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Questioning the competitiveness of Indonesian wooden furniture in the global market

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Abstract. Indonesia is one of the top-ten most dominant manufacturers of wooden furniture in the world, exporting approximately \$ 1.34 billion of wooden furniture in 2015, with a market share 2.09%. However, in the last decade, the volume of wood furniture exports has gradually decreased. Additionally, the wooden furniture industry in Indonesia must now implement the timber legality verification system (SVLK) to ensure raw materials come from legal sources. Given the importance of the wooden furniture industry and recent timber legality mandates, this study: 1) analyzes the competitiveness of Indonesian wooden furniture in the international markets and 2) investigates the relationship between the timber legality assurance system (TLAS) and the competitiveness of Indonesian wooden furniture in the global market. This research uses economic trade data and revealed comparative advantage (RCA) to analyze the comparative advantage of wooden furniture from Indonesia in the global market, as well as export product dynamics (EPD) methods to determine the market position of Indonesian wooden furniture. The RCA index shows that Indonesia has a comparative advantage, but its competitiveness is lower than China, Vietnam, and Malaysia. The EPD methods indicate that the competitiveness of Indonesian wood furniture continues to decline. These analyses point to a potential weakness in SVLK in relation to the competitiveness of Indonesian wood furniture in key international markets.

1. Introduction

Wood furniture is one of the important commodity in Indonesia. Wood furniture provides a considerable contribution to the economy [1], contributed Rp 31.3 trillion to GDP (BPS, 2016). The wood furniture industry is dominated by small and medium industries, which account for 139 thousand business units, mostly scattered in Jepara, Klaten, Surakarta, Semarang and Surabaya. The development of wooden furniture industry is supported by the Indonesia's timber resources. Sustainability of furniture industry depends on the supply of raw materials that can be obtained from the private forests, plantation or State Forest [1]. Indonesia is one of the largest producers of tropical timber in the world. Teak is the raw material from which this furniture is made with the highest demand. However, the supply of teak is limited, given the long harvest rotation time. Thus, mahogany, coconut, and sengon wood provide



cheaper alternatives for furniture production [3]. The President of the Republic of Indonesia seeks to increase furniture exports to \$5 billion in 2019.

Over the past decade, the value and volume of the international trade in wooden furniture has increased with the number and types of methods for timber legality certification and verification. While wooden furniture production provides billions of dollars of revenue across the world, it has also been associated with illegal logging and deforestation [4], [5]. Hence, the international movement toward timber legality certification and verification. This research assesses Indonesia's role in the global trade in wooden furniture, and it examines the relationship between recently mandated regulations for timber legality verification and trade in Indonesian wooden furniture.

In 2006, global trade in wooden furniture was valued at \$47.5 billion, rising to the \$64.1 billion in 2015 [6]. Leading exporters of wooden furniture include a variety of developing and developed countries (see figure 1). Nearly all of the developing countries in the top ten list of wood furniture export experienced a decline in global market share from 2006 to 2015, with the United States (US) being the only exception. In 2015, China comprised 35.6% of the total market share and demonstrated the greatest growth [7]. Vietnam, another emerging market for wooden furniture, also experienced continuous growth in the market share of wooden furniture, increasing an average of 13.4% per year between 2006 and 2015. Over the same period, however, Indonesia did not experience a relative increase in the market share of wood furniture.

