Hilirization And Marketing Of The Main Export Commodity Of Pulp (A Value Chain Approach)

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Abstract

The aims of this paper are 1) to map the production of upstream and downstream pulp commodities. 2) knowing the potential and impact of downstream on regional and national economic growth. 3) formulate a recommendation for the development strategy of the main commodity downstream. The data used is secondary data, namely Riau Province Input-Output data in 2016 with a 52 x 52 matrix. Data was gained from the Central Statistics Agency (BPS). The analytical method is analysis is (IO) backward linkage and forward linkage from rub the ber plantation sector as a provider of inputs and users of inputs as well as the impact on the economy in Riau Province. The results showed that production from upstream to downstream of pulp commodities can be divided into several industries, including the forestry and logging sector, the textile industry sector, and the paper industry sector for paper goods, printing, and recording media reproduction. The sector with the most potential and impact on economic growth frdownstreaming of pulp commodities is the paper and paper goods industry, printing, and recording media reproduction. Strategies that can be taken to develop the paper and paper goods industry, printing, and reproduction of recording media are increasing economies of scale in production, determining appropriate market segments, increasing product value (increasing value), and maintaining economic stability.

Keywords: Hilirization and Marketing, Input-Output, Pulp Commodities

I. INTRODUCTION

Indonesia's pulp and paper exports have great potential because they are supported by the availability of wood raw material sources. This is because Indonesia has a fairly large forest area and is supported by a good tropical climate so that plants can grow faster than in other parts of the world (Situmorang, 2005). In addition, the productivity of Indonesian pulp and paper raw material factories outperforms other competitors such as Brazil, the US, and China (Ministry of Trade, 2019).

Excellence in production makes Indonesia the world's largest exporter of pulp and paper commodities. Share the value of Indonesia's pulp exports in the last 20 years (2001-2020) compared to 3.87 percent of the total world pulp export value or sixth in the world. During the same period, Indonesia's paper export value share accounted for 2.17 percent of world paper exports or ranking 15th in the world (International Trade Center, 2021).

World pulp and paper production and trade are dominated by NORSCAN countries (North America and Scandinavia), but Indonesia's opportunities in pulp are still quite large because the dominance of NORSCAN countries tends to weaken and shift to Asian and Latin American countries (Widyantoro et al. 2006; Ministry of Trade 2019).

Asian and Latin American countries are expected to increase their pulp and paper capacity. This is due to the abundant supply of wood and non-wood fiber raw materials. The shift in the dominance of the world pulp and paper commodity market can be seen in the average growth rate of exports from NORSCAN countries (US, Canada, Finland, and Sweden) which tends to decrease and is negative. On the other hand, although the export volume of Asian countries increased on average and Latin America (Brazil, Indonesia, and China) tended to decline, it remained positive.

NORSCAN countries still dominate in terms of average export value growth but the growth tends to decline or even be negative. The shift in dominance occurred due to several things, namely: decreased demand for paper, especially for uncoated types of newspapers and writing and printing paper, expanding pulp and paper capacity in Latin America and Asia, and the increasing role of waste paper in global paper production (Bogdansky, 2014).

The declining dominance of the NORSCAN countries in the world pulp and paper trade is an opportunity for Indonesia as a potential exporter. But this momentum is an opportunity for other Asian and Latin American countries such as China, Brazil, and China. Therefore, Chile will have competition in the world's pulp and paper trade. Furthermore, Indonesia also faces several challenges in developing pulp and paper exports, namely, accusations of dumping in the US and Australia, protectionist practices, the high price of expensive gas raw materials in production, black campaigns related to forest fires, changes in consumer behavior and the development of the digital industry (Ministry of Trade, 2019).). Data on the average export volume growth of the world's main pulp and paper exporters are presented in Table 1.

