

Impact of trade liberalization on Indonesian broiler competitiveness

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ABSTRAK

Industri ayam broiler adalah salah satu sektor yang memerlukan perhatian sehubungan dengan diberlakukannya perdagangan bebas. Penelitian ini bertujuan untuk menganalisis daya saing dan dampak kebijakan pemerintah terhadap daya saing ayam broiler di Indonesia dan memberikan gambaran industri broiler dalam perdagangan bebas. Penelitian ini dilakukan di Bogor dan Subang menggunakan metode survei. Sampel terdiri dari 30 peternak rakyat yang dipilih dengan *random sampling* dan sebuah perusahaan terintegrasi yang dipilih secara purposif. Selanjutnya data dianalisis menggunakan Policy Analysis Matrix (PAM). Hasil analisis menunjukkan peternak rakyat memiliki keunggulan kompetitif, tetapi tidak memiliki keunggulan komparatif. Sedangkan perusahaan oleh perusahaan terintegrasi memiliki keunggulan komparatif dan kompetitif. Analisis kebijakan menunjukkan bahwa keseluruhan kebijakan bersifat protektif dan memberi manfaat kepada produsen. Terdapat tiga skenario yang digunakan untuk menggambarkan perdagangan bebas, pengurangan tarif impor, penurunan tingkat suku bunga, dan pengurangan biaya logistik. Pelaksanaan perdagangan bebas akan mengurangi keunggulan kompetitif tetapi peningkatan keunggulan komparatif.

Kata Kunci: Broiler, daya saing, PAM, perdagangan bebas

ABSTRACT

International trade has been growing rapidly and requires high competitiveness. Broiler industry is one of the sectors that might be threatened by trade liberalization. This study aims to analyze the competitiveness and government policies impact on the broiler competitiveness in actual and free trade condition. This research was conducted in Bogor and Subang using survey method. The sample consisted of 30 local farmers selected by random sampling and an integrated company selected purposively. Further data is analyzed using Policy Analysis Matrix (PAM). Privat Cost Ratio (PCR) and Domestic Resource Cost Ratio (DRCR) analysis showed that small farm has a competitive advantage, but does not have a comparative advantage. While the production by integrated company has comparative and competitive advantages. The policy analysis indicates that overall policies is protective and give benefit to producers. There are three scenarios that are used to portray free trade: reduction in import tariffs, interest rates, and logistics costs. The implementation of free trade will reduce competitiveness in actual price but increase competitiveness in the undistorted market condition.

Keywords: Broiler, competitiveness, free trade, PAM

INTRODUCTION

Indonesia has signed and implemented a number of free trade agreements with countries and regions around the world as an independent market as well as a member state of the Association of South East Asian Nations (ASEAN) in order to strengthen its position in international trade. Indonesia's involvement in these trade agreements requires governments to reduce protection of domestic products and open markets for foreign products. This causes a significant question about whether trade liberalization can have a positive impact on the economy of the countries involved in free trade agreements. In Southeast Asia, evidence shows that the benefit from trade liberalization in non-agricultural goods has far outweighed the benefit of trade liberalization in agricultural goods (Hertel *et al.*, 2000).

Trade liberalization in agriculture also drives out small and medium-size farmers from the agricultural industry both in the export and import of agricultural produce. Due to free trade in agriculture, large scale farming is dominating agricultural production, while small-medium size farmers become unable to sustain their own agricultural production and consequently get pushed out of their work. As agricultural production becomes more and more concentrated into large scale farming throughout the world, the impoverishment of small farmers and agricultural workers are rapidly proliferating. Poultry, especially broilers is one of the industry that become the center of attention in this trade liberalization era. Indonesian broilers must compete with similar products from other countries with lower prices. In Indonesia, the broilers is a strategic commodity because broiler meat has been mostly consumed compared to other meat (Pusdatin, 2014) and is the most widely produced (Pusdatin, 2013). In addition to its increasing demand, broilers is attractive to be produced because of its shorter production period, therefore it shall cause rapid turnover as well (Moreki, 2011; Ezeh *et al.*, 2012).