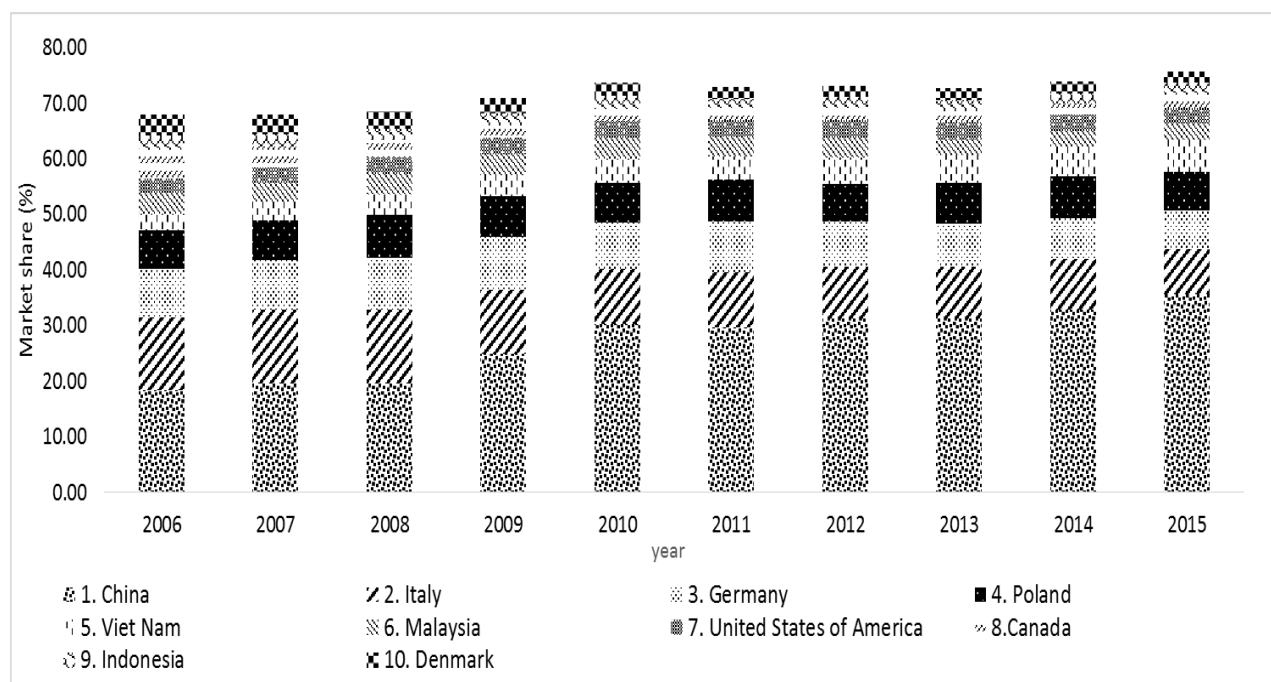


Figure 1. The market share of the top ten wooden furniture exporting countries Source: [6]

Between 2006 and 2015, Indonesian exports of wood furniture experienced significant volatility, although export volume generally declined in line with the decline in market share. Table 1 contains the value, growth, volume, and volume growth in Indonesian wooden furniture exports from 2006 to 2015. Indonesian wooden furniture export value dropped dramatically during the global economic crises of 2009 and 2011, then increased slightly since 2012, in line with the recovery in global economic conditions. Despite this volatility, Indonesia was the 9th largest exporter of wooden furniture in 2015, with a market share of 2.09%. Wooden furniture exports were valued at \$1.34 billion in 2015, showing an increase of 5.41% from the previous year. The primary markets for Indonesian exports include the US (42.2%), EU (24.2%), Japan (10.08%), and Australia (3.50%). These primary markets led to an additional production hurdle in 2009.

Table 1. Indonesian wooden furniture export performance 2006-2015 [6], [7]

Year	Value (US\$)	Growth of value (%)	Volume (ton)	Growth of volume (%)
2006	1,191,240,791	3.52	594,172,853	2.04
2007	1,206,246,923	1.26	581,607,924	-2.11
2008	1,212,568,051	0.52	541,508,259	-6.89
2009	1,026,927,268	-15.31	439,251,837	-18.88
2010	1,205,655,902	17.4	506,500,511	15.31
2011	903,988,209	-25.02	369,763,048	-27.00
2012	1,111,230,471	22.93	428,971,917	16.01
2013	1,197,422,480	7.76	425,243,877	-0.87
2014	1,269,989,983	6.06	442,117,072	3.97
2015	1,338,721,835	5.41	434,815,648	-1.65

In the midst of declining export performance, wood furniture production in Indonesia has been required to comply with the Indonesian timber legality verification system (SVLK). SVLK was established by the Indonesian government in 2009, requiring export-oriented furniture to have a certificate of legality and v-legal timber, verifiable by customs to ensure the legality of timber traded [8]. On September 30th, 2013, the Government of Indonesia (GoI) and the EU signed the Forest Law Enforcement Governance and Trade-Voluntary Partnership Agreement (VPA). Through this mechanism, the EU offers assistance to timber-producing countries to prevent the entry of illegal timber products into the EU. The EU Commission sets rules for bilateral timber trade through the European Union Timber Regulation (EUTR), which has been in force for large-scale processing units since March 2013, and for small-scale units and timber smallholders since 2017 [9]. All timber products exported to the EU members are going through the due diligence process, except for countries that have already completed a VPA [3], [10].

Other major markets for Indonesian wooden furniture have established their own timber trade rules. These include the Lacey Act Amendment (US), Japanese-Goho Wood, and Australia's Illegal Logging Prohibition [11], [12]. SVLK compliance assists with ensuring the legality of timber production for the EU as well as other major market destinations for Indonesian timber products. Together, these international timber regulations aim to prevent the circulation and entry of illegal timber and contribute to the elimination of illegal logging. Globally, losses in revenue from illegal logging are estimated at \$30-100 billion [13]. The practice of illegal logging in Indonesia is estimated to reach approximately \$2.1 billion/year [14], [15]. While all of the objectives of SVLK regulation are positive, the extent to which the regulatory mechanism has achieved these aims remains unclear. This is especially true for the aim of enhancing the competitiveness of Indonesian timber products, including wooden furniture production and export.

2. Methodology

The relationship between SVLK and the competitiveness of Indonesian wooden furniture must be analysed comprehensively. Thus, this research measures comparative and competitive advantage from 2006 to 2015, using data from the Trade Map.

