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Agriculture to Industry: Structural Transformation and the Role of Manufacturing in Jambi's Economic Growth

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Abstract

This study examines the role of the manufacturing sector in the economic development of Jambi Province during the period 2007–2024. The research addresses the uncertainty regarding whether the manufacturing sector functions as a base sector and evaluates the extent to which key economic factors contribute to its performance. Using the Location Quotient (LQ) and Dynamic Location Quotient (DLQ) methods, the study identifies the structural dynamics of the sector, while a log-linear regression model is employed to analyze the effects of investment, labor, and the number of business units on the sector's GRDP. The results indicate that the manufacturing sector remained predominantly non-base throughout the period, with a temporary base status occurring between 2011 and 2020. Regression findings reveal that labor and the number of business units exert positive and significant effects on the manufacturing GRDP, whereas investment shows inconsistent impacts. On average, the manufacturing sector contributed 12.06 percent to Jambi's total GRDP. These findings highlight the need for strengthened industrial policy strategies focused on enhancing labor capacity, expanding business unit development, and improving investment effectiveness to support regional economic diversification and resilience.

1. INTRODUCTION

Economic development has long been regarded as a central goal for nations, especially for developing countries that strive to enhance welfare, reduce poverty, and create equitable opportunities for their citizens. The success of development is often measured not only by the growth of Gross National Product (GNP) or Gross Domestic Product (GDP) but also by the reduction of income inequality, job creation, and improvements in social welfare. A well-coordinated interaction among different economic sectors is required to achieve this success. Through such interaction, productive activities generate both backward linkages, in the form of demand for inputs from other sectors, and forward linkages, by supplying outputs that support additional productive activities (Arsyad, 2010).

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Within this broader context, the concept of economic development must be understood as a systematic and continuous transformation process. The objective is to increase total and per capita income while considering population growth, structural changes, and the need for equitable distribution of income. For many nations, industrialization has historically served as a powerful driver of this transformation. It entails a fundamental shift from an agrarian-based economy toward an industrial economy, supported by technological development, innovation, specialization, and global trade (Szirmai, 2012)

Indonesia, like many other developing countries, has pursued industrialization as a key development strategy since the early stages of its national development plans (Pelita I). Over time, this strategy has contributed to structural change: whereas agriculture was once the dominant sector, manufacturing and related industries have grown in importance, aided by policies that facilitated foreign capital inflows and encouraged the development of domestic industries. This transition has been particularly visible in the manufacturing sector, which encompasses activities that transform raw materials into finished or semi-finished goods through mechanical, chemical, or other processes (Tambunan, 2019).

At the national level, manufacturing has been a major contributor to GDP and employment. In 2015, the sector contributed 16.65 percent to national GDP, and although this share fluctuated in subsequent years, manufacturing remained among the top contributors. Beyond GDP, the sector has consistently ranked among the largest employers in the economy, demonstrating its importance not only for output but also for labor absorption (Badan Pusat Statistik, 2025).

Despite its overall significance, the contribution of the manufacturing sector has not been uniform across regions of Indonesia. Some provinces, due to their historical dependence on agriculture or natural resource extraction, have faced challenges in positioning manufacturing as a base sector that consistently drives regional growth. Jambi Province is one such region. Although it forms an integral part of Indonesia's national development, its economy has traditionally been dominated by primary sectors such as agriculture, forestry, and mining (Kuncoro, 2012)

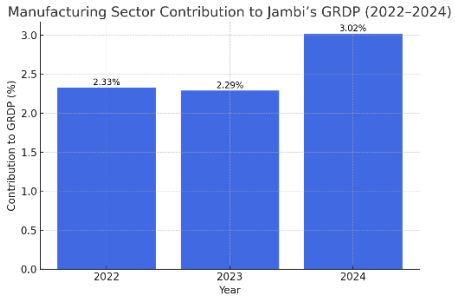

Figure 1. manufacturing sector contribution to Jambi

In recent decades, Jambi has experienced fluctuating contributions from the manufacturing sector to its Gross Regional Domestic Product (GRDP). For instance, while the sector contributed 2.33 percent to the province's economy in 2015, this share declined slightly in 2016 before rising again in subsequent years. These fluctuations indicate both opportunities and vulnerabilities, reflecting the sector's sensitivity to structural and policy dynamics (Badan Pusat Statistik, 2025).