Although the number of broilers production in Indonesia continues to increase, but the broilers industry still has several issues in the various agribusiness subsystems which shall negatively affect on competitiveness. Issues on the upstream subsystem is the high dependence on imported raw materials for feed (Mengesha, 2012; Fitriani *et al.*, 2014). Furthermore, the main issues in the

on-farm is efficiency. According to Pakage *et al.* (2014) and Radam *et al.* (2008), the broilers production may be already technically efficient, but it is still not allocatively and economically efficient. Although it is considered technically efficient, but Indonesia is still inferior compared to other ASEAN countries. In general, production of broilers in Indonesia is done by local farmers and large companies (Pakage *et al.*, 2014; Rohmad, 2013). But local farmers who operate in small scale and simple technologies still dominate the broiler production in Indonesia, whereas broilers farming in competitor countries already used closed house system in a large scale (Radam *et al.*, 2008; Todsadee *et al.*, 2012). Issues on supporting sub-sectors, among others, related to investments, partnerships, and government policies (Adegbite *et al.*, 2014; Bisant and Fatimah, 2008; Farooq *et al.*, 2010; Lakra *et al.*, 2014;).

The issues in the broiler agribusiness system led to costs that must be paid to produce each kilogram of chicken is still relatively high. Costs of production per kilogram in Indonesia reached US \$ 1.39, the production cost in ASEAN countries (Thailand and Malaysia) reached to US \$ 1.2, while the cost of production in the main exporting countries (US, Brazil, and Argentina) is less than 1 dollar (US \$ 0.85- 0.97). This suggests that the broiler production cost in Indonesia is more expensive 20 to 54 percent from other countries (USDA, 2014).

The high cost of production causes output prices become more expensive and it is difficult to compete with similar products from other countries (Lee and Jeong, 2007; Ahn and Jo, 2009). Competitiveness is the ability of a manufacturer/country in producing a commodity with good quality and reasonably low cost according to the price in the international market, and can be marketed at a sufficient price that it can continue production activities (Salvatore, 2014).

Concerning the high difference in the cost of production of broilers between Indonesia and other broiler producer countries causes a significant question about whether the Indonesian broiler industry can compete and survive in the trade liberalization era. Based on the above presentation, the broilers competitiveness in Indonesia is interesting to be analyzed. In general, this research is objected to determine the competitiveness and government policies impact on the broiler competitiveness in actual and free

trade condition.

MATERIALS AND METHODS

This study was conducted with survey method by collecting a sample from the existed population (Nasir, 1988) and data collection was taken in May - June 2015. The primary data source in this research consists of four groups: local farmers, large corporation/integrated company, slaughterhouse, and the marketing actors. Local farmers were used to represent the character of exploitation broiler on a small scale, partnerships, and use simple technology. Integrated company were used to describe the exploitation character by large-scale and more modern technology (closed house). Integrated companies usually have their own slaughterhouse and marketing division, while the economic activities in the farmers stop in the harvesting and being continued by other parties (slaughterhouse and marketers).

Local farmers in Indonesia are divided into two groups, those are independent farmers and partner farmer. Independent farmers are farmers who make all of production decisions on their own. While partner farmers choose to working under contract with a core company to raise chickens. In this case, core is not in the form of an integrated company. The core company is still using traditional technology while integrated company is already using closed house and has large scale. Most core companies started from poultry shops/distributors that provide input and collect output. Because of that reason, even partner farmers are controlled by core company, their conditions are very different from integrated company.

Pamijahan district - Bogor Regency was made as sample research location for local farm because it is an highest broilers producers area in Indonesia (Pusdatin, 2014) and able to represent characteristics of local farmers in Indonesia as mentioned above. The sample determining method to local farmer partner was random sampling by taking 30 farmers who has been in partnership in Pamijahan District. As for the number of independent local farmer samples is equal to the population that was 9 farmers. The method used for slaughterhouse and marketers was the snowball that is started from the farmers. The sample of integrated companies was selected purposively, namely PT. Leong Ayam Satu Primadona (a subsidiary of PT. Malindo Feedmill

carry out business in broilers preservation) located in Subang. This company brings together the characteristics of broiler integrated company: large-scale, using modern technology (closed house), and vertically integrated (large corporate entities control all levels of the value chain from DOC and feed milling to delivery at the retail level).

Data analysis methods used in this research were a qualitative and quantitative methods. Qualitative methods was used to describe the broilers agribusiness system conditions, the impact of the ASEAN Economic Community enactment, and the research location overview. Whereas quantitative methods using Policy Analysis Matrix (PAM) was utilized to analyze the competitiveness of broiler and the impact of government policy.

