

Research Article

Analysis of Regional Economic Resilience through Comparative Advantages of Sectoral Growth

Supriadi M. Hi Habib and Imam Mukhlis*

Faculty of Economics and Business, State University of Malang, Indonesia

ORCIDSupriadi M. Hi Habib: <https://orcid.org/0009-0009-2861-0437>**Abstract.**

The objective of this study is to analyze the economic resilience of regions during the COVID-19 period that affected the Indonesian regional economy. Economic resilience can be identified by examining the development of leading sectors in the regional economy. This study uses secondary data in the form of time series using Gross Regional Domestic Product (GRDP) data obtained from the Central Bureau of Statistics of Batu City, the Central Bureau of Statistics of Malang City, and the Central Bureau of Statistics of Kediri City from 2018 to 2021. All three cities are located in East Java Province, Indonesia. The analysis in this study involves using three methods: Location Quotient, Shift Share, and Klassen typology. The analysis results reveal that Batu City and Malang City show strong competitiveness and comparative advantages. On the other hand, Kediri City demonstrates relatively low competitiveness and comparative advantage, which can be attributed to the impact of the COVID-19 shock. Additionally, research results show that the sectors in Malang City have experienced rapid growth, with all sectors developing faster than in other regions. In contrast, the sectors contributing to Batu and Kediri's Gross Regional Domestic Product (GRDP) have experienced delayed development. The results of this study confirm that regional economic resilience still exists through the development of sectoral businesses that contribute to the overall value of Gross Regional Domestic Product in various regencies and cities within East Java Province.

Keywords: basic sector, resilience, shift share, location quotient, regional economy

1. Introduction

Economic globalization and the growing knowledge within society have become a necessity for any country. Public administrators need accurate economic information to formulate policies and make decisions that contribute to economic development. The objective of the economic policy is to boost regional economic growth and increase competitiveness (Martínez Prats & Armenta Ramirez, 2013). Regional economic development is oriented towards making sustainable development a component of national economic development. Therefore, in order to realize national development goals, regional development is expected to reduce inequality in each region to create fair and equitable

Corresponding Author: Imam
Mukhlis; email:
imam.mukhlis.fe@um.ac.id**Published** 31 July 2024Publishing services provided by
Knowledge E

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Selection and Peer-review under the responsibility of the BESS 2023 Conference Committee.

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welfare (Latifah & Meidy Haviz, 2022). Economic-based regional development should be a key priority when viewed from a regional context. Sectoral economic activities within regional development can boost regional economic output and stimulate the national economy. To properly carry out development in a region, it is crucial to understand the workings that underlie the pattern of increasing economic growth in the region (Sektor et al., 2023)

A basic or leading sector can boost economic growth in a region since it is competitive both nationally and regionally. A region is said to have an economic base if it has a sector with comparative and competitive advantages over other sectors in the comparable area that contributes significantly to the economy through the added value of production and multiplier effect (Rajab & Rusli, 2019).

Global, national, and regional economic developments experienced a contraction during the 2019–2021 period. This occurred due to the impact of COVID-19, which led to the implementation of stricter regulations on the mobility of people and goods in order to prevent the spread of COVID-19. As a result, Indonesia's domestic and international economic activities fell and were disrupted. Khodir et al. (2022) found empirical evidence showing that the pandemic did not significantly affect the family resilience of capitalist farmer households. However, it greatly impacted the family resilience of proletariat farmers in several villages within Malang Regency, Indonesia. This resilience includes aspects of meeting economic, educational, and health needs. According to the United Nations Conference on Trade and Development (UNCTAD) (2022), global trade experienced a decline of approximately \$2.5 trillion (or 9%) in 2020 compared to 2019. UNCTAD data showed that as economic conditions improved in 2021, the value of global trade rose dramatically, reaching a new high of approximately \$28.5 trillion, representing a 13% increase from pre-pandemic levels. Meng et al. (2022) found that from a regional perspective, China's eastern and central regions were the first to be hit by the pandemic, and they had lower economic resilience than the national average. However, these regions were able to stabilize the pandemic's development trend earlier than other areas.

