Intersectoral Linkages and Spillover Effects in South Sumatra's Economy: Evidence from the 2016 Interregional Input–Output Table and 2024 Input–Output Table

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Abstract. This study examines South Sumatra's economic structure using interregional input–output analysis to identify key sectors and quantify spillover effects. A dual-dataset approach employs the 2016 IRIO table for interprovincial trade dynamics and the 2024 IO table for current sectoral analysis. Results indicate a domestically oriented economy, with 88.45% of supply met by internal production. Manufacturing and construction emerge as central hubs with strong intersectoral linkages, supported by agriculture and mining as upstream suppliers. Interregional trade is concentrated with nearby Sumatran provinces and Java's industrial centers. Spillover effects benefit Jambi, Bengkulu, and Banten, while feedback effects show dependency on Java. Output multipliers highlight electricity and gas as key growth drivers, whereas agriculture and real estate contribute most to local income. These patterns reveal a structural divergence between growth and inclusivity. To address this, the study recommends a dual-track strategy: scale up manufacturing and energy to drive aggregate output, while modernizing agriculture and high-value services to support income distribution. Strengthening interprovincial corridors and deepening local supply chains can further enhance resilience and expand the province's role in national development.
Keyword: Interregional Input–Output, Intersectoral Linkages, Multipliers, South Sumatra, Spillover Effects;

1. Introduction

1.1. Background: South Sumatra's Economic Paradox, Development Context and Research Gap

South Sumatra is a key player in Indonesia's economy—third largest in Sumatra [1] and among the top ten nationally —and is one of the country's top producers in both mining and agriculture [2]. On the mining side, its status as a leading coal-producing province is underpinned by large resource endowments, including 28.7% of national coal reserves, 12.8% of crude oil reserves, and 12.9% of natural gas reserves, which collectively position the province as a national energy hub [3]. On the agricultural side, South Sumatra ranks first nationally in coffee and rubber production and is among the top five in palm oil [4]. A substantial rice surplus further cements its role as a national food barn [5].

Macroeconomically, in 2024 South Sumatra contributed 13.63% to Sumatra's GDP and grew by 5.03%, a pace that matched the national average. Its production structure was concentrated in primary–secondary activities—mining (24.6%), manufacturing (18.3%), and agriculture (13.6%) [6].

On the expenditure side, growth was driven mainly by household consumption (61.8%) and investment (31.0%), indicating continued reliance on domestic demand as the principal engine of expansion [6].However, this impressive resource wealth presents a paradox. Despite its strong production base, the province faces structural vulnerabilities. Export growth in 2024 was nearly stagnant at 0.15%, while imports surged by 46.9% [6], signaling a rising dependence on external supply chains. This juxtaposition of resource abundance against limited value-added and growing external reliance raises critical questions about the resilience and inclusivity of its development model, forming the central inquiry of this paper.

Realizing South Sumatra's full potential is not merely a regional priority but a national imperative. Indonesia's long-term vision to escape the middle-income trap [7] hinges on robust regional contributions, and resource-rich provinces like South Sumatra are expected to be primary growth engines. To achieve this, understanding its economic interconnectedness is crucial. The province's commodities flow to industrial centers, primarily in Java, while manufactured goods move in the opposite direction, creating a complex web of interdependencies [8].

Despite its strategic role, South Sumatra faces three interrelated challenges that define the research problem. First, its economic integration is fragmented, with trade heavily oriented towards Java, limiting the development of intra-Sumatran value chains [8]. Second, local value-added remains low, as commodities are often exported in raw or semi-processed forms [9]. Third, this structure creates a dependency on external demand and global price volatility [10].

Although previous studies have applied Input–Output (I-O) analysis to Indonesian provinces, South Sumatra remains relatively under-researched compared to Java or Lampung [11]. Moreover, most studies focus on aggregate growth rather than interregional linkages [12], leaving a gap in understanding how South Sumatra's economy both influences and depends upon other provinces. Addressing this gap is critical for designing policies that maximize multiplier effects, strengthen interprovincial trade corridors, and reduce structural vulnerabilities.

1.2. Research Objectives and Contribution

To address the identified gaps, this study employs a dual-dataset approach, utilizing the 2016 Interregional Input-Output (IRIO) table and the updated 2024 Input-Output (IO) table. The primary objective is to comprehensively map South Sumatra's economic structure, identify its key sectors, and quantify its interregional dependencies. Specifically, this research seeks to answer the following questions:

1. What characterizes the economic structure of South Sumatra, and which sectors function as key drivers with the strongest backward and forward linkages?
2. Which provinces are South Sumatra's most significant trade partners, and what is the magnitude of the resulting spillover and feedback effects?
3. How large are the output and value-added multipliers across sectors, and how can this potential be leveraged to promote inclusive and resilient regional development?

By answering these questions, this paper offers three main contributions. Theoretically, it demonstrates the application of a comprehensive IRIO analysis in a subnational context that is strategically important but under-researched. Methodologically, it combines linkage, multiplier, and spillover decomposition to provide a multi-dimensional view of regional economic structure. For policymakers, it delivers actionable evidence on leverage points for growth, key interprovincial partners, and strategic priorities for strengthening regional economic resilience.

