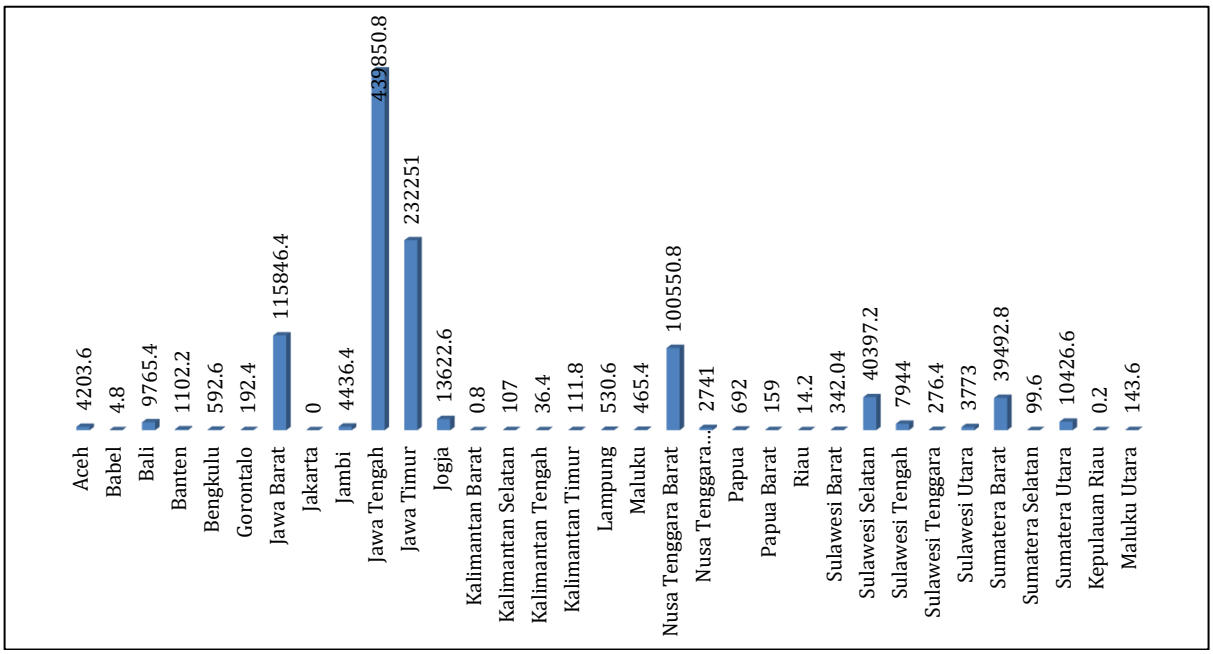
Source: Directorate General of Horticulture, Ministry of Agriculture (2011 -2015)

Figure 19 Productivity of shallot in the provincial level in Indonesia in 2010-2014 (Ton per Ha)

Seed is an important aspect determining the productivity of shallots. In terms of seed, only a few shallot farmers have utilized TSS (True Shallot Seed). This is a certified seed. As outlined

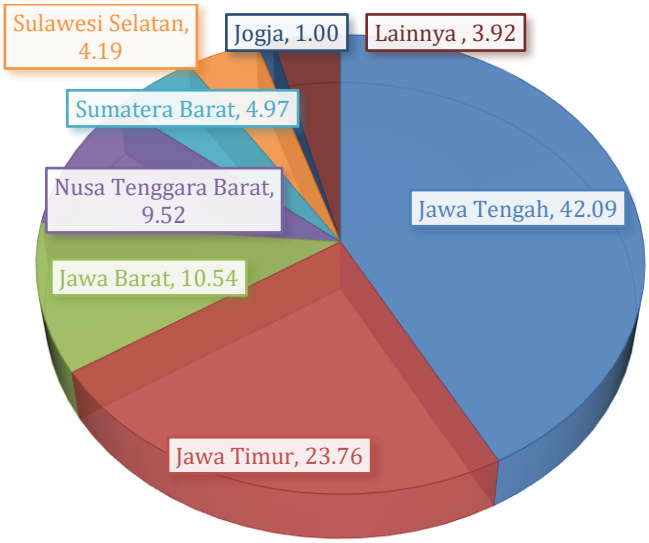
previously, the majority of farmers are still using shallot seed in the form of mini bulbs. There are several advantages of using TSS compared to the mini bulb seed: (1) per ha of land area only require about 3-4 kg of seed versus 1,500 kg of mini bulbs, (2) easy of storage, (3) no seed dormancy period and (5) higher productivity compared to mini bulbs. However, TSS requires longer seeding and cultivation periods compared to the mini bulb. Another issue of shallot production in Indonesia is related to high production costs. Currently, shallot farmers have to spend about IDR 100 million for planting shallots per ha versus IDR 6 million perha for rice (paddy). The main production cost is for seed.

As outlined previously, the production is determined by the amount of land planted for shallots and the productivity. The details of production in Indonesia are presented in Figure 19. In Indonesia, shallot cultivation is only conducted in certain regions, particularly in Java Island (80%). Jawa Tengah is the main production zone of shallots in Java Island with the contribution to national shallot production of about 42.09%. The main district producing shallots in Jawa Tengah is Brebes. The percentage of shallot production by province is presented in Figure 20.



Source: Directorate General of Horticulture, Ministry of Agriculture (2011 -2015)

Figure 20 Production of shallot by province in Indonesia in 2010-2014 (Ton)



Source: Directorate General of Horticulture, Ministry of Agriculture (2011-2015)

Figure 21 The main production province producing shallot in Indonesia (%)

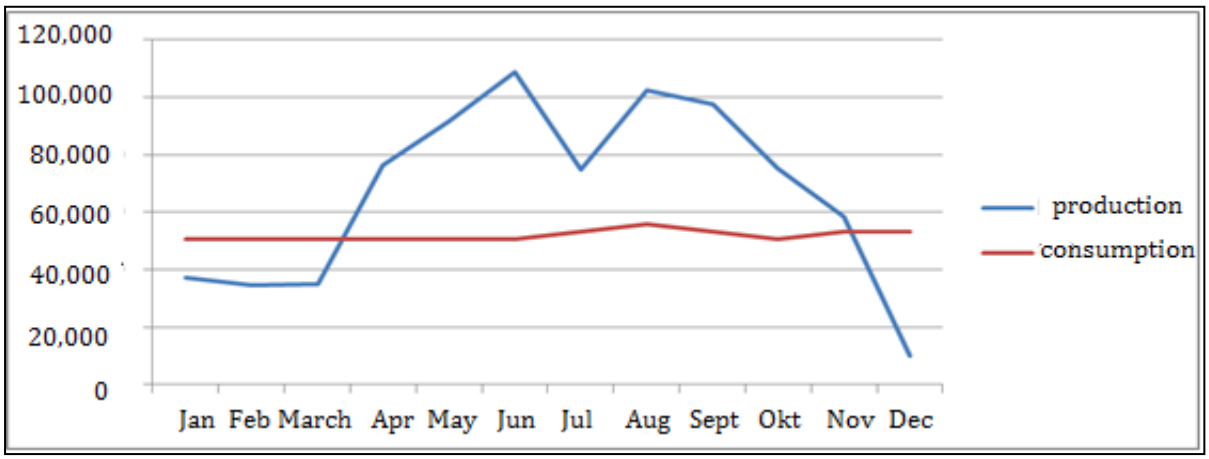
Demand for shallots continues to increase along with an increasing population, while production tends to fluctuate. The gap between supply and demand impacts on price fluctuation. The projection of production, consumption, and surplus/deficit of shallot can be seen in Table 14. The value of consumption is based on the multiplication of total population and shallot consumption per capita, per year. It can be found by Table 14 that shallots are always surplus in Indonesia. However, price fluctuations still occurs. This is because the distribution of shallots from production area and consumption area is not always smooth due to infrastructure issue (such as road, port conditions). Another factor is the gap of supply and demand in the off season. During this time, shallot supply decreases while the demand is relatively stable.

Table 14 The projection of production, consumption and surplus / deficit of shallot in Indonesia

Year	Production(Ton)	Consumption(Ton)	Surplus/Deficit(Ton)
2008	854	630	224
2009	965	591	374
2010	1049	602	447
2011	893	569	324
2012	960	695	266
2013	1011	620	391
2014	1061	631	430
2015	1125	639	486
2016	1173	646	527
2017	1231	654	577
2018	1294	662	632
2019	1360	670	690
2020	1428	678	750

Source: Statistics Indonesia, (2013-2014), Bappenas (2014)

The off season for shallots occurs between December to March (Figure 22). During these months, the production of shallots is lower compared to demand which leading to increase of prices. From April to November, the production of shallots is higher compared to demand. This will reduce the shallot price in the market. If the government can maintain the gap between supply and demand, it is expected that the price of shallots will relatively stable. For example, the government might store an excess of supply and sell them during the off season.

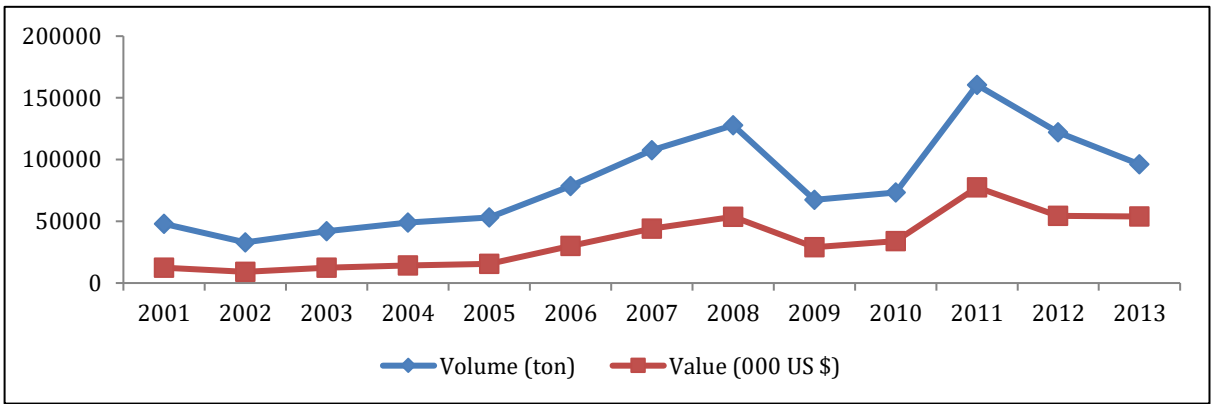


Source: Bappenas (2014)

Figure 22 Monthly situation of production and consumption of shallots

2.3.3. Export and Import

Although Indonesia is producing shallots, the government still imports them in order to fill the gap between supply and demand. The volume and value of the imported shallots in Indonesia is presented by Figure 23. The volume and value of imported shallots tended to fluctuate in the period of 2001-2013.



Source: Dirjen Pengolahan dan Pemasaran Hasil Pertanian,Ministry of Agriculture (2014)

Figure 23 Volume and value of imported shallots in Indonesia in 2001-2013

In 2011, the volume and value of imported shallots reached a peak. After that it tended to decrease. In 2016, the volume and value of imported shallot was about 1,218.8 tonne and US$ 1,167,146 (Ministry of Agriculture, 2017). Indonesia mainly imported shallot from India, Vietnam, The Philippines, and Thailand (Table 15).

Table 15 The volume of imported shallots in Indonesia based on origin countries in 2012-2015 (Kg)

Country of origin	2012	2013	2014	2015*
Taiwan	162,000	-	-	-
China	1,492,185	5,090,044	-	-
Thailand	43,706,049	18,956,095	14,941,986	-
Philippines	5,882,990	5,573,225	1,923,105	1,587,550
Malaysia	767,905	228,000	-	-
Myanmar (form Burma)	538,190	17,798,126	-	-
Viet Nam	45,105,892	48,371,959	9,632,880	45,000
India	24,179,710	56,000	37,412,944	15,769,200
Bangladesh	86,000	66,000	-	-
Indonesia	58,000	-	-	-
New Zealand	51,600	-	-	-
Netherlands	3,000	-	-	-
France	43,200	-	-	
Total	122,076,721	96,139,449	63,910,915	17,401,750

Source: Center for Agricultural Information Systems and Data (2015)
http://database.pertanian.go.id/eksim2012, 2013,2014,2015/

Besides importing shallots, Indonesia has also exported to several countries (Table 16). The main destination countries include Thailand (61.12%), Taiwan (14.02%), Vietnam (11.13%), Singapore (8.08%) and Malaysia (4.97%).

Table 16 Destination countries of exported shallot by Indonesia in 2012-2015 (kg)

Destination countries	2012	2013	2014	2015*
Hong Kong	275	60	48	-
Taiwan	708,040	129,250	-	1,049,000
China	58,000	57,000	20	-
Papua New Guinea	250	-	75	-
Thailand	11,160,529	3,786,315	2,590,200	4,572,960
Singapore	974,600	315,900	517,660	604,476
Philippines	48,000	55,000	-	-
Malaysia	1,407,828	233,699	854,658	371,510
Viet Nam	4,667,800	390,600	412,916	832,648
United Arab Emirates	90	230	90	15
Bahrain	-	15	-	-
Benin	9,550	9,060	-	-
Australia	2,400	-	-	-
Qatar	-	-	15	-
Christmas Islands	-	10	129	54
Timor Leste	42,494	4,880	62,976	50,402
Japan	-	-	-	140
Total	19,079,856	4,982,019	4,438,787	7,481,205

Source: Center for Agricultural Information Systems and Data (2015)
http://database.pertanian.go.id/eksim2012, 2013,2014,2015 /

Indonesia exports shallot mainly during August to November. As outlined previously, productions of shallot in these months are higher compared to its demand. As such the excess supply of shallots can be exported (Table 17).

Table 17 Monthly export of shallots from Indonesia in 2016

Month	Volume (Kg)	Growth (%)	Value ($ US)	Growth (%)
January	0.00		0.00	
February	4.00		3.00	
March	9.00	125.00	9.00	200.00
April	288.00	3,100.00	2,168.00	23,988.89
May	2,106.00	631.25	583.00	(73.11)
June	13,695.00	550.28	6,125.00	950.60
July	803.00	(94.14)	202.00	(96.70)
August	297,845.00	36,991.53	92,763.00	45,822.28
September	125,050.00	(58.02)	38,080.00	(58.95)
October	185,590.00	48.41	121,329.00	218.62
November	110,200.00	(40.62)	141,967.00	17.01
December	0	(100.00)	0.00	(100.00)
Average	1,299.17	4,115.37	33,602.42	7,086.86

Source : Ministry of Agriculture (2017)

If we compare the value of exports and imports, it can be found that the trade balance of shallots tends to in deficit (Table 18). Total trade deficit in 2016 was 815,571. This occurred in June-September in which the values of imported shallots were higher compared to the value of exported shallots.

Table 18 Trade Balance of Shallots per month in 2016

Month	Export (US$)	Import (US$)	Surplus/Deficit (US$)
January	0	0	0
February	3	0	3
March	9	0	9
April	2,168	0	2,168
May	583	0	583
June	6,125	15,000	(8,875)
July	202	675,800	(675,598)
August	92,763	350,000	(257,237)
September	38,080	150,000	(111,920)
October	121,329	0	121,329
November	141,967	28,000	113,967
December	0	0	0
Total	403,229	1,218,800	(815,571)

Source: Ministry of Agriculture (2017)

2.3.4. Government regulation and policy for shallots

2.3.4.1. Price

The regulation related to prices of shallot was issued by Directorate General of Domestic Trade No. 118/PDN/KEP/10/2013. It regulates the Reference Price of shallots that can be used as an instrument to stabilize the prices. The price for consumption was established at IDR 25,700,-per kg. Imports, can be conducted after considering the harvest time and the availability in domestic markets.

The latest regulation related to reference prices of shallot has been issued by the Indonesian Ministry of Trade No. 63/M-DAG/PER/9/2016. This states that purchasing price for farmers is established after considering the production cost, distribution cost, profit and/or other costs. The selling reference price for consumers is established in the same way. In purchasing and selling activities for shallots, the Public logistic company (BULOG) and/or other public company (BUMN) should refer to the selling and purchasing reference prices as stated by this regulation. In purchasing and selling practices, BULOG and other BUMN can co-operate with BUMN, local public company (BUMD), cooperatives and/or Partner Companies. Both reference prices are valid for four months after the regulation has been issued. When the validity expires and new reference prices have not been issued yet, the previous reference prices are still applied. The purchasing reference prices for shallots in the farmer level were IDR 15,000 per kg for Konde Basah, IDR 18,300 per kg for Konde Askip, IDR 22,500 per kg for Rogol Askip. At the consumer level, the purchasing reference price was established at IDR 32,000 per kg for Rogol Askip.

The latest regulation has been issued by the the Ministry of Trade No. 27 / M-DAG / PER / 5/2017 on May 5, 2017 related to the reference prices of shallots. The reference prices at the farmer level issued in 2017 were the same as in 2016. This regulation might potentially contribute to anti-competition, since the prices are set to be fixed for the whole period (season). In fact, the prices fluctuate and tend to not match the price which are set by the regulation. It indicates that the regulation is not effective.

2.3.4.2. Production

The availability of shallots is an important issue as stated by Presidential Decree Number 71 year 2015, about Determination and Storage of Basic Food stuffs and Essential Goods. In conditions that can disturb national trade activities, the central government is required to ensure the supply and price stabilization of shallots.

The Law Number 18 year 2012 states that the government is obliged to manage the supply and price stabilization of staple food include shallots, manage the reserve and the distribution of staple foods in order to ensure safe and nutritious food sufficient for society. Supply of shallots can be sourced from domestic production and national reserves. In this case, if the availability of shallots in the domestic market is not sufficient, they can be fulfilled through imports. Exporting shallots is able to conducted after considering the gap between domestic food consumption and the availability of the product.

The cultivation and production activities of shallots in Indonesia are bound to some regulations. As stated by the Law Number 12 year 1992, the plant cultivation system aims to improve and expand the diversification of crops, to meet the needs of food, clothing, shelter, health, domestic industries and to increase exports; to improve farmers' incomes and living standards; and to encourage expansion and equitable distribution of business opportunities and employment. The ultimate goals of the crop cultivation system are to improve farmers’ incomes and living standards. To achieve this goal, the government has to makea cultivation development plan in accordance with the stages of the national development plans. The government also has to determine the development of plant cultivation areas. For all the products, the government regulates the production of certain crops based on the national interest which can meet the need

of consumers. The high quality seeds for cultivation development activities are carried out through the discovery of improved varieties and/or introduced from abroad. By using high quality seeds, the crops can produce high quality products. For these purposes, the contribution and support from all parties, especially farmers is needed. In order to gain the participation of farmers, the government also creates conditions that support community participation.

For achieving the national goal for plant cultivation, the variety of products are also regulated by the government in Law number 29 year 2000 regarding plant variety protection. By this Law, a new variety is defined as propagation material or harvesting of the varieties that never traded in Indonesia or have been traded but not for more than a year or have been trafficked abroad no more than for four years for crops and six years for perennial crops at the time of receipt of the request PVP (Plant Variety Protection). The periods of PVP varies from 20 years for seasonal plants and 25 years for annual plants after the PVP certification has been granted. The holders of the PVP can be an individual or a legal entity or perhaps other parties. PVP holders have the right to use and give consent to the individual or the legal entity to use the varieties in the form of seeds and crops that are to be used for propagation. To get the right PVP certificate, the variety of the seeds must be registered, inspected, certifiedand recorded by the PVP office. These rights can be implemented alone and /or transferred to another party to exploit the plant variety commercially through a treaty. Rights set out in the legislation, include producing or reproducing the seed, setting up for production purposes, selling or trading & exporting and importing.

The extension systems are regulated in Law Number 16 year 2016 about agriculture, fishery and forestry. The purposes of this extension system is to develop human resources and improve social capital. The main functions of extension systems are to facilitate the learning process of the the main doers and businessmen, to provide access to the major doers and entrepreneurs to resources, technology and other resources which enable them to develop their business, to improve leadership skills, managerial, and entrepreneurial key doers and businessmen, to help key doers and entrepreneurs to develop their organizations economically, to help analyze &solve problems & respond to opportunities and challenges facing the major doers & entrepreneurs in managing the business also to raise the awareness of the key doers and businessmen on the preservation of environmental functions.

Environment management has a big role in plant cultivation. The protection and management of the environment are regulated by Law Number 32 year 2009. The scope of environmental management includes plan, control, maintenance, supervision and law enforcement. To plan the environmental management and protection, some stages need to carry out: the environmental inventory; the zoning eco-region and RPPLH preparation (Protection Plan and Environmental Management)

Article 100, section 3 of Law No. 13 year 2010, states that the maximum foreign capital ownership for horticultural commodities is 30%. This Law is expected to be implemented effectively in 2014. The full regulation in article 100, section 3 is: the amount of foreign investments are limited to 30% (thirty %). This regulation aims to encourage domestic investment as well as to protect farmers and horticulture businesses in Indonesia. Meanwhile for staple food, the maximum ownership of foreign investment remains the same. Presidential Decree No. 36 of 2010 and Presidential Decree No. 36 of 2014 states it is a maximum of 49%.

By authorizing the international treaty on genetic plant resources for food and agriculture, Indonesia will benefit in increasing public awareness of the importance of plant genetic resources within the national agricultural development. The agreement, also enhances the national capacities in the management of plant genetic resources through capacity-building assistance from the support system of this agreement. Illegal search and collection of plant genetic resources, as well as the development by the state/part can be prevented. The agreement can develop the regional and international co-operation in the management of plant genetic resources for food, agriculture, guarantee access and equitable sharing of benefits from the utilization of plant genetic resources for food and agriculture. By the authorization of the agreement, Indonesia will gain benefit from the establishment of the multilateral system for the exchange of plant genetic resources included in Annex I, gaining access to genetic resources (Annex I) which is stored in the states parties to the treaty, as well as from centers of international agriculture research. The maximum benefit from authorization can be gained from international programs, such as the Global Plant of Action, ex situ collections stored at the centers of the international agricultural research (International Agricultural Research Centers). The global information system is expected to increase institutional capacity and human resources in the field of conservation and sustainable use of agricultural genetic resources at both the central and regional levels.

The production issue of shallots needs to be overcome by expanding potential areas for production. As such, the Ministry of Agriculture implemented by the Directorate General of Horticulture established a program of the Cultivation of shallots during the dry season of 2015. This program was funded by the National Budget (APBN). The program is conducted in selected districts; therefore, not all districts get the program activities. One of the outputs is the availability of certified seed for shallot production in Indonesia.

In 2015, the government through the Directorate General of Horticulture, Ministry of Agriculture has issued Special Safeguard Policies (UPSUS) shallots by providing assistance in several aspects including: (1) certified seed for shallots, (2), strengthen the institutions for seed, (3) technology of cultivation and (4) managing cropping pattern. UPSUS program is also targeted to control supply of shallots in markets, control of imports and encourage exports of shallots.

2.3.4.3. Import

Based on the Indonesian custom tariff book of 2012, the import tariff for shallots with HS 0703.10.21.00 is equal to 0%. The regulation of The Trade Ministry Number 30/ M-DAG/PER/5/2012 about import provision of Horticulture Product include shallot states that imports of agricultural products must consider some aspects including national food security, the availability of horticulture in domestic market, packaging, labeling and quality standards. This regulation, also highlights that imports of horticultural products are allowed if national products are not sufficient to fulfill domestic demands

The regulation issued by the Ministry of Agriculture Number 60/Permentan/OT.140/9/2012 of Horticulture Product Import Recommendation (HPIR) states that HPIR is given to importing companies. The companies can import certain horticultural products after they obtain approval from the Ministry of Trade. The scope of the regulation includes the requirements and procedures

for obtaining HPIR, obligations and supervision and sanction provisions. Another law about import recommendations for horticulture products is issued by the Ministry of Agriculture Number 86/Permentan/OT.140/8/2013. This law states that importing of horticultural products can be done beyond the harvest, during the harvest and post-harvest periods. The process runs after the importers have received the approval letter from the Ministry of Trade. HPIR publishes this twice a year and is applicable for the period from January to June and July to December. HPIR service is not applicable for fresh horticulture products for consumption, such as shallots.

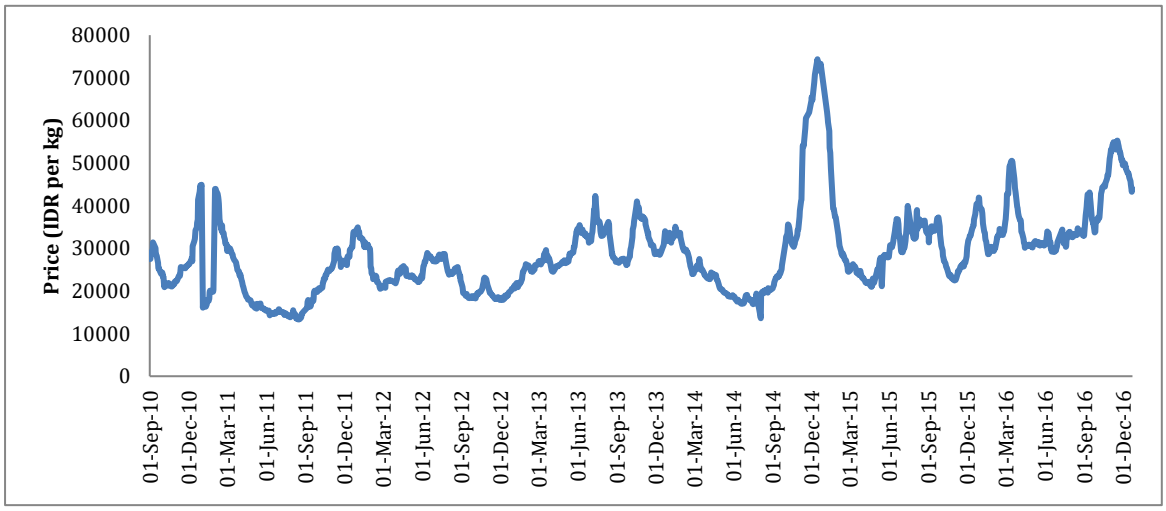
The regulation issued by The Ministry of Agriculture Number 43/ Permentan/ OT.140/6/2012 about Plant Quarantine Measures for the Importation of Fresh Vegetables of bulb crops into the Territory of the Republic Indonesia can be considered as a basis regulation to import bulb crops into the Indonesian territory. This regulation aims to prevent the entry of quarantined pests into the Indonesian territory and to fulfill the requirements of plant security. The bulb crops entering Indonesian territory must be equipped by phytosanitary certificates from the origin country and the transit country. The products entering Indonesian territory should arrive at specific places and the handoverofthe reports, as well as all requirements needed for the quarantine officers at entry points must be done.

The regulation of the Agricultural Ministry Number 42/Permentan/OT.140/6/2012 about plant quarantine states that the entry points for bulb crops are the sea ports of Tanjung Perak (Surabaya), Belawan (Medan), Soekarno-Hatta (Jakarta) and Soekarno-Hatta (Makassar). Other entry points are specified by laws and regulations in the free trade zone and the free ports can be used as the entry point for bulb crops. The importation of fresh fruits and vegetables through the entry points can be done only to fulfill domestic consumption.

2.4. Chili

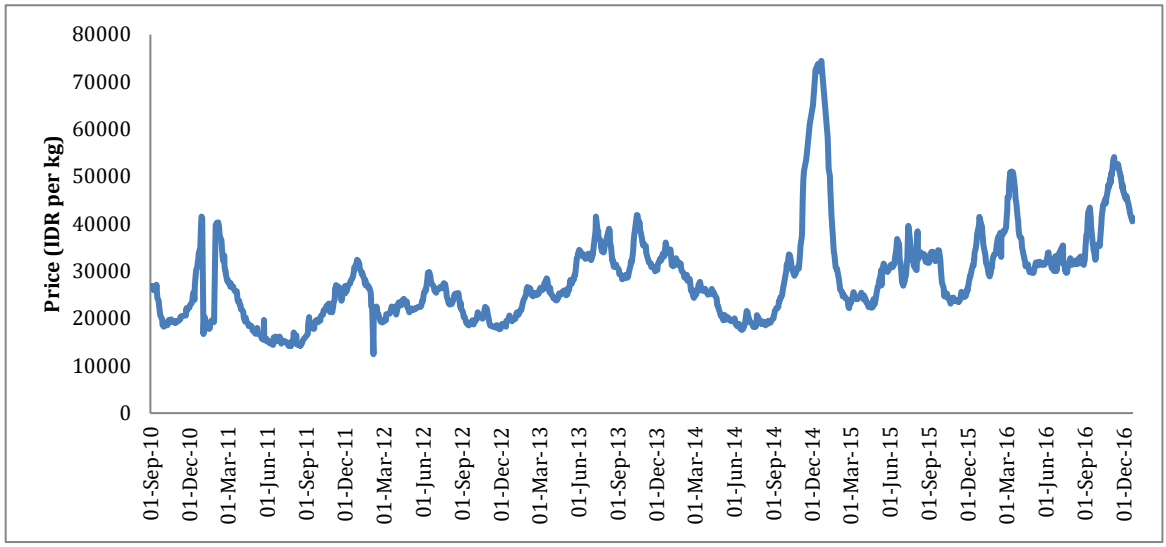
2.4.1. Prices

The price of chili is very volatile. High chili prices occur in certain months in Indonesia and is referred to as chili related “inflation”. The daily prices at retail markets for curly chili from 2010 to 2016 are presented in Figure 24. Over the period, the price fluctuated withregularly.Similar situations occur for the price of red chilis (Figure25).



Source: http://www.kemendag.go.id/id/economic-profile/prices/international-price-table

Figure 24 Daily prices at retail markets for curly chili from 2010 to 2016

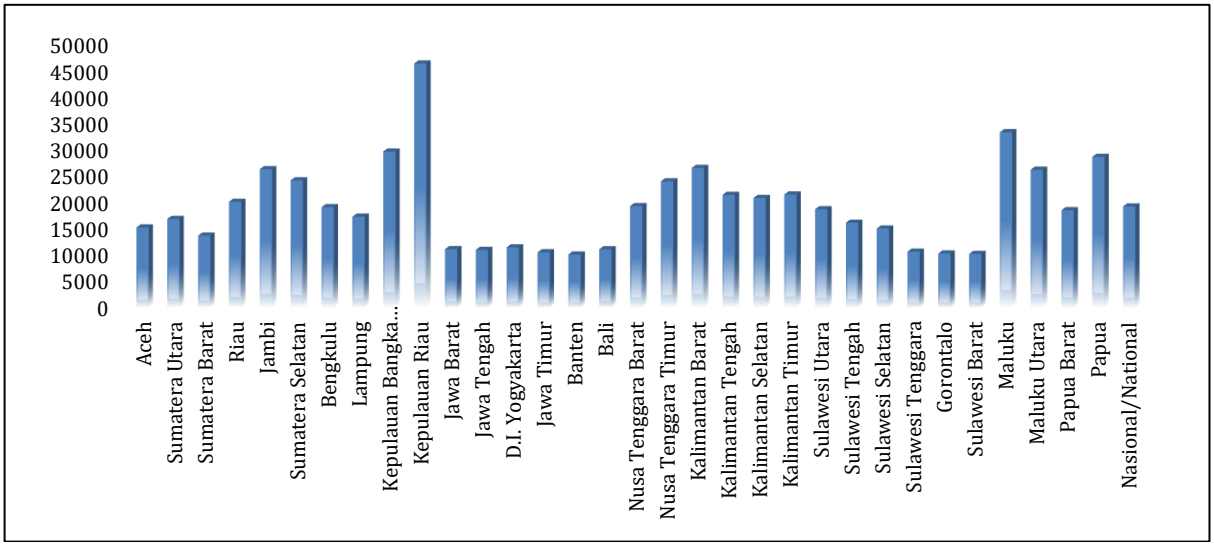


Source: http://www.kemendag.go.id/id/economic-profile/prices/international-price-table

Figure 25 Daily prices at retail markets for big chili from 2010 to 2016

At the beginning of 2017, the public were shocked by the increasing price of chili. The price of curly chili reached IDR 46,620 per kg, Whilst big chilis reached IDR 42,000 per kg. The prices were far above the reference prices set by the Ministry of Trade which are only IDR 28,000 per kg.

Besides price volatility, price disparity of chili occurs amongst Indonesia Provinces (Figure 26). In the main production zones (e.g., Jawa Tengah, Jawa Barat and Jawa Timur), the prices were lower compared to the non-production zones (e.g., Kepulauan Riau). This is because (1) the distribution issue from production zone to non-production zone, i.e., lack of infrastructure condition, (2) lack of storage system, chili is a perishable product.



Source : Badan Ketahanan Pangan, Ministry of Agriculture, 2015

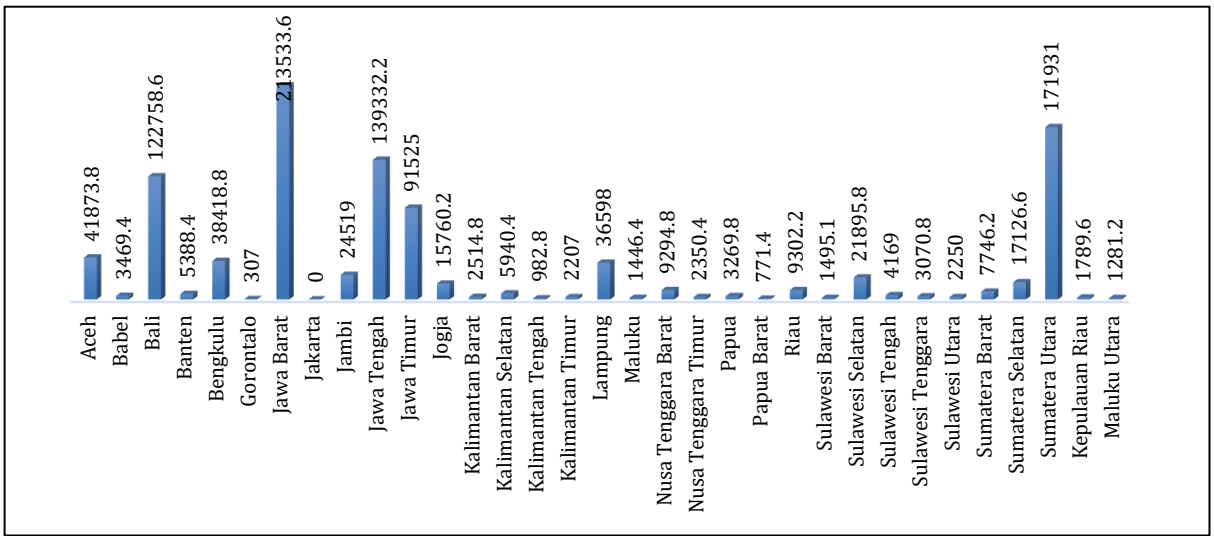
Figure 26 Average producer prices of chili in each province in Indonesia in 2014 (IDR per kg)

Due to the specific characteristic of chili, it is very difficult to predict the amount of chili supply in Indonesia. During the rainy season chili cultivation can potentially be affected by disease, while in the dry season cultivation of chili is potentially exposed to various pests. Additionally, if

farmers are hit by lower prices, they will suffer losses. As such, in the next season, the majority of them will not plant chili which reduces the supply of in the market. This is because the production costs to plant chili are relatively expensive, about IDR 80 per ha. The difficulty to predict the supply condition of chili leads to higher risk (price) faced by the actors along the chili supply chain. In order to create a reasonable and stable chili price, as well as reducing price disparity among provinces, the government should improve the distribution system, particularly the road and port infrastructure.

2.4.2. Production and Consumption

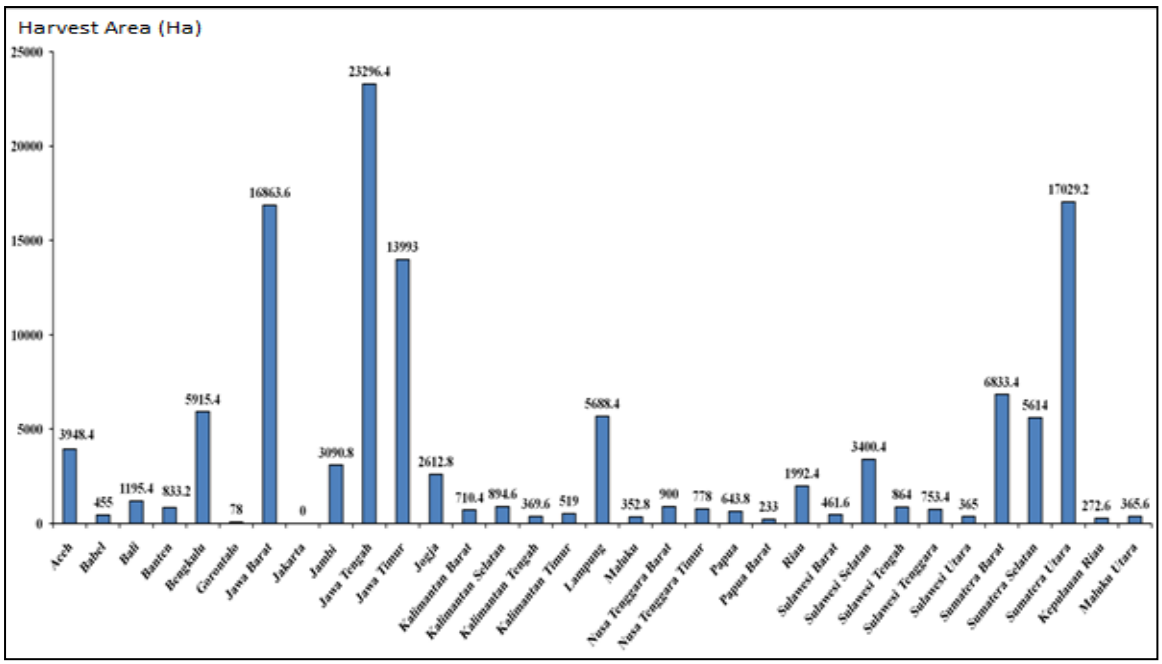
The main production zone of chili is in Java and Bali with a combined contribution of about 56.47% of national production. Figure 27 presents chili production in each province in Indonesia. The main production areas include Jawa Barat (21.26%), Sumatra Utara (17.12%), Jawa Tengah (13.87%), Bali (12.22%) and Jawa Timur (9.11%).



Source: Directorate General of Horticulture, Ministry of Agriculture (2011-2015)

Figure 27 Average production of big chili in each province in Indonesia in 2010-2014 (Ton)

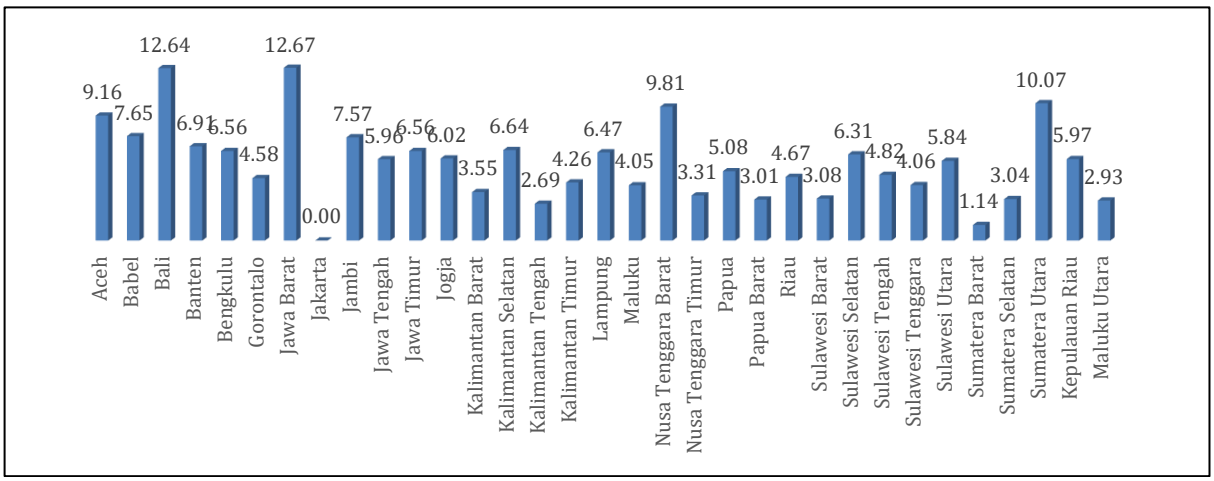
The amount of chili production is determined by two factors: the areas planted by chili and the productivity of chili. Based on land size, the provinces of Jawa Tengah (19.20%), Sumatra Utara (14.04%), Jawa Barat (13.90%), and Jawa Timur (11.53%) were dominant (Figure 28). Although Jawa Tengah had the largest area planted for chili, the highest production occurred in Jawa Barat. This is because the productivity is the largest compared to all the other provinces .



Source: Directorate General of Horticulture, Ministry of Agriculture (2011-2015)

Figure 28 The average of land area planted by big chili in each province in Indonesia in 2010-2014

The productivity of chili can affect the production in each province. Although the province of Jawa Tengah has the largest area planted by chili, its productivity was lower compared to the productivity in Jawa Barat Province. In Jawa Tengah Province, the productivity was only about 6 tonne per ha versus 12.7 tonne on Jawa Barat Province (Figure 29). Other provinces with higher chili productivity include Bali (12.6 tonne per ha), Sumatera Utara (10.1 tonne per ha), and Nusa Tenggara Barat (9.8 tonne per ha). The chili productivity in these provinces is still considerably lower compared to the potential production that can be achieved, up to about 20 tonne per ha.



Source: Directorate General of Horticulture, Ministry of Agriculture (2011-2015)

Figure 29 The average productivity of big chili in each province in Indonesia in 2010-2014 (Ton per Ha)

In the period 2008-2012, the average per capita consumption of red and curly chili reached 1.55 kg per capita per yearand 1.33 kg per capita per year, respectively (Table 19). During this period, the consumption of red and curly chili grew by about 1.30% and 1.20% per year.

Table 19 Consumption per capita of chili in Indonesia in 2008-2012

Year	Red chili (kg per capita per year)	Curly chili (kg per capita per year)
2008	1.55	1.44
2009	1.52	1.29
2010	1.53	1.30
2011	1.50	1.21
2012	1.65	1.40
Average	1.55	1.33
Growth per year (%/)	1.30	1.20

Source: Pusdatin, Statistics Indonesia (2009-2013)

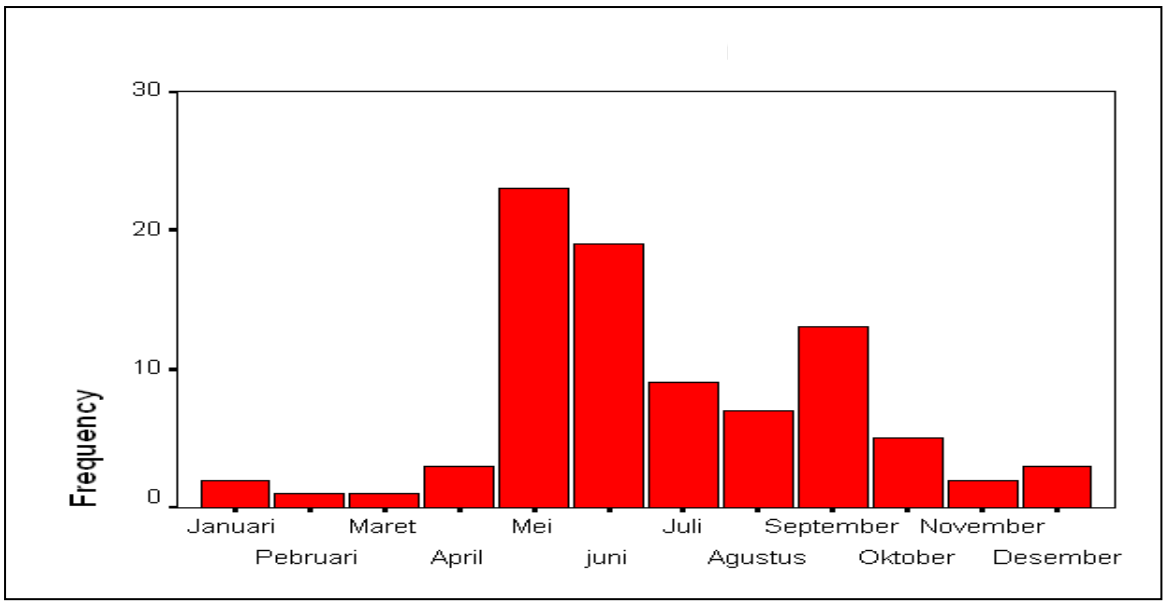
Prior to and during certain celebrations (Idul Fitri celebration, fasting month, Christmas and new year), the demand for chili increases. This will potentially increase chili prices. Additionally, an increasing number of processing food producers also contributes to the increasing demand. Table 20 shows the consumption and production conditions of chili in Indonesia in 2016-2020.

Table 20 Consumption and production of chili in Indonesia in 2016-2020

Year	Consumption (000 Tonne)	Production (000 Tonne)	Surplus/Deficit	
			000 Tonne	%
2008	688.45	1,053.06	364.61	34.62
2009	658.78	1,378.73	719.95	52.22
2010	672.35	1,328.86	656.51	49.40
2011	652.30	1,483.08	830.78	56.02
2012	769.55	1,656.62	887.06	53.55
2013[a]	862.70	1,725.94	863.24	50.00
2014	1,008.80	1,776.00	767.20	43.20
2015*	1,021.80	1,833.00	811,15	44.25
2016*	1,034.00	1,865.80	831.79	44.58
2017*	1,046.30	1,910.50	864.19	45.23
2018*	1,058.80	1,956.40	897.64	45.88
2019*	1,071.40	2,003.50	932.14	46.53
2020*	1,084.30	2,103.60	1,019.30	48.46

Source: Bappenas, 2013, Statistics Indonesia, 2015
[a]Sayaka, (2014) * Projection

Although production of chili was higher compared to its production (surplus) during one year, a gap between production and consumption occurred in certain months. It can be seen from Figure 30 that production of chili was not stable over the month. As such, a deficit occurs. For example, in January, February, March, April, November and December, the productions of chili can be considerably as the off season, since the harvested chili in these months was low. The harvest period of chili spans between May to September. This condition causes price volatility in Indonesia.

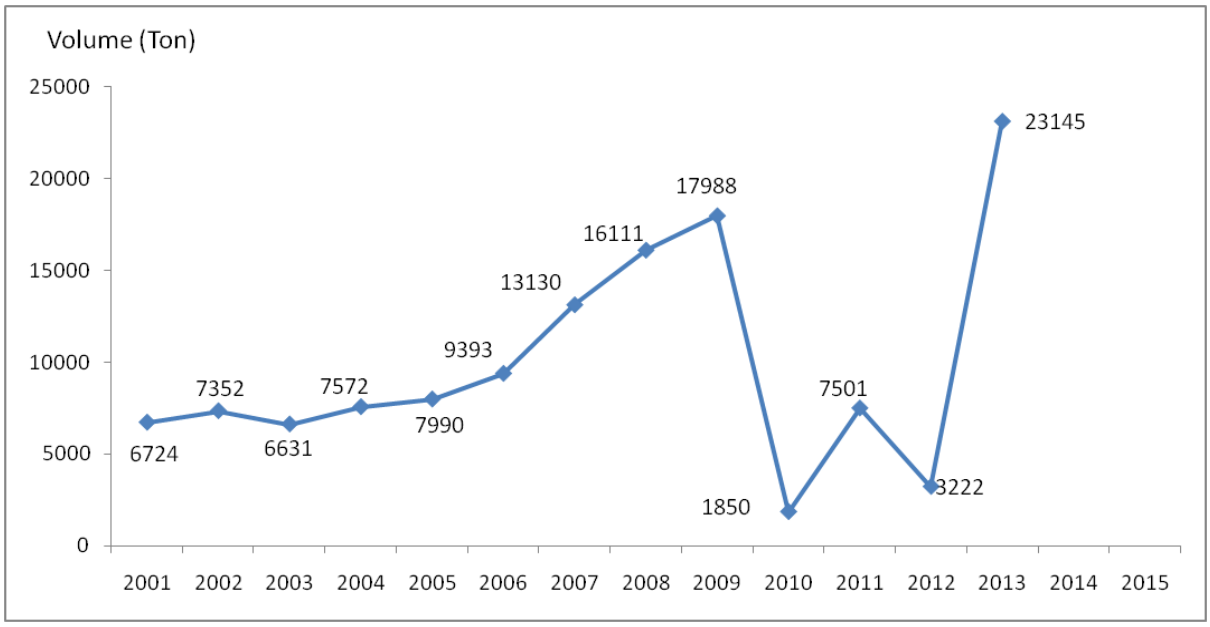


Source: Saptana, 2014

Figure 30 Harvest time and off-season of chili in Indonesia

2.4.3. Export and Import

The existence of a gap between the supply and demand leads the Government to import chili. Based on Figure 31, from 2001 to September 2015, the volume of imported chili fluctuated, ranging from 1,850 tonne per year to 42,657 tonne per year. The average imports during this period was 13,384.40 tonne per year. In 2016 total imports of chili reached 29,442.8 tonnes. On average, imported chili in the period increased by 68.57% per year.



Source: Dirjen Pengolahan dan Pemasaran Hasil Pertanian, Ministry of Agriculture (2014)

Figure 31 The volume of imported chili in Indonesia in 2001-Sept 2015

The volume of importing chili based on origin countries are presented in Table 21. There are three main countries that import chili to Indonesia including China, Vietnam and India. In 2012-

2014, the largest amount of imported chili came from Vietnam (64.8%). In 2015, the largest import volume of chili came from India (93.53%).

Table 21 The volume and value of imported chili to Indonesia based on origin countries in 2012-2015

Origin Country	2012		2013		2014		2015*	
	Volume (Tonne)	Value (000 US $)	Volume (Tonne)	Value (000 US $)	Volume (Tonne)	Value (000 US $)	Volume (Tonne)	Value (000 US $)
China	724.73	796.88	0	0	1.57	1.70	2.75	3.58
Thailand	47.74	43.49	0	0	0	0	0	0
Vietnam	1986.87	1.760.55	243.93	230.86	14.71	24.94	0	0
India	460.03	362.14	50.00	137.50	13.23	30.01	39.82	85.28
Australia	2.30	7.31	0	0	0	0	0	0

Source: Statistics Indonesia (2013-2015)
Noted: * until September

If we look at the monthly data, the importing of chili is conducted every month (Table 22). In 2016, the average volume of imported chili was about 2,453,567 kg per month with the value US$ 3,287,656.

Table 22 Monthly data of volume and value of imported chili to Indonesia in 2016

Month	Volume (Kg)	Growth(%)	Value ($ US)	Growth (%)
January	2,719,441		3,487,900	
February	3,017,062	10.94	3,666,654	5.12
March	1,343,353	-55.47	1,784,282	-51.34
April	1,805,002	34.37	2,278,469	27.70
Mei	3,007,748	66.63	3,999,193	75.52
June	1,766,826	-41.26	2,308,888	-42.27
July	1,589,775	-10.02	2,051,249	-11.16
August	2,714,511	70.75	3,977,059	93.88
September	3,065,528	12.93	3,978,605	0.04
October	2,118,875	-30.88	3,169,216	-20.34
November	3,337,916	57.53	4,539,679	43.24
December	2,956,763	-11.42	4,210,678	-7.25
Average	2,453,567	9.46	3,287,656	10.29

Source: Ministry of Agriculture(2017)

Besides importing chili, Indonesia also exports to some countries. The volume of exports from Indonesia tended to fluctuate during 2012-2015 (Figure 32). In 2014, chili exports experienced a drop by 56.2%. However, the average exported chili in the period 2012-2015 tended to increase by an averge of 16.09% per year.

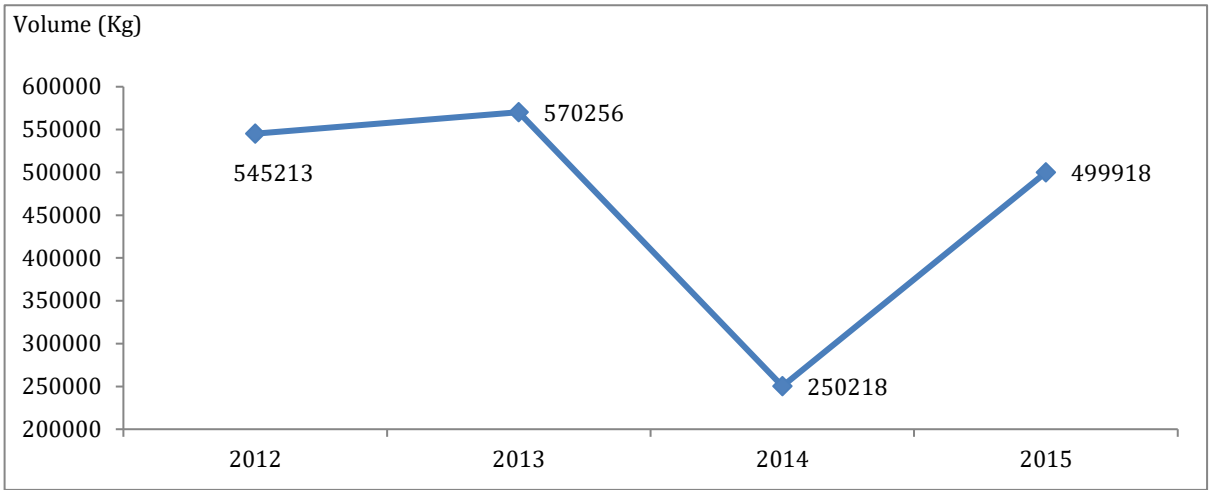


Figure 32 The volume of exported chili from Indonesia in 2012-2015*
Source: Statistics Indonesia (2012-2015)

The main countries importing chili from Indonesia's were Singapore, Malaysia, and Saudi Arabia (Table 23). The largest proportion of exported chili from Indonesia was to Singapore (56.64%) followed by Malaysia (27.79%) and Saudi Arabia (6.63%). Similar to import, Indonesia also exported chili each month (Table 24). In 2016, the volume of exported chili per month tended to fluctuate.

