


**STRUCTURAL CHANGES AND GROWTH OF THE INDONESIAN FISHERY, 1975-2010:  
AN INPUT-OUTPUT PERSPECTIVE**

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ARTICLE INFO	ABSTRACT
<p><b>Article history:</b></p> <p><b>Received</b> 13 January 2023</p> <p><b>Accepted</b> 08 March 2023</p> <p><b>Keywords:</b></p> <p>Structural Changes And Growth; Fishery Industry; Input-Output Perspective; Indonesia.</p> <div data-bbox="172 1064 480 1310" style="text-align: center;">  </div>	<p><b>Purpose:</b> This paper aims to examine the growth and structural changes of fishery industry in the Indonesian economy.</p> <p><b>Theoretical framework:</b> The growth of the fishery industry output and the exchange rate of Indonesian fishermen has increase, indicating that there has been a structural change in this industry.</p> <p><b>Design/methodology/approach:</b> Structural growth and change are analyzed from the perspective of inputs and outputs of the fishery industry, which include: (1) growth and structural changes of the fishery industry from the demand side; (2) growth and changes in the structure of domestic and imported inputs used by the fishery sector; and (3) fishery industry interlinkage.</p> <p><b>Findings:</b> By employing Input-Output analysis on 8 table series along 1975-2010 of Indonesian economy, this study shows that Indonesian fishery industry is growing year by year, with improved domestic sectoral support and decrease import dependence, as well as analysis of structural changes related to economic growth in very different circumstances of the 1970s and 2000s.</p> <p><b>Research, Practical &amp; Social implications:</b> The research provides valuable insights into the structural changes and growth of the Indonesian fishery sector over a period of 35 years. This analysis can inform future research on the fishery sector in Indonesia and other similar contexts. The research findings can inform government policies and decision-making related to the fishery sector in Indonesia. The growth of the fishery sector can have a positive impact on the employment and income of people working in the sector, and in the communities dependent on the sector.</p> <p><b>Originality/value:</b> This study finds that some technology coefficients (direct input coefficient) of fisheries sectors have declining trends, implying that direct backward linkage of fisheries on these industries becomes weakening. These fisheries supporting input among others are: trade, fishery, manufacture of transport equipment and its repair, road transportation.</p> <p>Doi: <a href="https://doi.org/10.26668/businessreview/2023.v8i3.1147">https://doi.org/10.26668/businessreview/2023.v8i3.1147</a></p>

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## MUDANÇAS ESTRUTURAIS E CRESCIMENTO DA PESCA INDONÉSIA, 1975-2010: UMA PERSPECTIVA DE ENTRADA-SAÍDA

### RESUMO

**Objetivo:** Este documento tem como objetivo examinar o crescimento e as mudanças estruturais da indústria pesqueira na economia indonésia.

**Estrutura teórica:** O crescimento da produção da indústria pesqueira e a taxa de câmbio dos pescadores indonésios tem aumentado, indicando que houve uma mudança estrutural neste setor.

**Desenho/método/abordagem:** O crescimento e a mudança estrutural são analisados a partir da perspectiva de entradas e saídas da indústria pesqueira, que incluem: (1) crescimento e mudanças estruturais da indústria pesqueira do lado da demanda; (2) crescimento e mudanças na estrutura dos insumos domésticos e importados utilizados pelo setor pesqueiro; e (3) interligação da indústria pesqueira.

**Conclusões:** Ao empregar a análise Input-Output em 8 séries de tabelas ao longo de 1975-2010 da economia indonésia, este estudo mostra que a indústria pesqueira indonésia está crescendo ano a ano, com melhor suporte setorial doméstico e diminuição da dependência de importação, bem como análise das mudanças estruturais relacionadas ao crescimento econômico em circunstâncias muito diferentes dos anos 70 e 2000.

**Pesquisa, implicações práticas e sociais:** A pesquisa fornece valiosos insights sobre as mudanças estruturais e o crescimento do setor pesqueiro indonésio ao longo de um período de 35 anos. Esta análise pode informar pesquisas futuras sobre o setor pesqueiro na Indonésia e outros contextos similares. Os resultados da pesquisa podem informar as políticas governamentais e a tomada de decisões relacionadas com o setor pesqueiro na Indonésia. O crescimento do setor pesqueiro pode ter um impacto positivo no emprego e na renda das pessoas que trabalham no setor, e nas comunidades dependentes do setor.

