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Joglosemar in the investment vortex: Is inclusive growth just rhetoric?

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Abstract

Doubling per capita income may create the illusion of progress, but it hides a more troubling fact by obscuring the underlying socio-economic challenges. As a national economic, strategic area (*Kawasan Strategis Ekonomi-KSE*) and the golden triangle in Central Java Province - Special Region of Yogyakarta, the achievement of inclusive economic growth in the cities of Yogyakarta, Surakarta, and Semarang remains a question. This study aims to analyze the role of investment in the leading sector in achieving inclusive economic growth in the Joglosemar reliable area. The objective was achieved using location quotient (LQ), shift share (SS), Klassen typology analysis methods, and path analysis. As a result, developing strategic projects and establishing Joglosemar's main development area, which attracts investment in leading sectors, have not created inclusive economic growth. Foreign direct investment (FDI) or (*penanaman modal asing-PMA*) and domestic direct investment (DDI) or (*penanaman modal dalam negeri-PMDN*) partially do not have a significant effect on the inclusive economic growth of the Joglosemar reliable area through the leading sector. To strengthen the broad multiplier effect, the government can align fiscal and monetary policies with the needs of leading sector development. In addition, the government can also create a collaboration scheme between FDI and DDI to maximize the contribution of both as a source of investment.

Keywords: Investment; Joglosemar; inclusive economic growth; leading sectors

1. Introduction

Doubling per capita income creates the illusion of progress but hides more troubling facts by obscuring the underlying socio-economic challenges. The development label is particularly misleading when poverty is worsening, unemployment is rising, or inequality is deepening. According to Amar and Zghidi (2016), development is not only about economic growth but also about addressing structural problems and ensuring equitable improvements in the quality of life of all members of society. This understanding means that development raises the standard of living in all aspects of people's lives, not just the numbers on the balance sheet.

Without addressing fundamental issues, such as income inequality and unequal access to the benefits of progress, economic growth will be an empty metric that does not reflect the reality of people's lives. This situation can marginalize vulnerable groups and perpetuate the cycle of poverty. These problems underlie the importance of development that highlights inclusive growth to ensure equitable distribution of economic progress across various segments of society, not a privileged few (Rahmawati *et al.*, 2021). Inclusive economic growth not only provides the benefits of increasing social cohesion but also strengthens the economy as a whole by maximizing the potential of society (Eregha and Mesagan, 2017). Its implementation differs from the pro-poor growth approach, focusing only on poverty alleviation without considering equity across income levels (Ghandour, 2024). In this way, development can be a path to achieving shared prosperity and long-term stability.

Inclusive growth is closely related to the speed and pattern of growth, which are intertwined, so they must be addressed together (Johnson and Eccleston, 2023). According to Cigu *et al.* (2019) and

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Banerjee *et al.* (2020), infrastructure and human capital investment influences economic growth. At the same time, Rahmawati *et al.* (2021), Zulha *et al.* (2023), and Bahrini and Qaffas (2019) found findings in the form of encouraging inclusive economic growth the government needs to accompany investment in agriculture-based sectors and information and communication technology as the region's leading sector. However, Nabi *et al.* (2023) and Arbia *et al.* (2023) provide inverse findings. Information and communication technology significantly negatively impacts increasing economic growth in the long run. Their influence depends on each region's population growth, education level, and inflation. The problems of poverty, unemployment, and inequality in Indonesia are still not fully resolved (Yulianita *et al.*, 2023). The achievement of inclusive economic growth in Indonesia is still a question. Research by Rini and Tambunan (2021), Soleh and Suwarni (2023), Prabowo *et al.* (2022), and Zhu (2022) proves that the benefits of economic growth in Indonesia can only be enjoyed by certain groups of people. Regions that can achieve inclusive economic growth in Indonesia are still relatively few. Then, what about Joglosemar's main development area as a national strategic area whose development is inseparable from exploiting natural resources?

In regional regulation (*Peraturan Daerah-Perda*) No. 21/2003, the mainstay area in Central Java Province has been established, which includes several areas, namely Borobudur and its surroundings, Kendal, Demak, Ungaran, Salatiga, Semarang, and Purwodadi (Kedungsepur), as well as Surakarta, Boyolali, Sukoharjo, Karanganyar, Wonogiri, Sragen and Klaten (Subosukawonosraten). The mainstay area is defined as an area that is determined to be the driving force of the regional economy with the criteria of having a leading sector that grows faster and is related to other regions (Pujiati, 2009). The cities of Yogyakarta, Semarang, and Surakarta are classified as national economic strategic areas (*Kawasan Strategis Ekonomi-KSE*). They are expected to become a golden triangle or economic growth center capable of cooperating between regions for the scope of Central Java Province - Special Region of Yogyakarta (Samosir *et al.*, 2021). Even so, Joglosemar's main development area is still an industrial area with potential sectors that have not received maximum follow-up for inclusive growth.