Table 23 The volume of exported chili to several destination countries in 2012-2015

Destination Countries	2012		2013		2014		2015	
	Kg	%	Kg	%	Kg	%	Kg	%
Japan	462	0.08	8,277	1.45	8,459	3.38	5,149	1.03
Hong Kong	60	0.01	55	0.01	0	0.00	0	0.00
Singapore	364,071	66.78	220,745	38.71	196,099	78.37	213,514	42.71
Malaysia	72,489	13.30	280,397	49.17	17,543	7.01	208,405	41.69
Brunei Darussalam	1,100	0.20	0	0.00	390	0.16	0	0.00
India	61,050	11.20	28,000	4.91	0	0.00	0	0.00
Saudi Arabia	25,436	4.67	23,122	4.05	15,882	6.35	57,203	11.44
Kuwait	178	0.03	0	0.00	15	0.01	3	0.00
Oman	98	0.02	60	0.01	0	0.00	0	0.00
United Arab Emirates	12,068	2.21	5,054	0.89	6,007	2.40	11,390	2.28
Qatar	1,344	0.25	4,014	0.70	2,319	0.93	2,901	0.58
Bahrain	17	0.00	136	0.02	0	0.00	0	0.00
Australia	6,705	1.23	0	0.00	0	0.00	0	0.00
East Timor	3	0.00	0	0.00	1,480	0.59	0	0.00
Netherlands	132	0.02	240	0.04	5	0.00	63	0.01
Korea	0	0.00	78	0.01	0	0.00	0	0.00
Christmas Islands	0	0.00	78	0.01	247	0.10	83	0.02
China	0	0.00	0	0.00	1,000	0.40	0	0.00
Thailand	0	0.00	0	0.00	770	0.31	0	0.00
Switzerland	0	0.00	0	0.00	2	0.00	0	0.00
Viet Nam	0	0.00	0	0.00	0	0.00	1,008	0.20
Italy	0	0.00	0	0.00	0	0.00	21	0.00
Spain	0	0.00	0	0.00	0	0.00	178	0.04
Total	545,213	100.00	570,256	100.00	250,218	100.00	499,918	100.00

Table 24 Monthly data of volume and value of exported chili in Indonesia in 2016

Month	Volume (Kg)	Growth (%)	Value (US$)	Growth (%)
January	1,084,566		4,164,301	
February	1,204,700	11.08	3,697,432	-11.21
March	922,140	-23.45	1,989,982	-46.18
April	1,399,683	51.79	3,069,849	54.27
Mei	1,646,853	17.66	3,109,118	1.28
June	1,475,234	-10.42	3,747,011	20.52
July	846,660	-42.61	2,250,694	-39.93
August	1,279,475	51.12	1,976,450	-12.18
September	1,123,425	-12.20	3,020,821	52.84
October	1,091,611	-2.83	2,410,916	-20.19
November	1,064,963	-2.44	2,304,877	-4.40
December	1,188,834	11.63	3,285,920	42.56
Average	1,194,012	4.48	2,918,948	3.40

Source: Ministry of Agriculture (2017)

The trade balance of chili in 2016 is presented in Table 25. On average, Indonesia experienced a deficit in the trade balance of chili in which, the value of imports was higher compared to the value of exports. The largest deficit occurred in August and November due to the low production of chili during these months, which in turn forced Indonesia to import more chili.

Table 25 Trade balance of chili in Indonesia in 2016

Month	Export (US$)	Import (US$)	Surplus/Deficit (US$)
January	4,164,301	3,487,900	676,401
February	3,697,432	3,666,654	30,778
March	1,989,982	1,784,282	205,700
April	3,069,849	2,278,469	791,380
Mei	3,109,118	3,999,193	-890,075
June	3,747,011	2,308,888	1,438,123
July	2,250,694	2,051,249	199,445
August	1,976,450	3,977,059	-2,000,609
September	3,020,821	3,978,605	-957,784
October	2,410,916	3,169,216	-758,300
November	2,304,877	4,539,679	-2,234,802
December	3,285,920	4,210,678	-924,758
Average	2,918,948	3,287,656	-368,708

Source : Ministry of Agriculture (2017)

2.4.2. Government Regulation and Policy for Chili

2.4.2.1. Price

The regulations related to the price of chili is the same as for shallots. The Reference Price of chili was issued by the Directorate General of Domestic Trade Number: 118/PDN/KEP/10/2013. The reference price of red chili/curly was established at IDR 26,300,- per kg. For red small chili, the reference price was IDR 28,000,- per kg.

Furthermore, the regulation related to reference prices of chili has been issued by the Indonesian Ministry of Trade Number 63/M-DAG/PER/9/2016. This regulation states that purchasing reference price for the farmer and consumer level. In purchasing and selling activities for chili BULOG and/or BUMN should refer to the selling and purchasing reference prices as stated by this regulation. BULOG and other BUMN can co-operate with BUMN, local public company (BUMD), cooperatives and/or Partner Companies. The purchasing reference prices for farmers is IDR

15,000 per kg for red curly chili, IDR 15,000 per kg for big red chili and IDR 17,000 per kg for small red chili. Meanwhile, for consumers, the reference prices for big red chili and red small chili were IDR 28,500 per kg, and IDR 29,000 per kg, respectively.

After the regulation in 2016, the government implemented the Ministry of Trade Regulation No 27/M-DAG/PER/5/2017 related to reference prices of staple foods in Indonesia. Meanwhile, the reference prices of chili are excluded from this regulation. It means that there is no regulation of reference price for chili commodity. It shows that the price of chili is determined by a market mechanism.

2.4.2.2. Productions

The regulation of chili production is the same as shallots. The several regulations are:

a. The Presidential Decree Number 71 year 2015 about Determination and Storage Basic Foodstuffs and Essential Goods.
b. The Law Number 18, year 2012 is about staple food, states that the government is obliged to manage the supply and price stabilizationof staple foods, manage the reserve and distribution of staple food in order to ensure a the safe and nutritious food sufficienct for societies demands.
c. The Law Number 12, year 1992, states that the plant cultivation system aims to improve and expand the diversification of crops, to meet the needs of food, clothing, shelter, health, domestic industries and to increase exports; to improve farmers, incomes and living standards; and to encourage expansion & equitable distribution of business opportunities & employment.
d. The Law Number 29, year 2000 refers to plant variety protection. In this Law, the new variety is defined as propagation material or the harvest of these varieties that have never traded in Indonesia or have been traded but; not for more than a year, or have been trafficked abroad no more than four years for crops and six years for perennial crops, at the time of receipt of the request PVP (Plant Variety Protection).
e. The Law Number 16, year 2016 about agriculture, fishery and forestry. The purposes of the extension system are to develop human resources and improve social capital.
f. The Law Number 32, year 2009. The scope of environmental management includes plan, control, maintenance, supervision and law enforcement.
g. Article 100, section 3 of Law No. 13, year 2010, states that the maximum foreign capital ownership for horticultural commodities is 30%. Meanwhile for staple foods, the maximum ownership of foreign investment remains the same as per Presidential Decree No. 36 of 2010 and Presidential Decree No. 36 of 2014 which is a maximum of 49%.
h. The Ministry of Agriculture implemented by the Directorate General of Horticulture established a program of the cultivation of chili during the dry season of 2015. This program was funded by the National Budget (APBN).
i. The Directorate General of Horticulture, Ministry of Agriculture has issued a Special Safeguard Policies (UPSUS) for chili.

2.4.2.3. Import

The most imported chili product is chili powder and dried and preserve chili. The import tariff of chili with HS 0711.90.20.00 is 5 %. It is based on the Ministry of Finance Regulation Number 06/PMK.010/2017.

Beside that import tariff regulation, the other regulations for chili are similar to the shallots. That regulations are :

a) The Trade Ministry Number30/M-DAG/PER/5/2012 is about import provision of Horticulture Products.
b) The Ministry of Agriculture Number 60/Permentan/OT.140/9/2012 of Horticulture Product Import Recommendation (HPIR) states that HPIR is given to importing companies.

Table 26 presents laws and regulations related to chili and shallots in Indonesia. The laws can be classified into several aspects including price, import, and production.

Table 26 Laws and regulations related to chili and shallot commodities

No	Regulation	Description
1	Law Number 12 of 1992 about Crops cultivation system	The purpose of the Plant Cultivation System is to: 1. Improve and expand the diversification of crops, in order to meet the needs of food, clothing, shelter, health, domestic industries, and to increase exports; Improve farmers, incomes and living standards; Encourage expansion and equitable distribution of business opportunities and employment. 2. The scope includes processes of production to post-harvest activities. 3. To achieve the objectives: The Government has codified cultivation development plans in accordance with the stages of the national development plans The government has to determine the development of plant cultivation area; The government regulates the production of certain crops based on the national interest, The government creates conditions that support community participation. 4. Achievement of quality seeds for cultivation development activities carried out through the discovery of improved varieties and / or those introduced from abroad.
2	Law Number 29 of 2000 about Plant variety protection	1. A new variety is classed as propagation material or harvesting these varieties that have never traded in Indonesia or have been traded but not for more than a year or have been trafficked abroad no more than four years for crops and six years for perennial crops at the time of receipt of the request PVP (Plant Variety Protection), 2. The varieties that cannot be protected by PVP varieties that are contrary to the legislation, public order, decency, norms of religion, health and environmental sustainability. 3. Long time PVP a. 20 (twenty) years for seasonal plants. b. 25 (twenty five) years for annuals after being granted rights certificate PVP (Sertifikat hak PVT) 4. The holder of the PVP is the glorification of person or legal entity, or other party that receives more PVP of previous PVP rights holder. PVP rights holder has the right to use and give consent to the person or legal entities to use the varieties in the form of seeds and crops that are used for propagation.

No	Regulation	Description
		5. In order to get the PVP certificate, the petition must be registered and inspected. It will be announced and recorded by the PVP office. These rights can be implemented alone and/or transferred to another party, to exploit the plant variety commercially through a treaty. Rights set out in the legislation include, produce or reproduce the seed, set up for the purpose of propogation, sell or trade, export and import. To breeders or others who obtained the PVP are required to implement them in Indonesia.
3	Law Number 16 of 2006 about Agriculture, fishery, and forestry extension system	The purposes of the extension system settings are to develop human resources & improve social capital Function of extension systems: 1. To facilitate the learning process the main actors and businessesmen. 2. To make easy access to the major actors and entrepreneurs to resources, technology and other resources to enable them to develop their businesses. 3. To improve leadership skills, managerial and entrepreneurial of the key actors and businessmen 4. To help key actors and entrepreneurs to develop their economic organizations into highly competitive, productive, applying seeks good governance and sustainable organizations. 5. To help analyze and solve problems and respond to opportunities and challenges facing the major actors and entrepreneurs in managing the business. 6. To raise awareness of key actors and businessmen on the preservation of environmental functions. 7. To institutionalize cultural values of agriculture, fisheries and forestry that are advanced and modern for the main actors in a sustainable manner.
4	Law Number 25 of 2007 about Capital Investment	1. The provisions of this law applies to investments in all sectors in the territory of the Republic of Indonesia. 2. The Government sets a basic policy of investment to: • Encourage the creation of a national business climate conducive to investment in order to strengthen the competitiveness of the national economy. • Increase capital investment. • Ensure legal certainty, equity and security is attempted by investors throughout the licensing process, until the expiry of the investment activities in accordance with the provisions of the legislation.

No	Regulation	Description
		• Give an opportunity for development and provide protection to micro, small, medium, and co-operatives.
5	Law Number 32 of 2009 about Protection and Management of the Environment	1. Scope of environmental management includes: Plan Control Maintenance Supervision Law enforcement 2. Planning of environmental protection and management is carried out through the following stages: Environmental inventory The zoning of eco-regions RPPLH preparation (Protection Plan and Environmental Management) 3. The law also stipulates: • The integrity of the elements of environmental management • Clarity of authority between the central and local strengthening efforts on environmental control • Strengthening pollution prevention instruments and/or damage to the environment, including by means of strategic environmental assessment, spatial, environmental quality standards, the standard criteria of environmental damage, environmental impact analysis, environmental management efforts and environmental monitoring efforts, licensing, etc. • Efficient use of licensing as an instrument of controlutilization of the ecosystem approach. • Certainty in responding and anticipating developments in the global environment. • Strengthening environmental democracy through access to information, participation and to justice and strengthening the rights of communities in the protection and management of the environment. • Enforcement of civil , administrative and criminal law more clearly. • Institutional strengthening of environmental protection and management more effective & responsive. • Strengthening environmental monitoring official authority and civil servants investigator environment.

No	Regulation	Description
6	Law Number 13 of 2010 about The limitation of foreign investment in horticulture industry to maximum 30%	1. The purpose of implementation horticulture to: • Manage and develop horticultural resources optimally, responsibly and sustainably. • Increase production, productivity, quality, added value, competitiveness and the market share. • Improve product consumption and utilization of horticultural services. • Providing protection to farmers, businesses and consumers in nation wide horticulture. • Improving the country's foreign exchange resources. 2. Scope of the organization of horticultural arrangements include: • Plan • Utilization and development of resources • horticulture development • Distribution, trade, marketing and consumption • Financing, guarantees, and investments • Information Systems • Research and development • Empowerment • Institutional • Supervision • Society participation
7	Regulation of The Finance Ministry Number 13/PMK.011/2011 About entry tariff rate of food products and foodstuff, fertilizer and livestock feed raw material. With the reference of PMK 213 of 2011, Directorate General of Customs and Tax Published Book of Indonesia's Custom Tariffs of 2012.	Based on the Indonesian custom tariff book of 2012, the policy of import tariff on shallots is covered by HS 0703.10.21.00 is equal to 0 %. The import tariffs for tomato products with HS 0702.00.00.00 is 5% and for chili product with HS 0711.90.20.00 is 5 %

No	Regulation	Description
8	Law Number 18 of 2012 about Food Security	1. The government are obliged to manage the supply and price stabilization of staple food, manage the reserve of staple food for government, and distribute staple food to realize safe and nutritious food sufficient for society. 2. Food supply source is derived from domestic food production and national food reserves. In terms of sources of food supply it is not sufficient that food can be fulfilled with imports of food as needed. 3. Exporting of food can be done with attention domestic food consumption and the national interest. 4. Exporting of can be done only after fulfillment of staple food and national food reserves. 5. Importing of food can be done if domestic food production do not fulfill and can't produce sufficient in country.
9	The Decision of Directorate General Trade domestic as Chairman of the Technical Committee of Horticultural Products Price Monitoring Number : 118/PDN/KEP/10/2013 About Reference Price Horticultural Product	1. Reference price of red chili/curly is establised at IDR 26,300,-/kg 2. Reference price of cayenne pepper is establised at IDR 28,000,-/kg 3. Reference price of fresh shallots for consumption is establised at IDR 25,700,-/kg 4. Reference price is used as an instrument for red chili/curly, red cayenne pepper, and fresh shallots imports for consumption consider the likely harvest and stock availability in the country.
10	Presidential Regulation Number 39 of 2014 About The List of Opened and Closed Business Fields with The Requirements in Investment sector.	1. The business sector that is closed are sectors that are prohibited cultivation as capital investment activities. 2. The business sector that are open can be cultivated as an investment activity under certain conditions. Namely the business sector reserved for Micro, Small, Medium Enterprises and Co-operatives, business areas as required by the partnership, the business sector requiring capital ownership, business sector as required by a particular location and business sector required with a special permit. 3. In the case of investment permits a predetermined location of the business and the investor intends to expand the business by doing the same business activities in other locations have been defined in the investment permit as the investor who must meet the requirements of the location.

No	Regulation	Description
11	President Regulation Number 71 of 2015 About Determination And Storage Basic Foodstuffs and Essential Goods	1. Staple goods needs are items concerned in the lives of many people, with a high scale of fulfillment and becoming supporting factors of public welfare. Staple goods of agricultural products : • Rice • Soybean • Chili • Shallots Staple goods of Industrial Product : • Sugar • Cooking oil • Wheat flour Staple goods of livestock and fisheries • Beef • Chicken meat • Eggs • Fresh fish, that is milkfish and tuna 2. In conditions that can disturb national trade activities, the central government is required to ensure the supply and stabilization price of staple and essential goods. 3. Implementing its obligations, the Ministery is to establish a pricing policy, stock and logistics management and export and import management. Determination of price policy is as follows: • Specific pricing determination, when approaching, now and after national religious feast day or when conditions where volatile prices are likely. • The highest retail price determination in respect of the market operations for partially or all of the staple goods. • Subsidies pricing determination for partially or all of the staple and essential goods 4. Export and import management by: • Give approval to exports if goods in domestic has fulfilled theavailable of allocation reserve stock at least for the next six months. • Gives approval for imports if supply shortage occurs in the country which effect in price volatility

No	Regulation	Description
12	*President Regulation* No.44 of 2016 About The List of Opened and Closed Business Fields with The Requirements in Investment sector.	Business sector of activities investment Business sector that open Business sector that closed Business sector that open with requirements Business sector with requirements consist of: Business sector that open with requirements: reserved or partnership with the Micro, Small and Medium Enterprises and Cooperatives Business sector that is open with certain requirements, namely: 1) foreign equity ownership restrictions 2) specific location 3) Special permits 4) domestic capital 100% (one hundred %); 5) capital ownership restrictions within the framework of the Association of Southeast Asian Nations (ASEAN) Annual vegetable crops seed business, annual vegetable plants, tuber vegetable cultivation, cultivation of fruit and vegetables, chilli and paprika cultivation, horticulture processing industries (post-harvest fruits and vegetables business) requirements for foreign investment of up to 30 %.
13	Regulation of The Trade Ministry Number 30/ M-DAG/PER/5/2012 about Provision of Horticulture Product Import	Imports of horticultural products is obligatory to the following aspects: Food security of Horticultural Product Horticulture Domestic Product Availability Target production determination and consumption of horticultural products Packaging and labeling requirements Quality standards 2. Importation of Horticultural Products can be done if the production in country has not been sufficient for public consumption.
14	Regulation of The Agriculture Number 60/Permentan/OT.140/9/2012	The basic law gives RIPH for companies that will perform Horticultural Product Imports Importing of horticultural product companies can be done after obtaining the import approval of the Trade Ministry. The scope of these regulations include:

No	Regulation	Description
	about Horticulture Product Import Recommendation (RIPH)	a. the requirements and procedures for obtaining RIPH b. obligations of RIPH c. supervision d. sanction provisions
15	Regulation of The Agriculture Minister Number 86/Permentan/OT.140/8/2013 about Horticulture Product Import Recommendation (RIPH)	Importing of horticultural products can be done during a specified period but not before, during and post harvesting. Importation of Horticultural Products can be done by an importer after import approval from the trade ministry or designated officials RIPH is published twicea year and is applicable for the period from January to June and June to July to December. RIPH service is not applicable for fresh horticulture products such chili and shallots Horticultural products which can be granted RIPH include, fresh products, industrial raw materials, processed industrial raw materials and processed food for consumption. RIPH fresh horticultural products for consumption such as chili and shallots are based on reference price provisions of the Trade Minister.
16	Regulation of The Agriculture Number 43/ Permentan/ OT.140/6/2012 about Plant Quarantine Measures for the Importation of Fresh Vegetables bulb crops into the Territory of the Republic of Indonesia	This regulation is a basis entry requirement for bulb crops into Indonesia and the implementation of the plant quarantine measures and the aims to prevent the entry of quarantine pests (plant quarantine) and to fulfill the requirements of fresh food security plants. The scopes of this regulation apply for plant quarantine measures and point of entry bulb crops entering into Indonesian territory required: equipped phytosanitary certificate from the country of origin and the transit country Entery through a specified place Report to hand over to the quarantine officer at the entry points for the purpose of plant quarantine measures Entry Points for bulb cropsconsist of: a. Sea Port of Tanjung Perak, Surabaya b. Sea port of Belawan, Medan c. Soekarno-Hatta, Jakarta d. Soekarno-Hatta Sea Port, Makassar e. Other entry places

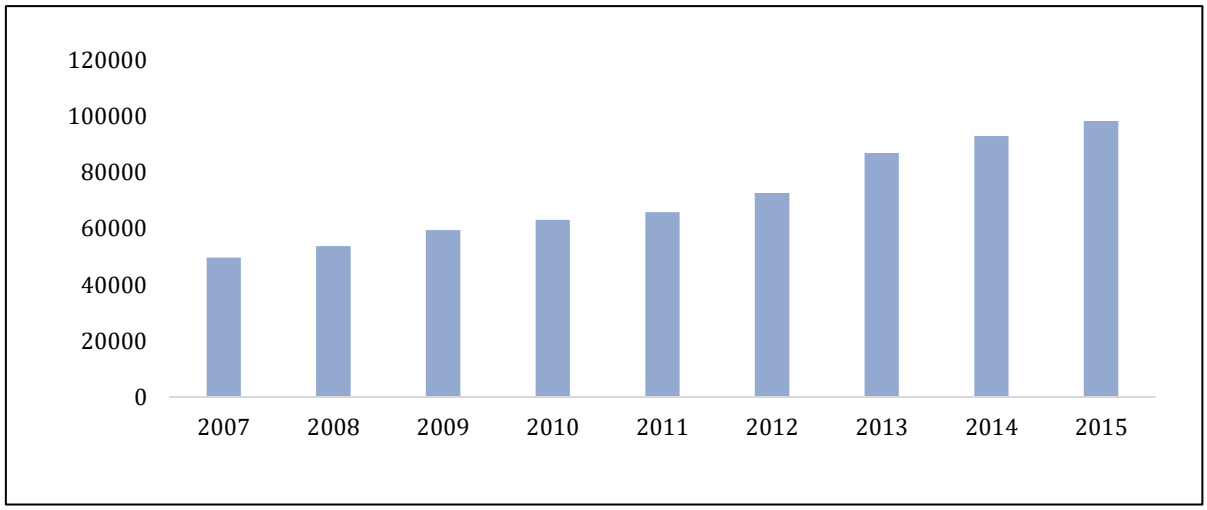
No	Regulation	Description
		The entry points are specified by the laws and regulations of the free trade zone and the free port can be used as an entry point for bulbs
17	Regulation of The Agriculture Ministry Number 42/Permentan/OT.140/6/2012 about plant quarantine measures for imported fruits and vegetables fresh fruit into the territory of the Republic of Indonesia	1. Places approved for the importation of fresh fruits and vegetables are: Sea port of Tanjung Perak, Surabaya Sea port of Belawan, Medan Soekarno-Hatta, Jakarta Soekarno-Hatta Sea port, Makassar 2. Importation of fresh fruits and fresh vegetables through these entry points can be done to fulfill consumption and it is banned to circulate in outside the free trade zone and the free ports.
18	Law Number 4 of 2006 about Ratification International Treaty on Genetic Plant Resources for Food and Agriculture	By authorizing the agreement, Indonesia will benefit in: Increasing public awareness of the importance of plant genetic resources within the national agricultural development. Enhancing national capacities in the management of plant genetic resources through capacity-building assistance from the support system of this agreement. Preventing illegal search and collection of plant genetic resources as well as the development by the state part. Development of regional and international co-operation in the management of plant genetic resources for food and agriculture. Guarantee access and equitable sharing of benefits from the utilization of plant genetic resources for food and agriculture; Benefit from the establishment of the Multilateral System for the exchange of plant genetic resources included in Annex I Gaining access to genetic resources (Annex I), which is stored in the States Parties to the Treaty, as well as from centers of international agricultural research; Gain the maximum benefit from: international programs related, such as the Global Plan of Action

No	Regulation	Description
		ex situ collections stored at the centers of the international agricultural research (International Agricultural Research Centers). a global information system to increase institutional capacity and human resources in the field of conservation and sustainable use of agricultural genetic resources at both central and regional levels.
19	Regulation of Indonesia Republic Trade Ministry Number 63/M-D AG/PER/9/2016 about determination of purchasing price reference in farm level and determination of selling price reference in consumer level.	Purchasing at the reference price at the farmer level, while considering about production cost, distribution cost, profit and/or other costs. Selling at the reference price for consumers which consider production and distribution cost, profit, and/or other costs. The Public Logistic Company (Perusahaan Umum Badan Urusan Logistik (BULOG)) and/or other public company (Badan Usaha Milik Negara (BUMN)) in purchasing and selling activities for sugar, shallots, chili and beef refer to use both reference prices. In purchasing and selling, BULOG and other BUMN can co-operate with BUMN, BUMD, Cooperative and/or private companies. Both reference prices are valid for four months after the Ministry Regulation is formed When the valid time expires and new reference prices are not formed yet, the previous reference prices are still applied. The purchasing reference price for shallots in the farmer level: Kondebasah IDR 15,000 per kg, Kondeaskip IDR 18,300 per kg, Rogolaskip IDR 22,500 per kg. Reference price in consumer level for Rogolaskip IDR 32,000 per kg. The purchasing reference price for farmers is: red curly chili IDR 15,000 per kg, big red chili IDR 15,000 per kg, red small chili IDR 17,000 per kg. Reference price in consumer level: red curly chili IDR 28,500 per kg, big red chili IDR 28,500 per kg, red small chili IDR 29,000 per kg.

2.5. Beef

2.5.1. Price

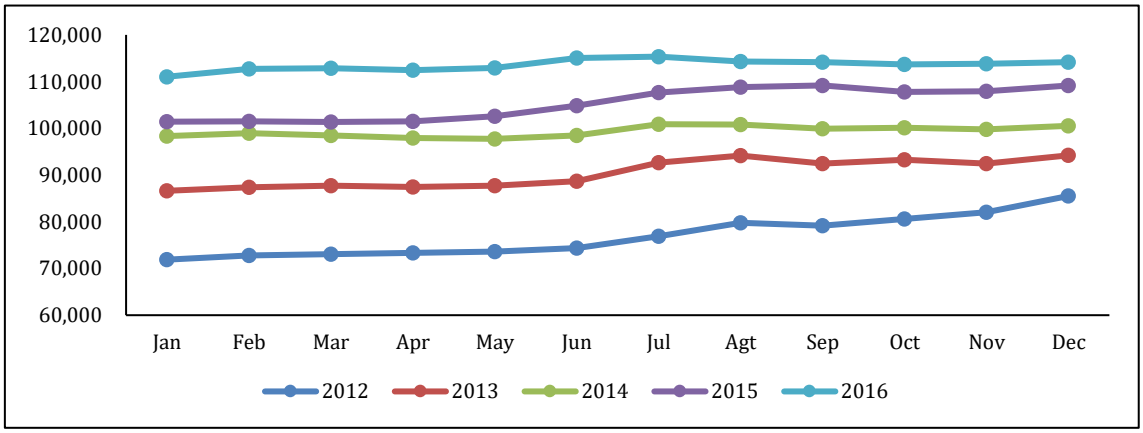
Beef is the main source of animal protein and experiences big price fluctuations during the fasting month (Ramadan) and Idul Fitri celebrations. In order to suppress the price rise of beef at a reasonable level, the Indonesian Government has issued several polices. However, the price data shows that beef prices tend to increase from year to year (Figure 33). Several factors contribute to an increasing price of beef including: (1) inefficiency in the marketing channel of beef, (2) inefficiency in the cattle breeding systems dominated by small scale farmers and (3) high production and marketing costs.



Source: Statistics Indonesia, 2016

Figure 33 Beef prices in Indonesia in 2007-2015

The monthly price of beef tended to increase in June and July from 2012-2016 (Figure 34). This is due to the increased demand for beef in these months as a response to religious celebrations (Ramadan and Idul Fitri). It is important to note that if the prices of beef increase, it is difficult for prices to reduce in the next month.



Source: Statistics Indonesia, 2016

Figure 34 Monthly prices of beef in Indonesia in 2012-2016 (IDR per kg)

An increasing domestic beef price will have a negative impact for consumers since it will reduce their purchasing power. This will in turn force consumers to shift from buying domestic beef to other alternative products (such as imported beef, and/or buffalo). For the producer, an increasing beef price will not provide a positive impact on them, since they only receive a low share in the supply chain. At the macro level, the high price of beef can reduce the overall consumption of animal protein. In this situation, it is important for the government to provide a support for the environment for cattle farmers, particularly improving the cattle breeding system and the infrastructure to distribute both live cattle & beef from the production regions to the market areas.

In 2016, the price in Jakarta was higher compared to the reference price set by government, which was only IDR 80,000 per kilogram (Table 27). In 2016, the price for each month was above IDR 100,000 per kilogram. According to Burhani (2013), the volatility of beef prices in the future will tend to be smaller and persistent over time. The volatility depends on the previous period. Consequently, high prices now will result in high prices in the next period. Based on the Table 27, it indicates the monthly price tends to be stable at a high price.

Table 27 Monthly beef price at consumer level in DKI Jakarta in 2015-2016 (IDR per Kg)

Month	Year	
	2015	2016
February	98 750	116 129
March	98 333	118 276
April	99 500	118 226
Mei	100 000	111 833
June	100 000	112 258
July	100 300	117 433
August	107 833	115 579
September	116 146	114 636
October	110 000	113 523
November	N.a	113 182
December	N.a	113 384
Average	N.a	114 086

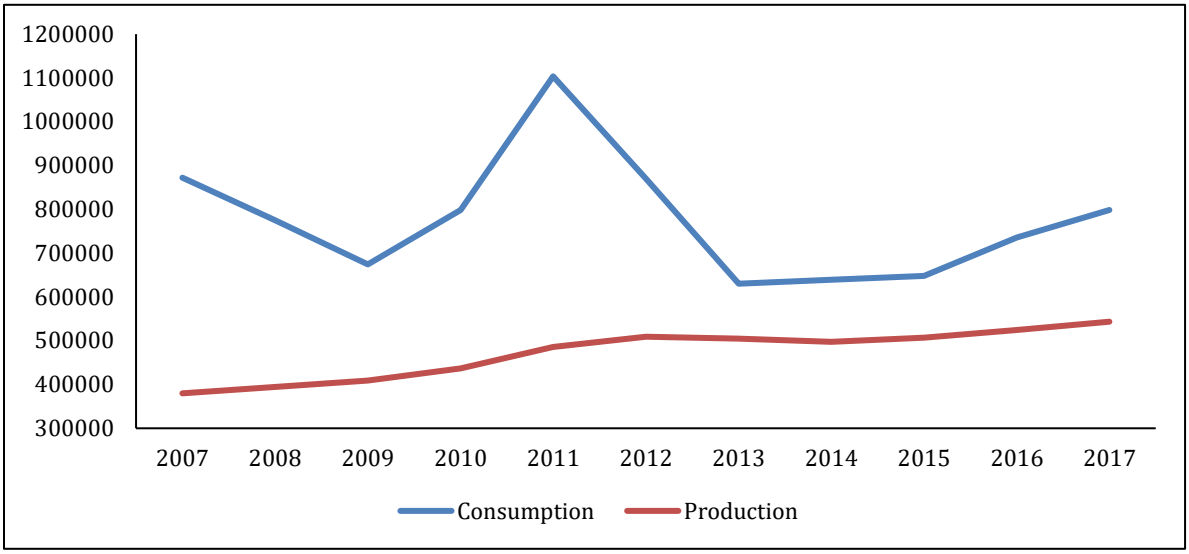
Source: Direktorat Jenderal Peternakan dan Kesehatan Hewan (2016)

The price of feeders and cattle in the livestock market is determined by the buyer, while the price of beef is determined by the seller. Therefore, the stabilization of beef prices must be supported by a better market price information system both for the live cattle market (calve, heifer, steer, feeder, bull, beef-cow) and the beef market in production & consumer areas. Integration of information systems and coordination between producers and consumers are crucial in stabilizing the price. The price in Jakarta has been considered as the national indicator for consumers, because it constitutes the highest consumption share, of 45.01%. The beef suppliers are mainly from eastern Indonesia (NTT, Bali, NTB), East Java and Lampung.

2.5.2. Production and Consumption

Demand for beef increases along with the growth of per capita income of the Indonesian population. It can be categorized as elastic income. This means that higher incomes will increase

the demand for beef. In 2017, with the population being about 260 million and consumption per capita of about 2.7 kg per year, it is expected that Indonesia needs about 702 thousand tonnes of beef (ASPIDI 2016). Meanwhile, according to BPS (2016) domestic beef production in 2016 was only about 524 thousand tonnes. By the average growth of production per year (2009-2016) being only 3.67%, it is expected that the gap between the demand and supply will increase (Figure 35).



Source: Statistics Indonesia, 2017

Figure 35 The projection between production and consumption of beef in Indonesia in 2007-2017 (tonne)

Another fundamental issue facing Indonesia in meeting the domestic beef demand is the distance between production and consumer areas. The majority of production areas are located outside of Java, meanwhile the consumer areas are mainly there (particularly DKI Jakarta Province and its hinterland areas). Based on statistical data from the Directorate General of Animal Husbandry and Animal Health (2016), the main production zones of cattle are spread over seven provinces including Jawa Timur (28%), Jawa Tengah (10.5%), Sulawesi Selatan (8%), Nusa Tenggara Barat-NTB (7%), Nusa Tenggara Timur-NTT (6%), Lampung (4%) and Bali (3.5%). Lampung Province is included as a fattening center that brings the live cattle from outside Lampung, as the number of beef cattle is limited in this province. Meanwhile, in the provinces of NTT, NTB and Bali the calves are the beef sources.

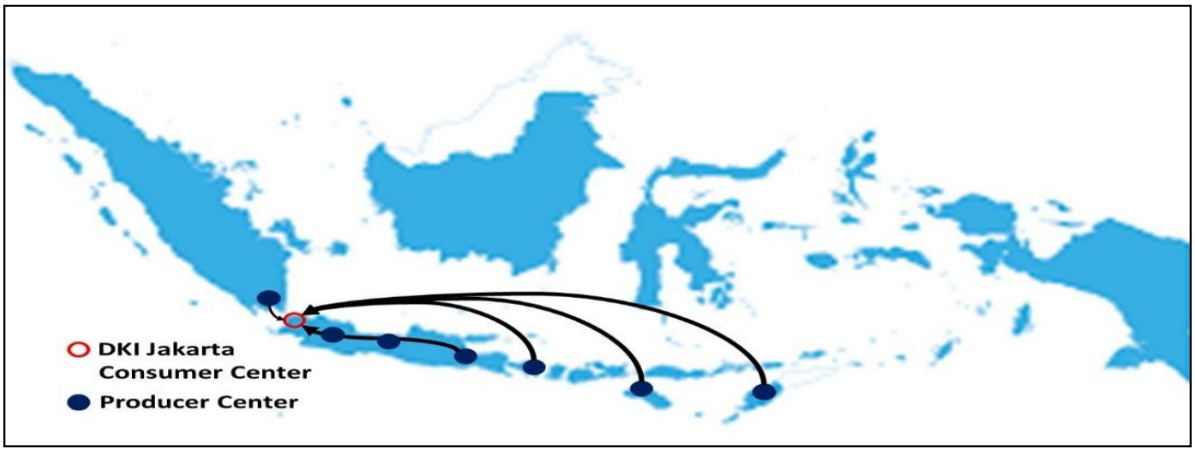
Table 28 Production of beef by provinces in Indonesia in 2009-2016 (tonne)

Province	2009	2010	2011	2012	2013	2014	2015	2016
ACEH	7614	7914	8303	6569	8747	8814	10048	10550
NORTH SUMATERA	13261	14256	18299	24547	18437	22656	23408	24141
WEST SUMATERA	18322	20442	20287	22638	23099	24943	26007	26787
RIAU	7294	10950	12658	11317	8243	9298	8677	9036
JAMBI	3868	6349	6515	6507	4386	4329	4654	4749
SOUTH SUMATERA	12482	12703	13601	14649	14496	15281	16689	17125
BENGKULU	2411	2691	3276	3761	4222	3106	3365	3743
LAMPUNG	10694	9527	10064	9833	14099	13074	12337	12991
KEP. BANGKA BELITUNG	2004	3024	3932	2917	2966	3427	2539	2666
KEP. RIAU	579	450	532	585	556	2663	2661	2665
DKI JAKARTA	5657	6058	9413	12206	18021	19260	20166	20166
WEST JAVA	70662	76066	78476	74312	71881	67073	75478	77231
CENTRAL JAVA	48340	51001	60322	60893	61141	55988	55332	56029
DI YOGYAKARTA	5384	5690	7657	8896	8637	8611	7584	7765
EAST JAVA	107768	109016	112447	110762	100707	97908	95431	97675
BANTEN	18728	20326	25806	36121	36676	37672	37164	39765
BALI	6283	6238	8081	8759	8964	7283	7744	7804
WEST NUSA TENGGARA	6567	9287	10958	11228	12688	10847	10593	11133
EAST NUSA TENGGARA	6486	4507	8668	13595	11083	11656	12299	12545
WEST KALIMANTAN	6567	7074	10437	7263	8077	7274	5532	6150
CENTRAL KALIMANTAN	2564	5224	3116	4154	4277	3844	4061	4264
SOUTH KALIMANTAN	5946	7058	8459	9610	9770	8573	7978	7916
EAST KALIMANTAN	6729	7530	8240	8069	9210	8700	9129	9579
NORTH KALIMANTAN	-	-	-	-	-	675	614	644
NORTH SULAWESI	4571	4386	4446	4501	4565	4587	3611	3655
CENTRAL SULAWESI	3359	3672	3058	4250	4603	5131	4884	5115
SOUTH SULAWESI	11323	9056	11026	12725	14518	17214	19365	20140
SOUTH EAST SULAWESI	3737	3902	2709	3328	3849	4374	3693	4346
GORONTALO	3063	3926	3985	4347	3617	2460	3006	3048
WEST SULAWESI	1361	1795	3917	3053	2911	1988	2792	3574
MALUKU	1338	1420	1320	1496	2687	1592	2110	2556
NORTH MALUKU	223	243	274	578	876	999	1192	1458
WEST PAPUA	1696	1899	2316	2533	4077	3658	3809	3866
PAPUA	2427	2770	2737	2903	2733	2711	2709	3235
INDONESIA	409308	436450	485335	508905	504819	497669	506661	524109

Source: Statistics Indonesia, 2017

Consumers mostly prefer fresh over frozen meat.Indications are that the distribution of live cattle production areas to the areas does really matter (Figure 36). The live cattle distribution system is the domain of the government and can be used as an instrument to manage the supply of beef particularly in high consumer areas. During distribution/transportation, live cattle can experience stress which reduces their weight (Grandin and Shivley, 2015). In some cases, this stress might cause the death cattle. Engen et al. (2014) reported that a bad distribution system

from producer areas to consumer areas causes significant economic losses due to declining livestock productivity and the cost of recovering the health of cattle.



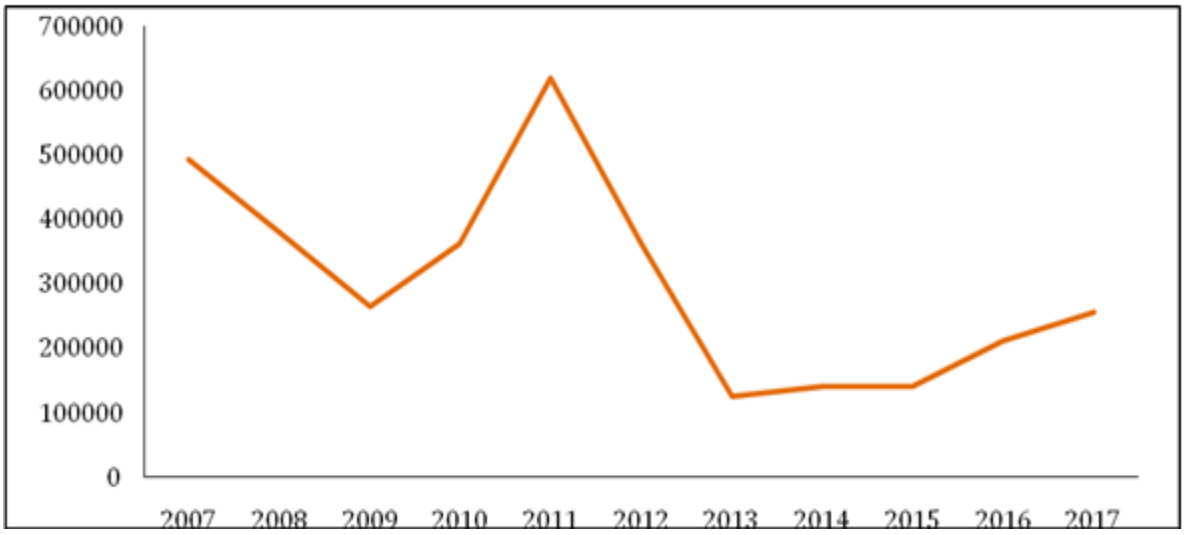
Source: Direktorat PKH, 2016

Figure 36 Distribution system of live cattle form production areas to consumer areas

2.5.3. Export and Import

Over the last 10 years, the average consumption of beef has increased. As outlined previously, consumption needs cannot be fulfilled by local production resulting in a deficit of supply and demand. Consequently, importing is inevitable to fulfill this deficit. Destiarni (2016) reported that the level of public consumption of beef, the price of domestic beef, and the price of imported beef affect the demand for imported beef. The demand will increase if the level of beef consumption rises, the price of domestic beef is high and the price of imported beef reduces. The beef exporting countries to Indonesia are dominated by Australia and New Zealand with Australia having the largest market share.

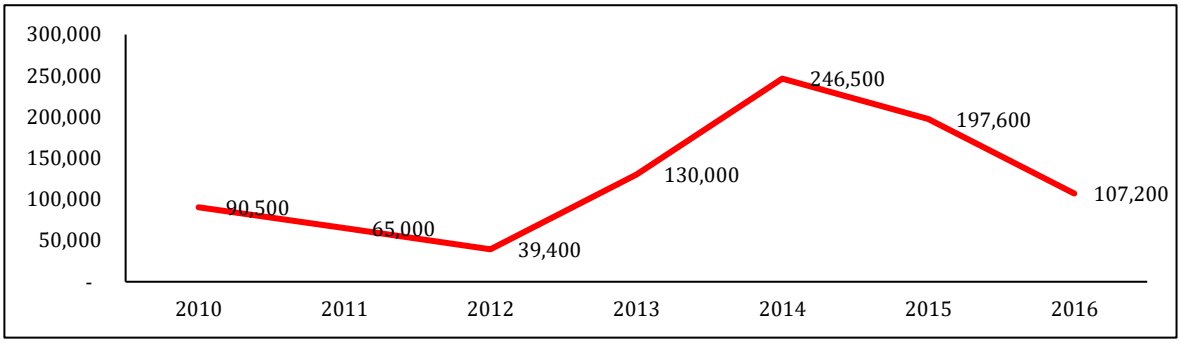
On average, importing has tended to decrease by 5% over the last 10 years (Figure 37). Currently, Indonesia relies on imported beef from Australia and New Zealand, since beef from these countries have similar quality to Indonesian beef (grass-fed). As such, the domination of these two countries in the beef market is very difficult to overcome by other countries particularly, the United States and India.



Source: Statistics Indonesia processed from per capita consumption and production

Figure 37 The amount of imported beef as required by Indonesia in 2007-2017 (tonne)

Imported beef in Indonesia tends to fluctuate (Figure 38). Data from the Ministry of Agriculture shows that in 2010 the volume of beef imports reached 90.5 thousand tons with the value about US $ 338.8 million. However, in 2012 the volume of imported beef reduced to 39.4 thousand tons with the value of US $ 164.89 million (Katadata Indonesia 2017).



Source: Databoks, Katadata Indonesia, 24 March 2017

Figure 38 The realization of Indonesian import volume in 2010-2016 (tonne)

Initially, Indonesia utilized country-based systems over the zone-based system. By using this system, only imports from Australia and New Zealand were suitable as these countries have been free from endemic diseases, i.e., Mouth and Nail Disease (PMK) and Zoonosis. Africa, South America, India and China are countries that have not been free from these endemic diseases. As such, previously Indonesia did not import beef from these countries. In order to avoid dependency of imported beef from only a few countries, currently though the use of the zone system means that imports can nowbe sourced from other countries, such as India. The quarantine processes should be tighterto reduce the possibility of endemic diseases spreading and possibly destroying local farmers. Therefore, the consistency of the supervision must be conducted in order to ensure that no person or party will take advantage from the policy.

Until now, Indonesian does not export beef to the world market. This is because the production of local cattle is dedicated to fulfill demand for beef in the domestic market.

2.5.4. Government Regulation and Policy

2.5.4.1. Price

The Ministry of Trade continues to implement strategies and policies to ensure the availability, stability and price stabilization for basic needs, especially during fasting and Idul Fitri Celebration. In 2013, The Ministry of Trade issued a regulation No. 669 / M-DAG / KEP / 7/2013 about beef price stabilization. This regulation isset to increase supply in the domestic market by importing a sufficient volume of beef. Importing licences are issued to the Animal Slaughtering Industry, the integrated feedlotter, and the Animal Slaughterhouse.

Table 29 Policies related price stabilization for beef in Indonesia

Policy	Context	Purposes	Substances
Regulation of the Ministry of Trade No. 669 / M-DAG / KEP / 7/2013	Stabilization of Beef Prices	Creating price stability of beef in Indonesia	Imported beef with approval and supervised by Ministry of Trade and Ministry of Agriculture
Regulation of Ministry of Trade No. 63 / M-Dag / Per / 9/2016	Price references of beef particularly at consumer level	Ensuring the availability of beef and price stability	Frozen Meat IDR 80,000 per kg, Fresh Beef /*Chilled:* • round steak meat IDR 98,000 per kg • bottom round meat IDR 105,000 per kg • brisket IDR 80,000 per kg, • flank IDR 50,000/kg
Regulation of the Ministry of Trade No.27 / M-DAG / PER / 5/201	Price references of beef	Ensuring the availability of beef and price stability	Frozen Meat IDR 80,000 per kg, Fresh Beef /*Chilled:* • round steak meat IDR 98,000 per kg • bottom round meat IDR 105,000 per kg • brisket IDR 80,000 per kg, • flank IDR 50,000 per kg Prime cut beef can be sold above the reference prices.

In 2016, the Ministry of Trade issued a regulation No. 63 / M-DAG / PER / 9/2016 about the reference price of beef at the producer and consumer levels. The price of frozen meat was set at IDR 80,000 per kg, round steak at IDR 98,000 per kg, bottom round meat at IDR 105,000 / kg, brisket at IDR 80,000 / kg and flank at IDR 50,000 / kg. BULOG (Indonesian Logistic Agency) and State-Owned Enterprises are appointed by the government to import beef.

Unfortunately, the regulations did not receive a good response from the local farmers and the breeders. By following the references prices, farmers and breeders reported that they cannot cover the costs incurred.

The government, on the other side, wants the beef price around IDR 80,000 per kg or equivalent to the price of frozen meat as reference. However, there is no explanation regarding the type or quality of meat referred to the reference price. On the other side, consumer prefers fresh meat, thus the addition of frozen meat supply in the meat market will not lower the price of beef. Furthermore, the increase of high meat price is more often caused by asymmetric information and generally can be anticipated by the government because the condition is patterned. Thus, the solution to overcome the excessive price hike is not by the sole policy of HET or been import policy or breaded cattle, in the short term can lead to moral hazard of beef business. A long-term policy is required in increasing the production of beef cattle, provision of beef cattle, investment and cattle trade between regions or between islands, i.e:

1. Applying integrated approach strategy of cattle farming area and integrated upstream-downstream
2. Developing local livestock producers besides beef cattle by consistently promoting national meat diversification efforts
3. Developing the infrastructure of domestic beef cattle trading pattern from live-cattle form into *fresh-and frozen-meat* forms from various centers of livestock production to increase value added for the region.
4. Conducting beef cattle imports to develop modern cow breeding as the national cattle breeding center.
5. Developing the cattle breeding financing through financial institutions, both banks and non-banks, in accordance with the pattern of cattle production and beef business behavior.
6. Government needs to provide assistance programs for farmers to produce concentrates in each livestock group and a quality-forage garden, as well as the forage preservation technology using agricultural wastes.

Therefore, government should promote the national movement regarding the use of artificial insemination technology which needs to be intensified with efficient and effective services for farmers and supported by human resources and research institutions as a source of innovation. This program cannot be transferred to local governments, because not all regions have a comparative advantage of cattle farming and adequate infrastructure.

Introduction of innovation in the field of reproduction and genetic improvement of domestic cattle. The establishment of the National Innovation Commission (*Komisi Inovasi Nasional*) is an appropriate step in developing production technology and local breed reproduction. In a short term, it is only governments that have the ability to develop these innovations, but in the long run, government encourages livestock companies to develop this locally based innovation.

The areas of broiler production, most of which are outside of Java Island, because the cattle breeding business requires enough large land for the provision of bovine cows's forage. In Java Island is not possible to conduct cattle breeding business on the existing land, so in terms of availability of land, it is only feasible to made in outside of Java, where forage can be obtained cheaply. Meanwhile, main consumers of meat as the center of the market is in Java. The disparity between the producer and the consumer's areas requires transportation for the trade of livestock.

Marine transport infrastructure specifically designed for inter-island cattle transportation expected to reduce the marketing costs, thus prices at farm-gate level can be increased. Animal Cutting House (RPH) acts as the controller of beef supply, both quantity and quality. Besides to avoid the productive female cows being cut, it is also linked to the HET policy on cattle, as each type of beef cut has a price that matches its quality.

2.5.4.2. Production

To achieve sufficiency of domestic meat production, the government has launched a self-sufficient beef program through the Self-Sufficient Beef and Buffalo Program 2014' (PSDSK 2014). This includes five main activities (Ditjen Peternakan, 2011): (a) provision of local feeder/local beef; (b) enhancing the productivity and reproducibility of local cattle; (c) prevention the slaughtering of productive female cattle; (d) provision of local calves and feeders; and (e) monitoring of domestic beef stock, including stock of beef cattle, distribution and their marketing.

Self-sufficiency of beef has not been achieved due to the lack of detailed operational issues of the program, the top down approach and the existence of the traditional cattle breeding system in Indonesia. Although this aspect of self-sufficiency has not been achieved, the Government remains consistent towards such a program.In 2015 the Indonesian Government issued a policy with related to several aspects including: the development of breeding and fattening centers, revitalization of institutional and human resources in the field and providing support facilities and infrastructure for the sector. The operational strategies include the optimization of programs regarding to artificial insemination, reducing reproductive disorders and animal diseases, improving the quality and the number of feeders, improving and increasing the number of slaughterhouses, controlling the productive female from early slaughtering, the intensification of natural breeding, the development of local feedand institutional development and other support activities.

Indonesia has also launched a program 'Sarjana Membangun Desa' in which fresh bachelors who have just graduated from the universities to visit and become involved in rural development. This program was launched in 18 provinces as the center of beef cattle. Through this program, the government mobilizes the network among regions to increase the supply of beef, so that cooperation between regions will be more dynamic and complementary. However, Ilham (2007) reported that the program had several limitations including lack of structural and management of related agencies and implementing officers, lack of time to familiarize the program to all actors involved in supply chain, failure to integrate technical and non-technical aspects, lack of involvement of traditional institutions (customs), ineffective credit realization, strong bargaining position of importers and the political nuances that tend to not support the program.

Since the government has not been able to fulfill domestic demand for beef, they have issued a policy to diversify the national meat consumption. The policy aims to increase the average consumption of animal protein per capita with less dependency on beef. Through this program, government will promote the consumption of buffalo, goat, sheep, rabbits, and others.

Another issue is the data synchronization between the Ministry of Trade and the Ministry of Agriculture related to national beef requirements. Data from the Ministry of Trade is collected

from the data of beef as demanded by the consumers. Meanwhile, the data of the Ministry of Agriculture is collected from the supply side or data of the number of cows available in the country. Although domestic cattle supply currently stands at 14 million head as managed by local farmers, it cannot automatically be utilized to meet the market demands of beef since the data also includes calves, that are not ready to be slaughtered yet.

2.5.4.3. Policies for import beef

Considering that beef experiences price fluctuation, the Indonesian Government through the Ministry of Trade issued No. 05 / M-DAG / PER / 1/2016 on provisions of the export and import of Animals and Veterinary Products. The regulation states that the export of animals and their products can be conducted if the domestic needs of beef have been met. While the importing of animals and their product (beef) can be conducted when domestic needs cannot be fulfilled by domestic production. The time of import and the countries of origin for imported beef must be in accordance with the approval of the Ministry of Trade and the Ministry of Agriculture. Any increase in imported beef prices, are directly related to the increase in domestic prices. This confirms that Indonesia has a strong dependence on imports, so that changes in the imported prices are transmitted directly to the domestic prices.

The Ministry of Trade has abolished the import quota for cattle and frozen meat and issued a new regulation that importers are required to bring 1 head for every 5 imported feeders. The provisions were included in the regulation of the Minister of Agriculture (Permentan) No. 16 of 2016 with respect to the importation of Large Ruminant Livestock into the Territory of Indonesia.This policy has been running along with the permission to import 300,000 head of cattle until 2018. This means there should be 60,000 parent cows that can be developed to improve the quality of local cattle. Other regulations for importing beef are presented in Table 30.

