Global Value Chain of Indonesia Furniture Industry

Tauhid Ahmad¹, Arief Daryanto², Rina Oktaviani², D.S. Priyarsono²

¹Institute for Development of Economics and Finance (INDEF), Jl. Batu Merah No. 45, Pejaten Timur, Pasar Minggu, Jakarta Selatan, Indonesia 12510
²Faculty of Economic and Management, IPB University, Indonesia

Abstract – The exports of the furniture industry plays an important role for the Indonesia’s economy. It is challenging, however, to measure the real benefits and added values of this industry due to the double counting problem. To address this issue, this study adopts a Global Value Chains (GVC) approach by using Input-Output (IO) tables developed by Organization for Economic Co-operation and Development as an alternative measurement of trades among countries. This study measures the value-added transactions of the Indonesian furniture industry from 1995 to 2011, including its position in GVC. Three key findings are concluded. First, in the case of the Indonesian furniture industry, local players contribute the majority of added values compared to foreign counterparts. Secondly, Indonesia plays a key role in the upstreaming process of the global furniture industry, which supplies inputs for other countries. Third, The Indonesian furniture industry is increasingly connected with the global value chain of world furniture industry.

Keywords – Global Value Chain, Indonesia Furniture Industry, Input-Output Table, GVC Participation.

I. INTRODUCTION

Indonesia is one of the world’s largest exporters of furniture products (Kaplinsky et. al, 2003; Tambunan, 2006; KPM Asset, 2015). The furniture industry plays an important role for the Indonesian economy (Indrawan, 2012; Hierorld, 2010; SENADA-USAID, 2007). This industry provides about 146,000 employments; contributes to the state income over Rp193 billion and exports of $1.09 billion; and produces total added values of Rp17.8 trillion (BPS, 2016). The development of this industry is supported by the availability of its key raw materials in Indonesia (KPM Asset, 2015) and growing global demand of furniture products grew about 5% in 2003-2012 (CEPS, 2014).

The current export statistics is unable to decompose the added values by country. It only captures the total values of exports/import. This means that a large amount of exports does not mean the country contribute to the majority of the added values. Alternative measures, therefore, are needed to capture the real benefits generated by each country in a given GVC, including at the Indonesian furniture industry (Barta and Covatz, 2015). In GVC concept, value chains illustrates the stages of value-added activities by a different companies/nations in producing goods or services, from the initial research and design process, production, marketing, distribution, and other supporting activities at the consumer level (Gereffi and Stark, 2011). Value chains also describe all activities to produce goods and services through the intermediate transactions prior to final consumer or disposal phase which involves a combination of physical changes and inputs from various production services (Kaplinsky, 2004).

The GVC concept involve different companies in different countries in the form of intermediate and/or final products (Hummels et al., 2001). The GVC of iPhone, for
instance, involves countries, including China, Germany, Japan, Korea, and the US (Xing and Detert, 2010; Dedrick et al., 2010). Each country plays a different role in the iPhone GVC. One country produces the intermediate inputs which are then sent to other countries and used to create the final products (Meng, 2011; Koopman et al., 2010). Other country can also focus on assembly process for the domestic markets, while other country plays a role in providing the capital for other countries, especially the third world countries which usually need foreign investment to support their economies (Johnson and Noguera, 2012).

Hummels et al. (2001) propose an alternative approach to study GVC. They use the ratio of import content of exports which is defined as vertical specialization (VS) by using the input-output (IO) table. This study decomposes the value of exports into the domestic added values and foreign added values. This study assumes that all the exports are fully absorbed by the global markets. Similarly, other studies (e.g. Johnson and Noguera, 2012; Koopman et al., 2010; Meng et al., 2012; Trefler and Zhu, 2010; or Johnson, 2018) use a multi-regional input-output model approach to analyse and measure GVC in each country. The analysis includes the measurement of added values of exports, which are produced in a particular country. These products are then exported to other countries as an intermediate input to produce other (higher value added) intermediate inputs or even final products, which would be sold to other countries (Serbanel, 2015).