The situation is further complicated by employment trends. At the national level, the manufacturing sector consistently ranks among the top three sectors in terms of labor absorption. In Jambi, however, manufacturing's contribution to employment has remained modest, fluctuating between 2% and 3% of total employment during the same period. This raises concerns about the sector's ability to generate inclusive growth that benefits a wide segment of the population.

Moreover, the ability of the manufacturing sector to serve as a driver of regional growth depends not only on its output but also on key economic factors such as investment levels, labor availability, and the number of business units. These factors interact dynamically. Investment may expand productive capacity, but its effectiveness depends on labor productivity and the entrepreneurial ecosystem, while the growth of business units can generate multiplier effects when supported by adequate infrastructure and policy frameworks (Setyadi, 2011).

This complexity underscores the central challenge: while Jambi has the potential to leverage its industrial sector to diversify away from primary commodities, the path forward is neither automatic nor guaranteed. Structural fluctuations, modest labor absorption, and inconsistent investment impacts have raised doubts about whether manufacturing can truly serve as a sustainable growth engine for the province.

Given these conditions, several important questions arise. To what extent has the manufacturing sector in Jambi Province functioned as a base sector capable of driving regional economic growth? What factors particularly investment, labor, and the number of business units significantly influence the sector's contribution to GRDP? And finally, how substantial is the sector's overall contribution to the province's economic performance over time?

Although previous studies in Indonesia have examined the manufacturing sector using descriptive or sectoral approaches, research focusing specifically on Jambi Province remains limited. Existing studies have not yet integrated Location Quotient (LQ) and Dynamic Location Quotient (DLQ) analysis with econometric modeling to assess both the structural position of manufacturing and the determinants influencing its GRDP. This gap limits a comprehensive understanding of the sector's long-term development potential (Kuncoro, 2012)

Unlike existing studies that mainly rely on descriptive sectoral analysis or static indicators, this study integrates Location Quotient (LQ) and Dynamic Location Quotient (DLQ) with econometric modeling to simultaneously capture the structural position and growth dynamics of the manufacturing sector. By focusing on Jambi Province over a long observation period (2007–2024), this research provides region-specific empirical evidence that remains underexplored in the Indonesian industrial development literature.

To address these issues, This study provides empirical evidence on the structural and growth role of the manufacturing sector in Jambi's economic structure over the period 2007–2024. First, the study employs Location Quotient (LQ) and Dynamic Location Quotient (DLQ) to determine whether the manufacturing sector functions as a base sector and how its position has evolved over time. Second, a log-linear regression model is used to analyze how investment, labor, and the number of business units influence GRDP in the manufacturing sector. Third, the study calculates the sector's contribution to total GRDP, providing a comprehensive assessment of its economic significance.

By integrating structural and econometric approaches, this research contributes empirical evidence that strengthens the understanding of Jambi's industrial development trajectory. The findings are expected to inform policymakers in designing targeted industrial strategies that support economic diversification, increase regional competitiveness, and reduce long-term dependence on primary sectors.

2. METHODS

The analytical model for the first research problem applies the Location Quotient (LQ) method, which serves as a tool to identify the economic base of a region.

$$LQ = \frac{vi / vt}{Vi / Vt} \quad \text{..... (3.1)}$$

Where :

LQ : Location Quotient Index
vi : Income of the industrial sector in Jambi Province
vt : Total income of Jambi Province (GRDP / Manufacturing sector)
Vi : Income of the industrial sector at the national level
Vt : Total national income (GDP / Manufacturing sector)

The value of LQ can be either greater than 1 or less than 1, with the following interpretations:

- If the LQ of a sector is greater than 1, then LQi is considered positive (+), which indicates that the sector is a leading or base sector.
- If the LQ of a sector is less than 1, then LQi is considered negative (–), which indicates that the sector is a supporting or non-base sector.

The Dynamic Location Quotient (DLQ) essentially follows the same principle as the static LQ. However, it introduces the dimension of growth by assuming that both sectoral value-added and GRDP have their own average growth rates over the period from year (0) to year (t). The formula for DLQ is as follows:

$$DLQij = \frac{\frac{(1+gij)}{(1+gj)}}{\frac{(1+Gi)}{(1+G)}} = \frac{IPPSij}{IPPSi} \quad \text{.....(3.2)}$$

Where:

IPPSij = Index of development potential of sector i in the region
IPPSi = Index of development potential of sector i in the reference area

Gij = Growth rate of sector i in the region
Gi = Growth rate of sector i in the reference area
Gj = Average growth rate in the region
jG = Average growth rate in the reference area

The interpretation of the Dynamic Location Quotient (DLQ) is essentially the same as that of the static LQ, except that the comparison places greater emphasis on growth rates.