Batu, Malang, and Kediri are cities in East Java Province, Indonesia that contribute to East Java's GRDP. The contribution of the three cities to sectoral GRDP undergoes changes over the years between 2019-2021 due to their different comparative advantages. As shown in Table 1, Batu City contributes 2.63%, Malang City contributes 1.37%, and Kediri City contributes 0.57% to the overall GRDP of East Java Province. This time period coincides with the spread of COVID-19, especially in these regions. The data provided in Table 1 shows that the contribution of each GRDP sector produced by the

three cities has experienced fluctuations during the COVID-19 pandemic, as shown in the following table:

TABLE 1: Average Growth Rate of GRDP-ADHK in Each City in East Java Province from 2019-2021 (%).

Sectors	Batu City	Malang City	Kediri City
Agriculture, Forestry, and Fisheries.	0.67	1.66	0.82
Mining And Quarrying	-1.27	-1.26	-3.19
Manufacturing industry	2.96	5.07	0.28
Electricity and Gas Procurement	4.12	3.34	1.43
Water Supply, Waste Management, Waste, and Recycling	2.12	4.27	4.37
Construction	2.32	1.92	0.23
Wholesale and Retail Trade, Car and Motorcycle Repairs.	2.75	1.53	0.65
Transportation And Warehousing	3.06	3.32	3.67
Accommodation And Food & Beverage Services	0.45	-3.54	0.09
Information And Communication	7.20	7.05	8.54
Financial And Insurance Services	1.58	0.91	2.69
Real Estate	2.39	3.81	2.23
Corporate Services	2.26	-0.49	-0.78
Government Administration, Defense, And Mandatory Social Security	-0.42	-0.04	1.31
Education Services	1.28	3.31	2.77
Health Services and Social Activities	5.46	5.95	7.14
Other Services	0.32	-0.41	-2.40
GRDP	2.63	1.37	0.57

Source: data processed, 2023.

These fluctuations reflect the growth and policy responses in dealing with the impact of COVID-19 on the regional economy. Some sectors have shown resilience to the impact of COVID-19, while others have experienced a decline in performance. Regional development strategies and policies are required in the framework of development sustainability so that sectoral performance in the regional economy can have resilience and competitive advantage.

The problem arising from achieving stability and resilience of the regional economy requires an in-depth study of the contribution and structural change of the economy in Kediri City as a response to regional economic development in East Java Province, Indonesia. The study concerns the leading sector and sectoral contribution to regional economic development in a sustainable manner (Tutupoho, 2019). The East Java Provincial Government and the Kediri City Regional Government must also synchronize programs in regional development planning based on accurate descriptions of the actual conditions and potential competitiveness and look at opportunities and threats in the regional economic structure (Wibisono et al., 2019; Sutton & Arku, 2022).

Based on the background explained previously, this study aims to analyze the condition of regional economic resilience based on competitive advantages and leading sectors within the regional economies of Batu City, Malang City, and Kediri City.

2. Literature Review

Uneven shocks and economic disruptions have become primary concerns for economists, especially regional economists (Xiaohui Hu and Robert Hassink, 2020). However, the concept of regional economics and regional economic resilience has gained significant attention among academics, policymakers, and practitioners. This is due to the fact that regional resilience has a significant global impact on life (Healy, 2020). Resilience can be divided into two aspects: performance and capacity. Performance refers to something that leads to the outcomes of a region's reaction to a shock that happens, such as evaluating regional resilience. Capacity, on the other hand, focuses on the adaptive process that underlies a region's ability to cope with short-term or unexpected shocks (Bănică et al., 2020)

One way to analyze regional resilience is by using the location quotient (LQ) at the initial stage of data processing, commonly known as data export. This method has revitalized its use in the field of economic geography, which is directly related to regional development and technological innovation, as previously studied (Petralia, 2016). LQ can also describe industrial excellence in a region by using labor indicators as variables that can connect one industry with another through various observations of workers among them. However, this method requires dividing the location of the transformation that has been applied because, in recent years, there has been a problem in seeing the LQ transformation in certain data sets and discussing the results. Despite the fact that this LQ method has been widely used, many articles still suggest the use of the LQ index itself.

The shift-share analysis is another method for analyzing regional resilience, which compares regional performance and evaluates sectoral performance. Since its introduction, this method has had many applications because it has been widely used due to its clear explanation, ease of data collection, and production of results that are easy to understand and interpret (Dogru & Sirakaya, 2017; Márquez, 2009; Oyewole, 2016). The national share component also measures the growth and decline in the context of employment and income in a region if employment or income in a region increases or decreases at the same rate as the national average (Tervo, 1983).

