

FINANCIAL SERVICES AND INSURANCE: INTERREGIONAL LINKAGES AND REGIONAL ECONOMIC IMPACT ACROSS SIX INDONESIAN ISLANDS

Tamira Pontia Kirana¹, Eka Agustiani², Muhammad Dzul Fadlli³

¹⁻³) Mataram University / Economic Development Department, Mataram

E-mail: ¹⁾ tamirapontiakirana@gmail.com

Submitted: 05 Aug 2026	Revised: 11 Sept 2026	Accepted: 01 Oct 2026
---------------------------	--------------------------	--------------------------

Abstract

This study examines the contribution of the Financial Services and Insurance Sector to regional economic development across six major island groups in Indonesia using an Inter-Regional Input-Output (IRIO) framework. The 2016 IRIO table from Statistics Indonesia (BPS), covering 17 sectors across six island groups, was analyzed using Forward and Backward Linkage indices derived from the Leontief inverse matrix. Results show that Java accounts for approximately 75% of national financial sector output, while most input-output flows remain within originating islands. Despite this concentration, the sector demonstrates strong linkages across all regions, with Forward Linkage indices exceeding 1.91 and Backward Linkage indices exceeding 1.12. The Electricity and Gas Supply Sector consistently emerges as the primary downstream beneficiary of financial sector activity. These findings indicate that the Financial Services and Insurance Sector occupies a strategically important position in Indonesia's economic structure, but its contribution to balanced regional development remains constrained by spatial concentration and limited interregional integration, as reflected in the relatively low inter-island export share of 6.41%. The findings highlight the importance of strengthening equitable access to financial services, promoting interregional financial integration, and directing financial intermediation toward productive sectors and infrastructure-related activities to support more balanced regional development across Indonesia.

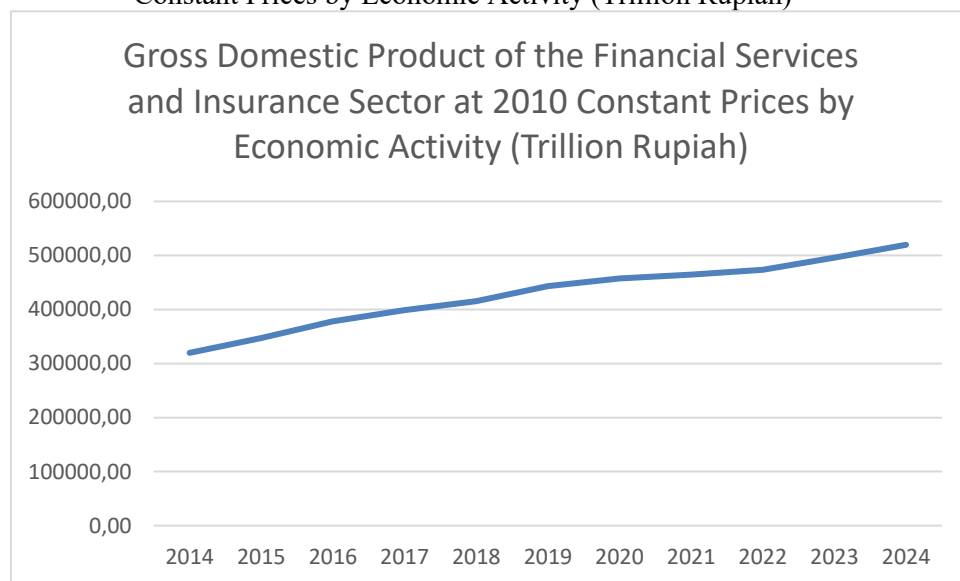
Keywords: *Financial sector, inter-regional input-output, forward linkage, backward linkage, regional development, Indonesia.*

1. INTRODUCTION

The financial services and insurance sector plays an important role in supporting economic development by mobilizing savings, allocating financial resources, facilitating investment, and providing financial services to households and businesses. A well-functioning financial sector can improve the efficiency of resource allocation and support productive economic activities. This role is consistent with the supply-leading hypothesis proposed by Patrick (1966), which argues that financial development can precede and stimulate economic growth by providing financial services to emerging sectors. Levine (2005) and Beck et al. (2000) further emphasize that financial development contributes to economic growth through improved resource allocation, investment, and productivity.