Table 30 Policies related to import and export of beef

Policy	Context	Purposes	Substances
Regulation of the Minister of Trade No. 46 / M-Dag / Per / 8/2013	Provisions on the Import and Export of Animals and Veterinary Products	To improve consumer protection, preserve biological natural resources, provide business certainty, transparency and simplify the licensing process, govern import administration, and follow up the package of economic rescue policies made and approved at the Ministerial Limited Meeting dated August 23, 2013	Import can be conducted for • Cattle with maximum weight of 350 kg • Fresh or frozen meat • Bone-in-bone meat • Boneless meat
Regulation of the Minister of Agriculture No. 74 / Permentan / Pd.410 / 7/2013	Second Amendment to Regulation of the Minister of Agriculture No. 52 / Permentan / Ot.140 / 9/2011 Concerning Recommendation of	To meet the needs of public consumption, price stabilization, and domestic beef market operations	The import of ready-to-cut beef is not a required recommendation of the Provincial Government. The import of ready-to-cut beef must meet the technical requirements of animal health

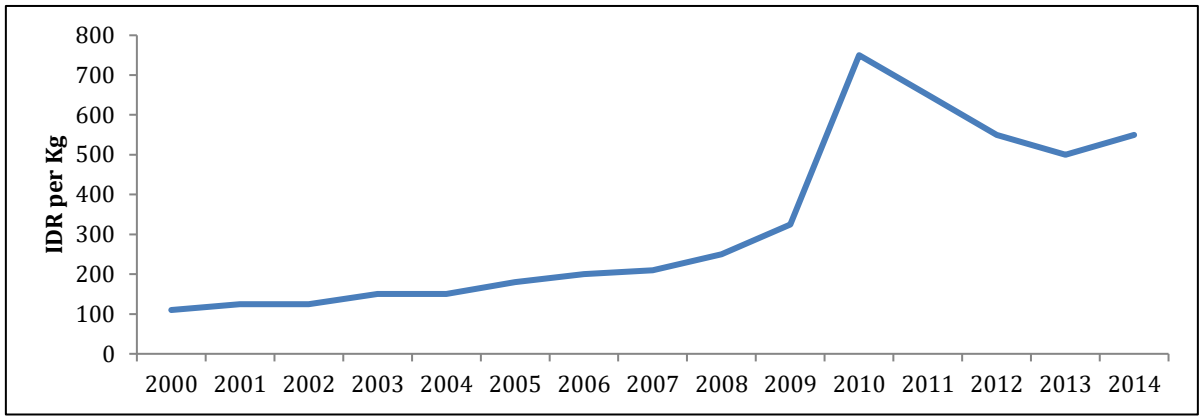
Policy	Context	Purposes	Substances
	Approval Of Inclusion And Expenditure Of Livestock Into And Out Of The Region Of The Republic Of Indonesia		in accordance with the provisions of the laws and regulations. The import of ready-to-cut meat is conducted based on the Decree of the Minister of Agriculture.
Regulation of the Minister of Agriculture of the Republic of Indonesia No. 96 / Permentan / Pd.410 / 9/2013	Amendment to the Regulation of the Minister of Agriculture No. 84 / Permentan / Pd.410 / 8/2013 with respect to the Import of Carcass, Meat, Offal, and / or Processed meat into the Territory of the Republic of Indonesia	To improve efficiency and effectiveness as well as to provide certainty in the service of recommendation related to Import of Carcass, Meat, Offal, and / or Processing into the Territory of the Republic of Indonesia;	Importing might be conducted by Business Actors, State-Owned Enterprises, Social Institutions, or Representatives of Foreign Countries / International Agencies.
Regulation of the Minister of Agriculture of the Republic of Indonesia No. 97 / Permentan / PD.410 / 9/2013	Second Amendment to Regulation of the Minister of Agriculture No. 85 / Permentan / Pd.410 / 8/2013 about Import of feeder, cattle, and ready-to-cut meat into the Territory of Republic of Indonesia	To optimize import services related to import of feeder, cattle, and ready-to-cut meat into the Territory of Republic of Indonesia;	Requirements should be fulfilled in importing beef: a. Health issue, as evidenced by the health certificate issued by the veterinary authority of the country of origin countries and certificate of origin issued by the authorized agencies in the country of origin; b. Antibiotic residues and growth hormones such as tricolon acetate harmful to human health do not exceed the internationally established standard thresholds c. The weight per tail of cow is a maximum of 350 kg upon arrival at the port of entry, and be not more than 30 months old and must be fattened for at least 60 days after the quarantine period.
Regulation of the Minister of Agriculture of the Republic of Indonesia Number 113 / Permentan / Pd.410 / 10/2013	Animal Quarantine Actions for breeding cow, Beef Cattle, and ready-to-cut cattleinto The Territory Of The Republic Of Indonesia	To prevent the introduction of animal diseases into the territory of the Republic of Indonesia which might be transmitted through breeding cow, Beef Cattle, and ready-to-cut cattle	Importing should follow the quarantine requirements, quarantine site, and quarantine actions
Regulation of the Minister of Agriculture of the Republic of Indonesia No. 108 / Permentan / Pd.410 / 9/2014	Importation regulation for breeding cow, Beef Cattle, and ready-to-cut beef into The Territory Of The Republic Of Indonesia	To increase the breeding, and meet the needs of meat in the country	Import should follow entry requirements, procedures for entry and monitoring applications

Policy	Context	Purposes	Substances
Regulation of the Minister of Trade No. 37 / M-Dag / Per / 5/2016	Amendment to the Regulation of the Minister of Trade No. 05 / M-Dag / Per / 1/2016 Concerning Provisions on Export and Import of Animals and Veterinary Products	To improve the effectiveness of exports and import policies of animal and its products	Companies that have obtained export and import approval should submit reports on the implementation of the export of Animals and / or Animal Products, or the implementation of the Import of Animals and / or Animal Products
Regulation of the Minister of Trade No. 13 / M-Dag / Per / 2/2017	Amendment to Regulation of the Minister of Trade No. 59 / M-Dag / Per / 8/2016 Concerning Provisions on the Export and Import of Animals and Veterinary Products	To enhance the effectiveness of the implementation of export and import policies of animals and their products	Importers should consider the types of animals and its products that are restricted to import into Indonesia

2.6. Salt

2.6.1. Price

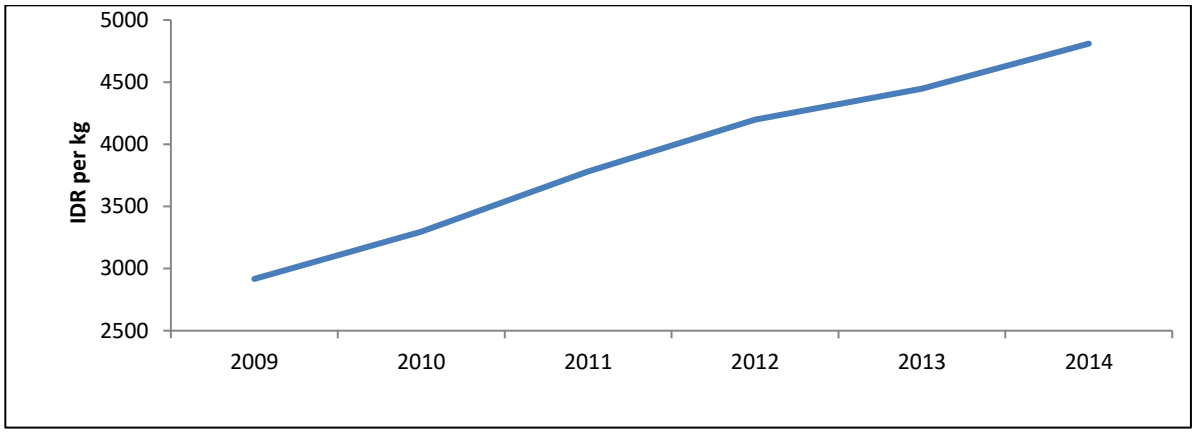
The salt price for the producer has been increasing during the period 2000 to 2014 which the average increase was 15.83%. The highest increase occurred in 2010, when the producer price increased by around 130%. This drastic increase was caused by lack of production due to a high rainfall.



Source: Ministry of Industry, 2015

Figure 39 Salt price in the producer's level, 2000-2014

The price of soft salt for the consumer increased by an average of 10.5% during the period of 2009 until 2014. Production significantly decrease in 2010 causing the producer's price to drastically increase, the consumer's price to decrease by 13% compared to 130% for the producer. This relatively low increase are mainly caused by the importing conducted by the government during this period which stabilizes the consumer price of salt.



Source: Ministry of Trade, 2015

Figure 40 Salt price in the consumer's level, 2009-2014

2.6.2. Production

Salt production in Indonesia is derived from the sea. The production fluctuations are mostly caused by the weather, high rainfall makes for shorter days to conduct production. In 2016, production decreased by more than 90% due to the high rainfall. Most of the salt produced came from the salt farmer with only about 15% produced by the government-owned PT Garam.

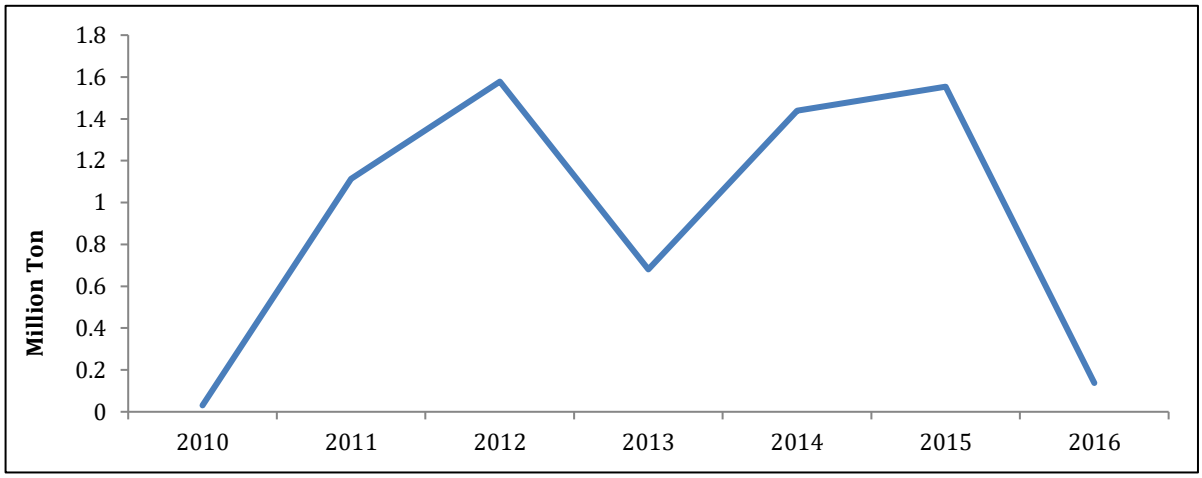


Figure 41 Indonesia's salt production, 2010-2016

There are 20 districts in the main production zone of salt in Indonesia (Table 31). These 20 districts produce salt from small farmers.

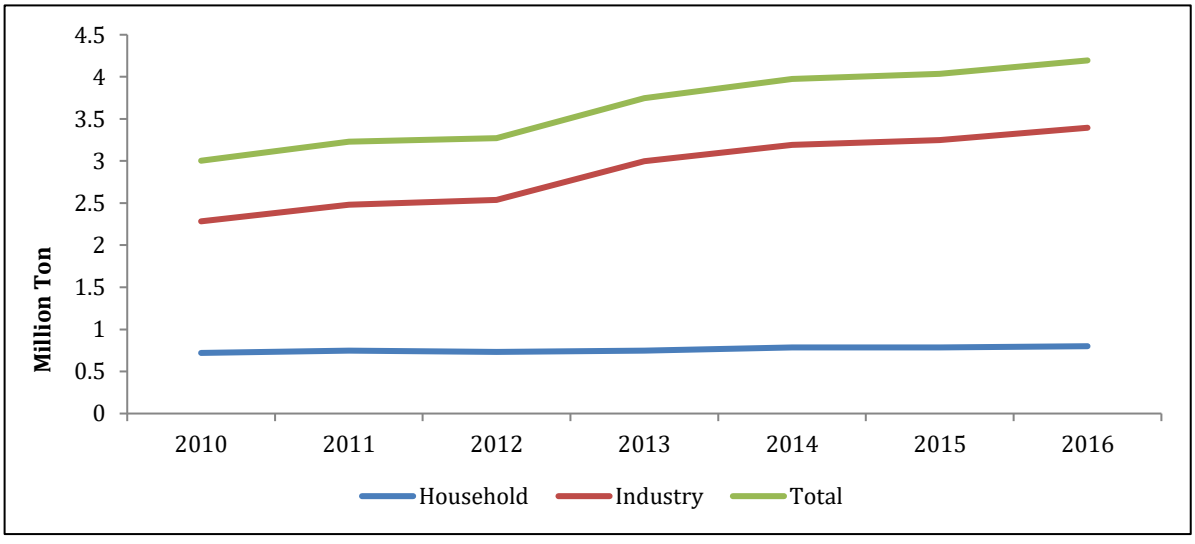
Table 31 The main production districts producing salt in Indonesia in 2015 (Tonne)

No.	District	Production (Tonne)
1	Cirebon	435,439
2	Sampang	398,983
3	Pati	381,704
4	Indramayu	317,122
5	Sumenep	236,117
6	Rembang	218,491
7	Bima	152,439
8	Demak	130,118
9	Pamekasan	123,534
10	Surabaya	86,226
11	Jepara	56,614
12	Brebes	53,629
13	Pangkajene	42,268
14	Jeneponto	40,274
15	Lamongan	38,804
16	Tuban	29,425
17	Probolinggo	23,004
18	Pasuruan	19,354
19	Sidoarjo	17,720
20	Gresik	16,535

Source: The Ministry of Marine and Fishery (2016)

2.6.3. Consumption

Salt consumption in Indonesia can be divided into two purposes, household consumption and for industrial use. The consumption salt, which is consumed by the household, comprises 19% of the total consumption. The rest is for industrial used in 2016.



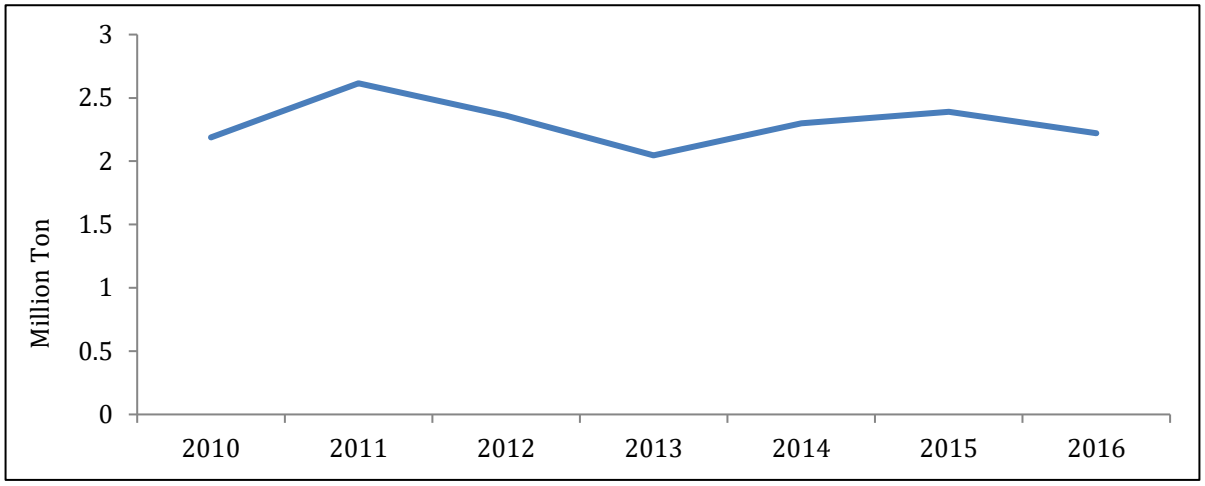
Source: Association of Salt Consumer (2016)

Figure 42 Indonesia's salt consumption, 2010-2016

The total consumption kept on growing with an average of 5.8% during the period of 2010 to2016. This growth is mainly contributed by the an increasing demand for industrial salt of 7%. Meanwhile, household consumption remained constant with a growth of only 1.8% during the same period.

2.6.4. Import

During the period 2010 until 2016, the demand exceeded supply, therefore the import were conducted in order to fulfill the deficit. According to The Ministry of Trade Decree No 125/M-DAG/PER/12/2015, the importing of salt is divided into salt for the household and for industrial use. Importing for use in the household must have a recommendation from the government, whilst import for industrial use do not need this permission. The objective of this regulation is to protect the salt produced by the domestic producer especially in terms of price. The total salt imports depend on the production of domestic salt. During the period of 2010-2016, imports grew by just 1%. Salt imports came from Australia, India, China, New Zealand and Thailand.



Source: Association of Salt Consumer (2016)

Figure 43 Indonesia's salt import , 2010-2016

2.6.5.Government Regulation and Policy

Indonesia's central government regulation regarding salt refers to two aspects, production and imports.

2.6.5.1. Production

For production, the regulation is the Presidential Decree No 69 1994. The objective of this decree is to increase the quality of the health of the population by eliminating diseases related to iodine deficiency. The decree mentions the standard of salt being sold to the consumer and it must contain iodine. The impact of this decree is that the salt farmer cannot directly sell their raw salt to the consumer but, it must be further processed by adding iodine which is mostly conducted by private companies or a government-owned enterprise. Therefore, the farmers rely heavily on the processor to process their raw salt.

In order to support this regulation, the government issued several supporting regulations such as the Ministry of Industry Regulation No 21/M/SK/2/1995 regarding the determination of Indonesian National Standard (SNI) and using the SNI sign as obligatory in 10 staple products,

including salt. In addition, there is the Ministry of Industry Regulation No 77/M/SK/5/1995 regarding technical requirements covering processing, packaging and labeling of iodine salt.

The impact of these regulations varies for the government or the producer. For the government do not have enough in the budget and sufficient human resources to monitor the distribution of iodine salt. They have difficulties in supporting the sustainable salt farming, especially what is owned by smallholders (Jamil, 2014).

In the producer's side, the smallholder cannot compete with the large scale salt farmer. The production of the small holders cannot be absorbed by the salt processor causing the production of iodine salt not being met for the domestic demand. In order to meet this demand, the government conducts salt imports, especially from Australia and India.

In 2011, the Indonesian government set a program in order for Indonesia to be self sufficient. The government who are represented by the Ministry of Marine Affairs and Fisheries, set up the PUGAR (Pemberdayaan Usaha Garam Rakyat/Smallholder Salt Farming Development) program which is conducted in 40 regencies all over Indonesia. The program provides an input subsidy in order to increase productivity, infrastructure development, determination of salt price, import arrangement and land intensification (Dharmayanti, 2013).

2.6.5.2. Import

The second regulation is regarding importing through the Ministry of Trade Decree No. 125/M-DAG/PER/12/2015, this regulation revised the previous regulation of the Ministry of Trade Decree No. 58/M-DAG/PER/9/2012and the Ministry of Trade Decree No. 88/M-DAG/PER/10/2015. The objective of the decree is to increase the competitiveness of national industry through easing salt imports. This regulation is divided two types of salt which are industrial and consumption salt which is based on the content of NaCl, the industrial salt has minimum content of NaCl of 97% and consumption salt has the minimum of 94%.

Imported industrial salt must have the importer identity number (Angka Pengenal Importir-Produsen) and can only be used for industrial purposes. Meanwhile, consumption salt can only be imported on two occasions: a failed salt harvest and domestic salt production cannot meet the demand of the market. In addition,only the government owned-enterprise can be authorized to import the salt for consumption.

The Ministry of Trade Decree No. 125/M-DAG/PER/12/2015 is different from the previous regulation, especially the Ministry of Trade Decree No. 58/M-DAG/PER/9/2012 and the Ministry of Trade Decree No. 88/M-DAG/PER/10/2015, in several aspects:

- In the previous regulation, a minimum price is regulated for the farmer based on the quality produced, but in the current regulation no minimum price policy is implemented.
- In the previous regulation, consumption salt importers have the obligation to buy a minimum of 50% of their total supply from the domestic producer or co-operate with the local salt farmer. In the current regulation, there are no rules related to absorbing the domestic salt production

- In the previous regulation, importing of consumption salt is prohibited one month before the harvesting season, during harvesting and two months after harvesting. The current regulation states that, importing of salt for consumption can be conducted during a failed harvest or when domestic salt production cannot meet the demands of the domestic market.

Previously, the government set up a minimum price of salt that are as follows:

Table 32 Minimum price of raw salt set by the government

Regulation	Price
Ministry of Industry and Trade No. 360/MPP/Kep/6/2004	K1: IDR 145,000 per tonne K2: IDR 100,000 per tonne K3: IDR 70,000 per tonne
Ministry of Trade No. 20/M-DAG/PER/9/2005	K1: IDR 200,000 per tonne K2: IDR 150,000 per tonne K3: IDR 80,000 per tonne
Ministry of Trade No. 44/M-DAG/PER/10/2007	K1: IDR 200,000 per tonne K2: IDR 150,000 per tonne K3: IDR 80,000 per tonne
Directorate General of Foreign Trade No. 07/DAGLU/PER/7/2008	K1: IDR 325,000 per tonne K2: IDR 250,000 per tonne
Ministry of Trade No. 58/M-DAG/PER/9/2012	K1: IDR 750,000 per tonne K2: IDR 550,000 per tonne

Note: K1, K2 and K3 denotes the quality of raw salt with K1 being the best quality
Source: Jamil (2014)

Chapter 3 Market Structure and Conduct

3.1. Sugar

3.1.1. Supply chain and market structure

Supply chain structure

In Indonesia, plantation white sugar (GKP) is produced by both state-owned and privately owned companies. The raw materials for state-owned sugar mills are mostly sourced from sugarcane farmers, while private sugar mills obtain raw materials from the sugarcane grown on their own land. The co-operation between farmers and sugar mills is formed with a scheme of revenue sharing produced from farmes' milled sugarcane. The revenue sharing is based on sugarcane rendement with a basis of 66 percent for farmers and 34 percent for sugar mills. Some private owned mills offer farmers a share that is higher than 66 percent. From 100 percent sourced from farmers, 10 percent is given in kind (sugar) and 90 percent are sold jointly by farmers' co-operatives. Thus, the mills are not involved in the sales of the farmers' sugar.

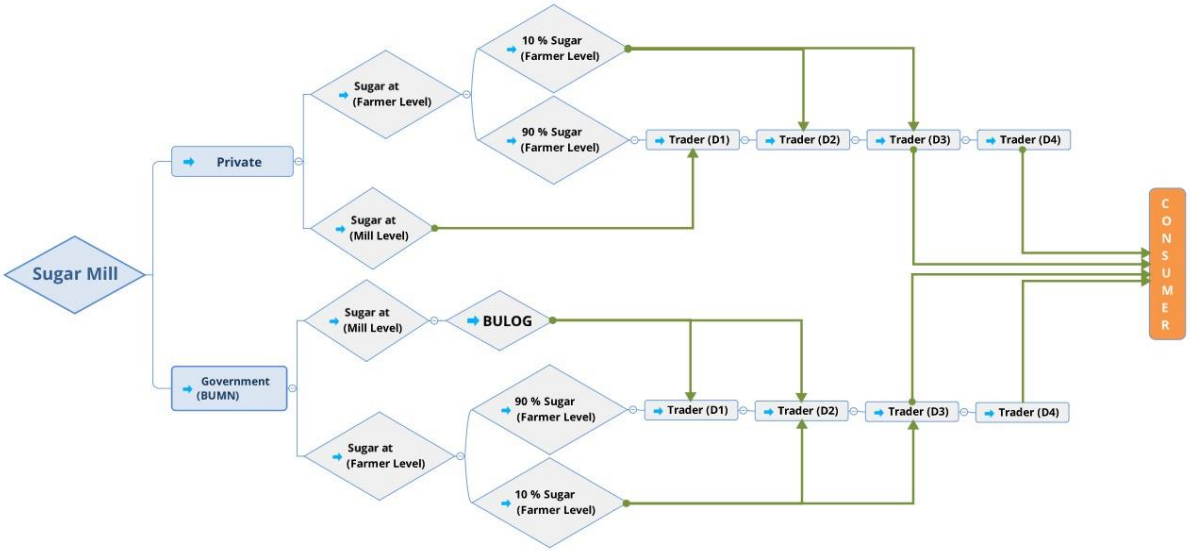


Figure 44 The marketing channels of plantation white sugar

The marketing flows of sugar from sugar mills to consumers is presented in Figure 44. Based on Figure 44, it can be identified that the sugar marketing from producers to consumers comprise five channels, as the following:

Channel 1 : State Owned Sugar Mills (BUMN) – Logistics Agency (BULOG) –D2 Traders– D3 Traders – Consumers - or D3 Traders – directly to consumers or to D4 traders – Consumers. The share of BULOG on sugar trading is below 10%.

Channel 2 : Private Owned Sugar Mills - D1 Traders - D2 Traders – D3 Traders - directly to consumers or to D4 traders – Consumers

Channel 3 : Farmers Sugar 90% - D1 Traders - D2 Traders –D3 Traders- directly to consumers - or to D3 Traders – Consumers.

Channel 4 : Farmers Sugar 10% - D2 Traders or D3 Traders- Consumers- or D3 Traders – Consumers.

Channel 5 : In addition to the sugarcane based sugar, there is also imported raw sugar. Raw sugar import is processed first in sugar mills into plantation white sugar (GKP) and then will be traded to D1 Traders.

Market structure

Discussion of the marketing channel and market structure of sugar should be started with the proportion of products from each of the current GKP producers that is still operating. Table 33 shows the production and proportion of each sugar company in 2010 and 2015.

Table 33 Distribution of GKP production in 2010 and 2015

2010			2015		
Description	GKP Result (Tonne)	Share	Description	GKP Result (Tonne)	Share
PTP Nusantara IX	166,357	6.1%	PTP Nusantara IX	98,081	3.9%
PTP Nusantara X	445,812	16.4%	PTP Nusantara X	430,550	17.3%
PTP Nusantara XI	450,084	16.5%	PTP Nusantara XI	405,302	16.3%
PT RNI	375,957	13.8%	PT RNI	315,105	12.6%
PT PG Madu Baru	39,520	1.5%	PT Madu Baru	31,778	1.3%
PT PG Kebon Agung	148,010	5.4%	PT Kebon Agung	200,062	8.0%
PT LPI (PG Pakis Baru)	23,490	0.9%	PT LPI (PG Pakis Baru)	28,097	1.1%
PT Gendhis Multi Manis	0	0.0%	PT Gendhis Multi Manis	20,003	0.8%
PT Industri Gula Nusantara	7,878	0.3%	PT Industri Gula Nusantara	-	0
PTP Nusantara II	33,580	1.2%	PTP Nusantara II	29,680	1.2%
PTP Nusantara VII	174,463	6.4%	PTP Nusantara VII	131,120	5.3%
PTP Nusantara XIV	39,474	1.5%	PTP Nusantara XIV	33,997	1.4%
PT Gunung Madu Plantation	216,000	7.9%	PT Gunung Madu Plantation	198,238	8.0%
PT Sugar Group	454,108	16.7%	PT Sugar Group	372,102	14.9%
PT PG Gorontalo	32,994	1.2%	PT PG Gorontalo	49,059	2.0%
PT Pemuka Sakti Manis Indah	56,200	2.1%	PT Pemuka Sakti Manis Indah	88,709	3.6%
PT Laju Perdana Indah	57,800	2.1%	PT Laju Perdana Indah	58,220	2.3%
SOES	1,725,247	63.4%	SOES	1,443,835	58.0%
SWASTA	996,480	36.6%	SWASTA	1,047,378	42.0%
INDONESIA	2,721,727	100.0%	INDONESIA	2,491,212	100.0%

Source: Dewan Gula Indonesia and Direktorat Jenderal Perkebunan-Kementan RI

From 2010 and 2015 data shows that there is a change in the role of the private sugar company related to national sugar production. In 2010, the role of private sector was 36.6% and SOEs 63.4%. However, by 2015, the private sector role increased to 42% and the state-owned enterprises role at 58%. This change occurs because privately owned PG production increased while SOEs PG were down.

Quantitatively, SOEs controls about 60%, but it should be noted that 66% of this sugar belongs to smallholder sugarcane farmers. The organizational system of smallholder sugarcane farmers in the management of sugar is through the Smallholder Farmers' Cooperative (KPTR) whose management stands alone in each PG area.

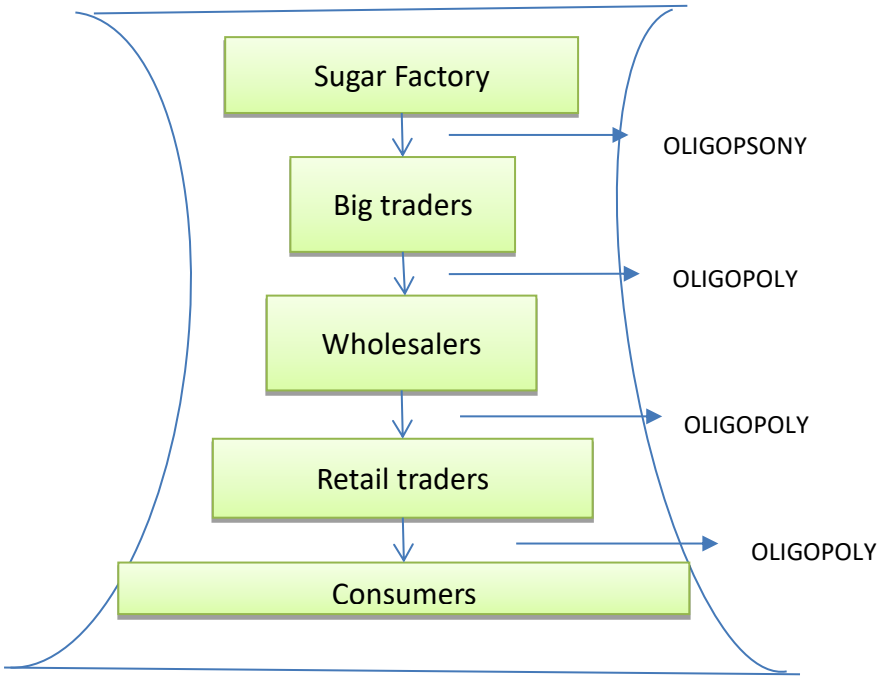


Figure 45 Market structure ofplantation white sugar (GKP)

The structure of the sugar market begins with the sale of sugar from producers to wholesalers (also called D1 traders). The number of wholesalers is not much, so the nature of the market is oligopsony. Sales are conducted with auction system periodically. Legally, bidders are big traders with open bidding system. So, the facts from the field, the determinant of sugar price is the auction price that cannot be separated from the role of the wholesalers. Problems will arise if these merchants manage the supply, so the auction price will be formed according to the wishes of the wholesalers and will continue to affect in next level.

Sugar will be marketed from wholesalers to wholesalers (called D2) that have a bigger number of traders. The nature of the market is an oligopoly, with the benchmark being the auction price. Big traders do not take big margins, but rather dealin quantity. Sugar distribution from wholesalers to wholesalers can be delivered or picked up by wholesalers. Each of the big traders generally already have a path to the underlying traders, so there is no competition between big traders. The wholesaler, will sell the sugar to a larger number of retailers (D3). From retailers to consumers the price may vary depending on the location of sales, the distance from the sales location to the wholesaler and the margin taken by the retail merchants.

For the market structure from sugarcane farmer to their buyers we analyzed this by asking farmers questions related to the numbers of buyers around their locations (Table 34). The results confirm that the market structure from farmers to their buyers (traders) for sugarcane tends to be oligopsony and consist of only one buyer.

Table 34 Number of producers, traders, and buyers for sugarcane

Description	How many producers/supliers/farmers around your location?			How many traders around your location?			How many buyers/traders have you sold to ?		
	Av	Min	Max	Av	Min	Max	Av	Min	Max
Sugarcane	20	20	20	1	1	1	1	1	1

Based on the product homogeneity and the marketing chain, it can be seen that there is no open competition. Strong price determinants are in large traders, whose numbers are not many. Some important aspects of the marketing structure is presented in Table 35.

Table 35 Important aspects in the market structure of sugar

Aspects in Market Structure	Producer	Big trader	Wholesaler	Retailer
1. Product homogeneity	Tend to homogeneous	Tend to homogeneous	Tend to homogeneous	Tend to homogeneous
2. Product utilization by produce	Sold in phases according to production time	Sold in phases according to market demand	Sold in phases according to market demand	Entirely sold
3. Barrier to entry	None	Networking and capital	Networking and capital	Capital
4. Accessibility to price information, etc.	From reference price set by the government (HPP) and international price	Very easy	Very easy	Very easy
5. Availability of written or unwritten rules of trade	None	Available but unwritten (working area)	Available but unwritten	None
6. Business/trade facilities owned	Storehouse	Storehouse	Storehouse	Retail storehouse
7. Freedom in product sale/purchase	Organized by the Joint Auction Office	Purchasing by auction system	Free	Free

Source: Primary Data (processed)

3.1.2. Conduct

Barrier to entry

The sugar marketing arrangement regulated by the Government is between GKP and GKR. GKR sugar is only allowed for the use in the food and beverage industry. GKP may be marketed freely in the market and may also be sold to industry.

Sugar management only applies to imported sugar, both of raw sugar and white sugar. For GKP, anyone can become a seller in accordance with the law and rules.

Dominant position

At the retailer level the behavior is relatively similar. Potential dominance may occur due to the barrier of distance and transportation difficulties.There are only a few actors in the sugar market.

As outlined previously, GKP production in Indonesia comes from sugar mills (Pabrik Gula-PG) managed by state-owned enterprises (SOEs) and the private sector. In 2015, theshare of SOEs PG was 58% and the rest owned by private PG. However, the total 58% of sugar produced by SOEs PG, as much as 66% is sugar owned by farmers. Meanwhile, for sugar produced by private PG, almost 80% is the company's sugar. Table 36 presents the product share for each company. From the data analysis of sugar production and control by each party and in plantation white sugar (GKP) marketing, there is no monopoly system conducted by certain producers.

Table 36 GKP production in 2015 and share of each company

Description	Result of GKP		Product Share
	(Tonne)	(Tonne/ha)	
PTP Nusantara IX	98,080.6	4.29	3.9%
PTP Nusantara X	430,549.9	6.56	17.3%
PTP Nusantara XI	405,301.6	5.07	16.3%
PT RNI	315,105.4	6.08	12.6%
PT Madu Baru	31,778.3	4.37	1.3%
PT Kebon Agung	200,062.4	5.99	8.0%
PT LPI (PG Pakis Baru)	28,097.3	4.76	1.1%
PT Gendhis Multi Manis	20,003.0	4.56	0.8%
PTP Nusantara II	29,680.0	3.83	1.2%
PTP Nusantara VII	131,120.2	5.11	5.3%
PTP Nusantara XIV mnj oleh PPN X	33,997.0	3.29	1.4%
PT Gunung Madu Plantation	198,238.0	6.72	8.0%
PT Sugar Group	372,101.9	5.89	14.9%
PT PG Gorontalo	49,059.0	6.36	2.0%
PT Pemuka Sakti Manis Indah	88,709.0	6.93	3.6%
PT LPI (PG Komering)	58,219.9	4.67	2.3%
Total;Average; Indonesia SOEs	1,443,834.7	5.47	58.0%
Total;Average; Indonesia Private Company	1,047,377.8	5.92	42.0%
Total;Average; INDONESIA	**2,491,212.5**	**5.65**	100.0%

Source: Ditjenbun, 2015 (processed)

Sugar control and marketing are not done by each PG. The control and marketing of sugar is done by the company owner of PG, so PG has no authority to sell sugar and distribute it. When viewed from the product share of each company, the largest share is owned by PT Sugar Group. The amount controlled by PT Sugar Group is about 15%. While for PTPN and RNI, although the product share is quite big, the market is only about 34% of the total. Farmers control the greatest share of sugar, but because farmers market their sugar according to the area of KPTR, it eventually splits into a number that is not dominant. KPTR conducts an auction within a period of 2 weeks or adjusted to the specific needs. Bidders are D1 merchants from different cities.

The control of sugar produced by PG is divided into two, namely sugar owned by PG and sugar owned by farmers. Sugar owned by private PG is ± 30.5% and by SOEs PG is 25.8% from total sugar produced (from sugarcane). The amount owned by the farmers is 43.7% which will eventually be sold to traders. If the farmers owned sugar that is sold to traders is combined with

the private-owned sugar sold to traders, the sugar controlled by them will be about ± 74.2%. This will greatly affect the trading in the field. Traders can determine the amount of sugar supply and can even set the auction price and the price for the consumer.

Sales by the auction system for sugar owned by SOEs and farmers can avoid the control by only one party or company. This will be different if what is owned by SOEs and farmers are purchased by BULOG in accordance with Letter of Minister of Trade No.885 / M-DAG / SD / 8/2017 concerning Purchase and Sugar Selling by BULOG on 16 August 2017 followed by Director General of Domestic Trade (Direktorat Jendral Perdagangan Dalam Negeri) no. 465 / PDN / SD / 8/2017 dated August 21, 2017 regarding Sugar Sales by BULOG. If sugar owned by SOEs and farmers are purchased by BULOG, then BULOG's control becomes around 70% and with the current set price, the GKP market will be dominated by one party only, BULOG. If BULOG really can buy sugar owned by state-owned enterprises and farmers, which amounts to 70% of the total production or about 1.5 million tons, there is no problem. However, if BULOG sells to D1 merchants, there will be an extension of the trading lane, because BULOG is a D0 level trader.

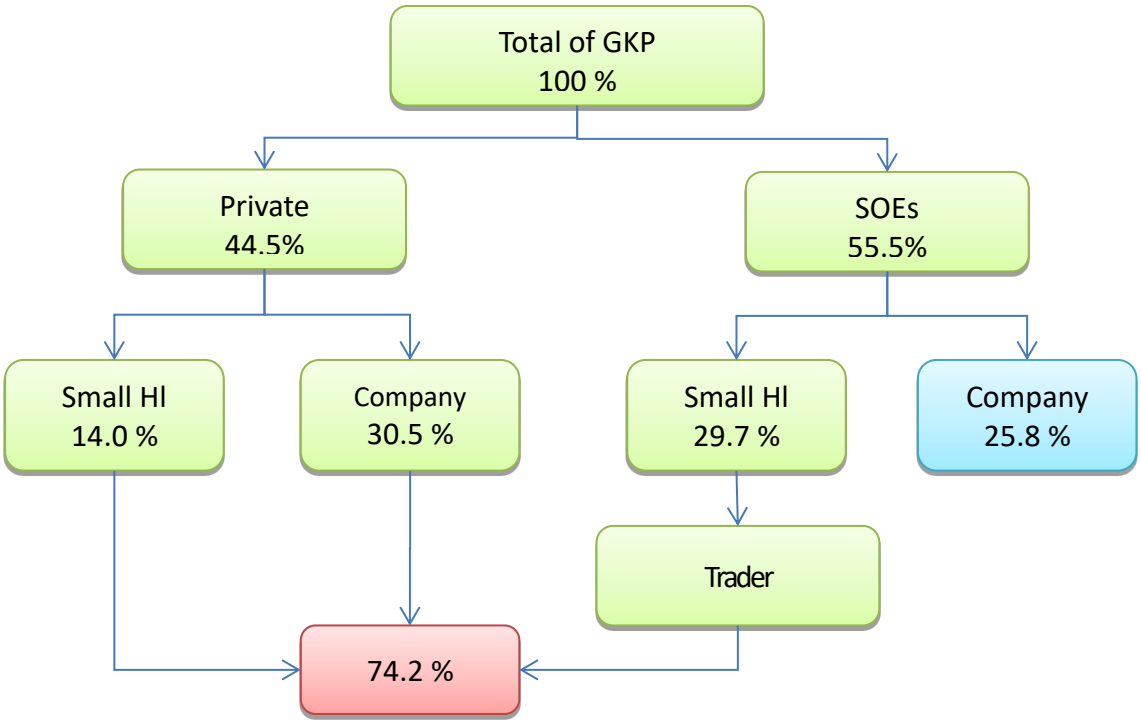


Figure 46 Sugar control by private sector, SOEs and farmers

The dominant of sugar trading company is presented in Table 37. Each of these companies holds a share of between 8% -15%. However, there is no in-depth study of the share of each company.

Table 37 Name of the Dominant Sugar Trading Company

No.	Name of Company
1	PT Kencana Gula Manis
2	Berlian Penta
3	Fajar Mulia
4	Citra Gemini Mulia
5	Iroda
6	Arta Guna Sentosa
7	Agro Tani Nusantara
8	Kencana Makmur
9	Kedung Agung

Table 38 Name of big sugar trader

PROVINCE	DISTRICT	NAME OF BIG TRADER
BANTEN	TANGERANG	PT. KHALIFA GLOBAL INDONESIA
DKI JAKARTA	JAKARTA TIMUR	UD RAYA AMENITIES
DKI JAKARTA	JAKARTA	PT PERUSAHAAN PERDAGANGAN INDONESIA
DKI JAKARTA	JAKARTA BARAT	PT. ADDA JAYA INDONESIA
JAWA TIMUR	SURABAYA	PT SUMBER LANCAR
SUMATERA UTARA	MEDAN	HARUM INDAH SUKSES
JAWA TIMUR	SURABAYA	CV. KURNIA AGRO LESTARI
KALIMANTAN TIMUR	KUTAI KARTANEGARA	CV. SIRLI SEJAHTERA

Hoarding

Indonesia's Sugar Board ensures that the amount of sugar in PG warehouses is always monitored every 2 weeks. The results of this monitoring shows how much sugar is owned by PG, farmers and traders that have not been taken. This data is compared with the distribution of sugar to the market. However, now this activity is not done intensively like before, it is rather difficult to track the actual amount of sugar. This is coupled with the import of raw sugar by the licensed parties who even put their imported product in some PG, both PG GKP and PG GKR.

Other fraudulent actions

Fraudulent actions that will affect the sugar market are (1) illegally sourced sugar and (2) GKR entering the market which is illegal which especially occurs in the border areas. The weak supervision of the authorities causes this fraud to occur. However, the starting point of this all is the supply of GKP which is still not enough to cover the demand and the high prices of national production GKP that is more expensive than imported sugar.

Pricing

The sales of sugar owned by farmers and private sugar mills are conducted by auction. Sugar belonging to farmers was auctioned by Smallholder Farmer Co-operatives once a week. The price was decided in the auction if the bidder is more than 1 person. Next, the auction winners paid and collected the sugar in the mills' warehouse. The traders bid the price based on the consideration of the quality of sugar, the production, the quantity of imported sugar and the market price. The implementation of Ceiling Prices (HET) has consequences traders to calculate the prices very carefully as margins could be pre-determined. On the other hand, farmers commonly offer high prices because of the high total cost of production and poor rendement.

Payment system

Sugar payment was being made after the auction winner is clear. Subsequently, they collect sugar from the warehouse. This is the main reason why BULOG could not realize the absorption of the sugar produced from sugar mills this year, despite its mandate to buy the sugar. The State Owned Sugar Mills were reluctant to sell due to the fear of sanctions. There was an indication in the field that the sugar produced by the sugar mills and purchased by BULOG was being taken by D1 traders who bought to BULOG. This is actually not allowed, because the aim is to reduce the price of sugar for the consumer.

Quality

The current quality of GKP is determined based on the Indonesian Quality Standard (SNI), stipulated by a regulation of the Minister of Agriculture No. 68 / Permentan / OT.140 / 6/2013. In this ministerial regulation, the quality of sugar is classified as GKP 1 and GKP 2. In the field, sugar mills have generally produced sugar with GKP 2 quality. This is mainly related to the implementation of sulfitation as common practice in the manufacturing process. As for the newer sugar mills, the quality of sugar produced can achieve the quality of GKP 1. The difference in the quality of sugar affects the price of sugar. The price difference between the various qualities ranges between IDR 100 - IDR 150 per kg.

Information

Sugarcane production managed by private and state-owned sugar mills are assessed via prognosis in the December, March and August evaluations. The December's prognosis aims to estimate sugar production the following year. The taxation or prognosis is completed using the main data of plantation area and crop category (PC or RC). The March's prognosis is usually conducted in April. In this estimation, production is calculated based on plantation area, estimated sugarcane yield per ha and the estimated yield. In this prognosis/taxation, the starting period and the duration of milling for each sugar mill is also calculated. The results of March prognosis/taxation are utilized to construct a sugar balance, so the decision to import sugar or

not, can be determined. In early September, the August prognosis/taxation is conducted in order to consolidate sugar production and ensure the effectiveness of the policy making.

3.2. Rice

3.2.1. Supply Chain and Market structure

Supply chain structure

Statistics Indonesia conducted a survey on rice distribution in Indonesia. The distribution began in rice milling and ends at the consumer. The rice marketing channel can be seen in Figure 47.

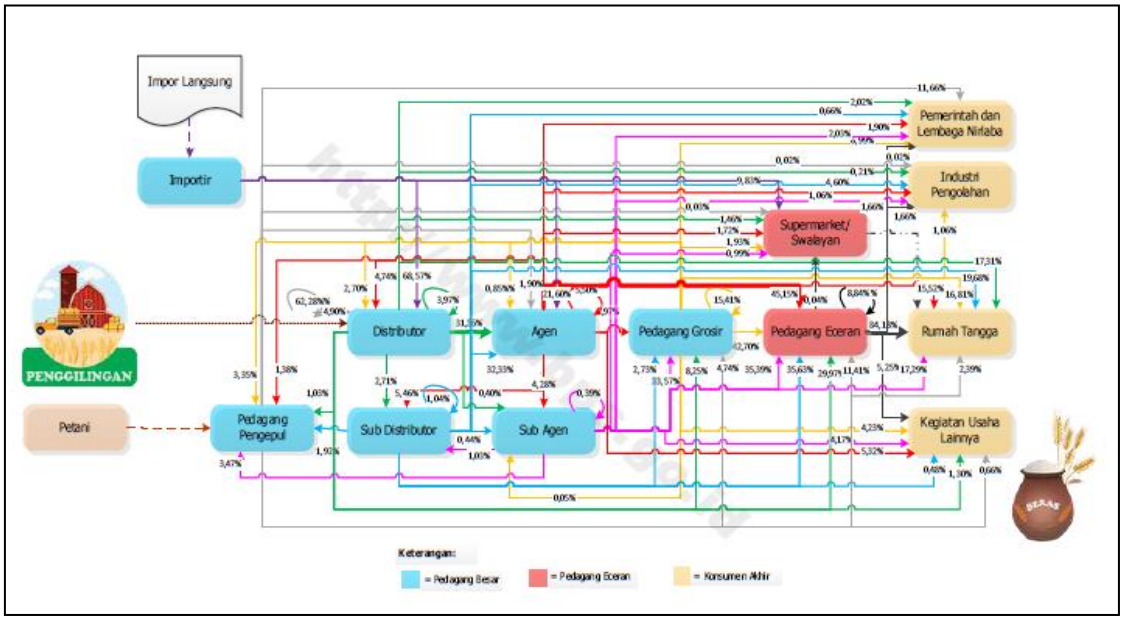


Figure 47 Rice Marketing Channel in Indonesia

Source: Statistics Indonesia (2016)

In order to look more closer on the marketing channel of rice, a field survey was conducted in Karawang Regency. The regency is one of the largest producers of rice in Indonesia. The marketing channel in Karawang Regency mainly involves farmers, village traders, rice milling and wholesalers before reaching the consumer (Figure 48).

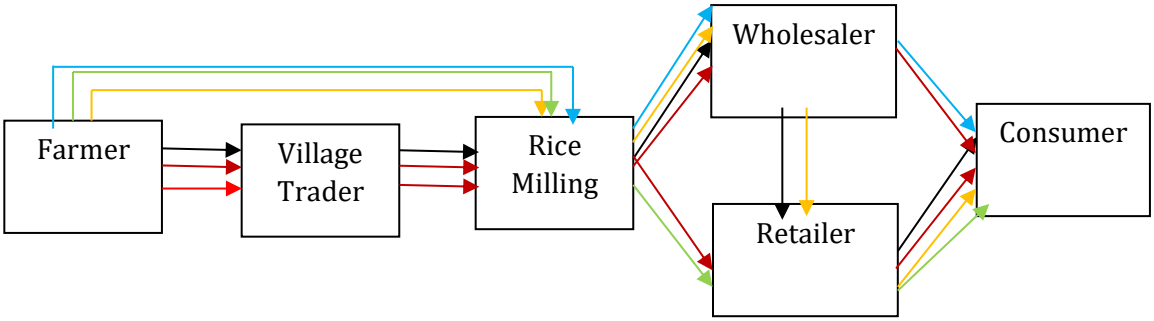


Figure 48 Rice Marketing Channel

There are six marketing channel patterns exist, namely:

1. Farmer → Village Trader → Rice Millling → Wholesaler → Retailer → Consumer
2. Farmer → Village Trader → Rice Millling → Wholesaler → Consumer
3. Farmer → Village Trader → Rice Millling → Retailer → Consumer
4. Farmer → Rice Millling → Wholesaler → Retailer → Consumer
5. Farmer → Rice Millling → Wholesaler → Consumer
6. Farmer → Rice Millling → Retailer → Consumer

These marketing channels can be classified into two.The first, whether farmers sell the unhusked rice through traders or directly to rice millers. Although farmers sell through village traders, usually these traders are the employee of the rice mills. Meanwhile, when farmers sell directly to rice mills, they also act as traders.

The second classification is whether to sell through the wholesalers or directly to the retailers. For marketing, they can directly sell to the retailer from the rice mills, which usually are limited to the retailer in the rice production area, such as in Karawang. Meanwhile for the channel using the wholesaler, it is usual when selling outside the production area. The wholesaler can be in the production area and in the big cities. For example,rice from Karawang can be sold through wholesalers in Pasar Johar in Karawang, then sell to wholesaler in Pasar Induk, Cipinang Jakarta. The other possibility is that the rice millers sell directly to the wholesaler in Pasar Induk, Cipinang Jakarta.

Market Structure

Farmers produce rice in the form of harvested unhusked rice (Gabah Kering Panen/GKP). They sell to the village traders or directly to the rice mills who sometimes act as traders also. A large number of farmers usually cause them to not have any power to determine the price they receive. Some traders give loans to farmers and will be paid during the harvesting time. In some case, farmers already sell their rice before harvesting time because they need immediate cash for their daily activities. Regarding the market structure, farmer face a competitive market when selling their unhusked rice, since the farmer can choose to whom they sell and the number of traders or the rice mills. Based on Table 39, the number of traders around the farmer locations ranged between 4-10.

Table 39 Number of producers, traders, and buyers for paddy

Description	How many producers/supliers/farmers around your location?			How many traders around your location?			How many buyers/traders have you sold to ?		
	Av	Min	Max	Av	Min	Max	Av	Min	Max
Paddy	57	5	250	4	0	10	2	1	6

Traders usually live in the neighborhood where they buy their unhusked rice. They can be be independent or act as an agent of the rice milling unit. They sell their unhusked rice to local rice mills or outside their neighborhood. Large traders will sell the unhusked rice outside their regency or even outside the province to large rice milling units. In order to guarantee receiving the unhusked rice from farmers, sometimes traders give loans to farmers and will be paid during harvest. This is one alternative for traders who face competition from others.

Rice mills usually buy rice in the form of harvested unhusked rice (Gabah Kering Panen) and dry the product for several days before milling. The rice that is ready for millling is called the milling unhusked rice (Gabah Kering Giling/GKG). Large rice mills usually have their agent in the field to buy the rice from farmers or traders, meanwhile smaller mills usually depend on selling their services and are paid by cash or by rice. When selling their rice, rice mills face an oligopsony market since the number of wholesalers is relatively small and the price is determined by the wholesaler.

Wholesalers can be located in the central production area or in the big cities. In Jakarta, the central wholesaler is in Pasar Induk Cipinang. Wholesalers in the central production area receive their rice from rice from the surrounding mills. Millers cannot sell directly to the wholesaler, but only through the agent in the market. Buyers will come to the wholesaler's store and bargain the price. This rice is then transported to the retailers or to wholesalers in other big cities. Wholesalers act oligopolisticly when dealing with retailers since they are smaller in number and the wholesaler determines the price. The summary of rice market structure is presented in Table 40.

Table 40 Rice Market Structure at Various Market Level

Seller	Buyer	Market Structure
Farmers	Traders	Oligopsony
Traders	Rice Mills	Oligopsony
Rice Mills	Wholesalers	Oligopsony
Wholesalers	Retails	Oligopoly

Farmers face an oligopsony market because traders are smaller in number. In addition, the price is mostly determined by traders. They can be independent or an employee of a rice mill. The independent traders are part of an oligopsony market when dealing with the rice mills. Rice millers also deal in an oligopsonymarket in their dealings with wholesalers. Rice mills have the choice to whom they want to sell to depending on the demand and/or higher price.

There are other aspects of the market and this is summarized in Table 41. For product homogeneity in farmer and traders are the same. Meanwhile, in rice mills the product is more heterogen with difference in quality, packaging and others. These differences mean the price also differs especially between the medium and premium product.

Farmers and traders have limited stock, beyond daily needs, of unhusked rice. Rice mills, store unhusked rice which will be used whenthere isa price increase. Currently,with the implementation of maximum price for medium and premium rice, some rice mills mix their stored unhusked rice to engineer a higher price.Therefore, they can set the price just below the maximum price allowed.