Table 1. Average Export Volume Growth in the World's Major Pulp and Paper Exporting Countries

Country Exporter	Average Growth Pulp Export Volume (%)		Country Exporter	Average Growth Paper Export Volume (%)	
	2001-2010	2011-2020		2001-2010	2011-2020
USA	10.49	-0.49	German	4.89	-0.52
Canada	1.66	-0.53	USA	4.92	-1.69
Brazil	11.69	6.43	China	19.08	3.60
Sweden	1.67	2.55	Canada	1.67	-4.43
Chile	7.63	3.01	Sweden	2.03	-0.93
Finland	5.14	-	Finland	0.14	-
Indonesia	7.19	8.93	France	0.04	-2.36
German	0.52	-2.55	Italy	3.70	2.36
Russia	1.60	2.74	Dutch	4.35	4.56
Dutch	9.97	-	Indonesia	6.00	3.89

Source: ITC (2022)

The pulp and paper industry is one of the most important industries in the national economy (Widyantoro et al. 2006; Mardiana, 2012). This industry is not only able to absorb a sizeable workforce in the last 10 years but also contributes to national exports (Wulandari, 2007). Based on BPS data (2016), in this industry from 2002-2015 labor absorption averaged 129 thousand workers a year, and its export contribution during the same period averaged 3,937 thousand tons, which was USD 3,265 million. Compared to national non-oil and gas exports, the pulp and paper industry exports an average of 3.4% per year during the same period. The main exports of the pulp and paper industry to destination countries include Japan, the United States, Malaysia, and Vietnam.

Exports of value-added products are also important for a country's economic growth. There is a relationship between value-added exports and exports of economic growth, foreign direct investment, human capital, and trade openness of countries, especially high and middle-income countries (Chrid, Saafi, and Chakroun, 2020). From several studies, it is concluded that the export of the industrial sector, especially high-value exports, has an important role in the economic growth of a country.

The high export value does not necessarily reflect the added value of the national economy, taking into account that imports from other countries are also contained in exports (Hummels et al. 2001). As a result, some part of the added value also belongs to Indonesia's trading partners exporting auxiliary raw materials for Indonesia's pulp and paper industry. GVC (Global Value Chain) pulp and paper industry is not only found in certain countries, but also in many countries and from many other sectors. An example is the case of three countries where the first country produces intermediate products and finished goods for the second country (Meng, 2011; Koopman et al. 2010); and the second country produces both for domestic needs and exports to third countries.

The manufacturing process in the second country requires domestic intermediaries of goods, capital, and labor. As for exports to third countries, these can be in the form of intermediate and final goods. That is, because of international production the process of fragmentation implies that each country will specialize in a particular trade or added value (Timmer et al. 2014). The same process involving many countries will form a GVC (Global Value Chain) in which each country with its resources participates in one or more manufacturing processes and production is shared between them (Johnson and Noguera, 2012).

Based on this background, the objectives of this paper are 1) to map the production of upstream and Hilirization pulp commodities. 2) knowing the potential and impact of Hilirization on regional and national economic growth. 3) formulate a recommendation for the development strategy of the main commodity civilization.

II.   LITERATURE REVIEW

Pulp Commodities

Pulp is the result of separating the fiber from fibrous raw materials (wood and non-wood) through various manufacturing processes (mechanical, semi-chemical, chemical) is and used as raw material for paper making and can also be converted into cellulose derivative compounds including cellulose acetate. The classified materials consist of pulp, paper, and cardboard.

Grouping is done based on the number of stages of treatment on the material, sorted from the number of treatments to the least. It is broadly divided into pulp class, uncoated paper and cardboard class, coated paper class, and finally special paper class and others. Pulp class is divided into 2 (two), namely virgin pulp and recycled pulp. The virgin pulp class is further divided based on the manufacturing process and the type of raw material. Recycled pulp classes are divided based on the type of paper and cardboard that will be reused as raw materials for making paper.

Based on the raw materials used, uncoated paper and cardboard are divided into 2 (two) classes, a namely uncoated paper containing mechanical pulp and uncoated paper from chemical pulp. Based on the raw materials used and the end-use grouping of paper and cardboard, the next classes are the recycled paper and cardboard, the white/bleached paperboard class, the tissue paper class, the unbleached/unbleached paper, and cardboard class, the d packaging paper class.

Added Value

Value added is the added value of a commodity because it undergoes processing, transportation, or storage process in production. In the processing value added can be defined as the difference between the value of the product and the cost of raw materials and other inputs, excluding labor. The concept of added value is very dependent on existing demand and often changes according to the values in a product desired by consumers, income and the environment are many factors that change consumer preferences for a product.