The policy analysis matrix (PAM) provides a systematic framework for assessing the impacts of government's intervention in certain production systems. Monke and Person (1989) stated that the structure of PAM can be described as a product of two accounting identities: one defining profit as the difference between revenues and costs and the other measuring the effects of divergence (distorting policies and market failures) as the difference between observed parameters and parameters that would exist if the divergences were removed. Monke and Pearson established the basic format of the PAM, as shown in Table 1.

The data in the first row of the PAM table provide a measure of private profitability. The private profitability demonstrates the competitiveness of the agricultural system. The second row of the PAM is used to calculate social profits. Social profits are those profits calculated at efficiency (shadow) prices. Positive social profit indicates that there is a positive valuation of output and is an incentive to the farmers. The third row shows the difference between the private valuation and social valuation.

The PAM framework can also be used to calculate important indicators for policy analysis. The nominal protection coefficient (NPC), a simple indicator of the incentives or disincentives in place, is defined as the ratio of domestic price to a comparable world (social) price. NPC can be calculated for both output (NPCO) and input (NPCI). The NPC is calculated by dividing the revenue in private prices (A) by revenue in social prices (E). It can be calculated for output and input.

Table 1. Policy Analysis Matrix (PAM)

	Value of Output	Value of Input		Profit
		Tradable	Domestic Factor	
Private price	A	B	C	D
Social price	E	F	G	H
Policy transfer	I	J	K	L

Source: Monke and Pearson (1989)

- A = Revenues evaluated at domestic prices of the output
- B = Cost of Tradable Input evaluated at Domestic Price
- C = Cost of Non Tradable Input evaluated at Domestic Price
- D = A – (B + C) = Private Profitability
- E = Revenues evaluated at border prices of the output
- F = Cost of Tradable Input evaluated at International Price
- G = Cost of Non Tradable Input evaluated at International Price
- H = E – (F + G) = Social Profitability
- I = A – E = Output Transfers
- J = B – F = Input Transfer
- L = D – H = Net Policy Transfers

$$NPCO = A/E$$

If NPCO = 1, the domestic market price equals world price and therefore, there is no protection and the price is efficient. If NPCO > 1, there is positive protection of output. If NPCO < 1 there is negative protection on output.

$$NPCI = B/F$$

If NPCI = 1, the domestic cost of input equal world price of input. If NPCI > 1, the domestic cost of input is expensive compared to imported inputs and it is preferred to use import for production, If NPCI < 1, it is profitable to use domestic input.

Besides the NPC, EPC (*Effective Protection Coefficient*) can also be an indicator of the impact of policy. The EPC is defined as the ratio of value added in private prices to value added at social prices. It measures the ratio of value added at domestic prices (A - B) to value added at world reference prices (E - F). Using PAM elements, $EPC = (A - B) / (E - F)$. If EPC > 1, means net subsidy to value added, If EPC < 1 means net tax to value added, If EPC = 1 means no value added. The EPC ignores the transfer effects of factor market policies like NPC.

RESULT AND DISCUSSION

Profitability Analysis

The competitive advantage can be seen from private profits, while the comparative advantage

represented by social benefits. Private profit is the difference between revenues and expenses on the actual price condition which is received by the farmers with the government policies effects and the market failure. The social profit is the difference between revenue and expenses at the level of world prices which is an economic efficiency reflection. The social gain also reflects the advantages that can be obtained in the absence of affected government policies for input and output. The average profit per ton carcass for one production cycle (about 2 months) of each business type (farmers partners, independent farmers and integrated company) can be seen in Table 2.

Data in Table 2 shows that it is acknowledged that private profit had positive value while social profit had negative value on the broiler production by an independent and partner farmers. It meant that broilers were profitable at current price and eligible to produce. But from a social price, broiler production was not yet profitable, or in other words without any policies then production of broiler in Indonesia is still not profitable. While the production done by the integrated company is profitable in private and social price.

Competitive Advantage and Comparative Advantages

Competitive advantage and comparative

Table 2. Broiler Production Profitabilities by Partner Farmers, Independent Farmers, and Integrated Company (per Ton Carcass per One Production Cycle)