1.3. Literature Review: Intersectoral–Interregional Linkages, Multipliers, and Spillover Dynamics

The Input–Output (IO) framework maps how industries are connected through production and use. Its core tool, the Leontief inverse, traces direct and indirect effects of final-demand shocks on total output [13]. This turns technical relations into measurable multipliers and linkage indicators. Yet standard IO is aspatial and treats the economy as one unit.

The Interregional IO (IRIO) model adds geography. It embeds intra- and interregional flows in a block matrix that shows how shocks propagate across space [14]. IRIO links technology with trade and decomposes impacts into intra-regional, spillover, and feedback effects [13], [14]. This helps reveal whether gains are retained locally or leak to partner regions.

Key indicators guide diagnosis. Backward linkages measure how a sector pulls inputs from its suppliers. Forward linkages show how it pushes outputs to users. Dispersion indices highlight sectors with above-average propagation—often the "key sectors." Multipliers complement linkages by quantifying total effects on output and on value-added, the latter being central for local income and welfare [13]. In an interregional setting, both metrics can be decomposed to show what stays inside the province and what diffuses outward.

Spillovers travel mainly through trade in intermediates. Growth in one region raises activity in others along supply chains. IRIO captures these spatial interdependencies transparently and supports analysis of core–periphery patterns and corridor development [13]. Applications in large economies, such as China, explicitly separate intra-regional, spillover, and feedback components, showing how impulses circulate between provinces [14]. Environmental extensions link these propagation channels to resource and emission accounts, widening the policy lens [15].

In developing economies, IRIO work usually follows two tracks: building consistent tables and applying them for policy. Once validated, the models rank sectors, compute multipliers, and trace the geography of spillovers. Indonesian studies often note the tension between resource-based specialization and downstreaming for higher local value capture [16]. Multiregional systems elsewhere, such as Mexico, show how IRIO identifies which territories gain—or lose—from interregional investment shocks [17]. These precedents confirm IRIO's utility for subnational strategy.

Taken together, the literature establishes three points. First, IRIO is a robust tool for measuring intersectoral and spatial propagation. Second, linkage and multiplier analysis helps identify sectors with the greatest systemic influence. Third, spillover–feedback decomposition clarifies how benefits spread and return across regions. Yet province-level IRIO assessments for Indonesia remain scarce, limiting granularity for policy. Few studies jointly examine IDP/IDK, output and value-added multipliers, and spillover/feedback in one design. The present study addresses this gap by applying the 2016 IRIO for spatial diagnostics and an IO table updated to 2024 for sectoral assessment, delivering an integrated view of South Sumatra's intersectoral structure and interprovincial linkages.

1.4. Empirical Precedents in Developing Economies

IRIO applications in developing economies like Indonesia typically follow two paths: constructing the tables themselves and using them for policy analysis [14]. Once a validated IRIO exists, it becomes a powerful tool for ranking sectors, computing multipliers, and tracing the geography of spillovers.

The literature reveals both the potential and the challenges of this work. At the subnational level in Indonesia, studies often highlight the tension between resource-based specialization and the push for industrial downstreaming to increase local value capture [16]. These studies provide a clear template for the present research: a province-focused analysis using a national IRIO to measure linkages, multipliers, and spillovers.

2. Research Method

2.1. Data and Sources

This study relies on two primary data sources published by BPS-Statistics Indonesia: the 2016 Interregional Input–Output (IRIO) Table and the 2024 Input–Output (IO) Table of South Sumatra. The 2016 IRIO table, constructed with a 17-sector by 34-province matrix, captures the production, consumption, and trade flows both within and between all provinces in Indonesia. It represents the most comprehensive dataset currently available for analyzing intersectoral and interregional dependencies in the Indonesian economy.

The 2024 IO Table for South Sumatra features a 17×17 industry dimension and was constructed by updating the 2016 IO table using the RAS balancing method, benchmarked against the province's 2024 Gross Regional Domestic Product (GRDP) data. The RAS procedure iteratively adjusts the rows and columns of the matrix while maintaining internal consistency, a technique widely applied in input–output research for extending base-year tables when newer official statistics are unavailable [17], [18]. Updating to 2024 is crucial because relying solely on the 2016 structure would not capture the significant structural changes that have occurred over the past decade, including post-pandemic recovery, service-sector expansion, energy transition, and infrastructure-driven industrial growth.

In addition to these core tables, supporting macroeconomic indicators were drawn from official regional accounts, including GRDP, sectoral output, and household expenditure data. These complementary statistics are used to provide contextual interpretation for the findings, but do not alter the underlying structure of the IRIO-based calculations. For this analysis, South Sumatra serves as the focal region, while its linkages to all other provinces are examined through the national IRIO framework.

2.2. Analytical Framework

This study adopts the quantitative IRIO model as its analytical framework due to its capacity to analyse the complex web of economic interdependencies. The model allows for a detailed assessment of how shocks to final demand—such as a decline in exports or an increase in investment—propagate through the economy, affecting output, income, and both inter-sectoral and inter-regional linkages [18].

The basic structure of an IRIO table for a two-region case (Region A and Region B) is shown in Table 1.