In Indonesia, the importance of the financial sector has increased alongside structural transformation and technological development. The expansion of banking services, financial technology, Islamic finance, capital markets, insurance, and other financial institutions has broadened the role of financial intermediation in the economy. According to Bank Indonesia (2022), the financial system consists of several major components, including conventional and Islamic banking, insurance, pension funds, financing institutions, capital markets, and financial technology. The Financial Services and Insurance Sector also recorded sustained growth over the past decade, as illustrated in figure:

Figure 1. Gross Domestic Product of the Financial Services and Insurance Sector at 2010 Constant Prices by Economic Activity (Trillion Rupiah)



Source: BPS Indonesia 2014-2024, (*Proceed Data*, 2026)

As shown in Figure 1, the output of the Financial Services and Insurance Sector at constant 2010 prices increased from IDR 319.83 trillion in 2014 to IDR 519.74 trillion in 2024, representing an increase of approximately 62.5%. The sector also maintained relatively stable performance during the COVID-19 pandemic, indicating its continued importance within the national economy. However, aggregate national growth does not necessarily imply an equal contribution across regions.

Indonesia has substantial geographical and economic disparities among its major island groups, with economic activity remaining highly concentrated in Java. The 2016 Inter-Regional Input-Output (IRIO) data used in this study show that Java accounts for approximately 74.93% of the national output of the Financial Services and Insurance Sector, while Sumatra contributes 11.50%, Sulawesi 4.98%, Kalimantan 4.23%, Bali-Nusa Tenggara 3.11%, and Maluku-Papua only 1.24%. This concentration raises an important question concerning whether the economic benefits generated by the financial sector are effectively transmitted across regions or remain largely concentrated within the regions where financial activity originates.

Understanding these regional transmission mechanisms requires an analytical framework that captures both inter-sectoral and interregional relationships. The input-output

model developed by Leontief (1936) provides a framework for examining the interdependence of economic sectors through the flow of inputs and outputs. The Leontief inverse matrix can be used to identify the direct and indirect effects generated by changes in final demand. Miller & Blair (2022) explain that input-output analysis can be extended to examine production linkages and multiplier effects across sectors. At the regional level, the Inter-Regional Input-Output (IRIO) framework developed from the interregional input-output approach of Isard (1951) enables the analysis of economic interactions between sectors and regions, including interregional trade, spillover effects, and feedback mechanisms.

Within this framework, forward and backward linkages provide important indicators of the strategic position of a sector in the production system. Forward linkage measures the extent to which the output of a sector is used as an input by other sectors, while backward linkage measures the extent to which a sector depends on inputs from other sectors. A linkage index greater than one indicates a relatively strong linkage compared with the average linkage of the economy. Therefore, examining both indicators can reveal whether the Financial Services and Insurance Sector primarily functions as a supplier of services to other sectors or as a significant demander of intermediate inputs.

Previous empirical studies have demonstrated the importance of the financial sector for economic growth. Sutrisno & Nuryadin (2024), using a Bayesian Vector Autoregression (BVAR) approach, found that the financial sector contributes to economic growth with a lag of approximately two quarters. Indrakusuma (2020), using an Error Correction Model (ECM), also found a positive long-run relationship between financial sector variables and economic growth. These studies provide evidence of the macroeconomic importance of financial development, but their econometric approaches primarily examine relationships over time rather than the inter-sectoral and interregional transmission of economic effects.

Meanwhile, previous input-output studies have generally focused on sectors such as agriculture, mining, and manufacturing. Dimas Gadang (2010) examined sectoral linkages and found stronger forward linkages in agriculture, while Syaputra et al. (2023) identified mining as a sector with strong backward linkages. Other studies have applied input-output and regional approaches to investigate sectoral linkages, regional impacts, and economic structures, including Suryani (2013), Freytag & Fricke (2017), Norbu et al. (2021), Sargento et al. (2024), and Torój (2024). Nevertheless, relatively limited research has specifically examined the Financial Services and Insurance Sector using an IRIO framework to identify its inter-sectoral and interregional linkages across Indonesia's major island groups.