2.1. Revealed Comparative Advantage (RCA)

RCA Method measures the comparative advantages of a commodity in the international market [7], [16]. The patterns of comparative advantage can be examined from the data trade during a certain period [17]. RCA measures a country's export structure using the ratio of exports of a commodity to the total exports

of a country, compared with the proportion of commodity exports in world trade in total world exports [18]. RCA can be calculated using the formula:

$$RCA_{ij} = \frac{X_{ij}/X_j}{X_{iw}/X_w}$$

X is exports, i is a commodity, and j is a country. X_{ij} is the exports of commodity i by country j; X_j is the exports of all commodities by country j; X_{iw} is the exports of commodity i by all countries in the world and; X_w is the exports of all commodities by all countries in the world.

If the RCA index > 1 , then that the country has a comparative advantage. Conversely, if the RCA index < 1 , then the comparative advantage for these products is low or below the global average [7], [19]. A higher RCA index value indicates a greater comparative advantage for a national commodity in the global market [20].

2.2. Export Product Dynamics (EPD)

Export Product Dynamics (EPD) is a method for analysing and identifying products or commodities with high competitive power and rapid growth in export trade [21]. If the export growth during a specified period is above the world average, then the commodity is experiencing above average growth and might become an increasingly important revenue source for the state [22]. EPD is the most appropriate method for identifying useful products based on a growth rate of exports over a given period. A commodity is said to be a dynamic product in the world trade if its market share is growing faster than other products [23]. EPD describes the position of a product's export growth through total export share or share market attractiveness as well as product shipping or business strengths. The EPD method indicates four categories for a product's competitive position (see table 2).

Table 2. Matrix of EPD competitive positions

Share of country's export in world trade	Share of product in world trade	
	Rising /Dynamic(+)	Falling /Stagnant (-)
Rising /Competitive (+)	Rising Star	Falling Star
Falling /Non-Competitive (-)	Lost Opportunity	Retreat

Source: [16]

These four positions included in table 2 relate to positive or negative values for the growth and the market share of a national commodity over a certain period of time. These values are calculated by:

x-axis: Growth of business strength or export market share:

$$\frac{\sum_{t=1}^t \left(\frac{X_{ij}}{W_{ij}} \right)_t \times 100\% - \sum_{t=1}^t \left(\frac{X_{ij}}{W_{ij}} \right)_{t-1} \times 100\%}{T}$$

Y-axis: Growth market appeal or market share of the product:

$$\frac{\sum_{t=1}^t \left(\frac{X_t}{W_t} \right)_t \times 100\% - \sum_{t=1}^t \left(\frac{X_t}{W_t} \right)_{t-1} \times 100\%}{T}$$

Where (in this case):

X_{ij} = total export value of wooden furniture Indonesia to export destinations

X_t = total value of Indonesian exports to the export destination countries

W_{ij} = total export value of wooden furniture world to export destinations

W_t = total value of world exports to the country of export destination

T= number of years of analysis used

Plotting the values from the EPD method indicates where, on the x-y axis of “Growth of business strength” by “Growth of market appeal” a national commodity is located. Figure 2 further illustrates these positions.

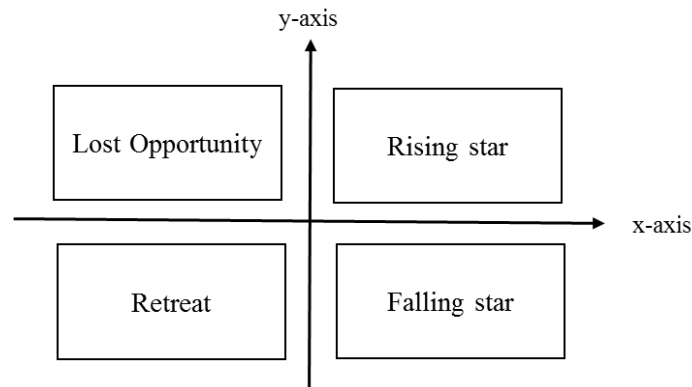


Figure 2. Position competitiveness of products with EPD method [37]

The “rising star” position indicates that a national product is dynamic, with a growing market share. In contrast, the “lost opportunity” position indicates a national product has suffered a loss of market share in an overall dynamic product market. A national product in the “falling star” indicates that it has increased in market share, but the market is not active. Finally, the “retreat” quadrant represents national products with below average business growth and market appeal. It is possible for products in “retreat” to move from stagnant to compelling, but such changes do not happen in the short term [23].

3. Results and discussions

3.1. The comparative advantage of the Indonesian wooden furniture in the global markets

A country has a comparative advantage if it can produce more goods and services at a lower cost than other nations [24]. In this study, Indonesia’s comparative advantage is calculated in reference to markets worldwide and in the United States (US), the European Union (EU), Japan, and Australia. Indonesia has a comparative advantage, with an RCA index greater than 1, across all years and in each market (see figure 3).

