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## Impact on Increasing Concentration in Indonesian Broiler Industry

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**Abstract:** This study aims to analyze the market structure of the broiler industry in Indonesia using industry concentration ratio and barriers to entry and their impact on the level of competition in the broiler industry in Indonesia. Using secondary data time series from the Central Bureau of Statistics, CR<sub>4</sub> calculations obtained in 2003 was 50.26 and in 2012 increased to 54.81, while the industry barriers to entry (MES) also tends to increase the value of which was in 2003 reached 0.126 while in 2012 be 0.137. The average output of the four largest companies reached 54.8 percent with barriers to entry at 0.137, so that it can be said that broiler industry market structure in Indonesia is an oligopoly with entry barriers are quite low. This means that the broiler industry in Indonesia has not been efficient. Conditions where large-scale enterprise and has integrated industry structure tends to cause high concentrated so vulnerable to unfair competition practices. The farmers through farmer organizations or professional organizations should actively conduct animal studies and research and active advocacy against government policies that may lead to unfair competition is detrimental to farmers.

**Key words:** Concentration ratio, oligopoly, unfair competition

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### INTRODUCTION

The changing structure of Indonesian agriculture has generated concerns about reduced competition in a wide variety of agricultural products markets, including broiler. Two primary areas of concern in the broiler industry are consolidation the shift to fewer and larger firms and industry concentration the extent to which a small number of firms control most of the sales. Several studies concerning the poultry industry asserts that the present structure of the poultry industry in Indonesia leads to oligopolistic (Yusdja *et al.*, 2004; Fitriani, 2006; Agustina, 2009). This is indicate by the presence of (1) about approximately 40 broiler producers in Indonesia, 16 companies of which include large-scale category. Sixteen large-scale companies that control 75% market share of broiler farming industry (Prasetya, 2011), (2) this large-scale farm enterprises also perform vertical integration.

The rapid growth in the broiler business much more enjoyed by multinational corporations (MNCs) large scale. Driven by the advantages of economies of scale and globalization of the value chain system, companies increasingly dominate the agribusiness sector in the entire value chain, from upstream to downstream. This has left the traditional markets where farmers or small-scale farmers sells product to market and local merchants. The more concentrated an industry, the distinction between paid by consumers and received by producers for the production of the goods are getting bigger (Daryanto, 2009).

Broiler industry is one of the industry's most integrated farming. The industry has dominated the competition in the market area of the meat during the last 20 years, dramatically expanding the market share due to increased efficiency, maintain lower prices than its competitors and increase its product offering and its variations (Tsoulouhas and Vukina, 2001). Similarly in Indonesia, the broiler industry is entirely vertically integrated, from breeding flocks and hatcheries to feed mills, transportation divisions and processing plants. The finishing stage of production is organized almost entirely through contracts with independent growers. A large proportion of the value added in processing is the main reason why the processors became the coordinators of the industry, whereas the significant economies of scale in processing have lead to a significant industry concentration.

The concentration and restructuring in the poultry industry could have two impacts: (a) higher concentrated industry means higher market power, consequently social welfare would decrease, (b) the industry restructuring may improve cost efficiency, which would increase social welfare (Tsoulouhas dan Vukina, 2001). Under the present conditions, aided by the research literature on the impact of concentration in some countries to the level of competition in the industry then this paper aims to analyze the structure of the broiler market in Indonesia using the industry concentration and barriers to entry and their impact of market power in Indonesian broiler industry.

**MATERIALS AND METHODS**

This research used annual survey data of broiler firms which are collected by BPS from 2003-2012. The data includes the number of broiler companies, production and sales of broiler chicken meat each company. Differences in the number and size distribution of companies is a key factor to differentiate the theoretical model of perfect competition, oligopoly, monopoly and monopolistic competition (Ferguson, 1988). Market power is the ability of a company to strongly influence the quantity and price in the market. This is also the share of the company's total revenue of industrial output that varies from 0 to 100%. A company with a market share of less than 10% can not be said to have market power. The power of emerging markets if the share reaches 15% and the company can be said to be a monopoly if it reaches 25 to 30% (Sheperd, 1997).