**Originalidade/valor:** Este estudo conclui que alguns coeficientes tecnológicos (coeficiente de entrada direta) dos setores pesqueiros têm tendências decrescentes, o que implica que a ligação direta para trás da pesca nesses setores se torna cada vez mais fraca. Estes insumos da pesca, entre outros, são: comércio, pesca, fabricação de equipamentos de transporte e seu reparo, transporte rodoviário.

**Palavras-chave:** Mudanças Estruturais e Crescimento; Indústria Pesqueira; Perspectiva Input-Output; Indonésia.

## CAMBIO ESTRUCTURALES Y CRECIMIENTO DE LA PESCA INDONESIA, 1975-2010: UNA PERSPECTIVA DE INSUMO-PRODUCTO

### RESUMEN

**Propósito:** Este trabajo pretende examinar el crecimiento y los cambios estructurales de la industria pesquera en la economía indonesia.

**Marco teórico:** El crecimiento de la producción de la industria pesquera y el tipo de cambio de los pescadores indonesios ha aumentado, lo que indica que se ha producido un cambio estructural en esta industria.

**Diseño/metodología/enfoque:** El crecimiento y el cambio estructural se analizan desde la perspectiva de las entradas y salidas de la industria pesquera, que incluyen: (1) crecimiento y cambios estructurales de la industria pesquera desde el punto de vista de la demanda; (2) crecimiento y cambios en la estructura de los insumos nacionales e importados utilizados por el sector pesquero; y (3) interrelación de la industria pesquera.

**Resultados:** Mediante el empleo del análisis Input-Output en 8 series de tablas a lo largo de 1975-2010 de la economía indonesia, este estudio muestra que la industria pesquera indonesia está creciendo año tras año, con una mejora del apoyo sectorial nacional y una disminución de la dependencia de las importaciones, así como el análisis de los cambios estructurales relacionados con el crecimiento económico en circunstancias muy diferentes de las décadas de 1970 y 2000.

**Investigación, implicaciones prácticas y sociales:** La investigación aporta valiosos datos sobre los cambios estructurales y el crecimiento del sector pesquero indonesio a lo largo de un periodo de 35 años. Este análisis puede servir de base para futuras investigaciones sobre el sector pesquero en Indonesia y otros contextos similares. Los resultados de la investigación pueden servir de base para las políticas gubernamentales y la toma de decisiones relacionadas con el sector pesquero en Indonesia. El crecimiento del sector pesquero puede repercutir positivamente en el empleo y los ingresos de las personas que trabajan en él y en las comunidades que dependen del sector.

**Originalidad/valor:** Este estudio constata que algunos coeficientes tecnológicos (coeficiente de insumos directos) de los sectores pesqueros presentan tendencias decrecientes, lo que implica que el vínculo directo hacia atrás de la pesca con estas industrias se debilita. Estos insumos de apoyo de la pesca son, entre otros: el comercio, la pesca, la fabricación de material de transporte y su reparación, y el transporte por carretera.

**Palabras clave:** Cambios Estructurales y Crecimiento; Industria Pesquera; Perspectiva Input-Output; Indonesia.

## **INTRODUCTION**

Indonesia is the largest archipelago country, consisting of 17000 or so islands with an intricate coastline whose length has been estimated as just over 100,000 kilometers. The potential of Indonesia society to drap his life by utilizing geographical condition of belonging through fishery is very huge. The Indonesian fishery sector experienced significant structural changes and growth from 1975 to 2010, as analyzed from an input-output perspective. This growth can be attributed to a variety of factors, including government policies promoting aquaculture development, increased investment in fishing vessels and technology, and rising demand for fish as a source of protein in the domestic market.

One example of this growth can be seen in the expansion of aquaculture production, which went from accounting for less than 1% of total fish production in 1975 to over 30% in 2010. This shift towards aquaculture was driven by government policies and investment in infrastructure and technology, as well as rising demand for fish in the domestic market. Additionally, there was an increase in the use of modern fishing technology, such as trawlers and refrigerated storage facilities, which led to a significant increase in the volume of fish caught and sold. This increase in fishing efficiency also led to the growth of the fish processing and marketing industry, creating further employment and economic opportunities in the sector.