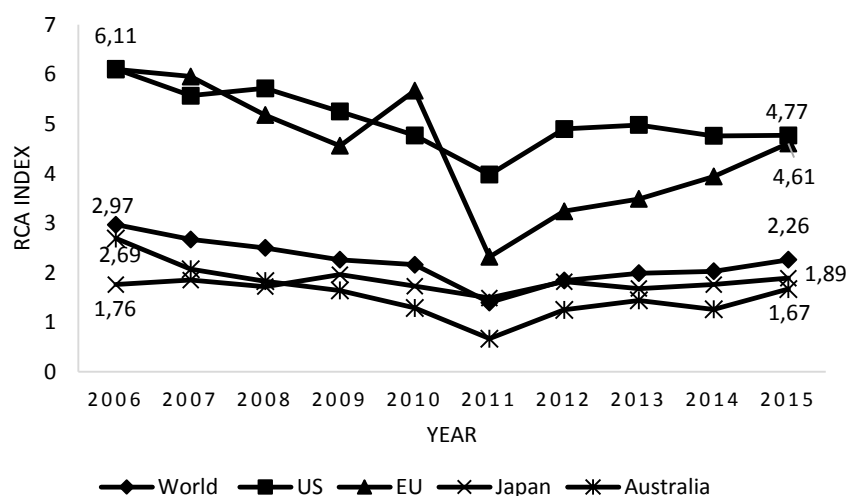


Figure 3. RCA Index for Indonesian wooden furniture 2006-2015

Although Indonesia enjoys a comparative advantage in all of its major markets, this advantage demonstrates volatility between 2006 and 2015, but with an overall pattern of decline. The decline in comparative advantage is potentially attributable to, among other things, higher labor costs and simple technology; in contrast, China enjoys increasing competitiveness over the same period due to cheap labor cost, mass production, and use of high tech [25]. The competitiveness of Indonesian wooden furniture decreased most markedly in 2009 and 2011, due to global economic crises. Indonesia's comparative advantage has since rebounded since 2012 as the recovery in global economic conditions.

Overall, the comparative advantage for Indonesian wooden furniture was strongest in the US, with RCA index was more than 4. 62.7% of global trade of wooden furniture is the US and EU [6]. It is thus important to note that, despite enjoying comparative advantage above the worldwide market in the US, the comparative advantage of Indonesian wooden furniture in the US market declined from 2006 to 2015. Post economic crisis the competitiveness rose slowly until 2015, and the growth rate of Indonesia's wooden furniture exports to the US market from 2013-2015 increased 10.3%. However, its market share fell from 3.74% to 3.6% (see table 3). Thus, although its export value grew, Indonesian wooden furniture is becoming less important within the US market.

The comparative advantage of Indonesian wooden furniture in the EU showed a negative trend during the period 2006-2011. RCA index declines sharply from 6.1 in 2006 into 2.32 in 2011. Post-crisis competitiveness rose slightly, although by 2015 it did not rise to its 2006 value. The European economy significantly affects Indonesia's export performance. [19] said that the demand for furniture by EU member states is affected by macroeconomic conditions. Factors influencing Indonesia's furniture exports to the EU include EU GDP, Indonesia's GDP, the exchange rate, and relative proximity [26]. If the EU's GDP grew 1 percent, wooden furniture imports increased by 3.8% [27].

The government of Indonesia and the EU signed FLEGT-VPA in 2013, to ensure due diligence of timber legality verification. In November 2016, Indonesia received the EU FLEGT license, after SVLK was determined to be sufficient for ensuring certified legal timber products to the EU market. However, it appears that the agreements and new systems for timber legality verification have not been able to increase market opportunities for Indonesian timber products. In addition to tepid increases in comparative advantage, the market share of wooden furniture exported to the EU is only 1.42%. This indicates that many countries that do not have timber legality systems and a FLEGT-VPA with the EU comprise a larger share of the market—thus benefitting from greater trade opportunities than does Indonesia. For example, wooden furniture from China and Vietnam has a market share of 15.53% and 2.86% respectively, and neither of these countries have gone through the VPA process. Table 3 provides further information on the market share of Indonesian furniture within the four top export markets for wooden furniture.

The comparative advantage of Indonesian wooden furniture in the Japan and Australia remained relatively stable, compared to the US and EU markets. In the Japanese market, Indonesia has a significant market share, reaching 6.08% in 2015 (table 3). Growth in exports also showed a positive trend from through 2015. However, from 2006 the overall market share of wooden furniture from Indonesia declined; despite a relatively high market share and comparative advantage, Indonesian wooden furniture exports were unable to maintain a trend of increased market share over the ten-year period of this study. The wooden furniture export performance in Australia was also comparatively stable.