The Indonesian furniture industry has actively participated in the GVC of this industry (Purnomo et al., 2011; Widodo et al., 2010; Parlinah et al., 2011). At the first stage (forestry/logging), the raw materials of the furniture industry in Indonesia are obtained from Perum Perhutani’s (a state-owned enterprise) forests across the country (Purnomo et al., 2011; Widodo et al., 2010). At the second stage (wood brokers or retailers), the raw materials are sold to other industries. Some of the key raw materials include wood, fiber, glass, cardboard, processed wood, plywood, paper board, stamp, handle, glue, coating, MDF, chemicals, plastics, and paints (BPS, 2014). These raw materials are then transformed into higher value-added products, through sawmills and mechanized products to produce various goods/furniture for kitchen, office, bedroom, living room, and shop (Kaplinsky et al., 2003; Purnomo et al., 2011; Ministry of Trade, 2008). The next stage is followed by the distribution of the goods by global brokers, importers and domestic brokers (Purnomo et al., 201; Parlinah et al., 2011). Finally, at the retail level, both international and domestic retailers sell the final products directly to end consumers (Purnomo et al., 2011; Widodo et al., 2010).

Many studies in different countries (e.g. Malaysia (Zakaria et al., 2014), Hungary (Barta and Covatz, 2015), North Caroline-USA (Brun et al., 2013), and Philippines (Israel and Bunao, 2017), UNIDO, 2009) reveal that the use of a descriptive statistics to analyse the GVC of furniture industry is unable to capture the value added activities in each stage. Further studies were carried out in. Nevertheless, there is still limited research on the role of Indonesia in the GVC of furniture industry. This study aims, therefore, to analyse the participation of Indonesia in the global furniture industry by using input-output approach and to determine its condition with its trading partners along with its position in the GVC of the furniture industry. Ma et al. (2019) state that a higher GVC position is able to encourage a greater demand for high skilled workers and help producers to be more competitive (Lutz and Matthias, 2017). This article is structured as follow. This chapter describes the background of the research. The second chapter elaborates the theoretical underpinning used in this research. Methodology is explained in detail at the third chapter. The fourth chapter is result and discussion, while the conclusion is provided at the last chapter.

II. Theory

Timmer et al. (2014) explains the concept of the global value chain by distinguishing between the final product and the intermediate products. The final product is defined as the total values and works required to produce the goods bought by the end consumers. This GVC is identified by industry or company where the whole production processes are carried out in multiple countries. The price paid by the buyers is actually the incomes for the suppliers and its workers. It means that, in the age of GVC, companies are inter-connected one to another. The value added process depends on how much values that the company/worker contributes in the value chains. Thus, by adding up all the added values of labor and capital in a given location/country, the domestic added values of the product can be calculated.

In the context of globalization, value chains can be carried out between companies in a global scale. By considering the sequence of activities for the formation of value-added, both goods and services, the global value chain provides a comprehensive view of a global industry or commodity (Gereffi and Stark, 2011). The global production process with a value chain approach is illustrated by the "Smile Curve" (Figure 1). This curve describes that the value-added activities are usually generated in different locations. This concept is developed by Mudambi (2007, 2008). This
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theory argues that high value-added processes are located at
the both ends of the curve, upstream (R&D and design) and
also marketing & other after-sales services.