Indicators of industrial concentration calculations commonly use concentration ratios. Concentration ratio is the percentage of market share held by the largest firms in an industry  $m$ , where  $m$  is the number of company-specific, usually 4, but sometimes more or less than that amount. Concentration ratio is often expressed as  $CR_m$ , for example,  $CR_4$  (Carlton and Perloff, 2000).

Concentration ratio can be expressed as:

$$CR_m = s_1 + s_2 + s_3 + s_4 \dots \dots + s_m$$

where,  $s_i$  = market share of the company  $i$ .

If  $CR_4$  is close to zero, this value indicates a perfectly competitive industry in which the four largest companies do not have significant market share. In general, if the value of  $CR_4$  is less than 40 (which shows that the four largest companies have a market share of less than 40%), then the industry is considered to be very competitive, with a number of other companies are competing, but none has a greater share. On the other hand, if the  $CR_4$  value greater than 90, it can be said the company controls more than 90% market effectively called a monopoly. Barriers to entry is a condition where there are barriers to entry and or exit an industry. If there is no impediment to entry or exit, it will be difficult for the company that has been established to maintain prices above marginal cost and benefit, (Church and Ware, 2000). MES calculations were performed as:

$$MES = \text{Av. output 4 largest companies} \frac{(50\% \text{ Industrial Output})}{\text{total output}}$$

Fifty percent in the above equation is not an absolute figure. This figure may exceed 50 percent if the market structure in a state of natural monopoly. In Indonesian broiler industry, the average output of 4 largest companies reached 54.8 percent with barriers to entry of 0.137 so it can be said Indonesian broiler industry market structure is an oligopoly with low entry barriers.

**Profile of broiler market:** Broiler chickens are livestock introduction of newly developed in Indonesia in the mid 1970s and the new data is available in the official documents since 1984. Poultry is supplied by multinational companies. This business is generally a commercial businesses, specialized and main source of income for the farmer concerned. Now the broiler chicken farming is dominated by large companies.

Since introduced in the mid 1970s, broiler chicken business is growing rapidly as shown in the table below. The population of broiler chickens increased by 35.61% growth rate per year in the period 1980-1989. The economic crisis in 1997-1999 gave a severe blow to the poultry business so that the growth of the population fell to only 2.10%/year in the period 1990-1999. Along with economic recovery, return chicken population increased at a rate of 9.07%/year in the period 2000-2010.

Chicken meat production is directly proportional to its population. Broiler meat production increased by 20.70% growth rate/year in the period 1980-1989. The rate of growth in chicken meat production fell to 3.31%/year in the period 1990-1999. Once again, the drop in the growth of broiler chicken meat production in this period is a result of the economic crisis of 1997-1999. In the period 2000-2010, broiler meat production increased with growth rate of 9.5%/year. Average broiler chicken meat production during the period 2000-2010 has reached 849 008 tones/year.

The rapid rate of growth of broiler farms have made meat of broiler chickens as most types of meat produced in Indonesia. Since the 1990s, broiler meat production (average of 412 639 tones/year) has surpassed beef production (an average of 316 535 tones/year). Broiler meat production also has exceeded the total poultry meat production. With the accelerated growth, the dominance of broiler meat continues to increase, not only more abundant supply, broiler meat prices are also cheaper than all other types of meat so chicken becomes the main source of animal protein for the Indonesian people.

Meanwhile, if viewed from the level of the national chicken meat consumption, where consumption/capita is still low for chicken meat, about 6 kg/capita/year (Central Bureau Statistics, 2012). Although it is still dependent on purchasing power, but demand growth has a positive correlation with population growth.

Actually broiler industry still has a large growth potential, given the low number of national consumption of chicken meat. Some other contributing factors that increase the demand for broiler meat products is mainly because of most the Muslim population of Indonesia, the relatively lower prices of chicken meat than beef and the belief that white meat is healthier than red meat.