It is important to note that since SVLK implementation in 2013, the comparative advantage of Indonesian wooden furniture exports experienced immediate decline in Australia, and continued decline in the US as well as an overall decline in market share in each major export market other than the EU. The US, Japan, and Australia each regulate timber products aiming to reduce the amount of illegal timber products in their markets. However, these regulations do not necessarily require proof of the legality of timber in the form of a certificate or v-legal documents, as SVLK provides, according to the EU-Indonesia VPA agreement. Thus, it seems likely that effects from SVLK are felt across major export markets for wooden furniture, and that these effects may not actually enhance the competitiveness of wooden furniture made in Indonesia.

Table 3. The Export value and market share of Indonesian wooden furniture

Year	Importing countries							
	US		EU		Japan		Australia	
	Export value (US\$)	Market share (%)	Export value (US\$)	Market share (%)	Export value (US\$)	Market share (%)	Export value (US\$)	Market share (%)
2006	11,646,456	3.86	8,783,735	4.61	1,666,952	7.29	41,121	2.38
2007	11,742,421	3.50	10,684,813	4.12	1,704,532	7.29	39,187	2.19
2008	10,344,945	3.83	11,018,674	3.81	1,786,942	7.82	40,781	2.04
2009	9,028,963	3.98	12,035,202	2.76	1,796,398	7.91	33,396	1.87
2010	10,326,084	3.85	16,156,522	2.82	1,959,079	7.76	31,877	1.43
2011	10,994,007	3.24	17,115,069	1.25	2,231,756	7.25	21,226	1.00
2012	12,122,935	3.49	18,330,939	1.40	2,397,379	8.15	34,824	1.40
2013	13,203,241	3.74	19,439,194	1.34	2,441,791	6.90	40,084	1.51
2014	14,175,948	3.56	22,091,483	1.41	2,469,026	6.37	43,599	1.52
2015	15,449,489	3.66	22,857,332	1.42	2,220,059	6.08	46,919	1.45

Source: [6]

3.2 Comparison the competitiveness of Indonesian wooden furniture and the competitors.

In 2015, China, Malaysia, and Vietnam each demonstrated greater comparative advantage and market share of wooden furniture exports than Indonesia. [26] attributes Indonesia's lack of competitiveness to the high cost of mostly handmade furniture. Table 4 presents the RCA index for Indonesia as compared to its major competitors in wooden furniture export.

Table 4. RCA Index for Indonesian wooden furniture and competitors

Year	Exporting countries			
	Indonesia	China	Malaysia	Vietnam
2005	3.23	2.16	2.6	8.41
2006	2.97	2.28	2.73	9.41
2007	2.67	2.21	2.68	9.57
2008	2.5	2.18	2.94	9.63
2009	2.26	2.57	2.89	8.32
2010	2.16	2.89	2.88	9.1
2011	1.4	2.84	2.81	7.8
2012	1.84	2.81	2.9	7.59
2013	1.99	2.68	2.44	7.07
2014	2.03	2.65	2.32	6.66
2015	2.26	2.54	2.36	5.87

Source: [6]

China and Malaysia have the same general trend in comparative advantage of wooden furniture production from 2006 to 2015. In recent years, China has been the leader in wooden furniture exports, with an overall market share of 35.6%. Its growth in exports over the last decade was 13.3%. Despite China's large market share, it has a comparative advantage similar to that of Indonesia and Malaysia, and is much less competitive than Vietnam. The total value of all wooden furniture exports from China is only 1% of total exports. China's comparative advantage and large market share of wooden furniture exports is made possible by the combination of plentiful skilled labor and low production costs [7].

Malaysia, the most proximate country to Indonesia, has a higher comparative advantage. Its competitiveness strength comes from a national strategy of promoting low cost and good quality wooden furniture [28]. Government support and abundant raw sources of raw materials fueled the rapid growth of the Malaysian furniture industry since the 1990s. The raw materials often used for Malaysian wooden furniture include rubber wood (*Hevea brasiliensis*), *meranti* (*Shorea pinanga*), *nyatoh* (*Palaquium sp.*), and *ramin* (*Gonystylus bancanus*). Malaysia's export value in 2015 amounted to \$1.86 billion with a market share of 2.9%. Perhaps in part due to this national strategy, the Malaysian wooden furniture industry proved resistant to economic crisis [28]. Since the economic crisis in 2009 and 2011, the strength of Malaysia's comparative advantage has grown steadily.

Vietnam has the highest comparative advantage and is an emerging market with rapid industrial growth. Vietnam produces wooden furniture more efficiently than other countries, and so benefits from lower selling prices in addition to national incentives for furniture production. Raw materials for Vietnamese wooden furniture is generally sourced Laos, Cambodia, China and the United States [29]. They have to import about 80% of their furniture raw materials and components [30]. Vietnam further benefits from a youthful workforce and steady population growth [31]. In 2015, Vietnam has a comparative advantage in wooden furniture production of 5%, and an export value of \$3.7 billion. Its average export growth over the last decade was 13.4%, far greater than the world trade growth. However, during this period, Vietnam's comparative advantage declined from 9.41 in 2006 to 5.87 in 2015. The decline was caused by the decrease in the share of exports of wooden furniture to the total export of Vietnam, from 3.7% in 2006 to 2.3% in 2015 [6].