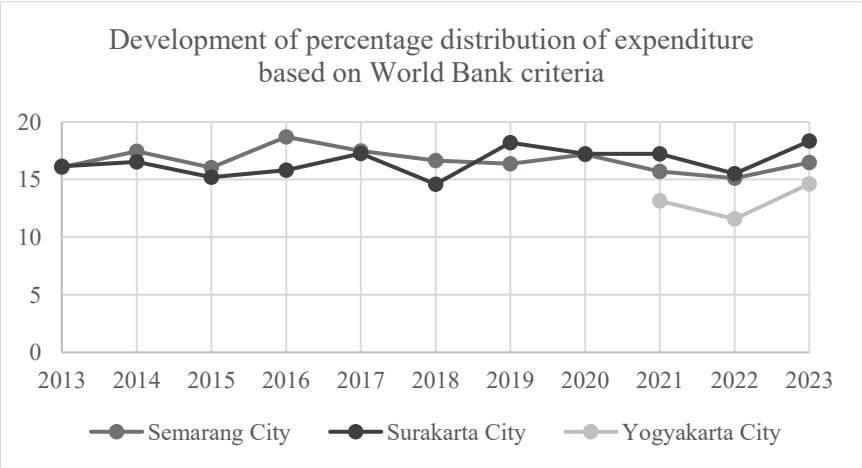

Figure 1. Development of percentage distribution of expenditure based on World Bank criteria 2013 – 2024. Source: www.bps.go.id/id

Figure 1. shows that the concentration of benefits from development in the Joglosemar Region is classified as moderate inequality. This figure reflects that high-income groups tend to dominate access to development benefits. In addition, this condition is a form of failure of the welfare distribution system to reach vulnerable groups. Thus, economic equality in the Joglosemar Reliable Area is still experiencing challenges in community welfare inequality.

On the other hand, based on the report of the Investment Ministry (*Kementerian Investasi/Badan Koordinasi Penanaman Modal-BPKM*) (2024), the value of investment realized in Indonesia reached 1,514 trillion to complete 190 National Strategic Projects (*Proyek Strategis Nasional-PSN*) including 18 projects in Java with an investment value of 639.18 trillion Indonesia rupiah. Some of the completed PSNs are Yogyakarta Airport, Pidekso Dam, Yogyakarta Airport Access Railway, West Semarang SPAM, Technopark Development Acceleration, PLUT Java, Central West

Java Transmission Line 500 KV, Yogyakarta-Bawen Toll Road, Borobudur Temple, and so on. Meanwhile, referring to the Investment Office of the Integrated Service (*Dinas Penanaman Modal dan Pelayanan Terpadu Satu Pintu-DPMPTSP*) of Central Java Province and the Special Region of Yogyakarta, existing investments are concentrated in the hotel and restaurant sector, textile industry, optical, electronic, and medical instrument industry, trade and repair, other services, and transportation, warehouse, and telecommunications.

The large number of incoming investments, the establishment of the Joglosemar Region as a main development region, the National Economic Strategic Area (*Kawasan Strategis Ekonomi-KSE*), and the Strategic Development Area (*Wilayah Pengembangan Strategis-WPS*) will undoubtedly improve the regional economy. However, the improvement of the regional economy needs to be supported by implementing effective policies and identifying key sectors sustainably, and this means that it is important to analyze, specify, and prioritize base and non-base sectors so that planning will be more focused on regional development following the potential and conditions of the region (Pratama and Asmara, 2023). Accelerating the identification of key regional sectors into government policy will strengthen economic development and equal welfare distribution with more effective and sustainable resource management. Thus, further analysis is needed on whether strategic projects and regional designations can create inclusive economic growth in the region or can only be felt by a few groups.

2. Literature review

Inclusive economic growth

Inclusive economic growth has become a new paradigm in economic development, replacing traditional measures that only focus on economic numbers, such as the value of Gross Domestic Product (GDP) growth. Inclusive economic growth emphasizes that economic growth provides equal opportunities for all elements of society to existing resources, education, and employment opportunities (Rini and Tambunan, 2021). This goal is achieved while considering the level of employment in the economic, social, and territorial categories and the principle of inclusive development (Krysovatyy *et al.*, 2023). Thus, an inclusive economy plays a vital role in reducing inequality and ensuring that everyone, regardless of their social and economic background, has equal access to resources, education, and employment opportunities.

Investment

Investment is often the main spotlight in the dynamics of a regional economy full of potential. Investment is defined as expenditure to acquire capital and production equipment to replace and add capital goods in economic performance to increase the production capacity of goods and services in the future (Suprapto *et al.*, 2022). Investment is the government's commitment to delaying the consumption of several funds and resources to benefit productive assets.

According to Yolanda *et al.* (2020) and Pandusetya *et al.* (2021), investment is one of the pillars to support the sustainability of a sustainable and responsive economic development process. Investment in various economic sectors will accelerate development and positively impact people's welfare (Aryasthini and Sri, 2021). Investment can be in research that increases production efficiency and company competitiveness (Yedder *et al.*, 2023), which means that increased investment will increase production capacity and create jobs and economic growth.

Leading sector

The progress and strengthening of a region's local economy involves a leading sector that plays a major role according to its benefits. According to Muarief *et al.* (2021), the leading sector is determined according to the criteria of the main driver of economic development, has a strong relationship with other economic sectors, can compete with comparable sectors outside the area, and is related to outside areas both potential markets and raw material inputs. The leading sector in the future will be further developed through incoming investment to become the basis of monetary activity. This concept is usually associated with comparisons on various scales, whether regional, national, or international (Pratama and Asmara, 2023). Thus, the leading sector is expected to be a driving force with comparative and competitive advantages and able to increase added value and production for other sectors.