The primary concern with many have concentration is that it could reduce competition in the market for agricultural and food products and result in market

Table 1: Production performance of broiler chickens livestock enterprises in Indonesia, 1980-2010

Illustration	1980-1989	1990-1999	2000-2010
<b>Population</b>			
Mean (head)	166 744 286	510 988 500	828 124 000
Growth (%)	35.61	2.10	9.07
Coefficient of variation (%)	11.22	32.72	18.35
<b>Production</b>			
Mean (ton)	136 236	412 639	849 008
Growth (%)	20.70	3.31	9.5
Coefficient of variation (%)	4.04	31.12	25.38

Central Bureau Statistics (BPS), Statistical various years, by processed

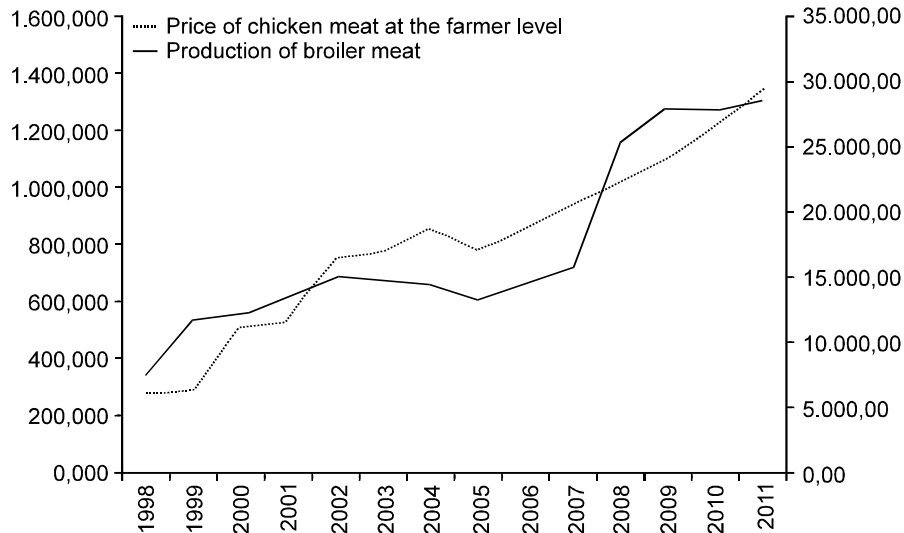


Fig. 1: Development of production and average price of broiler industry in Indonesia. Department of Commerce (2012) processed by Agricultural Data and Information Center, 2012

power (i.e., the ability of a firm to influence prices), putting at a disadvantage some segment of the population, such as producers or consumers. However, concentration may also result in efficiency gains, whereby cost savings are passed on to consumers through lower retail prices, which in turn can result in additional demand for commodities and benefit farmers. However, the experts generally agreed that concentration is likely to increase in the future, where a further increase in concentration leads to price increases Lopez and Liron-Espana (2005) and Shields (2010). This can be indicated by the development of chicken meat prices increased over time (Fig. 1).

Increased concentrations can occur through mergers, acquisitions, investments and other means. With increasing industry concentration and the achievement of economies of scale, cost efficiency should increase and product prices may go down, which in turn increases demand for the products of social welfare will increase as well. But in reality the price of broiler meat continues to experience a significant increase. It is thought to have occurred due to the structure of the market distortions that lead to a monopoly market, but it will require data that is more detailed with respect to the behavior of the industry.

Today, when viewed from either the number of integrated companies, non-integration and small farmers, broiler business in Indonesia consists of a very large number of players. However, the company that operates the integration only slightly and increasingly dominate, such CPIN and JPFA, which has business lines ranging from DOC nursery, feed mills and processing. Growers usually buy DOC and feed to the company's integration. Some players are not integrated in the business only has a nursery or in the manufacture of feed.

During this decade, the broiler industry in Indonesia is concentrated. It is evident from the CR4 in 2003 amounted to 50.26 to 54.81% in 2012. Seven companies of about 956 companies in the broiler controls 53.52% in 2003 and now in 2012 has increased from some 108 companies broiler scattered throughout the country, seven companies control about 60.32%. So predictable, market domination by large corporations that in 2025 reached 70% (Fig. 2).