Overall, the structural changes and growth in the Indonesian fishery sector from 1975 to 2010 can be attributed to a combination of government policies, investments in technology, and rising demand for fish in the domestic market. This input-output perspective highlights how these factors interacted and contributed to the development of the fishery sector.

This study aims to analyze the structural change and growth of the Indonesian fishery sector from 1975 to 2010 using an input-output perspective, with the aim of identifying the factors that contributed to the growth of the fisheries sector, and filling gaps in understanding of how structural change and growth fisheries sector occurred in Indonesia for the last 35 years.

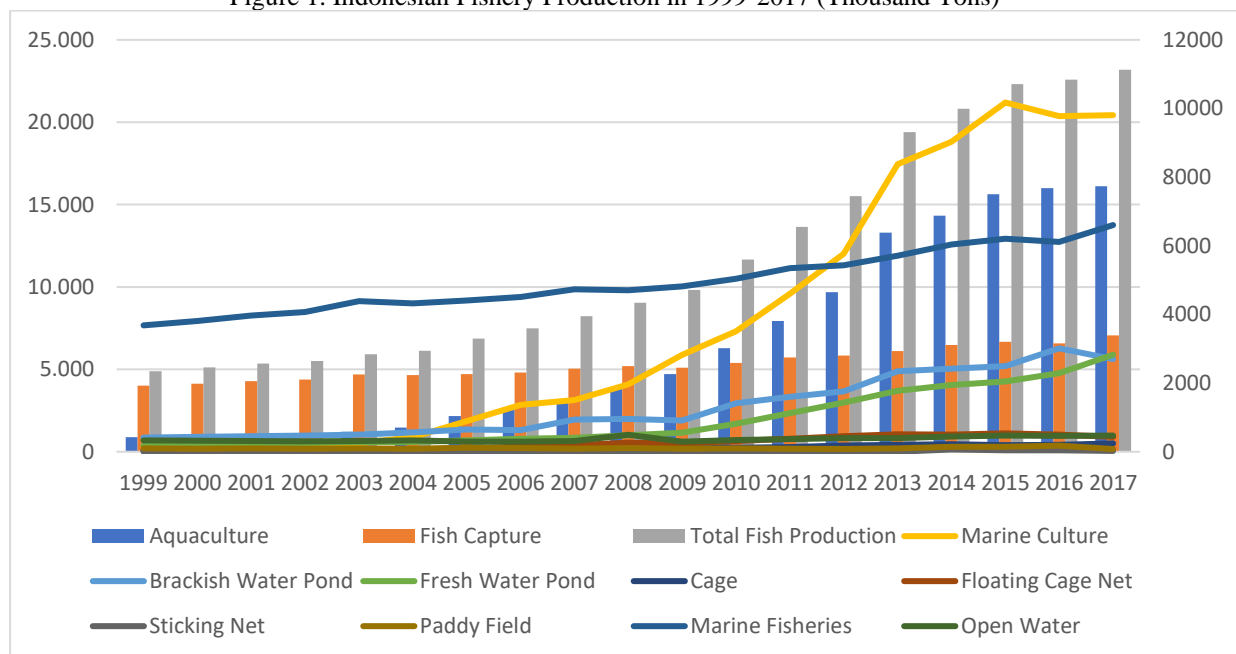
## **LITERATURE REVIEW**

Fish resources in Indonesian seas cover 37% of the world's fish species (KKP, 2019). Fishery commodities in the Indonesian oceans have high economic value, such as tuna, shrimp, lobster, fish, ornamental fish, shellfish, and seaweed. In addition, Indonesia's oceans also contain abundant potential for non-biological resources, the potential for renewable energy from the sea, such as deep sea water, is still a challenge to be developed and utilized in the future. The fisheries sector is also sourced from aquaculture. Nationally, the potential of aquaculture land is estimated at 17.92 million ha, consisting of 2.83 million ha of freshwater

aquaculture, 2.96 million ha of brackish water cultivation and 12.12 million ha of marine aquaculture. The utilization so far is only 11.32 percent for freshwater aquaculture, 22.74 percent for brackish water cultivation and 2.28 percent for marine aquaculture (KKP, 2019). The utilization rate, especially for marine aquaculture, can still be increased, so that the utilization of aquaculture production can continue to be increased. Increased production of aquaculture can encourage increased market absorption both for exports and for domestic consumption.