There is no barrier to become a farmer. Traders have to have a network with farmers as well as with the rice mills. They can be an employee of the rice mill. For any rice mill needs the technology and the capital in order to operate effectively. Capital is used to buy the unhusked rice and to build drying area. Capital is needed by the wholesaler and retailer for stock.

Price information is relatively easy for all at the marketing institution to access. Farmers receive information on price from fellow farmers or traders using handphones. Therefore, institutions have the freedom to sell or purchase the rice except when they have an obligation to pay for pre-financed activities.

There is no written regulations regarding marketing. Traders, the mills and wholesaler usually have unwritten rules regarding their operational zone. Traders usually pick up the unhusked rice from the field using their own transportation. Rice mills usually have their own truck to be used for purchasing the unhusked rice or to sell as far as Cipinang market in Jakarta. Rice mill also own their own storage especially for storing the unhusked rice during harvest, this can be milled in the event of a price increase.

Table 41 Aspect on Market Structure in Rice for Various Marketing Institution

Aspect in Market Structure	Marketing Institution				
	Producer	**Trader**	**Mill**	**Wholesaler**	**Retailer**
Product homogeneity	Relative homogenous	Relative homogenous	Heterogenous	Heterogenous	Very Heterogenous
Product utilization	Have limited stock	Have limited stock	Have some stock	Have some stock	Have limited stock
Barrier to entry	No	Network	Capital and technology	Capital	Capital
Price information	Easy	Easy	Easy	Easy	Easy
Regulation	No rules	Unwritten rules	Unwritten rules	Unwritten rules	No rules
Facilities	None	Transportation	Transportation, Storage	Storage	Kiosk
Freedom to sell and purchase	Free except for pre financed	Free except for pre financed	Free except for pre financed	Free except for pre financed	Free except for pre financed

3.2.2. Conduct

Barrier to entry

Barrier to entry barrier exists between the rice miller and the wholesaler. Rice millers cannot sell directly to the wholesaler but, only through the agents. This is because wholesalers, only want to buy rice from the traders that they have familiar with.

Dominant Position

The ten largest rice mills are located all around Indonesia especially, in the central rice production area (Table 1). The four largest market shares are (CR4) which is only 13.70 percent.According to Hirschey (2009) when the concentration ratio is below 20 the industry is considered to be

highly competitive. One of the largest rice mills is located in Karawang Regency with a market share of 1.31 percent. The trend of CR4 is increasing, in 2010 the value was 10.82 percent, meanwhile in 2014 the CR4 increased to 13.7 percent (Table 42). This increase is mainly caused by an increase in production valuesand shares of the four largest rice mills.

Table 42 Ten largest rice Millling units in Indonesia, 2014.

No	Province	Regency	Production Worker	Production Value (Thousand Rupiah)	Share (%)	CR4
1	SOUTH SUMATERA	PALEMBANG	70	456,785,748	4.58	13.7%
2	EAST JAVA	BONDOWOSO	70	395,638,500	3.97	
3	CENTRAL JAVA	SRAGEN	73	279,674,400	2.81	
4	EAST JAVA	LAMONGAN	135	233,173,939	2.34	
5	EAST JAVA	BONDOWOSO	56	224,541,050	2.25	
6	BALI	JEMBRANA	95	151,318,520	1.52	
7	EAST JAVA	BANYUWANGI	61	142,477,500	1.43	
8	WEST JAVA	BEKASI	160	140,191,741	1.41	
9	CENTRAL JAVA	KARANGANYAR	52	134,750,000	1.35	
10	WEST JAVA	KARAWANG	28	130,669,650	1.31	
11	OTHERS			7,679,757,461	77.04	
	TOTAL			9,968,978,509	100.00	

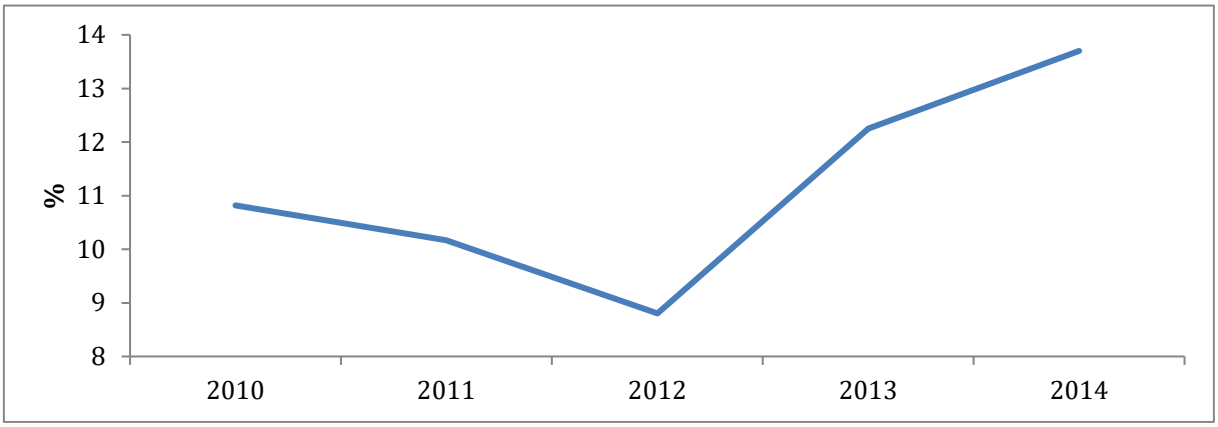
Source: Statistics Indonesia (2015)

Compared the CR4 in 2013, to the CR4 in 2014 it was higher (13.7% in 2013 versus 12.25% in 2013). However these CR4's are below 20 indicatinga highly competitive industry. A company in South Sumatra was largest producer in 2013 and 2014. In 2013, this company had a share of 3.62% and it slightly increased in 2014 to 4.58%. Other processors experienced changes in relation to their position in the ten. For example, the second position in 2013 was occupied by a company from Central Java (Sragen District), but in 2014 the position was replaced by a company from East Java (Bondowoso District). The ten largest rice processors in 2013 is presented in Table 43.

Table 43 Ten largest rice processors in Indonesia in 2013

No	Province	District	Production Worker	Production Value (Thousand Rupiah)	Share (%)	CR4
1	SOUTH SUMATRA	PALEMBANG	70	283,556,688	3.62	12.25%
2	CENTRAL JAVA	SRAGEN	79	258,565,400	3.30	
3	EAST JAVA	LAMONGAN	122	221,227,641	2.83	
4	EAST JAVA	BONDOWOSO	63	195,482,400	2.50	
5	WEST NUSA TENGGARA	MATARAM	48	172,260,000	2.20	
6	EAST JAVA	BANYUWANGI	63	145,170,000	1.85	
7	SOUTH SULAWESI	SIDENRENG RAPPANG	105	143,660,690	1.84	
8	CENTRAL JAVA	SRAGEN	30	102,086,400	1.30	
9	WEST JAVA	BEKASI	160	100,509,808	1.28	
10	LAMPUNG	LAMPUNG TENGAH	45	96,192,448	1.23	
11	OTHERS			6,109,420,561	78.04	
	TOTAL			**7,828,132,036**	**100.00**	

Source: Statistics Indonesia (2014)



Source: Statistics Indonesia (2015)

Figure 49 CR4 Rice Mill Industry, 2011-2014

Table 44 List of Rice Traders in Indonesia in 2017

PROVINCE	DISTRICT	NAME OF BIG TRADER
BANTEN	SERANG	PD RATU TANI
WEST JAVA	INDRAMAYU	PB ADI JAYA
	INDRAMAYU	ADI TARSIMAN,HULLER/H WARYA HULLER
	SUBANG	ADI WIJAYA / SUMBER JAYA (PEDAGANG BERAS KETAN)
	INDRAMAYU	CV ALAM JAYA
	INDRAMAYU	PB BERKAH JAYA (BERAS PUTIH)
	INDRAMAYU	PB SANDI JAYA 2(BERAS PUTIH)
	TASIKMALAYA	STD (BERAS PUTIH)
CENTRAL JAVA	SRAGEN	PD BERAS PELOPOR ALAM LESTARI
	DEMAK	UD PAHALA ABADI
	GROBOGAN	UD USAHA BARU
	BLORA	HG RATMOJO
	DEMAK	UD HASIL PADI
	NGANJUK	INDUSTRI BERAS H.SUPINGI
EAST JAVA	JEMBER	UD JAWA DWIPA
	TUBAN	UD JAYA MAKMUR
	LUMAJANG	PB HASIL TANI
	BANYUWANGI	PP SEKAR JAYA
DI YOGYAKARTA	SLEMAN	UD SRI NUGROHO
SOUTH SUMATERA	PALEMBANG	CV KARYA JAYA MANDIRI
	EAST OGAN KOMERING ULU	CV. PRIMA JAYA
NORTH SUMATERA	PEMATANG SIANTAR	CV SENTOSA
	SERDANG BEDAGAI	KILANG PADI MAKMUR
	BATU BARA	BINTANG ASAHAN
LAMPUNG	CENTRAL LAMPUNG	PP MAJU JAYA
	PRINGSEWU	PP RUKUN DAMAI
	CENTRAL LAMPUNG	PP. LAMPUNG SURYA
	CENTRAL LAMPUNG	BERAS AGUNG PUTRA JAYA
CENTRAL KALIMANTAN	KAPUAS	CV BERKAT HELMAN
EAST KALIMANTAN	KUTAI	USAHA MEKAR
DKI JAKARTA	NORTH JAKARTA	ALAM SEJAHTERA FAMILY (ALSEFA)

Source: http://www.Kemenperin.Go.Id/Direktori-Perusahaan?What=Beras&Prov=32

Table 45 List of rice millers in Indonesia in 2017

PROVINCE	DISTRICT	NAME OF RICE MILLING
WEST JAVA	INDRAMAYU	PB SUMBER JAYA
	INDRAMAYU	FAJAR NIAGA
EAST JAVA	MOJOKERTO	PT LUMBUNG PADI INDONESIA (LPI)
	NGAWI	PT PADI UNGGUL INDONESIA
	GRESIK	HM.FAISOL
	TUBAN	JAYA MAKMUR
	BANYUWANGI	UD MAHA JAYA
	MAGETAN	MITRA TANI
	LOMBOK TENGAH	UD HARAPAN JAYA
	BANYUWANGI	UD ALAM PERKASA ABADI
	TULUNGAGUNG	PENGGILINGAN PADI MOCH HASIM
CENTRAL JAVA	SRAGEN	PENGGILINGAN PADI REJOSARI
	SRAGEN	PENGGILINGAN PADI SRI GUNA
	SRAGEN	PENGGILINGAN PADI SUMBER AGUNG
	KARANGANYAR	KURNIAWAN PUTRA
	KARANGANYAR	PADI MAKMUR
LAMPUNG	CENTRAL LAMPUNG	PENGGILINGAN PADI SUBUR MAKMUR
WEST NUSA	MATARAM	UD BAROKAH
TENGGARA	SUMBAWA	UD BUNGA BUANA
	EAST LOMBOK	H. L. M. ISTAR RIADI
	CENTRAL LOMBOK	H. MASRIN HASAN BASRI

Source: Kemenperin
http://www.kemenperin.go.id/direktori-perusahaan?what=PENGGILINGAN&prov=0&hal=2

Table 46 Name of big traders of rice in Indonesia in 2017

PROVINCE	DISTRICT	NAME OF COMPANY
WEST JAVA	BEKASI	PT INDO BERAS UNGGUL
	KARAWANG	PT JATISARI SRI REJEKI
	BEKASI	PT. SUKSES ABADI KARYA INTI
	BEKASI	PT ALAM MAKMUR SEMBADA
BANTEN	TANGERANG	PT. KHALIFA GLOBAL INDONESIA
	TANGERANG	PT. RUMAH BERASKU
DKI JAKARTA	EAST JAKARTA	PT KARYA BARU INDONESIA
	EAST JAKARTA	PT. FOOD STATION TJIPINANG JAYA
EAST JAVA	MOJOKERTO	PT LUMBUNG PADI INDONESIA (LPI)

Source: http://m.indotrading.com

Table 47 Number of rice millers in Indonesia in 2016

NO	PROVINCE	DISTRICT	AMOUNT OF BIG TRADER
1	ACEH	17	1.200
2	NORTH SUMATERA	21	2.280
3	WEST SUMATERA	10	1.600
4	SOUTH SUMATERA	10	3.280
5	RIAU	4	200
6	LAMPUNG	8	2.240
7	BANTEN	4	320
8	WEST JAVA	17	12.000
9	CENTRAL JAVA	28	8.000
10	DI YOGYAKARTA	4	520
11	EAST JAVA	29	6.840
12	WEST KALIMANTAN	12	3.000
13	SOUTH KALIMANTAN	10	880
14	SOUTH SULAWESI	17	5.600
15	WEST NUSA TENGGARA	6	920
16	EAST NUSA TENGGARA	11	600
17	BALI	6	280
	TOTAL		50.000

Source: Badan Ketahanan Pangan, Kementerian Pertanian (2016)

Vertical integration

Some rice mills also conducted vertical integration by hiring traders as their employee or even owning farmland with perhaps other people working on the land.

Payment system

The majority of farmers sell their unhusked rice to rice milling units (Figure 50). The main reason is that the RMU give a better price and usually the RMU can act as a trader.

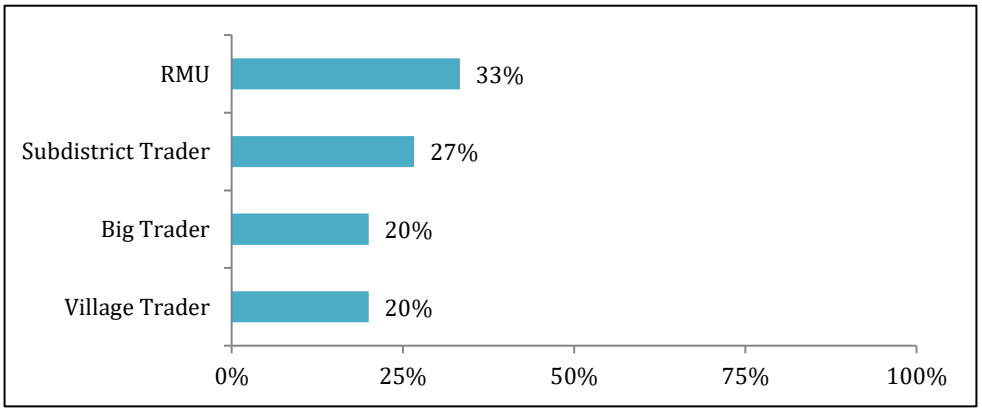


Figure 50 Main buyer of paddy farmers' respondents (in percentage)

Farmers can either sell their product in the form of paddy or dried unhulled rice (Gabah Kering Panen/GKP). Most sell in the form of paddy (61 percent) (Figure 51). The buyer usually appraise the value of the paddy before the harvest and give the farmer the cash directly. The majority of

farmers prefer selling in the form of paddy, as they do not have to take care of the harvesting activities. Farmer who prefer to sell in the form of dried unhulled rice (Gabah Kering Panen/GKP) harvest their paddy by themselves.

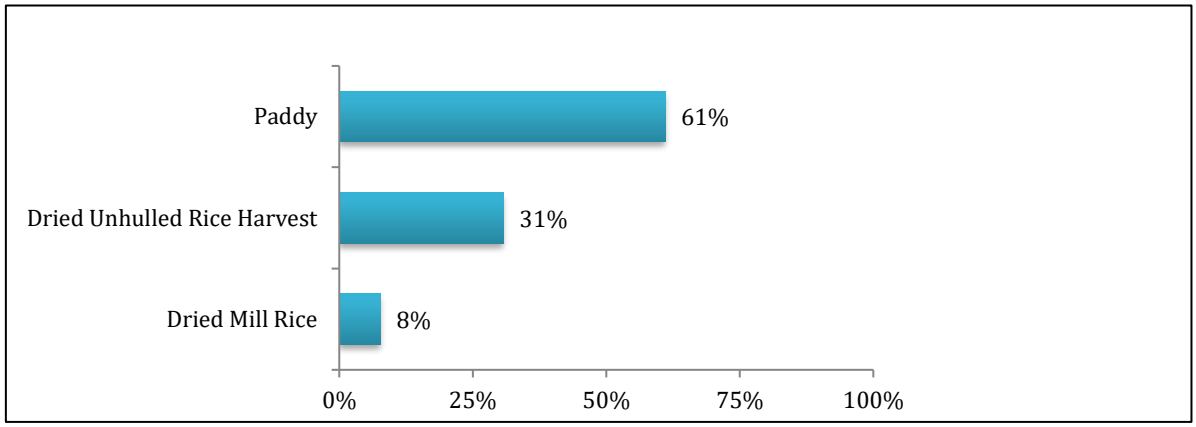


Figure 51 The types of produces sold by paddy farmers' respondents (in percentage)

Selling place

Most of the farmers (77 percent) sell to local traders (Figure 52). These traders are usually a neighbor or even relatives and it is a long established business relationship.

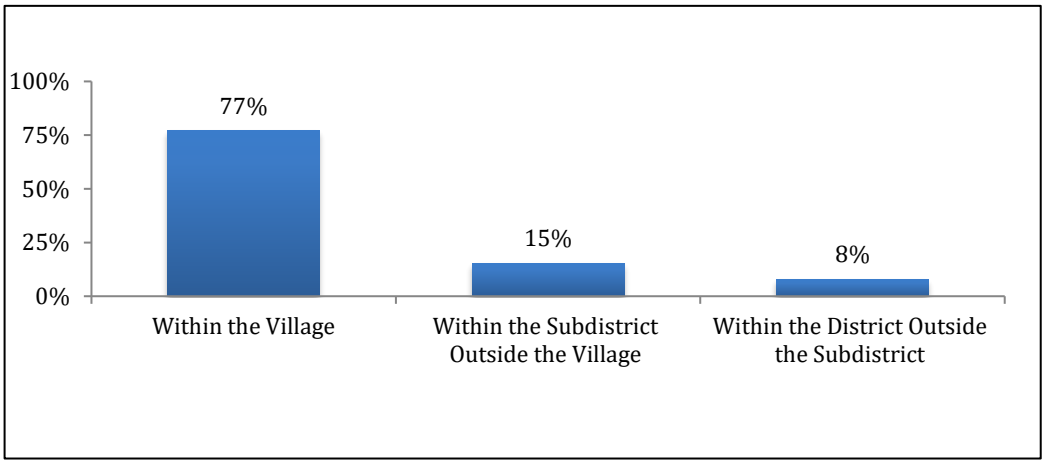


Figure 52 Percentage of respondents based on sales location of rice

Farmers sell their product to the trader who pays the highest price (Figure 53). Farmers have handphones to check the prices. They may sell to buyers who are known and trusted.

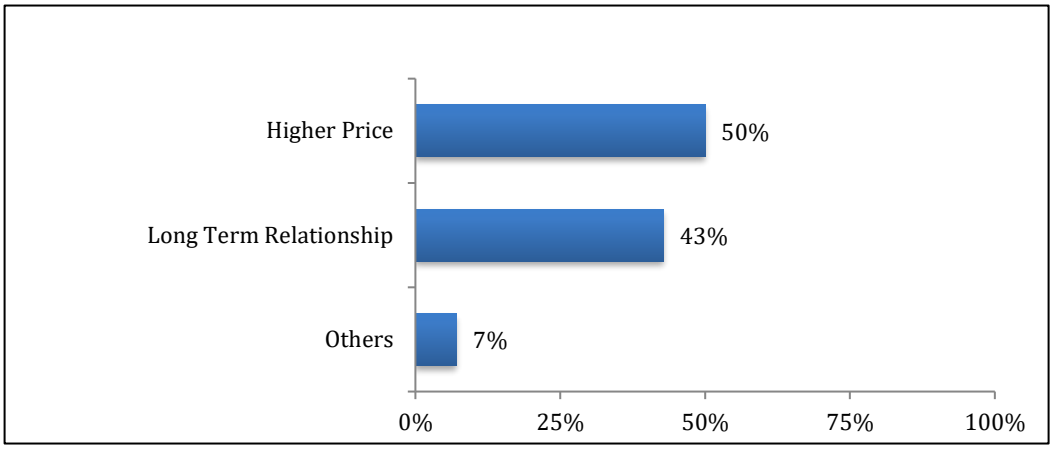


Figure 53 The reasons selling to the buyersof rice

Farmers prefer to sell their product in the field (Figure 54). This saves the transportation cost. If not in the field, usually the transaction location is in the farmers house.

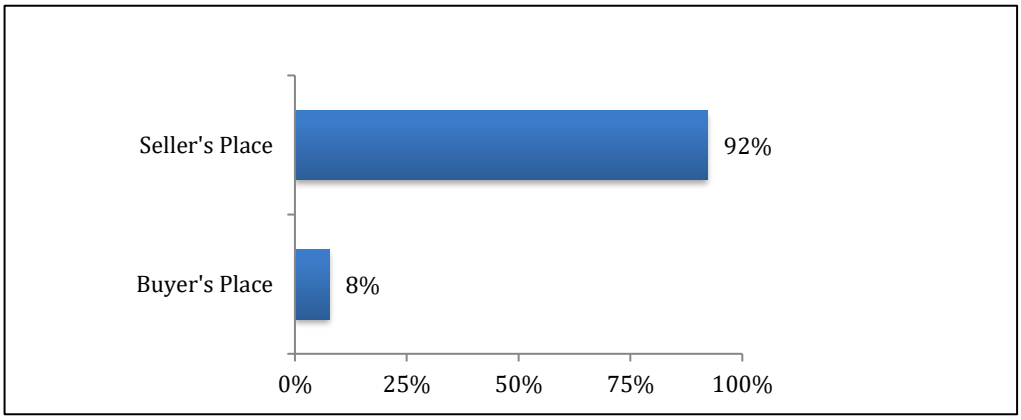


Figure 54 Place of transaction in rice commodity

Payment System

Most of the farmers receive their payment directly when they sell their product (Figure 55). Since they need the money for they daily purposes. Paying in cash is also a consideration by farmers when they choose to whom that they sell their product to. Farmers who are not paid cash, are usually the big farmers and the buyers are trusted.

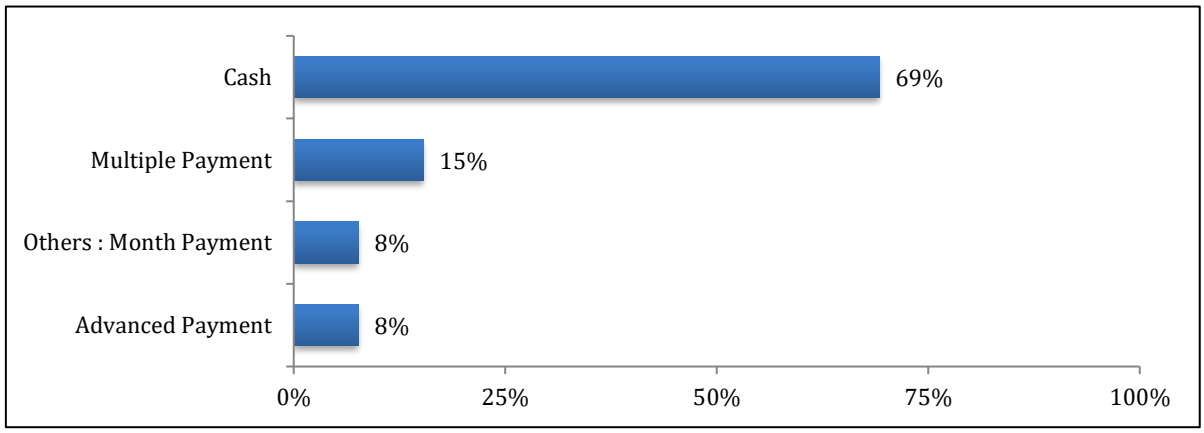


Figure 55 Payment system of rice

Price bargaining position

When selling the product, bargaining in order to receive a better price usually is conducted. It seems recently period farmers are more as a price taker (Table 48). This is caused by all involved knowing the price using their handphones as the principal form of communication. Most of the farmers still try to bargain, in order to receive a better price for their product.

Table 48 Price Bargaining Position Over the Five Years (2011) and the Last Year (2016)

Description	2011(%)	2016(%)
I always accepted the price the buyer offers	8	25
I sometimes bargain with the buyer	17	8
I usually bargain with the buyer	75	67
Total	100	100

3.3. Shallot

3.3.1. Supply chain and market structure

Supply chain structure

Central Java is the center of shallot production with the average annual contribution reaching 42.63 percent to the national shallot production. One of the main centers of production in Central Java, as well as Indonesia, is Brebes Regency. Shallots produced from here contributed to 31.4 percent nationally and 73.6 percent for Central Java.

The market share from Brebes Regency in Cibitung central market, Bekasi constituted an average of 85 percent of daily supply. Meanwhile, it also contributed to Kramat Jati central market in East Jakarta and Caringin central market in Bandung by 57.1 percent and 41.3 percent, respectively. Brebes regency not only supplied shallots to the main markets in Java, but also to several outer Java markets. The average market share from Brebes is transported to Jakabaring market in Palembang, Pangkal Pinang development market in Bangka Belitung, and Lampung Metro market reached 74.3 percent, 100 percent, and 32.5 percent, respectively. However, there is no data

available for the market share of shallots in Tanah Tinggi central market, despite shallots from Brebes also supplying this market (Kemendag, 2016). Based on the description, it can be said that the highest market share of shallots from Brebes Regency occurred in the central market (*Pasar Induk*). Equivalently, the share of the shallot production from Nganjuk, reached 13.7% of the national production.

The shallot market share from Brebes Regency in Cibitung central market,constituted an average of 85 percent of daily supply. Meanwhile, it also contributed to Kramat Jati central market in East Jakarta and Caringin central market in Bandung by 57.1 percent and 41.3 percent, respectively. Brebes regency not only supplied shallot to the main markets of Java, but also to several outer Java markets. The average market shares of shallots from Brebes in Jakabaring market in Palembang, Pangkal Pinang development market in Bangka Belitung, and Lampung Metro market reached 74.3 percent, 100 percent, and 32.5 percent, respectively. Based on The data indicates that the highest market share of shallots from Brebes Regency occurred in the central market (*Pasar Induk*).

The marketing of shallots from Brebes regency starting from the upstream (producer markets) to downstream (consumer markets) occurred due to the existence of marketing actors/institutions. The main destination of shallots from the wholesale markets is Kramat Jati (Jakarta), Cibitung (Bekasi) and Tanah Tinggi (Tangerang). Nevertheless, the shallots marketing also developed in inter-island regions such as Sumatra and Sulawesi.

The actors involved in the shallots marketing in Brebes consisted ofbrokers, village traders, big distributors, wholesalers, sub-wholesalers, retailers and end consumers. The main difference of actors involved in the marketing of shallots and other vegetables (i.e chili) was the existence of brokers. They have a role as intermediary in the sale of shallots from farmers to collectors.

There are several marketing channels of shallots in Brebes Regency can be seen in Figure 56. It can be identified that there were nine (9) marketing channels of Shallots as the following:

1. Farmers – Village Traders– Big Distributors – Wholesalers – Sub-Wholesalers - Retailers- End Consumers
2. Farmers – Village Traders– Big Distributors – Wholesalers – Retailers– End Consumers
3. Farmers – Village Traders – Big Distributors – Wholesalers – Sub Wholesalers - End Consumers
4. Farmers – Big Distributors – Wholesalers – Sub Wholesalers - Retailers- End Consumers
5. Farmers – Big Distributors – Wholesalers - Retailers - End Consumers
6. Farmers – Big Distributors – Wholesalers – Sub Wholesalers - End Consumers
7. Farmers –Brokers – Collectors – Big Distributors – Wholesalers – Sub Wholesalers - Retailers - End Consumers
8. Farmers – Big Distributors –Big Distributors of Outside Java
9. Farmers – Big Distributors – Manufacturers

   The most prevalent marketing channel of Shallots from Brebes Regency was the first channel involving Farmers – Village Traders – Big Distributors – Wholesalers – Sub-Wholesalers - Retailers- End Consumers

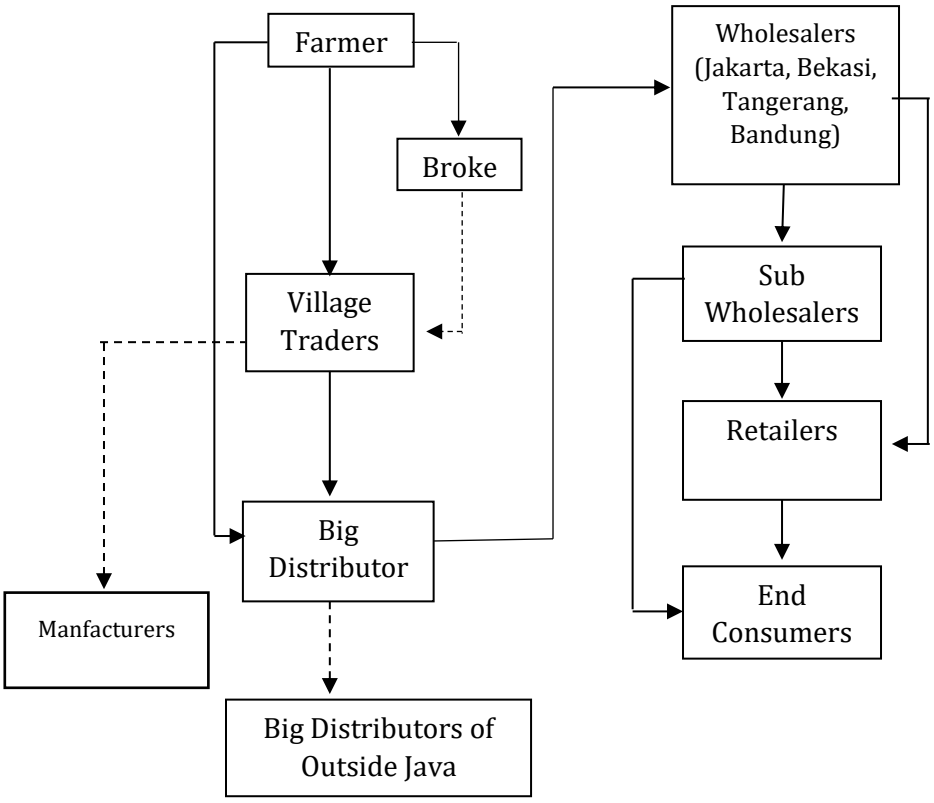
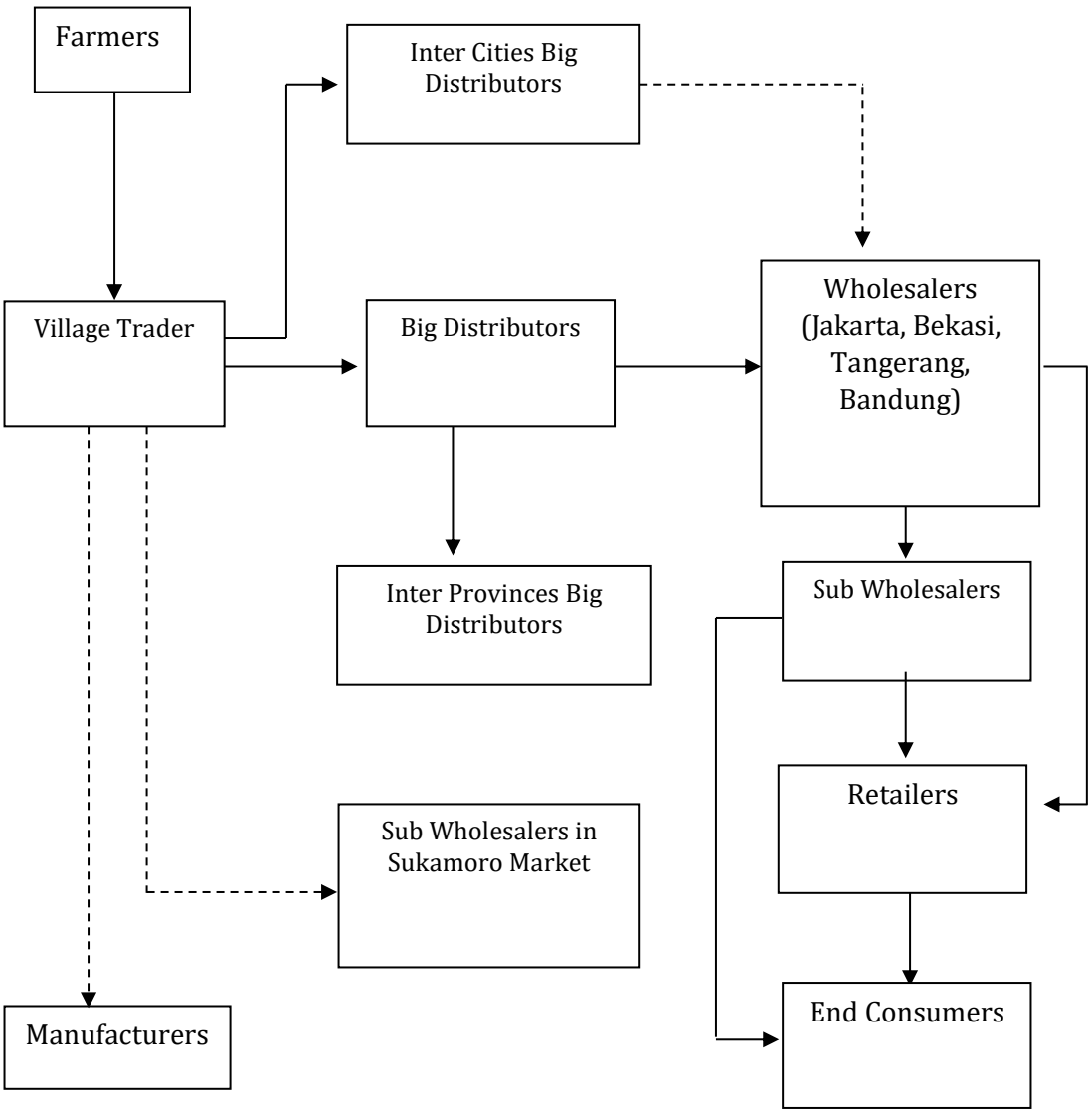


Figure 56 Marketing channels of shallots in Brebes Regency

When supply is reduced, The traderssource shallots from areas outside of Brebes such as Tegal, Cirebon, Indramayu, Majalengka, Kendal and Pati. In fact, shallot growers from Brebes, who experienced limitation in acquiring land, usually rented land in these areas. It was common to find some shallot growers from Brebes, temporarily rent land in these areas. Thus, village and big traders are still able to obtain supply when there is a reduction in the Brebes Regency.

The shallot marketing channels in Brebes, Central Java are similar to the marketing channels in other production centers such as in Nganjuk, East Java, as it is illustrated in Figure 56 (Hakim et al., 2016). Most of the marketing channels from Nganjuk were directed to central markets in Jakarta, Bandung, Bekasi and Tangerang. Currently, the shallot marketing from Nganjuk is more concentrated on inter-city trade in East Java and also on inter provinces and inter-island trade. Nganjuk regency has a special market for shallots, The Sukomoro Market, which is located in District Sukomoro, Nganjuk. The supply chains or marketing channels of shallots in Nganjuk Regency can be seen in Figure 57.



Source: Hakim *et al*, (2016)

Figure 57 Marketing channels of shallots in Nganjuk Regency

Market structure

The market structure of shallots is presented in Table 49. The market structure that is formed on the marketing of Shallot in Brebes and generally in Indonesia shows Oligopsony market structure. The Oligopsony market structure is characterized by many sellers and few buyers.

Table 49 Shallot Market Structure In Various Level

Traders	Buyer	Market Structure
Farmer	Collectors	Oligopsony
Collectors	Large Traders	Oligopsony
Large traders	Wholesalers	Oligopsony
Wholesalers	Sub Wholesalers	Oligopoly
Sub Wholesalers	Retailers	Oligopoly
Retailers	Consumers	Oligopoly

Based on Table 50, the number of traders around farmer location ranged between 2-20 traders. With the number of farmers are relatively larger compared to traders, it can be confirmed that market structure between farmer and trader/collector is olygopsony.

Table 50 Number of producers, traders, and buyers for shallots

Description	How many producers/supliers/farmers around your location?			How many traders around your location?			How many buyers/traders have you sold to ?		
	Av	Min	Max	Av	Min	Max	Av	Min	Max
Shallot	106	2	500	9	2	20	3	1	4

The Oligopsony market structure can be seen from the number of traders involved in the shallot marketing channel. The number of traders at the higher levels is getting smaller followed by greater power in determining the price. In Kramat Jati and Cibitung market there are traders (Bandar / wholesalers) with a relatively large capacity. The average capacity of the shallot trader reaches 4 trucks (32 tonnes) per day. A list of shallot traders (Bandar / wholesalers) in Kramat Jati and Cibitung Market are shown in the following table.

Table 51 Shallot Wholesaler in Pasar Induk Kramat Jati

No.	Traders Name	Venture Number
1	Luky B Hutagaol	A LOO FSB 164
2	Martin Saragih	A LOO FSB 242
3	H. Hasan Kudri	A LOO GSB 015
4	H. Karsim	A LOO GSB 051
5	Karmen Sagala	A LOO GSB 061
6	Obinton Munthe	A LOO GSB 083
7	Tagor Lumban Raja	A LOO GSB 094
8	Nurmala L. Gaol	A LOO GSB 115
9	Sahat Purba	A LOO GSB 118
10	Tanto	A LOO GSB 145
11	H. Juheri	A LOO GSB 148
12	Buha Saut Munthe	A LOO GSB 190
13	Magdalena Marpaung	A LOO GSB 237
14	Bl Aldo	A LOO HSB 147
15	Firman	A LOO HSB 154
16	Martua Munthe	A LOO HSB 183

Source: Pasar Induk Kramat Jati (2016)

Table 52 Shallot Wholesalers in Pasar Induk Cibitung

No	Name
1	Haji Naryo
2	Haji Nanang
3	Ali
4	Imam
5	Haji Rustono
6	Abah Mip
7	Haji Cartas
8	Haji Nur
9	Haji Sucipto
10	Haji Saudi

The Oligopsony market structure can be seen from the nature of traded products. Shallots are divided into three different types: konde basah (leaves attached with 3 days of drying), konde askip (leaves still attached, but dried) and askog rogol (without leaves). These three types have different selling prices. Rogol shallots have the highest selling price.

There is limited access for new marketing agencies in shallots. This because wholesalers will not recklessly accept shallots from larger traders They prefer to deal exclusively with traders who are well known and already trusted. The limited access between these marketing agencies is due to the existence of bonds between marketing agencies. These bond may be related to funds, a family relationship or be long-standing customer.

Most farmers sell their crops to collecting traders in the form of wet condiments with a slash system. The system operateswhere the harvesting activity is carried out by the buyer (collecting trader). Shallot crop yields are not all sold by farmers but; to a certain extent, part of the crop will be used for seeds because the seed price is relatively expensive. Meanwhile, from large traders to sub wholesalers, the products are traded in the form of *wet condiments, konde askip* and *rogolan*. While the retailers sell relatively homogeneous products in the form of *rogolan*.

Table 53 shows the entry barriers of the Shallot market at the level of trader, large trader and wholesaler. New business entrepreneurs who wishto enter the market as collecting traders must have funds for the purchase of Shallot that payment to the farmer. Approximately, 87 percent of respondents are paid cash from their sales to traders while the remaining 13 percent are paid with a postpone payment system of about 2-3 days. Entry obstacles in the market system are also evident for wholesalers who must have enough cash funds for purchasing of shallots from collecting traders. It is worthwhile noting that there is a postponed system of payment. The wholesalers also must have strong funds foundation for the purchase of large amounts ranging from 24 to 32 thousand tonnes per day. This requires a considerable amount of funds.

Table 53 Aspects in Market Structure at Various Marketing Actors of Shallot

Market Structure Aspects	Marketing Actors/Institutions					
	Farmers	Collectors	Large Traders	Wholesalers	Sub Wholesalers	Retailers
1. Product homogeneity (product type, variety, quality, packaging)	Homogen in konde basah (slash system)	Homogen in konde basah (slash system)	Various types: konde basah, konde askip, rogolan	Various types: konde basah, konde askip, rogolan	Homogen rogolan	Homogen rogolan
2. Product utilization by producers	Most are sol, though some are set aside for seeds	All sold	All sold	All sold	All sold	All sold, any leftovers will be stored for the next day
3. Barrier to entry	Not Found	Capital	Capital and long-term relationship	Capital and long-term relationship	Capital	Not Found
4. Accessibility to price information	Very easy, the access to daily price information usually received from fellow farmers and traders	Very easy, the access to daily price information usually received from traders	Very easy, the access to daily price information usually received from traders in central market (Pasar Induk)	Very easy, the access to daily price information usually received from fellow traders	Very easy, the access to daily price information usually received from fellow traders	Very easy, the access to daily price information usually received from fellow traders
5. Existence of unwritten or written trade rules	Not Available	Not Available	Not Available	Available in unwritten rules (wholesalers in IKJ sells 1 sacks minimum (70 kg)	Available in unwritten rules (wholesalers sells minimum 10 kg in IKJ and 5 kg in Cibitung	Not Available
6. Business/trade facility owned	Not Available	Stall	Available (stalls, drying places, storage, truck)	Stall	Stall	Stall, transport
7. Freedom in products selling/buying	Free	Free	Free	Free	Free	Free

The price information as seen above indicates that about 55 percent of farmers get it from fellow farmers and the remaining 45 percent of farmers, obtain the price information from traders.

Farmer use their handphones (HP) (67%) and the rest of the information is available when they meet the traders. The traders obtain the pricing information from each other.

The written rules for the shallot trade is not available for every market. Nevertheless, there is an unwritten rule such as in Kramat Jati Indoor Market (IKJ), where the wholesalers must sell at least one (1) sack or 70 kg of shallots, while sub wholesalers must sell at least 10 kg.

As for the business facilities are concernedthe minimum owned by a trader is a stall. The collecting traders have a stall close to the shallot production field with simple and simplified facilities (bamboo and plastic cover). Meanwhile, the large traders have permanent stall made of iron, a drying area, storage and space for trucking. In the other words, most of the wholesalers, sub-wholesalers and retailers only have stalls. The majority of wholesalers and sub-wholesalers have a place of purchase and sale at the same location, so as not to require transportation. In contrast, retailers who usually come from around the central market *(Pasar Induk)* or outside the city such as Bogor to Outer Java require transportation, either through their own transport or leasing arrangements.Retailers whose sales location is close to the central market, use motorcycles for short journeys and for surrounding areas small open-air car is the preferred mode of transport. For traders from outside Java transport is by trucks.

3.3.2. Conduct

Vertical Integration

Vertical integration shows the relationship between upstream and downstream activities. Based on results of the research, there is no shallot business actors performing vertical integration activities from upstream to downstream. From the downstream side, particularly in the seed business, there are farmer respondents who set their crop yields to be used as seeds, while others buy seeds from other farmers or seed traders. The collecting or large shallot traders, together with some traders work on their own shallot production. Meanwhile, online processing activities are conducted by business actors outside Brebes Regency, such as SMEs with fried Shallot business in Kuningan Regency. This is well-known as the center of fried shallots and PT. Indofood Sukses Makmur Tbk in Jakarta. The processing of shallots by PT Indofood sees the traders receiving an order by the companies requirements (for shallot delivery) and the company's request.

Barrier to Entry

The factors that may cause new business actors to face barriers is due to their access to funds. Traders must have funds for the purchase of payment to the farmers. Approximately, 87 percent of the respondent's are paid cash from the traders, the rest are paid with the postpone system. The same system also applies for wholesalers who must have funds for the purchasing from collecting traders as well as facilities such as stalls, drying places, storage and transportation. Similarly the wholesaler, must have a strong fund system because for the purchase of a large amount of shallots, ranging from 24 thousand tonnes s to 32 thousand tonnes per day. This

requires capital of around IDR 240 million to IDR 320 million per day assuming that the purchase price is IDR 10,000/kg.

In addition, the barriers to entry that occur in the marketing of shallots that there is limited access among marketing agencies. Wholesalers are not always willing to accept Shallot from other wholesalers because they only take Shallot from large traders they have known for years or there are family ties and offer of bond as funds may be accepted as their supplier. It shows that trust and reputation is an important factor in market access.

Dominant Position

The market dominance of producers to consumers will lead to bargaining positions between sellers and buyers in price determinations. In general, pricing is done by bargaining but the final decision remains on the traders who are at the top level. This dominant position is closely related to every level of the market structure. The price received at the marketing agency is most likely determined by the price in the central market so that this price becomes the reference price.

The following table lists the wholesale traders in the central market in Brebes's. The wholesalers includes those who has large scale production in Pasar Induk Kramat Jati (DKI Jakarta) and Pasar Induk Cibitung (Bekasi). The business capacity of each trader reaches 24 tonnes to 32 tonnes per day (3-4 trucks / day).

Table 54 Shallot traders in central Market (*Pasar Induk*) and production center in Brebes

Central Market	Number	Traders Name	Venture Number
Kramat jati (DKI Jakarta)*	1	Luky B Hutagaol	A LOO FSB 164
	2	Martin Saragih	A LOO FSB 242
	3	H. Hasan Kudri	A LOO GSB 015
	4	H. Karsim	A LOO GSB 051
	5	Karmen Sagala	A LOO GSB 061
	6	Obinton Munthe	A LOO GSB 083
	7	Tagor Lumban Raja	A LOO GSB 094
	8	Nurmala L. Gaol	A LOO GSB 115
	9	Sahat Purba	A LOO GSB 118
	10	Tanto	A LOO GSB 145
	11	H. Juheri	A LOO GSB 148
	12	Buha Saut Munthe	A LOO GSB 190
	13	Magdalena Marpaung	A LOO GSB 237
	14	Bl Aldo	A LOO HSB 147
	15	Firman	A LOO HSB 154
	16	Martua Munthe	A LOO HSB 183
Cibitung (Bekasi, West Java)	1	Haji Naryo	
	2	Haji Nanang	
	3	Ali	
	4	Imam	
	5	Haji Rustono	
	6	Abah Mip	
	7	Haji Cartas	

Central Market	Number	Traders Name	Venture Number
	8	Haji Nur	
	9	Haji Sucipto	
	10	Haji Saudi	
Brebes	1	H. Zainudin	
	2	PL. Silalahi	
	3	Toko Murah	
	4	Toko Surabaya	
	5	H Kolidin	
	6	Topik	
	7	Gioarto	
	8	H. Temi	

Source: * Pasar Induk Kramat Jati (2016)
** Traders Information

Exclusive Dealing

Exclusive dealing refers the condition of contract terms for suppliers to sell their goods only through certain retail outlets or retail sales in certain areas.In shallot trading by no indication of exclusive dealing is found. A Shallot supplier is free to sell wherever they want. Nevertheless,there are some traders who have a contract with PT Indofood Sukses Makmur Tbk. The company has a partnership with these traders to fulfill their needs for processing.

Other agreements encountered in the field are only the rules made by Paguyuban Centeng Bawang Merah in Pasar Induk Cibitung. Some agreed unwritten rules include loading and unloading time, wage for porters and retribution.

Hoarding

Shallots are a commodity that is not durable if stored. Based on the results of research, farmers as producers commonly store Shallot for their seeds. This is done by farmers because the price of shallot seed is very expensive and the contribution of seed is a substantial total production cost to a farmer who may have limited funds. The shallots used for seeds requires a dormancy period for 3 months from harvest time and is exposed to certain treatments such as pest control during storage. Besides the farmers, some growers do the same thing.

Generally, the traders sell the harvest directly to the marketing agency. The same thing is done by the wholesalers, except, if they will make a deformation of *konde basah* to be dried askip or rogolan then traders will save it for the drying stage.

Price determination

The Oligopsony market structure affects the behavior of marketing agencies and farmers. For shallots the farmersact as the price taker and traders as the price setter. Farmers cannot determine the price of shallots. Despite the process of pricing through bargaining, the reference

price for the purchase is determined by the traders at a higher level. In the case of shallots, the selling price follows the price in the central market. This price is determined by the volume of supply entering the central market in one day. According tothe manager of Pasar Induk Kramat Jati, the ideal supply of shallots is 120 tonnes per day. If that amount is supplied, the sale price is normal. If the supply is less then the price will rise and vice versa if the supply is more, the price will drop.

At Pasar Induk Cibitung, the process of loading and unloading, starts at 06.00 am, while in Pasar Induk Kramat Jati it is earlier with a start between 03.00 - 04.00 WIB. Shallots are taken from the truck directly to the wholesalers stalls and awholesalers usually buy between 7 - 32 tonnes per day on average. Newly arrived shallots remain in the stalls only a matter of hours (1- 2 hours). During the process of loading and unloading the buyers are already lining up to negotiate the price and purchase the shallots. Most buyers at the wholesalers level are sub-wholesale (centeng) traders, but it is not possible for retailers to buy directly as there is minimum purchase of 10 kg. Sub-wholesale traders are not only coming from Pasar Induk Cibitung, but also from Bogor, Tambun, Cikarang and Bekasi markets. In contrast to this, at Psar Induk Tanah Tinggi there is no sub-wholesaler traders.

Transactions between wholesalers with sub-wholesale traders include price agreements and the weight measuring processes, for paymentwill be done after the shallots are sold. This is usually done in the afternoon or the next morning. Each sub-wholesalers on average brings from 600-1,500 kg. Minimum purchases are 70-130 kg or 1-2 sacks while purchased by sub-wholesaler is a minimum 10 kg.

Every wholesaler (and sub-wholesaler) have informants who are always traveling around the markets to find out the supply, demand and prices that run at that time. Therefore, wholesalers can adjust the priceevery hour.It usually ranges from IDR 500 – 1,000 / kg. Sub wholesale traders at Pasar Induk Cibitung have formed a community called PCBM (Paguyuban Centeng Bawang Merah). One of the activities carried out in the community is negotiating the amount of retribution and wages for the shallot porters.

Another regulation made by PCBM at Pasar Induk Cibitung is for loading and unloading can be done only between 6.00-18.00 WIB and if after 18.00 WIB the shallots will remain on the truck until the next morning. If wholesalers need to loading and unloading beyond the time limit, then it must pay a fine of about IDR 20,000,000. The process of buying and selling at the wholesalers level can take place until 22:00 pm. The same condition and similar situation occurred in *Pasar Induk Tanah Tinggi* with the Shallotsbeing allowed to enter the market from 03.00-18.00 WIB and prohibited after that time. This rule is not made by management but made by the traders them selves to avoid additional supply that may reduce the price.

Wholesalers determine the selling price of after the process of loading and unloading has been completed in the central market (pasar induk). This affects the existence of the postpone system as the farmers will only be paid later after theyare sold in the market. The trader will provide an advance payment (deposit and confirmation) as a sign of his intent to purchase. After the Shallot is sold, the outstanding money will be paid. In general, repayment is made 2-3 days after the shallots are sold. The same thing is applied to payment from wholesalers. Sub-wholesalers can

bring in the goods even before they have not been paid. Sub-wholesale traders will pay for the purchases after the trader determines the sale price on that day.

Collecting traders and wholesalers negotiate with the farmers 3-5 days before the shallots are ready for harvest. This is the same even for those who have established long-standing relationships. There are several factors that affect farmers selling with a the slash system which this includes reduced costs, the need for money, ease of transaction and a reduced price risk.

Payment System

The payment system in Brebes regencycan be either cash or a non-cash (consignment) system. Most of the farmers respondents were paid cash (86.7%) and the rest (13.3%) used a tempo or consignment system (Table 55). The tempo system (consignment) is a system where the payment is made several days after the delivery of the produce. For consignments , the payment from the traders to the farmers took place approximately two (2) days after the transaction was made. This payment system did not only occur at the farmers level but also at other marketing institutions.

Table 55 The payment systems of shallot

Payment System	Frequency	Percentage
Cash	13	87
Advanced Payment	0	0
Multiple Payment	0	0
Others (Debt)	2	13
Total	15	100

Meanwhile, the analysis on the shallot's delivery system showed that 66.7% of respondents delivered their product at the seller's place while at the farmers' field. At 33.3% of farmers respondents handed over the product at the place of the buyers or traders (Figure 58).

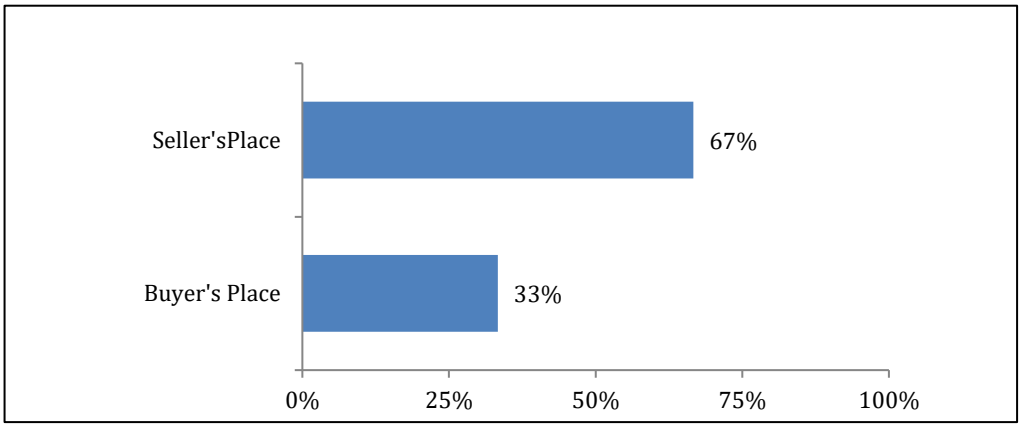


Figure 58 The place of shallot transaction

The sales of harvested shallots in Brebes regency was not only supplied and directed to a single level of traders (Figure 59). Most of the respondents (61.1 percent) in Brebes regency sold shallots to collectors (villages and subdistricts). Besides selling directly to collectors, 16.7 percent

of farmers' respondents also supplied directly to the large distributors, while the remaining 22.2% of respondents traded shallots to other destinations. The other sales destination included, sales via brokers. Brokers are intermediary actors between the farmers and the collectors. They generally contributed by showing a sample of harvested shallots produced by the farmers to the collectors. As a result, the brokers obtained a fee from any sales.