Governments in China, Malaysia, and Vietnam have not established a mandatory certification scheme for their timber industries. The wood trade rules of the importing country have changed the business strategy of the timber industry in Vietnam and China [12]. In Vietnam, FSC-certified products demonstrated a comparative advantage [31]; however this market-based certification strategy does not preclude the need for enforced public policy that ensures sustainable forest management and timber legality [32].

3.3 The comparative advantage of Indonesia and its competitors in the major market.

The four major market of Indonesian wooden furniture are EU, US, Japan, and Australia. 79.95% of the total trade of Indonesian wooden furniture exported to there [6]. Global wooden furniture export to the four major market amount \$ 43.77 billion or almost 68% of total trade. Indonesia, China, Malaysia, and Vietnam all have a comparative advantage in the major market (table 5).

The US is the second largest market for Indonesia's wooden furniture. The value of US wooden furniture reached \$15 billion. Table 5 presents the RCA index for Indonesia, China, Vietnam, and Malaysia. Vietnam has the highest comparative advantage, but its competitiveness fell sharply from 12.9 in 2006 to 8.33 in 2015. China and Indonesia also experienced a decline in competitiveness from 3.14 to 2.65, while Malaysia's competitiveness increased. Despite its weakened comparative advantage, China and Vietnam have a higher market share when compared to Indonesia and Malaysia. 51.3% of the wooden furniture in the US market is dominated by China, while Vietnam has a market share of 13.1%. Indonesia and Malaysia are only comprise 3.7% and 4.2%, respectively, of the US market. Indonesia's wooden furniture trade to the US was the \$565 million in 2015. By comparison, China and Vietnam exported \$7.9 billion and \$2 billion to the US in 2015.

The US is the biggest wooden furniture importer in the world. The US government does not require legality certification of imported timber despite enactment of the Lacey Act. Local importers are free to choose different certification types, and certification itself is not mandatory. The most common certification for importers in the US is FSC certification [33]. FSC-certified product often fetch a higher price than non-FSC products, due to customer recognition of higher product quality [31]. The timber legality certificate issued by v-legal certification in Indonesia is not as familiar with many US importers and buyers. Thus, Indonesian wooden furniture for export to the US often requires dual certification: the SLVK as a condition of export of the Indonesian government and FSC to attract importers and buyers in the US. This demonstrates lower acceptance and potentially weaker legitimacy of SVLK [10].

Timber trade in the EU consists of 38.7% of total world trade [6]. Timber products, including wooden furniture, exported to the country must meet social, environmental, health and safety requirements [31]. The EUTR requires that products exported to the EU must be eco-label certified, and it aims to control the origin of timber products exported to the EU [34]. However, official eco-labelling generates an adverse effect in the exporting country, as they must adapt the standard and incur high costs [26].

Table 5. RCA index for Indonesian wooden furniture and the major exporter in the four main market.

Exporting country	Year									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
US Market										
Indonesia	6.11	5.57	5.72	5.25	4.77	3.98	4.9	4.98	4.76	4.77
China	3.14	3.16	3.4	3.08	3.38	3.14	3.06	2.92	2.85	2.65
Malaysia	3.11	3.33	4.64	5.16	5.92	5.77	5.64	5.05	4.84	4.71
Vietnam	12.9	12.56	15.68	12.14	14.18	12.81	12.46	10.52	9.54	8.33
EU Market										
Indonesia	6.1	5.96	5.18	4.56	5.67	2.32	3.24	3.49	3.94	4.61
China	1.34	1.54	1.54	1.89	2.07	1.9	2.18	2.02	2.05	2.11
Malaysia	3.03	3.27	3.59	3.86	3.62	2.79	3.22	2.35	2.37	2.26
Vietnam	11.34	11.86	11.28	10.02	10.68	7.15	6.12	4.9	4.86	4.5
Japan Market										
Indonesia	1.76	1.85	1.72	1.96	1.73	1.49	1.82	1.68	1.76	1.89
China	2.04	2.29	2.22	2.1	2.22	2.17	2.12	2.13	2.2	2.22
Malaysia	3.46	3.71	2.89	3.35	2.7	3.01	2.33	1.94	1.78	2.22
Vietnam	10.46	10.1	8.37	8.96	9.78	8.6	7.4	7.56	7.32	6.65
Australia Market										
Indonesia	2.69	2.07	1.83	1.64	1.29	0.67	1.25	1.44	1.26	1.67
China	3.98	3.98	4.2	4.01	3.8	3.91	3.71	3.61	3.39	3.03
Malaysia	5.54	4.35	3.73	3.43	2.85	2.93	2.58	2.28	1.9	2.43
Vietnam	2.31	2.9	2.7	4.21	4.8	6.44	5.94	5.33	5.11	6.33

Source: [6]