This gap is important because the financial sector does not generate economic effects only through its own output. Its services can support production, investment, trade, and other economic activities in multiple sectors. If financial services are highly concentrated geographically and their transactions remain predominantly within the originating region, their potential contribution to balanced regional development may be constrained. Conversely, stronger interregional linkages could allow financial resources and services generated in economically advanced regions to support productive activities in less-developed regions.

Therefore, this study examines the role of the Financial Services and Insurance Sector in regional economic development across six major island groups of Indonesia using the

2016 Inter-Regional Input-Output (IRIO) framework published by Statistics Indonesia (BPS). Specifically, the study analyzes the distribution of inputs and outputs, as well as the forward and backward linkages of the Financial Services and Insurance Sector across the six island groups. By combining sectoral and regional perspectives, this study seeks to provide a more comprehensive understanding of the position of the financial sector within Indonesia's interregional economic structure and its potential contribution to more balanced regional development.

2. RESEARCH METHOD

This study employs a descriptive quantitative approach, which presents data in numerical form. The data are analyzed and described to reveal the relationships among variables (Arindi et al., 2025). This approach is applied to describe the input-output distribution structure and to analyze the forward and backward linkages of the Financial Services and Insurance Sector across six island groups in Indonesia.

The study utilizes secondary data in the form of Indonesia's Interregional Input-Output table for domestic transactions at producer prices (ADHP), disaggregated by six island groups and 17 economic sectors for the year 2016 (in million rupiah), published by Statistics Indonesia (BPS).

The 2016 Inter-Regional Input-Output (IRIO) table is used as the baseline dataset because it provides a consistent representation of interregional and intersectoral transactions across six major island groups and 17 economic sectors. For the official Inter-Regional Input-Output table disaggregated into six major island groups, the 2016 IRIO table is the most recent version officially published by Statistics Indonesia (BPS). Therefore, the use of the 2016 IRIO table is methodologically appropriate for examining the structural linkages and distribution patterns of the Financial Services and Insurance Sector during the reference period. However, the findings should be interpreted within the temporal scope of the dataset. As the IRIO table represents the economic structure of 2016, the results do not necessarily reflect the current structure of Indonesia's economy, particularly given subsequent changes in financial services, infrastructure development, regional economic structures, and interregional connectivity. Therefore, this study is intended to identify structural patterns and interregional linkages based on the 2016 baseline rather than to provide a direct representation of current economic conditions. Future research may extend the analysis using more recent interregional input-output data when available.

The analytical method employed in this study is Interregional Input-Output (IRIO) analysis. Input-output analysis describes the relationships among sectors. This system is constructed based on certain assumptions regarding economic behavior, which serve to simplify the framework for assessing the flow of inputs and outputs across economic activities within a given region (Amaliya Nur Rahmah, 2024). According to Heriawan, this method enables the identification of the mechanism through which sectoral output flows to other sectors, as well as the mechanism through which a given sector receives the inputs it requires from other sectors (Syaputra et al., 2023).

The analysis was processed using Microsoft Excel and encompasses an examination of the input structure, output structure, forward linkages, and backward linkages. Forward and backward linkages serve as analytical instruments used to identify the extent to which a

given sector is interconnected with other sectors within the economy.

To examine both forward and backward linkages, an analysis of the output distribution structure is employed by summing across all sectors (n sectors), in which sector i distributes output x_i within a given period. This distribution is disaggregated into intermediate demand (z_i) and final demand (f_i) (Arindi et al., 2025), which can be formulated as follows:

$$DO_{ij} = \frac{x_{ij}}{X_i} \times 100\%$$

The larger the value of the output distribution, the greater the proportion of sector i 's output utilized by sector j .

Meanwhile, the input distribution structure shows the sources of inputs used by a sector in its production process.

$$DI_{ij} = \frac{x_{ij}}{X_j} \times 100\%$$

Thus, the larger the value of the input distribution, the greater the dependence of sector j on inputs from sector i .