The factors that encourage the creation of added value (Anderson and Hatt, 1994) are a) Quality means that the products and services produced are by or more than the expectations expected by consumers, b) Function, where the products and services produced are by what is expected. requested from each actor, c) Form, the product produced is by the shape desired by consumers, d) Place, the

product is produced according to the place, e) Time, the product is produced according to the time and f) the ease of the product produced for access to consumers.

Value Chain Approach

Developed the concept of value chain analysis (VCA) by analyzing the involvement of the supporting factors involved in the value chain. Value chain analysis focuses on the competitiveness of the value chain by taking into account the aspects of business sustainability. Value chain analysis is growing in line with the changing demands of global market consumers, in addition to demanding product quality, also requires business actors' concern for fair trade aspects (fair for small business actors for business sustainability) as well as paying attention to environmental sustainability.

Trienekens (2012) suggests that the value chain analysis framework in developing countries includes three aspects important: (1) network structure in the value chain; (2) added value from the production process; and (3) bargaining position between business actors in the value chain and the distribution of their benefits and costs. Furthermore, Gereffi (1994) states that VC is an approach toanalyzinge the technical structure of a VC (value chain mapping), the actors (actor) involved, the territorial (geographical) area of the movement of inputs and output, and also the relationship between the actors. The analysis of the five dimensions can answer questions about how the production process is carried out, who is the perpetrator, where are the differences, how are the links between each process and who gets the benefits.

Trading Contract

A contract is an event where two or more people promise each other to do or not to do a certain act. The parties who agree on the agreed matters are obliged to wait and implement them so that the agreement creates a legal relationship that issues rights and obligations. There are various general provisions contained in the trade contract, including the number of commodities to be traded, description of the commodity, grade, packing method, commodity unit price, currency unit used, payment method, delivery method and schedule, type of delivery used, insurance required, the party who bears the insurance premium and tax burden.

Pulp Commodity Competitiveness

During the period 2011-2015, the volume of pulp and paper exports increased by 1.75% per year, while the value decreased by 1.98% per year. In terms of volume, exports increased from 5.9 million tons in 2011 to 6.3 million tons in 2015, while the export value decreased from USD 4.4 billion to USD 3.9 billion in the same period. The decline in export value was caused by the decline in pulp prices in the international market. In 2015 there was a decline in pulp prices in the international market from USD 876.91/MT in 2014 to USD 875/MT (World Bank). Performance of pulp and paper exports during the period 2011-2015.

Table 2. Pulp and Paper Export Performance for the 2011-2015 period

Description	2011	2012	2013	2014	2015	Trend (%)
Value (Billion USD)	4.4	4.2	4.2	4.2	3.9	-1.98
Volume (Million Tons)	5.9	6.2	6.7	6.5	6.3	1.75

Source: BPS (2016)

The main export destination country for Indonesia's pulp and paper is the People's Republic of China (PRC) with a value in 2015 of USD 1.2 billion, followed by Japan with USD 0.4 billion, South Korea with USD 0.3 billion, Iwith India with USD 0.2 billion, Malaysia USD 0.2 billion, Vietnam USD 0.1 billion, Bangladesh USD 0.1 billion and the United States USD 0.1 billion. Of the several main export destination countries, only three countries experienced positive growth during the 2011-2015 period,

namely China, Bangla,desh, and the United States with growth th of 7.17%, 9.67%, and 7.61% per year, respectively. . If you look at the competitiveness performance of Indonesia's pulp and paper in the global market based on Comtrade data, the competitiveness rating of Indonesia's pulp in the global market tends to increase over the last few years, while the paper's competitiveness rating fluctuated. In 2010 the competitiveness of pulp was ranked 17th, increasing to 13th in 2014. Meanwhile, the competitiveness of paper in 2010 was in 5th position, declining to 9th in 2014.