Table 1. Basic Structure of the IRIO Table

Sector		Sector				
		Region A			Region B	
		1	2	3	1	2
Region A	1	z_{11}^{AA}	z_{12}^{AA}	z_{13}^{AA}	z_{11}^{AB}	z_{12}^{AB}
	2	z_{21}^{AA}	z_{22}^{AA}	z_{23}^{AA}	z_{21}^{AB}	z_{22}^{AB}
	3	z_{31}^{AA}	z_{32}^{AA}	z_{33}^{AA}	z_{31}^{AB}	z_{32}^{AB}
Region B	1	z_{11}^{BA}	z_{12}^{BA}	z_{13}^{BA}	z_{11}^{BB}	z_{12}^{BB}
	2	z_{21}^{BA}	z_{22}^{BA}	z_{23}^{BA}	z_{21}^{BB}	z_{22}^{BB}

Note: For a two-region case, A and B, with three sectors (1, 2, 3) in region A and two sectors (1, 2) in region B. The notation z_{ij}^{AA} and z_{ij}^{BB} represent intraregional flows, while z_{ij}^{AB} and z_{ij}^{BA} represent interregional flows [18].

Table 1 can be transformed into matrix form as follows:

$$\boldsymbol{Z} = \begin{bmatrix} \boldsymbol{Z^{AA}} & \boldsymbol{Z^{AB}} \\ \boldsymbol{Z^{BA}} & \boldsymbol{Z^{BB}} \end{bmatrix} \tag{1}$$

where $\boldsymbol{Z^{AA}}$ and $\boldsymbol{Z^{BB}}$ represent intraregional transaction flows, while $\boldsymbol{Z^{AB}}$ and $\boldsymbol{Z^{BA}}$ interregional flows. The basic accounting balance states that for each sector, total output ($\boldsymbol{X}$) is equal to the sum of all intermediate demands (sales to other sectors, captured in $\boldsymbol{Z}$) and final demand ($\boldsymbol{Y}$).

For a two-region model with three sectors in Region A and two in Region B, this can be written algebraically as:

Region A:

$$X_1^A = z_{11}^{AA} + z_{12}^{AA} + z_{13}^{AA} + z_{11}^{AB} + z_{12}^{AB} + Y_1^A \tag{2}$$

$$X_2^A = z_{21}^{AA} + z_{22}^{AA} + z_{23}^{AA} + z_{21}^{AB} + z_{22}^{AB} + Y_2^A \tag{3}$$

$$X_3^A = z_{31}^{AA} + z_{32}^{AA} + z_{33}^{AA} + z_{31}^{AB} + z_{32}^{AB} + Y_3^A \tag{4}$$

Region B:

$$X_1^B = z_{11}^{BA} + z_{12}^{BA} + z_{13}^{BA} + z_{11}^{BB} + z_{12}^{BB} + Y_1^B \tag{5}$$

$$X_2^B = z_{21}^{BA} + z_{22}^{BA} + z_{23}^{BA} + z_{21}^{BB} + z_{22}^{BB} + Y_2^B \quad (6)$$

These equations are simplified by deriving technical input coefficients, which represent the input required from one sector to produce one unit of output in another.

$$a_{ij}^{AA} = \frac{z_{ij}^{AA}}{X_j^A} \; ; \; a_{ij}^{BB} = \frac{z_{ij}^{BB}}{X_j^A} \; ; \; a_{ij}^{AB} = \frac{z_{ij}^{AB}}{X_j^B} \; ; \; a_{ij}^{BA} = \frac{z_{ij}^{BA}}{X_j^A} \quad (7)$$

The regional input coefficient is defined as $a_{ij}^{AA} = \frac{z_{ij}^{AA}}{X_j^A}$, and the interregional trade coefficient is defined as $a_{ij}^{BA} = \frac{z_{ij}^{BA}}{X_j^A}$ (input from sector i in Region B to produce output in the sector j in Region A). Substituting these coefficients into equations (2) through (6) yields the following system:
Region A:

$$X_1^A = a_{11}^{AA}X_1^A + a_{12}^{AA}X_2^A + a_{13}^{AA}X_3^A + a_{11}^{AB}X_1^B + a_{12}^{AB}X_2^B + Y_1^A \quad (8)$$

$$X_2^A = a_{21}^{AA}X_1^A + a_{22}^{AA}X_2^A + a_{23}^{AA}X_3^A + a_{21}^{AB}X_1^B + a_{22}^{AB}X_2^B + Y_2^A \quad (9)$$

$$X_3^A = a_{31}^{AA}X_1^A + a_{32}^{AA}X_2^A + a_{33}^{AA}X_3^A + a_{31}^{AB}X_1^B + a_{32}^{AB}X_2^B + Y_3^A \quad (10)$$

Region B:

$$X_1^B = a_{11}^{BA}X_1^A + a_{12}^{BA}X_2^A + a_{13}^{BA}X_3^A + a_{11}^{BB}X_1^B + a_{12}^{BB}X_2^B + Y_1^B \quad (11)$$

$$X_2^B = a_{21}^{BA}X_1^A + a_{22}^{BA}X_2^A + a_{23}^{BA}X_3^A + a_{21}^{BB}X_1^B + a_{22}^{BB}X_2^B + Y_2^B \quad (12)$$

