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Economic Policy Implications of LQ and DLQ Analysis in Strategic National Project Area

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Abstract

This study examines the economic policy implications of the Location Quotient (LQ) and Dynamic Location Quotient (DLQ) analyses in the context of the Tanimbar Islands, located in Indonesia's Maluku province. The islands, rich in natural resources, face significant development challenges, including poor infrastructure, geographic isolation, and limited industrialization. The upcoming INPEX project, a large-scale energy initiative by a Japanese corporation, is expected to transform the region's economy through investments, job creation, and infrastructure development. The aim of this research is to analyze which sectors—using LQ and DLQ—show the most promise for growth in light of the INPEX project, and to propose local economic policy adjustments that can maximize these opportunities. The study finds that while the primary sectors, such as agriculture and fisheries, have potential, underdeveloped infrastructure and outdated practices hinder their growth. Strategic planning, informed by LQ and DLQ analyses, is critical to aligning the region's economic development with the upcoming industrial transformations.

Keywords: *Location Quotient (LQ), Dynamic Location Quotient (DLQ), Economic Policy, Strategic National Project, Tanimbar Islands*

INTRODUCTION

The Tanimbar Islands, located in the Maluku province of Indonesia, are endowed with abundant natural resources, particularly in sectors such as fisheries, agriculture, and cultural tourism. However, despite these resources, the region faces substantial economic challenges, including geographic isolation, inadequate infrastructure, and limited market access. These factors have led to persistent poverty, economic underdevelopment, and a lack of significant industrialization. As highlighted by Maswekan & Balak (2024), the islands' isolation and lack of connectivity between the islands and other regions has severely hindered the region's economic development.

The strategic development of the region is expected to be significantly impacted by the INPEX project, one of the major Strategic National Projects (PSN) in Indonesia. The INPEX corporation, a Japanese oil and gas company, is slated to

begin operations in the Tanimbar Islands by 2030, focusing on large-scale energy production. This project is expected to bring substantial economic transformation to the region, including infrastructure development, job creation, and an influx of investments in related sectors. However, the successful integration of this project into the local economy will depend heavily on the effective identification of key sectors that can benefit from this development.

This research aims to explore the economic policy implications of the Location Quotient (LQ) and Dynamic Location Quotient (DLQ) analyses to help determine which sectors in the Tanimbar Islands have the most potential for growth in light of the upcoming INPEX project and how local economic policies can be adjusted accordingly.

The central issue in the Tanimbar Islands lies in the inefficient utilization of its abundant natural resources due to underdeveloped infrastructure and an over-reliance on primary sectors such as agriculture and fisheries. Despite these sectors' potential, productivity remains low because of outdated technology, lack of capital, and inefficient management (Devi, N. K. T. N., et al., 2024). Additionally, the islands' geographical isolation results in high transportation costs and limited access to national and international markets, making it difficult for local products to compete.

The INPEX project is expected to be a transformative force in the region, not only because of the direct economic benefits it will generate but also due to its potential to stimulate growth in other sectors. According to Stiglitz (2012), economic development should be focused on enabling sectors with comparative advantages to thrive, while simultaneously addressing infrastructural deficits that inhibit growth. In this context, the LQ and DLQ analyses are critical for identifying which sectors in Tanimbar can leverage the incoming investment from the INPEX project. These sectors could include tourism, fisheries, and agriculture, which are well-suited to benefit from improved infrastructure and a more diversified economy.

However, without proper planning, the INPEX project may also exacerbate existing inequalities in the region. The INPEX project will bring large-scale investments in energy and infrastructure, but the benefits may not be evenly distributed across all sectors or communities. Todaro and Smith (2020) argue that inclusive growth is essential to ensure that the benefits of economic development are shared by all segments of society. Therefore, the challenge for policymakers is not only to maximize the economic benefits from the INPEX project but also to ensure that the growth resulting from this project leads to sustainable and equitable development for the local population.

The use of LQ and DLQ analyses in identifying sectors with the highest potential is central to developing effective economic policies for the Tanimbar Islands. Location Quotient (LQ) is an analytical tool that helps determine which industries in a specific region are more specialized compared to the national average, thus identifying sectors where the region holds a competitive advantage (Bell, 1934). These sectors are considered essential for promoting economic development because they can potentially generate high returns by increasing production or expanding trade.