- If DLQ = 1, it means that the growth rate of sector (i) relative to the GRDP growth rate of region (j) is proportional to the growth rate of the same sector in the GRDP of the reference area.
- If DLQ < 1, it indicates that the proportion of the growth rate of sector (i) relative to the GRDP growth rate of region (j) is lower compared to the proportion of that sector's growth rate relative to the GRDP of the reference area.
- Conversely, if DLQ > 1, it suggests that the proportion of the growth rate of sector (i) relative to the GRDP growth rate of region (j) is higher than the proportion of the same sector's growth rate relative to the GRDP of the reference area.

Following this, an analysis is conducted to determine the magnitude of the influence of independent variables on the dependent variable by using an econometric model. The following represents the model equation:

$$\mathbf{Y_t = \beta_o + \beta_1 X_{1t} + \beta_2 X_{2t} + \beta_3 X_{3t} + e_t} \quad \textbf{.....(3.3)}$$

Where:
β_0 = Constant
Y = GRDP of the industrial sector
INV = Investment
LB = Labor
NBU = Number of business units
e = Error term

To calculate the contribution of the manufacturing sector to the GRDP of Jambi Province, the following formula is applied:

$$KSI = \frac{SI}{PDRB} \times 100\% \quad \text{..... (3.4)}$$

Where:
KSI = Contribution of the industrial sector
SI = Industrial sector
GRDP = Gross Regional Domestic Product (GRDP) of Jambi Province

3. RESULT AND DISCUSSION

Based on the Location Quotient (LQ) calculation of the Gross Regional Domestic Product (GRDP) for the industrial sector in Jambi Province, it can be seen that from 2007 to 2024, the GRDP of the industrial sector in Jambi Province falls under the non-base sector. For more details, see the table below.

Table of LQ Analysis of GRDP in the Industrial Sector in Jambi Province

Tahun	Industrial GRDP (Million Rupiah)	GRDP of Jambi Province (Million Rupiah)	Industrial GDP (Billion)	Indonesia's GDP (Billion)	LQ	Result
2007	1.408.196	9.569.242	385.597	1.389.769	0.53	non base
2008	1.665.404	11.531.784	398.323	1.440.405	0.52	non base
2009	1.926.942	13.940.537	419.387	1.505.216	0.49	non base

Tahun	Industrial GRDP (Million Rupiah)	GRDP of Jambi Province (Million Rupiah)	Industrial GDP (Billion)	Indonesia's GDP (Billion)	LQ	Result
2010	2.027.398	15.928.520	441.754	1.577.171	0.45	non base
2011	2.293.889	18.487.944	469.952	1.656.516	0.43	non base
2012	2.702.262	22.487.011	491.561	1.750.815	0.42	non base
2013	3.112.688	26.061.774	514.100	1.847.126	0.42	non base
2014	3.804.724	32.076.677	538.084	1.964.327	0.43	non base
2015	4.568.278	41.056.484	557.764	2.082.456	0.41	non base
2016	5.258.204	44.127.006	570.102	2.178.850	0.45	non base
2017	10.357.580	90.618.411	597.134	2.314.458	0.44	non base
2018	11.217.086	97.740.873	633.781	2.464.566	0.44	non base
2019	12.023.508	104.615.082	670.190	2 618.932	0.44	non base
2020	13.005.650	111.766.131	707.481	2.769.053	0.45	non base
2021	13.630.734	119.991.444	741.835	2.909.181	0.44	non base
2022	13.948.630	125.037.398	1.934.533	8.981.517	0.51	non base
2023	14.267.736	130.501.132	2.016.876.8	9.434.632	0.51	non base
2024	14.698.667	136.556.706	2.103.066.4	9.912.749	0.50	non base

Source: Central Bureau of Statistics (2025)

According to the Dynamic Location Quotient (DLQ) analysis of the GRDP in the industrial sector of Jambi Province, from 2007 to 2024, the sector alternated between base and non-base classifications. Detailed results are presented in the table below.

Based on the results of the Dynamic Location Quotient (DLQ) calculation for the industrial sector GRDP from 2007 to 2024, it can be seen that this sector falls under both non-base and base categories. From 2007 to 2011, the industrial sector in Jambi Province was classified as non-base or still in need of development. This is because the industrial sector's GRDP in Jambi Province was not as strong compared to Indonesia's national industrial GDP, as Jambi's economy was more strongly supported by the agriculture, plantation, and trade sectors. Meanwhile, during the period 2012 to 2020, the industrial sector's GRDP in Jambi Province became a base sector, which was a positive indicator for the province to further develop both its oil and gas (migas) and non-oil and gas (non-migas) industries. However, from 2021 to 2024, the sector returned to being non-base, as Jambi Province continues to perform better in developing the agricultural sector rather than the industrial sector.