As research results by Fitriani (2014) that the increase in concentration is positively correlated with market power and negative correlated with cost per output (concentration can cause efficiency), though not significant. The presence or absence of the effect of efficiency to offset the effects of market power is critical

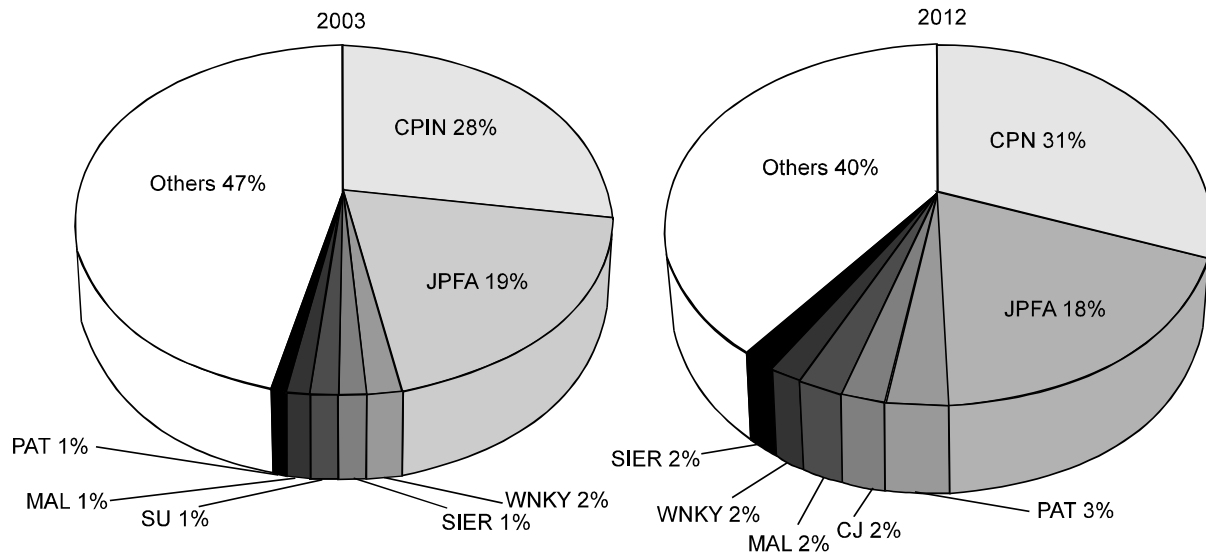


Fig. 2: Market share seven largest broiler company in 2003 and 2012. Central Bureau Statistics (BPS), 2012

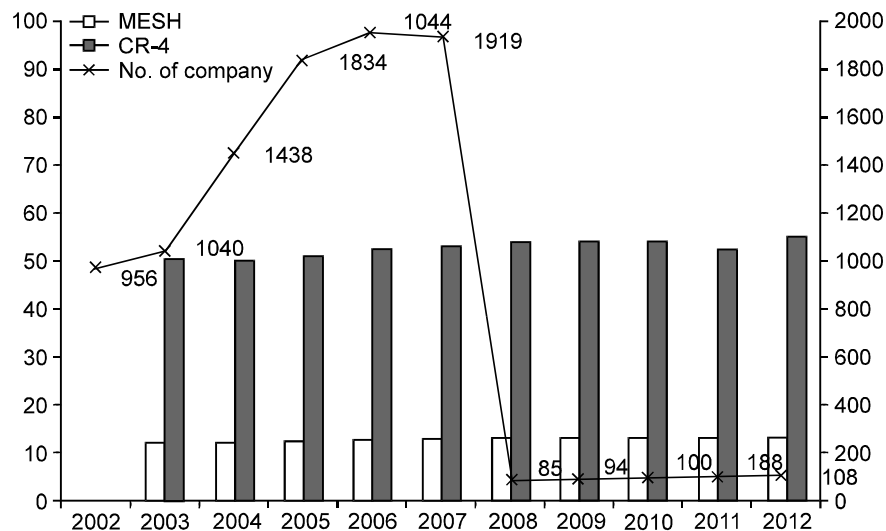


Fig. 3: Development of concentration in broiler industry in Indonesia. Central Bureau of Statistics (2012), by processed

to the performance of the food system. Thus, the concentration can have an impact not only on the consumer (or inefficiency to the extent that the cost savings are passed on to them), but also on the international competitiveness and profitability of the domestic food processing plants (Lopez and Liron-Espana, 2005).