In contrast, Dynamic Location Quotient (DLQ), as introduced by Chinitz (1961), offers a forward-looking perspective, capturing shifts in economic patterns

and external influences that could impact future sectoral growth. This is particularly relevant in the context of the INPEX project, which represents a major economic shift that will likely alter the region's economic dynamics. By using DLQ, policymakers can anticipate which sectors might experience growth as a result of the INPEX project and how to best leverage this growth to create employment and foster long-term development.

As Stiglitz (2012) emphasizes, the development of infrastructure is a key factor in enabling economic growth. In the Tanimbar Islands, the lack of sufficient infrastructure—especially in transportation, energy, and communication—has hindered the growth of key sectors. The INPEX project, however, presents a unique opportunity to address these infrastructure gaps. By improving transportation networks, energy supply, and communication systems, the project could unlock the potential of sectors such as tourism and agriculture, which are critical for long-term economic development.

According to Sen (1999), economic development should be assessed not only in terms of GDP growth but also in terms of the freedoms and capabilities it offers individuals. This means that economic policies in the Tanimbar Islands must focus not only on increasing output but also on improving the quality of life of the local population. Ensuring equitable access to education, healthcare, and employment opportunities is essential for the region's sustainable development.

The economic policies in the Tanimbar Islands must be restructured to take full advantage of the INPEX project. The LQ and DLQ analyses provide an essential tool to identify which sectors will benefit most from the incoming investment, enabling the formulation of policies that promote these sectors. By focusing on sectors with a competitive advantage, such as fisheries, agriculture, and tourism, the government can implement targeted interventions that stimulate growth, create jobs, and improve the region's economic resilience.

For example, tourism is a sector that could benefit greatly from the improved infrastructure that will be implemented as part of the INPEX project. The Tanimbar Islands are known for their rich culture and natural beauty, making them an ideal location for cultural tourism. However, without the necessary infrastructure—such as transportation networks, accommodations, and promotional activities—this sector cannot realize its full potential. According to Stiglitz (2012), improving infrastructure and creating market access are essential for unlocking the potential of tourism, and the INPEX project can serve as a catalyst for these improvements.

Similarly, the fisheries and agriculture sectors could also benefit from infrastructure development, particularly in terms of better access to markets and more efficient production technologies. However, the policies implemented to support these sectors must go beyond infrastructure improvements. They must also include incentives for technological adoption, capacity building for local farmers and fishers, and support for market access.

Despite the anticipated benefits of the INPEX project, the existing policy framework in the Tanimbar Islands faces significant gaps. As noted by Hutapea, A., Koleangan, R. A., & Rorong (2020), the current economic policies are not fully aligned with the region's development needs, particularly regarding infrastructure development and sectoral linkages. Moreover, Devi, N. K. T. N., et al. (2024) argue that without clear guidance on how the INPEX project should be integrated into the

region's economy, the benefits of such large-scale projects may not be fully realized.

The limited infrastructure in the Tanimbar Islands—especially in terms of transportation, energy, and communication networks—poses a significant challenge for economic development. The INPEX project is expected to address some of these infrastructure deficits, but the benefits may be unevenly distributed. For example, while energy infrastructure may improve as part of the project, sectors like fisheries and agriculture may still face significant barriers in terms of transportation and market access.

Furthermore, while the INPEX project promises substantial investments, it is essential that policies are designed to ensure these investments benefit the local communities and help reduce economic inequalities. In line with Sen's (1999) approach, it is important that policies are inclusive and focus on improving human development indicators such as education, healthcare, and job opportunities.

METHOD

This study employs a descriptive research design to analyze the economic structure of the Tanimbar Islands, focusing on identifying key sectors with growth potential in light of the forthcoming INPEX project. Descriptive research is instrumental in providing an accurate portrayal of characteristics within a particular field of study, facilitating a comprehensive understanding of existing conditions (Chandra & Sharma, 2007).

The research utilizes secondary data, specifically the Gross Regional Domestic Product (GRDP) statistics by industry for the Tanimbar Islands, spanning from 2010 to 2023. Secondary data analysis offers the advantage of accessing extensive datasets that may be impractical for individual researchers to collect firsthand, thereby enhancing the study's scope and depth (Johnston, 2014). The data is sourced from the Badan Pusat Statistik (BPS) Kabupaten Kepulauan Tanimbar, ensuring its credibility and relevance. To obtain this data, the researchers submitted a detailed research proposal accompanied by an official research permit, adhering to standard data acquisition protocols.