In the case of Indonesia, Syafrian (2019) argue that most
of the companies/industries experience struggle to upgrade
themselves from the current condition due to some factors.
From value capture perspective, Indonesian companies/industries are unable to optimize and get more
value-added processes in GVC. Many of them focus only on
the right side of the smile curve (i.e. marketing and after-sales
services). This is because Multinational companies view
Indonesia mainly as a ‘market’ rather than center of
‘production’ or ‘R&D and design’. Consequently, Indonesia
is unable to capture other high-value added processes,
especially the activities shown at the left side of the smile
curve.

\[ \sum_{t \in s} B_{st} V_{st} + \sum_{t \in s} B_{st} Y_{st} + \sum_{t \in s} G_{st} B_{st} Y_{st} + \sum_{t \in s} G_{st} B_{st} A_{rs} (I - A_{ss})^{-1} Y_{st} + \sum_{t \in s} G_{st} B_{st} A_{rs} (I - A_{rr})^{-1} Y_{st} + \sum_{t \in s} G_{st} B_{st} A_{rs} (I - A_{rr})^{-1} E_{rs} \]

Among the nine terms put forward by Koopman et al.
(2014), the first term is \( V_1 = V_1 \sum_{t \in s} B_{st} Y_{st} \) which represents
domestic value-added in direct final product exports, the
second one is \( V_2 = V_2 \sum_{t \in s} B_{st} Y_{st} \) which represents exports
value-added of intermediate products directly absorbed,
while the third term is \( V_3 = V_3 \sum_{t \in s} B_{st} A_{rs} (I - A_{ss})^{-1} Y_{st} \) which
represents exports value-added of intermediate products re-
exported to third world countries (other). Furthermore, the
fourth term is \( V_4 = V_4 \sum_{t \in s} B_{st} A_{rs} (I - A_{rr})^{-1} Y_{st} \) which represents
domestic value-added in intermediate products returned to the
country of origin (Indonesia) through importof intermediate products,
the fifth term is \( V_5 = V_5 \sum_{t \in s} B_{st} A_{rs} (I - A_{rr})^{-1} Y_{st} \) which
represents domestic value-added in intermediate products
returned to origin country through intermediate product

III. METHODOLOGY

This study uses Input-Output Tables initiated by
Hummels et al. (2001) to measure the added values of the
Indonesian furniture industry in GVC. This method allows to
decompose the value added contributions by country. This
technique, therefore, is able to address the double counting
problem in traditional trade statistics (UNCTAD, 2013). This
study uses Koopman’s et al. (2014) Inter-country Input-
Output (ICIO) approach to calculate the domestic and foreign
value-added contributions. Koopman et al. (2014) divid
exports into nine value-added terms, as shown in equation 1
below:

Source : Ye et al. (2015)

Figure 1: Conceptual framework of smile curve

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Among the nine terms put forward by Koopman et al.
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while the third term is \( V_3 = V_3 \sum_{t \in s} B_{st} A_{rs} (I - A_{ss})^{-1} Y_{st} \) which
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represents domestic value-added in intermediate products
returned to origin country through intermediate product

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imports, and the sixth term is \( V_6 = V_t \sum_{r,s} B_{ts} A_{rs} (I - A_{sr})^{-1} E_s \), which represents a double calculation of exports of intermediate products produced domestically. The seventh term is \( V_7 = \sum_{t,s} \sum_{r,s} V_t B_{ts} Y_{sr} \) which represents foreign value-added in export of final products, the eighth term is \( V_8 = \sum_{r,s} \sum_{r,s} V_t B_{ts} A_{sr} (I - A_{tr})^{-1} E_r \) which represents foreign value-added in the intermediate products export, and the last one is \( V_9 = \sum_{r,s} B_{sr} A_{rs} (I - A_{tr})^{-1} E_r \) which represents a double calculation of intermediate products produced abroad, (figure 2).