The backward linkages of a sector can be expressed by the following formula:

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

Definitions:

BL_j = backward linkages of sector j

B_{ij} = element of the Leontief inverse matrix $(I-A)^{-1}$

n = number of sectors

Interpretation:

$BL > 1$ = the sector has high backward linkages, meaning it relies heavily on inputs from other sectors.

Forward linkages are calculated as the inverse of backward linkages using the formula:

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

Definitions:

FL_j = forward link value of sector i

B_{ij} = element of the Leontief inverse matrix $(I-A)^{-1}$

n = number of sectors

Interpretation:

$FL > 1$ = the sector has high forward linkages, or the sector's output is widely used as input by other sectors.

3. RESULTS AND DISCUSSION

The structure of input-output flows, forward linkages, and backward linkages generated by the financial sector on the six Indonesian islands listed in the table below:

3.1. Output distribution structure

Table 1. Output distribution of the Financial and Insurance Services sector (2016 IRIO, % of national total)

Islands	Intermediary Demand		Final Demand		Total	%
	Within the region	Inter-island exports	Domestic exports	Exports to other countries		
Sumatra	46,557,580.58	7,883,614.50	27,190,125.00	229,942.22	81,861,262.30	11.50%
Jawa	318,888,270.90	25,545,190.06	183,538,527.57	5,236,808.14	533,208,796.67	74.93%
Bali dan Nusa Tenggara	11,974,034.35	2,137,793.82	7,971,157.69	80,099.40	22,163,085.25	3.11%
Kalimantan	15,238,269.57	5,417,600.94	9,331,366.97	92,737.56	30,079,975.03	4.23%
Sulawesi	20,152,896.08	3,472,720.47	11,737,899.61	61,736.91	35,425,253.07	4.98%
Maluku dan Papua	3,367,046.98	1,179,695.39	4,272,636.51	18,081.96	8,837,460.84	1.24%
Total	416,178,098.45	45,636,615.19	244,041,713.35	5,719,406.18	711,575,833.17	100%
	58.49%	6.41%	34.30%	0.80%	100.00%	

Source: Authors' calculations based on BPS IRIO 2016 (Processed Data, 2026)

Table 1 reveals a pronounced geographic concentration: Java accounts for approximately 75% of the Financial and Insurance Services sector's national output. Combined with Sumatra 11.5%, the two islands account for 86.5% of Western Indonesia's contribution. Expanding this to include Kalimantan 3.11%, Western Indonesia collectively captures approximately 89.6% of national output, leaving Eastern Indonesia with only 10.4%. This polarization reflects deep structural inequalities in financial infrastructure and access.

A further 64.9% of total sector output is utilized as intermediate demand, of which 58.49% remains within the originating island, confirming highly localized financial circulation. Inter-island exports constitute only 6.41% of total output, confirming limited cross-regional financial market integration. This inward orientation of financial flows constrains the sector's potential to serve as a catalyst for balanced national development.

3.2. Input distribution structure

Table 2 summarizes the key characteristics of the sector's input structure.

Table 2. Key characteristics of the input structure of the Financial and Insurance Services sector (2016 IRIO)

Input Component	Share / Value	Import Value	Export Value	Notes
Primary Inputs (wages, GOS, net taxes)	73.43%	—	—	Labor & capital intensive

Intermediate Inputs	–	Own	58.49%	–	–	Intra-island oriented
Island						
Inter-Island Imports			6.41%	–	–	Limited cross-region flow
Foreign Imports			–	Rp 22,578.2T	Rp 5,719.4T	High import dependency
Java's share of national input			74.93%	–	–	Dominant input source

Source: Authors' calculations based on BPS IRIO 2016 (Proceed Data, 2026)

The input structure is dominated by primary inputs (wages, gross operating surplus, and net production taxes) at 73.43%, characterizing the sector as both labor and capital intensive with a high value-added profile. The sector exhibits a significant international trade deficit: service exports amount to IDR 5,719.4 trillion against imports of IDR 22,578.2 trillion (a ratio of approximately 1:4), indicating substantial dependence on foreign financial services and considerable scope for improving export competitiveness. Java dominates as the primary input source at 74.93%, consistent with the geographic concentration documented in the output analysis.