3. Methodology

This research uses quantitative and descriptive data. A descriptive quantitative study analyzes data by describing the data that has been obtained. The GRDP-ADHK data from Batu, Malang, and Kediri cities are used in this study. Many variables can be compared, but the most common ones are value added (income level) and the number of jobs. The research method uses data from the Central Bureau of Statistics (BPS) from 2018 to 2021, which is analyzed using the multiplier effect, the Tiebout model (Locational Quotient or LQ), Shift Share, and Klassen typology to identify economic sectors in the development of Kediri city (Mukhlis et al., 2018)

1.1 Location quotient (LQ) is a measure that compares the specialization of a specific sector or industry in a particular place or region to its specialization at the national level. LQ can be used to determine whether a region or area has a comparative advantage or a competitive advantage in a particular sector or industry. The Location Quotient (LQ) is also the primary comparison of a region's role or sector/industry on a national scale with the importance of that sector/industry (Tarigan, 2012).

The location quotient formula is as follows:

$$LQ = \frac{x_i/v_t}{X_i/V}$$

Information:

LQ= Location Quotient coefficient

X_i = Value added of sector i in Kediri city

V_t = Total value added in Kediri city

X_i = Value added of sector i in East Java Province

V_t = Total value added in East Java Province

LQ is calculated by comparing the share of jobs in a particular sector or industry in a specific area or region with its share of jobs in that same sector or industry nationally. If LQ exceeds one, it indicates a higher concentration or specialization of the sector or industry in the region compared to the national level. Meanwhile, if LQ is less than one, it suggests a lower concentration or specialization in the region compared to the national level.

1.2 Shift Share Analysis is an analytical method commonly used to explain growth as a structural and competitive component. This analysis is also performed using the method of different factors that produce changes in the existing business sector within a region from one period to another (Khusaini, 2015)

The shift share formula is as follows (Mukhlis et al., 2018):

$$\Delta E_{r, i, t} = (NS_i + Pr, i + Dr, i)$$

$$NS_i, t = E_{r, i, t-n} (EN, t / EN, t-n) - E_{r, i, t-n}$$

$$Pr, i, t = \{(EN, i, t / EN, i, t-n) - (EN, t / EN, t-n)\} \times E_{r, i, t-n}$$

$$Dr, i, t = \{E_{i, r, t} - (EN, i, t / EN, i, t-n) E_{r, i, t-n}\}$$

Information:

Δ = Change, final year (year t) is reduced by initial year (year tn)

N = Province/region

E = Total GRDP

t = year

NS_i = National share

Pr, i = Proportional Shift

Dr, i = Differential shift

r = City

i = Sector

t-n = initial year

3.3 Klassen typology analysis is a statistical analysis method used to group data based on different categories or types. The data collected in the Klassen typology analysis are grouped into different categories or types depending on the characteristics or properties of each data unit. After data grouping, analysis is conducted to determine the differences and similarities between the groups. This method is often used in sociology and political science research to classify social or political groups, such as political parties, education levels, or types of jobs. It is important to ensure that the created categories are mutually

exclusive and do not overlap to obtain valid and useful results from a Klassen typology analysis.

4. Result and Discussion

4.1. Location Quotient

According to the results presented in Table 2, Batu City has sectors with an LQ value of $LQ \leq 1$, categorizing them as non-basic sectors.

Meanwhile, the Location Quotient (LQ) calculation results in Malang City, East Java, have shown the presence of eight sectors with comparative advantages (basic sectors) from 2019-2022 with average LQ numbers. These sectors include Water Supply, Waste Management, Waste and Recycling at 2.11, Construction at 1.41, Wholesale and Retail Trade, Car and Motorcycle Repair at 1.64, Financial and Insurance Services at 1.02, Educational Services at 2.89, Health Services and Social Activities at 4.09, Other Services at 2.05. According to the results of this analysis, all eight sectors are considered leading or basic sectors because their LQ values are >1 . This suggests that the economic resilience of Malang City before and after the occurrence of COVID-19 did not show a significant shift in LQ value, implying that the shock did not significantly affect Malang City's economic resilience during the pandemic period. These eight sectors demonstrate strong competitiveness, resulting in a surplus within Malang City. Therefore, it can be exported outside the region or abroad to generate foreign exchange or income for Malang City. On the other hand, because the LQ value is <1 , the other nine sectors are not considered competitive. This suggests that the nine sectors experienced a supply deficit during the COVID-19 pandemic, with supply falling short of meeting the demand within the community, particularly in Malang City. As a result, these nine sectors must be imported from other regions or countries to meet public demand. The nine sectors include Agriculture, Forestry, and Fisheries, Mining and Quarrying, Manufacturing Industry, Electricity and Gas Procurement, Transportation and Warehousing, Accommodation and Food & Beverage Services, Information and Communication, Real Estate, Government Administration, Defense, and Mandatory Social Security.