Tabel Analisis DLQ PDRB Sektor Industri Di Provinsi Jambi

Tahun	Industrial GRDP (Million Rupiah)	GRDP of Jambi Province (Million Rupiah)	Industrial GDP (Billion)	Indonesia's GDP (Billion)	DLQ	Result
2007	1.408.196	9.569242	385.597	1.389.769	0.74	non base
2008	1.665.404	11.531784	398.323	1.440.405	0.98	non base
2009	1.926.942	13.940537	419.387	1.505.216	0.63	non base
2010	2.027.398	15.928.520	441.754	1.577.171	0.32	non base
2011	2.293.889	18.487;944	469.952	1.656.516	0.64	non base
2012	2.702.262	22.487.011	491.561	1.750.815	1.01	Base
2013	3.112.688	26.061.774	514.100	1.847.126	1.14	Base
2014	3.804.7.24	32.076.677	538.084	1.964.327	1.31	Base
2015	4.568.278	41.056.484	557.764	2.082.456	1.17	Base
2016	5.258.204	44.127.006	570.102	2.178.850	4.22	Base
2017	10.357.580	90.6184.11	597.134	2.314.458	1.20	Base
2018	11.217.086	97.740.873	633.781	2.464.566	1.11	Base
2019	12.023.508	104.615.082	670.190	2 618.932	1.11	Base
2020	13.005.650	111.766.131	707.481	2.769.053	1.23	Base
2021	13.630.734	119.991.444	741.835	2.909.181	0.68	non base
2022	13.948.630	125.037.398	1.934.533	8.981.517	0.72	non base

Tahun	Industrial GRDP (Million Rupiah)	GRDP of Jambi Province (Million Rupiah)	Industrial GDP (Billion)	Indonesia's GDP (Billion)	DLQ	Result
2023	14.267.736	130.501.132	2 016 876.8	9.434.632	0.62	non base
2024	14.698.667	136.556.706	2 103 066.4	9.912.749	0.77	non base

Source: Central Bureau of Statistics (2025)

This study shows that investment, labor, and the number of business units have a positive and significant effect on the Gross Regional Domestic Product (GRDP) of the industrial sector in Jambi Province. The partial test (t-test) results indicate that the investment variable has a t-statistic value of 2.199958, which is greater than the t-table value of 1.70562, with a probability of 0.0451. The regression coefficient of 1.140005 implies that every 1 percent increase in investment will raise the GRDP of the industrial sector by 1.14 percent. The labor variable also has a significant effect, with a t-statistic value of 2.1600 and a probability of 0.0160. The regression coefficient of 0.962307 indicates that a 1 percent increase in labor will increase the industrial sector GRDP by 0.96 percent. Furthermore, the number of business units has the strongest influence, with a t-statistic of 4.190872, a probability of 0.0009, and a regression coefficient of 3.197586, meaning that a 1 percent increase in the number of business units will raise the GRDP of the industrial sector by 3.20 percent. These findings support the hypothesis that all three variables investment, labor, and the number of business units significantly influence the GRDP of the industrial sector in Jambi Province.

Dependent Variable: LOG(PDRB)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-46.19397	5.019457	-9.202981	0.0000
LOG(INV)	1.140005	0.518194	2.199958	0.0451
LOG(TK)	0.962307	0.351416	2.738366	0.0160
LOG(JUU)	3.197586	0.762988	4.190872	0.0009
R-squared	0.970173	Mean dependent var		15.48723
Adjusted R-squared	0.963781	S.D. dependent var		0.872850
F-statistic	151.7906	Durbin-Watson stat		1.686928
Prob(F-statistic)	0.000000			

The results are consistent with previous studies by Khoirun Nisa Ayu (2018), who found that labor significantly affects the GRDP of Kediri City, and Sugeng Setyadi (2011), who demonstrated that investment, labor, and business units significantly impact the industrial sector and regional economic growth. Theoretically, these findings reinforce Todaro's (2004) view that population growth and labor expansion positively contribute to economic growth through increased production and the expansion of domestic markets. Thus, the growth of investment, labor, and business units serves as a key driver in strengthening the industrial sector's contribution to economic development in Jambi Province. The industrial sector plays a crucial role in accelerating a nation's economic growth, as it drives more rapid development compared to other sectors. It encompasses activities that transform raw materials into finished or semi-finished goods. The contribution of the industrial sector to the total GRDP in Jambi Province can be seen in the following table.