Doughnut economics theory

Doughnut Economics: 7 Ways to Think Like a 21st Century was developed by Kate Raworth. This theory was born from the paradigm that the current economy has three main weaknesses: ecological context, employment, and inequality (Ross, 2019). Starting from these economic failures, Kate Raworth developed manifestations of long-term efforts for socioecological change towards a system with sustainable outcomes. The need for a safe environment and equitable space for all humans is visualized through the doughnut framework without the need to disrupt biophysical processes (Turner and Wills, 2022).

According to Krauss (2018), Kate Raworth divides the visualization of the doughnut economy into two concentric rings based on human social welfare and the planet's ecological palate. Through this, Doughnut Economics Theory seeks to prevent compartmentalized government decision-making from systematically understanding aspects of the Sustainable Development Goals (SDGs) that fit the concept of sustainable development (Turner and Wills, 2022). In addition, Kate Raworth updated the economic way of thinking to 7: changing goals, seeing the big picture, maintaining human nature, being smart with systems, designing to distribute, creating regeneration, and being agnostic with growth.

3. Method

Poverty equivalent growth rate (PGER)

Poverty equivalent growth rate (PGER) means inclusive growth benefits disadvantaged groups. The calculation is in the form of a comparison of the population's average income, the poverty rate, and the distribution of income in the early stages with the end of the development period. Based on this description, the calculation of inclusive growth is measured by the following formula:

$$Igij = Eij/Ei * Ej \quad (1)$$

Description:
Igij = inclusive growth coefficient
Eij = growth of group i concerning indicator j
Ej = growth of indicator j

Determination of regional leading sectors

First, the location quotients (LQ) analysis method determines the basic sector by comparing the production and value-added of the same sector with the production and value-added of a sector in the reference region (Harjanti *et al.*, 2021). The results of the LQ analysis represent the relative comparison between the capabilities of the same sector in the survey area and the reference region. The following is the calculation of the location quotients (LQ) value of a region adopting research by Abadi *et al.* (2024)

$$LQ = (Yib/Yb)/(Yia/Ya) \quad (2)$$

Description:
Yib = Income/number of workers in sector i in a region below.
Yb = Total income/number of workers across all sectors of the lower region.
Yia = Revenue/number of workers from industry sector i in the region above.
Ya = Total income/number of workers of all sectors in the upper region.

Second, shift-share analysis aims to describe the pattern of shifts and changes in the structure of the regional economy by looking at the comparison of the GRDP growth value of each sector in the analysis area and the GRDP value in areas with higher status (Darius *et al.*, 2021). The shift-share analysis is useful for seeing the relationship between one region/sector and another region/sector and the relationship between regions with lower administrative levels and higher regions. Referring to research by Amelia *et al.* (2024), the calculation of the shift-share analysis component is carried out using the following formula:

$$\text{National growth (NG)} = ((Yt))/((Yo)) - 1 \quad (3)$$

Proportional growth (PG) = ((Yit))/((Yio)) - ((Yt))/((Yo)) (4)

Regional share growth (RSG) = ((yit))/((yio)) - ((Yit))/((Yio)) (5)

Economic growth (EG) = NG + PG + RSG (6)

Description:
Yt = the total value of GRDP in the region at the end of the year.
Yo = the total value of GRDP in the region above the starting year.
Yit = the GRDP value of sector i in the region at the end of the year.
Yio = GRDP value of sector i in the region above the starting year.
Yit = GRDP value of sector i in the lower region in the final year.

Third, Klassen typology analysis determines the basic/leading sectors according to mapping the pattern and structure of regional sectoral growth potential (Harjanti *et al.*, 2021). This grouping is based on each regional economic sector's LQ and DLQ values (Pratama, 2023). The following matrix or cartesian diagram can represent sector growth and income through Klassen typology analysis.

Table 1. Klassen typology matrix

Criteria		Contribution to GRDP	
		Yi ≥ Y	Yi < Y
Growth Rate	ri ≥ r	Quadrant I Advanced and fast-growing sectors	Quadrant II Fast-growing sector
	ri < r	Quadrant III Developed and depressed sectors	Quadrant IV Lagging sector

Description: ri = GDP growth rate of sector I, r = total GRDP growth rate, Yi = contribution of sector i to total GRDP, and Y = average sector contribution to total GRDP.

Determining leading sectors in Joglosemar's main development area was analyzed by modifying the research framework of Fransiska and Setiawan (2022) and Sari *et al.* (2018). The leading sector is determined through LQ, SS, and Klassen typology analysis by summing the GRDP of all regional cities. In addition, relative weighting for each criterion was conducted to obtain comprehensive and measurable results from the three methods. This methodology refers to the research framework of Rizani (2020) with adjustments. The LQ and SS analysis results were weighed by giving points 1 to 17 from the largest analysis value to the smallest value in order. In contrast to this analysis, the weighting in the Klassen typology method is carried out by giving points according to the quadrant/cluster obtained.