### RESULTS AND DISCUSSION

Indonesian broiler industry consists of several segments of the activities of each other have a very large dependence because it involves biological needs. The first segment is cultivation, then feed mill segment, nurseries, pharmaceutical, industrial slaughterhouse and then packaging.

Indonesian broiler industry development pattern much driven by the influence of government policy. Prior to 1970, the entire production chain were in one business unit but in the small size of scale by farmers. Then after 1990 there was a tendency to form a national industry to vertical integration, but only in the form of a financial entity consisting of several companies that were not well integrated in a company, much less in one location. There are several groups that we know have 5 to 7 companies which are all segments of the poultry agribusiness.

Nationally, this kind of effort is inefficient because only profitable for the owners of capital but higher production costs and a burden to consumers. In an integrated farm systems, the company should benefit gained from

further processing, not instead of cultivation. Size/livestock maintenance becomes larger. This situation is not at all a positive impact on cost reduction, actually increased. In other words, the output price does not change between before and after integration. Supposedly, with integration, the price will be lower.

**Impact of concentration and barriers to entry in the broiler industry:** The ratio of the concentration of the broiler industry in Indonesia has increased slowly but surely which in 2003 CR<sub>4</sub> reached 50.26 and in 2012 increased to 54.81. While the industry entry barriers also tends to increase the value of which in 2003 reached 0.126 and while in 2012 to 0.137.

Broiler business is the most progressive farm business, by driving motor is a big producer of Day Old Chick (DOC) and feed company which is at the core of high technology that makes this industry continues to grow very rapidly. It can be said, the revolution is already underway on the farm broiler industry. Intrinsically, branches of this industry effort has economies of scale from the scope of business economics is so large that growing companies tend to be large-scale and integrated spheres of businesses (conglomerate). Therefore broiler farms dominated by large companies. In addition, large-scale enterprise and integrated industrial structure tends to have led to highly concentrated so vulnerable to unfair competition practices.

Indonesia has had 25 years of experience in developing farming enterprises, but the development was stagnated and remains problematic. The farmers in the last 20 years has developed one after another. They are the people who have filed for bankruptcy yesterday, while the farmers are now gasping the air. So if there is any suspicion that the farmers had experienced 25 years now and they are now well established. Growers are exist now is a new growers. Growers, because they have the ability to lower capital, will never be established individually. They could only be established, if they are united in an organization that is capable of eliminating all the weak points of small businesses. In the past, cartel horizontal integration in both overt and conspiracies that are secretly a lot going on. Now since the promulgation of the Law of Anti-Trust of Business Practices, horizontal conspiracy practice has been substantially reduced. Nevertheless horizontal conspiracy secretly of course difficult to detect. Often perceived indications, such as the animal feed industry tend to be almost the same price (Iwantono, 2007). Business Competition Supervisory Commission (KPPU) is conducting a study on the structure of such markets. The law of Anti-Monopoly in Indonesia does not prohibit the monopsony market structure or dominant position, as long as they do not commit abuse on the position through actions categorized as "unfair business practice". Such proof is certainly not easy.

The response can be done by livestock farmers is to strengthen their bargaining position through the cooperative. They could form a cooperative primary broiler growers and subsequently formed a cooperative Primary Cooperative Association. Combined these primary cooperatives representing farmers who then negotiates problem input prices and output prices either to the company or the government through market operations.

Now there is a fundamental problem arising apparent surface of the vertical integration. Vertical integration is happening today is far from perfect. On the other hand the apparent integration tends to grow to form a monopoly or oligopoly. Thailand as an Asian country that is advanced in the broiler industry, has from the beginning to build an integrated conduct, but lapsed into a form of monopoly (Yusdja *et al.*, 2004). Although integration is not only a necessity, but it should be so, but it does not have to be accompanied monopoly character.