Fisheries production can be divided into two major groups, namely aquaculture and fish capture. Aquaculture consists of marine culture, brackish water pond, cage floating cage net, sticking net, and paddy field while the other one, namely fish capture, consists of marine fisheries and open water. The production of fisheries in Indonesia in 1999-2017 can be seen in Figure 1 below.

Figure 1. Indonesian Fishery Production in 1999-2017 (Thousand Tons)

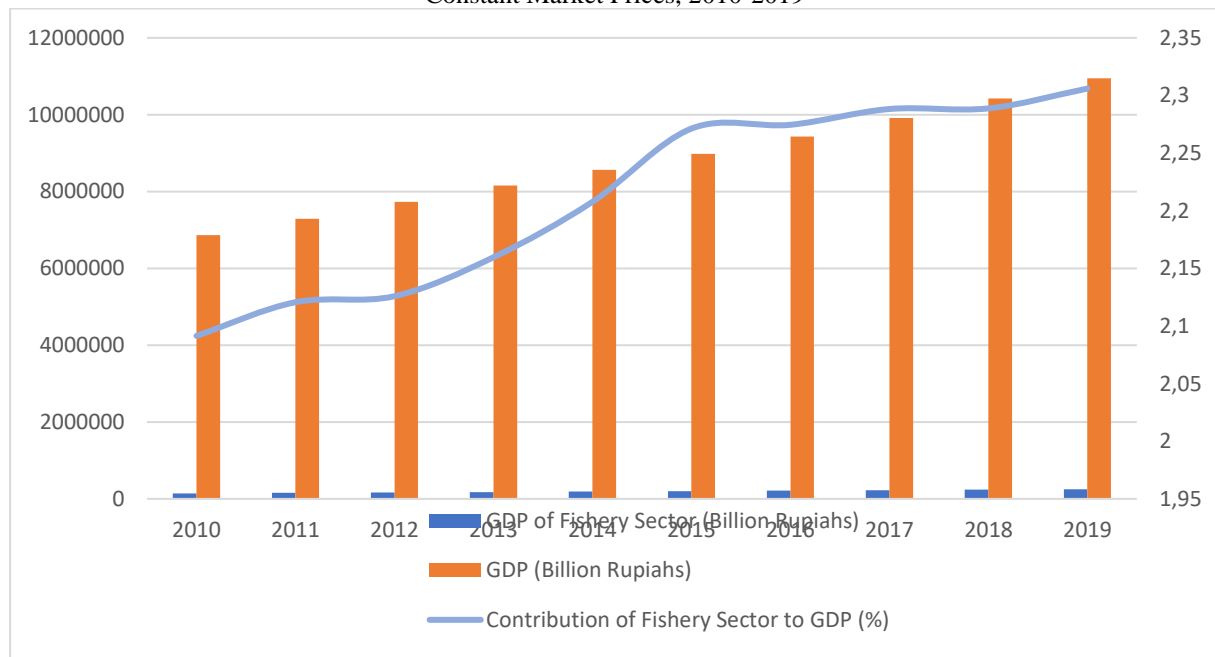


Source: (Indonesia Central Bureau of Statistics, 2020)

Based on Figure 1, the development of aquaculture production in Indonesia has a positive trend that is increasing every year. This positive trend was not followed by the production of fish capture which tend to be volatile at year 2004 decline into 4651 thousand tons which was originally in 2003 obtained its production amounted to 4692 thousand tons. A similar case also happened in 2009, its production decline occurred earlier in 2008 amounted to 5196 thousand tons be 5108 thousand tons in 2009. Although the development of the fish capture in Indonesia had time to decline again in 2016, the overall graph shows an improvement

though not too significant. In total, Indonesian fishery production in 1999-2017 is increasing every year. The increasing of Indonesian fishery production can contribute to the sustainability of the gross domestic product (GDP) certainly. The contribution of fishery sector to GDP can be seen in Figure 2.