Table 2. Operational definition of research variables

Variables	Operational definition	Unit
Gross Regional Domestic Product at Constant Prices	The calculation of the value added of goods and services for each business field in the region is based on prices prevailing in a particular year, which becomes the reference/base year.	Per year, million rupiah
Investment Realization (FDI/DDI)	Total value of FDI and DDI investment realization.	Per year, billions of rupiah
Inclusive Economic Growth	The benefits of economic growth, especially for people experiencing poverty, using the Poverty-Equivalent Growth Rate (PEGR) approach.	Inclusivity Coefficient

Data and sample

This research uses existing/secondary data based on the publication of the Indonesian Central Bureau of Statistics (*Badan Pusat Statistik-BPS*), Semarang City, Surakarta City, and Yogyakarta City in 2014 - 2023. The population and sample of this study cover the entire Joglosemar Region, namely

the cities of Yogyakarta, Surakarta, and Semarang. With this comprehensive and integrated sample selection approach, the research is expected to produce accurate, representative, and in-depth data. The description of the data used is outlined in the following table.

Research framework and model estimator

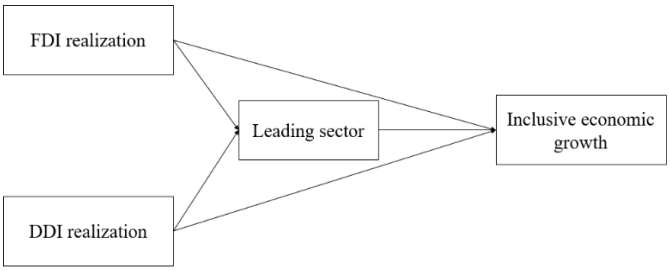

Figure 2. Mediation model with multiple independent variables - investment on inclusive economic growth through regional leading sector. Source: Adapted from research by (Alfons *et al.*, 2022).

We use fixed and common effect models to estimate equations in path analysis. Path analysis is defined as a procedure for expanding multiple regression analysis, which not only analyzes the effect between variables directly but analyzes the causal path between variables directly or indirectly in the presence of mediating variables. The type of panel data path analysis developed in this study is an intermediate model or intervening variable. The following is a diagram of the path model developed in the modified research from (Alfons *et al.*, 2022). Based on Figure 3.1, the regression model equation in the study is formulated as follows:

$$Zit = \beta 0 + \beta 1 X1it + \beta 2 X2it\ \varepsilon it \quad (7)$$

$$Yit = \beta 0 + \beta 1 Zit + \beta 2 X1it + \beta 3 X2it + \varepsilon it \quad (8)$$

Description:
Y = Inclusive economic growth.
Z = Leading sector.
X1 = Realization of investment value (FDI).
X2 = Realization of investment value (DDI).
β = Regression coefficient.
ε = Confounding factor.
it = Cross section, Time series.

4. Results and discussion

Analysis of inclusive economic growth in Yogyakarta City 2014 - 2023

Based on Table 3. below, an analysis of the dynamics of inclusive economic growth from 2014 to 2023 in Yogyakarta City reveals a significant paradoxical phenomenon in the context of macroeconomic development. Yogyakarta City consistently recorded positive economic expansion from 4% to 6%. A substantive anomaly occurred in 2020 when economic growth contracted to -1.76%. The economic contraction due to extraordinary events, namely the COVID-19 pandemic, was the only period with positive inclusiveness. Fiscal intervention in the form of comprehensive social assistance during the pandemic created a significant redistribution effect through increased household consumption levels (Hidayat *et al.*, 2020). Furthermore, according to Ariyad and Choirunnisa (2023), this is driven by the implementation of the fiscal decentralization policy of Yogyakarta City during the pandemic, which is managed by the regional local economic empowerment scheme.

The inverse relationship between economic contraction and the inclusiveness index is corroborated by Ngubane *et al.* (2023), who argue that an increase in economic growth will impact inequality in the long run. This result is also consistent with Pikety's (2014) critique of the Kuznet theory, which assumes that post-crisis economic recovery tends to increase inequality due to capital accumulation in certain segments. Suggest a fundamental problem in the conventional development

paradigm. Thus, these findings underscore the importance of reorienting economic policy towards growth acceleration and structural changes that provide access and participation for all elements of society to the benefits of economic development.

Table 3. PEGR analysis of Yogyakarta City 2014 - 2023

Year	Economic Growth	PEGR	Result
2014	5.28%	4.00%	Not Inclusive
2015	4.94%	3.81%	Not Inclusive
2016	5.35%	3.83%	Not Inclusive
2017	5.70%	3.99%	Not Inclusive
2018	5.75%	4.32%	Not Inclusive
2019	5.78%	4.53%	Not Inclusive
2020	-1.76%	13.15%	Inclusive
2021	4.01%	4.72%	Not Inclusive
2022	6.25%	5.05%	Not Inclusive
2023	5.57%	5.03%	Not Inclusive

Analysis of inclusive economic growth in Semarang City 2014 - 2023

Table 4. presents interesting dynamics related to economic stability to create inclusive economic growth amid global challenges. Semarang City's economic growth over the 2014- 2023 has shown a stable trend, hovering around 5%. This result reflects the consistency of fiscal and monetary policies in expanding the real sector (Chugunov *et al.*, 2021). Both main factors determine investment and business activities (Mehar, 2023). However, in implementing this policy, the government needs to be careful of the crowding out effect of public spending. A higher tax-to-GDP ratio will negatively impact regional economic growth.