This entire system of linear equations can be represented compactly in matrix form:

$$\begin{bmatrix} a_{11}^{AA} & a_{12}^{AA} & a_{13}^{AA} & a_{11}^{AB} & a_{12}^{AB} \\ a_{21}^{AA} & a_{22}^{AA} & a_{23}^{AA} & a_{21}^{AB} & a_{22}^{AB} \\ a_{31}^{AA} & a_{32}^{AA} & a_{33}^{AA} & a_{31}^{AB} & a_{32}^{AB} \\ a_{11}^{BA} & a_{12}^{BA} & a_{13}^{BA} & a_{11}^{BB} & a_{12}^{BB} \\ a_{21}^{BA} & a_{22}^{BA} & a_{23}^{BA} & a_{21}^{BB} & a_{22}^{BB} \end{bmatrix} \begin{bmatrix} X_1^A \\ X_2^A \\ X_3^A \\ X_1^B \\ X_2^B \end{bmatrix} + \begin{bmatrix} Y_1^A \\ Y_2^A \\ Y_3^A \\ Y_1^B \\ Y_2^B \end{bmatrix} = \begin{bmatrix} X_1^A \\ X_2^A \\ X_3^A \\ X_1^B \\ X_2^B \end{bmatrix} \quad (13)$$

This can be simplified to the general matrix equation:

$$\boldsymbol{AX + Y = X} \quad (14)$$

Rearranging this equation yields the classic Leontief solution:

$$\boldsymbol{X = (I - A)^{-1}Y} \quad (15)$$

where $\boldsymbol{I}$ is the identity matrix, $\boldsymbol{A}$ is the matrix of technical coefficients, $\boldsymbol{X}$ is the vector of total output, $\boldsymbol{Y}$ is the vector of final demand, and $\boldsymbol{(I - A)^{-1}}$ is the Leontief inverse matrix. This inverse matrix is central to the analysis, as it captures both the direct and indirect requirements needed to satisfy a change in final demand, allowing for the calculation of multipliers and linkages [19].

2.3. Analytical Indicators

From the IRIO model, several key indicators are derived to address the research questions.

2.3.1. Linkage Analysis and Key Sectors

Upstream (backward) and downstream (forward) linkage analyses are conducted to identify key sectors and critical points in the South Sumatra economy. Backward linkages indicate sectors that are highly dependent on inputs from other sectors, meaning an increase in their output will strongly pull growth in their suppliers. Forward linkages identify key input-providing sectors, such as agriculture or mining, that act as primary suppliers for the rest of the economy [20]. This analysis helps determine the most vulnerable, resilient, and strategic sectors for downstream development and investment.

These concepts are quantified using dispersion indices. The Power of Dispersion Index (IDP) measures a sector's backward linkage, while the Sensitivity of Dispersion Index (IDK) measures its forward linkage [21]. They are calculated as follows:
Power of Dispersion Index (Backward Linkage):

$$IDP_j = \frac{\frac{1}{n}\sum_{i=1}^{n} l_{ij}}{\frac{1}{n^2}\sum_{i=1}^{n}\sum_{j=1}^{n} l_{ij}} \quad (16)$$

Sensitivity of Dispersion Index (Forward Linkage):

$$IDK_i = \frac{\frac{1}{n}\sum_{j=1}^{n} l_{ij}}{\frac{1}{n^2}\sum_{i=1}^{n}\sum_{j=1}^{n} l_{ij}} \quad (17)$$

where l_{ij} is the element in row i and column j of the Leontief inverse matrix. For this specific analysis, the linkage indices are calculated using the 2024 South Sumatra IO table to provide the most current assessment of the province's internal economic structure. Sectors are then classified into four quadrants based on their index values, following Amir & Nazara (2005) as cited in [12].

Table 1. Key Sector Identification

Quadrant	Power of Dispersion (IDP)	Sensitivity of Dispersion (IDK)	Sector Type
I	High	High	Key sector
II	Low	High	Leading sub-sector (Potential)
III	Low	Low	Underdeveloped
IV	High	Low	Enclave (Potential)

2.3.2. Interregional Multipliers, Spillovers, and Feedback Effects
The output multiplier measures the total increase in output across the entire economy resulting from a one-unit increase in a specific sector's final demand. The IRIO framework allows for the decomposition of this multiplier into three distinct effects:

1. Intraregional Effect: This represents the output increase within a region due to a one-unit increase in final demand for a sector in that same region. The intraregional output multiplier for sector j in region A is calculated as:

$$O_{.j}^{AA} = \sum_{i=1}^{n} l_{ij}^{AA} \quad (18)$$

where l_{ij}^{AA} is an element of the intraregional Leontief inverse matrix for region A.

2. Interregional Spillover Effect: This measures the indirect impact that "spills over" from one region to another due to an increase in final demand in the first region. Spillover refers to the portion of induced output or income that arises outside the originating region, as neighboring regions expand production to meet increased intermediate input demand. It captures how growth in one province stimulates economic activity in others through supply-chain linkages, reflecting the interdependence of regional economies [12], [18].
The spillover effect from region A to region B is calculated as:

$$O_{.j}^{BA} = \sum_{i=1}^{n} l_{ij}^{BA} \quad (19)$$

where l_{ij}^{BA} is an element of the interregional Leontief inverse matrix from region B to region A.