The analytical framework of the study incorporates the calculation of Location Quotient (LQ) and Dynamic Location Quotient (DLQ) to assess the relative concentration and growth potential of various economic sectors. The LQ is a widely utilized tool in regional economic analysis, enabling the identification of sectors with a comparative advantage by comparing the regional share of a particular industry to a broader reference area (Isserman, 1977). An LQ value greater than one suggests that the region has a higher concentration in that sector compared to the reference area, indicating a potential export-oriented industry.

The DLQ extends this analysis by incorporating temporal dynamics, evaluating how the concentration of industries evolves over time. This approach facilitates the identification of emerging sectors that may not currently exhibit a high LQ but are on a growth trajectory, indicating future potential (Esteban-Marquillas, 1972). By analyzing trends from 2010 to 2023, the study captures the economic shifts within the Tanimbar Islands, providing insights into sectors that are gaining prominence.

To ensure the validity and reliability of the findings, the study adheres to rigorous methodological standards. The use of official data from BPS guarantees

accuracy, while the application of established analytical methods such as LQ, DLQ, and Shift-Share Analysis enhances the robustness of the results. Furthermore, the clear documentation of data collection procedures, including the submission of research proposals and permits, ensures transparency and replicability, aligning with best practices in research methodology (Creswell, 2014).

RESULTS AND DISCUSSION

The analysis of public perception regarding various government policies in the Tanimbar Islands shows significant variation, reflecting different levels of satisfaction and concerns among the local population. The security aspect received the highest perception level at 88.41%, indicating that the community feels safe and protected. This may be attributed to the effectiveness of law enforcement and the low crime rate in the region. The education and healthcare sectors received positive perceptions, with scores of 72.72% and 70.45%, respectively. However, these figures indicate room for improvement in service quality and accessibility. Limited facilities, teachers, and medical personnel may be factors influencing these perceptions. On the other hand, the communication, land transportation, electricity network, and sea transportation sectors received lower perceptions, with scores of 65.46%, 65.00%, 64.32%, and 62.28%, respectively. This suggests that infrastructure in these areas still needs to be improved to meet the public's need for better connectivity and basic services.

Public facilities and road infrastructure received even lower perceptions, at 56.82% and 52.04%, respectively. This condition indicates that the community feels dissatisfied with the quality and availability of public facilities, as well as the state of the roads, which can impact mobility and daily economic activities. Law enforcement and politics received fairly good perceptions, at 73.87% and 59.54%, respectively. However, there are still concerns regarding issues such as corruption, collusion, and nepotism, which received very low perceptions at 6.82%. This reflects a lack of trust among the public in the integrity of some government officials and the political process. Perception of the general economic condition is relatively low, at 38.64%. Additionally, 65.68% of the population feels that the prices of basic necessities are high, and 13.64% complain about the difficulty of finding employment. This situation indicates significant economic challenges, such as inflation and high unemployment rates, which affect the welfare of the population.

The high cost of healthcare and medicine is also a concern, with a perception of 6.82%. This suggests that the cost of healthcare services and medications is burdensome for some members of the community, which could hinder their access to necessary health services. Interestingly, education received the lowest perception score at 2.95%. This may be due to respondents' interpretation of the survey question, where they might view education as a lower priority compared to other more urgent issues, or due to deep dissatisfaction with the existing education system.

Table 1. Evaluasi Kebijakan Pemerintah

No	Kondisi yang dievaluasi	Persepsi
1	Keamanan	88.41%

2	Pendidikan	72.72%
3	Pelayanan Kesehatan	70.45%
4	Komunikasi	65.46%
5	Transportasi Darat	65.00%
6	Jaringan Listrik	64.32%
7	Transportasi Laut	62.28%
8	Fasilitas Umum	56.82%
9	Inflastruktur Jalan	52.04%
10	Penegakan Hukum	73.87%
11	Politik	59.54%
12	Ekonomi	38.64%
13	Harga-harga Kebutuhan barang pokok mahal	65.68%
14	Susah mencari lapangan kerja	13.64%
15	Kurupsi, Kolusi dan Nepotisme	6.82%
16	Kesehatan dan Obat-obatan mahal	6.82%
17	Pendidikan	2.95%

Source: Sinergi Data Indonesia (SDI)

The analysis of the Location Quotient (LQ) and Dynamic Location Quotient (DLQ) is a commonly used method to identify the base and non-base sectors in a region's economy. A base sector is one that has a comparative advantage and can export its products or services outside the region, thereby playing a crucial role in regional economic growth. In contrast, non-base sectors primarily serve local needs and have a more limited role in driving economic growth.