Table 4. PEGR analysis of Semarang City 2014 - 2023

Year	Economic Growth	PEGR	Results
2014	5.28%	10.31%	Inclusive
2015	5.09%	8.08%	Inclusive
2016	5.11%	7.80%	Inclusive
2017	5.24%	7.23%	Inclusive
2018	5.49%	7.58%	Inclusive
2019	5.96%	7.98%	Inclusive
2020	-2.42%	7.79%	Inclusive
2021	5.16%	7.76%	Inclusive
2022	5.12%	9.99%	Inclusive
2023	5.08%	8.53%	Inclusive

An interesting phenomenon in Semarang City occurred in 2020. In that year, economic growth was confirmed to have contracted due to the COVID-19 pandemic, but all elements of society could still feel the benefits of growth. This condition was driven by expansionary fiscal policy in the form of social assistance worth 6.695 trillion (BPS, 2022). This result is in line with the research results by Rahman (2021), which emphasizes the importance of implementing social protection policies during a crisis to maintain the purchasing power of vulnerable groups. In addition, according to Fridayani *et al.* (2024), this inclusive economic growth in Semarang City is a form of local government success in bridging the gap between the formal and informal sectors through the strategic use of technology and environmental practices. Thus, this analysis implies the need for adaptive and responsive policies with structural reforms, fiscal stimulus, and targeted social programs as the key to maintaining sustainable development.

Analysis of inclusive economic growth in Surakarta City 2014 - 2023

Based on the data, Table 5. presented, inclusiveness shows an inconsistent trend with fluctuating economic growth dynamics. The inclusiveness characteristic in Surakarta City can only be

achieved in 2015 and 2019. Meanwhile, other years in this research period have not reached the inclusive category. According to the framework developed by Klasen (2010), inclusive economic growth occurs when it reaches the proportional level. Development is pro-poor growth, with the distribution of benefits from development felt by all segments of society. In addition, inclusiveness is also seen from the balance of meeting the community's needs with the environmental ecosystem's condition. According to Kurniawati (2023), the practice of corporate social responsibility (CSR) in micro, small, and medium enterprises (MSMEs) in Surakarta City is one of the factors driving the achievement of sustainable development (SDGs). In addition, the agricultural sector also directly contributes to the SDGs related to economic growth and poverty alleviation in Surakarta City.

Table 5. PEGR analysis of Surakarta City 2014 - 2023

Year	Economic Growth	PEGR	Results
2014	6.25%	4.79%	Not Inclusive
2015	6.31%	5.01%	Inclusive
2016	5.80%	4.95%	Not Inclusive
2017	5.64%	5.30%	Not Inclusive
2018	6.48%	5.39%	Not Inclusive
2019	6.81%	5.95%	Inclusive
2020	-1.61%	-2.77%	Not Inclusive
2021	5.16%	3.93%	Not Inclusive
2022	5.73%	6.19%	Not Inclusive
2023	5.79%	4.81%	Not Inclusive

After the COVID-19 pandemic, there was an economic rebound in 2021-2023, but economic growth still did not reach inclusive conditions. This finding is consistent with the findings of Koutroulis *et al.* (2016), which prove that post-crisis economic recovery is often asymmetric. This indicator reflects structural failures in translating macro growth into equitable micro welfare. These failures and inconsistencies indicate the need for structural reforms and substantial improvements in the distribution of development benefits (Kim *et al.*, 2020), for example, by changing the competitiveness and quality of human resources.

Table 6. Location quotient (LQ) analysis of the Joglosemar's main development area 2014 - 2023

Business field	Average	Description
Agriculture, forestry, and fisheries	0.05	Non Basis
Mining and quarrying	0.05	Non Basis
Processing industry	0.68	Non Basis
Electricity and gas procurement	1.38	Basis
Water supply, waste management, waste and recycling	1.53	Basis
Construction	2.30	Basis
Wholesale and retail trade; repair of cars and motorcycles	1.11	Basis
Transportation and warehousing	0.98	Basis
Provision of accommodation and drinking meals	1.22	Basis
Information and communication	2.25	Basis
Financial and insurance services	1.51	Basis
Real estate	1.78	Basis
Company services	1.67	Basis
Government administration, land, and compulsory social security	1.41	Basis
Education services	0.89	Non Basis
Health and social services	1.27	Basis
Other services	0.72	Non Basis

Analysis of the determination of the leading sector of the Joglosemar's in 2014 - 2023

Based on the results of the LQ calculation (Table 6.), business field data in Joglosemar's main development area, the tertiary and secondary sectors, which are dominated by the services and

infrastructure sectors, are identified as experiencing a strengthening trend. The high LQ value of the information and communication sector (2.25) and construction (2.30) reflects that the Joglosemar area is at the regional growth stage with a modern economic structure. This condition aligns with Chenery and Syrquin's economic transformation theory, which is related to the shift in contribution towards the service sector and does not depend on the primary sector. The fulfillment of primary needs in the Joglosemar area is relatively dependent on other regions because of the low LQ values of the agriculture and mining sectors (0.05) and the processing industry (0.68).