3. Feedback Effect: This effect captures the output increase in region B that occurs due to an increase in final demand in region A, which then stimulates production in region B, and subsequently "feeds back" to induce further production in region A. It measures the round-trip effects that are a core feature of interregional models. The feedback effect for region A resulting from an initial demand shock in region A is denoted as:

$$B.O_{.j}^{BA} = \sum_{i=1}^{n} l_{ij}^{BA} - \sum_{i=1}^{n} p_{ij}^{BA} \quad (20)$$

where $B.O_{.j}^{BA}$ represents the feedback output impact for region A resulting from an increase in final demand in region A and p_{ij}^{BA} represents element of matrix $\boldsymbol{P}$, while matrix $\boldsymbol{P}$ is Leontief inverse matrix from IO model single region A. Matrix $\boldsymbol{P}$ is denoted as:

$$\boldsymbol{P} = \left(\boldsymbol{I} - \boldsymbol{A}^{\boldsymbol{AA}}\right)^{-\mathbf{1}} \tag{21}$$

3. Result and Discussion

This chapter presents the empirical findings of the study, structured to sequentially answer the established research questions. The analysis begins by examining the internal economic structure of South Sumatra and its key sectoral drivers. It then assesses the province's external linkages through its interregional trade patterns and their resulting spillover effects. Finally, it analyzes the economy's multiplier effects to identify strategic levers for promoting inclusive development.

3.1. The Economic Structure and Key Drivers of South Sumatra

The first research question addresses the fundamental structure of South Sumatra's economy and its key driving sectors. The analysis reveals a deeply domestically-oriented economy, with its structure shaped by a few highly integrated sectoral hubs.

The macroeconomic balance, illustrated in figures 1 and 2, shows that the province's supply is overwhelmingly met by its own domestic output (88.45%). This indicates a high degree of self-sufficiency, with imports from other provinces (9.26%) and abroad (2.29%) playing a supporting, rather than central, role. On the demand side, this output is primarily absorbed internally, with intermediate demand (41.89%) and household consumption (32.37%) as the largest components. This confirms that the province's economic engine is fuelled by its own production cycles and internal market. The results reflect national patterns, where internal production and trade dominate in most provinces, with only a few contributing sizable trade surpluses [22].

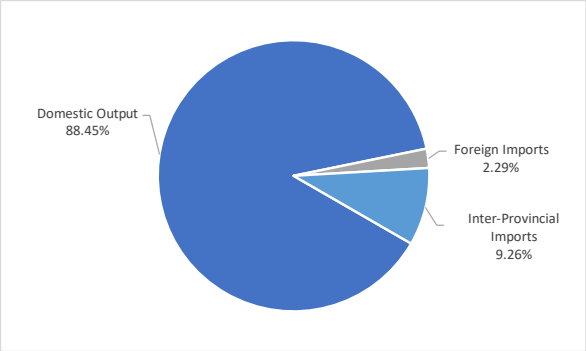

Figure 1. Source of economic supply in South Sumatra, 2024

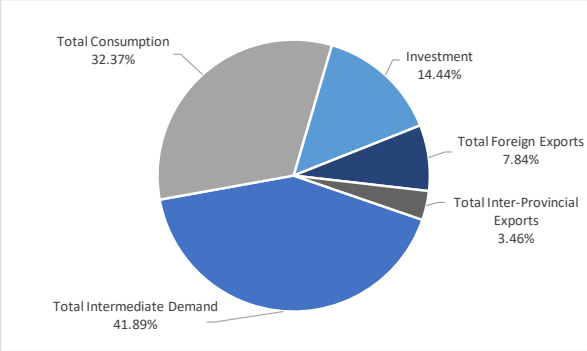

Figure 2. Economic use in South Sumatra, 2024

Exploring this structure, the linkage analysis in figure 3 identifies the specific sectors that function as its core drivers. Manufacturing (C) and Construction (F) emerge as the two primary hubs, with both backward and forward linkage indices exceeding one. This signifies their crucial dual role: they are major consumers of inputs from across the economy (high backward linkage) and critical suppliers for downstream activities (high forward linkage). This observation reinforces prior evidence suggesting that manufacturing and construction have long held central roles in Indonesia's input–output structure [23], [24].

Other sectors play important, specialized roles. Mining and Quarrying (B) and Agriculture (A) function as powerful upstream suppliers with strong forward linkages, providing essential raw materials to the rest of the economy. This aligns with findings from interregional trade studies, which highlight

functional specialization among provinces—resource-rich regions tend to supply raw materials, while Java's industrial corridor focuses on producing manufactured goods [22].

Conversely, service-oriented sectors like Transportation (H) and Accommodation and Food Services (I) exhibit strong backward linkages, making them effective channels for propagating demand and stimulating growth in their supplier industries. In essence, the province's economic structure is anchored by industrial hubs and supported by a network of specialized supplier and service sectors.