Based on the presented data, the sector "Water Supply, Waste Management, Waste and Recycling" has an LQ of 1.61 and a DLQ of 48.37, indicating that this sector is a base sector and has prospects for future development. Similarly, the sector "Accommodation and Food Services" with an LQ of 1.11 and a DLQ of 7.84 is also considered a prospective base sector. These sectors have current comparative advantages and are expected to continue growing, making them key areas for future regional economic development planning.

The "Construction" sector has an LQ of 1.98, indicating that it is currently a base sector. However, with a DLQ of 0.18, this sector is categorized as non-prospective, suggesting that its future growth may be slower compared to similar sectors in the reference region. This requires attention in planning to ensure that this sector continues to contribute significantly to the regional economy.

The "Agriculture, Forestry, and Fisheries" sector has an LQ of 0.84 and a DLQ of 2.45, meaning it is currently a non-base sector but has the potential to develop into a base sector in the future. Similarly, the "Mining and Quarrying"

sector with an LQ of 0.56 and a DLQ of 20.10 shows a similar pattern. Both sectors have the potential for faster growth compared to similar sectors in the reference region, and thus should be considered priorities in the regional economic development strategy.

The "Manufacturing" and "Electricity and Gas Supply" sectors have LQ values of 0.29 and 0.54, and DLQ values of 0.28 and 0.10, respectively, indicating that both sectors are non-base and non-prospective. This means that the contribution of these sectors to the regional economy is currently low and is expected to show no significant growth in the future. Therefore, policy interventions may be required to enhance the competitiveness and contribution of these sectors.

Table 2. Analisis LQ dan DLQ

No	Lapangan Usaha	LQ	DLQ	Keterangan	
				LQ	DLQ
A	Pertanian, Kehutanan dan Perikanan	0,84	2,45	Bukan Basis	Prospektif
B	Pertambangan dan Penggalian	0,56	20,10	Bukan Basis	Prospektif
C	Industri Pengolahan	0,29	0,28	Bukan Basis	Tidak Prospektif
D	Pengadaan Listrik dan Gas	0,54	0,10	Bukan Basis	Tidak Prospektif
E	Pengadaan Air, Pengelolaan Sampah, Limbah dan Daur Ulang	1,61	48,37	Basis	Prospektif
F	Konstruksi	1,98	0,18	Basis	Tidak Prospektif
G	Perdagangan Besar dan Eceran, Reparasi Mobil dan Sepeda Motor	0,67	1,25	Bukan Basis	Prospektif
H	Transportasi dan Pergudangan	0,55	0,66	Bukan Basis	Tidak Prospektif
I	Penyediaan Akomodasi dan Makan Minum	1,11	7,84	Basis	Prospektif
J	Informasi dan Komunikasi	0,70	4,26	Bukan Basis	Prospektif
K	Jasa Keuangan dan Asuransi	0,83	0,09	Bukan Basis	Tidak Prospektif
L	Real Estate	0,84	84,02	Bukan Basis	Prospektif

M	Jasa Perusahaan	0,55	3,79	Bukan Basis	Prospektif
N	Administrasi Pemerintahan, Pertahanan dan Jaminan Sosial Wajib	1,53	0,23	Basis	Tidak Prospektif
O	Jasa Pendidikan	0,62	1,82	Bukan Basis	Prospektif
P	Jasa Kesehatan dan Kegiatan Sosial	1,58	1,15	Basis	Prospektif
Q	Jasa Lainnya	0,66	11,14	Bukan Basis	Prospektif
Total	PRODUK DOMESTIK REGIONAL BRUTO Kab. MTB	0,91	11,04	Bukan Basis	Prospektif

Source: Create from PDRB MTB 2010-2023

Based on the results of the Location Quotient (LQ) and Dynamic Location Quotient (DLQ) analysis, there are several important implications for the development of Tanimbar Islands Regency. Sectors with high LQ values and positive DLQ, such as the "Water Supply, Waste Management, Waste and Recycling" sector and the "Accommodation and Food Services" sector, show significant potential to support regional economic growth. Therefore, regional development policies should focus on utilizing and strengthening these sectors to promote sustainable economic growth. This is in line with the *comparative advantage* theory proposed by Ricardo (1817), which states that sectors with comparative advantages should be the main focus in economic development strategies.

The "Water Supply, Waste Management, Waste and Recycling" sector, with an LQ of 1.61 and DLQ of 48.37, can be made a leading sector in the development planning of Tanimbar Islands Regency. Proper environmental management, especially concerning water and waste management, will not only improve the quality of life for the community but also contribute significantly to the regional economy. This is consistent with the *green growth* theory proposed by Stern (2007), which states that environmental sustainability and economic growth can go hand in hand if managed well. In this context, efficient management of clean water, waste, and recycling will enhance the region's economic competitiveness.