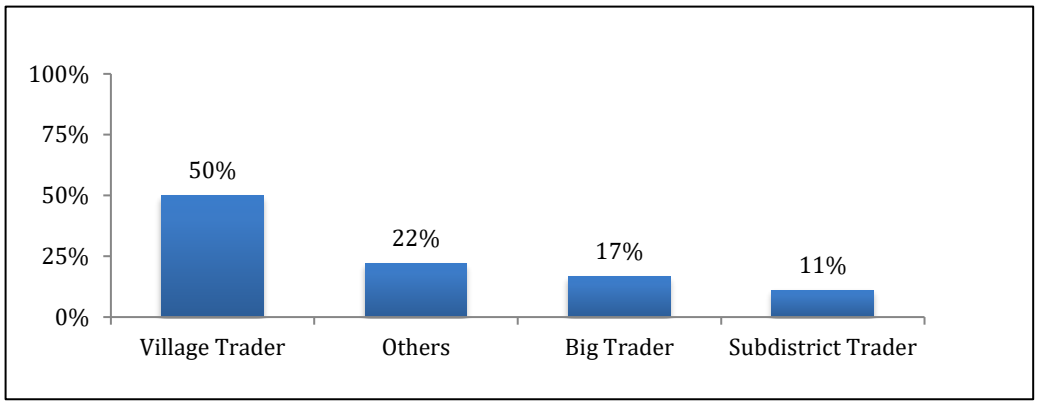


Figure 59 Main buyer of shallot from farmers (in percentage)

One of the unique aspects of the shallot marketing system in comparison to other agricultural commodities was the existence of different types of products sold from the farmers to the consumers. Shallot farmers traded their product in the form of *wet or fresh konde* but the consumers purchased shallots in the form of *rogol askip* (Figure 60).

In relation to the shapes or types of shallots in the sales and purchase systems, there are several terms that need to be understood. After the shallots are harvested, it is usually dried for 1-4 days with the leaves attached. It is called *wet or fresh konde*. However, if the shallot is dried for 1-4 days with the leaves had been removed, it is called *local rogol (wet rogol)*. Furthermore, if the shallot is dried for 4-8 days and s with leaves, it is called onion *askip konde* or *konde askip*; and if leaves had been removed , it is called *rogol askip* or *askip rogol*.

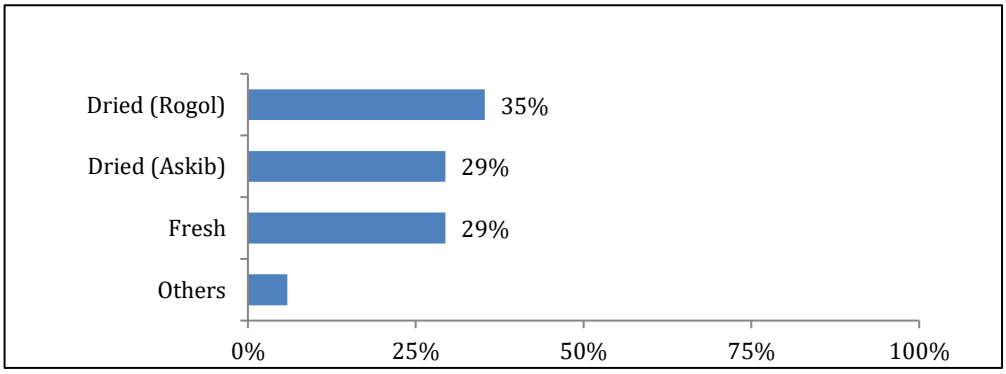


Figure 60 The types of produce sold by shallot farmers (in percentage)

In relation to the harvesting and selling, most of the respondents sold their product under a trader-harvester contract (*tebasan*) where harvesting was done by the traders. The development of the sales and *tebasan* in Brebes Regency indicated the improvements made by the shallot farmers. In the previous period, they sold all the harvested crops and area using *tebasan*, but they

did not have the seeds for planting for the next season.The problem was excerbated as the the price of seeds continued to increase in relation to the price of shallots. However, the system has currently developed, as the farmers respondents are now not selling all of their harvested areas using the *tebasan* system but leaving the harvested shallots on certain areas to be used later as seeds. At the time of the study, the price of shallot seeds was very high, reaching up to IDR 35,000 / kg - IDR 40,000 / kg. Meanwhile, the selling price of shallots was around IDR 15,000 / kg - IDR 18,000 / kg. Therefore, shallot farmers in Brebes Regency have started to leave some products to be used as seed for the next planting season.

Furthermore, the location of the sales indicated that approximately 66.7 percent of farmers' respondents sold shallots in the village, followed by selling outside the province (26.7%) and outside the regency (6.7%). Figure 61 shows the the sales locations (in percentage).

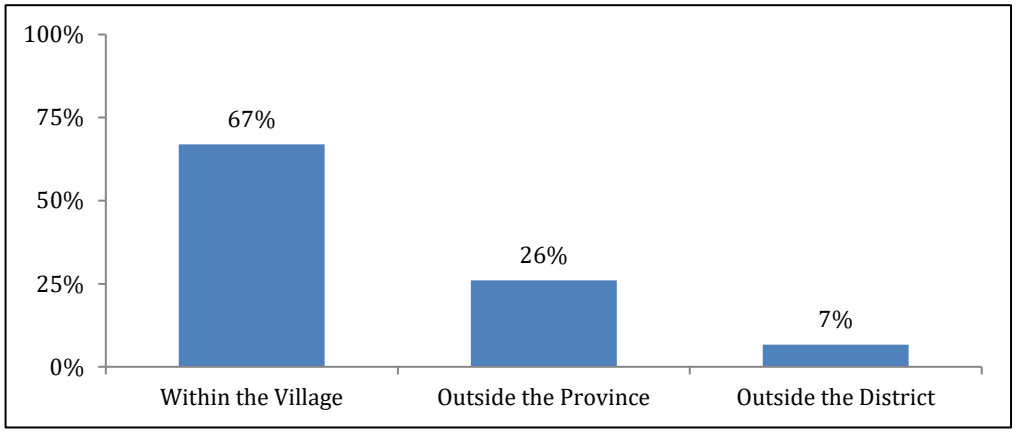


Figure 61 The sales location of harvested shallots (in percentage)

The underlying reasons of farmers' respondents to sell their harvested shallots to certain traders comprised ofbetter prices, more affordable locations, subscriptions, family relationships, capital lending ties and contracts (Figure 62). Farmers respondents decided to select certain traders as they offered higher prices. High prices incentivized the farmers to market their produce to those traders.

In addition to price factors, the location was one of the reason why farmers' respondents chose to sell shallots to certain traders. The long-standing customer relationship between the traders and the respondents also influenced the respondents' choice of traders. Farmers respondents preferred to market their shallots to collectors who have become regular buyers, hence it built trust. Furthermore, the other reason revealed that farmers' respondents had preference to market their products to collectors as they were their relatives or had family ties with the farmers.

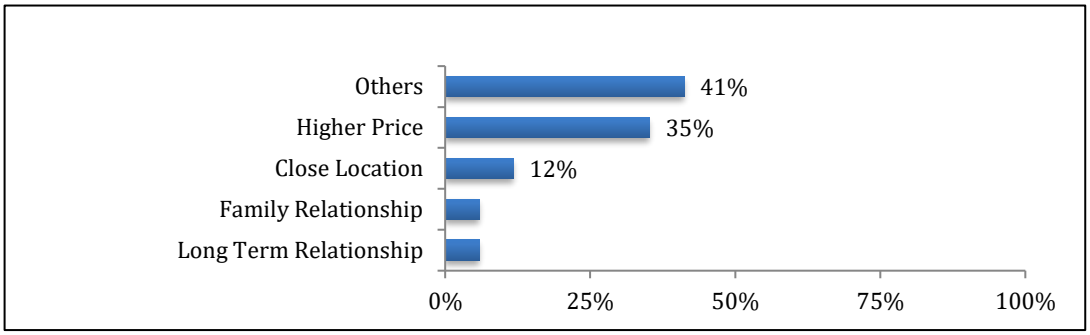


Figure 62 The reasons selling to the buyer (in percentage)

The shallots marketing systems not only reflected the flow of goods that occurred because of sales and purchases, but also showed the flow of money. This can be identified from the buyer's payment system to the sellers. If the farmers indicated that they were using the *tebasan* system for sales, the payment will be made in cash. Conversely, if the sales system was not utilizing the *tebasan* system, the payment was not always cash. Meanwhile, an analysis from the traders' side showed that about 75 percent of the traders respondents paid in cash. The remaining 25 percent made advance payments or paid with cash despite only making a partial payment.

3.4. Chili

3.4.1. Supply chain and market structure

Supply chain structure

Chili products that are traded consist of curly, redand small chili. Chili trades nationally in Indonesia and occurs from production centers in West Java, East and Central Java and North Sumatra to non-production areas such as DKI Jakarta. The large market for chilies in DKI Jakarta led to the formation of large chili merchants engaged in Pasar Induk, especially in Kramat Jati (Jakarta), Cibitung (Bekasi), and Tanah Tinggi (Tangerang).

The marketing channel of the three types of chili, in the research area in Garut district, is similar to the marketing channels so can be explained as a general figure (Figure 57). In marketing those chilies to the final consumer, the parties that are most involved are farmers, collecting traders, big traders, wholesalers and retailers.

Based on Figure 63 the marketing institutions or actors of chili are:

(1) Village Traders is a marketing agency that has a role to collecting chili from farmers to be sale to big traders.
(2) Big Distributors is a marketing agency that has a role to collecting chili from wholesalers in Central Market (Pasar Induk Kramat Jati, Tanah Tinggi and Cibitung).
(3) Local Market Retailers are marketing agencies that marketing chili to the local market.
(4) Wholesalers are marketing agencies that marketing chili to wholesale sub traders, retailers and consumers directly in central market.
(5) Retailers in central market are marketing agencies that marketing chili to consumer
The marketing channel of chili in Garut district has been identified as eight (8) channels of marketing as follows:

Channel 1: Farmers - Small Collecting Traders - Big Traders - Wholesalers (Pasar Induk) - Retailers - Consumers
Channel 2: Farmers - Small Collecting Traders – Second Level Collecting Traders - Big Traders – Wholesalers (Pasar Induk) - Retailers - Consumers
Channel 3: Farmers – Big Traders - Wholesalers (Pasar Induk) - Retailers - Consumers
Channel 4: Farmers - Small Collecting Traders - Local Retailers - Wholesalers (Pasar Induk) - Retailers - Consumers
Channel 5: Farmers - Big Traders - Retailers - Consumers
Channel 6: Farmers - Small Collecting Traders - Big Traders - Retailers - Consumers
Channel 7: Farmers - Small Collecting Traders - Retailers - Consumers
Channel 8: Farmers - Small Collecting Traders - Wholesalers (Pasar Induk) - Retailers – Consumers

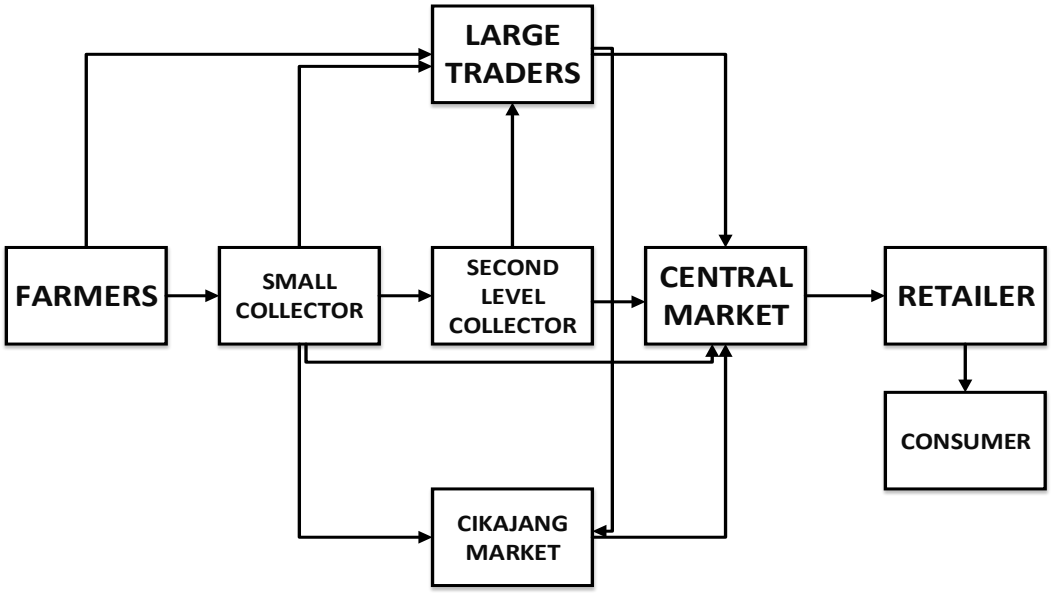
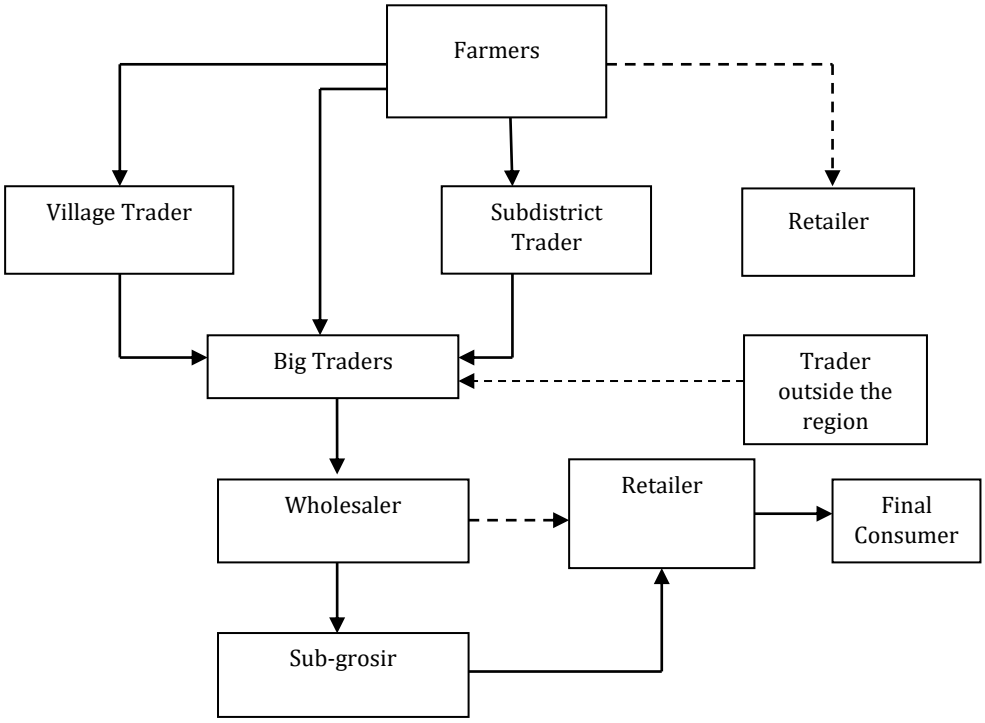


Figure 63 Distribution channel of three types chili in Garut District

Chili marketing channel in Garut district is relatively similar with any marketing channel in production center areas such as Majalengka district, in West Java (Figure 64), Banyuwangi district in East Java (Hakim et al., 2016), Brebes district (Farid and Subekti, 2012), Southeast Sulawesi, South Sulawesi, and East Java (ACIAR 2009).



Source : Hakim *et al*, (2016)

Figure 64 Marketing of curly red chili in Majalengka District

Besides local or domestic chili, Indonesia also imports frozen chili which is generally used to meet the needs of the processing industry. The processing industry uses raw materials from both local and imported chili. Importing frozen chili is executed when domestic chili production decreases due to a declining supply.

Of the many actors involved in the marketing of chili, the power of price determination is held by the wholesaler (or dealers) in the Pasar Induk. The role of wholesalers or dealers is to distribute chili to the retailers in Jakarta and the surrounding areas, as well as other islands. Java, as a center of chili production, mostly supplies chili to areas of South Kalimantan and West Sumatra. From South Kalimantan, chili from Java is distributed to Balikpapan and Samarinda. One factor that causes wholesalers or dealers to have the power to influence prices is because the power of capital to obtain the supply. This can be an obstacle for other traders who will enter the market as a wholesaler or dealer in Pasar Induk. Another obstacle to enter the market is the high risk of obtaining chili. The amount of chili stock is not easy to predict due to seasonal influences (Farid and Subekti, 2012).

Market structure

The market structure of chili at each level actors along the value chain is presented in Table 56.

Table 56 Chili Market Structure at Various Market Level

Seller	Buyer	Market Structure
Farmers	Middlemen/collectors	Oligopsony
Middlemen/collectors	Large traders	Oligopsony
Large traders	Wholesalers	Oligopsony
Wholesalers	Sub-wholesalers	Oligopoly
Sub-wholesalers	Retailers	Oligopoly
Retailers	Consumers	Oligopoly

Based on Table 57, the number of traders around farmer location ranged between 1-4 traders. With the number of farmers are relatively larger compared to traders, it can be confirmed that market structure between farmer and trader/collector is olygopsony.

Table 57 Number of producers, traders, and buyers for chili

Description	How many producers/supliers/farmers around your location?			How many traders around your location?			How many buyers/traders have you sold to ?		
	Av	Min	Max	Av	Min	Max	Av	Min	Max
Chili	124	30	300	2	1	4	2	1	5

Overall, the market structure formed in chili marketing from producers to wholesalers tends to be oligopsony and from wholesalers to retailers tends to be oligopolistic structure. The market power tends to be concentrated on several traders (network between traders within the channel is really strong) so that other traders who will enter the chili trade business will experience a barrier. Although the capital owned by the new traders who wish to enter the market is extremely large but, it cannot guarantee that the new traders will make a profit. Wholesalers will not accept chillies from all large traders, but only from those that they have been dealing with for a long-time. Similarly, the farmer will not necessarily deal with new traders (capital commitment and family relationship).

Several middlemen, in maintain a good relationship with the farmers, as they provide commitment in the form of capital used for farming. The relationship between the middlemen and large traders mostly has been established well. The middlemen generally will market their chillies to the same large trader for every sale (customer) due to this established relationship based on trust. A trust relationship becomes a vital component in chili marketing as the delivery of goods is conducted beforehand followed by payment in cash or with the delayed payment system.

There are several exceptionally strong chili wholesalers in Kramat Jati and Cibitung Central Market. The following Table presents a list of them. In the Kramat Jati Central Market they amount to around 18 people, while in Cibitung Central Market, there are around 9. The names have been acquired from secondary data and information from informants.

Table 58 Chili Wholesalers in Kramat Jati Central Market

No.	Name of wholesaler	Business Place Number
1	H Diki Alamsyah	A L00 HSB 013
2	H. Joharlis	A L00 HSB 005
3	Sujiman	A L00 HSB 133
4	H. Suhardi, SE	A L00 HSB 015
5	H Imam Siryadi	A L00 HSB 143
6	Alim/H Saep	A L00 HSB 034
7	H Suep Tohir	A L00 HSB 052
8	H. Nurkholis	A L00 HSB 052
9	Hj Nani	A L00 HSB 025
10	H. Sutrisno	A L00 HSB 076
11	Rela	A L00 HSB 003
12	Suprayitno	A L00 FSB 092
13	Dhani	A L00 GSB 159
14	Nuryanto	A L00 GSB 158
15	Mukid	A L00 FSB 088
16	Udi, SE	A L00 FSB 051
17	Rifai	A L00 FSB 051
18	H Marimin	A L00 GSB 165

Source: Kramat Jati Central Market (2016)

Table 59 Chili Wholesalers in Cibitung Central Market

No.	Name of Wholesaler
1	Haji Udin
2	Haji Sri
3	Haji Wir
4	Haji Parto
5	Haji Edi
6	Haji Odi
7	Haji Mukhtamar
8	Haji Ceong
9	Haji Ude

Every marketing institution performs different marketing functions. The function performed by farmers are chili sales and packaging. Chilies sold by the farmers usually have been neatly arranged and packed in sacks with the average weight of around 40 kg. The marketing function performed by the middlemen are an exchange function (sale and purchase of curly red chili), physical function (transport) and facility function (searching price information and providing capital loan for farmers). Large traders perform an exchange function (sale and purchase of curly red chili), physical (transport), and facility (not only searching price information, but also providing capital loan for farmers). Wholesalers, sub-wholesalers and retailers also conduct a

marketing function, namely, exchange (sale and purchase of chili), physical (transport) and facility (searching price information and sorting). All these contribute to the value of the chili.

Based on chili product homogeneity aspect, farmer respondents, in general, sell their product to middlemen/collectors in the form of fresh chilies. Meanwhile, for traders ranging from large traders to retailers sell chilies in various types, such as small red chili, big red chili, curly red chili, and others.

In terms of price information, it shows that at farmer level, farmer respondents obtained price information from fellow farmers, middlemen, and farmer group. The farmer respondents obtained price information mainly from handphones and direct/face to face interaction, followed by the internet and television. On the other hand, at the trader level, price information was acquired from fellow traders.

Business/trade facilities owned by the traders were at the very least motor vehicles and/or trucks. The middlemen could directly go to the farm to purchase chilies. The transport would generally use motor vehicles. Meanwhile, large traders owned transportation facilities in the form of trucks to carry chillies to the central market. Most of the wholesalers and sub-wholesalers only owned a stall/store. They have a sale and purchase place at similar locations so that they did not need any transport. It is different with the retailers, who usually come from around the central market, they often use motor vehicles for transport. The summary of market structure of chilis is presented in Table 56.

3.4.2. Conduct

Barrier to Entry

A barrier to entrance to the market, can be seen at the middleman, the large trader and the wholesaler level. The new business actor, who will enter as a middleman must have sufficient capital for purchasing chillies. Around 93 percent of farmer respondents were paid in cash from their sales by the middlemen, while the remaining 7 percent were paid with a delayed payment system of around 2 days after delivery. In addition, it was similar for large traders who must have capital for buying from the middlemen. This payment was cash (83%)and the delayed payment system (17%). Wholesalers also need capital because purchasing in large quantities requires a substantial amount of money.

Traders from the production areas depend on the wholesale markets around Jakarta, as more than 70% of chili is sold in these large wholesale markets. Traders tend to hamper free competition since they have established markets over many years. Only large traders, who are well known and already subscribed with wholesale traders will be accepted as their suppliers. The limited access between these marketing agencies is due to the existence of unbreakable bonds between them such as: funds, family relationships and long-standing relationships. This, as it is not hard to imagine, provides barriers for new entrants (new traders).

Vertical Integration

Vertical integration refers to the linkage between activities from upstream to the downstream. Based on study results, there has not been found any chili business actor performing vertical integration whether from upstream or to the downstream. From upstream side, especially chili seed business which was found that the farmer respondents bought chili seeds directly from a recognized seed company and farm store. Middlemen and/or large traders, in sometimes managed their own chili farm. Meanwhile, for chili processing, there are farmers who became partners of PT Indofood Sukses Makmur Tbk through the farmer group. This partnership is mutually beneficial for both parties as the price accepted by farmers is relatively stable even though there are adjustments every time.

Dominant Position

Market domination is starting from chili producers to consumers will lead to a bargaining position between sellers and buyers in price determination. Generally, the chili price determination is carried out through bargaining but the final decision remains the traders who are at the top level. This dominant position is highly related in the chili market structure. If the chili price is accepted at the marketing institution and at the central market it becomes the reference price.

Accordingly, the following Table presents list of a strong wholesalers in Kramat Jati Central Market (DKI Jakarta) and Cibitung Central Market (Bekasi).

Table 60 Chili Wholesalers in Kramat Jati and Cibitung Central Market

Central Market	Number	Name of Wholesalers	Business Place Number
Kramat jati (DKI Jakarta)*	1	H Diki Alamsyah	A L00 HSB 013
	2	H. Joharlis	A L00 HSB 005
	3	Sujiman	A L00 HSB 133
	4	H. Suhardi, SE	A L00 HSB 015
	5	H Imam Siryadi	A L00 HSB 143
	6	Alim/H Saep	A L00 HSB 034
	7	H Suep Tohir	A L00 HSB 052
	8	H. Nurkholis	A L00 HSB 052
	9	Hj Nani	A L00 HSB 025
	10	H. Sutrisno	A L00 HSB 076
	11	Rela	A L00 HSB 003
	12	Suprayitno	A L00 FSB 092
	13	Dhani	A L00 GSB 159
	14	Nuryanto	A L00 GSB 158
	15	Mukid	A L00 FSB 088
	16	Udi, SE	A L00 FSB 051
	17	Rifai	A L00 FSB 051
	18	H Marimin	A L00 GSB 165

Central Market	Number	Name of Wholesalers	Business Place Number
Cibitung (Bekasi, Jawa Barat)	1	Haji Udin	
	2	Haji Sri	
	3	Haji Wir	
	4	Haji Parto	
	5	Haji Edi	
	6	Haji Odi	
	7	Haji Mukhtamar	
	8	Haji Ceong	
	9	Haji Ude	

Sources: * Kramat Jati Central Market (2016)
** Information from traders

Exclusive Dealing

There are several farmers who have established cooperation with PT Indofood Sukses Makmur Tbk through a farmer group to deliver chilies to the company. The company conduct a partnership with various farmer groups to meet their needs for raw materials for processing, whether in the form of dried chili, sauce and chili pepper condiment. Nevertheless, not all chili farmersare partners with the company, due to a limited processing capacity. Farmers can still have alternatives in selling their produce if they desire.

Hoarding

Chili middlemen, in general, after purchasing the chillies, sell them immediately to the marketing institutions. Due to the chili's perishable characteristics, the chili price fluctuates because farmers and traders will not keep the chillies until the price is high.

Other Frauds

Frauds often take place between the traders in Cibitung Central Market. One of them is Manipulation from other traders' in the form of "henchmen" who claim, for example, that they are the subordinates of wholesaler-A who was performing the transaction at the time. When the chili deliveryman arrives, these "henchmen" provide false information that wholesaler-A did not order red small chilis to the deliveryman, who brought the chillies from the production centers. In fact, wholesaler-A had ordered beforehand. Consequently, the amount of chillies entering wholesaler-A was small and consumers switched to other wholesalers who had many chilies.

Price determination

In the field study area, Garut District, price determination refers to the price in the Central Market (Cibitung, Kramat Jati, and Tanah Tinggi). The price is influenced by the amount of supply entering the market. The law of demand and supply states that, if the supply in central

market is abundant, the price will fall. Conversely, if the supply of curly red chili in central market is small, the price will rise. The price information, is easily attainable technology known by wholesalers, traders and farmers. However, the seasonal nature of chili production means the price cannot be immediately responded to by farmers. In Tanah Tinggi Central Market, chili supply enters between 7.00 am until 5.00 pm WIB. The majority of chili comes from Central and East Java. In addition, chilies are also supplied from Sulawesi Island and Lombok Island in West Nusa Tenggara (NTB). The chilies from Makassar, transported by plane and brought to the central market using pick up trucks like the L 300. Using planes is preferred due to chili's perishable characteristics. Although the cost is quite expensive, the traders can still make a profit if sold at the market price like the chilies from other regions. These are usually called airport chillies. They arrive between 12.00 pm and 3.00 pm WIB. Chilies from Lombok are delivered using planes or expedition trucks.

The goods are unloaded in wholesalers areas and are distributed by sub-wholesalers (*centeng*). The buyers (in Tanah Tinggi Central Market case) sometimes prefer buying from the sub-wholesalers because they can select the best good quality goods. There is no need to buy in bulk, and the sorting has been done so the quality is assured even though the price is higher.

Payment System

The sub-wholesalers will pay usethe temporary delayed payment system and will be paid after the goods are sold. When the price is high, the sub-wholesalers will fight for the best quality goods. They even wait on the road until scrambling onto the trucks which are still heading towards the central market. Therefore, when unloaded, the wholesalers' goods are all taken by the sub-wholesalers. They mark the goods that will be taken with their initials on the sack they want to buy. The sub-wholesalers, in one side, help the wholesalers to sell the goods, but in other side, they cause the price to increase and harm the consumers.

All transactions of the curly red chili sold in the Garut District are using the delayed payment system. The system operates at all marketing levels, whether between farmers and middlemen, middlemen and large traders and large traders and wholesalers. This payment system is conducted by delivering the chilies first, followed by the cash payment.

Selling system

Most farmer respondents, market their chili to the collecting traders rather than to other marketing agencies. In terms of quantity, the collecting traders receive the largest volume of chili products from the farmers.

Chilis are both seasonal products and are needed regardless of the season. It is necessary to supply at all times. Therefore, the wholesalers must bring chili stocks from other regions for the daily supply of chili to Pasar Induk. In addition, when the supply of chili obtained from farmers and collecting traders is quite small, the big traders prefer to sell their chili to a closer market or local market.

Figure 65 shows the percentage of farmer respondents based on their sales destinations. Most of the farmers (87%) sold chili directly to collecting traders (in villages and sub-districts) and the rest (13%) sold to wholesalers. Meanwhile, not one of the respondents sold their crops to exporters or other destinations.

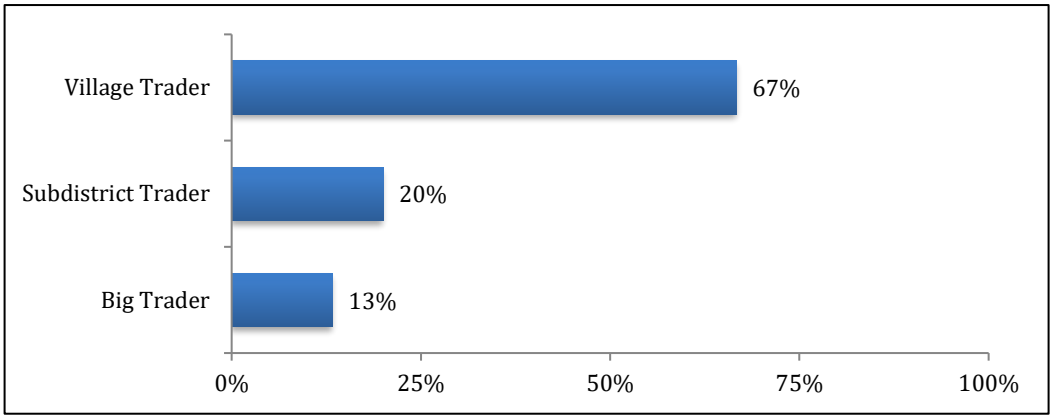


Figure 65 Percentage of farmer respondents and main buyer

The chili products sold by the respondents (100%) is in fresh form (Table 61). It shows no farmer respondents do any chili processing. The fresh chili productsare determined by the consumers' habits in consuming fresh chili. If the supply of chili declines and the needs of chili for consumers continues, then the price will increase. This causes the price of fresh chili be more fluctuating than the price of processed chili, which are relatively constant.

Table 61 Number of farmer respondents and types of chili products sold

Type of Sold Product	Frequency	Percentage
Fresh	15	100
Processed	0	0
Others	0	0
Total	15	100

Furthermore, based on the sales locations, it shows that about 67% of farmer respondents sold their chili in the same village as they are located, followed by selling the chili to consumers from other villages in sub-districts (27%) and from out of sub-districts in the same district (7%). There are no respondents who sold chili to outside the district or the province (Figure 66).

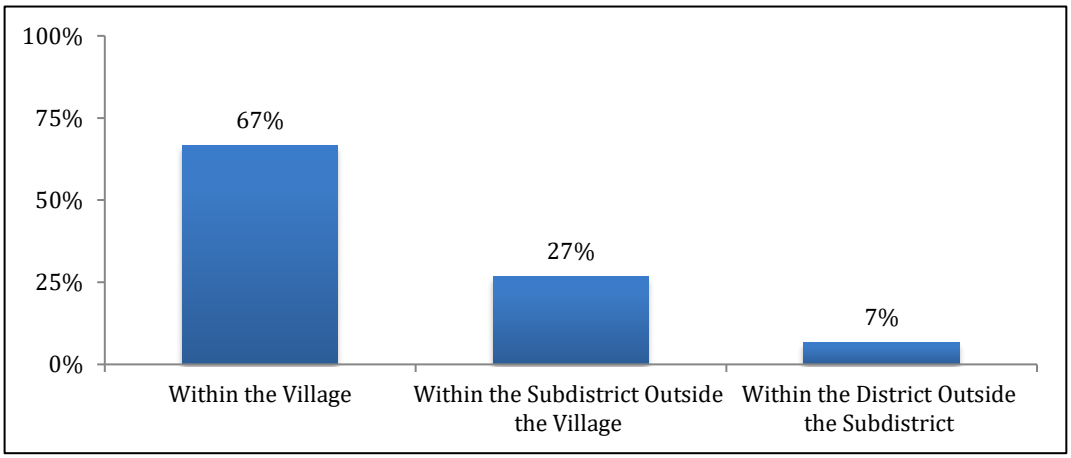


Figure 66 Percentage of respondents based on sales location of chili

The reasons why respondents sell their crops to certain traders are more expensive prices, more affordable locations, loyal customers, family relationships, capital lending ties and contracts (Table 62). The biggest reason farmers choose a particular trader is the higher price. The higher prices can be an incentive for the farmers to market their chili to a particular trader.

In addition to price factors, long-standing relationships with customers (having loyal customers) also influences some respondents to choose their trading partners. Farmers prefer to sell the chili to the collecting traders who are used to be their loyal customers for reasons of trust. Farmers also prefer, to market to the collecting traders, because they are relatives or have family ties. Contracts refers to an oral contract between farmers and buyers. As such, it will not tie the farmers to sell their chili to the same buyers.

Table 62 Percentage of farmers respondent and selling reasons

Reasons Selling to the Buyer	Frequency	Percentage
Higher Price	6	40
Close Location	3	20
Long Term Relationship	2	13
Contract	1	7
Buyer Provide Credit	1	7
Family Relationship	2	13
Total	15	100

The linkage of capital between farmers, collecting traders and wholesalers shows that the farmer respondents prefer to sell their chili to traders who have provided them with capital to help them. According to the trader respondents, the connection of capital between the farmer and the trader is not always decisive factor for the farmers where to sell their products. There are some farmers who sell their chili to other traders, who offer relatively higher prices, even though the farmers are already bonded to a debt with certain traders. There are some farmers respondents who sell to certain traders because of a contract. The contracts between the farmers and traders are intended to maintain continuity of supply. Therefore, contracts occur between farmers and traders and/or between farmers and processing industries such as Indofood. Some benefits of a

marketing contract are a) the price is relatively stable because it is already set in the long term contract and b) this usually provides technical guidance of cultivation for the farmers.

Meanwhile, according to the delivery system of goods, it shows that 73.3% of farmer respondents deliver goods to the seller's place, while 26.7% of farmer respondents deliver goods to the buyer's place (Table 63).

Table 63 Place of transaction

Place of Transaction	Frequency	Percentage
Seller'sPlace	11	73.3
Buyer's Place	4	26.7
Others	0	0
Total	15	100

Price Bargaining Position

The majority of farmers bargain with the traders. In the process of bargaining, before sending the chili, farmers will ask traders about the price of chili at that time, then the farmers start bargaining the price even though the final decision comes from the traders. Similarly, the bargaining process occurs among local traders in Kramat Jati, Pasar Induk. The traders who will deliver chili to Pasar Induk will ask about the price to the other traders in the market. If the price matches, and after there is a price agreement, the chili will be shipped to Pasar Induk. Price changes can occur after the goods arrive at the market and this information will be relayed to the large suppliers. If the large suppliers do not approve the price changes then the chili will be withdrawn. However, this condition rarely happens.

Table 64 Price bargaining position over the five years (2011) and the last year (2016)

Description	2011(%)	2016(%)
I always accepted the price the buyer offers	7	7
I sometimes bargain with the buyer	7	7
I usually bargain with the buyer	87	87
Total	100	100

3.5. Beef

3.5.1. Supply Chain and Market structure

Supply chain structure

In the beef trading system, there are two different flows from producer to consumer, live cattle and beef trading systems (Figure 67). Figure I explains that the flow of live cattle starting from producers (cattle keeper) to slaughterhouses (RPH), while beef flows from RPH to consumers. The participants of the live cattle market consist of importers, traders, collecting agents and feedlotters with a livestock market and quarantine facilities. The participants of the beef market consists of butchers and retailers with meat market facilities and a PKH Office. From the producer side, Indonesia has three possible trading systems: trading in the island, inter-island as well as importing from abroad.

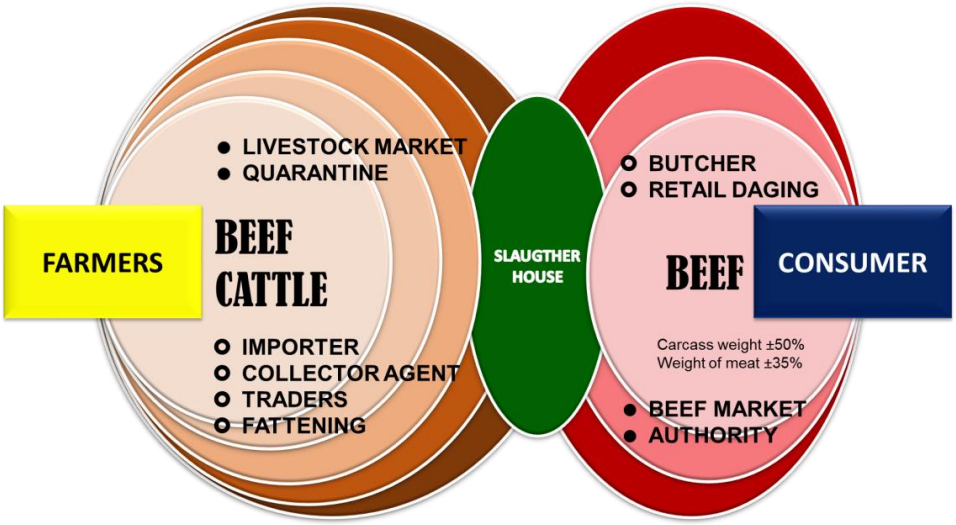


Figure 67 Beef trading system

Live cattle producers from abroad (mostly imports from Australia) are the shortest trading chain (Figure 68). Generally, cattle importers are feedlotters, therefore the trade channels are short and market participants are few. The longest trading chain is on the inter-island trading system, but the market participants are not always more than the in-the-island trading system. The collecting agent and sub-district/district traders usually performs, as an extension of the feedlotter, who is also an inter-island trader, just like importers. In contrast, the in-the-island trading system, has a chain that is relatively short, but the market participants are different, ranging from traders at the village, sub district, districts, provinces, slaughters and meat retailers.

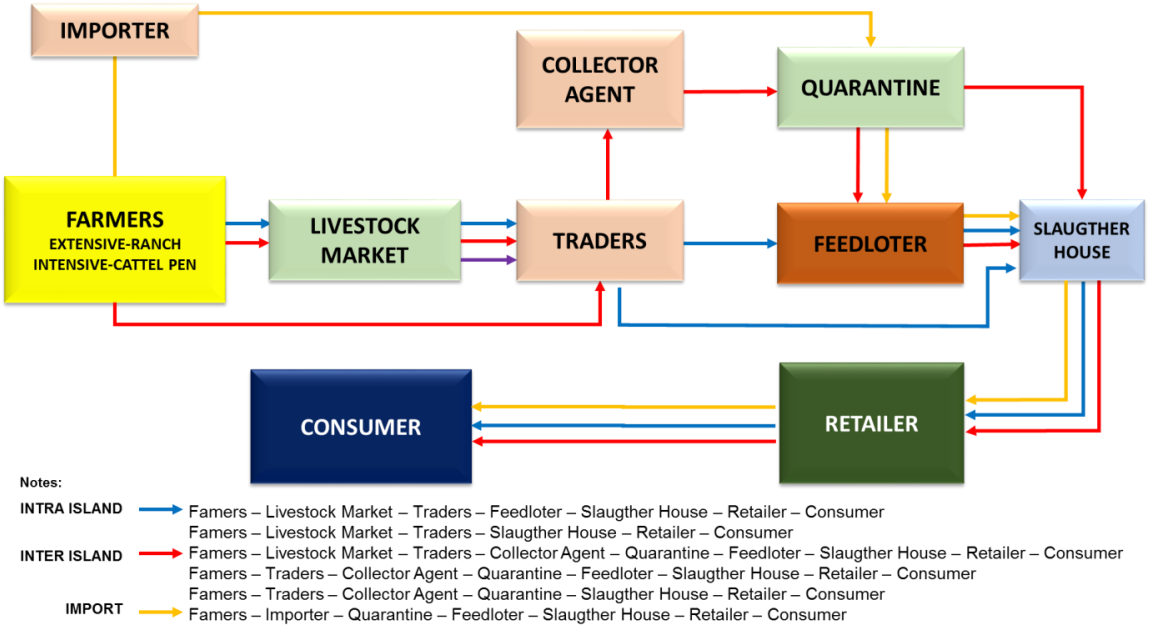


Figure 68 The chain of beef trade from producer to consumer

Cattle Keeper (Farmers)

Generally, there are three business models for cattle keeper, Cow Calf Operation (CCO)or Breeding, Raising and Fattening. Breeding is the calf producing activity, raising is calf raising activities to be sold as feeder cattle, and fattening is improving the lean beef/ feeder cattle to reach a desired slaughter weight by intensive feeding and cattle health.

The cattle raising system consists of a pasture/grazing and cage systems. Cattle keepers with the pasture system are found in imports and inter-island trading systems while cage systems are found in the island trading system. The production capacity of grazing systems abroad, ranges from hundreds to thousands of cattles, while in East Nusa Tenggara (NTT) and Bali the range is from tens to hundreds of cattle. This grazing system is also called an extensive system in the absence of value-adding by farmers or a naturally kept system.

Conversely, in the cage system, the average production capacity ranges from 2-3 cattle and the location of the cattle keeper are widespread and access is not easy. The cattle keeper with a fattening business has capacity for around 5-10 cattle and the selling frequency is once in every 4-5 months. This raising system is also called an intensive system, where value addingis provided by the cattle keeper, such as additional feeding (concentrate), reproduction handling, health handling and environmental conservation.

Trader, Collecting Agents and Importers

Traders and collecting agents collects the cattle according to the area coverage, livestock mobilization, sales transactions and inter island sales. In the import trade system, the role is carried out by the importer, while in the inter-island trading system it is conducted by the collecting agent and the trader. The in-the-island trading system it is only carried out by traders at the level of sub-district, district, and provincial traders.

Cattle traders (known as Blantik) usually gather at the livestock market. In addition, to this area, there are village (sub-district) traders whose functions is to directly purchasefor the cattle keeper (breeding, raising and/or fattening). Traders choose to have transactions in the livestock market, because the marketing costs are lower than in the location of the cattle keeper. Average purchasing amount from a cattle keeper is about 1-2 head, whereas in the livestock market up to 4 cattle in a week (Burhanuddin et al., 2016). In Sapudi Island, village (sub-district) traders buy the live cattle (about 5-10 head per week) from the cattle keeper and sell them to the district traders or in the livestock market (Burhanuddin et al., 2016).

The survey also shows that the cattle keepers often offer their cattle to the blantik and after the price is agreed, the trader will transport the cattle (usually done by the village traders) so it does not require any transportation costs, then the trader will bring his cattle to the livestock to the market with the cost of transport about IDR 100,000/head.

At peak condition, when many cattle keepers sell their cattle because of family needs (for school, their children or home renovation), traders can buy 3-5 head per week, however, in a normal condition, traders only gets 2-3 head (since most of the cattle keepers still consider that cattle are

to be used as a saving mechanism). The cattle keeper (fattening) will regularly sell their cattle about 5 -10 heads every 4 - 5 months and will be buy calves to be raised.

District traders usually buy live cattle from the village traders in the livestock market. According to Burhanuddin et al. (2016), this district trader can also perform as a regional trader (inter-district) by buying and selling cattle, around 17-40 head every two weeks in the livestock market or selling them directly to the slaughterhouses. In the inter-island trading system, the traders will distribute the live cattle to outside the island. Inter-regional traders can sell about 5-25 cattles per week (Burhanuddin et al., 2016).

Slaughterhouse

Based on ownership, there are two types of slaughterhouses, owned and managed by local government (Dinas Peternakan) or private. Slaughterhouses run by local governments, serve to provide for butchers / cattle fattening. Meanwhile, private ownership slaughterhouses also undertake trading activities by purchasing live cattle, slaughtering them and selling the beef to retailers or to processors (meatballs producers or restaurants). Currently, the number of private slaughterhouses is very limited because of livestock health problems.

From the results of a survey in one of the RPHs in Malang Regency, the cost for slaughter services is around IDR 150,000-200,000 / head which will be divided between 3-4 butchers. Another cost is the ticket to be paid to RPH is IDR 15,000 /head for bulls and IDR 30,000 / head for cows. The ticket price for cows is relatively high due to the examination procedure related to the prohibition of slaughtering pregnant cows (UU No. 41/2014, about reproduction examination). Thus, besides slaughtering services, RPH serves also as a provider of cattle inspection. In Kabupaten Malang, there are 9 RPHs owned by the Local government with an average slaughtering capacity of 5-8 head / day. The number of slaughtering services will increase to 30-40 in H-3 to H + 7 of Idul Fitri holidays and in the middle of fasting (Ramadan) to around 10 head.

Butcher and Beef Retailer

Butchers have similar activities to slaughterhouses, but they are independent and have no representative place to slaughter the livestock. One butcher can slaughter 3-21 live cattle at a cost of IDR 150,000 per head. The beef retailer purchases the meat from the slaughterhouses and sells it in traditional markets by adding a price difference/margin.

Generally retailer at the market are extension unit of butchery, each retailer already has their regular customer, especially Bakso seller. Therefore, every butchery can calculate how many cows should be butchered before hand. The connection built between retailer and customer is not bound by the price, but by emotional connection and trust. Thus, price increase will not drive customer to switch to other retailer or cheaper meat stock. From the butchery point of view, decrease in meat demand is not caused by the rising meat price, but due to community farming performance instead. If crop harvest is good, merchant will increase meat supply, and the contrary will apply when there is community crop failure.

Feedlotter

Feedlotters or cattle fattening keepers, who for a certain period performs intensive activities from upstream to downstream through procurement and selection of feeder cattle (steer or heifer), feeding and providing medicine. The feeder (steers or heifers) cattle usually comes from outside the island or abroad (imported). Feedlotters focus more on marketing, both for live cattle (such as bull for qurban) and beef. However, cattle keepers are starting to be interested in fattening cattle with a capacity of 10-15 head with the source of feeder cattle (steers or heifers) from the surrounding cattle keepers or livestock markets.

Transporter

Land transportation services use trucks and pickup trucks, while sea transport currently uses Pelni or Camara ships, which have been specially designed to transport livestock. Trucks and pickup trucks still require modifications in order to be able to transport the cattle. Aditia's (2017) shows that the Camara Ship has a capacity of 500 head is a fast and safe livestock transporter since it is equipped with SAR procedures for fallen livestock, as well as providing comfort and welfare of livestock (reducing the stress of livestock during these trips).

District Market Office

All live livestock markets are under the management and supervision of the District Market Office. Each office has different retribution policy. Retribution is used by the local government to control the trade of livestock, so the amount should not burden the livestock keeper and traders. Unfortunately, in the regional autonomy system, some of the livestock market management policy is not under the Animal Husbandry Department but, under the Market Office. This office does not have a veterinarian, who can check the condition of live cattle traded, so the pregrant cows are traded or even slaughtered outside the official RPH because there is no Reproduction Status Certificate issued.

Quarantine Office

This institution has an important role in the distribution of live livestock between islands. Main tasks of this office are to control the distribution of livestock and provide health checks from and to the outer islands and simultaneously documenting all livestock traded between islands.

Market Structure

As outlined above, actors which are involved in the beef market consist offarmers, village traders, sub-district traders, feedlotters, slaughterers and beef retailers. The products which are traded, are in the form of live cattle and beef. Live cattle are traded by farmers to slaughterers, while beef in the form of carcase and meat cuts are traded by slaughterers to the meat retailers and then to

the final consumers. Therefore, the market structure aspect will be different for each of market in the beef market (Table 65).

Table 65 Market Structure

Aspect in The Market Structure	Farmers	Village Traders	Subdistrict Traders	Feedloters	Slaughterers	Beef Retailers
Product Homogeneity	Heterogeneous: based on age, structure of population, weight	Heterogeneous: weight and age	Tend to be homogenous	Tend to be homogenous in the form of live cattle	Tend to be homogenous in the form of carcass	Heterogeneous: meat cuts, bones, oval
Product Sales/ Utilization	Sales based on needs	All of the products being sold	A small portion of the products are fattened to cut	All of the products are fattened and	All of the products are sold	All of the products are sold
Entry Barriers	None	Capital, Networks	Capital, Networks	Capital, technology, permit	Capital, permit	Capital, permit
Price Information	Access on Information is very limted	Access on Information is limted	Easy access on Information	Very easy access on Information	Very easy access on Information	Very easy access on Information
Restrictions on Sales	No restriction on Sales (Very Free)	Sales are generally restricted	Partly restricted	No restriction on Sales (Very Free)	No restriction on Sales	No restriction on Sales
Facilities and Policies	Assistance, Road Infrastructure	Road Infrastructure, Transport Vehicle	Road Infrastructure, Transport Vehicle	Land, Import Policy	Slaughterhouse (RPH), prohibition to slaughter productive cows	Business Location, HET (Maximum Retail Prices) Policy

a. Aspect of Product Homogeneity

Farmers purchase beef cattle with three purposes in mind, breeding, raising, and fattening. Based on these three objectives, the farmers purchase three types of live cattle including cows, young calves (*pedet*), and young bulls (*bakalan*). These types are usually varied in terms of age and weight. Therefore, the farmers does not have a specific pattern of sales regarding the best condition on certain ages and weights to sell their live cattle. At this stage, it can be inferred that it is difficult to attain the homogeneity of the products in the live cattle market as the sales do not refer to the supply and demand patterns.

The live cattle, which are traded by the village traders are also heterogeneous. It is difficult to obtain relatively uniform cattle in terms of age and weight as the structure of the population are diverse (Calves, Cows, and Young Bulls). Nevertheless, district traders have started sorting out the cattle, which are based on their weight, by fattening the underweight cattle so that the requirements from feedlotters can be fulfilled. As a result, feedlotters trade live cattle, which are relatively homogeneous.

Slaughterers purchase live cattle that are homogeneous and selling them in the form of carcases. This is mainly because the percentage of carcase to the weight of live cattle is somewhat similar,

despite the differences in the types. In the meantime, the products which are sold in the retailers are in the form of meat cuts, such as prime cut, secondary cut, ribs and legs, intestines and others.

b. Product Sales/Utilization

Farmers sell live cattle based on their needs. In fact, they are not easily incentivized to sell their cattle even though the live cattle prices is high. Moreover, the cattle will be sold whenever urgent need occurs despite possible low prices. In contrast to the farmers, all cattle purchased will be sold by the village traders. This type of sale is also performed by slaughterers and retailers. However, the products sold by are in the form of easily damaged beef, unless adequate storage facilities are available.

Sub-district traders and feedlotters conduct live cattle fattening to obtain a profitable selling weight. However, there are some differences in their practices, such as the amount of fattened cattle and the fattening technology. Hence, the production of the Feedlotter is seemingly more patterned (e.g. 3 months) in comparison to the sub-districts traders.

c. Price Information

The closer to the consumer, the price becomes more accessible. There isa tendency for the information on live cattle prices to be concentrated in district traders and feedlotters, while beef prices are concentrated in feedloters and slaughterers. Thus, feedlotters have an interest in obtaining the price, because they are highly prone to the risks whenever there are changes price.

d. Restrictions on Sales

All market actors have the freedom to sell, live and beef cattle. However, some village traders and sub-district traders are bound by restrictions on sales because of trust in the network, originated from a long standing social relationship.

e. Assistance and Policies

The live cattle farmers require government support in the form of assistance programs, for both distribution and cattle breeding. However, farmers spread over a wide range of areas still require road infrastructure to obtain better access to the markets. The Adequate maintenance of roads and specific transport vehicles are strongly needed by the village and sub-district traders to reduce the stress level of cattle and accidents.

In addition to road infrastructure and livestock transportation constraints, feedlotters also find it difficult to collect large numbers of beef cattle, as homogenized beef cattle are not concentrated in the same location and in the live cattle market. Therefore, the strategic location of the land, close to the production and consumption centers has become the decisive factor in the success of fattening beef cattle. Therefore, that seems rational, if the feedlotters prefer imported beef cattle (from outside the island or abroad) rather than collecting from local farmers.

Slaughterhouses (RPH) has a role as the controller of the beef supply, both on quantity and quality. In addition, it has a mandate to avoid pregnant cows. This is also related to the maximum retail prices (HET) policy on cattle, because each type of beef cut has a price that matches its quality.

The functions of marketing of live cattle and beef consist procurement and sales, transportation, sortation, slaughtering, packaging and storage (Table 66). In general, farmers do not perform marketing functions, unless they sell directly to the cattle market. Village traders only perform procurement, sales, and transport. Transport function is a major obstacle for the village traders, especially if the farmers are spread over a large area with inadequate road infrastructure.