3.3. Forward and backward linkages: Western Indonesia

Table 3 presents the forward linkage (FL) and backward linkage (BL) indices for Sumatra, Java, and Kalimantan.

Tabel 3. Forward-Backward Pulau Sumatera, Jawa, Kalimantan (2016 IRIO)

Sectors	Sumatra		Jawa		Kalimantan	
	FL	BL	FL	BL	FL	BL
Agriculture, Forestry, and Fisheries	2.08	1.6	1.95	1.33	2.23	1.5
Mining and Quarrying	2.53	1.67	2.64	1.23	1.82	3.18
Processing Industry	1.66	4.71	1.69	7.59	1.89	3.09
Electricity and Gas Procurement	2.92	2.55	3.17	3.83	3.04	2.13
Water Supply, Waste Management, Wastewater, and Recycling	1.67	1.04	1.36	1.06	1.46	1.06
Construction	1.12	3	1.12	3.49	1.24	1.9
Wholesale and Retail Trade; Auto and Motorcycle Repair	1.73	2.37	1.79	2.37	1.73	1.83

Transportation and Warehousing	1.86	1.91	1.79	2.16	1.98	1.86
Provision of Accommodations and Meals	1.3	1.33	1.22	1.9	1.42	1.25
Information and Communication	1.86	1.41	1.95	1.7	2.16	1.36
Financial Services and Insurance	2.17	1.17	2.13	1.44	2.28	1.17
Real Estate	1.5	1.19	1.43	1.37	1.37	1.12
Business Services	2.48	1.19	2.31	1.6	2.61	1.18
Public Administration, Defense, and Mandatory Social Security	1.15	1.48	1.17	1.56	1.11	1.52
Education Services	1.04	1.31	1.08	1.39	1.04	1.2
Health Care and Social Services	1.11	1.21	1.19	1.29	1.11	1.12
Other Services	1.33	1.26	1.32	1.46	1.41	1.19

Source: Authors' calculations based on BPS IRIO 2016 data. FL = Forward Linkage index; BL = Backward Linkage index. Bold = Financial and Insurance Services sector (Proceed Data, 2026)

In Sumatra, the Financial and Insurance Services sector records a forward linkage index of 2.17, indicating that increases in final demand generate downstream spillover effects more than twice the direct impact. Key downstream beneficiaries include Electricity and Gas Supply (FL = 2.92), Mining and Quarrying (FL = 2.53), and Business Services (FL = 2.48). The backward linkage index is 1.17; however, the sector is significantly supported by the Manufacturing Industry (BL = 4.71) and Construction (BL = 3.00), reflecting high operational dependency on physical and technological infrastructure.

In Java, the Financial and Insurance Services sector records FL = 2.13. The most pronounced downstream beneficiary is Electricity and Gas Supply (FL = 3.17), consistent with the energy and technology demands of modern banking and insurance. BL = 1.44, yet Manufacturing Industry (BL = 7.59), Electricity and Gas Supply (BL = 3.83), and Construction (BL = 3.49) receive substantial upstream stimuli, indicating that financial sector expansion in Java strongly activates manufacturing and infrastructure chains.

In Kalimantan, FL = 2.28—the highest among the three western islands—with Electricity and Gas Supply as the primary downstream beneficiary (FL = 3.04). BL = 1.17, with Mining and Quarrying (BL = 3.18), Manufacturing Industry (BL = 3.09), and Electricity and Gas Supply (BL = 2.13) constituting the principal upstream sectors. Given that mining, manufacturing, and energy form Kalimantan's economic base, the financial sector functions as a critical catalyst for strengthening the regional economic structure.

3.4. Forward and backward linkages: Eastern Indonesia

Table 4 presents the forward linkage (FL) and backward linkage (BL) indices for Bali-Nusa Tenggara, Sulawesi, and Maluku-Papua.