Table 7. Shift share (SS) analysis of the Joglosemar's main development area 2014 - 2023

Business field	NG	PG	RSG	EG	Desc.
Agriculture, forestry, and fisheries	0.215	-0.227	-0.004	-0.017	Negative
Mining and quarrying	-0.039	-0.088	-0.397	-0.525	Negative
Processing industry	0.488	-0.118	0.160	0.530	Positive
Electricity and gas procurement	0.461	0.056	-0.041	0.476	Positive
Water supply, waste management, waste and recycling	0.301	-0.060	-0.085	0.156	Positive
Construction	0.404	0.061	-0.104	0.361	Positive
Wholesale and retail trade, repair of cars and motorcycles	0.439	0.005	-0.013	0.432	Positive
Transportation and warehousing	0.671	0.310	-0.085	0.896	Positive
Provision of accommodation and drinking meals	0.624	0.288	-0.111	0.801	Positive
Information and communication	1.250	0.843	-0.039	2.055	Positive
Financial and insurance services	0.403	-0.020	-0.024	0.360	Positive
Real estate	0.540	0.073	0.021	0.634	Positive
Company services	0.597	0.191	-0.040	0.748	Positive
Government administration, land, and compulsory social security	0.285	-0.195	0.033	0.123	Positive
Education services	0.493	0.089	-0.042	0.541	Positive
Health and social services	0.835	0.318	0.071	1.224	Positive
Other services	0.475	0.188	-0.160	0.504	Positive

Table 8. Analysis of the Klassen typology of the Joglosemar's main development area 2014 - 2023

Business field	Quad.	Classification
Agriculture, forestry, and fisheries	4	Disadvantaged sector
Mining and quarrying	4	Disadvantaged sector
Processing industry	2	Fast-growing sector
Electricity and gas procurement	3	Advanced and distressed sectors
Water supply, waste management, waste and recycling	3	Advanced and distressed sectors
Construction	3	Advanced and distressed sectors
Wholesale and retail trade; repair of cars and motorcycles	3	Advanced and distressed sectors
Transportation and warehousing	2	Fast-growing sector
Provision of accommodation and drinking meals	3	Advanced and distressed sectors
Information and communication	3	Advanced and distressed sectors
Financial and insurance services	1	Advanced and fast-growing sectors
Real estate	1	Advanced and fast-growing sectors
Company services	3	Advanced and distressed sectors
Government administration, land, and compulsory social security	1	Advanced and fast-growing sectors
Education services	4	Disadvantaged sector
Health and social services	1	Advanced and fast-growing sectors
Other services	4	Disadvantaged sector

The dynamics of the growth of the economic structure of the Joglosemar in Table 7. shows a positive dominance in each sector. One of them is the information and communication sector. Despite having a negative RSG value (-0.039), this sector still shows the highest NG value (1.250) and a very high PG (0.843). In addition, the manufacturing industry, government administration, land and compulsory social security, real estate, and health and social services sectors also have high competitive

advantages. Indicates great potential for development into a basic sector. Because this sector can attract income flows from both inside and outside and become the backbone of the regional economy.

Referring to the results of the Klassen typology classification in Table 8. Above, it can be seen that the economic structure of Joglosemar in 2014-2023 is dominated by sectors classified as developed and depressed (quadrant 3). Only the health services and social activities sector, government administration, land, compulsory social security, financial services and insurance, and real estate are categorized as advanced and fast-growing (quadrant 1) and are basic. These sectors are expected to drive the flow of regional income and create a multiplier effect that will provide a positive stimulus to the non-base sectors.

Table 9. presents the results of determining the leading sectors in the Joglosemar special region for 2014-2023 by integrating composite weighting. This weighting combines the results of three methods: LQ, SS, and Klassen typology analysis. This analysis measures the level of competitiveness, progressive growth, and sustainable contribution to regional development of each sector. This approach to determining the region's leading sector adopts the research framework by Rizani (2020) in conducting a holistic mapping of the dynamics of the regional economic structure based on the convergence of quantitative indicators. As a result, the information and communication sector is the economy's main pillar with a comparative advantage, sectoral growth, and contribution to high economic growth compared to other sectors.

Table 9. Determination of leading sectors in the Joglosemar's area 2014 - 2023

Business field	Shift share analysis					Klassen Typology	Total
	LQ	NG	PG	RSG	EG		
Agriculture, forestry, and fisheries	16	16	17	9	16	4	13.0
Mining and quarrying	17	17	14	17	17	4	14.3
Processing industry	15	8	15	1	8	2	8.2
Electricity and gas procurement	8	10	10	10	10	3	8.5
Water supply, waste management, waste and recycling	5	14	13	12	14	3	10.2
Construction	1	12	9	14	12	3	8.5
Wholesale and retail trade, repair of cars and motorcycles	11	11	11	6	11	3	8.8
Transportation and warehousing	12	3	3	12	3	2	5.8
Provision of accommodation and drinking meals	10	4	4	15	4	3	6.7
Information and communication	2	1	1	8	1	3	2.7
Financial and insurance services	6	12	12	7	13	1	8.5
Real estate	3	6	8	4	6	1	4.7
Company services	4	5	5	5	5	3	4.5
Government administration, land, and compulsory social security	7	15	16	3	15	1	9.5
Education services	13	7	7	11	7	4	8.2
Health and social services	9	2	2	2	2	1	3.0
Other services	14	9	6	16	9	4	9.7

Analysis of the influence of FDI and DDI on inclusive economic growth through leading sectors

In answering the research question, panel data regression analysis was the best method. This method starts with exploring the most appropriate panel data regression model. Exploration is done with several tests, namely Chow, Hausman, and Lagrange multiplier tests.