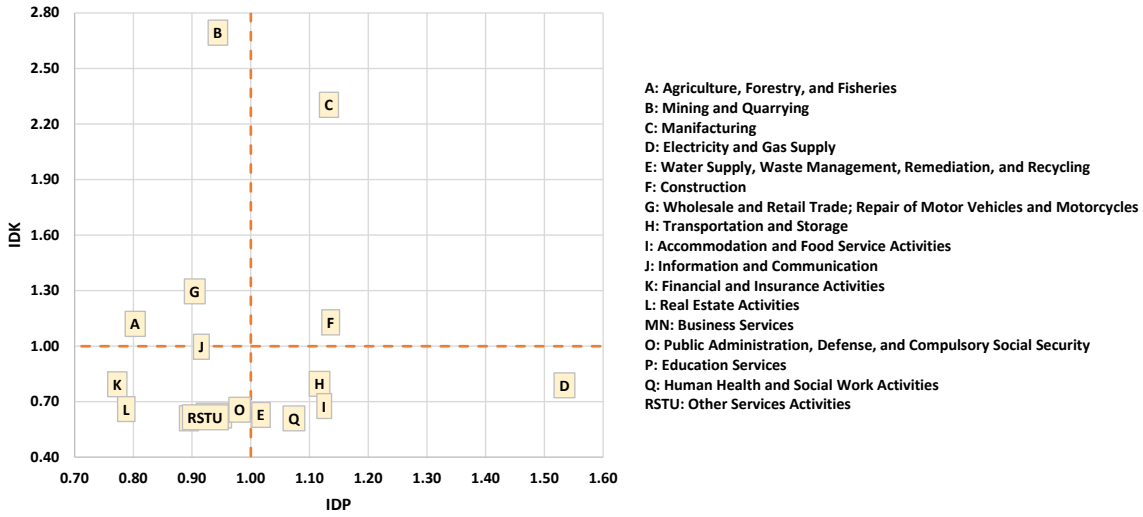

Figure 3. Economic sectors distribution in South Sumatra, 2024

3.2. Interregional Dependencies: Trade Patterns, Spillovers, and Feedbacks

The trade structure of South Sumatra, shown in table 3 and figure 4, provides a clear view of its interprovincial linkages. The table presents trade flows in monetary terms, while the map displays their spatial distribution. Together, they illustrate how South Sumatra connects with both nearby provinces and national economic centers.

Table 3. Export trade pattern in South Sumatra (IDR million), 2016

Exporter	Importer								
	South Sumatra	Jambi	Bengkulu	Lampung	DKI Jakarta	West Java	East Java	Banten	Others
South Sumatra	271,292,064	9,021,929	2,748,505	8,314,110	17,864,974	16,346,453	21,163,366	9,218,189	35,202,648
Jambi	9,588,420	71,146,050	364,398	558,068	1,200,165	3,149,028	3,423,546	3,542,151	23,409,815
Bengkulu	1,221,643	450,455	23,472,200	2,352,719	1,874,757	982,150	77,898	159,070	4,309,028
Lampung	8,397,478	1,155,461	976,719	146,951,874	6,809,424	7,533,547	3,471,258	9,844,923	8,263,957
DKI Jakarta	23,331,037	8,502,600	4,113,945	5,693,586	1,179,881,041	42,751,575	38,277,488	16,824,341	225,137,996
West Java	5,181,362	1,909,100	2,323,914	2,238,177	17,926,242	1,307,235,160	32,855,545	15,890,768	123,709,137
East Java	10,117,886	1,442,582	733,705	5,181,041	31,282,006	66,109,144	1,064,062,128	27,681,270	181,836,969
Banten	5,187,501	520,628	974,996	8,552,675	25,055,440	42,573,078	16,300,280	308,522,053	82,290,116
Others	19,457,271	14,385,964	4,360,522	8,738,512	134,767,786	98,005,996	168,595,927	49,120,164	3,451,347,061

The data indicate that South Sumatra's main export destinations are East Java, DKI Jakarta, and West Java. Its major import sources include DKI Jakarta, East Java, Jambi, and Lampung. In figure 4, blue arrows represent exports, red arrows represent imports, and the numbers show each province's share of total trade.

East Java is the largest export destination, accounting for 5.41% of total exports. This reflects strong downstream linkages with Java's manufacturing industries. On the import side, DKI Jakarta dominates with 6.59%, highlighting South Sumatra's dependence on the Greater Jakarta industrial and distribution network. This reflects interregional trade dynamics, where provinces exhibit functional specialization—raw materials from resource-rich areas, and manufactured outputs from Java's industrial zones [22].

Overall, the pattern shows a clear functional specialization across regions. South Sumatra trades intermediate and agricultural goods with Jambi and Lampung. At the same time, it sends major commodity exports and receives manufactured goods through Java's industrial corridor.