Figure 2. the Indonesian GDP of Fishery Sector, Total GDP, and Contribution of Fishery Sector to GDP at Constant Market Prices, 2010-2019



Source: (Indonesia Central Bureau of Statistics, 2020)

Figure 2 showing how the contribution of fishery sector to GDP is increasing every year relatively. The role of fishery industry is more significant in Indonesian economy, indicated by the growth of the fishery industry output. The contribution of fishery sector to GDP has improved significantly occurred in the period 2012-2015 due to the eradication of Illegal, Unreported, and Unregulated (IUU) Fishing such as the moratorium on the permits of ex-foreign vessel to the prohibition of transshipment or loading and unloading of fish in the middle of the sea. The increasing of the contribution of the fishery sector to GDP is inseparable from the existence of structural changes that occurred in particular in the period 2013-2018.

Structural changes in the Indonesian economy, where there was a shift in the role of agriculture to the manufacturing industry in the early 1990s, also occurred in more focused industries such as the fishing industry. To see the growth of the Indonesian fishing industry from year to year as well as an analysis of the structural change related to economic growth in 1975-2010, this study took the title "Structural Changes and the Growth of the Indonesian Fishery, 1975-2010: An Input-Output Perspective".

The GDP development of the Indonesian fishery sector can be seen in Figure 2. Based on BPS data, the Value of Fishery GDP at Constant Prices (ADHK) continues to increase, from Rp. 204.016 billion in 2015 to Rp. 252.484 billion in 2019. The growth rate of the fishery sector in 2019 reached 5.81 percent, an increase from 2018's growth of 5.19 percent. The performance of the fisheries sector is also shown by the contribution of the fishery sector to the agricultural sector as a whole of 18.63 percent and its contribution to GDP in 2019 of 2.30 percent. The contribution of the fisheries sector in 2019 increased from the previous period.

This improvement in the economic performance of the fishery sector cannot be separated from the government's efforts for four years, namely 2015-2019. The Ministry of Maritime Affairs and Fisheries has carried out various programs and activities to achieve the strategic goal of realizing sovereignty in the management of Marine and Fishery Resources, namely through increasing the compliance of marine and fisheries business actors and building marine and fishery business centers in small and outer islands. Based on this phenomenon, it shows that the role of government policies in the fisheries sector can increase the overall output of the fisheries sector and can encourage the movement of other economic sectors. In addition, it can also encourage changes in the structure of the linkage of the fisheries sector in Indonesia. It is important to identify changes in the structure of the fisheries sector linkage, especially in supporting the determination of government policies in the fisheries sector more precisely.

Economic growth as measured by GDP growth is suspected to be the cause of structural transformation in the Indonesian economy over a certain period of time (Arwani et al., 2022). In Indonesia, changes in the structure of GDP are the result of industrialization in Indonesia (Hayashi, 2006; Kuncoro, 1996). A study conducted by Hayashi (2006) shows the results that in the period 1995 to 2000, the manufacturing industry expanded its share of production, strengthened export orientation, and reduced import dependence. The study also shows that the decline in investment is a barrier to industrialization and is an important issue to get the government's attention, especially foreign direct investment. The important role of the manufacturing industry in the economy is also stated in the regional growth theory proposed by Kaldor (1967); Dasgupta & Singh (2007). The manufacturing sector is an engine of growth for a country or region. Kaldor (1967) also reveals the reason why the value-added growth of the manufacturing sector affects the growth of sectors other than manufacturing, this is because manufacturing has forward and backward linkages that affect the growth of other sectors. This theory encourages many countries to industrialize in order to obtain rapid economic growth (Lorentz et al., 2019).