Table 3. Indonesia's Pulp and Paper Competitiveness Ranking in the Global Market

Description	2010	2011	2012	2013	2014
Pulp	17	16	15	14	13
Paper	5	10	8	11	9

Source: UN COMTRADE (2014)

Based on these data, Indonesia currently occupies the 9th position in pulp production and the 8th position in world paper production. Overall, pulp and paper products accounted for 90% of the total export revenue of forestry products in 2015, which amounted to Rp. 9.86 billion (Kontan.co.id, 201The the domestic industry has been able to supply national needs, but t still, imports with import value growth of 0.67% per year and import volume growth of 4.55% in the 2011-2015 period. Betari (2020) explained that Indonesia has strong comparative competitiveness in the Chinese market for HS 4703 pulp and HS 4802 paper. The comparative competitiveness of HS 4703 pulp in the Chinese market is still lower than Canada and Chile, this is because Indonesia's productivity is higher. low when compared to Canada and Chile. As for the Indonesian HS 4802 paper commodity, Indonesia's comparative competitiveness as depicted through the RCA index has a comparative advantage that is superior to the four competing countries in the Chinese market because Indonesia has the advantage of low prices due to lower production costs.

III. RESEARCH METHODS

Data Types and Sources

The type of data used in this study is secondary data, namely data from the Riau Province Input-Output (IO) Table in 2016 with a 52 x 52 matrix. The data sources in this study were obtained from the Central Statistics Agency (BPS), the Departments of Agriculture, and various literature related to research objectives including magazines, books, journals, results of previous research, the internet, and literature studies.

Data analysis method

Input-Output Analysis is a method used to see the relationship between a production sector and other production sectors in an economy within a certain period (Rahmawan 2021). In this input-output analysis, the general equilibrium theory becomes easy to apply empirically because it is simpler (Suratman 2009). The input-output table is used to determine the role of the rubber plantation sector as a provider of inputs as well as users of inputs and the impact of related sectors on the economy in Riau Province.

Backward Linkage Index

This concept is defined as the ability of a sector to increase the growth of its upstream sector. Sector j is said to have a high backward linkage if it has a value greater than one. The formula used to find the total index value of backward linkage is:

$$BL_j = \frac{n \sum_{i=1}^{n} a_{ij}}{\sum_{i=1}^{n} \sum_{j=1}^{n} a_{ij}} \tag{1}$$

Where:

BLj = backward linkage index j . sector
α*ij* = element of Leontief's reciprocal matrix

Total Forward Linkage Index (Forward Linkage Index)

This concept is defined as the ability of a sector to encourage production growth in other sectors that use inputs from this sector. Sector i is said to have a high total forward linkage index if the value of greater than one. The formula used to find the index value of the total forward linkage is:

$$FL_i = \frac{n \sum_{j=1}^{n} a_{ij}}{\sum_{i=1}^{n} \sum_{j=1}^{n} a_{ij}}$$

(2)

Where:
FLi = Index of total forward linkage of sector i
a*ij* = elements of Leontief's reciprocal matrix

IV. RESULTS AND DISCUSSION

Production Scheme From Upstream And Downstream Of Pulp Commodities

In general, the pulp and paper industry is distinguished according to the type of product. However, in general, the process can be described in Figure 4. Some factories such as integrated pulp and paper mills have all the complete machines and equipment, while some paper or tissue producing factories will only have paper/tissue machines where pulp as raw material is imported from outside the factory. Meanwhile, the pulp mill will only have the machines and equipment to produce pulp.

Figure 1. Pulp Production Scheme

Based on Figure 1 above, in general, the details of each stage can be explained as follows:

Wood Preparation

Wood is the main raw material for pulp production. The preparation of raw materials can be obtained from the forest in the form of logs (logs) or in the form of wood chips obtained from processing from different wood industries. Wood is usually prepared in the form of wood chips. Wood preparation involves the process of cutting wood in a slasher to be cut to the desired size for the next process in pulping. The main processes of wood preparation are debarking and chipping. Energy consumption in both processes is relatively small. The complete wood preparation process is given below.
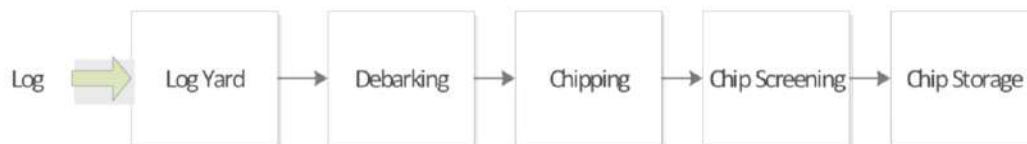