Business Type	Value of Output	Value of Input		Profit
		Tradable	Domestic Factor	
<i>Partner Farmers</i>				
Private price	66,380,430	24,221,370	3,5937,442	6,221,617
Social price	44,627,130	18,815,421	2,5971,448	-159,738
Policy transfer	21,753,300	5,405,949	9,965,995	6,381,356
<i>Independent Farmers</i>				
Private price	65,769,420	26,615,416	36,618,206	2,535,798
Social price	44,324,534	19,830,631	26,084,609	-1,590,706
Policy transfer	21,444,886	6,784,785	10,533,597	4,126,504
<i>Integrated Company</i>				
Private price	31,624,487	11,800,865	11,289,566	8,534,056
Social price	24,159,154	8,594,604	9,430,337	6,134,213
Policy transfer	7,465,333	3,206,261	1,859,230	2,399,843

advantages can be seen from the Private Cost Ratio (PCR) and the Social Cost Ratio (DRCR). The comparative and competitive advantages value in broilers farming for each type of farming can be found in Table 3. The Table 3 shows the value of $PCR < 1$ meaning that the broilers production done by local partner farmers, independent, and companies, had a competitive advantage in actual price (distorted market). DRCR showed the comparative advantage or commodity competitiveness in the undistorted market. Independent and partner farmers had $DRCR > 1$, which means their production barely compete without government protection. While the DRCR value of integrated company was 0.61 which means even without any protection policies, their product was still able to compete in the market.

RESULTS AND DISCUSSION

Production by the company is the most competitive among the three because of the technology (closed house) and scale. The closed house is a sealed enclosure that ensure the biologically safety with good ventilation settings so that the conditions inside the cage can be easily adjusted to comfortable condition. The use of

closed house can increase its productivity because it can reduce the risk of illness and then decrease mortality rate and reduce the use of drugs (Pakage *et al.*, 2014; Udoh and Etim, 2009; Ezeh *et al.*, 2012).

Large-scale farming also caused the competitive value of company higher than the local farmer. The average production capacity per period by partner farmers, independent, and companies respectively should be 8 500, 8 222, and 195 000 entered chicks. The larger scale will increase its efficiency proved by lower input used and total carcass cost per ton by the company compared to local farm (Mosheim and Lovell, 2009; Pakage *et al.*, 2014)

Producing by partner farmers had more competitiveness than independent farmers. This is because the partner farmers got benefit from the partnership in the form of technical assistance and the contract price. With the technical assistance, the production process is always controlled by the core company therefore it is more efficient in input usage. Contract prices caused an average price of 'ready to slaughter chickens' received by partner farmers are higher than independent farmers. Another advantage of the partnership was the post-harvest (slaughter) cost becomes more efficient. Output of the ready to slaughter

Table 3. Comparative and Competitive Advantage of Indonesia Broiler Production

Advantage	Farmers		Integrated Company
	Partner Farmers	Independent Farmers	
Competitive (PCR)	0.85	0.94	0.57
Comparative (DRCR)	1.01	1.06	0.61

chickens produced by some partner farmers will be collected by the core, therefore the total chicken was larger. With a large number of chickens then the slaughter process can be done in a modern slaughterhouse using a conveyor system, which slaughter costs in this modern slaughterhouse is cheaper than traditional slaughterhouse (Rohmad, 2013; Samarokoon and Samarasinghe, 2012; Tapsir *et al.*, 2011).

The Impact Government Policy

An effective policy is required to protect and support the development of the agribusiness system. Policies on a commodity systems reflected the divergences effects in the third row of the PAM table and some other indicators. The policy impact indicators was applied to broilers farming which includes policy input, output, and input-output (Table 4).

The government policy on output of broilers meat was protective that shall provide incentives for manufacturers, it can be seen from the output transfer that was positive and NPCO > 1. The protective policies on output that applied is import barriers. The import barriers caused the actual price of output (chicken meat) was higher than its social price (Cairns and Meilke, 2012; Felt *et al.*, 2012). Because of import tariffs, the total output value of the partner farmers, independent, and company was 49%, 48%, and 31% percent higher than it should be. Integrated company's NPCO was smaller than the partner and independent farmers' NPCO because the output price (carcass) set by the company was also lower.

The government policy impact on the input of broiler production can be seen from the value of the input transfer, transfer factor, and NPCI. The input transfer and factor transfer had positive value indicated that the actual price is higher than the social price, whereas the NPCI value > 1 indicated no protection for tradable input. Government policy related to interest rate also

became an example of the lack of input protection policy. Interest rate in Indonesia reached 14 percent, while in other ASEAN countries only 3 to 7 percent.

The input-output policies run effectively. EPC >1 values indicated that the government policy was protective. Net transfer had positive value indicated farmers had producer benefit value. PC measured the impact of the entire transfer. Local farmers had a PC with a negative value, while the company had positive value. This meant that the overall policy was applied by the government to provide incentives to companies but not for farmers.