Structural changes are influenced by several factors that differ between regions. Structural changes can be caused, among others, by the impact of a policy, changes in resources, population and permanent social conditions (Anh, 2022). The structural transformation process that occurs in Indonesia is the result of the implementation of planned long-term development policies (Firmansyah, et al, 2019). The government in a region requires policy engineering to maximize the positive impact of economic transformation. An important implication of this structural transformation is the development of the neoclassical growth model, namely that the growth of the agricultural sector is an important key to the growth process. This means that the success of structural transformation is largely determined by the strong linkages between the agricultural sector and the industrial sector (Kuncoro, 1996; Gollin et al., 2002). Structural changes that occur in the agricultural sector, including the sub-sector in it, namely the fisheries sector. Research conducted by Tajerin (2017) shows that there is a gap in domestic transactions and total transactions in the analysis of the Indonesian fishery sector using Table IO 1990, 1995 and 2000. There are two implications of the study, firstly that structural changes in the fisheries sector are still highly dependent on imported inputs from abroad. The second implication is the need to consider the implementation of the policy of import strategy in the fisheries sector. Other studies related to structural changes in the fisheries sector in several countries were conducted by Ancy and Raju (2014), Knútsson et al., (2008), Pihlajamäki et al., (2018), Zhao and Shen (2016).

Studies conducted by Ancy and Raju (2014) shows the Kerala fisheries sector can contribute to the security of nutrition, productive employment, and foreign exchange income of a country. The intensive approach needed to create the relationship of Government and private cooperation in building a quality and efficient infrastructure to increase exports from the fishing industry. The role of the private sector in boosting investment in the fishing industry is crucial. The transformation of the pattern of consumption and production of the fishing industry can have an impact on long-term economic growth and the reduction of inequalities among different groups of fisheries (Ancy & Raju, 2014).

A pilot study conducted by Knútsson et al., (2008) mapping the structural changes in fishery Iceland since 1990 up to mid-2008. Structural changes through the establishment of fish market can also have a major impact on the availability of fish. The fish market can also deliver better profits for fishermen due to the formation of market prices which can provide higher prices for fishermen. Fish market also supports an increase in the flexibility of the fishing industry because it can operate by making the manufacturer was able to determine in order to buy the species they need for production and selling species that they don't use. Iceland's fishing

industry more profitable and competitive but large marketing organizations did not find its position in the value chain (Knútsson et al., 2008).

Pihlajamäki et al., (2018) and analyzing food safety and security fisheries governance in the Baltic herring fish. Structural changes in the fishing industry are believed to be able to increase supply. Experts are trying to change the feed that can produce fish Baltic herring which are suitable for human consumption. The fishing industry's willingness to invest in product development and structural changes can also be reduced due to the narrowing of monetary gap between the fish sold for industrial use versus food, and fewer restrictions on production of feed (Pihlajamäki et al., 2018).

FAO (2002) shows that a positive impact caused by the structural changes (such as a fixed foreign exchange rate and price stability), creating the conditions that encourage growth in the sector of fishery. The growth of the fishery coupled with the opening of trade to Argentina fishery products in overseas markets and dwindling resources in the sea under the jurisdiction of the developed countries. This led to an increase in exports and production of fisheries, fisheries fleet and the addition of growth, and technological innovation (FAO, 2002).

Zhao and Shen (2016) show China's fishery economy and industrial dimension is not like the old days again. The development model used in the factors of production and access to the environment causes a bottleneck to the unsustainability of fisheries development. Transformation and upgrading is the approach that is sure to occur to achieve sustainable fisheries development. In order to effectively change the situation and exploration of the model of development of new fisheries, then the change of approach, promotion and structure adjustment of transformation is the way to achieve sustainable fisheries development and well in China. Sathiadhas (2009) shows considerable growth occurred in mechanized fishing units of 70% and a growth of approximately 200% on the motorized sector. The improvement of socio-economic status is reflected in the increase in the number of fishermen of literacy, decreasing the dropout numbers, and an increase in the type of housing. The fishermen involved in active fishing more than the absorption capacity of the fisheries sector which leads to veiled and unemployment led to the production of a lower per capita, increased pressure on arrest the fish that produces the catch of juvenile, and ultimately causes a serious threat on the sustainability of resources and environmental stability. Kumar et al., (2008) shows that the efficiency of marketing have been found in the case of more marine species than fresh water. Infrastructure facilities in most landing centers surveyed, the fishing port and the retail and wholesale markets are very inadequate and not properly terawatt. Modern retail outlets should be promoted in a big way through government-private partnerships in every major city so that