This study also adopts a model developed by Koopman et al. (2010) to determine the GVC relationship in Indonesia with its trading partner countries formulated in the participation position and index as follows;  
\[
GVC_{\text{position}} = \ln \left( 1 + \frac{V_{S_n} - E_s}{E_{S_n}} \right) - \ln \left( 1 + \frac{V_{S_n}}{E_{S_n}} \right) 
\]

\[
GVC_{\text{participation}} = \frac{V_{S1,sn}}{E_{S1,sn}} + \frac{V_{S2,sn}}{E_{S2,sn}} 
\]

Where \( GVC_{\text{position}} \) represent the position of country \( s \) in GVC, \( GVC_{\text{participation}} \) represents its participation and \( E_{S_n}\) represent gross exports. The \( V_{S_n} \) represent vector elements achieved from summing the matrix columns VS without domestic industry which is related to import charges (foreign) using the formula as follows;  
\[
V_{S1} = \sum_{t,s} V_t B_{ts} E_{sr} = V_t \sum_{s,t} B_{ts} Y_{sr} + V_t \sum_{t,s} B_{ts} A_{rs} (I - A_{tr})^{-1} E_r = \sum_{t,s} V_t B_{ts} E_{sr} 
\]

Where \( V_s \) is an element of the vector obtained from the sum of VS1 matrix rows (without domestic industry) relating to the export of domestic intermediate goods in other countries with its formulation as follows;  
\[
V_{S1,s} = \sum_{s,t} V_t B_{ts} E_{sr} = V_t \sum_{s,t} B_{ts} Y_{sr} + V_t \sum_{t,s} B_{ts} A_{rs} X_{rs} 
\]

Besides viewing it from "upstream" and "downstream" sides through GVC position, it is also necessary to determine the country’s participation and major trading partners in the overall value-added chain. As a result of this, the Koopman formula changes are as follows;
Basic data for the construction of *inter-country input output* (ICIO) of furniture industry was obtained from the Organization for Economic Co-operation and Development (OECD) data with base from 1995 to 2011 (OECD, 2015). It is also used for data aggregation and disaggregation using the Eora multi-region input-output table (MRIO) database (2017) in the same period using segregation in ICIO. There is aggregation from 43 countries to 17 countries and from 34 sectors to 16 with the disaggregates furniture industry from wood conducted. In this process, a "balancing" method using RAS is also performed with two different years used to determine the development of furniture industry GVC during the log export ban policy in 2001. The aggregation and disaggregation choice of the above countries and sectors is based on the export structure of the forestry and wood industry (Ye et al., 2015; FAO, 2014).

### IV. RESULTS AND DISCUSSION

The GVC analysis in this study adopts Koopman et al. (2014). The contribution of this study to the literature is mainly from the methodological side. This study addresses the double counting problem of the domestic and foreign added values by decomposing it into 9 sub-values, as explained in the third chapter. The results of data processing show (table 1) the composition of the domestic value added (V1-V6) of the Indonesian furniture industry is still at 98.6% while the remaining percentage is the foreign value-added (V7-V9).

This result is another calculation conducted by Koopman et al. (2012) using Hummels et al. (2001) method. The high domestic value-added shows that there has been limited involvement of foreign parties from Indonesia’s gross furniture exports. This is understandable considering the fact that it is dominated by small and medium enterprises with investments generally coming from domestic circles such as the center for furniture exports in Jepara, Central Java, which is almost entirely owned domestically by using local resources (Purnomo et al., 2011). One of the reasons is the raw material, where BPS was used for calculation in 1995 which imported raw material components at 2.6% of the total inputs needed for its production (BPS, 1996). In addition to raw materials caused by natural resource wealth, another factor that causes dominant domestic value-added is economic measure which allows the supply of internal value-added to be greater (UNCTAD, 2013).