The sub-district traders also experience a similar obstacle with village traders. However, they sort using the weight and type of cattle as well as other functions, such as slaughtering and fattening, District traders can cover the high cost of transporting. With greater production scale and better use of fattening technology, a feedlotter performs all marketing functions, resulting in much better value.

The slaughterer does all the marketing functions, because they are usually a meat retailer. However, slaughterers purchase live cattle and sell them in the form of beef cuts. Additionally, they also store carcases or unsold meat. Meat retailers also store unsold meat, but do not carry out transporting functions, since retailers generally receive on-site carcases. Retailers also implement sorting and grading on meat cuts and sell them at different prices.

Table 66 Actors' Marketing Functions in the Live Cattle and Beef Markets

Function	Farmers	Village Traders	Subdistrict Traders	Feedlotters	Slaughterers	Beef Retailers
Procurement and Sales	If it is needed	Performed	Performed	Performed	Procurement only	Sales only
Transportation	If sold in the market	Performed	Performed	Performed	Carcase	None
Sortation	No	No	Weight and Type of Cattles	Weight and Type of Cattles	Carcase Composition	Types of Meat Cut
Slaughtering	No	No	Performed by some traders	Performed	Performed	No
Packing	No	No	No	Performed	Performed	Performed
Storage	Cattles as Capital / Saving	No	Performed	Performed	Performed	Performed

Based on the description on the market structure aspects, the structure of beef is an imperfect market and the live cattle and beef markets are classified as a disintegrated market (Figure 69). The structure of the live cattle market tends to be oligopsony, i.e. the price is determined by fewer buyers relative to sellers. On the other hand, the beef market structure tends to be oligopoly, i.e. the price is determined by fewer sellers in comparison to buyers.

Based on Table 67, the number of traders around farmer location ranged between 2-7 traders. With the number of farmers being relatively larger compared to traders, it can be confirmed that market structure between farmer and trader/collector is olygopsony.

Table 67 Number of producers, traders, and buyers for beef

Description	How many producers/supliers/farmers around your location?			How many traders around your location?			How many buyers/traders have you sold to ?		
	Av	Min	Max	Av	Min	Max	Av	Min	Max
Beef	535	300	1000	4	2	7	2	0	10

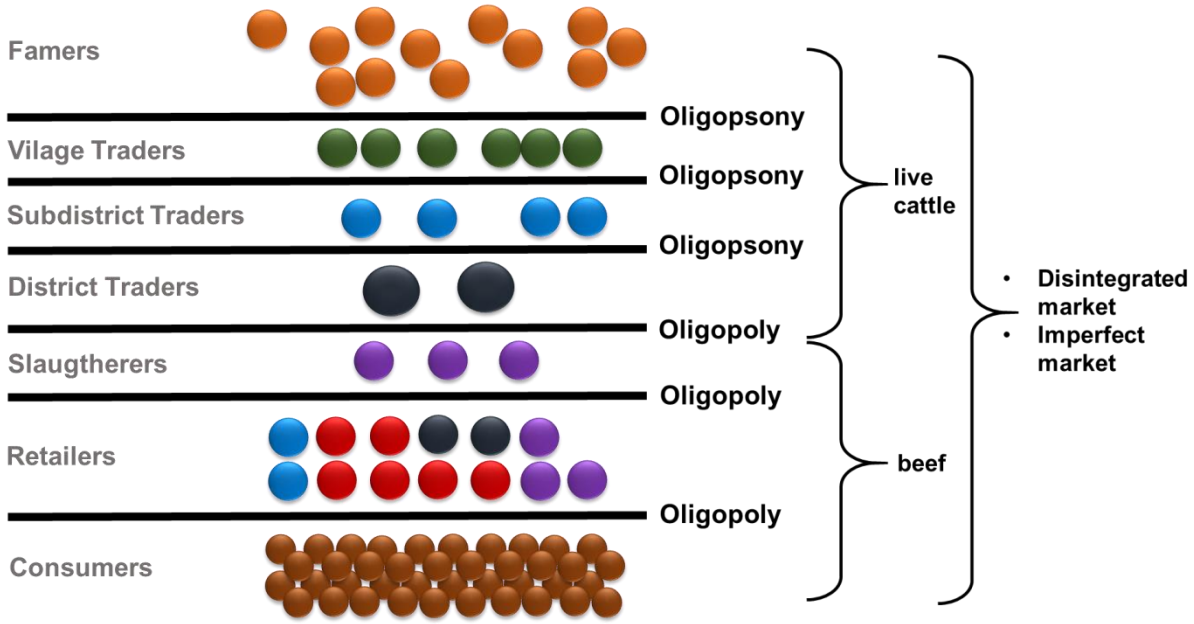


Figure 69 Market Structures of Live Cattle and Beef based on Actors

3.5.2. Conduct

Barrier to Entry

There are no significant obstacles to be farmers as the live cattle is considered as a divisible asset or inheritance. On the other hand, live cattle are classified as traded products, so the amount of owned capital and network amongst traders becomes the entry barrier in village and sub-district traders.

Capital is also an inhibiting factor for feedlotters, slaughterers, and meat retailers. Another entry barrier is a business permit that is quite rigid, because cattle and beef is a product that must be safe for consumers. The fattening technology is also considered as a high cost component especially for the feedlotters. This is because of the high dependence on feed ingredients and the daily body weight growth.

Vertical Integration

Vertical integration is characterized by the control of live cattle business from upstream to downstream. As the pattern of the majority of live cattle production relies on the farmers breeding, the vertical integration will be difficult to be implemented. Unless there is a large and broad scale breeding of live cattle supported by massive breeding technology.

Moral hazard

In the supply chain of beef, the high risk poses in the process of transporting live cattle. Because the vehicle used is not designed specifically to transport live cattle, the cow stress level is very high and they are prone to impact injuries. This condition leads to a decrease in the weight, a decrease in the quality of beef, and even and unfortunately not infrequently, the death of cattle. In fact, the weight loss of live cattle is a determinant to the profit that will be obtained.

To return, the weight of the cattle to the pre transported weight require time and costs. Consequently, moral hazards have frequently occurred in the supply chain. Some indications of moral hazard that have occurred are removal of tails and the eyes of the cattle rubbed with chili or balm, so the cattle do not collapse during the trip. In addition, to restore the initial weight, the cattle are often forced to drink a lot of water (*glonggongan cattle)*. The practice however damages the internal organs and reducesthe quality of meat.

Dominant position

At the RPH level, a dominant position exists (Table 68). However, RPH only provides services of slaughtering beef cattle. As such, the RPHs do not control the supply of beef cattle. From the number of cattle being slaughtered, as the East Java RPH slaughters most of the beef cattle (25.09%) (Table 69). This shows that East Java is the center of live beef cattle in Indonesia.

Table 68 The Largest Meat Slaughterhouse in Indonesia, 2014

No	Province	Regency	Production Worker	Production Value (Thousand IDR)	Share (%)
1	Jakarta	East Jakarta	131	245,200,000	45.01
2	East Java	Bojonegoro, Jombang, Sidoarjo, Surabaya	352	204,509,802	37.54
3	West Java	Subang	70	62,663,413	11.5
4	Yogyakarta	Yogyakarta	30	32,391,122	5.95

Table 69 Average number of beef cattle slaughtered at Slaughterhouse (RPH) by province in 2008-2015 (cattle)

Province	Number of beef cattle in 2008-2015 (Cattle)	Share
ACEH	24,977.38	1.93%
SUMATERA UTARA	25,738.50	1.99%
SUMATERA BARAT	35,962.88	2.79%
RIAU	17,555.75	1.36%
JAMBI	10,260.13	0.79%
SUMATERA SELATAN	27,075.00	2.10%
BENGKULU	6,610.88	0.51%
LAMPUNG	11,042.25	0.86%
KEP. BANGKA BELITUNG	7,283.38	0.56%
KEP. RIAU	890.67	0.07%
DKI JAKARTA	41,735.50	3.23%
JAWA BARAT	173,726.75	13.46%
JAWA TENGAH	181,537.13	14.06%
DI YOGYAKARTA	17,899.00	1.39%
JAWA TIMUR	334,307.25	25.90%
BANTEN	78,665.50	6.09%
BALI	46,180.63	3.58%
NUSA TENGGARA BARAT	30,833.50	2.39%
NUSA TENGGARA TIMUR	25,927.50	2.01%
KALIMANTAN BARAT	17,320.50	1.34%
KALIMANTAN TENGAH	12,661.75	0.98%
KALIMANTAN SELATAN	18,480.13	1.43%
KALIMANTAN TIMUR	41,360.50	3.20%
KALIMANTAN UTARA	1,613.67	0.13%
SULAWESI UTARA	3,768.38	0.29%
SULAWESI TENGAH	16,423.25	1.27%
SULAWESI SELATAN	49,147.38	3.81%
SULAWESI TENGGARA	10,566.63	0.82%
GORONTALO	5,653.25	0.44%
SULAWESI BARAT	1,867.25	0.14%
MALUKU	4,239.75	0.33%
MALUKU UTARA	2,149.38	0.17%
PAPUA BARAT	5,180.86	0.40%
PAPUA	4,424.13	0.34%
INDONESIA	1,290,853.50	100.00%

Source: BPS, 2017

Table 70 List of feedlotters in Indonesia

No	Name of Feedloter	No	Name of Feedloter
1	PT. Agrisatwa Jaya Kencana	20	PT. Kariyana Gita Utama
2	PT. Andini Agro Loka	21	PT. Karunia Alam Sentosa Abadi
3	PT. Andini Persada Sejahtera	22	PT. Legok Makmur Lestari
4	PT. Andini Karya Makmur	23	PT. Lembu Andalas Langkat
5	PT. Austasia Stockfeed	24	PT. Lembu Jantan Perkasa
6	PT. Bina Mentari Tunggal	25	PT. Mitra Agro Mandiri Abadi
7	PT. Brahman Perkasa Sentosa	26	CV. Mitra Agro Sangkuriang
8	PT. Catur Mitra Taruma	27	CV. Mitra Agro Sampurna
9	PT. Citra Agro Buana Semesta	28	PT. Nusantara Tropical Farm
10	PT. Elders Indonesia	29	PT. Pasir Tengah
11	PT. Eldira Fauna Asahan	30	PT. Rumpinary Agro Industry
12	PT. Fortuna Megah Perkasa	31	PT. Sadajiwa Niaga Indonesia
13	PT. Great Giant Livestock Co	32	PT. Santosa Agrindo
14	PT. Hade Dinamis Sejahtera	33	PT. Septia Anugerah
15	PT. Indah Gemilang Perkasa	34	PT. Sukses Ganda Lestari
16	PT. Indofarm Sukses Makmur	35	PT. Sumber Cipta Kencana
17	PT. Indo Prima Beef	36	PT. Tanjung Unggul Mandiri
18	PT. Juang Jaya Abdi Alam	37	PT. Widodo Makmur Perkasa
19	PT. Kadila Lestari Jaya		

Source: www.gapuspindo.org

Distribution system of live cattle

The two distribution systems of live cattle (inter-island and intra-island) are presented in Figures 70 and 71. Figure 70 explains the time required for cattle to be ready for the slaughterhouse (RPH) is approximately 10 days and feedlotter cage about 12 days. Prices per kilogram of live weight cattle changed from approximately IDR 30,000 per kg to be approximately IDR 45,000 per kg of live weight. In the in-island trading system, the price of cattle in the RPH or in the feedlotter is the same, but the price at the cattle keeper is higher (Figure 70). The price difference at the farmer level is due to different raising systems, either grazing or cage systems.

Utami (2016) found that the price transmission elasticity between beef cattle and the retail price of beef in Indonesia is less than one percent, ie 0.42. This explains that both prices (cattle and beef) tend to react slowly to market changes. In other words, the cattle market, with the beef

market, is not strongly integrated and reflects the high marketing costs generated by inefficient markets. This is indicated by the number of stakeholders and a undeveloped marketing infrastructure.

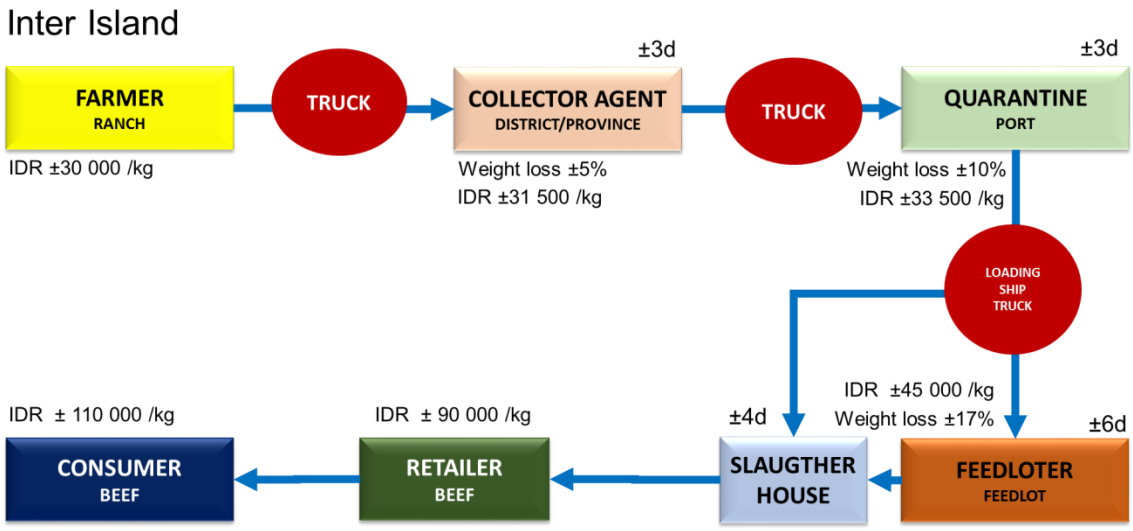


Figure 70 Inter island cattle trading system

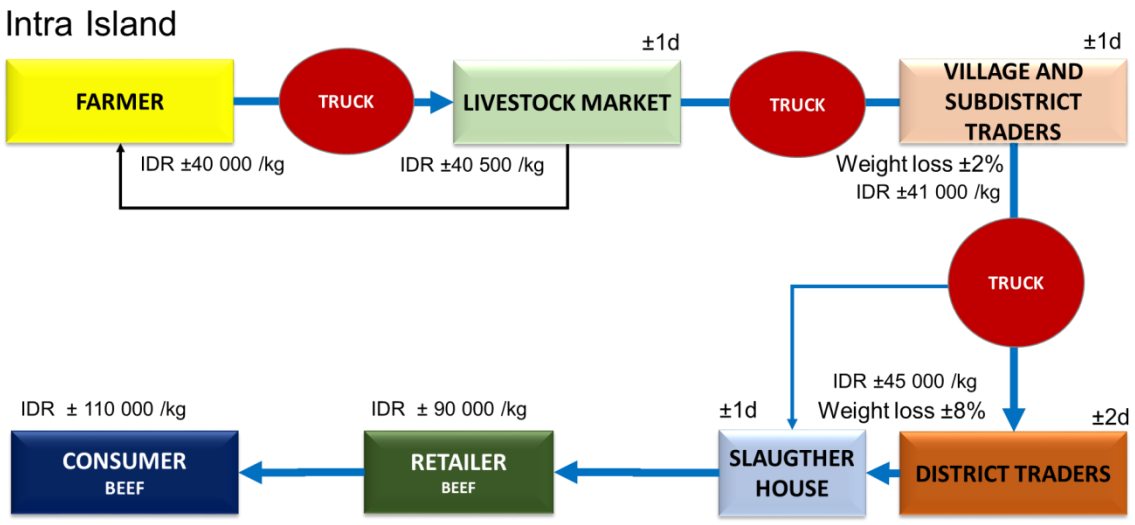


Figure 71 Intra island cattle trading system

Price bargaining position

The study indicated that there was a change of bargaining positions of farmers in determining the agreed price between 2011 and 2016 (Table 71). Farmers tend to have an increasingly strong bargaining position as a result of information openess. However, with an estimated system of live weight cattle or "jogrogan", the agreed price will be more beneficial for the cattle trader. In such a position, traders estimate that live cattle weight is always under the actual weight, so that their bargaining position is stronger.

Table 71 Price bargaining position over five last years (2011) and last year (2016)

Description	2011	2016
I sometimes bargain with the buyer	0.00	10.00
I usually bargain with the buyer	100.00	90.00
Total	100.00	100.00

Therefore, although the number of cattle keeper is more than traders, it is a strong indication that live cattle market structure tends to be oligopsony, while the market structure of beef tends to oligopoly. Therefore, overall the beef market in Indonesia can be classified as an imperfect market (Utami 2016).

Payment System

Live cattle that are traded in the livestock market are feeders (steers or heifers) and beef cattle (Table 72). The feeders will be fattened and re-sold by the cattle keeper, while the beef cattle are ready to be bought to be slaughtered by butchers or RPH. The number of cattle ready to be slaughtered (66.66%) are more than feeders (33.33%). This indicates that the need for beef is still relatively high.

Table 72 Age of traded cattle

Age of Cattle (Months)	Frequency	Percentage
>24<36	3	33.33
≥36<48	3	33.33
>48	3	33.33
Total	9	100.00

All traders sell live cattle (100%) (Table 73). This indicates that the marketing distribution is still focused on live cattle compared to the meat and that the distribution process is easier. That is, the system of buying and selling still refers to commodities that are difficult to calculate the profit as well as to control the quality.

Table 73 Type of product traded

Type of Sold Product	Frequency	Percentage
Live Cattle	9	100.00
Total	9	100.00

The payment system which is widely practiced in the cattle market is 100% cash. Cattle keepers feel comfortable because all risks are transferred to the traders, while they also feel satisfied because they can estimate the benefits to be gained. Findings from the livestock market confirm that traders will sell the cattle if the difference with the purchase price of about IDR 200,000-300,000 per head on the same day (Burhanuddin et al., 2016).

Table 74 Payment system in cattle trading system

Payment System	Frequency	Percentage
Cash	9	100
Advanced Payment	0	0
Others	0	0
Total	9	100

Quality

Limosin is the most traded cattle type (76.2%) (Table 75). However, Simmental, Brahman, and Peranakan Ongol are also traded. Local types of cattle such as cattle of Bali and Madura are also raised. In addition, there are several cross breeds between the various types of cows, such as Brahman Cross (BX) and Madrasin (Madura Limosin), Santa (Simental with PO) and Blegon (Simental with Brahman). All these cattle breeds produce good quality meat.

Table 75 Type of cattle

Type of Cattle	Frequency	Percentage
Limosin	16	76.2
Simmental	1	4.8
Brahman	3	14.3
Others	1	4.8
Total	21	100

Nevertheless, the treatment to the cattle during the transportation process largely determines the quality of beef (Table 76). Aditia (2017) observed that during transportation the live cattle are stressed and weight could be lost,they can collapse or even die.

Table 76 Condition of cattle during transportation process

OBSERVATION	Supply Chain		
	AUSTRALIA	DOMESTICS: INTER ISLAND TRADE	DOMESTICS: INTRA ISLANDTRADE
Total Travel time	16 hours	5 days, 8 hours	24 hours
Characteristics and conditions of livestock	cattle in one pen / colony sex : steer / heifer sapi BX Weight 450-600 kg	the origin of cattle is diverse sex : bull sapi Bali Weight 200-500kg	the origin of cattle is diverse sex : bull Cross breed lokal cattle & PO Weight 300-350 kg
Weight loss	4% of the live weight (weighing carried out as soon as the livestock arrives at the destination)	12 % of the live weight (weighing carried out 2 days after livestock arrives at the destination)	No data Cattle is not weighed at the time of purchase
Behaviour	Livestock fall or slip during unloading process	Livestock slips, falls, jumps, backs and stops moving during loading and unloading	Livestock slips, falls, jumps, backs and stops moving during loading and unloading

Sumber: Aditia (2017)

Information

The price of beef is affected by the amount of beef production while the beef production is determined by the production demand and the population of live cattle. It is assumed that, the consumer price of beef will change if the cattle producers apply a quota system for the live cattle trade. However, cattle keepers receive the information about price mostly from traders (50.09%) and their fellow traders (such as Farmer Group and Breeder) (Table 77). Therefore, the previous findings of the beef market are not integrated with the live cattle market and the low price transmission is confirmed.

Table 77 Source of cattle price information

Source of Price Information	Percentage
Breeder	19.70
Village's Trader	42.42
Farmer Group	21.21
Big Trader	16.67
Total	100.00

Utami (2016) shows that the effect of a trade quota policy is positive, which means it is likely to increase the retail price of beef. However, the transmission of prices between consumer centers and producer areas is low, about 45%. In fact, the cattle keepers will sell live cattle to traders who

buy at higher prices or sell when the prices are high (Table 78). A small number of farmers sell their cattle to traders due to good relations or long-term friendship.

Table 78 Reasons for selling the cattle to the buyer

Reasons Selling to the Buyer	Frequency	Percentage
Higher Price	8	80.00
Long Term Relationship	1	10.00
Others	1	10.00
Total	10	100.00

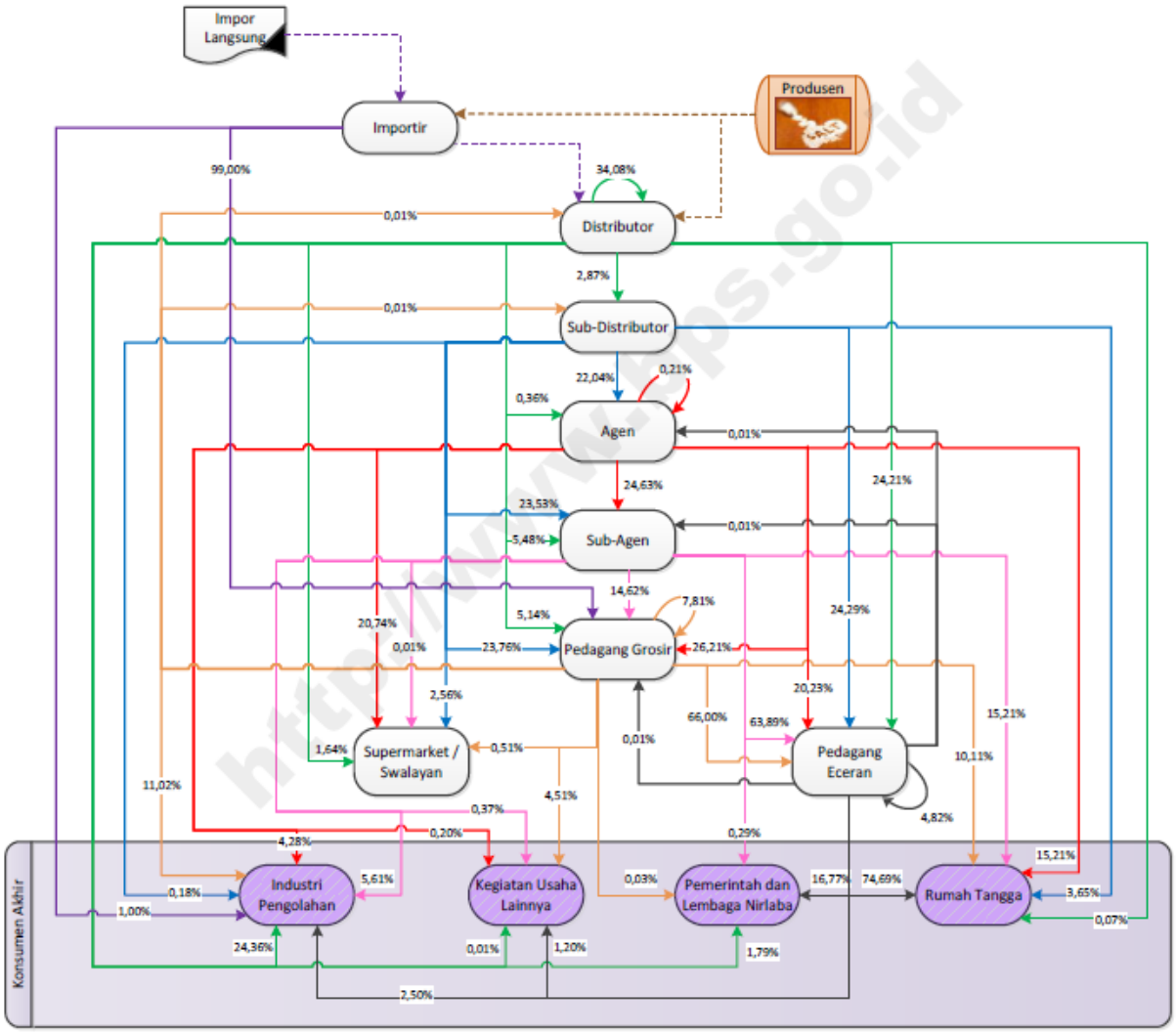
3.6. Salt

3.6.1. Supply chain and market structure

Supply chain structure

Statistics Indonesia, in 2014, conducted a survey in order to analyze the marketing channel of salt, especially from the salt processor and beyond. The survey revealed that there are five marketing institutions involved in the distribution of salt from the processor to the retailer. These institutions are distributor, sub-distributor, agent, sub-agent and retailer (Figure 72).

The study also calculated the margin received by these marketing institutions. It showed that the largest margin received by the distributors and agents was 24.8 percent meanwhile retailers received 18.98 percent (Statistics Indonesia, 2014).



Source: Statistics Indonesia, 2014

Figure 72 Salt Marketing Channel in Indonesia, 2014

In order to understand more on the marketing channel between the farmers and the processors, this study conducted a survey in Pamekasan Regency on the island of Madura, East Java Province. The regency is one of the largest producers of salt in Indonesia.

Farmer produced salt from sea water in ponds close to the sea. The harvesting begins after five to seven days, depending on the weather. The production of salt depended heavily on heat to dry the sea water therefore, only five to seven months in a year can be productive due to the high chance of rain. The salt is produced in the form of raw salt that is the processed to become soft salt. This salt can be used for consumption or for industrial purposes. The marketing channel of salt can be seen as follows:

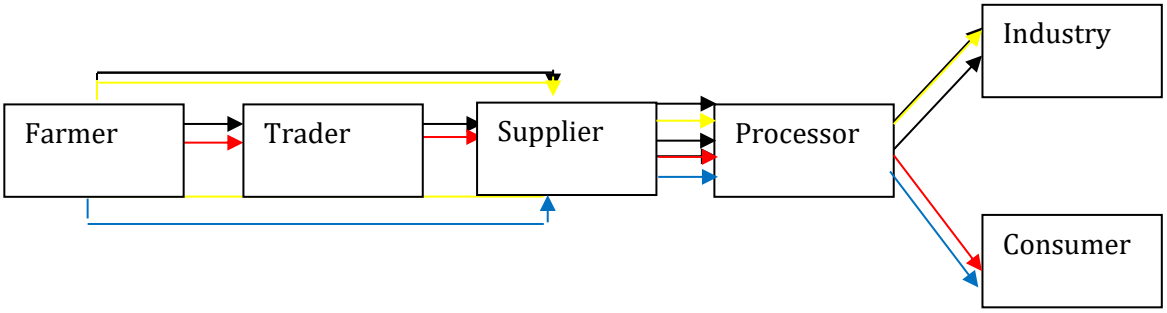


Figure 73 Marketing Channel of Salt

The marketing channel of salt from farmers to end users is as follows:
Farmer → Trader → Supplier → Processor → Industry
Farmer → Trader → Supplier → Processor → Consumer
Farmer → Supplier → Processor → Industry
Farmer → Supplier → Processor → Consumer

The marketing channel of salt can be classified into two. The first is when the farmer sells their raw salt through the trader and secondly when the farmers sell their raw salt directly to the supplier. Farmers usually sell their salt to the same person since the prices are relatively similar. In addition, sometimes farmers receive loan from traders and this is paid during harvest. Several farmers have their own storage facilities close to their pond. They store the raw salt when the price is low and sell when it is higher. The other main reason is the need for money for daily expenses.

Farmer produce rough salt which are then refined by the processing companies. They get their rough salt from traders and suppliers. These traders or supplier buy directly from the farmer's pond.

Market structure

The market structure faced by the different institutions is not competitive. The number of farmers are quite large with the other marketing institution being relatively small. Based on Table 79, the number of traders around the farmer locationd ranged between 1-8. With the number of farmers being relatively large compared to traders, it can be confirmed that the market structure between farmer and trader/collector is olygopsony.

Table 79 Number of producers, traders, and buyers for salt

Description	How many producers/supliers/farmers around your location?			How many traders around your location?			How many buyers/traders have you sold to ?		
	Av	Min	Max	Av	Min	Max	Av	Min	Max
Salt	26	2	100	4	1	8	2	1	6

The traders are mainly the employee of the supplier and these suppliers bring the raw salt to the processor. The number of players are small from traders to salt processors which gives the processors the market power to determine the price.

Traders are usually an agent of the supplier and are used to buy from the farmers. The salt is then transferred to the supplier. Only they or the trader using the suppliers can sell to the processor. Every processor usually has their own supplier.

The processor can be classified into two groups. The first is the large and medium processor, which is mainly located in the big cities and secondly, the small scale processor, mainly located near the production area. They mainly serve a specific market such as small scale salted fish firms or others. Based on the information gathered, during the field work, the supplier sell their raw salt to PT Budiono Bangun Persada which is located in Pamekasan Regency and PT Unichem which is located in Sidoarjo Regency.

The market structure for salt at various level of marketing channel is presented in Table 80. The farmers faced an oligopsony market which has limited numbers of traders. In Pamekasan Regency there are about 1464 salt farmers, with only 10 big traders. Limited traders only can sell to the salt processor making the market structure more oligopsony. Information on price and quality to farmers is based on the information from the traders and the farmers who cannot sell directly to the processor. The processors located in Pamekasan Regency are PT Budiono and PT Garindo. It was noted that several traders were employees of PT Unichem. This company is located in Surabaya Regency, 100 km from Pamekasan Regency.

Table 80 Salt market structure at various market levels

Seller	Buyer	Market Structure
Farmers	Traders	Oligopsony
Traders	Salt Processor	Oligopsony
Salt Processor	Wholesalers	Oligopoly

There are several aspects of market structure discussed and summarized in Table 81. In terms of product homegeneity, the producer, trader and supplier with the product is mainly similar being raw salt. Meanwhile, the processor is more heterogen according to size or packaging, which is then sold to industry or the consumer.

Most of the institutions have their own storage facilities. For farmers, they have their facilities close to theponds and will keep the raw salt when the price is low. Meanwhile traders and suppliers have their own storage and usually the capacity is larger than those of the farmers.

In terms of barrier to entry, farmers need suitable land which costing around IDR 100 million for one hectare, or IDR 20 million/per yearfor renting the land. Besides the land, farmers need also storage facilities, usually located nearby.

Traders have to own a storage facility, and have suitable transportation vehicles to pick up the raw salt and deliver it to the salt processor in Pamekasan or Surabaya. The traders (includes suppliers) need at least IDR 100 million every month to buy raw salt from the farmers. It is not

easy to be supplier since every salt processor has appointed their own supplier and in order to send the raw salt to the processor, it must go through these suppliers.

Salt processorsneed a very large investment to start a company. In addition, In order to be efficient a processing capacity of around 500,000 tonne of raw salt per year is needed (Ministry of Industry, 2002). In addition, salt processors also conduct the importing on raw salt in order to fulfill the national capacity. The price of imported raw salt is cheaper compared with the domestic salt, therefore processors prefer to import since they will receive a higher profit.

Price information can be achieved easily through traders or suppliers from various processors. Farmers can compare these prices and can choose to whom they want to sell to. The exception is if the farmers have been financed by traders or suppliers they may have to repay using their salt. Different processors offer different prices, depending on the quality of salt. There are also processors who only buy high quality of raw salt (KP1) meanwhile other processors only buy low quality salt (KP2 and KP3).

Table 81 Aspect on market structure for various marketing institutions

Aspect in Market Structure	Marketing Institution			
	Producer	Trader	Supplier	Processor
Product homogeneity	Relative homogenous	Relative homogenous	Relative homogenous	Heterogen
Product utilization	Have some stock	Have some stock	Have some stock	Have some stock
Barrier to entry	Land	Capital	Capital	Capital and technology
Price information	Easy	Easy	Easy	Easy
Facilities	Storage	Storage	Storage and transportation	Storage and transportation
Freedom to sell	Free unless is financed	Must sell to supplier	Must sell to specific processor	Free

3.6.2. Conduct

Dominant Position

The processor refines the raw salt to become either consumption salt or salt for industrial purposes. According to Statistics Indonesia, there are 118 salt processing plants in 2014 which are considered to be medium and to large enterprises. Meanwhile, there are 55 units of micro and small salt processing plants in 2014 as listed by Statistics Indonesia. Looking at the largest salt processors, all of them are located in Java and eight of them located in the East Java province. One of the largest processors is located in Pamekasan Regency which is PT Budiono Bangun Persada (Table 82). The concentration ratio or CR4 for the industry is 71.96 which means that the four largest plants/firms in the industry holds 71.96 percent of the market share and this number increased from 64.52 percent in 2013. This also means that the bigger firms dominates the industry.

Table 82 Large and medium salt Processor plants in Indonesia, 2014

No	Province	Regency	Production Worker	Production Value (Thousand Rupiah)	Share	CR4
1	EAST JAVA	PAMEKASAN	1000	802,499,705	36.99	71.96
2	EAST JAVA	SIDOARJO	708	32,394,163	24.54	
3	EAST JAVA	SURABAYA	831	41,659,580	6.53	
4	EAST JAVA	SURABAYA	268	84,555,811	3.90	
5	EAST JAVA	GRESIK	33	63,448,003	2.92	
6	BANTEN	CILEGON	352	58,507,889	2.70	
7	EAST JAVA	PAMEKASAN	426	56,895,487	2.62	
8	EAST JAVA	SURABAYA	33	55,948,003	2.58	
9	EAST JAVA	PAMEKASAN	28	32,243,198	1.49	
10	WEST JAVA	CIREBON	35	23,848,634	1.10	
11	OTHERS			317,315,590	14.63	
	TOTAL			2,169,316,063	100.00	

Source: Statistics Indonesia, 2014

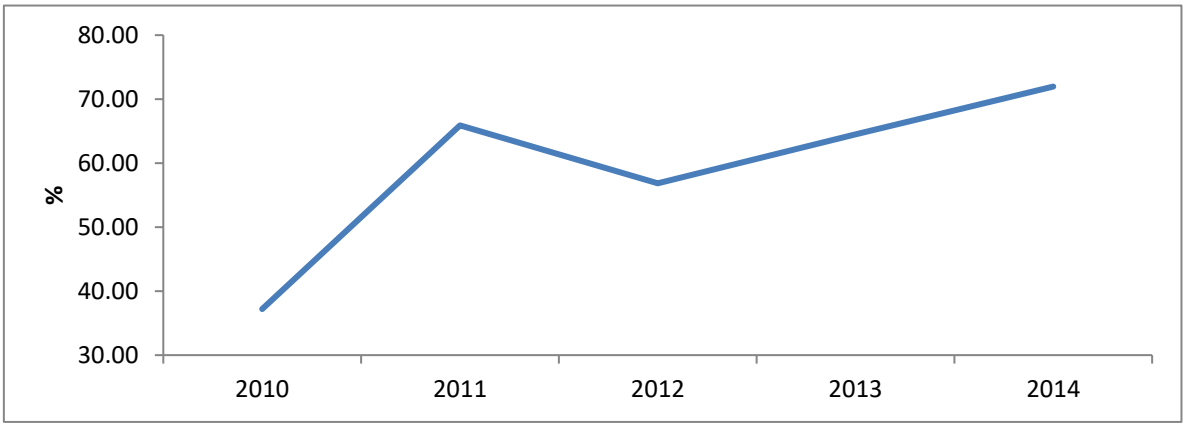
Table 83 shows the ten largest salt processors in Indonesia in 2013. Compared to CR4 in 2013, the CR4 in 2014 was higher (71.96% in 2013 versus 64.52% in 2013). As such, the market structure for salt processors is characterized by strong oligopoly. A company in East Java, (Pamekasan) was still in the first position in both 2013 and 2014. In 2013, this company had the share of 29.64% and this increased in 2014 to (36.99%). The position of other salt processors in the ten largest rice processors were relatively similar between 2013 and 2014.

Table 83 Ten largest salt processors in Indonesia in 2013

No	Province	District	Production Worker	Production Value (Thousand IDR)	Share	CR4
1	EAST JAVA	PAMEKASAN	1000	421,254,904	29.64	64.52
2	EAST JAVA	SIDOARJO	708	279,468,828	19.66	
3	EAST JAVA	SURABAYA	831	140,415,600	9.88	
4	BANTEN	CILEGON	73	76,000,000	5.35	
5	EAST JAVA	SURABAYA	298	68,496,781	4.82	
6	EAST JAVA	SURABAYA	81	34,145,570	2.40	
7	WEST JAVA	KARAWANG	64	26,979,216	1.90	
8	WEST JAVA	CIREBON	35	23,339,094	1.64	
9	EAST JAVA	GRESIK	74	21,888,048	1.54	
10	WEST JAVA	SUMEDANG	46	19,454,182	1.37	
	Others			310,033,075	21.81	
	Total			**1,421,475,298**	**100**	

Source: Statistics Indonesia (2014)

Comparing the data from previous years, it indicates that the concentration ratio of the salt industry has a positive trend. It reveals that several companies have control of the production of salt and their control keeps on increasing in the past few years (Figure 74). In 2010, the four biggest firms controlled 37.20 percent of the market but; in 2014 the number had increased significantly to 71.96 percent.



Source: Statistics Indonesia (2015)

Figure 74 Concentration ratio (CR4) of the salt processor industry

In Pamekasan Regency there are two dominant farmers. Both of them own around 100 Ha of salt fields. One of them is also the owner of PT Budiono which is one of the biggest salt processors in Indonesia. In other words, PT Budiono also conducted a vertical integration by owning the salt processor and the salt fields. Although the salt coming from its own fields is relatively small, at around 2 percent of the total capacity of the salt processor.

Table 84 List of big trader of salt commodity

PROVINCE	DISTRICT	NAME OF BIG TRADER
BANTEN	TANGERANG	PD. DANAM GARAM
	TANGERANG	UD. GUNUNG RAJAWALI AGRO NUSANTARA (PEDAGANG GARAM KASAR)
	TANGERANG	PT JAYA UTAMA SANTIKAH (PEDAGANG GARAM INDUSTRI DAN GARAM KONSUMSI)
	TANGERANG	PT. AR RAYYAN AL-MUBARRAK
DKI JAKARTA	NORTH JAKARTA	CV. WAHANA PERSADA NUSANTARA (PEDAGANG GARAM INDUSTRI DAN GARAM KONSUMSI)
	SOUTH JAKARTA	CV BINTANG PRATAMA C (PEDAGANG GARAM INDUSTRI DAN GARAM RENDAH SODIUM)
EAST JAVA	SURABAYA	CV. WAHANA JAYA MANDIRI
	SUMENEP	UD. ASMANA S&D (PEDAGANG GARAM K2)
	SIDOARJO	CV. SYSCO MULTI SOLUSI (DISTRIBUTOR GARAM RENDAH NATRIUM)
	PASURUAN	UD GARMAS
CENTRAL JAVA	PATI	CV GARAM BRIKET TIGA RODA,
	REMBANG	UD. KARYA BUMI

Sumber: https://www.Indotrading.Com/Company_Garam_331/

Table 85 Name of salt company in Indonesia

PROVINCE	DISTRICT	NAME OF COMPANY
BANTEN	PANDEGLANG	GARAM CAP GUNUNG PULOSARI
	TANGERANG	GARAM GUNUNG MAS
	TANGERANG	PT. KHALIFA GLOBAL INDONESIA (PEDAGANG GARAM INDUSTRI)
	CILEGON	PT CHEETHAM GARAM INDONESIA (PEDAGANG GARAM INDUSTRI, GARAM LOKAL, DAN GARAM KEMASAN)
WEST JAVA	SUKABUMI	GARAM SARI BUANA
	GARUT	GARAM CAP SEMAR JAYA SAKTI
	CIREBON	GARAM EKA SARI
	CIANJUR	GARAM HM
CENTRAL JAVA	PATI	PT GARAM BRIKET PERMATA LAUT,
	REMBANG	PT GARAM MAS
	PATI	GARAM MURIA JAYA
	PATI	PT GARAM NASIONAL
	REMBANG	GARAM NDANGDUT RIA
EAST JAVA	SURABAYA	PT GARINDO SEJAHTERA ABADI
	SURABAYA	PT SUSANTI MEGAH
	SURABAYA	PT GARAM
	SURABAYA	PT SUMATRACO L.M
	PAMEKASAN	PT BUDIONO
	PAMEKASAN	PT GARINDO

Source: Kemenperin

Vertical integration

Some salt processor also conducted vertical integration by owing salt fields.

Other unfair activities

There are several unfair activities especially to farmers which can be caused by collusion between the marketing institutions, these activities including:

- Looking at the number of salt farmers and marketing institution, it shows that farmers are the largest number and the salt processor the smallest number. This indicates that the farmers are more price takers and the salt processors are price makers. In addition, traders and suppliers are mostly the employee of the salt processors therefore, they determine the price.
- In the purchasing system, traders and suppliers have the authority to determine the weight of the salt purchased. For every sack the traders assume the weight is 50 kg, although the weight can be up to 55-60 kg. This activity cannot be stopped, since all the traders are usually the employee of the supplier therefore, the farmers have no power.
- In the salt processing level, there is an accusation that they controlled the supply and price especially among the processors in Madura. These accusations were investigated in 2006 by KKPU.

Payment System and reason for selling

Farmers sell their rough salt to traders or suppliers mostly because the buyer offers higher prices although most of the time traders or suppliers offer similar prices (Figure 75). Farmers also regard a long-term relationship as important when they sell to a trusted buyer.

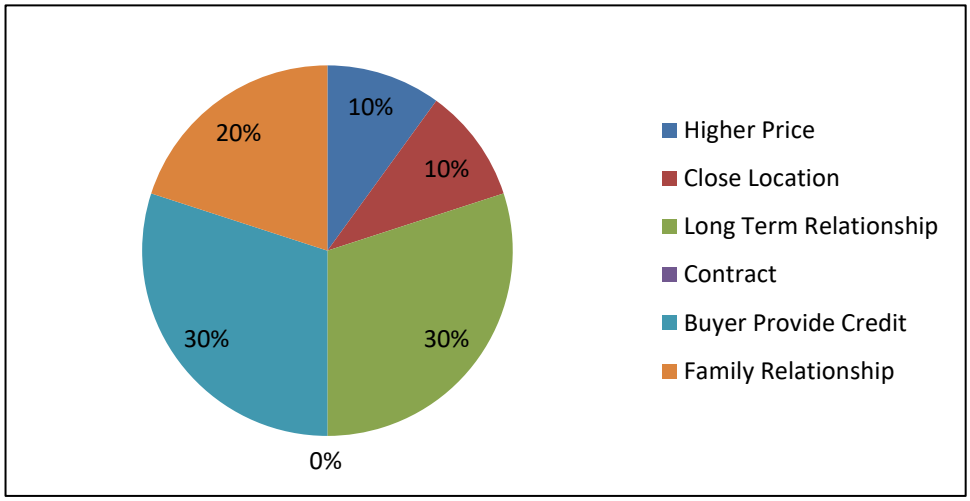


Figure 75 Reason for Selling in Salt Commodity

Half of the salt farmers receive their payment after delivering the rough salt to traders or suppliers (Figure 76). But half of them are paid one week after they deliver the rough salt. Traders or suppliers usually receive their payment after one week or at the end of the week. Therefore the traders or suppliers pay the farmers after they receive their payment from the salt processors. This delay payment usually happen to farmers that have large producing areas.

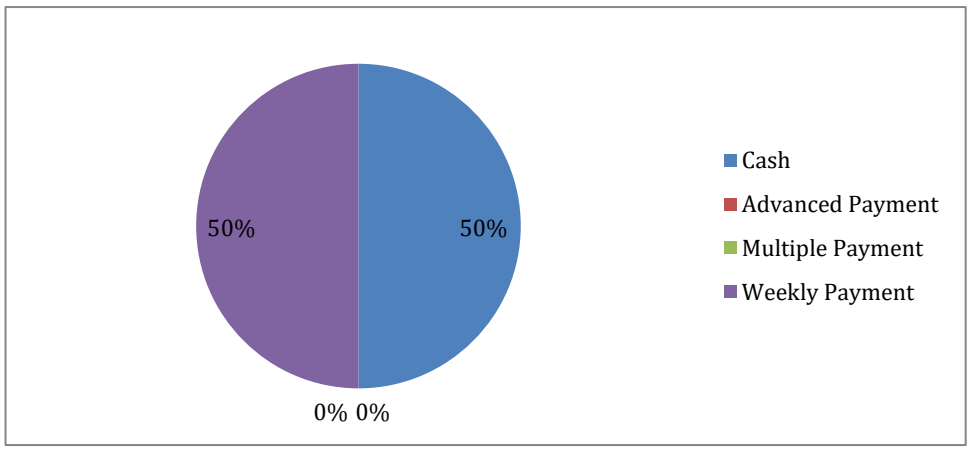


Figure 76 Payment system at the farmer level

Chapter 4 Performance

4.1. Efficiency

4.1.1. Price Trends

By using monthly price data from January 2012-December 2016 for sugar, rice, chili (red and small), shallots and beef, we calculated the mean and coefficient variation of each commodity. For salt, the data is only available from January 2012-January 2015.

From Table 86, it can be seen that the average producer price of sugar in the period of analysis was IDR 8,540 per kg and the average consumer prices was IDR 11,854 per kg. The coefficient variation of consumer price was higher than the producer price, showing that consumer prices tended to fluctuate compared to producer prices. From this analysis, it can be seen that the trend of price formation at consumer level is more determined by the marketing margin.

For rice, the average producer prices in the period of analysis were IDR 4,310 per kg (in the form of unhusked rice or dry mill-rice). The average consumer prices were IDR 9,290 per kg. The coefficient variation of the consumer price was higher compared to the producer price indicating that rice prices at the consumer level were fluctuated compared to producer prices. Both the producer and consumer prices have similar trends. As such, in order to reduce the price at the consumer level, the price at the producer level should be reduced as well.

For red and small chilis, they have a similar pattern in which consumer prices fluctuated compared to producer prices. Similarly, the prices of shallots and beef at the consumer level fluctuated compared to the producer level. Salt, as the coefficient variation indicates were almost similar (13 and 12).

Based on the coefficient of variation value of the producer and consumer price of chilli and shallots it shows that consumer price fluctuated more than the producer price. This means price changes at the consumer level are relatively faster compared with changes for producers. These changes are reflected at the central market level, i.e. Pasar Induk Kramat Jati (Jakarta), Pasar Induk Cibitung (Bekasi) and Pasar Induk Tanah Merapi (Tangerang). These central market (pasar induk) becomes a reference for other markets in price determination at both at the producer and consumer level. These reference markets get their supply from production centers. If these reference markets receive relatively large shipments from the production centers then the price in the reference market, which reflects consumer prices, will decrease. In contrast, if there is a scarcity of chili and shallots in the reference markets then consumer prices will quickly increase. The increase in the reference market is not immediately evident for the producer. But, if there is a fall in prices, the reference market will respond quickly with price reductions for the producer. Price changes in the central market (*pasar induk*) also cause price changes in the retail market. Price changes in the central market are also in response to price changes in the farmers market. In this case, the development of prices refers to shallot prices in Brebes. This Brebes development already represents a change in prices for farmers considering Brebes Regency is the largest shallot production center in Indonesia.

The trend from red chilli, small chili, and shallots are more dominated by the marketing margin. This can be seen from the CV value of the consumer price that is greater than the CV producer price. As such, control should be established in order to stabilize prices for the consumer. The values of CV at consumer price for red and small chili and shallots are greater than 20% showing large fluctuations of these three commodities. Policies on the distribution system are required to ensure price stabilization at the consumer level.

For beef and salt the values of CVs at the producer prices is almost equal to the values of CVsat the consumer prices. The prices formed are influenced by producer price and marketing margin. Policies on production and sales levels must be improved to ensure price stabilization at the consumer level.

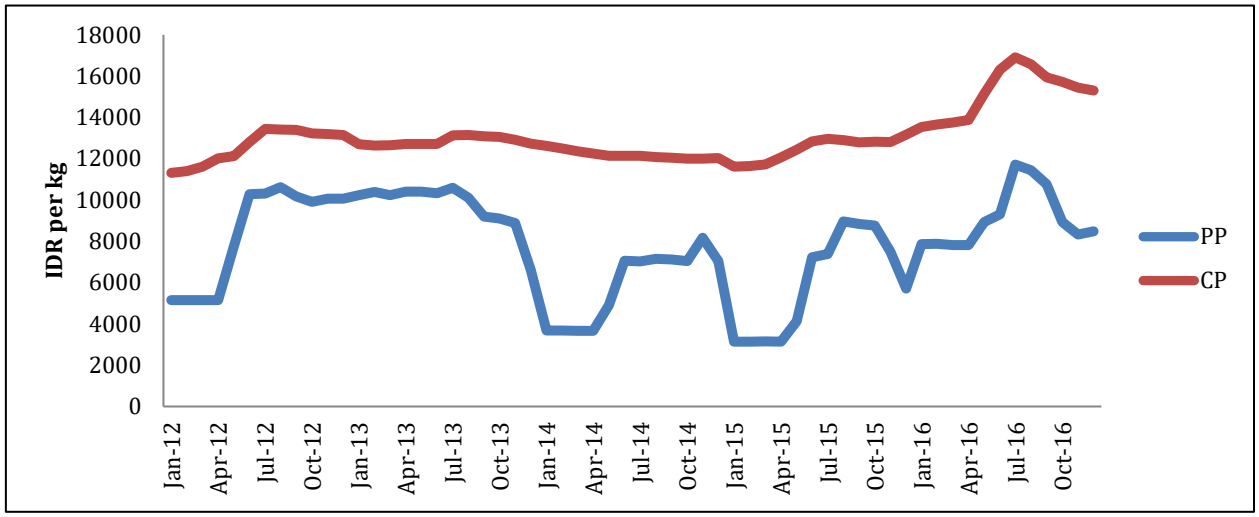
Table 86 Coefficient variation of commodities focus in the study

No.	Commodity	Price (IDR/kg)	Mean	Std.Dev	CV
1	Sugar	Producer Price	8,540	456	5.34
		Consumer Price	11,854	1,501	12.66
2	Rice	Producer Price	4,310	402	9.33
		Consumer Price	9,290	997	10.73
3	Red chili	Producer Price	20,178	1,369	6.78
		Consumer Price	30,434	9,596	31.53
4	Small chili	Producer Price	26,365	2,524	9.57
		Consumer Price	36,999	9,506	25.69
5	Shallot	Producer Price	15,583	1,999	12.83
		Consumer Price	27,127	10,170	37.49
6	Beef	Producer Price	38,940	5,424	13.93
		Consumer Price	95,028	14,062	14.80
7	Salt	Producer Price	816	112	13.70
		Consumer Price	2,790	342	12.25

Source: Statistics Indonesia, 2017

Note: PP for rice refers to unhusked rice price (IDR/kg), PP for beef refers to price of live cattle (IDR per kg)

The price trends of each commodity are presented in Figure 77 to Figure 83. The consumer and producer prices for all commodities tend to increase from January 2012- December 2016. All the commodities experienced increasing price during the period.