The "Accommodation and Food Services" sector, with an LQ of 1.11 and DLQ of 7.84, also shows a very promising outlook to support the tourism industry in Tanimbar Islands Regency. Research by Croes (2017) suggests that this sector can drive the regional economy by creating jobs in related sectors such as hospitality, culinary, and transportation. The regional government should focus on developing sustainable tourism infrastructure, as well as promoting local tourist destinations by capitalizing on the region’s rich natural and cultural heritage. This will increase the attractiveness of Tanimbar as a domestic and international tourist destination.

Although the "Construction" sector has a high LQ (1.98), its low DLQ (0.18) suggests that its future growth prospects may be limited. Martin & Sunley (2015) argue that the construction sector, while important, is often affected by macroeconomic cycles, which can slow its growth. Therefore, policies should be implemented to stimulate the growth of the construction sector, such as promoting the development of sustainable, green infrastructure and technology-based construction.

The "Agriculture, Forestry, and Fishing" sector, with an LQ of 0.84 and DLQ of 2.45, has the potential to develop into a base sector in the future. This aligns with research by Pahl-Wostl et al. (2013), which states that agriculture and fisheries sectors in developing regions, like Tanimbar, have great potential to support food security and export of local products. The regional government can facilitate the development of this sector by providing agricultural and fisheries technology training, as well as improving the distribution systems for local products to broader markets. Thus, this sector could become a major contributor to Tanimbar's economy.

Sectors with low LQ and DLQ, such as "Manufacturing" and "Electricity and Gas Supply," require more attention from the regional government. Research by Porter (1990) emphasizes that the industrial sector can become a main driver of economic growth if supported by innovation and policies that enhance competitiveness. Therefore, interventions that could increase the competitiveness of these sectors are through increased investment in technology and human resource development. Specifically, for the energy sector, focusing on the development of renewable energy will be critical in establishing long-term energy security, which will also support the growth of other sectors.

In addition, to enhance the competitiveness of non-base sectors such as manufacturing and energy, government policies should promote the development of industries based on local advantages, such as processing agricultural and fisheries products. This would add value to local products and stimulate growth in the manufacturing sector. For example, processing industries based on marine products could be a new opportunity for the region, in line with Gunningham's (2014) argument that natural resource processing sectors have significant potential when driven by policies that support investment and innovation.

Overall, to optimize sectors with high potential, such as water management, waste, and accommodation, the regional government needs to improve the infrastructure that supports connectivity between areas, whether by land, sea, or air. This is crucial for facilitating the distribution of goods and mobility of people, ultimately accelerating regional economic growth. Henderson & Noonan (2020) have shown that good connectivity between regions can enhance local market integration and accelerate the development of key sectors.

To improve the competitiveness of non-base sectors such as manufacturing and energy, the government should create policies that encourage investment and technology. The *cluster development* approach (Porter, 1998) can be applied by building industrial zones that link related sectors to increase efficiency and productivity.

CONCLUSION

The analysis of LQ and DLQ provides valuable insights into the potential for sectoral growth in the Tanimbar Islands, particularly in industries like agriculture, fisheries, and tourism. However, the study highlights a crucial issue: the region's underutilization of its natural resources, which is exacerbated by outdated technology and inefficient management. The INPEX project, while offering substantial economic opportunities, must be strategically integrated into local sectors to ensure sustainable growth. The research suggests that policy makers must prioritize infrastructure improvement, technological upgrades, and human capital development. Moreover, enhancing connectivity between the Tanimbar Islands and other regions is vital for unlocking its full economic potential.

Recommendations

1. Sectoral Development Plans: Local government policies should prioritize the growth of sectors identified as having high potential through LQ and DLQ analysis, such as tourism and fisheries, to maximize the benefits of the INPEX project.
2. Infrastructure Investment: Significant investments in infrastructure, particularly transportation and communication networks, are essential to reduce the islands' isolation and connect local industries with broader markets.
3. Technological Upgrades: Policies should focus on providing access to modern technologies in agriculture and fisheries to increase productivity and ensure sustainable development.
4. Human Capital Development: Training programs to enhance local skills, particularly in sectors such as energy production, technology, and management, will be critical for integrating local workers into the expanding economy.
5. Private Sector Engagement: Encouraging partnerships between the government and private companies, including those involved in the INPEX project, can ensure that local businesses benefit from infrastructure and economic growth.

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