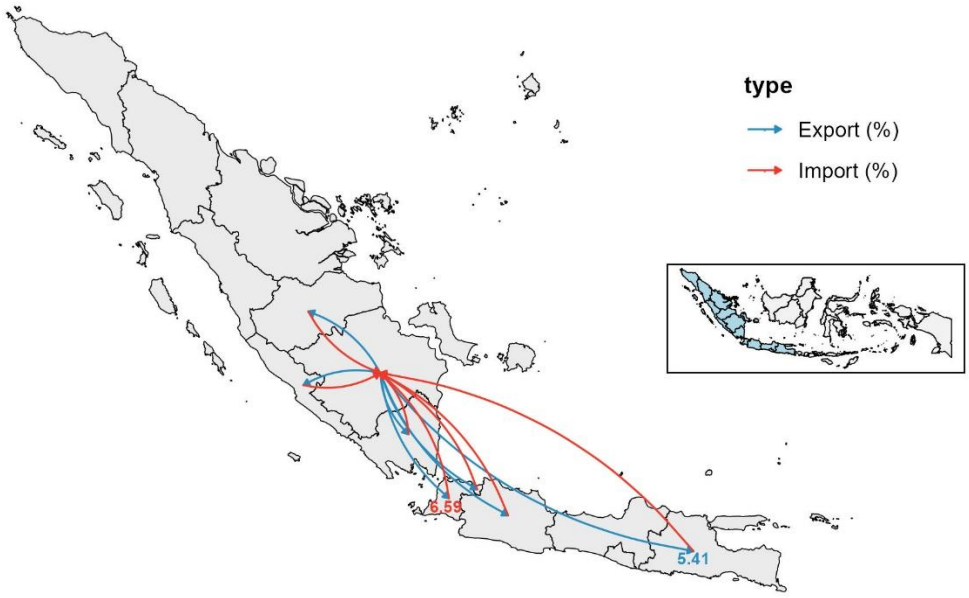

Figure 4. Export-import linkages map of South Sumatra, 2016

Table 4. Interprovincial spillover of South Sumatra, 2016

Province	South Sumatra	Jambi	Bengkulu	Lampung	DKI Jakarta	West Java	East Java	Banten	Others
South Sumatra	**1.5579**	0.0802	0.0626	0.0415	0.0105	0.0129	0.0155	0.0183	0.0103
Jambi	0.0279	**1.3974**	0.0088	0.0036	0.0011	0.0026	0.0028	0.0063	0.0056
Bengkulu	0.0037	0.0037	**1.3269**	0.0097	0.0010	0.0007	0.0002	0.0005	0.0010
Lampung	0.0257	0.0112	0.0216	**1.4512**	0.0039	0.0056	0.0028	0.0167	0.0026
DKI Jakarta	0.0725	0.0753	0.0889	0.0300	**1.4065**	0.0307	0.0282	0.0321	0.0524
West Java	0.0202	0.0214	0.0553	0.0140	0.0119	**1.5754**	0.0251	0.0312	0.0324
East Java	0.0347	0.0187	0.0226	0.0273	0.0186	0.0458	**1.4594**	0.0495	0.0442

Banten	0.0170	0.0075	0.0223	0.0370	0.0129	0.0268	0.0116	**1.3474**	0.0189
Others	0.0731	0.1339	0.1074	0.0504	0.0746	0.0740	0.1156	0.0933	**1.5521**
Intraregional Effect	**1.5579**	**1.3974**	**1.3269**	**1.4512**	**1.4065**	**1.5754**	**1.4594**	**1.3474**	**1.5521**
Interregional Effect (Spillover Effect)	**0.2747**	**0.3519**	**0.3895**	**0.2136**	**0.1344**	**0.1990**	**0.2019**	**0.2479**	**0.1674**
Feedback Effect	0.0040	0.0020	0.0004	0.0015	0.0038	0.0032	0.0049	0.0049	0.0096

The quantifiable impact of these trade relationships is shown through spillover and feedback effects, as detailed in table 4. While the province's economic activity has its greatest impact within its own borders—reflected in a strong intraregional multiplier of 1.5579—it also generates notable spillovers to key trading partners. The biggest beneficiaries of South Sumatra's growth are its neighboring provinces, particularly Bengkulu, Jambi, and Banten.

Conversely, the strongest feedback effects come from Java, especially Banten, East Java, and DKI Jakarta. These findings reaffirm earlier IRIO simulations, which point to a mutually reinforcing relationship between resource-based provinces like South Sumatra and the industrial hubs of Java [25].

3.3. Multiplier Effects and Levers for Inclusive Development

The final research question addresses which sectors offer the greatest potential to stimulate broad-based and inclusive growth. By analyzing output and value-added multipliers (figure 5), a critical divergence emerges that provides a nuanced answer.