Figure 2. Wood Absorption Process

Pulping

During the pulping process, wood chips are separated into individual fibers to remove lignin. There are five types of pulping processes, namely chemical, mechanical, semi-chemical, recycling, and others (eg dissolving). The most common pulping processes are chemical processes (i.e. kraft, soda, and sulfite). The process of making chemical pulp uses white liquor chemicals in the form of sodium hydroxide (NaOH) and sodium sulfide (NaS_2) as active chemicals. The cooking process can be carried out either in a batch digester or in a continuous digester. In the cooking process with a batch digester, wood chips of white liquor and weak black liquor are put into a batch bioreactor and heated to a cooking temperature of around 55 -175 ^{0}C. In the continuous cooking process, wood chips and white liquor are heated and cooked in stages at different stages and heated to a certain temperature. Furthermore, the digester is heated using direct steam injection so that it can significantly save fresh steam consumption.

Both types of cooking methods batch digester and continuous digester have different advantages. Batch digesters have a low capital cost and product flexibility, while continuous digesters are more space efficient, easier to control, do not require many operators, and are more energy-efficient.

Bleaching

Bleaching is the process of increasing the brightness of paper for writing, printing, or decorative paper. This process separates the lignin attached to the wood fibers. Pulp bleaching from a chemical process is carried out using an oxidizing agent and an alkaline solution. The Kraft process produces paper with a darker color quality so it requires a bleaching process. Pulp made from a mechanical process is bleached using hydrogen peroxide (H_2O_2) or sodium hydrosulfite (NaS_2O_4) to reduce the absorption rate of lignin. Chemical Recovery The chemical recovery system in the kraft pulping process has three functions, namely:

a. Inorganic chemical recovery
b. Energy recovery from black liquor which can be used to generate electricity and steam
c. Recovery of valuable by-products (eg tall oil).

The calorific value or energy contained in black liquor can usually meet all electrical and steam energy needs in the pulp and paper industry. The main processes in chemical recovery are the evaporation of black liquor, incineration of black liquor in the recovery boiler, and customization.

Pulp Drying

After the pulping and bleaching process, the pulp is processed into a stock that can be used for papermaking. In non-integrated mills, the pulp to be sold is dried, packaged, and then sent to the paper mill. In the integrated mill, the paper mill directly uses pulp without going through a drying process first. The pulp drying process is one of the processes that consume a large amount of thermal energy. With the pulp drying process in non-integrated pulp mills, the energy consumption or intensity to produce pulp will be greater than in integrated pulp and paper mills which do not need to go through the pulp drying process.

Papermaking Process (Papermaking)