<table>
<thead>
<tr>
<th>No</th>
<th>Country</th>
<th>in Billions of US dollars</th>
<th>Value-added exports</th>
<th>Domestic VA return home</th>
<th>Pure double counting in int. exports produced in home</th>
<th>Foreign VA return foreign in int. export</th>
<th>Pure double counting in int. exports produce abroad</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>(0)</td>
<td>(V1)</td>
<td>(V2)</td>
<td>(V3)</td>
<td>(V4)</td>
<td>(V5)</td>
<td>(V6)</td>
<td>(V7)</td>
<td>(V8)</td>
</tr>
<tr>
<td>1</td>
<td>Indonesia</td>
<td>820.6</td>
<td>27.69</td>
<td>62.87</td>
<td>7.59</td>
<td>0.16</td>
<td>0.21</td>
<td>0.04</td>
</tr>
<tr>
<td>2</td>
<td>Australia</td>
<td>126.9</td>
<td>23.53</td>
<td>48.05</td>
<td>6.84</td>
<td>0.13</td>
<td>0.20</td>
<td>0.06</td>
</tr>
<tr>
<td>3</td>
<td>Belgium</td>
<td>235.5</td>
<td>21.79</td>
<td>33.41</td>
<td>5.69</td>
<td>0.22</td>
<td>0.33</td>
<td>0.38</td>
</tr>
<tr>
<td>4</td>
<td>France</td>
<td>446.8</td>
<td>25.91</td>
<td>39.69</td>
<td>6.17</td>
<td>0.61</td>
<td>2.78</td>
<td>1.27</td>
</tr>
<tr>
<td>5</td>
<td>Germany</td>
<td>1253.6</td>
<td>33.46</td>
<td>48.11</td>
<td>6.37</td>
<td>1.41</td>
<td>3.59</td>
<td>1.63</td>
</tr>
<tr>
<td>6</td>
<td>Japan</td>
<td>32.5</td>
<td>32.33</td>
<td>37.73</td>
<td>6.41</td>
<td>0.71</td>
<td>2.79</td>
<td>0.40</td>
</tr>
<tr>
<td>7</td>
<td>Korea</td>
<td>21.6</td>
<td>24.69</td>
<td>31.19</td>
<td>6.96</td>
<td>0.10</td>
<td>0.55</td>
<td>0.24</td>
</tr>
<tr>
<td>8</td>
<td>Netherlands</td>
<td>268.0</td>
<td>25.07</td>
<td>39.52</td>
<td>9.45</td>
<td>0.39</td>
<td>0.73</td>
<td>0.57</td>
</tr>
<tr>
<td>9</td>
<td>United Kingdom</td>
<td>153.4</td>
<td>29.07</td>
<td>34.96</td>
<td>5.55</td>
<td>0.41</td>
<td>3.01</td>
<td>1.42</td>
</tr>
<tr>
<td>10</td>
<td>United States</td>
<td>778.1</td>
<td>21.79</td>
<td>31.86</td>
<td>3.49</td>
<td>0.88</td>
<td>19.30</td>
<td>3.64</td>
</tr>
<tr>
<td>11</td>
<td>China</td>
<td>1536.9</td>
<td>16.61</td>
<td>72.55</td>
<td>7.00</td>
<td>0.14</td>
<td>0.30</td>
<td>0.09</td>
</tr>
<tr>
<td>12</td>
<td>India</td>
<td>5.9</td>
<td>18.21</td>
<td>21.15</td>
<td>26.73</td>
<td>0.02</td>
<td>1.09</td>
<td>0.16</td>
</tr>
<tr>
<td>13</td>
<td>Malaysia</td>
<td>596.5</td>
<td>19.11</td>
<td>62.92</td>
<td>9.00</td>
<td>0.25</td>
<td>0.22</td>
<td>0.20</td>
</tr>
</tbody>
</table>
When intensively viewed using Koopman et al. (2014) framework with nine terms value-added, in the form of exports for intermediate products, the production and consumption of goods by importing countries is still around 62.87% (V2). This value compared to Indonesia's trading partners is much higher where the average for all countries is 50%, except for China which is 72.55% (V2). The value is due to the incomplete exportation of furniture at the assembly stage, which is generally adjusted to the tastes of consumers, in the form of color, shape and paint. The trend was driven by many exhibitions of wood products in these countries and the economic development of Indonesia's trading partners (ITCP-Osaka, 2012). However, the value-added in exports of final products is quite high, reaching 27.69% (V1) compared to some of Indonesia's trading partner countries, such as America, Singapore and the Netherlands. This amount also shows that their final products are quite competitive with these countries even though they are still below Germany, Japan, the United Kingdom and Vietnam.