Source: Statistics Indonesia, (2017)

Figure 77 Monthly data of producer and consumer prices of sugar in January 2012-December 2016

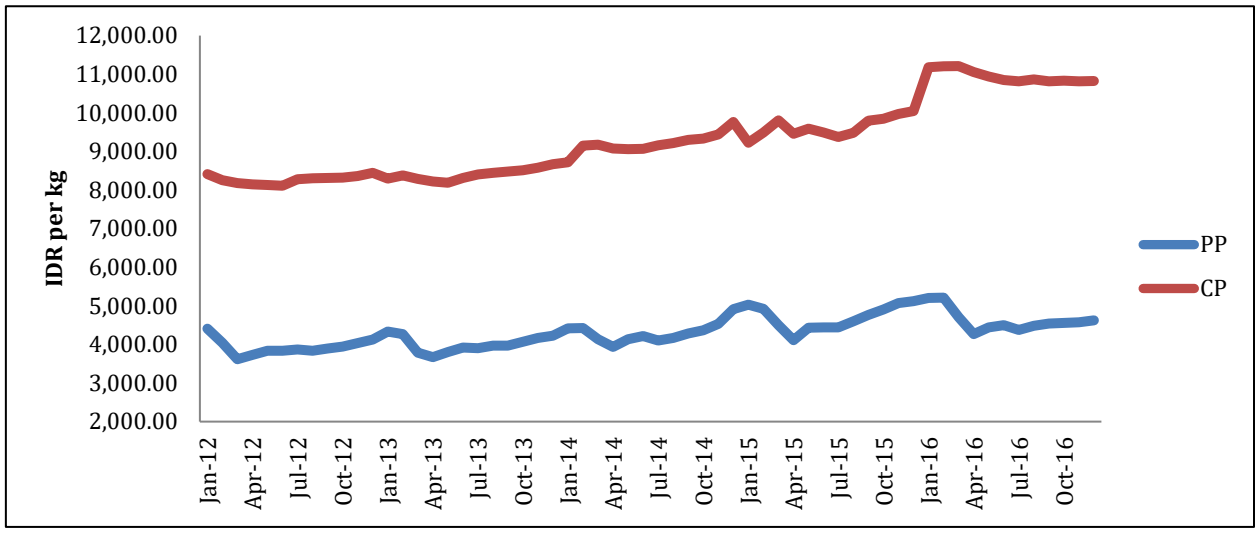
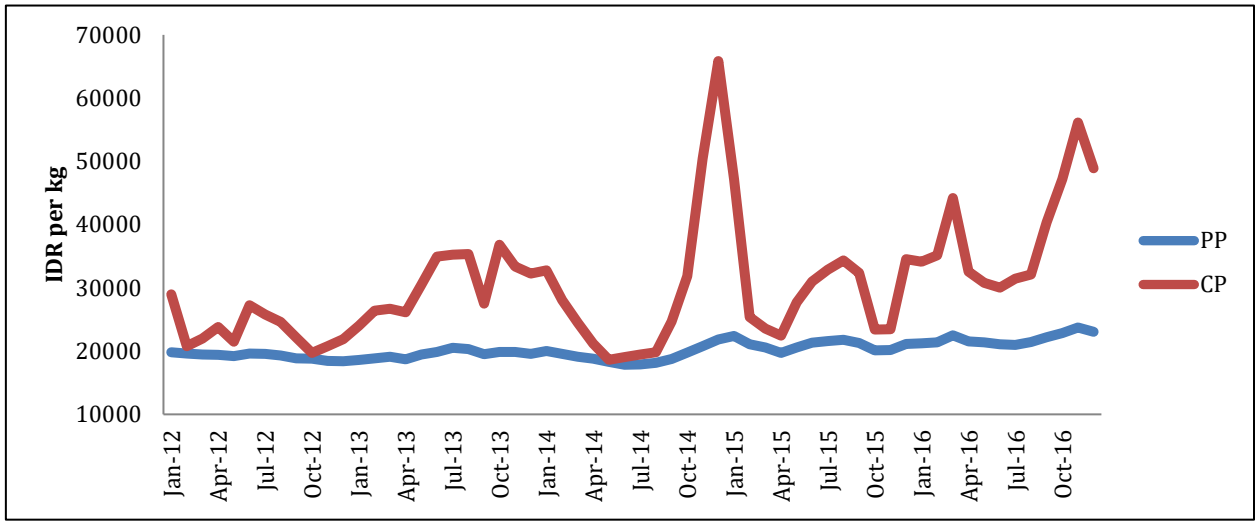


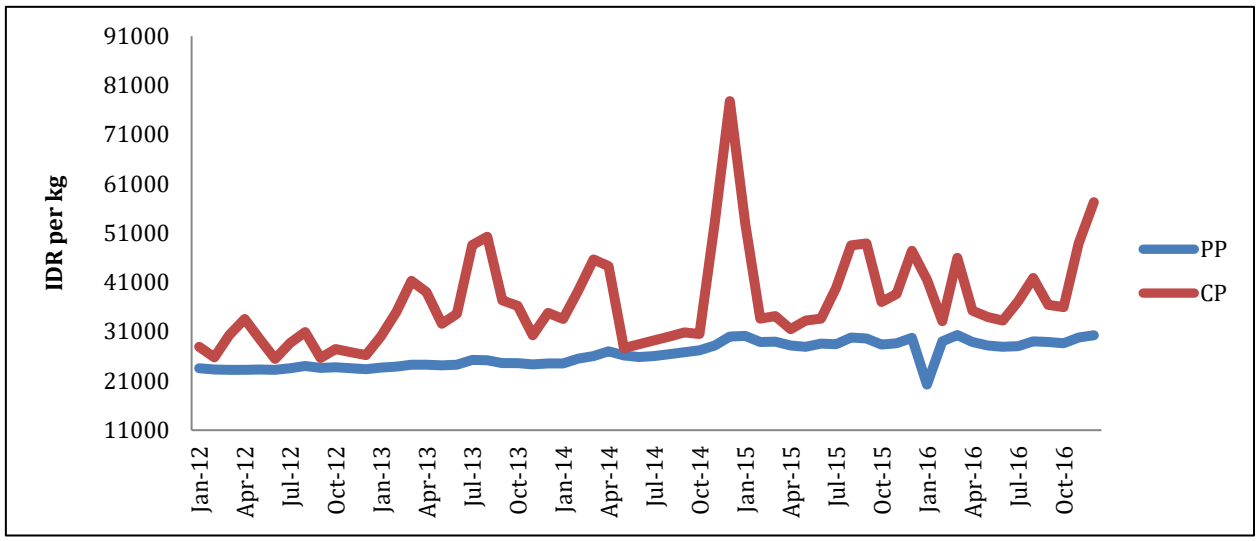
Figure 78 Monthly data of producer and consumer prices of rice in January 2012-December 2016

Source: Statistics Indonesia, (2017)



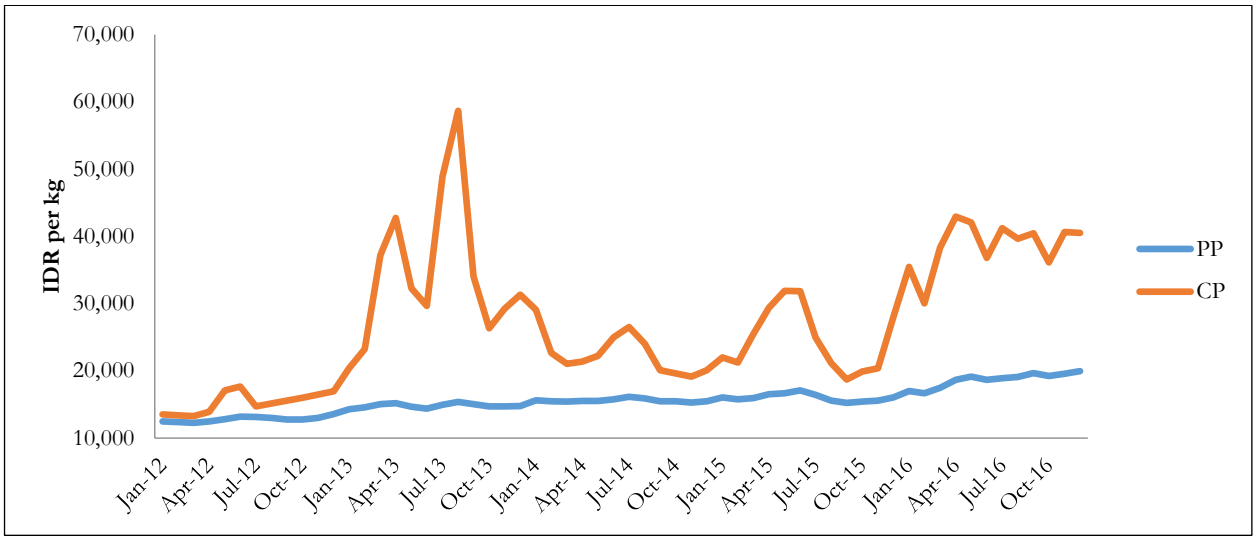
Source: Statistics Indonesia, (2017)

Figure 79 Monthly data of producer and consumer prices of red chili in January 2012-December 2016



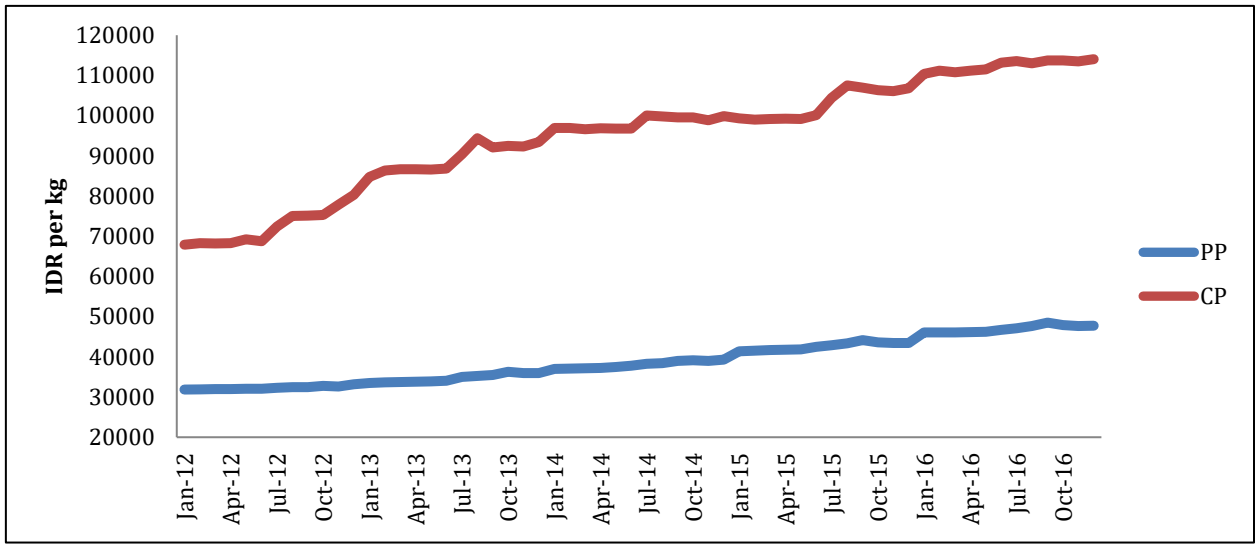
Source: Statistics Indonesia, (2017)

Figure 80 Monthly data of producer and consumer prices of small chili in January 2012-December 2016



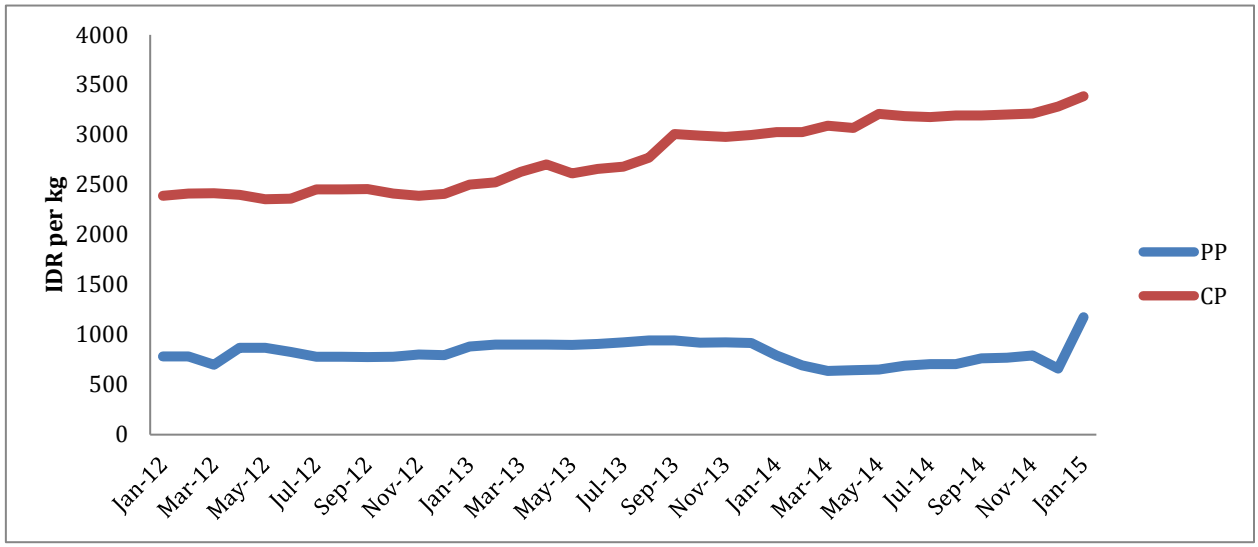
Source: Statistics Indonesia, (2017)

Figure 81 Monthly data of producer and consumer prices of shallot in January 2012-December 2016



Source: Statistics Indonesia, (2017)

Figure 82 Monthly data of producer and consumer prices of beef in January 2012-December 2016



Source: Statistics Indonesia, (2017)

Figure 83 Monthly data of producer and consumer prices of salt in January 2012-December 2016

4.1.2. Price Asymmetry

For the price asymmetry analysis, we use the consumer and producer prices from January 2012-December 2016. As outlined previously, for salt commodities, the data is only available from January 2012-January 2015. To check the price asymmetry issue, we conducted three steps: (1) cointegration test, (2) causality test and (3) ECM model.

1. Cointegration test

The results of ADF show the presence of a unit root for all price series in first difference, not in level. This indicates that stationarity has occurred for all prices series in the first difference for all commodities. The trace statistic tests show that the cointegration of producer and consumer prices occurs in the six commodities (Table 87).

Table 87 Cointegration tests

No	Commodity	Cointegration Test (PP and CP)
1	Shallot	Cointegrated
2	Chili	Cointegrated
3	Beef	Cointegrated
4	Sugar	Cointegrated
5	Rice	Cointegrated
6	Salt	Cointegrated

2. Causality test

The causality test is conducted for the six commodities. Among them, the causality can be identified for three commodities, chili, beef and rice. For the three other commodities, i.e., shallot,

sugar and salt, the causality in which whether producer price (PP) affects consumer price (PP) or vice versa is inconclusive. In the case of chili and rice, the causality tests show that the values of F-test for $\mathbf{Z_{t-1}}$ coefficients for (π_2) are significant, but the coefficients for (π_1) are insignificant (Table 88). Therefore, we conclude that producer prices influence consumer prices. For beef, the analysis shows that consumer prices cause producer prices.

Table 88 Granger causality results

Commodity	Number of lags	Weak exogeneity		Causality results
		Price 1 $H_0 : \pi_1 = 0$	Price 2 $H_0 : \pi_2 = 0$	
Shallot	1	1.14	1.98	-
Chili	2	0.16	2.76**	PP causes CP (PP→CP)
Beef	5	3.44**	1.01	CP causes PP (CP→PP)
Sugar	1	1.83	0.35	-
Rice	1	1.59	6.37**	PP causes CP (PP→CP)
Salt	1	2.02	0.66	-

**Significant at the 5% level

3. The issue of asymmetry price

Since the causality tests conclude that producer prices directy affect consumer prices for chili and shallot.With regards to the asymmetric test we estimate the equations that producer prices cause consumer prices (PP→CP). For beef, we utilize the equation of consumer prices cause producer prices (CP→PP). The estimated coefficients based on ECM-EG approach in the three commodities are presented in Table 89.

Variables associated with current time of the rising prices (ΔPPt^+) is significant in the case of chili at the level of 1%. This shows that changing the price for the producer level will adjust to the consumer. In the case of price reduction, it will be transmitted to consumers in the next month. Moreover, the consumer price of chili is also influenced by the price for the consumer in the previous month.

For the rice price reductions for the producer it will adjust with the changes for consumer at the same period. This indicates by the significant coefficient PPt^- at the 1% level in the rice equation. The coefficient of ΔPP_{t-1}^+ has significant impact showing that changing prices by increasing them for the producer, will be transmitted to the consumer in the next month. Similar to chili, the consumer price of rice is influenced by the price changing at the consumer level in the previous month as indicated by the coefficient ΔPC_{t-1}^+that significant to the 10% level.

In the case of beef, variables associated with the time of the rising prices (ΔPCt^+) is significant to 5%. This findings show that an increase in the consumer prices of beef will adjust with the changes in producer price in the same period. Meanwhile, variables related to the reducing prices (ΔPCt^-)are not significant. The producer price of beef is influenced by the price changing at the producer level in the previous month as indicated by the coefficient $\Delta PC_{t-1}^+$and ΔPC_{t-1}^- that is significant at the 1% level.

Table 89 Empirical results of ECM of chili, beef and rice

	Chili	Beef	Rice
	PP→CP	**CP→PP**	**PP→CP**
Intercept	-0.058[a]	0.009**	0.017**
	(-1.594)[b]	(2.845)	(2.447)
ΔPPt^{+}	5.003***		0.031
	(5.179)		(0.206)
ΔPPt^{-}	0.358		0.307***
	(1.006)		(2.838)
ΔPP_{t-1}^{-}	3.863***	1.146**	0.027
	(4.020)	(1.976)	(0.260)
ΔPP_{t-1}^{+}	0.038	-0.275**	-0.439***
	(0.098)	(-1.892)	(-2.849)
ΔPCt^{-}		-0.298	
		(-0.677)	
ΔPCt^{+}		0.2800***	
		(2.683)	
ΔPC_{t-1}^{-}	-0.354**	-0.390	0.162
	(-2.003)	(-0.939)	(0.545)
ΔPC_{t-1}^{+}	0.715***	0.003	-0.290*
	(3.306)	(0.024)	(-1.801)
π^{+}	-0.885***	-0.042	0.268***
	(-4.417)	(-0.698)	(3.313)
π^{-}	-0.612**	0.115**	0.152
	(-2.320)	(2.317)	(1.315)
R^2	0.625	0.274	0.367
R^2-adj	0.565	0.157	0.267
	Test for symmetry (based on Wald test)		
Short run	17.764[c]***	5.006**	5.868**
	(0.000)[d]	(0.029)	(0.019)
Long run	0.470	2.607	0.527
	(0.496)	(0.113)	(0.471)

Note: Note: [a] parameter estimate, [b] t-values, [c] f-values, [d] p-value

The values of the Wald test in the short run are significant at the 1% level for chili and 5% level for beef and rice (Table 89). As such, we reject the null hypothesis showing that there is evidence of price asymmetry between producer and consumer prices of chili and rice. For chili, the price rising or falling at the producer level passes to the consumer level but is not fully transmitted. This is indicated by the larger coefficient of ΔPPt^{+} compared to ΔPPt^{-} as consumers are not benefitting from a price reduction at the producers' level.

For rice the price reduction at the production level will not be fully transmitted to price changes at the consumer level. Similarly, we also find evidence of price asymmetry in the case of beef. The price reduction for the consumer, will be fully transmitted to the producer, but an increased price will not be fully transmitted to the producer prices. This shows that producers might not benefit from a price increase for the consumer. Evidence of market asymmetry might be explained by the

market structure of the commodity which tend to oligopsony in which trader/processors have a strong bargaining position in terms of prices.

In the long run, the results of the Wald test reject asymmetry price between consumer and produces prices. This indicates that when prices fall they are passed on in the same magnitude with the times when price rises.

4.1.3. Production and Price Risks

4.1.3.1. Sugar

Sugar production starts from the process of plantation preparation and growing sugar in the field. The yields harvested from sugarcane cultivation are sugarcane yield and rendement. These two main factors are strongly influenced by the soil and climate conditions. Sugarcane plantations require an adequate water in the growing time and dry conditions at the end of growth and during harvesting. The water supply forsugarcane relies solely on rainfall.

The low level of production in 2016 was determined by the continuing rainfall during the milling season. Two major losses occurred, including the low rendement and the high cost of cutting transport. As a result, the cost of production became expensive and the national sugar production only reached 2.2 million tonnes. The plantation white sugar (GKP) balance experienced a deficit of 0.6 million tonnes and hence consumption was fulfilled with imports.

The shifting of sugarcane growing to dry and marginal land has led to a lower productivity. Additionally, inadequate infrastructure conditions resulted in high transport costs. More specifically, the cost of freight and cutting reached IDR 10 million per hectare. As the competition for fertile land with other commodities, especially rice and corn, the rent value of land became very high. With the price of rice grain and maize reaching an average of IDR 4,500 and IDR 4,000 per kg, it further weakens the position of sugarcane.

4.1.3.2. Rice

Farmers have various risksthey encounter during farming. During the survey, most of the risk that farmers have to manage is disease attach (Figure 84) followed by the climate related risk or La Nina.

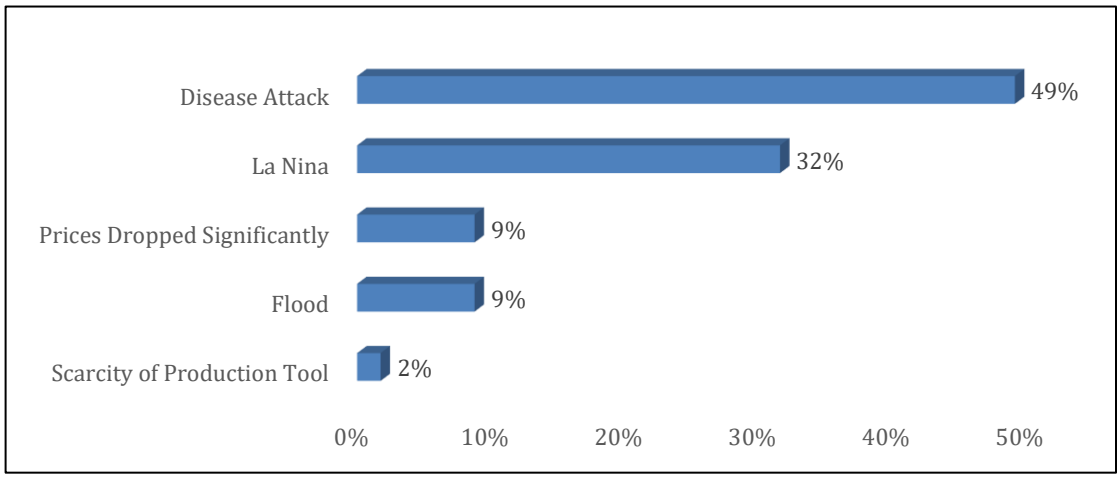


Figure 84 Numerous shocks faced by paddy farmers

The magnitude of the production risk that farmers face can be calculated using the coefficient variation (CV) and the value of CV is 0.31. This number means that for every 1 tonne of production there is a probability that 310 kilograms will fail. The failure can be caused by various reasons such as crop disease or can be climate related.

Table 90 Production risk

Indicator	Value
E(R)	6.10
Var	7.52
Sd	2.05
Cv	0.31

4.1.3.3. Shallots

Production and product prices risks are common for shallot farmers. Sources of risk in production include climate change such as El Nino, La Nina, pests and plant diseases (crops disturbing organisms), as well as floods. The source of production risk causes a gap of actual yields compared with potential yield, hence the farmers suffer losses. In the beginnning of 2017, farmers respondents failed to harvest shallots due to flooding. There was a case of the farmers respondents harvesting about 40 percent of shallots, despite a low quality. Figure 85 shows the percentage of farmers respondents facing numerous sources of risk (shocks) in production. The main production shock faced by the respondents was pests and diseases, followed by La Nina (prolonged rainfall). Meanwhile, the price risks were the declining price of shallots and the changes in price occurring frequently.

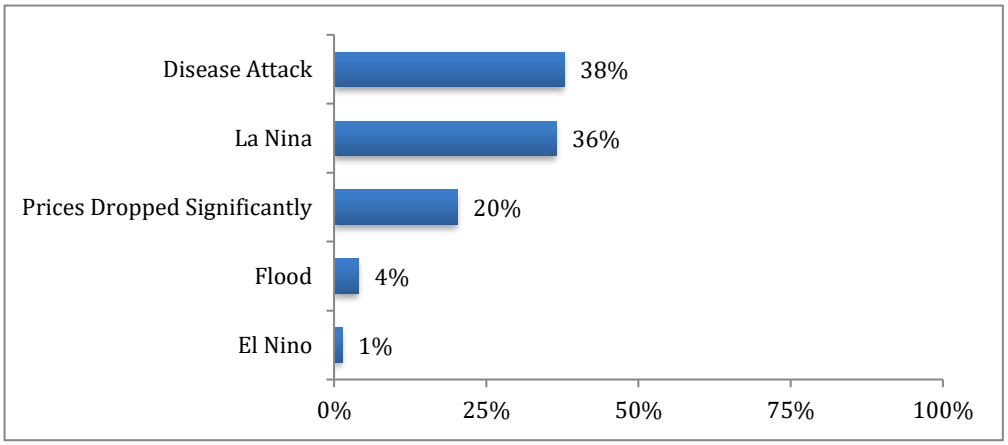


Figure 85 Numerous shocks faced by shallot farmers

According to the farmers respondents, almost 100 percent of respondents stated that shock caused adverse impacts (Table 91). There was an absence of interventions in the shocks coping mechanism, either from government or other institutions.

Table 91 Shock effect

Shock	Have you experience shock of [...]?			What is the impact of shock to your activity?		
	Yes	No	Total	Worse	No Effect	Total
El Nino	20%	80%	100%	100%	0%	100%
La Nina	80%	20%	100%	100%	0%	100%
Disease Attack	80%	20%	100%	100%	0%	100%
Flood	0%	100%	100%	-	-	-
Landslide	0%	100%	100%	-	-	-
Earthquake	0%	100%	100%	-	-	-
Scarcity of Production Tool	13%	87%	100%	50%	50%	100%
Prices Dropped Significantly	60%	40%	100%	100%	0%	100%

The products that become the main shallot competitors in Brebes regency were the imported and the local variety. The presence of imported products reduced the local price, especially those from Brebes. Similarly, the increased number of products from other production centers in Indonesia, also affected the price of Brebes shallots.

Furthermore, the level of production and price risks faced by farmers' respondents can be seen in Table 92. The amount of production risk is indicated by the value of coefficient of variation (CV). The value of coefficient variation of the shallots production was 0.59. It can be interpreted that out of every 1 tonne of shallots produced there will be a the potential loss (failure) of 590 kg.

Table 92 Production and price risks of shallot

Indicator	Production Risk	Price Risk
E(R)	6.53	194,078
Var	15.98	44,266,882
Sd	3.31	5,605
Cv	0.53	0.29

Furthermore, the value of coefficient variation on the price of shallots was 0.29. The value indicated that at shallots price of IDR 10,000 / kg, the potential loss experienced by the farmers respondents is IDR 2,900 / kg.

4.1.3.4. Chili

Chili farmers always face production risks and product prices. Some factors, as the source of risk in production, include climate change, such as El Nino and La Nina, pests and plant diseases (plant-disturbing organisms). The existence of the source of production risk can cause the gap between actual chili harvested compared to the potential chili which can be harvested, thus farmers experience loses. Figure 86 shows the percentage of farmer respondents who have faced a shock in production based on the source of risk. The biggest shock in production faced by the respondents is El Nino where the rainfall is very low (dry season is prolonged) while chili needs adequate irrigation. Meanwhile, the price risk, is the decrease of the chili. The chili price can fluctuate very quickly, as much as every hour. From the shock faced, both of production risks and product prices, it shows that climate change, especially El Nino is the greatest shock experienced by the respondents which in turn leads to a decrease in the price of chili.

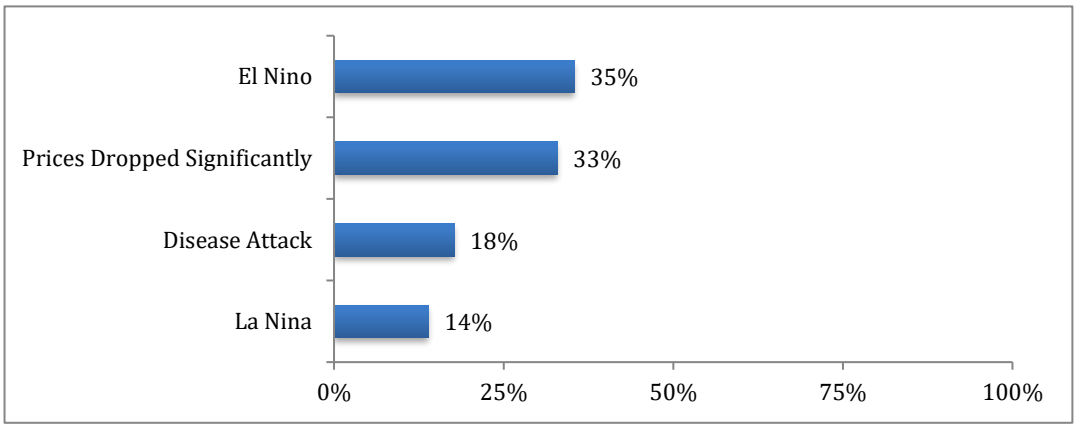


Figure 86 Some shocks faced by chili farmers

Meanwhile, from the impact of these shocks, El Nino and price reductions are the main factors that have affected the respondents (Tabel 90).

Table 93 Shock effect faced by chili farmers

Shock	Have you experience shock of [...]?			What is the impact of shock to your activity?		
	Yes	No	Total	Worse	No Effect	Total
El Nino	87%	13%	100%	77%	23%	100%
La Nina	60%	40%	100%	44%	56%	100%
Disease Attack	73%	27%	100%	64%	36%	100%
Flood	0%	100%	100%	-	-	-
Landslide	0%	100%	100%	-	-	-
Earthquake	7%	93%	100%	100%	0%	100%
Scarcity of Saprodi	0%	100%	100%	-	-	-
Prices Dropped Significantly	67%	33%	100%	100%	0%	100%

The risk level of chili production faced by farmer respondents can be seen in Table 94. The amount of production risk is shown by value of coefficient of variation (CV). The coefficient of variation in the production of large red chili, red curly chili, and hot red chili respectively is 0.39; 0.39; and 0.76. Interpretation of the value of coefficient of variation of large and curly red chili that every 1 tonne of chili expected by farmers, loss (failure) of production will be equal to 390 kg. Similary with of hot red chili production, that for every 1 tonne of chili, the potential loss (failure) of production is 760 kg. Comparing the three types of chili, the risk of hot red chili much higher than the other varieties. This is due to the production cycle of hot red chili which is relatively longer, so that there is a greater chance of influence from the environment.

Table 94 Production risk of chili

Indicator	Value		
	Red Chili	Curly Chili	Small Chili
E(R)	7.72	7.11	7.22
Var	9.54	13.12	36.78
Sd	2.98	2.95	5.60
Cv	0.39	0.39	0.84
Production Risk	2,344	4,936	18,376

Furthermore, the price risk of chili products can be seen in Table 95. The co-efficient of variation on the price of red chili, curly chili, and small chili respectively is 0.47; 0.38; and 0.43. The value indicates that for every IDR 10,000 / kg of revenue expected by the farmers, the potential loss that could be experienced is up to IDR 4,700 / kg for red chili, IDR 3,800 / kg for curly chili, and IDR 4,300 / kg for small chili.

Table 95 Price risk of chili

Indicator	Red Chili	Curly Chili	Small Chili
E(R)	5,975	13,167	17,089
Var	8,701,512	24,854,674	54,545,467
Sd	2,852	4,933	7,165
Cv	0.47	0.38	0,43

4.1.3.5. Beef

Cattle farmers face production and price risks. The biggest risk is the price of the cattle itself (Figure 87). Another risk is disease and the various climate change (e.g. El Nino). Due to climate change fresh grass becomes hard to find. Fortunately, currently cattle keepers add concentrate and provide straw with molasses to reduce this risk. Indonesia has long been free of zoonotic and endemic diseases, so the shock from disease and El Nino is not critical. However, beef production is influenced by the shock that weight loss of the live cattle experience during transport. This is about 10-17 percent.

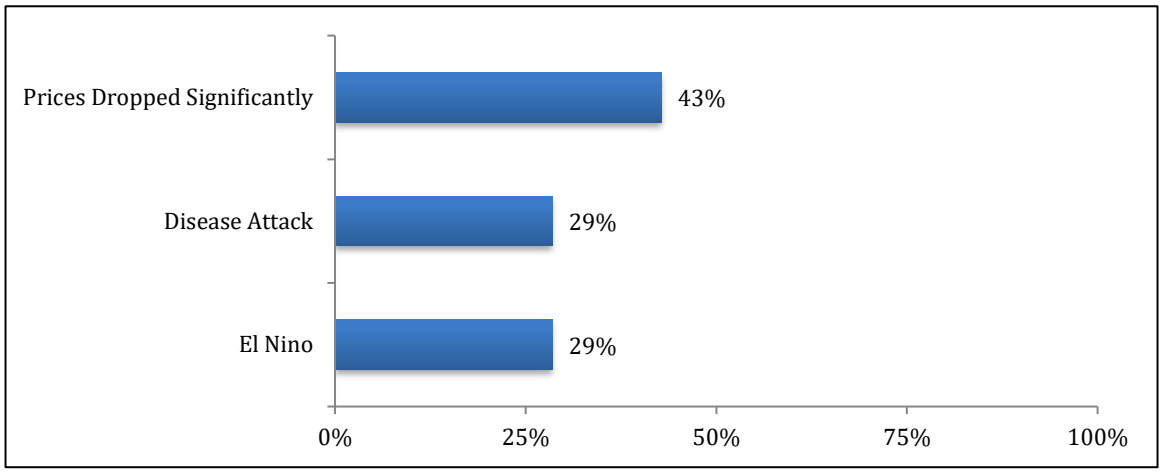


Figure 87 Shocks faced by cattle keepers

The level of risk of cattle production can be seen in Table 96. The value of coefficient of variation (CV) of production and cattle price is very small, that is 0.29 and 0.13. This means that of every 100 cattle bred, raised, and or fattened while about 29 head may have poor growth. Furthermore, the level of cattle price risk indicates that for every the price expected by cattle keepers of IDR 10,000 / kg of live weight, the potential loss that maybe be experienced is IDR 3,100 / kg of live weight.

Table 96 Production and price risk of cattle

Indicator	Production Risk	Price Risk
E(R)	0.41	39,670
Var	0.02	35,253,600
Sd	0.11	4,924
Cv	0.29	0.13

4.1.3.6. Salt

Salt farming is a high risk operation. It mainly depends on heat to evaporate the sea water to produce the salt. Therefore, salt farming cannot be conducted as a whole year activity due to the wet season. Price risks also occur in the salt farming activities, a low supply of salt will increase the price and during harvest when there is an abundance the price will usually decrease.

Figure 88 shows that the shock was mainly caused by La Nina causing the rain to pour to the pond. Even slight unseasonal rain will decrease the production and increase the price.

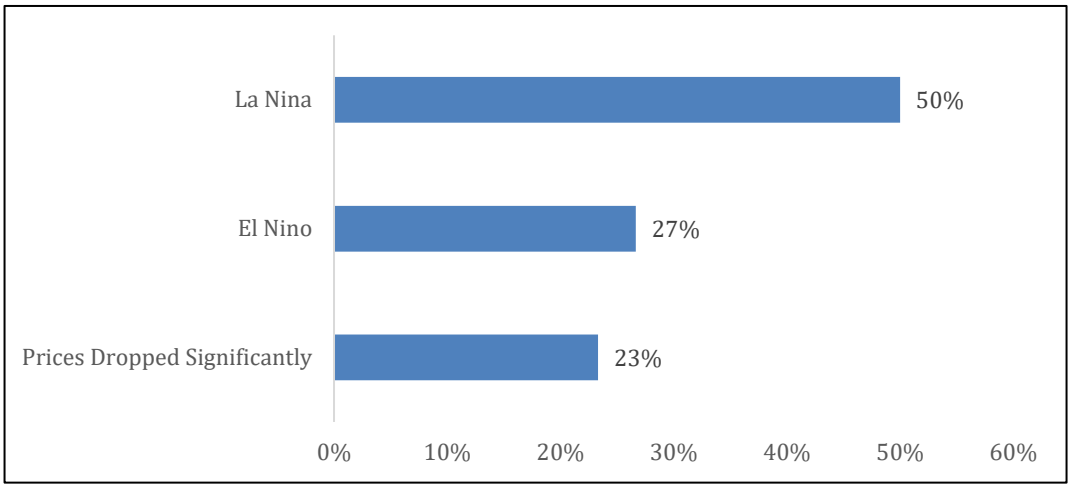


Figure 88 Shocks faced by salt farmers

The magnitude of the risk can be measured by the coefficient variation. Production risk has the coefficient variation of 0.29 (Table 97) meanwhile price risk has the coefficient variation of 0.68 (Table 98). The production coefficient variation of 0.29 means that every 1 ton of salt produce will have a production potential loss of 290 kg. This loss may usally cause by weather related aspect such as rain pouring during dry season when salt farming is conducted.

Meanwhile the price coefficient variation of 0.68 means that every price of IDR 1,000 per kg expected by the farmers there are a potential loss of IDR 680 per kg. This price decrease mainly is the cause by the over supply of salt.

Table 97 Production risk

Indicator	Value
E(R)	6.62
Var	4.84
Sd	1.90
Cv	0.29

Table 98 Price risk

Indicator	Value
E(R)	1624
Var	837665.84
Sd	874.29
Cv	0.68

4.2. Cost Structure, Margin analysis

4.2.1. Sugar

Cost Structure and Margin Analysis

If the calculation is used by using reference price IDR 9,100 per kg and the retail price is IDR 12,500 per kg, the total margin plus risk plus transportation cost is about IDR 3,400 (27.2%), but; if it is calculated from production cost (Biaya Produksi Pokok-BPP) of the farmers sugar of IDR 9,000, the margin is IDR 3,500. Of the total margin, producers only receive IDR 500 (4%). In Table 99, margins are presented at various levels of traders.

Table 99 Distribution of margin with reference price IDR 9,100 and HET IDR 12,500 (per kg)

Trader	Description	Price	
D1	Auction price	9,600	
	Loading and unloading costs plus transportation cost	125-200	
	Margin	150-200	
		Big party (bulk)	Small party
D2	Purchasing price	9,875	9,875
	Cost (Loading and unloading costs)	25	200
	Margin	25	225
	Price at D2	9,925	10,300
D3	Purchasing price	9,925	10,300
	Cost	15	225
	Margin	450	850
	Price at D3	10,500	11,000
D4	Purchasing price		11,000
	Consumer price		12,500

Source: Survey data, processed

Sugar price determination starts with calculation of the cost spent by sugar farmers (production costs-Biaya Pokok Produksi, BPP). For private ownership with HGU BPP land, the price is currently in the range of IDR 6,000 per kg. The low BPP is due to the absence of land rent and high sugar productivity. If BPP sugar is not considered by the farmers, the sugar BPP in Indonesia is not higher than in other sugar-producing countries.

An illustration of the calculation of sugar BPP 2016 issued by the Directorate General of Plantation, Ministry of Agriculture is presented in the following table. BPP value is then used as one of the considerations by the Government in setting the HPP.

Table 100 Details of sugarcane farming costs and cost of production of sugar farmers (ha)

Description	Wet land (rice field)		Dry land		Production Cost
	Plant Cane (PC)	Ratoon Cane (RC)	Plant Cane (PC)	Ratoon Cane (RC)	
A. Cost					
1. Land rent	14,450,582	16,410,000	13,168,316	15,119,956	15,302,998
2. Planting cost	22,879,255	12,888,564	18,953,179	11,053,961	12,560,689
a. Land preparation	13,404,146	9,843,707	9,242,542	7,999,868	8,779,230
b. Seed	6,540,430	50,842	6,253,837	170,294	819,421
c. Material	2,934,679	2,994,016	3,456,800	2,883,799	2,962,037
3. Chopping down and transportation	9,745,490	8,561,858	8,661,329	7,465,740	7,937,138
a. Chopping down	5,824,181	4,946,687	4,954,580	5,007,304	5,011,148
b. Transportation	3,921,309	3,615,172	3,706,750	2,458,436	2,925,990
4. Others	738,365	688,140	530,090	434,976	522,517
Total	47,813,693	38,548,562	41,312,915	34,074,633	36,323,341
Interest rate	3,548,841	3,634,143	3,094,892	2,661,480	2,994,753
Total Cost	51,362,533	42,182,705	44,407,806	36,736,114	39,318,094
Molasses	4,023,544	3,690,778	3,135,289	2,918,038	3,184,873
Total cost	47,573,778	38,491,927	41,272,517	33,832,513	36,149,211
B. Production					
1. Sugarcane (tonne)	87.0	77.2	78.0	76.2	77.0
2. Rendemen –sugarcane contribution to sugar (%)	8.04	8.05	7.92	8.01	8.01
3. Sugar (tonne)	6.739	6.122	6.177	6.099	6.165
4. Farmer sugar (tonn)	4.428	4.017	4.107	4.141	4.112
BPP for sugar (IDR/kg)	**11,036**	**9,581**	**10,049**	**8,171**	**8,790**

Source: Direktorat Jenderal Perkebunan, Kementan RI (2017)

If the farm improves and PG performance increases, then the yield of 8.5% and the sugar for the farmers will be 70%, then BPP will decrease to IDR 7,895 per kg.

Table 101 Details of sugarcane farming costs and BPP of PG Kebon Agung (per ha)

Description	Wet land PC	Wet land RC	Dry land PC	Dry land RC	Average
A. Cost					
1. Land rent	24,000,000	18,666,667	15,000,000	15,666,667	16,000,000
2. Planting cost					
a. Land preparation	17,750,000	18,216,667	16,066,667	15,744,444	15,996,667
b. Seed	14,000,000	-	4,466,667	-	274,000
c. Planting material	7,227,500	5,065,000	4,648,333	3,731,667	3,914,125
c.1. Fertilizer	6,527,500	4,585,000	3,651,667	3,040,000	3,232,275
c.2. Pesticide	700,000	480,000	996,667	691,667	681,850
d. Others	547,850	532,867	372,533	336,222	357,126
3. Chopping down and transportation	12,600,000	13,600,000	9,866,667	10,250,000	10,563,500
Interest rate (KKP-E)	225,000	315,000	315,000	320,000	318,450
Cost+Interest Rate	68,194,139	43,833,465	41,626,051	35,942,940	37,146,093
Revenue from Molasses	4,620,000	4,520,000	3,520,000	3,030,267	3,194,932
Production					0
a. Sugar (tonne)	7.400	7.283	4.873	5.059	5
b. Sugar owned by farmers (tonne)	5.170	5.180	3.428	3.662	4
Total Cost	63,574,139	39,313,465	38,106,051	32,912,673	33,951,161
BPP of sugar	12,297	7,590	11,117	8,989	8,960

Source: Survey, processed

The results of a survey in PG Kebon Agung area of Malang Regency found that for the year 2017 the cost of production is around IDR 8,960. From these results and the results of 2016 shows that the BPP sugar is IDR 8,790 per kg.

4.2.2. Rice

4.2.2.1. Cost Structure and Margin Analysis

Rice mills receive the highest margin since they have to process the unhusked rice (Table 102). The highest cost is covered by the wholesaler, since they have transfer the rice and the cost of hiring the kiosk. Meanwhile in this marketing channel, farmer receive 48 percent of the farmer share.

From September 2017, the government implemented the Ministry of Trade No 57 2017 regarding the maximum price policy of rice in different areas of Indonesia and classified two types, medium and premium. The lowest maximum price is in Java, Lampung and South Sumatera with IDR 9,450 per kg for medium and IDR 12,800 per kg for premium rice. Meanwhile the highest maximum price is in Maluku and Papua with IDR 10,250 per kg for medium and IDR 13,600 per kg for premium rice

The implementation of this policy made medium rice scarce in the market, since during this time selling under the maximum price is not feasible. According to the calculation of the mills, the maximum price for unhusked rice (GKP) is IDR 2,900 per kg in order to obtain profit with the maximum price policy. This calculation is based on the assumption:

- The margin of rice mill is IDR 2,000 per kg of unhusked rice
- The conversion ratio from unhusked rice (GKP) to rice is 58 percent
- The price in the wholesaler is IDR 8,450 per kg rice

Table 102 Margin of Rice Marketing

No	Description	Value	
		IDR/Kg	%
1	**Farmer**		
	Selling Price	4,218	
2	**Collect Trader**		
	Purchasing price	4,218	
	Cost	173	9%
	Profit	109	4%
	Margin	282	6%
	Selling Price	4,500	
3	**Big Trader**		
	Purchasing price	4,500	
	Cost	173	9%
	Profit	64	2%
	Margin	238	5%
	Selling Price	4,738	
4	**RMU**		
	Purchasing price	4,738	
	Cost	547	29%
	Profit	1,560	60%
	Margin	2,107	47%
	Selling Price	6,845	
5	**Wholesaler**		
	Purchasing price	6,845	
	Cost	1,024	53%
	Profit	856	33%
	Margin	1,880	42%

No	Description	Value	
		IDR/Kg	%
	Selling Price	8,725	
	Total Cost	**1,918**	**22%**
	Total Profit	**2,589**	**30%**
	Total Margin	**4,507**	**52%**
	Farmer's Share (%)	**48%**	

4.2.3. Shallots

4.2.3.1. Cost Structure and Margin Analysis

Cost structure and the marketing agency of shallots are presented in Table 103. The distribution of the shallot marketing margin during the study in Brebes ranged from IDR 1,786 – 3,267 / Kg or around 54% of the price received by consumers. From the margin value, the profit received amounted to IDR 1,142 -1,992 / Kg. While the costs incurred, ranged between IDR 445 – 1,275 / Kg. The margin earned on the marketing agency is relatively large, with the profit as its largest component. The amount of profit obtained is much greater than the cost incurred. This indicates that the marketing performance is still inefficient. Marketing agencies take less profit than the cost. In other words, the profit earned, is not proportional to the marketing function activity performed by the marketing agency. This results in a large margin on marketing channels. In these conditions, the consumer is the victim and pays a higher price.

Table 103 Cost Structure of Shallot for the marketing institution in Brebes 2017

No	Description	Value	
		IDR/Kg	%
1	Farmer		
	Selling price	10,563	
2	Collectors		
	Purchasing price	10,563	
	Cost	1,088	22
	Profit	1,142	16
	Marjin	2,230	18
	Selling price	12,793	
3	Big Trader		
	Purchasing price	12,793	
	Cost	1,102	22
	Profit	1,439	20
	Marjin	2,540	21
	Selling price	15,333	
4	Wholesaler		
	Purchasing price	15,333	
	Cost	445	9
	Profit	1,341	18
	Marjin	1,786	14
	Selling price	17,119	
5	Sub Wholesaler (Centeng)		
	Purchasing price	17,119	
	Cost	1,118	22
	Profit	1,382	19
	Marjin	2,500	20
	Selling price	19,619	
6	Retailer		
	Purchasing price	19,619	
	Cost	1,275	25
	Profit	1,992	27
	Marjin	3,267	27
	Selling price	22,886	
	Total Cost	5,028	22
	Total Profit	7,296	32
	Total Margin	12,323	54
	Farmer Share	0.46	

Based on the total cost incurred and the amount of shallots produced, the break even point (BEP) price is IDR 10,549 / Kg (Table 104). This price is the BEP for wet-type shallots. The BEP price

earned already accommodates all costs incurred by the farmer, whether issued in cash or non-cash. The price of BEP may change, if there is a change in the total incurred cost and changes in productivity.

Table 104 Production cost of Shallot in Brebes Regency

Description	Average	Percentage
Land (ha)	0.142	
Seed (IDR)	5,660,135.00	44.08
Fertilizer (IDR)	1,369,387.50	10.66
Pesticide (IDR)	2,099,727.50	16.35
Labor (IDR)	3,293,750.00	25.65
Non cash include depreciation, labor (IDR)	417,460.25	3.25
Total Cost (IDR)	12,840,460.25	100.00
Production (kg)	1,217	
BEP (IDR /kg)	10,548.75	

Note: Productivity 8.59 ton/ha

4.2.4. Chili

4.2.4.1. Cost Structure and Margin Analysis

The distribution of margin consists of costs and profit. Margin in the marketing ofsmall red chilis ranges between IDR 1,429/kg and IDR 2,730/kg (13.5 and 25.9 percent). The profit is between 11.9 percent and 28.2 percent. Meanwhile, the costs are between 15.4 percent and 24.4 percent. Therefore, the profit gained, in this case the sub-wholesaler, is relatively high. The profit gained compared to the activities and added value performed by the marketing institution, is relatively in-efficient. This occurs by using a simple marketing activity, they gain a high profit. The following Table depicts the cost structure and margin of each marketing institution.

Table 105 Chili's Cost Structure for the marketing institution in Garut 2017

No	Description	Red Small Chili		Big Red Chili	
		IDR/Kg	%	IDR/Kg	%
1	Farmer				
	Selling price	25,714		8,704	
2	Middleman/collector				
	Purchasing price	25,714		8,704	
	Cost	592	16.9	592	16.9
	Profit	837	11.9	837	11.9
	Margin	1,429	13.5	1,429	13.5
	Selling price	27,143		10,133	
3	Large Trader				
	Purchasing price	27,143		10,133	
	Cost	773	22.1	773	22.1
	Profit	1,227	17.4	1,227	17.4
	Margin	2,000	19.0	2,000	19.0
	Selling price	29,143		12,133	
4	Wholesaler				
	Purchasing price	29,143		12,133	
	Cost	539	15.4	539	15.4
	Profit	1,206	17.1	1,206	17.1
	Margin	1,745	16.5	1,745	16.5
	Selling price	30,888		13,878	
5	Sub-wholesaler (*centeng*)				
	Purchasing price	30,888		13,878	
	Cost	741	21.2	741	21.2
	Profit	1,990	28.2	1,990	28.2
	Margin	2,730	25.9	2,730	25.9
	Selling price	33,618		16,608	
6	Retailer				
	Purchasing price	33,618		16,608	
	Cost	852	24.4	852	24.4
	Profit	1,790	25.4	1,790	25.4
	Margin	2,642	25.1	2,642	25.1
	Selling price	36,260		19,250	
	Total Cost	3,496	9.6	3,496	18.2
	Total Profit	7,050	19.4	7,050	36.6
	Total Margin	10,546	29.1	10,546	54.8
	Farmer Share	71		45	

Table 106 Production cost of chili in Garut Regency

Description	Average		Percentage	
	Red Small Chili	Red Chili	Red Small Chili	Red Chili
Land (ha)	0.36	0.28		
Seed (IDR)	926,706.39	516,207.54	2.02	2.41
Fertilizer (IDR)	18,351,598.38	4,219,621.80	39.93	19.7
Pesticide (IDR)	4,507,031.14	3,487,078.32	9.81	16.28
Labor (IDR)	12,173,414.68	8,664,147.30	26.49	40.45
Mulsa, stake (Ajir)	5,937,592.03	2,910,896.46	12.92	13.59
Non cash include depreciation, labor (IDR)	4,059,268.11	1,621,448.58	8.83	7.57
Total Cost (IDR)	45,955,610.72	21,419,400.00	100	100.00
Production (kg)	4707	2,331.00		
BEP (IDR /kg)	9,762.83	9,187.24		

Note : Productivityof red small chili 13.3 ton/ha and red chili 8.3 ton/ha

4.2.5. Beef

4.2.5.1. Cost Structure and Margin Analysis

Based on the market observation in East Java, there are 6 channels which are identified as the live cattle and beef supply chains. From farmers to consumers is 6 (Figure 89) and it depicts that the actors involved in the live cattle supply chains include village traders, sub- district traders, and feedlotters, while the beef market actors consist of feedlotters, slaughterers and meat retailers. In channels 1 and 4, sub-district traders also serve as slaughterers and beef retailers in traditional markets. This also happens in channels 2 and 5 where the slaughterers purchased from feedlotters who are also beef retailers.

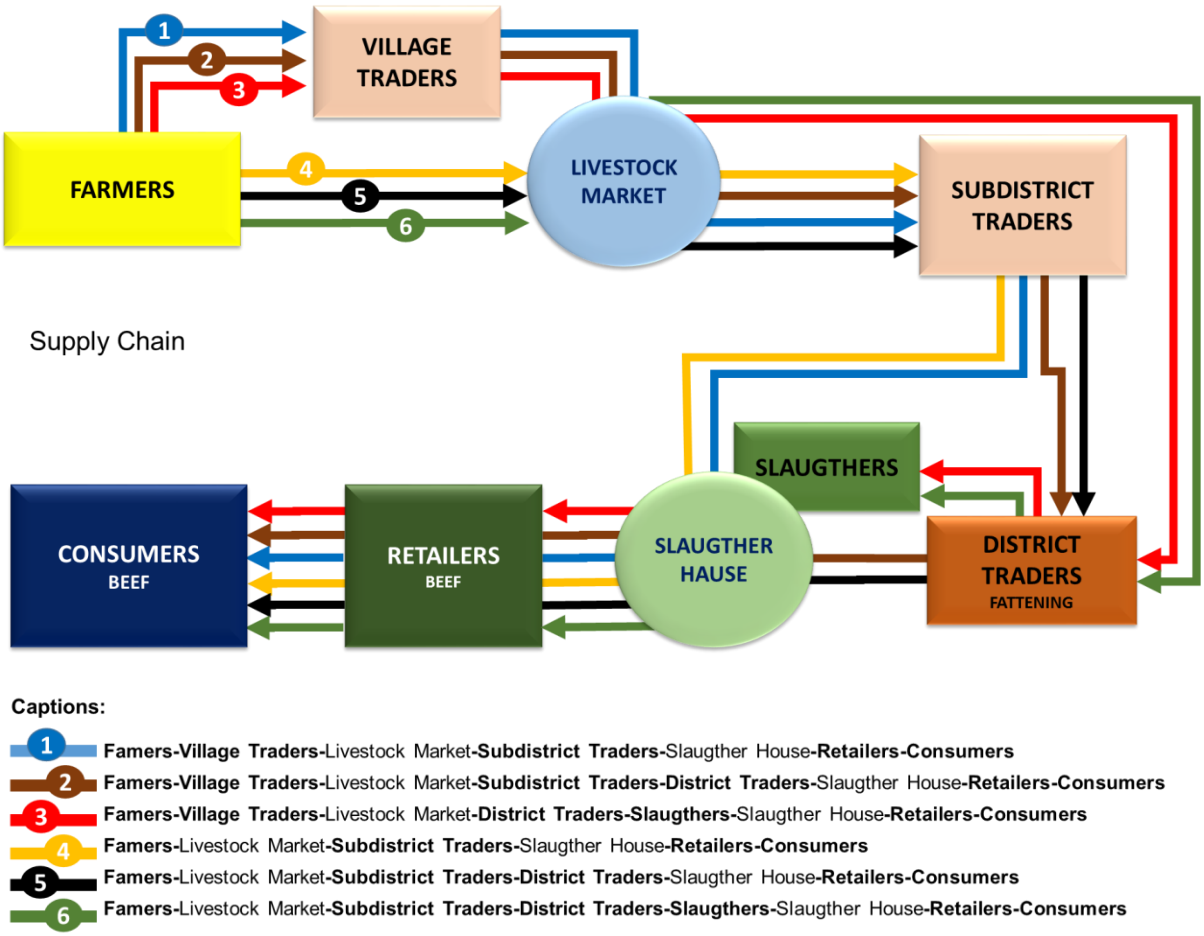


Figure 89 Beef Cattle and Beef Supply Chains

Based on the six market channels, the cost structure in each market of live cattle can be identified (Table 107 and Table 108). Based on these two tables, Channel 4 shows the highest farmer share (47.72%), where the farmers sell live cattle to the cattle markets and then directedly to the sub-district traders which are also slaughterers and beef retailers. If the Farmers sell their live cattle in the cage, then the highest farmer share occurs in Channel 1 (45.61%).