Paper is made of cellulose fiber with the addition of other substances to improve the quality of the paper produced according to the desired grade. Pulp for papermaking can be made from virgin fiber by mechanical or chemical processes or by re-pulping of recovered paper. In the pulping process, the cellulose material is broken down into fibers. Wood is the main raw material for making paper, but other raw materials such as straw, grass, cotton, and other materials containing cellulose material can also be used as raw materials for making paper. The composition of raw materials will depend on the type and species of wood or material, especially for the content of cellulose, lignin, and hemicellulose.
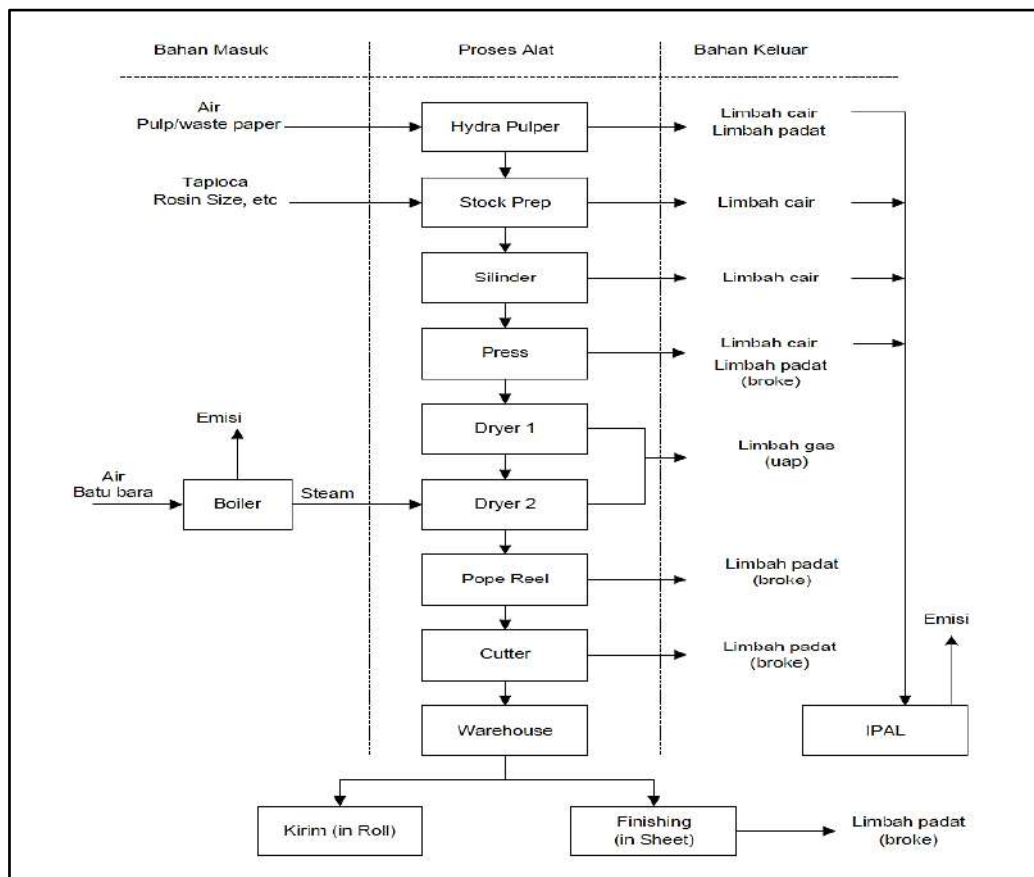
Figure 3. Paper Making Process

Paper produced using waste paper will involve a cleaning process for contaminants resulting from previous use and may involve a de-inking process depending on the quality of the material and the desired product quality. Paper products typically comprise up to 45 percent by weight consisting of fillers, coatings, and other additives. Each type of paper produced requires certain specifications and properties so that each type of paper can be different in terms of the manufacturing process. In this case, the type of product produced also greatly affects the use of raw materials and energy consumption needed to produce pulp and paper. The process of making pulp and paper can be distinguished based on the raw materials and methods used in processing the raw materials.

Papermaking consists of the process of preparation (preparation), formation (forming), pressing (pressing), and drying (drying). The processes that use the most energy are the stages of preparation and drying. During the preparation process, the pulp is made more flexible through beating, mechanical pounding, and squeezing. The addition of pigment, color, and filler material is carried out at this stage. Forming is done by spreading the pulp on the screen. Water is separated through a continuous process, namely through pressing and drying. All stages of paper making are given below.

Forward and Backward Direct Linkage Analysis

The direct relationship between forward and backward can be seen from the coefficient value of the technical matrix. Forward and backward direct linkage coefficient values for sector forestry and logging, paper, and paper goods industry, printing and reproduction of recording media as well as textile and apparel industry can be seen in the following table:

Table 4. Forward and Backward Direct Linkage Coefficient Values

Sector	Forward Direct Linkage	Backward Direct Link
Forestry and Logging	0.4886526	0.0274785
Textile and Apparel Industry	0.0223306	0.3308680
Paper and Paper Goods Industry, Printing and Recording Media Reproduction	0.3110392	0.5564698

Source: Input-Output Table of Riau Province in 2016

Based on Table 4 above, the sector with the greatest direct linkage impact in the future is the forestry and logging sector with a value of 0.4886526. ThIn the cheaper and paper goods industry sector, printing and reproduction of recording media are in second place with a coefficient value of 0.3110392. The value of the coefficient of direct forward linkage in the textile and apparel industry sector is 0.0223306 and is the sector with the lowest direct forward linkage impact.