Based on Table 10. results, sub-structural equation 1 is used to see the effect of FDI and DDI variables on the leading sectors in the Joglosemar reliable area in 2014-2023. Referring to the Table 10. above, the Chow test results show that the prob > chi^2 value is less than 0.05, so the best model chosen is FEM. Furthermore, the Hausman test was conducted to determine FEM or REM as the best model. The value of prob > chi^2 is less than 0.05, so FEM is chosen as the best model, and the Lagrange Multiplier test does not need to be done.

Table 10. Best model exploration results

Structural equation	Best model test	Prob > chi^2	Interpretation
Sub-Structural Equation 1	Chow test	0.0006	Fixed effect model
	Hausman test	0.0024	Fixed effect model
Sub-Structural Equation 2	Chow test	0.2977	Common effect model
	Lagrange multiplier test	1.0000	Common effect model

Sub-structural equation 2 is used to see the role of FDI and DDI variables on inclusive economic growth through leading sectors in the Joglosemar reliable area in 2014-2023. Based on the Table 10. above, the Chow test results show that the prob > chi^2 value is greater than 0.05, so the best model chosen is CEM, and the Hausman Test does not need to be done. The Lagrange Multiplier Test further determines the best model. As a result, the value of prob > chi^2 is greater than 0.05, so the best model chosen is CEM.

Partial analysis (t)

Table 11. Partial statistical test results (t)

Structural equation	Best model	Unstandardized coefficients		t-stat.	Sig.
		B	Std. Error		
Sub-Structural Equation 1	FDI	0.0156	0.0271	0.58	0.569
	DDI	0.1124	0.0312	3.60	0.001*
	Constant	14.3345	0.4059	35.32	0.000
Sub-Structural Equation 2	FDI	0.0320	0.0290	1.10	0.280
	DDI	-0.0218	0.0279	-0.78	0.441
	Leading Sector	0.3824	0.1700	2.25	0.033*
	Constant	-8.9306	2.3399	-3.82	0.001

Notes: "*" indicate significance at the 5%levels

Based on the Table 11. above, in sub-structural equation 1, testing variable X1 (FDI) has a t-statistic value of 0.58 < t table 2.051 with a prob. (significance) value of .765 (> 0.05), it can be concluded that variable X1 (FDI) does not have a significant effect on variable Z (leading sector). Meanwhile, variable X2 (DDI) has a t- statistic value of 3.60> t table 2.051 with a prob. (significance) value of .001 (< 0.05), it can be concluded that variable X2 has a significant effect on variable Z (leading sector).

Variable X1 (FDI) in sub-structural equation 2 has a t-statistic value of 1.10 < t table 2.055 with a prob. (significance) value of 0.280 (> 0.05), it is concluded that variable X1 (FDI) has no significant effect on variable Y (inclusive economic growth). Another variable, namely X2 (DDI), has a t-statistic value of -0.78 < t table 2.055 with a prob. (significance) value of .441 (>0.05), which means that the variable X2 (DDI) has no significant effect on variable Y (inclusive economic growth). Finally, variable Z (leading sector) has a t-statistic value of 2.25> 2.055 with a prob. (significance) value of 0.033 (< 0.05). It can be concluded that variable Z (leading sector) significantly affects variable Y (inclusive economic growth).

Simultaneous analysis (F)

Table 12. Simultaneous statistical test results (F)

Equation	F-count (Wold chi2/F-statistic)	F-table	Probability
Equation 1	7.05	3.354	.0037*
Equation 2	8.11	2.975	.0006*

Notes: "*" indicate significance at the 5%levels

The Wold Chi^2 (F count) value of sub-structural equation 1 in Table 12. is 7.05 > F table, which is 3.354 with a prob/significance value of .0037 (< 0.05), it is concluded that variables XI and X2 (FDI and DDI) have a significant effect on the dependent variable Z (leading sector)

simultaneously. Then, in sub-structural equation 2, the F-Statistic value (F count) is 8.11> F table, namely 2.975 with a Prob. (Significance) value of 0.0006 (<0.05), it can be concluded that the independent variables X1, X2, and Z (FDI, DDI, and leading sectors) simultaneously or jointly affect the dependent variable Y (inclusive economic growth).

Test coefficient of determination (R^2)

The R-Square value of sub-structural equation 1 in Table 13. is 0.7472. It can be concluded that the contribution of the influence of the independent variables to the dependent variable simultaneously (together) is 74.72%. Variables outside the equation model explain the remaining 25.28% of the effect. The Adjusted R-Square value of equation 2 is 0.4240, and it is concluded that the contribution of the causality of the independent variables to the dependent variable simultaneously (together) is 42.40%. In other words, the remaining 57.60% is influenced by variables outside the equation model.