Table 1 also shows that the exports value-added in intermediate products re-exported to third world countries is quite large compared to others at 7.59% (V3). This indicates that importation, utilizes products exported to other countries. This tends to have implications for increasing Indonesia's participation in the global value chains. Another case is with India which has an extreme V3 share of 26.73% shows that their final products are quite competitive with these countries even though they are still below Germany, Japan, the United Kingdom and Vietnam.

Table 2. Decomposition of Global Value Chain Export of Wood Furniture Industry in Indonesia and Trading Partner Countries in 2011 (%)

<table>
<thead>
<tr>
<th>No</th>
<th>Country</th>
<th>in Billions of US dollars</th>
<th>Value-added exports</th>
<th>Domestic VA return home</th>
<th>Pure double counting in int. Exports produced in home</th>
<th>Foreign VA return foreign countries in int. Exports</th>
<th>Pure double counting in int. Exports produced abroad</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>in direct final exports</td>
<td>in int. absorb by direct importers</td>
<td>in int. reexports to third countries</td>
<td>in final exports</td>
<td>in int. Exports produced in home</td>
<td>in final exports</td>
</tr>
<tr>
<td>(0)</td>
<td></td>
<td></td>
<td>(V1)</td>
<td>(V2)</td>
<td>(V3)</td>
<td>(V4)</td>
<td>(V5)</td>
<td>(V6)</td>
</tr>
<tr>
<td>1</td>
<td>Indonesia</td>
<td>1529,0</td>
<td>17,07</td>
<td>62,82</td>
<td>11,11</td>
<td>0,19</td>
<td>0,54</td>
<td>0,11</td>
</tr>
<tr>
<td>2</td>
<td>Australia</td>
<td>327,2</td>
<td>23,06</td>
<td>46,29</td>
<td>9,95</td>
<td>0,28</td>
<td>0,37</td>
<td>0,11</td>
</tr>
</tbody>
</table>
Conversely, the composition of export value-added in the final form (V1) decreased from 27.69% to 17.07% and the domestic value increased from 7.59% to 11.11%, while the exportation value of products among those absorbed directly by the importing country (V2) remained at 62.82%. This development shows that the greater foreign value-added also affected the domestic pattern of intermediate products re-exported by importers. Export demand accompanied by involvement of foreign countries also aims to be re-exported.

There is an average significant difference when compared with Indonesia's trading partners, which experienced an increase in foreign value-added from 25.1% to 48%, 1% as shown in figure 3. This means that each has a tendency to involve others in the process of their furniture industry value chain, in the form of final and intermediate products. This is seen from the increase in shares V7, V8 and V9 followed by a reduction in shares V1, V2 and V3. These developments indicate that the trend of foreign value-added partner countries as "demand" is not in line with the trend of increasing export value-added in Indonesia's final product (V1).

![Figure 3. Changes in Global Value Chain Decomposition of Indonesian Furniture Industry Exports and Trade Partner Countries in 1995 and 2011 (%)](image-url)
Among its trading partner countries, China still dominated world gross exports, both in 1995 and 2011 with a 93.1% development. This country remained consistent with a domestic value-added (V1-V7) above 97% for the two periods. China actually strengthens the value-added of exports in the form of final export products (V1) and reduces the share in the form of intermediate products absorbed by importing countries (V2). The large gross export value and progress achieved in the furniture industry are due to cheap wood raw materials, productive labor, economic banking interest rates, low taxes, low product costs due to small and simple businesses, easy licensing process, and dumping policy (Gunawan in Tambunan, 2006). In addition, the high domestic value-added in China for the manufacturing industry where furniture is located is due to the expansion of export volumes which uses domestic products rather than imports (Lianliang and Cuihong, 2017). Specifically, the high domestic value is due to the increasingly global procurement of raw materials, including illegal logging from Indonesia, Vietnam, Papua New Guinea, Myanmar and other countries (Cohen, 2005). This explains why domestic value-added is large while foreign charges is low given that illegal logging is not recorded as foreign cargo.