Based on total marketing margins, Channel 3 constitutes as the channel with the highest total margin (IDR 19,781.86). However, Channel 6 is the most efficient channel (4.72%), although all are efficient. Channels 1, 4 and 6 are the shortest channels, but the roles of feedlotters in the management of live cattle production contributes substantially to the beef marketing efficiency.

Table 107 The Cost Structure of Beef Cattle in Channel 1,2,3

Description	Channel 1		Channel 2		Channel 3	
	IDR/Kg	%	IDR/Kg	%	IDR/Kg	%
LIVE CATTLE						
1. Farmers						
Selling Price	39,743.59		39,743.59		39,743.59	
2. Village Traders						
Purchasing Price	39,743.59		39,743.59		39,743.59	
Cost	176.05	2.7	176.05	3.1	176.05	3.1
Profit	1,661.57	20.6	1,661.57	18.8	1,661.57	11.8
Total Margin	1,837.62	12.6	1,837.62	12.7	1,837.62	9.3
Selling Price	41,581.21		41,581.21		41,581.21	
3. Subdistrict Traders						
Purchasing Price	41,581.21		41,581.21			
Cost	845.87	13.0	845.87	14.9		
Profit	1,755.51	21.8	1,755.51	19.9		
Total Margin	2,601.38	17.8	2,601.38	17.9		
Selling Price	44,182.59		44,182.59			
4. District Traders						
Purchasing Price			44,182.59		41,581.21	
Cost			1,893.42	33.3	2,739.30	48.2
Profit			2,560.59	29.0	4,316.10	30.6
Total Margin			4,454.02	30.7	7,055.40	35.7
Selling Price			48,636.61		48,636.61	
BEEF						
5. Slaughterers						
Purchasing Price					105,731.76	
Cost					402.40	7.1
Profit					6,995.68	49.6
Total Margin					7,398.07	37.4
Selling Price					113,129.83	
6. Retailers						
Purchasing Price	77,002.24		96,049.11		113,129.83	
Cost	5,504.95	84.3	2,765.65	48.7	2,363.26	41.6
Profit	4,633.81	57.6	2,865.06	32.4	1,126.91	8.0
Total Margin	10,138.76	69.5	5,630.71	38.8	3,490.17	17.6
Selling Price	87,141.00		101,679.83		116,620.00	
Total Cost	6,526.87		5,681.00		5,681.00	
Total Profit	8,050.89		8,842.73		14,100.26	
Total Margin	14,577.76		14,523.73		19,781.26	
Farmer's Share (%)	45.61%		39.09%		34.08%	
Efficiency	7.49		5.59		4.87	

Table 108 The Cost Structure of Beef Cattle in Channel 4,5,6

Description	Channel 4		Channel 5		Channel 6	
	IDR/Kg	%	IDR/Kg	%	IDR/Kg	%
LIVE CATTLE						
1. Farmers						
Selling Price	41,581.21		41,581.21		44,182.59	
2. Village Traders						
Purchasing Price						
Cost						
Profit						
Total Margin						
Selling Price						
3. Subdistrict Traders						
Purchasing Price	41,581.21		41,581.21			
Cost	1,021.92	15.7	1,021.92	18.0		
Profit	1,579.46	25.4	1,579.46	22.5		
Total Margin	2,601.38	20.4	2,601.38	20.5		
Selling Price	44,182.59		44,182.59			
4. District Traders						
Purchasing Price			44,182.59		44,182.59	
Cost			1,893.42	33.3	2,739.30	49.8
Profit			2,560.59	36.6	1,714.72	17.4
Total Margin			4,454.02	35.1	4,454.02	29.0
Selling Price			48,636.61		48,636.61	
BEEF						
5. Slaughterers						
Purchasing Price					105,731.76	
Cost					402.40	7.3
Profit					6,995.68	71.1
Total Margin					7,398.07	48.2
Selling Price					113,129.83	
6. Retailers						
Purchasing Price	77,002.24		96,049.11		113,129.83	
Cost	5,504.95	84.3	2,765.65	48.7	2,363.26	42.9
Profit	4,633.81	74.6	2,865.06	40.9	1,126.91	11.5
Total Margin	10,138.76	79.6	5,630.71	44.4	3,490.17	22.7
Selling Price	87,141.00		101,679.83		116,620.00	
Total Cost	6,526.87		5,681.00		5,504.95	
Total Profit	6,213.26		7,005.11		9,837.30	
Total Margin	12,740.14		12,686.11		15,342.26	
Farmer's Share (%)	47.72%		40.89%		37.89%	
Efficiency	7.49		5.59		4.72	

4.2.6. Salt

4.2.6.1. Cost Structure and Margin Analysis

During the field study in Pamekasan Regency the salt price is relatively high since the weather is not suitable for production causing the supply to decrease and price to increase. Although the price is relatively high, the farmer did not obtain the benefits since the availability of salt is limited. During this scarcity period, the farmer's share can reach more than 60 percent (Table 109).

Table 109 Marketing channel margin distribution during limited supply

No	Description	Value	
		IDR/Kg	%
1	**Farmer**		
	Selling Price	2,220	
2	**Collecting Trader**		
	Purchasing price	2,220	
	Cost	225	29%
	Profit	55	16%
	Margin	280	25%
	Selling Price	2,500	
3	**Salt Processor**		
	Purchasing price	2,500	
	Cost	345	44%
	Profit	122	35%
	Margin	467	41%
	Selling Price	2,967	
4	**Big Trader**		
	Purchasing price	2,967	
	Cost	209	27%
	Profit	175	50%
	Margin	383	34%
	Selling Price	3,350	
	Total Cost	**779**	**23%**
	Total Profit	**351**	**10%**
	Total Margin	**1,130**	**34%**
	Farmer's Share (%)	**66%**	

Meanwhile during the harvest and normal period, the price of raw salt can drop below IDR 500 per kg. Jamil (2014) conducted a marketing channel analysis in the same location and found that the margin of the marketing is shown in Table 110. It shows that the share is only 12.50 percent and the highest profit and cost is the responsibility of the salt processor.

Table 110 Marketing channel margin distribution during normal supply

No	Description	Value	
		IDR/kg	%
1	Farmer		
	Selling Price	350	
2	Trader		
	Purchasing Price	350	
	Cost	50	4.40
	Profit	25	1.90
	Margin	75	3.06
	Selling Price	425	
3	Salt Processor		
	Purchasing Price	425	
	Cost	975	85.90
	Profit	1100	83.65
	Margin	2075	84.69
	Selling Price	2500	
4	Big Trader		
	Purchasing Price	2500	
	Cost	110	9.69
	Profit	190	14.45
	Margin	300	12.24
	Selling Price	2800	
	Total Cost	1135	
	Total Profit	1315	
	Total Margin	2450	
	Farmer Share		12.50

Chapter 5 Practices at the International Level

This chapter provides a comparative study and look at the organization and struture of the food sector at the international level. In the middle of globalization of the economy progresses, the response of each country is different about how to survive in the global market. It is asked whether to stick to old-fashioned protectionism or to compete in a global market with competitiveness. We will look at how each country in the world confronts this issue.

5.1. Sugar

Thailand is one of the largest sugar producers in the world, after Brazil and India, with an area of approximately 1.3 million Ha and 47 mills operating during the milling period. It has a total production capacity of 720,000 tonnes per day. Sugar in Thailand has generated 5.6 Billion USD per year, and income for 190,000 families spread across 49 provinces in four major regions (Central, North, South and Northeast), as well it employs 1,500,000 persons.

One of the legal grounds for the government to intervene in the sugar industry is the creation of the Cane and Sugar Act B.E. 2527 of 1984 and the inclusion of sugar into the Goods and Services Prices Act B.E. 2542 of 1999. The main purposes of establishing the Cane and Sugar Act B.E. 2527 of 1984 are: (1) protecting the profit of sugarcane farmers, (2) providing fair / equitable benefits to farmers, sugar companies and consumers;(3) maintaining domestic supply sustainability; and (4) setting prices for Quota A(based on consideration of the Office of the Cane and Sugar Board / OCSB). The main purposes of establishing the Goods and Services Prices Act B.E. 2542 of 1999 are:

- Setting the retail price by the Ministry of Commerce (MoC)
- Controlling retail prices in Bangkok-Metropolitan city
- Setting the reference price of the province by the Internal Trade Department – MoC

The Thailand government's policy of maintaining the sustainability of domestic and export stocks is done by allocating sugar into three quotas, i.e., quota A, B and C. As much as 36% of quota A is for local consumption, 12% of quota B is dedicated to specialized companies, the last which is Quota C, is as much as 52% for sugar companies that are also registered as exporters.

The Thailand sugar products line consists of; (1) Upstream Level: cane sugar is handled by the Ministry of Agriculture and Cooperatives, (2) Middle Level: raw sugar and refined Sugar are handled by the Ministry of Industry and Ministry of Energy, and (3) Downstream Level: raw sugar and refined Sugar are handled by the Ministry of Trade and registered exporters. While the main stakeholder of the sugar industry in Thailand consists of:

Private	: *Office of the Cane and SugarFund*, *Thai Cane and Sugar Corp. Ltd, Export Companies* (6 companies), *Thai Sugar Millers Corporation* (47 companies), *Cane growers association* (29 associations)
The Government	: Ministry of Trade, Ministry of Industry, and Ministry of Agriculture and Cooperatives
Committee	: *Cane and Sugar Board,Administrative Committee*, *Cane Committee, Sugar Committee* and*Cane and Sugar Fund Committee*

In addition, to maintain the sugar supply, the government has established an irrigation policy. This policy is necessary because approximately 80% of the sugar fields in Thailand rely on rainfall. It means about only 20% of sugar land has been using a structured irrigation system, which is regulated under the Ministry of Agriculture and Cooperatives.

5.2. Rice Sector in Japan

Rice is the most important crop in Japan and planted on the best agricultural land. Other crops in Japan include soybean, wheat, barley, and a large variety of fruit and vegetables. The climate in Japan ranges from temperate in the north to semi-tropical in the south, with abundant rainfall (typhoons are common), hot summers, and relatively mild winters (except in the northern Japanese island of Hokkaido).

Until recently, Japan is a country that had been implement the rice production management that aimed to maintain the price of rice That was called “rice acreage reduction policy”. But Japanese government decided to abolish the policy from fiscal 2018. As a result of this policy changing, Japanese government no longer involves in the adjustment of amount of production of rice. On the other hand, Japanese government established “Agricultural Competitiveness Reinforcement Program” in November 2016 and enacted “Agricultural Competitiveness Reinforcement Support Law”in August 2018. According to this law, Japanese government will conduct survey and publicize farm input and material prices, as well as agricultural product distribution costs every five years.

In addition, Japanese government established “Rice Oversea Market Expansion Strategy Project” to support active export to the world.Japan’s Ministry of Agriculture, Forestry and Fishery (MAFF) has a crop production branch that collects agricultural data at the prefecture level, monitors crop development using weather data and satellite imagery, and publishes crop estimates.

5.3. Horticulture products: Chili and Shallots

5.3.1. Production and International Trade of Vegetables

This part will review the whole vegetable commodities at an international level. For example, the international statistical data of shallots (FAO Statistical) is included in onion data. This is because on the assumption that shallot consumption at an international level is very limited. The largest producers and consumer country for shallots is Indonesia. Other South-East Asian Countries such as Thailand, The Philippines and Malaysia, also consume shallots but with a lower amount compared to Indonesia. As such, shallotsare not considered as important commodities in these countries.

The largest country producing vegetables in the world is China. In 2014, China produced 562.5 million tonne of vegetables, contributing to more than 50% of vegetable production in the world. Besides China, India can be considered as another main production zone of vegetables in the world which a total production reached about 171 million tonnes. In terms of vegetable growth, the two countries that had significant growth over the last decade, i.e., India and Malaysia with growthlevels of 13.7% and 7.9%, respectively (FAO, 2014). The growth of land size planted by vegetable, productivity and production of vegetables in several countries in Asia is presented in Table 111.

Table 111 Growth of area, productivity and vegetable production of several countries in Asia in 2011

Country	Land size (000 Ha)	Growth 2000-2011 (%)	Productivity (Kw/ha)	Growth 2000-2011 (%)	Production (000 ton)	Growth 2000-2011 (%)
Indonesia	1,049	1.4	96.3	2.0	10,096	4.3
Malaysia	58	5.1	208.3	2.7	1,213	3.7
Thailand	513	-1.7	73.2	1.1	3,760	4.5
Philippines	714	1.8	86.9	0.2	6,204	1.3
Viet Nam	836	3.6	123.5	0.7	10,321	6.7
China	24,213	2.9	232.3	1.3	562,596	10.7
India	7,571	3.0	139.7	0.5	105,795	4.0

Source: FAO (2014)

The largest vegetable area in 2000-2011 was China followed by India and Indonesia. The development of vegetable plantation areas in several countries such as Indonesia, Malaysia, The Philippines, Vietnam, China and India tended to increase except for Thailand. The largest growth of land size area planted by vegetables occurred in Malaysia followed by Vietnam, India, and China. In terms of vegetable productivity, the data indicated that China had the highest vegetable productivity followed by Malaysia, India, and Vietnam.

From the perspective of trade balance of vegetable products, in the period 2003-2012 China consistently experienced a surplus in which its exports were higher than imports. This makes China as a net exporter country for vegetable products. Indonesia is included as the main destination country for exported vegetables from China followed by Vietnam, Thailand, Malaysia, Japan, Russia, Hong Kong, The Philippines, and South Korea. Besides exporting to Asian countries, China also exports vegetables to United States, Saudi Arabia, Netherlands, and Brazil.

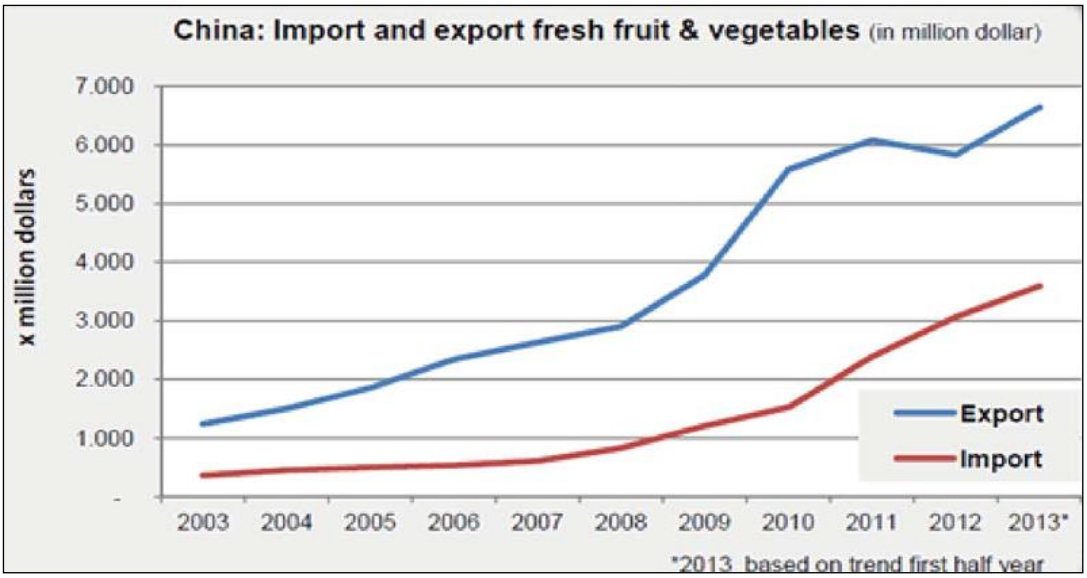
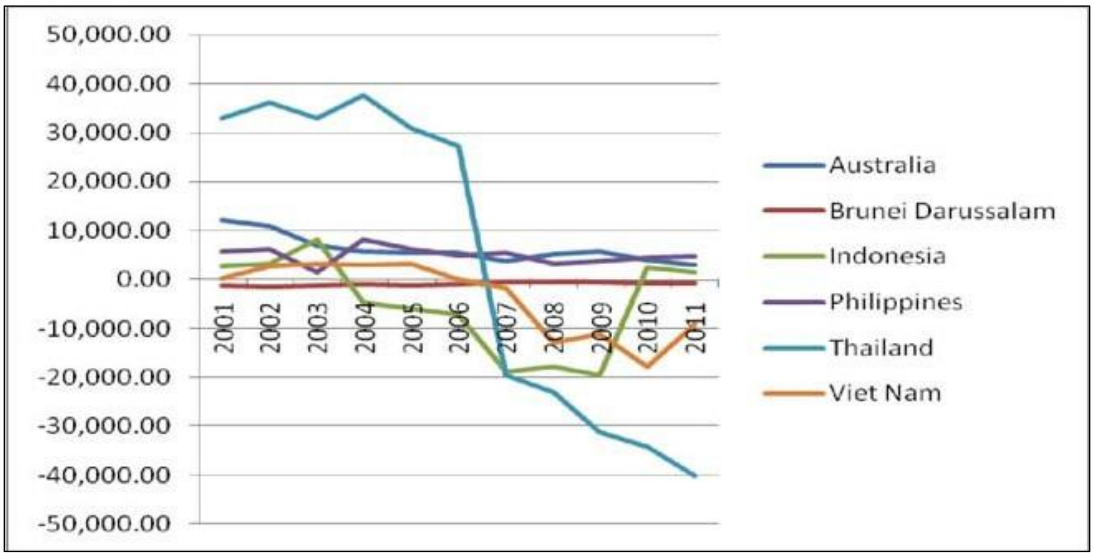


Figure 90 Trade Balance for vegetable products in n China in 2003-2012 (Boon, 2013)

Figure 91 shows the trade balance of vegetable products in some other countries, The Philippines and Thailand showed surplus in their trade balance for vegetable products while Brunei

Darussalam and Indonesia experienced deficit. The trade balance situation in Indonesia could be a potential market for Indonesia's vegetables.



Source: FAO, 2013 in Arsanti (2015)

Figure 91 Trade Balance for vegetable products in several countries in 2001-2011 (000 ton)

Shallots are includedin the top fourth of exported vegetable from China with the contribution of about 8%. Over the last few years, China has exported around 60,000 to 70,000 tonne per year. The main destination countries include Russia, Japan, Vietnam, and South Korea. The high demand for vegetable products from China is particularly determined by their relatively cheap prices compared to those from other countries. The average production cost in China is due to low costs of labor, grading, packaging and marketing (Johnson, 2016).

Besides exporting fresh vegetables, China also exports processed vegetable products. Indonesia is among countries importing processed chili from China. This processed chili from China increased significantly. In 2009, Indonesia only imported about 205 kg of dried chili and it increased to 2,712 tonne in 2012. In 2013, the import volume of processed chili from China reached 4,604 ton. Besides importing dried chili, Indonesia also imports chili paste from China (Ditjen PPHP, 2014).

5.3.2. Policies related to vegetable products in several countries

5.3.2.1. China

Several factors contribute to the vegetable production efficiency of China. The main factor is the strong commitment of the Chinese Government to create a pro-business environment in vegetable production by conducting bureaucratic reformation, law enforcement and creating a stable economy environment. Besides, the Chinese Government allocated a significant amount of their budget to build and maintain infrastructure that can support the development of vegetable products including road, port and logistic systems. Additionally, the Chinese Government also proposes a banking sector to provide credit with a low interest rate. In China, the interest rate offered by banking sector ranged between 5- 6% versus 13-14% in Indonesia (Pusputasari and Prabawati, 2015).

5.3.2.2. Thailand

The vision of Thai agricultural development is for "farmers to get a better standard of living, society has food security, and the state receives revenue". Meanwhile, the target of Thai agriculture development is to: (1) increase the farmers' prosperity index by 80 % by 2016; (2) increase growth of the agricultural sector by 3% per year; and (3) the efficiency of the utilization of resources in order to increase agricultural production. The key strategies of Thai agricultural policy include: (1) improvement of the quality of life for farmers (*smart farmer*); (2) development of an agricultural production efficiency, management, and food security; and (3) promoting agricultural resources in an efficient manner, which is balanced, and sustainable. With clear vision, target and key strategies, it is not surprisingly the development of the agricultural sector in Thailand has increased significantly.

Besides rice, sugar, corn, and fruits, in Thailand vegetables are included as the main priority product to be developed. For vegetables and fruit, the Government has set a target that fresh or processed vegetables and fruit products with Thai packaging can be consumed around the world. The Thai Government has created the motto “kitchen of the world”. The motto has established Thailand as a producer, distributor, and exporter of agricultural products to the world market, in order to fulfill the demand of global consumers towards its “kitchen needs.” Shallots are included as one of the exported vegetables from Thailand.

5.3.2.3. Malaysia

The policy in Malaysia that will be elaborated in this section is related to their price policy. The latest regulations in Malaysia regarding price policy is the law number 723 year 2011 about Price Control and Anti-Profiteering Act (PCPA) issued on 1st April 2011. This regulation provides authorizing of the Malaysia Government to determine the prices of goods and services; prohibit profiteering; ensure the community from the price shocks; and protect the interests of consumers (Center for Domestic Trade Policy, 2015)

In the price control scheme, the maximum price in retail is governed by the government throughout the year. The implementation of this scheme was controlled by them and any violators will be prosecuted. Besides, under PCPA, the Government also promotes the festive price control scheme in order to control price during specific occasions, i.e., fasting month, Idul Fitri celebration, Chinese New Year, and Christmas. The aim of this scheme is to control price increase during the festival period and to control the potential of price increases due to an increase in demand. Commodities being monitored in the scheme include chicken, local meat (cow/goat/pig), chicken eggs, chili, shallots, imported round cabbage, tomatoes, coconuts and derived products of coconuts such as shredded coconut, plus garlic, potatoes, beans, mackerel, pomfret (ikan bawal) and large white shrimp.

The mechanism of the festive price control scheme begins by commoditiesthat will be regulated and setting reasonable prices for these. This process involves local governments, producers, traders and other stakeholders involved in the supply chain of the commodities. Each region may propose different price levels, which should be adjusted to the local conditions. Once the Minister

of Trade has approved the commodities and prices, the list will be issued through mass media, at least one month prior to implementation. This scheme is generally valid for 9 to 12 days before and after the holiday. Table 114 shows the price control elements in Malaysia.

Table 114 Element of price policy control in Malaysia

No.	Elements	Description
1.	Regulations	*Price Control and Anti-profiteering Act* 2011 (Act723)
2.	Institutions	• The Minister of Trade appoints a Price Controller, several Deputy Price Controllers, and some Assistants Price Controllers in order to implement the regulation. • *Price Controller* is under supervision of the Minister of Trade. • *Deputy Price Controllers*, *Assistant Price Controllers* are supervised by *Price Controller*.
3.	Mechanism	• Price Controller set maximum and minimum prices for the supervised commodity at the producer, wholesale, and retail levels. The price might set differently among the regions. • After acquiring approval from the Minister of Trader, the controlled price lists will be announced in mass media. • Commodities in the price control scheme is determined at the beginning of the year and is valid to the end of the year. Commodities on the festive price control is determined one month before the implementation takes place and is valid 9-12 days after the festive day. • The Minister of Trade controls the mechanism to prevent unusual profits taken rent seekers. The price set by considering taxes, supply and demand conditions, the geographical condition and situation or market of the product.
4.	Commodities	• Price control scheme include sugar, petrol, diesel, LPG, wheat flour, palm cooking oil and masks. • Festive price control scheme (varies depending on the festival or celebrations. But it usually include chicken, local meat (cow/lamb/pig), chicken egg, imported round cabbage, tomato, red chili, coconut and its derivatives such as shredded coconut, shallot, garlic, potato, bean, mackerel, pomfret (ikan bawal), large white prawn.
5.	Violations and sanction	• Violating is selling or offering to sell higher or lower than the reference prices; buying or offering above or below the reference prices is also considered a violation. • Institutional or corporate violators will be fined a maximum of 500 thousand RM, and if repeated a maximum fine of 1 million RM will be imposed. • Individual violators will be fined a maximum of 100 thousand RM or a maximum of 3 years prison. For repeated offenders, a fine of maximum 250 thousand RM will be imposed, or maximum of 5 years prison or both

Source: Center for Domestic Trade Policy (2015)

5.3.2.4. The Philippines

Special policies regarding price control in The Philippines is based on the equivalent of the law, the Republic Act no 7581 1992. The price of basic necessities in The Philippinesis regulated in the law, Republic Act no. 7581 or better known as The Price Act 1992. Agencies in charge of the implementation of this act are the Ministry of Agriculture, the Ministry of Health, the Ministry of the Environment and Resources, Police and the Ministry of Industry and Commerce, hereinafter mentioned as the implementing agencies. To support the implementing agencies, the head of the nation form the Price Coordinating Council, which consists of the Ministry of Commerce and Industry and other related agencies.

In the event of price fluctuations due to disruption caused by disasters, dangerous threats, price manipulation, and events that cause the price of basic needs to rise to unreasonable limits, the government fixes a ceiling price. In special circumstances, that is in disaster-affected areas, emergencies, legal disputes, rebel / insurgent regions and regions under conditions of war that the government will impose unilateral price control. In another section of this Act, the government prohibits all actions that can manipulate prices such as hoarding (inventory amounts 50% higher than usual in the last three months); renters and cartels. Any violations committed by both business and/or government actors are clearly defined in the Act. Table 112 which shows the price control elements in Philippines

Table 112 Price policy control elements in The Philippines

No.	Elements	Description
1.	Regulations	Republic Act No.7581 The Price Act year1992
2.	Agencies	The head of state form Price Coordinating Council which includes the Ministry of Commerce and Industri and other related agencies.
3.	Mechanisms	• Appoint basic commodities. • Fix the ceiling price if the price fluctuates due to disasters, dangerous threats, price manipulation, and the event of unreasonable price increase in staple food. • Forbidding every action that may manipulate price such as hoarding (inventory amounts 50% higher than usual in the last 3 months); rent hunters, sale of goods with no price, unsuitable quality, counterfeit, and selling staple food with a profit margin higher than 10%; and cartels. • In special circumstances, i.e. disaster-affected areas, emergencies, legal disputes, rebel / resistance areas, the government will impose the price unilaterally (automatic price control).
4.	Commodities	Staple food includes: rice, corn, bread, fresh, dry, or canned fish, sea produce, beef and poultry, egg, fresh milk and processed milk, fresh vegetable, tubers (root crops), coffee, sugar, cooking oil, salt, soap, detergent, fire wood, coal, candle, drugs classified as necessities by the Ministry of Health.

No.	Elements	Description
5.	Violation and sanctions	• The act of price manipulation will be given a sanction of minimum of 5 years in prison with a maximum of 15 years in prison and will be fined with a minimum of 5 thousand pesos with a maximum of 2 million pesos. • Violation of the ceiling price will be given the minimum sanction of 1 year in prison with a maximum of 10 years in prison and will be fined a minimum of 5 thousand pesos with a maximum of 1 million pesos. • Violation conducted by foreigners will result in revoked business permission and deportation. • Violation by government officials will be given sanctions based on the given law and will be given an additional punishment of dismissal of title permanently.

5.4. Beef

There are 20 countries that act as the main exporters of beef in the world (Table 113). The majority of the countries are from Europe with an export contribution of morethan 50%. Poland has the highest share of export for beef in the world followed by France, Germany, The Netherlands, and Belarus. The US and Australia are included as the countries with the highest share of exported beef.

Table 113 The main exporting countries of beef in the world in 2010-2013 (ton)

No.	Country	2013	2012	2011	2010
1	Poland	199,844	204,879	191,107	194,449
2	France	186,015	208,877	210,124	186,468
3	Germany	176,656	206,989	247,113	211,568
4	Netherlands	161,331	160,261	164,164	127,940
5	Belarus	142,990	102,796	96,586	120,552
6	United States of America	116,173	103,548	111,047	97,007
7	Spain	96,434	97,382	80,971	77,945
8	Australia	87,981	63,515	53,166	56,749
9	Belgium	73,664	76,999	78,948	64,112
10	Austria	52,457	50,317	54,307	48,690
11	United Kingdom	49,179	59,212	72,572	54,367
12	Denmark	47,574	49,625	45,336	43,722
13	Ireland	47,479	45,994	51,277	55,282
14	Italy	45,864	46,020	52,567	49,953
15	Mexico	40,131	35,977	27,817	21,203
16	Pakistan	36,658	34,245	25,295	22,550
17	New Zealand	35,681	33,563	23,921	32,863
18	Canada	27,535	29,499	32,529	45,836
19	Uruguay	22,511	10,991	9,025	7,512
20	Ukraine	20,213	16,533	12,965	13,054

Source: FAOSTAT, 2017

From the import side, the world's largest importing countries are from Europe including Italy, The Netherlands, Germany and France (Table 114). This indicates that European countries are the main producers and consumers of beef in the world. As such, the beef trade is very important for them. Among importing countries, Indonesia is consistently an importer for each year and is included as the third largest importing country in Southeast Asia together with Malaysia and Singapore.

Table 114 The main importing countries of beef in the world in 2010-2013 (ton)

No	Country	2013	2012	2011	2010	2009
1	Italy	257,871	266,812	289,241	312,950	298,645
2	Netherlands	214,140	246,526	247,178	202,475	168,618
3	Germany	140,975	153,050	148,816	100,789	96,057
4	France	120,939	123,837	93,077	115,278	124,565
5	Republic of Korea	101,852	109,550	119,262	102,688	90,039
6	Russian Federation	93,132	56,085	178,834	158,881	192,319
7	Greece	80,310	86,273	78,523	98,538	86,459
8	China, mainland	61,140	10,309	2,179	2,131	563
9	United States of America	54,779	56,274	49,801	53,574	40,430
10	Portugal	52,332	53,934	45,128	49,816	45,664
11	Spain	50,693	50,052	30,341	36,162	31,887
12	United Kingdom	49,610	72,457	64,791	67,588	66,125
13	China, Hong Kong SAR	41,116	11,748	8,425	10,668	9,821
14	Saudi Arabia	30,479	22,414	21,837	20,206	9,129
15	Denmark	22,556	22,849	20,978	26,298	30,421
16	Belgium	18,642	22,105	25,608	19,642	22,230
17	Canada	18,236	17,138	15,228	12,322	12,624
18	Bosnia and Herzegovina	15,386	7,513	10,273	6,909	4,475
19	Switzerland	14,041	8,614	8,362	7,625	5,138
20	Sweden	13,216	12,820	6,505	1,217	6,550
21	Kuwait	10,237	6,299	4,862	5,843	7,647
22	Kazakhstan	9,486	6,926	5,258	950	2,779
23	Norway	8,812	12,451	5,527	362	2,964
24	South Africa	8,811	2,316	2,394	1,609	1,302
25	Angola	8,747	8,163	4,042	2,538	3,645
26	Morocco	8,653	2,813	8,890	3,855	9,179
27	Malaysia	8,600	9,144	6,000	5,802	5,857
28	Croatia	7,971	6,297	5,091	5,243	7,692
29	Venezuela (Bolivarian Republic of)	7,711	1,653	1	150	62,913
30	The former Yugoslav Republic of Macedonia	6,706	7,583	8,198	7,605	7,752
31	Slovakia	6,338	4,414	2,828	2,489	1,671
32	Turkey	6,141	25,436	110,204	50,658	-
33	Ireland	6,017	5,859	6,126	8,044	7,836
34	Poland	5,814	7,276	2,109	2,646	2,237

No	Country	2013	2012	2011	2010	2009
35	Czechia	5,666	5,837	3,649	4,635	4,266
36	Afghanistan	5,213	14,017	1,847	1,992	1,006
37	El Salvador	5,184	4,703	5,189	6,694	7,115
38	Brazil	4,558	6,223	5,926	3,963	5,199
39	Oman	4,496	6,176	6,523	7,330	7,556
40	Slovenia	3,997	4,403	4,665	4,195	5,033
41	Mexico	3,974	2,974	3,715	5,085	6,876
42	Romania	3,879	2,668	4,374	3,171	4,563
43	Bhutan	3,871	3,871	2,659	2,961	2,720
44	Singapore	3,507	3,458	2,971	2,833	3,020
45	Luxembourg	3,382	3,167	3,349	2,697	2,670
46	Indonesia	3,216	1,082	6,765	4,322	3,787
47	Swaziland	3,060	-	-	-	-
48	Iran (Islamic Republic of)	3,055	1,942	466	3,800	227
49	Australia	602	518	715	523	106

Source: FAOSTAT, 2017

European countries establish strict regulations with respect to the international trading of beef. The trade policies for beef are intended to maintain supply (high quality, food safety) and the demand of beef as well as price stabilization in the European Countries. Several requirements to be qualified as an exporting country is as follows:

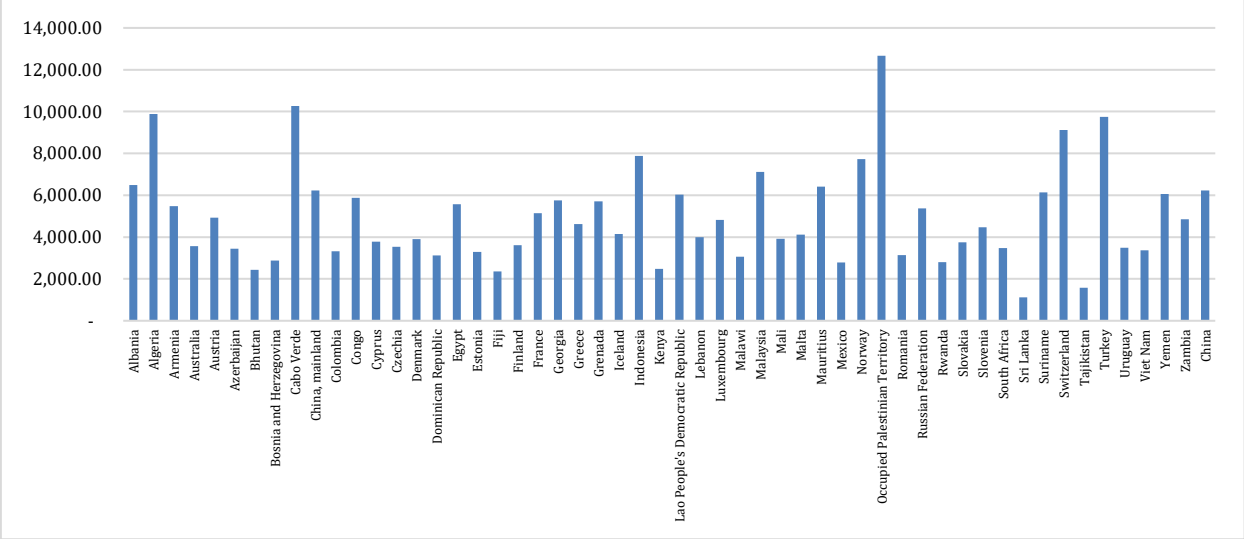
1. Exporter countries must have a competent authorized veterinarian who takes responsibility to control the supply chain of beef. The veterinarian must be given authorization and the resources to control and ensure animal health and hygiene issues along the supply chain.
2. Exporting countries must meet the standards for animal health. This implies that the countries must be members of the World Animal Health Organization and must fulfill their standards and obligations. The authorized veterinarian must ensure and control animal health as requested by the organization.
3. The authority from the exporting countries must ensure that the animal health criteria has been fulfilled and meets the required standards, i.e., from Good Farming Services to Good Manufacturing Practices. The criteria includes, health and hygiene aspects, equipment and operational processes for butchering, storage and the handling of the beef. This regulation is intended to ensure high standards and prevent product contamination during the processing.
4. A monitoring system must be conducted to verify the compliance with the European Union (EU) requirements with respect to residues of veterinary medicines, pesticides and other contaminants.
5. Relevant monitoring programs should be designed by authorized officers and submitted to the European Commission for preliminary approval and updated annually.
6. Importsare permitted only from approved companies (e.g., slaughterhouses, handling places, cold storage and meat processing plants) which have been examined by authorized officers of the exporting country and comply with EU requirements. The government provides the necessary guarantees and conducts regular checks.

7. The exporting countries shall propose the status of the mad cow issue (Bovine Spongiform Encephalopathy-BSE).
8. Inspection by the Food and Veterinary Commission is required to ensure compliance with the requirements set by European countries. Such inspection is the basis for building trust between the EU Commission and the Government of the exporting countries.

On the other hand, The United Kingdom has established several regulations for international trade of beef as follows.

1. The United Kingdom's International Meat Trade Association consulted with IMTA EU and submitted a special proposal regarding United Kingdom's policy for international trade of beef. This is because about 45% of meat products consumed in United Kingdom (UK) come from imports and only about 24% of UK beef production is exported.
2. Imports of meat should fulfill food security and contribute to the UK economy.
3. Meat imports provide raw materials for the processed meat industry in UK.
4. British consumers demand beef with a high quality and fulfill all food safety issues.
5. If the British Government decides to adopt EU tariffs, then it can be implemented with a quota system.
6. Veterinarian agreements and certifications are among important prerequisites for meat export. The government should convince export partners that the UK follows the EU's provisions in animal health and public health policies.

With respect to the beef price, Indonesia is included, as the sixth country having the highest price of beef. Other countries with high prices of beef include Palestine, Ivory Coast, Algeria, Turkey, and Switzerland (Figure 92).



Source: FAOSTAT, 2017

Figure 92 Beef prices at producer levels in several countries in 2012 (USD per tonne)

However, from the context of Southeast Asia, Indonesia is the third largest importer of beef and meat processing after Malaysia and Singapore (Table 115). Although Malaysia is the largest country in importing beef and processed products, the price of Malaysian beef is still lower than Indonesia. Even among the countries in Southeast Asia, the price of Indonesian beef at the

consumer level is the highest. In addition to lower prices, Malaysia also has policies on the price management and anticipating the shocks in both domestic and international beef trade.

Table 115 Imports of Southeast Asian Countries

Region	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004
Meat cattle (tonnes)										
Brunei Darussalam	427	243	188	209	312	311	355	456	216	12
Indonesia	3,216	1,082	6,765	4,322	3,787	2,744	2,836	1,155	195	347
Malaysia	8,600	9,144	6,000	5,802	5,857	5,171	2,879	1,903	8,546	11,323
Myanmar	200	314	150	20	1	10	10	50	10	340
Philippines	2,147	3,365	2,590	2,950	2,135	2,657	1,624	742	744	586
Singapore	3,507	3,458	2,971	2,833	3,020	2,637	1,724	1,268	978	881
Thailand	194	684	1,293	104	106	141	289	521	408	712
Timor-Leste	200	200	200	200	200	200	200	200	200	200
Meat, beef, preparations (tonnes)										
Brunei Darussalam	147	192	156	260	188	157	182	113	189	84
Indonesia	2,185	1,270	1,009	794	879	636	1,691	1,871	1,527	1202
Malaysia	426	472	430	407	478	447	434	362	633	560
Myanmar	1	1	1	304	2	48	76	88	-	233
Philippines	928	1,216	883	1,015	970	1,168	614	843	923	950
Singapore	4,000	3,893	3,574	3,612	2,936	2,519	2,543	1,990	2,238	2267
Thailand	582	257	86	27	18	79	37	59	37	19
Timor-Leste	-	-	-	-	-	-	-	-	1	2

Sumber: FAOSTAT, 2017

5.4.1. Current market situation of beef in Malaysia

In terms of demand and supply of beef, Indonesia and Malaysia are similar. As outlined previously, they are among the importer countries in terms of beef. However, the prices of beef in Malaysia is only half compared to beef prices in Indonesia (Figure 93).

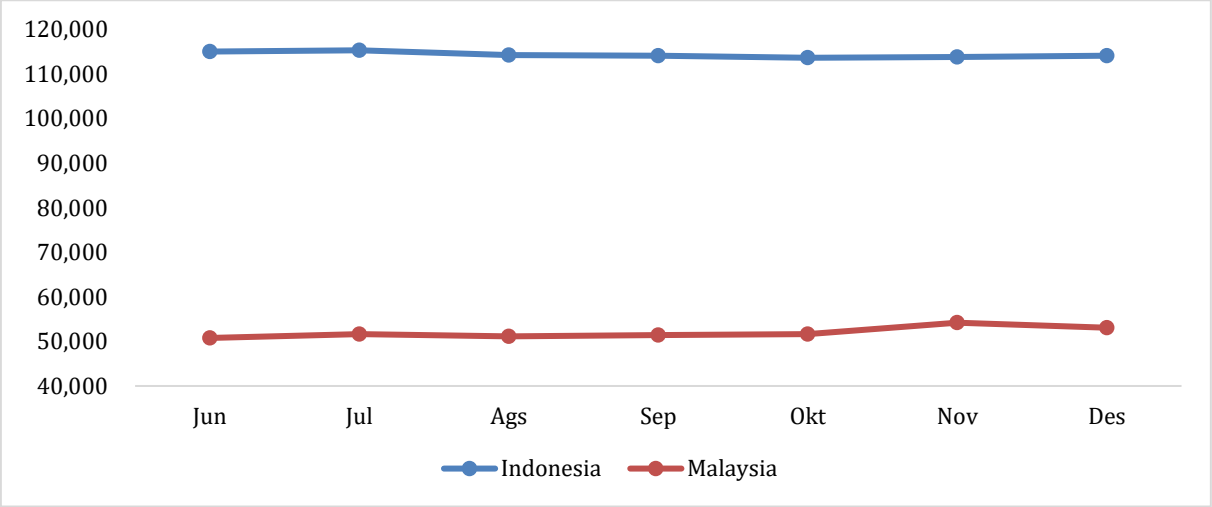


Figure 93 Beef prices in Malaysia and Indonesian in 2016 (IDR per kg)

Indonesia and Malaysia face similar issues in developing beef sectors. The issues include: lack of quality breeds, high price of animal feed and lack of suitable grass. The Malaysian government has anticipated these issues by establishing several policies as follows.

First, in 2013 Malaysia established a Strategic Policy in breeding Livestock, including cattle through the program, Malaysian Livestock Breeding Policy 2013. The vision and mission of the program is "A leader in tropical livestock breeding" and "Enabling the breeding of quality livestock through sound genetic principles and practices that satisfy the need for an economic and sustainable livestock industry and fulfill the market requirements", respectively. Through this program Malaysia can maintain beef stock. Several types of calves have been developed in Malaysia namely Kedah-Kelantan, KK crosses, Brahman, Brahman crosses, Droughtmaster, Brakmas, Charoke, Sahiwal-Friesian, and Bali Cattle through by using technologies of pureline breeding, crossbreeding, registration and quality certification, artificial insemination, embryo transfer, and cement sexing. In the long run, the program is able to stabilize the price of beef to compete with other countries. The Malaysian Government states that this program can be used as a blueprint policy for developing the beef sector. According to Abdulla et al. (2016), genetic improvements can increase the number of broiler beef cattle to the desired level in 2020 as set by the Malaysian Government.

Second, Malaysia uses a stock management system policy. They have provided live a cattle supply of 4 to 5 months before demand increased during special occasions such as the Idul Fitri Celebration. This policy indicates that the aspect of beef stock in Malaysia includes as partof government obligations that should not be delegated to other profit oriented institutions. Although this program has not been able to meet demand for beef in Malaysia, the grace period of 4-5 months has allowed Malaysia to cover the supply shortages through subsequent policies.

Third, Since Malaysia uses base zone policy in importing meat; Malaysia can import meat from India with relatively cheap prices. However, imported meat from India is not consumed in the form of fresh meat, but is utilized as input for processed food such as sausage and other meat. As such, imported meat from India does not cause beef price fluctuations in Malaysia and is counter productive with the grand policy of the breeding program.

Fourth, Malaysia has established a trade relationship with Australia by using the scheme of Malaysia-Australia Free Trade Agreement (MAFTA). The data from Meat and Livestock Australia (MLA) shows that Malaysia has imported 53,004 cattle. About 82% of meat in Malaysia was imported from India and the rest (about 15%) comes from Australia, New Zealand and Brazil. Malaysia only produces beef of around 50-60 thousand tonnes per year while demand for beef in Malaysia is more than 200 thousand tonnes. As such, importsare still important for Malaysia

According to Mohamed et al. (2013), by adopting the policies above, it is expected that Malaysia's beef industry will be able to meet its needs by more than 50% independently. This can be accelerated if Malaysia's policy to import female cows continues to increase which in turns increase the domestic livestock population and the supply of domestic beef. In the long run, Malaysia might reduce imported beef and encourage local farmers to increase production by providing price incentives for local farmers.

5.5. Salt

5.5.1. India's Salt Industry

India is the third largest salt producer in the world, after China and USA. In 2015-2016, India produced 27.6 million tons (Ministry of Commerce and Industry, 2016). Most of the salt produced came from sea salt. India's salt production can fulfill its domestic demand and some of its production is being exported.In 2015-2016 India's exports reached 6.5 million tonnes (Ministry of Commerce and Industry, 2016). Indonesia is one of its main destinations of exported salt.

Similar to Indonesia, 87.6% of salt producers are small producers, which own less than 10 acres for manufacture, 6.6 % are medium scale producers (having 10 – 100 acres) and 5.8% are large scale producers (having more than 100 acres)(Ministry of Commerce and Industry, 2016).

The Central Government of India is responsible for controlling all aspects of the Salt Industry. The Salt Commissioner's Organization, an attached Office under the Ministry of Commerce & Industry (Department of Industrial Policy & Promotion), Government of India, is entrusted with the above task. The main task of the Salt Commissioner's Organization includes the following aspects:

- Technological development and quality improvement
- Salt iodization programme for reducing iodine deficiency diseases
- Infrastructure development promoting salt industry
- Labor welfare scheme for salt workers particularly housing
- Export of salt

In the distribution aspect the Salt Commissioner's Organization has a function to distribute the salt using several means of transportation including railways and roads. Different from India, which the salt industry is controlled under one roof, is Indonesia with the salt industry under different authorities. For production, the authority belongs to the Ministry of Marine and Fisheries, while the distribution aspects including export and import, is the Ministry of Trade. Therefore, co-ordination between the two ministries is needed in order to develop the salt industry in Indonesia.

Chapter 6 Conclusion and Implication

It is often said that there is no economic growth without competition. There is no field where competition and innovation is not required and the field of agriculture is not exception. If farmer can only produce that are not competitive due to the protectionism policy, agricultural industry cannot survive in the global economy.

On the other hand, it is said that Indonesia is experiencing high prices in many food commodity markets. Before the beginning of this market study, KPPU was concerned that there might be competitive problems for the six commodities. In fact, some problems from the viewpoint of competition policy were found in this market study.

There are various ways to measure the competitiveness in the market. For example, competition authority uses indicators of market structure such as market concentration degree, number of supply companies, easiness of price comparison. In addition, competition authority uses indicators of market behavior such as the number of new entrants and change rate of supplier, and also uses indicators of competitive performance such as expectation satisfaction degree of consumers and average mark-up rate. In this market study, there are some parts that were not carried out detailed survey due to human resources and time constraints, but it enabled us to get a glimpse of problems from the viewpoint of competition policy. We hope that it will be the beginning of further survey in the future. The conclusions and implications are made based on the results of the study and Focus Group Discussion (FGD) held in various regions.

6.1. Conclusions

6.1.1. General conclusions:

1. In common with six commodities, there are many intermediary venders between producer and the final consumer, which is thought one of cause of the high distribution cost and high consumer price.
2. In common with six commodities, in actuality, the number of players participating in each distribution stage is small, and there are few new entrants in each distribution stage. There is a tendency to deal only with familiar business partners. The reason why new entrants are not promoted is not always clear, but there is a need to further survey about the cause that competition is not fully activated.
3. Based on Coefficient Variation (CV) analysis of producer and consumer prices, four commodities (rice, sugar, salt, and beef) have the value of CV less than 15% both for producer and consumer prices. For two commodities, i.e., shallot and chili, the values of CV are greater than 20% indicating that marketing margin for shallot and chili experience large fluctuations. It shows that the consumer price formations are more affected to the farming margin compared to the producer price.
4. The production costs of rice and sugar are still high and are transmitted to retail prices.

5. Some policies issued by the Government are considered to disrupt the market situations of the six commodities. Market participants are hesitant and worried about legal sanctions as stated by the policies.

6.1.2. Specific conclusions

Sugar

1. The production of GKP (Plantation White Sugar) in Indonesia that is only 2.2 million tonnes and is not sufficient to fulfill sugar consumption that is about 2.8 million tonnes.
2. The production cost of sugar is high due to low sugarcane rendement and cost efficiency.
3. The low performance of sugar factories cause farmers to obtain the sugar not in accordance with its potential cost.

Rice

1. Rice production occurs throughout the year with different numbers in each region and season.
2. Farmers can sell un-husked rice to any buyers available around the farmers' places as long as the price is in accordance with the conditions at that time.
3. Competition between un-husked rice occurs among local traders and inter-regional traders. Open competition also occurs among the rice sellers.
4. The price of rice is more affected by the price of un-husked rice. The price of un-husked rice directly affects the price of rice.
5. The dominant marketing channel of rice is from the farmers to the rice millers, big traders and retailers.
6. In 2017, the productivity of rice dropped significantly due to pest and disease attacks reducing the supply and increase the price of un-husked rice.

Shallots

1. Market structure for shallots tends to be oligopsony at the farmer level until the big traders which tends to oligopoly at the wholesale market until the retail level.
2. The majority of shallots is selling outside the production areas with the long marketing channel. The marketing channel, involves many marketing institutions including broker, collector trader at the village level, big trader, wholesale market, sub grocer, and retailers. As such, the marketing margin of shallots is relatively high. Low levels of profit ratio and farmer share indicate marketing efficiency.
3. Price fluctuation of shallots at the consumer level is bigger compared to price fluctuations at the producer level.
4. It is common practice that traders at wholesale markets have agents (brokers) in order to obtain information about volume and price of shallots that come to the wholesale markets.

In Kramat Jati market, wholesale traders have a dominant role in price determination, while in other wholesale markets (i.e., Cibitung) the sub-grocer traders have the dominant role.They are in the organization of Shallot Broker Community (Paguyuban Centeng Bawang Merah- PCBM).

Chili

1. In 2017, the reference price of chilis had been abolished by the Ministry of Trade.
2. Market structures for chili at the farmer until the big trader levels tend to be oligopsony. Meanwhile, from the wholesale market until the retailers, it tends to oligopoly.
3. The marketing channel of chili involves many marketing institutions including broker, collector trader at the village level, big trader, wholesale market, subgrocer, and retailers. Inter-island trade is still relatively low since the transportation costs are very expensive. For example, the transportation costs from Garut to Batam (in Sumatra Island) is about IDR 12,500 per kg (including the packaging by using boxes). By using sea transportation, the cost is only IDR 2,500 per kg, but it take several days to send the chili, increasing the risk of shrinkage. Traders from production zones are still relying on wholesale markets around Jakarta as the destination markets. As such, the price of chili refers to the price at wholesale markets (Kramat Jati, Cibitung and Tanah Tinggi).
4. Marketing margin of chili is relatively high since many actors are involved in the marketing channel. Price fluctuation of chili at the consumer level is bigger compared to the producer level.

Beef

1. There is no accurate data about the population of cattle at the farmer level.
2. Farmers can sell cattle to any buyers available around farmers' places with an agreed price.
3. The price of live cattle is not the main factor influencing the decision of farmers to sell their cattle. Farmers sell cattle when they want to fulfill household necessities, e.g., education.
4. The price of live cattle tends to fall, but the price of beef tends to rise. This shows that the market of live cattle and beef is not well integrated.
5. The sale of live cattle are not conducted based on their weight but rather the physical condition of the cattle.

Salt

1. The production of salt in Indonesia is strongly influenced by the climate; therefore, the amount of salt production over the year is not spread evenly.
2. The national production of salt is not sufficient for fulfilling the national salt demand particularly for industry. In fact, the majority of imported salt is dedicated to fulfill industry needs.

3. The marketing margin of imported salt is very big when it is sold in accordance with the price of domestic salt.

6.2. Recommendation

1. The transaction data of the six commodities should be improved.It is important to grasp structural problems correctly that can not be solved by farmers' efforts and clarify what the administration should do.
2. Government should actively promote streamlining of disribution of commodities.As one of solution, it should be strengthen the legal system on wholesale market to reduce information asymetry and to realize high transparent market pricing.
3. Although several government agencies are involved in the agricultural sector, it is necessary to review existing regulations cross-sectionaly and improve the regulation that is not functioning well to strengthen competitiveness. Policies that potentially disturb markets of the commodities should be improved. For example, policies that appoint BULOG as the single buyers in sugar commodity.
4. Supervision along the supply chain of the commodities should be conducted more intensivelyby KPPU in order to avoid unfair transactions in the market. .
5. Potential market dominance by trader groups in the center market should be monitored and controlled to avoid the abuse of dominat position by trader groups that will cause the difficulties for new trader to get involved in the business.

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