From 2006-2015, China's comparative advantage in the EU market increased slightly, while Vietnam and Malaysia's competitiveness declined. Indonesian competitiveness decline until 2011, and then increased gradually. The impact of the economic crisis across Europe in 2011 corresponds with the overall decline in comparative advantage in 2011. As explained in the previous section, though, Malaysia was quite resistant to the economic crisis, with a relatively small decline in competitiveness. In the post-economic crisis period, Indonesia and China's competitiveness showed a positive trend. The drop in the competitiveness of Malaysia and Vietnam was due to the high penetration of Chinese products to nearly all export destinations. China's exported 6.2 billion tons wooden furniture in 2015, Vietnam just for 853 million tons and Malaysia was 445 million tons [6]. Rapid industrial growth and ability to compete making China can control almost all sectors, not just any wooden furniture. The GoI established a regulatory restriction of import of various commodities to protect the domestic industry from new product penetration of imports especially from China. For timber products, the GoI stipulates Minister of Trade Regulation 97/M-dag/PER/11/2015 about provisions of forestry products imports, restrictions on the import of wood products through a due diligence and certify the legality of timber [8].

Upon analysis of its export performance, Vietnam and China experienced higher export value, amounting to \$4.2 billion. Although it has the greatest comparative advantage, Indonesia comprises the smallest share of the overall EU wooden furniture market (see table 6).

Table 6. Market share of Indonesia, China, Vietnam and Malaysia in the EU market

Exporting Countries	Year									
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Market share (%)										
Indonesia	4.6	4.1	3.8	2.8	2.8	1.2	1.4	1.3	1.4	1.4
China	16	19.6	21.5	19.9	18.7	17.7	17.5	15.7	16.1	15.5
Malaysia	3.9	3.8	3.8	2.9	2.2	1.7	1.6	1.1	1.1	0.9
Vietnam	5.1	5.6	5.8	4.2	3.5	3.1	3	2.7	2.9	2.9

Source: [6]

China and Vietnam have a larger market share than Indonesia and Malaysia. The performance of Malaysian furniture exports fell due to rising labor costs and the limited supply of raw materials during this period [35]. Vietnam has bilateral cooperation with the EU, named the EU-Vietnam Free Trade Area (FTA). This bilateral cooperation aims to boost the trade both of countries by eliminating trade barriers. One objective is to remove the tariff barriers of wooden furniture products [31], which contribute to the increased cost of goods produced abroad [36]. China also has a bilateral cooperation with the EU. Their FTA provides opportunities for partner countries to improve the market access. These FTAs, which have enforced 0% import duties, have made Vietnam's and China's wooden furniture more competitive. Indonesia does not have an FTA with the EU. The EU-Indonesian VPA is not capable of entirely eliminating barriers to trade for wooden furniture.

Japan is the largest importer of wooden furniture in Asia. The total value of furniture imported to Japan in 2015 is \$2.2 billion. 51.67% of the Japanese wooden furniture came from China in 2015, with an export value of \$1.2 billion. Other exporters include by Vietnam (16.86%), Indonesia (6.37%), and Malaysia (7.07%). Indonesia and its competitors each have a comparative advantage in the Japanese market. Historically and currently, Vietnam enjoys a strong comparative advantage in the Japanese wooden furniture market. However, from 2006 to 2015 Vietnam's comparative advantage in Japan decreased most markedly. Regardless, the RCA Index for Vietnamese wooden furniture in Japan is nearly three times that of its competitors in 2015.

Like the US and the EU, Japan also has unique trade rules for timber products. These trade rules, called Japanese Goho-Wood, are most similar to the US regulations that do not mandate certification of timber legality in the export documents. All timber products imported to Japan must have legal documents that explain the origin of its raw materials. Because of this requirement, and the penalty for not observing it, many importers have turned to market-based certification. As in the US case, it is likely that v-legal certification, unless accompanied by dual-certification, is easily recognized by importers and consumers.

Australia imported \$1.4 billion in 2015. China has a market share of 28.73%, Vietnam 4.32%, Malaysia 4.11%, and Indonesia 1.45%. While all of the countries have a comparative advantage in the context of Australian wooden furniture production, Indonesia is the least competitive nation. Vietnam increased in competitiveness sharply, while China, Malaysia, and Indonesia declined from 2006 to 2015. Overall, over the last decade, the Australian furniture market has declined.

3.4 The Analysis of Indonesian wooden furniture competitiveness using EPD methods

The EPD method determines the dynamics of growth in wooden furniture products for the international market [37] by comparing the growth of Indonesian wooden furniture export value to the overall growth of world trade [22]. These comparative values are then graphed to demonstrate the current status of

Indonesian wooden furniture [23], with the x-axis representing the market share of Indonesian wooden furniture and the y-axis representing the growth of the worldwide wooden furniture market.