Beside China, Vietnam has the second gross export growth of 2,447.5% all over the world. Its changes are also same as the phenomenon in general partner countries, as earlier explained. Vietnam reduced V1, V2 and V3 but quickly increased V7 and V8 or in other words foreign value-added in intermediate products and final products in the gross exports of the furniture industry grew bigger. According to Hoang (2014), it is understood that few decades ago, Vietnam opened up large foreign investment opportunities, with the principle of overseas subsidiaries in the furniture industry. Decomposition dynamics of GVC in each country during these two periods show their various choices. This starts from the availability of main raw materials, the ability of human resources to innovate, openness to foreign investment and growth (Sampath et al., 2018). Although this determines the trade policies of each country in various ways, including options for developing “up grading” on final products, intermediate products or expanding overseas roles in the development of furniture industry exports.

Another dimension of GVC is the position and participation of each country in the GVC. Koopman et al. (2010) introduces its participation and position which shows the vertical relationship of an industry/sector. A country in a "downstream" position tends to have a high share of its vertical specialization in terms of importations with foreign charges (VS) in its exportations. Conversely, the upstream position tends to have a share which is vertically high in terms of exports (VS1) or high share of exports through third world countries using intermediate input. This analysis has the tendency of being deepened with a description of the role of each country in the formation of the total demand and input between the Indonesian pulp and paper industry with major trading partner countries (BPS, 2010). This method is used to complete the impasse of Koopman et al. (2010) in tracing the role of each country and each sector in the formation of GVC of a sector in a particular country.

This analysis begins by looking at the position and participation of the furniture industry and partner countries in 1995 with a GVC position value of 1.30 which places Indonesia as the country with the highest "upstream" position compared to its trading partner countries, see figure 4. Besides Indonesia, Germany, America, China and Malaysia are also in an "upstream" position in the GVC furniture industry. CEPS (2014) suggests that there are several factors that determine a country's furniture industry in the "Upstream" position in the GVC, namely the level of profit, the availability of raw materials, components, labor costs and trained labor, investment in machine technology, research and development and innovation and design, policy support and furniture price development. Indonesia already has one or two of the above factors namely the availability of raw materials, components, cost of labor and trained labor, especially in some furniture industry centers in Jepara, Central Java Province (Purnomo et al., 2011; Widodo et al., 2010).

Singapore, India and several other countries have a "downstream" position which means they have a large proportion with the exportation of intermediate products from other countries. CEPS (2014) also revealed a number of things that led to a country's furniture industry in "downstream" position, namely the level of product demand, due to income spent, investment in housing construction, and changes in population demography. It was also caused by the form and level of ease of contracting furniture products as well as distribution and retail channels of furniture industry products.
Conversely, Indonesian furniture industry also has a low GVC participation index with a value of 9.45 compared to its main trading partner countries, which means that its exports processed and integrated in third countries are low. This is due to the fact that Indonesian exports are more dominant in the form of final and intermediate products which are absorbed directly by importers without being exported back to third countries or domestic. In other words, it’s exports does not exceed the second world countries as already it increase productivity, peculiarities and diversification of the exported product (Kowalski et al., 2015). This means that Indonesian furniture industry products have not gone far in increasing productivity or diversifying exported products.

Singapore is in an extreme position where its GVC participation index is 73.52, which indicates a high level of participation because of its high "downstream" linkage processed and integrated in third country exports (UNCTAD, 2013). It is seen that the value-added overseas returns to their countries in Singapore's industrial exports are quite high compared to other countries, both in the form of inputs between 41.82%, and final products at 27.44%. The high level of participation of a country in the GVC, according to Marrel (2015) are labor market efficiency, climate of innovation, spending on R&D, low barriers to investment and trade between national borders, logistics performance to human capital. In plain view Singapore has several factors above that are far above Indonesia and other Asian countries.