Tabel 4. Forward-Backward linkage indices: Bali-Nusa Tenggara, Sulawesi, and Maluku-Papua
(2016 IRIO)

Sectors	Bali-Nusra		Sulawesi		Maluku & Papua	
	FL	BL	FL	BL	FL	BL
Agriculture, Forestry, and Fisheries	1.76	1.35	1.84	1.37	1.67	1.33
Mining and Quarrying	1.36	1.33	2.36	1.37	2.16	1.6
Processing Industry	1.45	1.76	1.58	2.77	1.68	1.85
Electricity and Gas Procurement	3.18	2.4	2.87	2.13	2.99	2.15
Water Supply, Waste Management, Wastewater, and Recycling	1.41	1.04	1.53	1.04	1.54	1.03
Construction	1.1	2.08	1.07	2.63	1.08	1.75
Wholesale and Retail Trade; Auto and Motorcycle Repair	1.64	1.7	1.69	1.84	1.66	1.64
Transportation and Warehousing	1.59	2.02	1.74	2.05	1.78	2.06
Provision of Accommodations and Meals	1.29	2.03	1.36	1.27	1.56	1.17
Information and Communication	1.93	1.46	1.98	1.39	2.2	1.35
Financial Services and Insurance	2.05	1.18	2.11	1.21	1.91	1.12
Real Estate	1.47	1.23	1.38	1.12	1.3	1.1
Business Services	2.27	1.17	2.44	1.13	2.31	1.08
Public Administration, Defense, and Mandatory Social Security	1.05	1.44	1.07	1.62	1.08	2.39
Education Services	1.05	1.29	1.04	1.33	1.03	1.3

Health Care and Social Services	1.08	1.17	1.13	1.18	1.05	1.18
Other Services	1.31	1.32	1.56	1.22	1.29	1.2

Source: Authors' calculations based on BPS IRIO 2016 data. FL = Forward Linkage index; BL = Backward Linkage index. **Bold** = Financial and Insurance Services sector (Proceed Data, 2026)

In Bali–Nusa Tenggara, FL = 2.05, with Electricity and Gas Supply as the primary beneficiary (FL = 3.18). BL = 1.18, reflecting the relatively underdeveloped upstream capacity of the region. In Sulawesi, FL = 2.11, again channeling the largest downstream benefits to Electricity and Gas Supply (FL = 2.87). In terms of backward linkages, Manufacturing Industry (BL = 2.77), Construction (BL = 2.63), and Electricity and Gas Supply (BL = 2.13) are the primary upstream sectors.

In Maluku and Papua, FL = 1.91 and BL = 1.12. Despite accounting for only approximately 1.2% of national output, the sector maintains positive linkage effects. Electricity and Gas Supply is again the primary downstream beneficiary (FL = 2.99), while Government Administration, Defense, and Compulsory Social Security (BL = 2.39) and Electricity and Gas Supply (BL = 2.15) are the primary upstream sectors. This pattern reflects the heavy dependence of Eastern Indonesia's financial activities on government-driven investment and the critical need for basic infrastructure in the region.

4. CONCLUSION

Key Findings

This study examines the role of the Financial Services and Insurance Sector in regional economic development across six major island groups in Indonesia using the 2016 Inter-Regional Input-Output (IRIO) framework. The findings show that the sector has strong intersectoral linkages across all regions, with Forward Linkage indices ranging from 1.91 to 2.28 and Backward Linkage indices ranging from 1.12 to 1.44. The consistently higher Forward Linkage values indicate that the sector primarily functions as a supplier of financial services to other economic activities rather than as a major user of intermediate inputs. This finding is consistent with the supply-leading hypothesis proposed by Patrick (1966) and the financial development–growth nexus discussed by Levine (2005) and Beck et al. (2000).

Despite its strong linkage effects, the contribution of the Financial Services and Insurance Sector remains spatially concentrated. Java accounts for approximately 74.93% of the sector's national output, while the contribution of the eastern regions remains considerably smaller. Furthermore, 58.49% of intermediate transactions remain within the originating island, whereas only 6.41% are distributed through inter-island exports. These patterns indicate that strong sectoral linkages do not automatically translate into broad interregional spillovers. The Electricity and Gas Supply Sector consistently emerges as the primary downstream beneficiary of financial sector activity across all six island groups, highlighting the potential importance of financial intermediation in supporting infrastructure-related economic activities.

