Competitiveness of Indonesian beef trading in ASEAN

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ABSTRACT

This research was aimed to analyze Indonesian beef trading competitive position and specialization in ASEAN countries. This research was conducted in Indonesia with nine other ASEAN members (Brunei, Cambodia, Laos PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam) as the comparison. The research used secondary data of beef export and import values, and export commodities from Indonesia and nine other ASEAN countries in 2013 to 2017. Beef competitive position was measured by using Revealed Comparative Advantage (RCA) method, while the development of beef commodity in international trading was measured by using Trading Specialization Index (TSI) method. RCA calculation result in 2013-2017 showed the lowest comparative advantage of Indonesian beef trading in ASEAN (RCA = 0.000). TSI calculation result in 2013-2017 showed that Indonesian beef trading commodity was in introduction stage in international trading (TSI≈1.000).

Keywords: beef trading, comparative advantage, RCA (revealed comparative advantage), TSI (trade specialization index)

INTRODUCTION

Indonesia is one of ten countries that agreed on ASEAN Economic Community (AEC) enforcement since 31 December 2015. The AEC Blue Print stated a cooperation in food and agriculture fields, including livestock, as one of the important element to make ASEAN as the...
single market and production base (Ningsih and Kurniawan, 2016). Wastra (2014) stated that some opportunities that can be reached by Indonesia in AEC are: opening wider market opportunities for Indonesian agricultural products; ASEAN population is about 630,490 million people (8.40% of world people); a better ASEAN economic growth; encouraging domestic investment; and facilitating domestic companies to form joint venture with companies in ASEAN scope.

Beef is one of a favorite food commodity in Indonesia and ASEAN. Beef consumption level tends to increase along with increasing of population and per capita income, changes in consumption patterns and people’s tastes, and also awareness of high nutritious food. Beef consumption of Indonesian population increased from 2.305 kg/cap/year in 2013 to 2.399 kg/cap/year in 2017 (Kementan, 2017), even though is still lower than other ASEAN countries, such as Malaysia 8.5 kg, Vietnam 8.9 kg, and Philippines 3 kg/cap/year. The low consumption was caused by the low purchasing power, expensive meat price, and shortage of domestic meat production. Some of Indonesia’s beef needs are still fulfill by imports of meat and feeder stock. Overall, Indonesia is a country importing livestock commodity including beef, which tends to increase from year-to-year.

Forming a single market in ASEAN will allow Indonesia to sell its products and services easily to other countries in Southeast Asia, thus the competition will be harder. In the harder competition, only countries with the competitive advantage will be able to survive and win the competition, while the countries with low competitiveness will be the target market of other countries in Southeast Asia, thus the Indonesia to sell its products and services easily to other countries in Southeast Asia, and this will improve the competitiveness of Indonesian beef in the ASEAN market. Hence, beef trading competitive position and specialization in ASEAN countries.

**MATERIALS AND METHODS**

**Research Location**

This research was conducted in Indonesia with nine other ASEAN countries member (Brunei, Cambodia, Laos PDR, Malaysia, Myanmar, Philippines, Singapore, Thailand, and Vietnam) as the comparison.

**Objects and Data of the Research**

The objects of the research are: (1) determine position of Indonesian beef competitiveness among nine other ASEAN countries, and (2) understand specialization of Indonesian beef trading among nine other ASEAN countries. Categorized of beef observed include: Bovine Carcasses and Half Carcasses, Fresh or Frozen with codes HS 0201100000; Bovine Cuts Bone In, Fresh or Frozen code HS 0201200000; Bovine Cuts Boneless, Fresh or Frozen HS 0201300000; Bovine Carcasses and Half Carcasses, Frozen (HS 0202100000); Bovine Cuts Bone In, Frozen (HS 0202200000); and Bovine Cuts Boneless, Frozen (HS 0202300000). The research used a secondary data of export and import beef values, and export commodities of Indonesia and nine other ASEAN countries from 2013 to 2017. Data obtained from Ministry of Agriculture, Ministry of Commerce, Central Bureau of Statistic, International Trade Centre (ITC), and Food and Agriculture Organization (FAO).