Scorecoefficientdirect links tobehindhe three sectors, the largest in the paper and paper goods industry, printing and reproduction of recording media, which is 0.5564698. Furthermore, the textile and apparel industry sector is in second place at 0.3308680. The sector with the lowest coefficient value is the forestry and logging sector, which is 0.0274785.

Analysis of Forward and Backward Direct and Indirect Linkages

The direct and indirect forward and backward linkages can be seen from the coefficient value of the Leontief inverse matrix. Coefficient values of fo forwarding and backward direct and indirect linkages for sector forestry and logging, paper, and paper goods industry, printing and reproduction of recording media as well as textile and apparel industry can be seen in the following table five.

Based on Table 5 above, the coefficients of direct and indirect forward linkages if sorted from highest to lowest are the forestry and logging sectors, the paper and paper goods industry, the printing and

reproduction of recording media, and the textile and apparel industry. Each coefficient value is 1.6851818 for the sector forestry and logging, 1.3950489 for the paper and paper goods industry sector, printing and reproduction of recording media, and 1.0232492 for the textile and apparel industry sector.

Table 5. Coefficient of Direct and Indirect Linkage Forward and Backward

Sector	Forward Direct and Indirect Linkages	Back-to-back Direct and Indirect Linkages
Forestry and Logging	1.6851818	1.0393909
Textile and Apparel Industry	1.0232492	1.5089592
Paper and Paper Goods Industry, Printing and Recording Media Reproduction	1.3950489	1.7014814

Source: Input-Output Table of Riau Province in 2016

The value for the highest coefficient of direct and indirect linkage behind the sector is the sector the paper and paper goods industry, printing and reproduction of recording media the value is 1.7014814. Next is the textile and apparel industry sector in the second rank, which is 1.5089592. The lowest sector is sector forestry and logging with a coefficient value of 1.0393909.

Analysis of Shock Demand Side
Indonesia's Pulp commodity exports continue to fluctuate. Data on the development of Indonesian pulp exports are presented in the image below.

Figure 4. Development of Indonesian Pulp Exports

Indonesia's pulp exports at the end of 2016 showed a decline in value (down 9.58%) but an increase in volume (growing 3.91%). Indonesia's pulp exports at the end of 2017 showed significant growth both in terms of value (growing 31.35%) and volume (growing 55.28%). Meanwhile, pulp export growth this year in September has grown by 5.47% (yoy) in value and 29.82% (yoy) in volume.

Table 6. Analysis of Shock Demand Side

Sector	Y	X

Forestry and Logging	16506.2662	490853
Textile and Apparel Industry	846.577536	876,837
Paper and Paper Goods Industry, Printing and Recording Media Reproduction	1445742.93	1593534

Source: Input-Output Table of Riau Province in 2016 (Data Processed)

Analysis of the impact of the demand side shock from the forestry and logging sector, the paper and paper goods industry, printing and reproduction of recording media as well as the textile and apparel industry can be seen in the following table six. The total value of forestry and logging exports in 2016 according to BPS was IDR 384,098,000,000. After analyzing the demand side shock, in the forestry and logging sector, if there is an increase in exports by 5 percent (ΔY) with a value of Rp 850,860,000. In the paper and paper goods industry, printing and reproduction of recording media, if exports increase (ΔY) by 5 percent with a value of Rp 1,445,743,000,000, meaning that an increase in exports from total exports will affect the output (ΔX) of Rp 1,593,533,620,000. In the textile and apparel industry sector, if exports increase (ΔY) by 5 percent of total exports with a value of Rp 846,000,000 then the change in output that occurs (ΔX) is Rp 876,840,000.

Recommendations for Pulp Commodity Downstream Development Strategies

The pulp commodity has a large market opportunity both in the domestic and international markets. Due to the low consumption of paper per capita in the country, the paper market opportunity in the domestic market remains large. The prospect of increasing demand for packaging paper, cardboard, and tissue are due to the increasing trend of online shopping through e-commerce and the growing trend of healthy lifestyles. Indonesia has a comparative advantage, especially in the supply of raw materials. Indonesia has a tropical climate and takes less time to supply raw materials compared to subtropical countries such as the United States and Europe. The potential for raw materials for the pulp and paper industry is quite high, including industrial forest plantations/HTI (wood) and other alternative cellulose raw materials such as bamboo, kenaf, coconut fiber, and oil palm empty fruit bunches.