The development of Indonesia's own furniture industry in 2011 experienced a slight change in which the value of the position of the GVC decreased from 1.3 to 0.35, thereby, indicating a balanced "upstream" or downstream position in producing raw materials for other countries, see figure 5. In terms of domestic raw materials, there is also a scarcity of teak wood as the main material for the Indonesian furniture industry, due to the decline in natural forest production and the slow production of teak forests by state and community plantations (Widodo et al., 2010; Purnomo et al., 2011). The decline is closely related to obstacles faced by this industry in foreign export markets, including illegal logging to other countries, which are not designed domestically but by foreign buyers or by the term original equipment manufacturer (OEM). The product quality is lacking because standardization and passive marketing system are not optimal (ITCP Osaka, 2012).

In terms of GVC participation, despite being at a lower level compared to other countries, its participation index also increased from 9.45 to 20.11. This indicates an increase in the role of this industry in the global value chain, which indicates that Indonesia is increasingly connected with other countries. As earlier explained, this is owing to its gross exports which increased its foreign value-added in raw materials which is reflected in V7 and V8. Increased participation is also supported by investment openness through foreign direct investment (FDI) in the manufacturing industry in Indonesia,
one of which came from China amounting to US $ 30 billion (BKPM, 2016).

Some countries show different patterns such as China which has increasingly established itself with low GVC participation. In addition, cheap labor costs and high domestic availability are some contributing factors responsible for the availability of raw materials. Conversely, India is considered a "downstream" country with high participation due to its driving factors which has led to the development of hybrid model, disposable income growth, changes in consumer preferences, energy technology efficiency, segment and industrial product premiumization (KPMG, 2013).

The biggest changes were experienced by Korea, Malaysia and Taiwan in the increasing level of GVC participation. This shows that these countries are the fastest to make changes in their furniture industry. The most dominant is bringing in foreign value-added through input raw materials between other countries, because of the scarcity and trend of the use of intermediate input types in accordance with market demand. Furthermore, in Malaysia, due to manufacturing efficiency of the Original Equipment Manufacturer (OEM) model from Taiwan an initial investor in the industry (ASM, 2015) is required. With the OEM model, export volumes increase faster following investors' needs. This model is also applied by Vietnam as one of its competitors with the availability of raw materials and low labor costs.

Participation of partner countries in Indonesian GVC is seen in terms of intermediate and final demand in the Input-Output table structure (BPS, 2010). The countries associated with the largest are Japan and Australia, while others are relatively smaller when compared to 1995 and 2011, with an increase in relationship. This development shows that in terms of demand side, the country depends on Japan and Australia to keep the global value chain going forward for years. Meanwhile, in terms of intermediate inputs, countries that were closely related in 1995 were Japan, America, Singapore, Germany and Australia. While in 2011, there was a slight change in the sequence of China, Korea, Japan, Singapore and America. This change shows that there is a different relationship between periods where the dominance of the main trading partner differ. Japan plays an important input role in Indonesian furniture industries which is replaced by China. This shows that the increase of its participation in GVC also changes the structure of trade relations between countries, both as exporters and importers as seen from the structure of demand and intermediate inputs.

V. CONCLUSION

This study aims to understand the role of Indonesia in the global furniture industry. Input-Output (IO) tables are used to measure the contribution of Indonesia in value-added activities in the global furniture Industry. This study adopts Koopman (2014) method to analyze and decompose the value-added activities generated in Indonesia. This study finds that in 1995 and 2011, the Indonesia's furniture industry is still dominated by domestic value-added contents, although foreign contributions also increase gradually. In regard to its position in the GVC, the inter-connection of Indonesian furniture industry with other main trading partners between 1995 and 2011, is still well-connected and remains in the upstream level. Indonesia produces raw materials as well as intermediate inputs for other countries, especially for China and Australia. There is also a quite significant increase in the GVC participation with major trading countries.

REFERENCES