**Revealed Comparative Advantage Analysis**

The position of beef competitiveness was measured by using Revealed Comparative Advantage (RCA) method or Balassa Index popularized by Balassa in 1965 (French, 2017). RCA compares the weight of a certain category of export in total export from a country with the weight of the same category at world level, against total world export. RCA is commonly used to measure the comparative advantage of agricultural commodity in Indonesia, for example of cereals, cocoa, live animal, milling products, and tobacco (Ningsih and Kurniawan, 2016), of crab (Riniwati et al., 2017), and of food crops, horticulture and estate crops (Firmansyah et al., 2017). RCA is calculated with this formula:

\[ RCA = \left( \frac{x_{ij}}{x_j} \right) / \left( \frac{x_{iw}}{x_w} \right) \]

where:

- \( x_{ij} \) = Export commodity value \( i \) (beef) in country \( j \) (ASEAN country)
- \( x_j \) = Total export commodity value of country \( j \) (ASEAN country)
- \( x_{iw} \) = World export commodity value \( i \) (beef)
- \( x_w \) = Total of world export commodity

The values of RCA index vary from 0 to infinity (0≤RCA≤∞). RCA that is less than 1 implies that a country has comparative disadvantage in the commodity or industry. In
contrast, RCA that is greater than 1 means that a country has comparative advantage in the commodity or industry (Saleh and Widodo 2010; Zaman and Vasile, 2012; Granabetter, 2016). In 2001, Hinloopen and Marrewijk presented 4 classes of RCA index values which can be easily interpreted: Class a: 0<RCA≤1; Class b: 1<RCA≤2; Class c: 2<RCA≤4; and Class d: RCA>4 (Startiené and Remeikiené, 2014). Class a includes all Commodities or industries by which a country “does not have revealed comparative advantage”, class b related to "weak comparative advantage", class c "medium comparative advantage", and class d "strong comparative advantage".

**Trade Specialization Index Analysis**

Trade Specialization Index (TSI) is applied to analyze the position or development stage of a commodity product. This index is used to recognize whether types of commodity in a country tend to be an exporter or importer country. TSI is a comparison between net trade value difference with total value of trade in a country. TSI is calculated with the formula:

\[
\text{TSI} = \frac{(X_{ia} - M_{ia})}{(X_{ia} + M_{ia})}
\]

\(X_{ia}\) = export commodity value \(i\) (beef) in country \(a\) (ASEAN country)

\(M_{ia}\) = import commodity value \(i\) (beef) in country \(a\) (ASEAN country)

The position of the competitiveness of a commodity in international trade can be divided into 4 stages based on TSI value (Riniwati et al., 2017; Firmansyah et al., 2017; Elysi et al., 2018), where “Introduction stage”: TSI values vary from -1.00 to -0.50; “Import Substitution stage”: TSI value varies in the interval from -0.51 to 0.00; “Growth stage”: TSI value varies in the interval from 0.01 to 0.80; and “Maturity stage”: TSI value varies in the interval from 0.81 to 1.00.

**RESULTS AND DISCUSSION**

**Revealed Comparative Advantage**

Revealed Comparative Advantage (RCA) calculation result in 2013-2017 showed that Indonesia, with Philippines and Myanmar, have the lowest RCA value in ASEAN (RCA=0.000), below Vietnam (0.003), Cambodia (0.005), Thailand (0.034), Brunei (0.035), Singapore (0.039), Malaysia (0.041), and Laos (0.074) (Table 1). RCA value close to zero indicates that beef exports in almost all ASEAN countries are very low (less than 0.5%) comparing with total export commodities. Overall, ten ASEAN countries do not have comparative advantages (RCA<1) in beef international trading. The result of this research was similar to the review of Jabbar (2014) that since 2008 no ASEAN country has a comparative advantage in livestock commodity trading, including meat. By using Relative Trade Advantage (RTA) method, Ismail

Table 1. Revealed Comparative Advantage (RCA) Rankings for ASEAN countries 2013-2017

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Countries</th>
<th>Revealed Comparative Advantage</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>2013</td>
<td>2014</td>
</tr>
<tr>
<td>1</td>
<td>Lao PDR</td>
<td>0.000</td>
<td>0.006</td>
</tr>
<tr>
<td>2</td>
<td>Malaysia</td>
<td>0.028</td>
<td>0.049</td>
</tr>
<tr>
<td>3</td>
<td>Singapore</td>
<td>0.026</td>
<td>0.023</td>
</tr>
<tr>
<td>4</td>
<td>Brunei</td>
<td>0.003</td>
<td>0.002</td>
</tr>
<tr>
<td>5</td>
<td>Thailand</td>
<td>0.040</td>
<td>0.064</td>
</tr>
<tr>
<td>6</td>
<td>Cambodia</td>
<td>0.000</td>
<td>0.002</td>
</tr>
<tr>
<td>7</td>
<td>Vietnam</td>
<td>0.000</td>
<td>0.004</td>
</tr>
<tr>
<td>8</td>
<td>Indonesia</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>9</td>
<td>Myanmar</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>10</td>
<td>Philippines</td>
<td>0.001</td>
<td>0.000</td>
</tr>
</tbody>
</table>

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Setiaji et al. (2013) found the different result that Indonesia, Philippines, Singapore, and Thailand are more competitive in the meat and meat preparation sector, for the ruminant category, as compared to Malaysia.