Table: Contribution of the Industrial Sector GRDP to the Total GRDP of Jambi Province

Tahun	Industrial GRDP (Million Rupiah)	GRDP of Jambi Province (Million Rupiah)	Contribution (%)
2007	1.408.196	9.569.242	14.71
2008	1.665.404	11.531.784	14.44
2009	1.926.942	13.940.537	13.82
2010	2.027.398	15.928.520	12.72
2011	2.293.889	18.487.944	12.40
2012	2.702.262	22.487.011	12.01
2013	3.112.688	26.061.774	11.94

Tahun	Industrial GRDP (Million Rupiah)	GRDP of Jambi Province (Million Rupiah)	Contribution (%)
2014	3.804.724	32.076.677	11.86
2015	4.568.278	41.056.484	11.12
2016	5.258.204	44.127.006	11.91
2017	10.357.580	90.618.411	11.42
2018	11.217.086	97.740.873	11.47
2019	12.023.508	104.615.082	11.49
2020	13.005.650	111.766.131	11.63
2021	13.630.734	119.991.444	11.35
2022	13.948.630	125.037.398	11.15
2023	14.267.736	130.501.132	10.93
2024	14.698.667	136.556.706	10.76
Mean			**12.06**

Source: Central Bureau of Statistics (2025)

Based on the table above, the average contribution of the industrial sector GRDP to the total GRDP of Jambi Province from 2007 to 2024 is 12.06 percent per year. The highest contribution occurred in 2007, reaching 14.71 percent. This increase was driven by the province's strategic shift from relying primarily on the agricultural sector to promoting industrial development as a means of enhancing regional growth and revenue. Conversely, the lowest contribution of the industrial sector to the total GRDP was recorded in 2024, amounting to 10.76 percent.

4. CONCLUSION

Based on the results and analysis, it can be concluded that the industrial sector in Jambi Province from 2007 to 2024 has not yet become a base sector according to the Location Quotient (LQ) analysis, although it shows potential for development based on the Dynamic Location Quotient (DLQ). During 2012 – 2020, the sector functioned as a base sector, but it returned to a non-base sector in 2021–2024, indicating the need for renewed development efforts. The F-test and t-test results show that investment, labor, and the number of business units significantly affect the industrial sector's Gross Regional Domestic Product (GRDP), with an average contribution of 12.06 percent per year to the province's total GRDP. Therefore, it is recommended that the government focus on developing the industrial sector by improving investment conditions, ensuring a stable investment climate, and attracting investors to Jambi Province. Strengthening the industrial sector alongside agriculture, plantations, and trade is essential, as these sectors are interrelated and can support industrial growth. The industrial sector should be prioritized as a key economic driver, and downstream industrial development should be encouraged to enhance productivity and promote sustainable regional economic growth.

5. REFERENCES

Arsyad, L. (2010). *Ekonomi Pembangunan* (5th ed.). UPP STIM YKPN.

Ayu, K. N. (2018). *Pengaruh tenaga kerja terhadap Produk Domestik Regional Bruto (PDRB) Kota Kediri*. Jurnal Ekonomi Pembangunan Daerah, 12(2), 45–53.

Badan Pusat Statistik. (2025). *Produk Domestik Regional Bruto Provinsi Jambi menurut lapangan usaha*. BPS RI.

Kuncoro, M. (2012). *Perencanaan Pembangunan Daerah: Teori dan Aplikasi*. UPP STIM YKPN.

Setyadi, S. (2011). *Pengaruh investasi, tenaga kerja, dan jumlah unit usaha terhadap pertumbuhan sektor industri dan perekonomian daerah*. Jurnal Ekonomi dan Kebijakan Publik, 5(1), 23–35.

Szirmai, A. (2012). Industrialisation as an engine of growth in developing countries, 1950–2005. *Structural Change and Economic Dynamics, 23*(4), 406–420. https://doi.org/10.1016/j.strueco.2011.01.005

Tambunan, T. (2019). *Perekonomian Indonesia: Kajian Teoritis dan Analisis Empiris*. Ghalia Indonesia.

Todaro, M. P., & Smith, S. C. (2004). *Economic Development* (8th ed.). Pearson Addison Wesley.