**Industry concentration and unfair business competition:** On March 5, 1999 has been enacted Law No. 5 concerning Prohibition of Monopolistic Practices and Unfair Business Competition. Consideration of the issuance of this law, among others, that every person who tried in Indonesia must be in a situation of fair competition and reasonable. Should not result in the concentration of economic power in certain business actors. The main objective of the establishment of this law are: a. Keeping the public interest and improve the efficiency of the national economy as part of efforts to improve the people's welfare, b. Brought conducive business climate through fair competition arrangements in order to ensure certainty in the same business opportunities for businesses large, medium-sized entrepreneurs and small businesses c. Prevent monopolistic practices and or unfair business competition posed by the business and d. Effectiveness and efficiency in the creation of economic activity.

To oversee the implementation of this Act was created by the Commission for the Supervision of Business Competition, an independent agency, free from the influence of the government and other parties. The Commission has two basic tasks, namely: (1) litigation activities, examine, prosecute and rule on cases of unfair competition, (2) Provide advice to the government's consideration of government policies that give rise to unfair competition.

KPPU is a quasi-judicial bodies of first instance for cases of unfair competition. Commission's Decision on appeal to the District Court to the Supreme Court. But for that there are some things that should be done by broiler grower organizations, including:

**Advocacy to government:** Distortions in the market that generates economic concentration, business practices

unhealthy performed by operators are often sourced from government policy. The forms of government intervention in the market is often actually cause a distortion in the competitive market mechanism. Presidential Decree No. 22/90 which limits the maximum effort broiler in fifteen thousand for enterprises to be used by large scale to divide the ownership of the business under various names so as not to deviate from the Decree. In the Indonesian government intervention implemented by legislation although potentially violate antitrust law violations are excluded from anti-monopoly law.

With regard to the farmers through farmer organizations or professional organizations should actively conduct animal studies and actively conduct research and advocacy against government policies that may lead to unfair competition is detrimental to farmers.

**Organizing ourselves to strengthen the bargaining position:** The farmers should organize themselves on the association as well as the cooperative economy in order to improve the bargaining position of the imperfect market structure. In this association negotiate process between the producers and the buyers can be carried out by the cooperative. Through cooperative anyway they can adjust the level of production, quality standards, the purchase of production and or marketing of products together, can also improve efficiency through economies of scale.

In Indonesia and also in many other countries in the association pooling cooperative action which basically can be categorized as cartels exempted from the implementation of anti-monopoly legislation. In Indonesia this exception can only be performed during the transaction in question is limited to transactions conducted with its members, if the transaction is carried out by non-members shall be exempt from antitrust laws.

**Understanding and awareness about unfair business practices:** Farmers in Indonesia including the majority of its leaders have not been aware of and understand the essence of the anti-monopoly law, so that they do not know the business practices undertaken by other parties that are categorized as unfair and prohibited. Unfair action can occur many years without knowing. For the farmer organizations should disseminate anti-monopoly laws against farmers and cooperative leaders.

**Conclusion:** The results of the analysis in Indonesian broiler industry, obtained an average output of 4 largest companies reached 54.8 percent with barriers to entry by 0.137 so that it can be said Indonesian broiler industry market structure is an oligopoly with entry barriers are small. This indicates that easy for companies to enter and exit in the industry, but, the company who is able to

produce efficiently are able to survive in this industry. Hence, although the broiler farm business is dominated by large companies with an increasing amount of production, the price should be lower, but the price of broiler instead tend to increase. In addition, large-scale enterprise and integrated industrial structure tends to have led to highly concentrated so vulnerable to unfair competition practices.

Distortions in the market that generates economic concentration, business practices unhealthy performed by operators are often sourced from government policy. The forms of government intervention in the market is often actually cause a distortion in the competitive market mechanism. Besides government policies that limits the maximum effort for broiler in fifteen thousand for enterprises to be used by large scale to divide the ownership of the business in a variety of proprietary names so as not to deviate from the Decree. In Indonesian government intervention implemented by legislation although potentially violate antitrust law violations are excluded from anti-monopoly law.

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