At least, there are two problems related to the lack of comparative competitiveness of Indonesian beef trading. First, though economically beef cattle products will give benefit (Prasetyo et al., 2012, Nugroho et al., 2013, Kalangia et al., 2016), but the production cost will be expensive. In 2013, Cambodia was the first rank of competitive country to produce at US$ 1.97 per kg live beef cattle, followed by the Philippines US$ 2.06, Malaysia US$ 3.27, Indonesia US$ 3.34, Vietnam US$ 3.80, Thailand US$ 4.25, Laos PDR US$ 5.20, and Brunei US$ 10.47 (Soedjana and Priyanti, 2013). The average price of beef in the Indonesian market (US$ 9.1) is about double that in Australia (US$ 4.2). The average price of beef in Indonesia is relatively expensive, as the impact of inefficient domestic animal farming business and inefficient trading system from the areas of production centers to consumers’ areas. Beef trading in Indonesia is vulnerable to cartel behaviors that cause an oligopoly market structure. The farmers get little benefit from it, due to the farmer’s poor bargaining position. Import meat prices were relative cheaper with a better quality as a consequence of efficiency of production management, in addition to the dumping price policy by exporter countries (Pakpahan, 2012).

This price differentials increase the beef trade deficit from 88,419 tons (2013) to 144,697 tons (2017) (Kementan, 2017). Deficit was over the prediction of Jabbar (2014) that the deficit of Indonesian beef trading will be 23,000 tons in 2020.

Trade Specialization Index

Trade Specialization Index (TSI) calculation result in 2013-2017 showed that Indonesia and Philippines had the lowest TSI values in ASEAN (TSI =-1.000), below Myanmar (-0.995), Vietnam (-0.983), Brunei (-0.937), Cambodia (-0.835), Singapore (-0.693), Thailand (-0.639), Laos (-0.627), and Malaysia (-0.493) (Table 2). Malaysian beef trading had entered “Import substitution stage”, whereas nine other ASEAN countries are in “Introduction stage”. Negative TSI indicated that ASEAN countries are net importer countries of beef. The demand for beef products in ASEAN countries will be driven

<table>
<thead>
<tr>
<th>Ranks</th>
<th>Countries</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Malaysia</td>
<td>-0.552</td>
<td>-0.358</td>
<td>-0.322</td>
<td>-0.601</td>
<td>-0.634</td>
<td>-0.493</td>
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<tr>
<td>2</td>
<td>Lao PDR</td>
<td>-1.000</td>
<td>-0.872</td>
<td>0.612</td>
<td>-0.876</td>
<td>-1.000</td>
<td>-0.627</td>
</tr>
<tr>
<td>3</td>
<td>Thailand</td>
<td>-0.431</td>
<td>-0.373</td>
<td>-0.453</td>
<td>-0.939</td>
<td>-0.999</td>
<td>-0.639</td>
</tr>
<tr>
<td>4</td>
<td>Singapore</td>
<td>-0.753</td>
<td>-0.774</td>
<td>-0.706</td>
<td>-0.532</td>
<td>-0.698</td>
<td>-0.693</td>
</tr>
<tr>
<td>5</td>
<td>Cambodia</td>
<td>-1.000</td>
<td>-0.917</td>
<td>-1.000</td>
<td>-0.260</td>
<td>-1.000</td>
<td>-0.835</td>
</tr>
<tr>
<td>6</td>
<td>Brunei</td>
<td>-0.990</td>
<td>-0.992</td>
<td>-0.996</td>
<td>-0.708</td>
<td>-1.000</td>
<td>-0.937</td>
</tr>
<tr>
<td>7</td>
<td>Vietnam</td>
<td>-0.998</td>
<td>-0.971</td>
<td>-0.998</td>
<td>-0.950</td>
<td>-1.000</td>
<td>-0.983</td>
</tr>
<tr>
<td>8</td>
<td>Myanmar</td>
<td>-1.000</td>
<td>-1.000</td>
<td>-1.000</td>
<td>-1.000</td>
<td>-0.974</td>
<td>-0.995</td>
</tr>
<tr>
<td>9</td>
<td>Indonesia</td>
<td>-1.000</td>
<td>-1.000</td>
<td>-1.000</td>
<td>-1.000</td>
<td>-1.000</td>
<td>-1.000</td>
</tr>
<tr>
<td>10</td>
<td>Philippines</td>
<td>-0.999</td>
<td>-1.000</td>
<td>-1.000</td>
<td>-1.000</td>
<td>-1.000</td>
<td>-1.000</td>
</tr>
</tbody>
</table>
by economic progress, population growth, urbanization, and changing consumer preferences (Agus and Widi, 2018; Smith et al., 2018), and their knowledge about the importance of animal protein consumption (Mallu et al., 2018), and improvement of living standard (Rudatin, 2016). The increasing of beef demand is not compensated with the increasing of beef production, thus it will make ASEAN member countries stay as net importers.