Policy Recommendation

1. Strengthening equitable access to financial services across regions

The financial services sector's output is concentrated in Java at 74.93%, while Maluku and Papua account for only 1.24%, indicating a spatial disparity in financial activity. This situation highlights the need for financial inclusion policies that are more specifically targeted at regions with relatively low access to and activity in the financial sector, particularly in Eastern

Indonesia. Findings by Erlando et al. (2020), show that financial inclusion is linked to economic growth and poverty reduction in Eastern Indonesia, while Razak et al. (2020) found that banking development contributes to regional economic growth, particularly in relatively underdeveloped provinces.

2. Directing financial intermediation toward sectors with high economic linkages.

The high level of forward and backward linkages in the financial services sector indicates that this sector plays a strategic role in supporting the activities of other sectors. Therefore, the allocation of financing needs to be more directed toward sectors with strong linkages, such as manufacturing, construction, mining, and electricity and gas, so that financial intermediation can generate a broader economic impact. This policy direction is consistent with Levine (2005), who shows that a developed financial system can reduce firms' external financing constraints and support economic growth.

3. Promoting interregional financial integration.

The fact that the financial services sector's output is predominantly absorbed within its region of origin indicates that interregional economic flows can still be strengthened. Therefore, policies need to promote financial intermediation and connectivity that enable the mobilization of funds from regions with higher financial capacity to regions with greater productive financing needs. This approach is important to ensure that the development of the financial sector does not further reinforce economic concentration but instead serves as a link between regional growth center. Theoretically, strengthening the functions of financial intermediation and financial markets can expand access to financing and support productive economic activities Levine (2005).

4.3. Limitations of the Study

This study has several limitations that should be considered when interpreting the findings. First, the analysis is based on the 2016 Inter-Regional Input-Output (IRIO) table, which is the most recent officially published IRIO dataset from Statistics Indonesia (BPS) that is disaggregated into six major island groups. Although the dataset provides a consistent baseline for examining interregional and intersectoral linkages, it represents the economic structure of 2016 and therefore may not fully capture subsequent structural changes in Indonesia's economy, including developments in financial technology, infrastructure, regional economic structures, and interregional connectivity. Second, the IRIO framework is primarily designed to identify intersectoral and interregional linkages and does not directly establish causal relationships between financial sector activity and regional economic development. Therefore, the linkage results should be interpreted as evidence of structural relationships rather than direct causal effects on economic growth or development. Third, the aggregation of economic activities into six major island groups and 17 sectors may limit the ability of the analysis to capture differences across individual provinces and more detailed economic subsectors. Future research may address these limitations by utilizing more recent IRIO data when available, incorporating provincial-level analysis, and combining input-output analysis with complementary econometric approaches to examine the relationship between financial sector development and regional economic outcomes.

REFERENCES

- Amaliya Nur Rahmah, S. W. (2024). Peranan Sektor Industri Pengolahan Dalam Perekonomian di Indonesia dengan Pendekatan Input Output Tahun 2010-2016. *Anggaran : Jurnal Publikasi Ekonomi Dan Akuntansi*, 2(3), 214–222. <https://doi.org/10.61132/anggaran.v2i3.762>
- Arindi, S. R., Wijimulawiani, B. S., & Fadlli, M. D. (2025). Peran Infrastruktur Konstruksi Terhadap Ekonomi NTB Dengan Pendekatan Input - Output. *Jurnal Ekuilnomi*, 7(1), 85–93. <https://doi.org/10.36985/qz05cd05>
- Beck, T., Levine, R., & Loayza, N. (2000). Finance and the sources of growth. *Journal of Financial Economics*, 58(1–2), 261–300. [https://doi.org/10.1016/s0304-405x\(00\)00072-6](https://doi.org/10.1016/s0304-405x(00)00072-6)
- Dimas Gadang. (2010). Analisis Peranan Sektor Pertanian Terhadap Perekonomian Jawa Tengah (Pendekatan Analisis Input-Output). *Fakultas Ekonomi Universitas Diponegoro*, 1–75.
- Erlando, A., Riyanto, F. D., & Masakazu, S. (2020). Financial inclusion, economic growth, and poverty alleviation: evidence from eastern Indonesia. *Heliyon*, 6(10). <https://doi.org/10.1016/j.heliyon.2020.e05235>
- Freytag, A., & Fricke, S. (2017). Sectoral linkages of financial services as channels of economic development—An input–output analysis of the Nigerian and Kenyan economies. *Review of Development Finance*, 7(1), 36–44. <https://doi.org/10.1016/j.rdf.2017.01.004>
- Indrakusuma, D. A. (2020). Analisis Pengaruh Perkembangan Indikator Sektor Keuangan Terhadap Pertumbuhan Ekonomi Indonesia Selama Tahun 1980-2019. *Jurnal Dinamika Ekonomi Pembangunan*, 3(2), 105–116. <https://doi.org/10.14710/jdep.3.2.105-116>
- Isard, W. (1951). Interregional and Regional Input-Output Analysis: A Model of a Space-