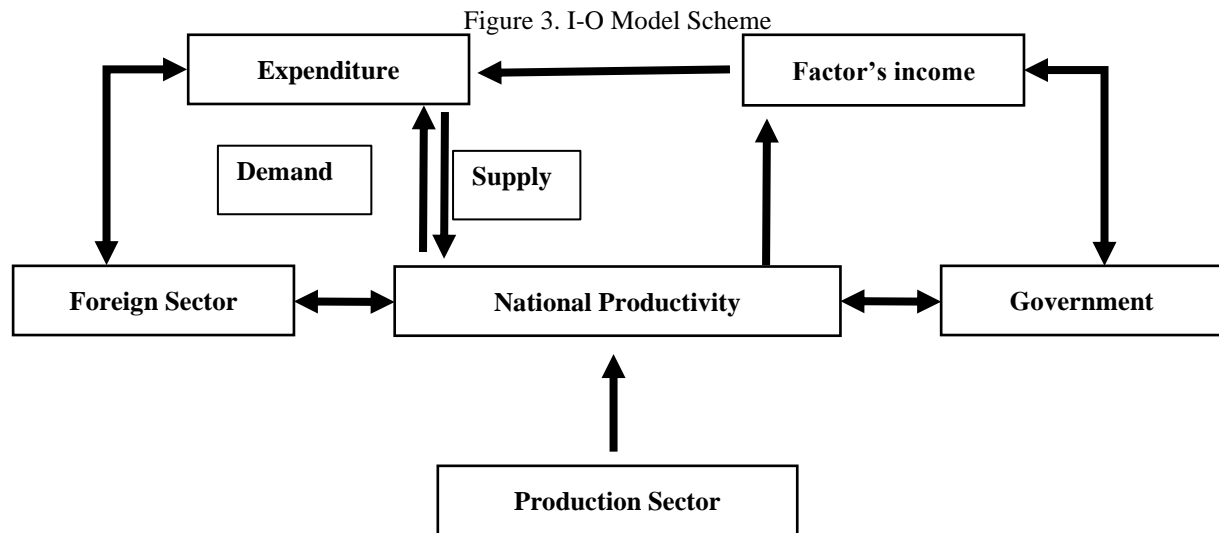


fish consumption is becoming an easier proposition in the future. Although there are several organizations and policies related to the promotion of the marketing of fish, there is a need to formulate a uniform market policy for fisheries so as to facilitate the operation and regulation. This not only will handle the fish production of the country but also will have an impact to the consumer, ensuring at the same time a profitable price for fisherman.

## **MATERIAL AND METHODOLOGY**

This study aims to examine the growth and structural changes of fishery industry in the Indonesian economy. Structural growth and change are analyzed from the perspective of inputs and outputs of the fishery industry, which include: (1) growth and structural changes of the fishery industry from the demand side; (2) growth and changes in the structure of domestic and imported inputs used by the fishery sector; and (3) fishery industry interlinkage. In this paper, the baseline data used in this study is the Input-Output Table (I-O) of Indonesia, along 1975-2010. These tables are published by *Badan Pusat Statistik* (BPS) Indonesia every five years, which includes 1975, 1980, 1985, 1990, 1995, 2000, and 2005. The type of data used in input-output table is the total transaction based on producer prices, with coverage of 64 industries.

The I-O analysis is a general equilibrium analysis, which is based on goods and services transaction matrices. The analysis that has been done is demand side approach, because of the demand factor is exogenous factor affecting the economy. The magnitude of the change in economy is determined by the changes in the final demand components, as household consumption, government spending and exports. I-O analysis can also be performed by supply side approach. In this analysis the primary inputs into factors exogenous growth means the economy either sectoral or in total are affected by changes in the primary input. The inter-block linkage scheme of the Input-Output model is summarized in the Figure 3.



Source: Prepared by the authors (2022)

Input coefficient is a coefficient that can show the direct effect between sectors by vertical summing the coefficients. The main tool used in analyzing the structural changes is the technology coefficient in the fisheries sector is  $A_{ij} = X_{ij}/X_j$ ,  $A_{ij}$ . Where  $A_{ij}$  is the technology coefficient,  $X_{ij}$  is the transaction value between sectors  $j$  to sectors  $i$ , and  $X_j$  is the total input of sector  $j$ .