The status of Indonesian wooden furniture varied significantly from 2006 to 2015 (see figure 4). The dynamics of global trade and Indonesian efforts to maintain and even improve its competitiveness generated a range of values for Indonesian market share, and the relationship between market share and worldwide growth for wooden furniture. Before the enactment of SVLK, especially after periods of economic global economic crisis, EPD analysis locates Indonesian wooden furniture production in the “Lost Opportunities” quadrant. This means that Indonesia lost market share at a time when growth in the world of furniture products increased. During the economic crises in 2009 and 2011, Indonesia's competitiveness deteriorated demonstrating the vulnerability of the Indonesian wooden furniture exports to changing economic conditions in destination countries. By 2010, however, it seems that Indonesian wooden furniture production recovered to show an increase in market share and a growing worldwide market for wooden furniture. This period was short-lived, as from 2011 and onward, Indonesian wooden furniture production, worldwide wooden furniture trade, or both demonstrated negative trends.

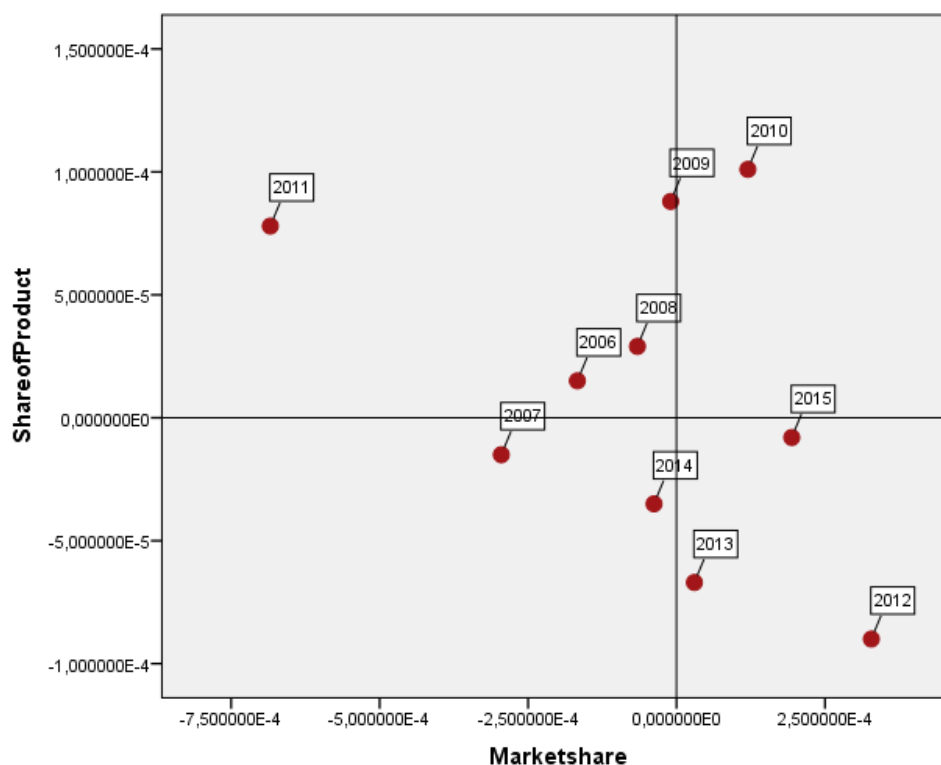


Figure 4. The EPD for Indonesian wooden furniture in the global market in 2006-2015

3.5 Combining Insights from the RCA Index and EPD Methods

Although Indonesian wooden furniture exports have increased relative to worldwide trade in wooden furniture since the onset of SVLK regulation, and while it benefits from the highest comparative advantage in the EU wooden furniture market, competing countries occupy greater market share and comparative advantage in the global market for wooden furniture. It remains unclear how much of these trends are attributable to global patterns of worldwide trade in wooden furniture, the specific nature and demand for Indonesian wooden furniture as compared to wooden furniture produced in competitor countries, or because of SVLK regulation. However, it seems unlikely that SVLK regulation, beyond improving the comparative advantage of Indonesian wooden furniture in the EU market, has contributed

to enhancing the competitiveness of Indonesian wooden furniture production overall as compared to other Asian countries among the top-ten exporters of wooden furniture.

4. Conclusions

Indonesian wooden furniture has a comparative advantage over the world average. Additionally, Indonesian wooden furniture has demonstrated increased market share since the implementation of SVLK regulation, despite a year-to-year downward trend in worldwide wooden furniture trade relative to overall world trade. However, the competitiveness of Indonesian wooden furniture in the global market, as well as in the national markets of the US, Japan, and Australia, indicate a decrease since the onset of SVLK regulation. Thus, while SVLK regulation has occurred alongside an increase in the comparative advantage of Indonesian wooden furniture in the EU, it seems unlikely that SVLK regulation has enhanced the overall competitiveness of Indonesian wooden furniture in the global marketplace. Future studies should seek to build upon this analysis by assessing causality and estimating the impact of SVLK regulation and the comparative advantage and market share of Indonesian wooden furniture.

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