- Economy. *The Review of Economics and Statistics*, 33(4), 318.
<https://doi.org/10.2307/1926459>
- Leontief, W. W. (1936). Quantitative Input and Output Relations in the Economic Systems of the United States. *The Review of Economics and Statistics*, 18(3), 105.
<https://doi.org/10.2307/1927837>
- Levine, R. (2005). Finance Growth Theory Evidence. *Nber Working Paper Series*, September, 1–118. <http://www.nber.org/papers/w10766>
- Miller, R. E., & Blair, P. D. (2022). Input-Output Analysis: Foundations and Extensions, Third Edition. *Input-Output Analysis: Foundations and Extensions, Third Edition*, 1–812. <https://doi.org/10.1017/9781108676212>
- Norbu, N. P., Tateno, Y., & Bolesta, A. (2021). Structural transformation and production linkages in Asia-Pacific least developed countries: An input-output analysis. *Structural Change and Economic Dynamics*, 59, 510–524.
<https://doi.org/10.1016/j.strueco.2021.09.009>
- Patrick, H. T. (1966). Financial Development and Economic Growth in Underdeveloped Countries. *Economic Development and Cultural Change*, 14(2), 174–189.
<https://doi.org/10.1086/450153>
- Razak, A. R., Soedarmono, W., & Yudhi, W. S. A. (2020). Banking, labor force, and regional economic growth: Evidence from Indonesia. *Jurnal Keuangan Dan Perbankan*, 24(2). <https://doi.org/10.26905/jkdp.v24i2.3533>
- Sargento, A. L. M., Lahr, M. L., Ferreira, J. P., & de la Torre Cuevas, F. (2024). Revisiting methods for estimating interregional input-output accounts: It's not just about trade flows. *Structural Change and Economic Dynamics*, 69, 664–677.
<https://doi.org/10.1016/j.strueco.2024.04.004>
- Suryani, T. (2013). Analisis Peran Sektor Ekonomi Terhadap Pertumbuhan Ekonomi

Kabupaten Pemalang (analisis tabel input output kabupaten pemalang tahun 2010). *Economics Development Analysis Journal*, 2(1), 2–9.
<http://journal.unnes.ac.id/sju/index.php/edaj>

Sutrisno, H., & Nuryadin, M. R. (2024). Pemodelan Pengaruh Sektor Keuangan Terhadap Pertumbuhan Ekonomi Di Indonesia. *Ecoplan*, 7(1), 92–107.
<https://doi.org/10.20527/ecoplan.v7i1.708>

Syaputra, R., Santoso, A. B., Retongga, N., Alfianta, L., Mu'awanah, F. R., & Heriyadi, Nu. W. A. A. T. (2023). Universitas Muhammadiyah Yogyakarta) Ellyawan Setyo A. Universitas Gadjah Mada Yogyakarta) Dr. Ir. Amir Hamzah, MT. (Institut Sains & Teknologi AKPRIND Yogyakarta) Dr. Ir. Iswanjono, 16(1), 37–47.
<https://doi.org/https://doi.org/10.34151/jurtek.v16i1.4320>

Torój, A. (2024). Estimating high-resolution interregional input–output tables: a Bayesian spatial approach. *Economic Systems Research*, 36(3), 353–377.
<https://doi.org/10.1080/09535314.2024.2358357>