## RESULTS AND DISCUSSION

Based on the classification of 64 sectors for 1975, 1980, 1985, 1990, 1995, 2000, 2005, and 2010, we calculate the coefficient of technology of fisheries sectors in the Table 1 below (the 20 largest input of fisheries sectors):

Table 1. The Coefficient Technology of Fisheries Sectors

No	Sector Code	Sector Name	1975	1980	1985	1990	1995	2000	2005	2010
1	32	Manufacture of other food product	0.006	0.007	0.019	0.019	0.031	0.071	0.045	0.039
2	53	Trade	0.060	0.032	0.041	0.041	0.014	0.040	0.034	0.019
3	23	Fishery	0.159	0.080	0.063	0.063	0.020	0.023	0.033	0.038
4	41	Petroleum refinery	0.013	0.015	0.043	0.043	0.042	0.032	0.032	0.035
5	49	Manufacture of transport equipment and its repair	0.020	0.023	0.017	0.017	0.019	0.019	0.005	0.004
6	55	Railway transport	0.000	0.000	0.000	0.000	0.000	0.000	0.005	0.000
7	56	Road transportation	0.011	0.006	0.008	0.008	0.005	0.001	0.004	0.001
8	60	Communication	0.000	0.000	0.000	0.000	0.000	0.000	0.003	0.000

9	40	Manufacture of chemical	0.004	0.001	0.001	0.001	0.000	0.000	0.003	0.002
10	52	Construction	0.003	0.002	0.003	0.003	0.003	0.002	0.003	0.003
11	48	Manufacture of machine, electrical machinery and apparatus	0.000	0.000	0.001	0.001	0.001	0.000	0.002	0.001
12	42	Manufacture of rubber and plastic wares	0.000	0.004	0.002	0.002	0.003	0.001	0.002	0.002
13	17	Other agriculture	-	-	-	-	0.021	0.026	0.002	0.000
14	61	Financial intermediaries	0.007	0.011	0.014	0.014	0.011	0.010	0.002	0.005
15	51	Electricity, gas and water supply	0.000	0.001	0.001	0.001	0.002	0.001	0.001	0.001
16	3	Maize	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.001
17	58	Air transport	0.000	0.000	0.000	0.000	0.000	0.000	0.001	0.000
18	27	Manufacture of food processing and preserving	-	-	-	-	-	-	0.001	0.000
19	29	Rice milling	0.001	0.001	0.001	0.001	0.001	0.000	0.001	0.000
20	39	Manufacture of fertilizer and pesticide	0.001	0.001	0.002	0.002	0.002	0.000	0.001	0.001

Source: Prepared by the authors (2022)

This study finds that some technology coefficients (direct input coefficient) of fisheries sectors have declining trends, implying that direct backward linkage of fisheries on these industries becomes weakening. These fisheries supporting input among others are: trade, fishery, manufacture of transport equipment and its repair, road transportation.

Several other sectors have increasing trends, implying that direct backward linkage of fisheries on these industries becomes strengthening. These sectors are: manufacture of other food product, petroleum refinery.

## CONCLUSION

Based on the estimation results, the declining in trade-related inputs is the shorter of distribution chain from the fishermen to the market. This also supported by the decline of transportation equipment value, and the value of road transportation (It is also indicating that there are more ports and fish auction place that can be accessed by the fishermen.

The increased of fisheries activities were identified from the increase in the input value of the fisheries sector in the manufacture of other food products and petroleum refineries.

The research was limited to a 35-year period, and therefore may not fully capture the complexity of the structural changes and growth of the fishery sector in Indonesia. The research was based on data from official sources, which may not fully reflect the realities of the fishery

sector in Indonesia. The research relied on input-output analysis, which may not fully capture the dynamic relationships between the different elements of the fishery sector.

Future research could extend the analysis to cover a longer time period and include more recent data. Future research could also consider incorporating other data sources, such as surveys and interviews with fishers and other stakeholders, to provide a more comprehensive understanding of the structural changes and growth of the fishery sector in Indonesia. Future research could also explore other analytical approaches, such as econometric models, to better capture the dynamic relationships between the different elements of the fishery sector.

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