Table 13. Test results of the coefficient of determination (R^2)

Structural Equation	R-squared	Adjusted R-squared
Sub-Structural Equation 1	0.7472	-
Sub-Structural Equation 1	0.4835	0.4240

Notes: "*" indicate significance at the 5%levels

Path analysis

According to Napitupulu et al. (2021), the decision-making criteria for the effect of the mediating variable are based on the magnitude of the Z-count and Z-table. In addition, the mediating effect of a variable can also be seen based on the P-value through the test results on the Sobel calculator.

Table 14. Sobel test results

Path analysis	Z-count	Z-table	P-value
X1 → Z → Y	0.5589	1.9600	0.5762
X2 → Z → Y	1.9083	1.9600	0.7220

Notes: "*" indicate significance at the 5%levels

Last, based on the calculated in Table 14., the Z value of variable X1 (FDI) of 0.55891 < the Z table value of 1.96 with a significance level of 5% and a p-value of 0.57621989 > 0.05, it is concluded that variable X1 (FDI) does not affect variable Y (inclusive economic growth) through variable Z (leading sector) as an intervening variable. On the other hand, the calculated Z value of variable X2 (DDI) is 1.90835 < the Z table value of 1.96 with a significance level of 5% and a p-value of 0.72197403 > 0.05, it is concluded that variable X2 (DDI) does not affect variable Y (inclusive economic growth) through variable Z (leading sector) as an intervening variable.

Discussion

The effect of investment in the form of FDI on inclusive economic growth in the Joglosemar through the leading sector

FDI and GRDP of leading sectors play an important role in achieving inclusive economic growth in a region. The flow of FDI into the region is expected to positively influence direct capital accumulation and a multiplier effect on the spread of knowledge, technology, and skills of local labor (Dao and Ngo, 2023). Meanwhile, the information and communication sector is crucial in bridging effective access to information to achieve optimal adoption and innovation. However, based on the results of this study, it is concluded that FDI cannot significantly influence inclusive economic growth, especially in the Joglosemar Special Region, through the leading sector.

According to research by Thu *et al.* (2010), technology and knowledge transfer from FDI do not significantly affect inclusive economic growth. According to him, FDI cannot create a strong relationship between trade and human capital in achieving inclusive economic growth. Furthermore, Burhan (2018) mentioned that it does not have a strong influence to overcome inclusive economic growth seen from poverty due to the low level of public education and unbalanced infrastructure. As defined by Kate Raworth in the donut economic theory, inclusive economic development will also not

be achieved if FDI flows are only concentrated in certain regions and sectors (Gam *et al.*, 2023). If it is concentrated in one sector, the same benefits will not be difficult to feel at all levels of society. It worsens the economy at large by creating gaps.

The effect of investment in the form of domestic direct investment (DDI) on inclusive economic growth in the Joglosemar through the leading sector

DDI does not significantly affect inclusive economic growth in the Joglosemar reliable area through the leading sector. This conclusion is in line with the findings in research by Bakari *et al.* (2018), which proves that local investment in a sector cannot create inclusive economic growth in the long run. The main problem is the negative impact of global warming due to pollution, which causes environmental damage. On the other hand, although the dominance of local investment and the use of high technology can outperform the competitiveness of foreign investment, it will create a crowding-out effect when investment is made in the same sector (Magbondé *et al.*, 2024). According to Zheng and Shen (2019), inclusive economic growth is moderated by factors such as human capital market development as a labor force and the skill structure of the labor force itself. These sectors determine people's ability to participate and benefit from economic growth.

5. Conclusion

Referring to the findings of the analysis regarding the role of investment in accelerating inclusive economic growth through the optimization of leading sectors in the Joglosemar reliable area in 2014 - 2023, it can be concluded that The development of strategic projects and the establishment of the Joglosemar's main development area that attracts investment in leading sectors have not been able to create inclusive economic growth. Investment in the form of Foreign Direct Investment (FDI) and Domestic Direct Investment (DDI) also does not significantly affect the inclusive economic growth of Joglosemar's main development area through the leading sector. The research findings have crucial substantial implications for the local government as a stakeholder as a basis for public policy formulation in the Joglosemar area.

To strengthen the broad multiplier effect, the government can align fiscal and monetary policies with the needs of leading sector development. Integrating the two will encourage labor absorption and equal access to development results. The government can align fiscal and monetary policies with the needs of leading sector development, for example, by allocating fiscal incentives and regulatory support for developing the information and communication sector as a motor of economic growth. However, it needs to be balanced by maintaining a strong coordination framework at the regional level. Future research should expand the scope of the temporal horizon of the study by examining the long-term as well as the undetected investment cycle in the period 2014-2023. For example, by adding spatial analysis to test the consistency of findings and adding other moderating variables, such as human resources, MSME participation, cultural dynamics, absorptive capacity factors, or fiscal and monetary policy evaluation studies that could be the reason FDI and DDI do not have a significant influence on inclusive economic growth through the leading sector.

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