PC provided company by 1.39 percent means that private profits derived by an enterprise 1.39 times larger than it should be, if there is no policy. The difference between the benefits received by the company with the benefits received by the local farmers based on the PC value was very high. This means input-output policies applied by the government actually satisfied the company.

The ratio value of subsidies to producers (SRP) indicates the level of the addition or subtraction acceptance of farming of a commodity due to government policy. SRP farming by farmers has value of 0.14 and 0.09 while the company has value of 0.10. This showed that the current government policy causes to the local farmers production costs was 14 percent and 9 percent lower, while the company's production costs 10 percent lower than the opportunity cost.

Trade Liberalization Impact on the Broiler Competitiveness

In this research, the scenario was used to potray the impact of trade liberalization on broiler competitiveness. The three scenarios that was conducted in this research is the estimation of the changes that will occur with the implementation of trade liberalization:

Table 4. Indicator of Government Policies Impact on Broiler Production in Indonesia

Indicator	Farmers		Integrated Company
	Partner Farmers	Independent Farmers	
Output Policy			
<i>Output Transfer (OT)</i>	21, 753, 299	21, 444, 886	7, 465, 333
<i>Nominal Protection Coef. on Output (NPCO)</i>	1.49	1.48	1.31
Input Policy			
<i>Input Transfer (IT)</i>	5, 405, 949	6, 784, 785	3, 206, 261
<i>Factor Transfer (FT)</i>	9, 965, 995	10, 533, 597	1, 859, 229
<i>Nominal Protection Coef. Input (NPCI)</i>	1.29	1.34	1.37
Input-Output Policy			
<i>Net Transfer (NT)</i>	6, 381, 356	4, 126, 504	2, 399, 843
<i>Effective Protection Coefficient (EPC)</i>	1.63	1.60	1.27
<i>Profitability Coefficient (PC)</i>	-3.89	-1.59	1.39
<i>Subsidy Ratio to Producer (SRP)</i>	0.14	0.09	0.10

1. Import tariff of chicken meat has decreased from 5 percent to 0 percent.
2. Interest rate has decreased from 14% to 5% (average interest rate ASEAN countries).
3. Logistics costs has decreased 20 percent (estimated reduction in logistics costs in 10 years).

Based on data in Table 5, it was acknowledged that the decrease in import tariff caused a decrease in competitiveness. While the decrease in interest rate and logistics costs would improve competitiveness. Changes to three variables simultaneously as a result of the implementation of the trade liberalization would cause a loss of competitive advantage, but increase the comparative advantage. With the changes in variables represent trade liberalization, broiler farming by the company remain to be the most competitive compared to independent farmers and partner farmers.

Some suggestions that can be formulated from the discussion above :

1. With the implementation of trade liberalization, the protection policy become more limited. But the government is still able to protect the broiler industry, especially the farmers, by intensifying partnerships.

2. Government can also encourage businesses to use the closed house to improve efficiency. But this impulse should be supported by facilities that provide convenience for closed house investments, considering the cost of an expensive investment (Todsadee *et al.*, 2012).
3. In addition the government policies that can be done is a decrease in interest rates and infrastructure improvements. The poor infrastructure in Indonesia is reflected in the high logistics costs compared to other countries (Kim and Jeong, 2009 and Lee and Jeong, 2007). The decrease in interest rate and logistics costs will improve competitiveness.

CONCLUSIONS

Indonesian broiler production conducted by the farmers and company had competitive advantages. While the comparative advantages only procured by the broiler production done by the company. This meant that without policies or protections from the government, the broiler farming of local farmers were not competitive. On actual condition, government policies that have been implemented were relatively able to

Table 5. Free Trade Scenario and Its Impact on Indonesia Broiler Competitiveness

Scenario	Farmers				Integrated Company	
	Partner		Independent		PCR	DRCR
	PCR	DRCR	PCR	DRCR		
Normal condition	0.85	1.01	0.94	1.06	0.57	0.61
Import tariff 0%	1.06	1.02	1.18	1.06	0.90	0.61
Interest rate 5%	0.80	0.88	0.88	0.99	0.51	0.54
Logistics costs decreased 20%	0.77	0.79	0.85	0.89	0.49	0.48
Combination	0.89	0.74	1.02	0.85	0.45	0.6

protect the Indonesian broiler industry. However, a set of policies that aim to protect the broiler industry has to be reduced by the implementation of trade liberalization. Results of this research concluded that trade liberalization would decrease the competitive advantage but increase the comparative advantage.

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