The pulp and paper industry is old and relatively small, requiring immediate structural reforms to improve efficiency and competitiveness, including better addressing environmental issues. Promote the national pulp and paper industry sustainably and sustainably to increase competitiveness by applying the principles of clean production and eco-efficiency. To increase the competitiveness of the Indonesian pulp, paper, and paper product industry, several things can be done, namely:

1. Strive to achieve economies of scale in production and distribution.
2. Determine the appropriate market segment.
3. Increase the value of the product (increase in value).
4. Maintain economic stability.

V. CONCLUSION

Based on the results and discussion, the conclusions obtained in this paper are as Production from upstream to downstream of pulp commodities can be divided into several industries, including the forestry and logging sector, the textile and apparel industry sector, and the paper and paper goods industry, printing and reproduction of recording media. The sector that has the most potential and has an impact on economic growth from downstream of pulp commodities is the sector paper and paper goods industry, printing and reproduction of recording media. Strategies that can be done to develop the industry paper and paper goods, printing, and reproduction of recording media by achieving economies of scale in production, determining appropriate market segments, increasing product value (increasing value), and maintaining economic stability.

References

[BPS] Central Bureau of Statistics. 2019. Analysis of Export Commodities 2012-2018, Agriculture, Industry, and Mining Sector. Jakarta (ID): Central Bureau of Statistics of the Republic of Indonesia.

Betari R. 2020. Analysis of Competitiveness and Factors Affecting Demand for Indonesian Pulp and Paper Exports in the Chinese Market [Thesis] Bogor (ID): Bogor Agricultural University.

Bodansky, BEC 2014. The rise and the fall of the Canadian pulp and paper sector. The Forestry Chronicle, 90(6), 785-793.

Chris, Naima., Saafi, S., & Chakrounm, M. (2020). Export Upgrading and Economic Growth: a Panel Cointegration and Causality Analysis. Journal of the Knowledge Economy.

Hummels D, Ishii J, Yi K. 2001. The nature and growth of vertical specialization in world trade. Journal of International Economics. 54:75–96. https://doi.org/10.1016/S0022-1996(00)00093-3.

Johnson R, Noguera G. 2012. Accounting for intermediates: production sharing and trade in value-added. Journal of International Economics. 86(2): 224–236. https://doi.org/10.1016/j.jinteco.2011.10.003.

Ministry of Trade] Ministry of Trade. 2019. Export News March 2019 edition. Director General of National Export Development.

Koopman R, Powers W, Wang Z, Wei SJ. 2010. Give credit to where credit is due: tracing value added in global production chains. NBER Working Paper 16426.

Mardiana. 2012. The impact of the pulp and paper industry on the local financial government in Riau Province (Case on PT. RAPP). Journal of Economics and Business View. 3(2).

Meng B. 2011. Trade Pattern and Global Value Chain in East Asia: From Trade in Goods to Trade in Tasks. World Trade Organizations-IDE JETRO.

Situmorang, S. 2005. Analysis of supply and demand for Indonesian pulp and paper in domestic and international markets. Thesis. Bogor Agricultural Institute.

Timmer MP, Erumban AA, Los B, Stehrer R, Gaaitzen J. De Vries. 2014a. Scaling up global value chains. Journal of Economics Perspectives. 28(2): 99– 118. https://doi.org/10.1257/jep.28.2.99.

United Nations Commodity Trade. 2013. UN Comtrade Statistics Database 2014.www.comtrade.un.org. [Accessed June 7, 2022].

Widyantoro, B., Siregar, H., Sanim, B., & Priyarsono, DS 2006. Economics of the Indonesian pulp and paper industry: a simulation analysis of international policies and pressures. Journal of Management and Agribusiness, 3(2), 103-111.

Wulandari F. 2007. Structure and performance of the pulp and paper industry in Indonesia: before and after the crisis. Journal of Development Economics 8(2): 209–222.