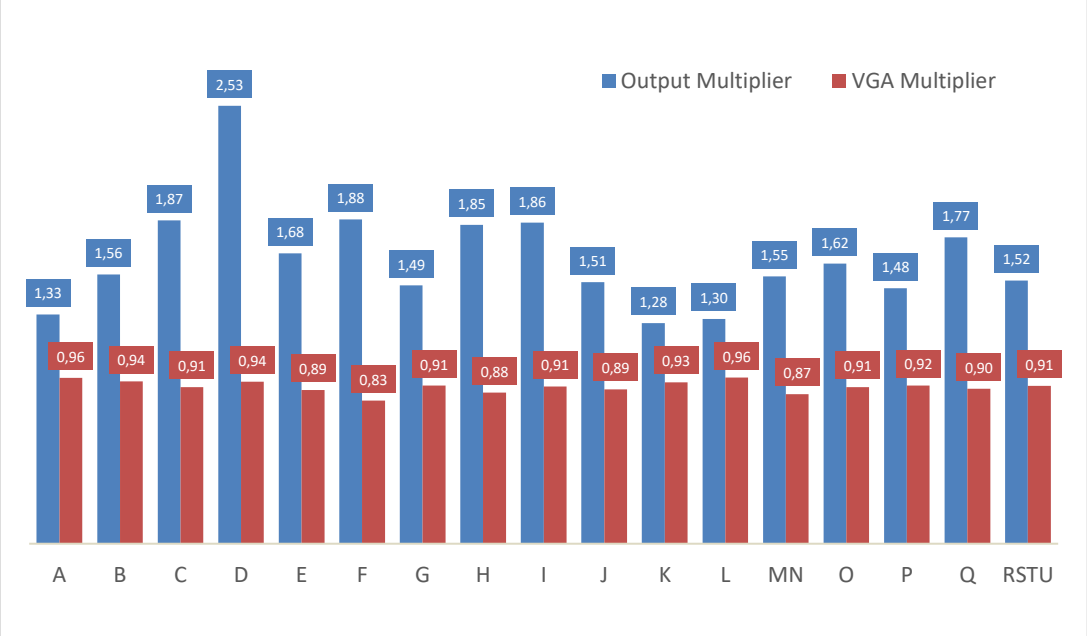

Figure 5. Multiplier analysis by economic sector in South Sumatra, 2024

From the perspective of stimulating total economic activity, the output multiplier analysis identifies Electricity and Gas Supply (D) as the undisputed engine of the economy. With a multiplier of 2.53, a one-unit increase in demand for electricity and gas supply goods generates the largest ripple effect on gross output across all industries. Other sectors with strong output multipliers, such as Construction (F; 1.88) and Manufacturing Industry (C; 1.87), are also key drivers of aggregate growth.

However, when the objective is inclusive development—measured by the impact on local income (wages and profits)—the value-added (VA) multiplier tells a different story. Here, Agriculture (A) and

Real Estate (L) are the most effective sector, with the highest VA multiplier (0.96), followed by industries like Mining and Quarrying (B; 0.94) and Electricity and Gas Supply (D; 0.94). This finding reveals that while Electricity and Gas Supply is best at making the overall economic "pie" larger, agriculture, real estate, and key industry are more efficient at distributing the slices of that pie as direct income to the local population.

This contrast emerges as a key insight for policymaking. For instance, the Electricity and Gas Supply sector (D) exhibits a high output multiplier but a relatively modest value-added (VA) multiplier (0.94). In contrast, Agriculture (A) not only demonstrates a strong output multiplier (1.33) but also the highest VA multiplier (0.96). These differences are in line with Miyazawa-based studies, which find that while industrial hubs tend to drive aggregate economic growth, agriculture and service sectors are often more effective at distributing income, particularly to lower-income households [26].

These findings underscore the need for a dual-track development strategy: one that harnesses the growth potential of sectors like electricity and gas supply, while also reinforcing agriculture and real estate as anchors for inclusive growth and improved household welfare.

4. Conclusion

This study applied an Interregional Input–Output (IRIO) framework to uncover how South Sumatra's economy functions within Indonesia's broader production network. The analysis reveals a province characterized by strong domestic linkages but shaped by selective regional interdependencies. Three key insights emerge.

First, South Sumatra's economy is primarily driven by internal demand. The province's production and consumption cycles are largely self-sustaining, allowing it to maintain resilience amid external shocks. This domestic orientation remains its main stabilizing force.

Second, South Sumatra occupies a dual position within Indonesia's regional economy. It trades raw and intermediate goods intensively with nearby provinces in Sumatra while being tightly connected to Java's industrial centers, especially DKI Jakarta and East Java. These connections form both the main outlet for its outputs and the feedback channels that reinforce its growth.

Third, a structural divergence exists between the sectors that drive total output and those that generate inclusive growth. Manufacturing and construction function as the economy's principal growth hubs, but agriculture and selected service sectors contribute more effectively to local value-added and household income. This contrast highlights a central policy challenge: reconciling expansion with equity.

Policy-wise, the findings call for a dual-track industrial strategy. Policymakers should strengthen manufacturing and energy as engines of aggregate growth while modernizing agriculture and high-value services to expand local income. Enhancing interprovincial corridors—particularly with Java and southern Sumatra—will magnify spillover gains, while deeper local supply-chain integration can reduce import leakages and enhance regional resilience.

Academically, this study contributes a rare province-level IRIO assessment, advancing understanding of intersectoral and interregional linkages often overlooked in national analyses. Yet, it faces limitations inherent in static modeling. The reliance on the 2016 IO and IRIO tables—updated to 2024 using the RAS method—cannot fully capture structural shifts such as digitalization or energy transition. Future studies should extend this work through dynamic models like Computable General Equilibrium (CGE) or Social Accounting Matrix (SAM) frameworks to evaluate long-term policy scenarios and structural transformations.

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