The lowest Indonesian TSI position in ASEAN is related to the imbalanced between beef consumption and beef production. Total beef consumption of Indonesian population decreased 0.942% from 591,671 tons (2013) to 586,149 tons (2017). The decline in meat consumption occurs because the price of meat at the consumer level increases very sharply (35.400%) from IDR 77,119/kg (2013) to IDR 104,419/kg (2017) (Kementan, 2017). In the same period, meat production declined 5.93% from 504,818 tons (2013) to 474,840 tons (2017). The decline in production caused the decline of Indonesian capability to meet the meat requirements from domestic production. Based on Self Sufficiency Ratio (SSR) calculation, Indonesian capability to meet domestic beef needs declined from 88.840% (2013) to 74.690% (2017). In the contrary, Import Dependency Ratio (IDR) value increased, from 14.910% (2013) to 25.310% (2017). This means that domestic production can only satisfy about 75% of Indonesian demand for beef. To fulfill the demand for meat, the Indonesian government has been importing meat and live feeder and slaughter cattle and some breeding stock (Agus and Widi, 2018; Smith et al., 2018). Fresh and frozen beef imported by Indonesia increased 218% from 45,503 tons (2013) to 144,705 tons (2017). Indonesian beef import, particularly from Australia, contributed 56.27%, India 28.68%, and New Zealand 10.46% (Kementan, 2017). Meat consumption is estimated to increase in the coming years as the population reaches 262 million, per capita income of IDR 51,890 million or US$ 3,877, and economic growth of about 5% (Ginting, 2017). Indonesian government estimate that the national beef consumption will reach 1,045 million tons in 2024 and can be produced domestically for about 546 thousand tons (52%) or the shortage is 499 thousand tons (Mallu et al., 2018).

The decline of Indonesian beef production was related to the low beef cattle productivity. The low local beef cattle productivity was caused by inefficient breeding management (Ekowati et al., 2018) and high mortality rate of livestock, particularly the death of calf that reached 20-40% and cattle for about 10-20% (Matondang and Rusdiana, 2013). The low productivity of local cows was also related to beef cattle production in Indonesia dominated by traditional and small-scaled farms. Only 10% of 16,599 million of beef cattle population in 2017 are managed by large beef cattle companies while the balance of 90% are from smallholder farming systems (Smith et al. 2018). Smallholder farmer, therefore, are the primary driver of domestic beef production in Indonesia. About 43.71% beef cattle population is concentrated in rural areas of Java island, whereas Java is only 6.77% of Indonesia's land area.

Small-scaled farmers have characteristics as follows: herd size of approximately 1-5 head per farmer, subsistence-oriented farming, the cattle is often employed for draught power and producer of fertilizer for the farm, and as a form of savings to be sold when cash is needed (Eni et al., 2006). For the majority of farmers in Indonesia the purpose of raising beef cattle are as saving, a social security insurance policy, draught power for plowing and freight, and a beef production system (Ainsworth, 2017). The performance of beef cattle on smallholder farms needs improvement through several strategies: development and use of breeds adapted to tropical conditions (Romjali, 2018); empowered smallholder farmers in terms of input technologies, financial, support, information and markets (Sugiarto et al., 2017; Kapa et al., 2018); and develop systems for industry development such as integration of palm oil or plantations with beef cattle production (Kadarsih, 2015; Agus and Widi, 2018).

CONCLUSION

Based on the result of this study, it can be concluded that the comparative advantage of Indonesian beef trading is the lowest in ASEAN, and Indonesian beef commodity is still in the introduction stage of international commerce.

ACKNOWLEDGEMENT

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