Furthermore, the calculation of LQ (Location Quotient) in Kediri City also demonstrates that the comparative advantage or basic sector that has competitiveness in Kediri City from 2018-2021 is only one sector, namely the manufacturing industry sector, as shown in the table above. This is indicated by the LQ value > 1 , which was 2.67 in 2018. However, the manufacturing industry sector, one of Kediri City's basic sectors, has

TABLE 2: Calculation results of Location Quotient (LQ) of the three cities from 2018-2021.

Sectors	Batu City				Malang City				Kediri City			
	2018	2019	2020	2021	2018	2019	2020	2021	2018	2019	2020	2021
Agriculture, Forestry, and Fisheries	1.29	1.29	1.38	1.34	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02
Mining And Quarrying	0.03	0.03	0.03	0.03	0.01	0.01	0.01	0.01	0.00	0.00	0.00	0.00
Manufacturing industry	0.15	0.15	0.16	0.17	0.77	0.76	0.77	0.76	2.67	2.64	2.63	2.61
Electricity and Gas Procurement	0.18	0.18	0.19	0.19	0.13	0.14	0.14	0.14	0.03	0.03	0.04	0.04
Water Supply, Waste Management, and Recycling	1.93	1.9	1.93	1.94	2.16	2.2	2.14	2.08	0.21	0.21	0.22	0.22
Construction	1.23	1.26	1.28	1.27	1.39	1.42	1.45	1.42	0.19	0.19	0.19	0.19
Wholesale and Retail Trade, Car and Motorcycle Repairs.	1.06	1.05	1.04	1.06	1.69	1.67	1.65	1.65	0.57	0.56	0.54	0.56
Transportation And Warehousing	0.47	0.48	0.55	0.56	0.88	0.91	0.88	0.92	0.15	0.15	0.17	0.18
Accommodation And Food & Beverage Services	1.97	1.94	1.75	1.75	0.85	0.86	0.83	0.82	0.29	0.29	0.3	0.3
Information And Communication	1.29	1.26	1.27	1.29	0.87	0.85	0.87	0.85	0.43	0.41	0.46	0.46
Financial And Insurance Services	1.37	1.35	1.42	1.37	1.02	1.01	1.03	1.01	0.37	0.37	0.39	0.39
Real Estate	1.71	1.7	1.77	1.74	0.88	0.89	0.87	0.87	0.27	0.27	0.28	0.27
Corporate Services	0.59	0.57	0.61	0.59	0.97	0.96	1.04	1.03	0.26	0.26	0.27	0.27
Government Administration, Defense, And Mandatory Social Security	1.09	1.08	1.14	1.08	0.64	0.62	0.62	0.61	0.17	0.17	0.17	0.18
Education Services	1.45	1.43	1.51	1.46	3.02	2.97	2.94	2.89	0.31	0.31	0.32	0.31
Health Services and Social Activities	1.16	1.13	1.17	1.16	4	4.07	4.1	4.09	0.28	0.28	0.29	0.3
Other Services	11.97	12.16	12.12	12.32	2.12	2.1	2.1	2.03	0.25	0.25	0.26	0.25

Source: Processed Results 2023

dropped gradually in the following years, specifically in 2019 at 2.64, 2020 at 2.63, and

2021 at 2.61. The LQ value produced by the manufacturing sector that fluctuates over the years can be attributed to the COVID-19 shock that has impacted the entire world, including Indonesia, and Kediri city, in particular, suffers from the impact of COVID-19 itself. As a result, the sector which often contributes significantly to economic growth, particularly in Kediri city, has declined since being hit by COVID-19.

According to the LQ (Location Quotient) data, the manufacturing industry sector in Kediri City has a surplus on a yearly basis. This means that the demand from the manufacturing industry sector exceeds the supply within the city. The surplus can be exported out of the region or country to earn income or foreign exchange for Kediri City.

Meanwhile, 16 other sectors in Kediri city, such as Agriculture, Forestry and Fisheries sector, Mining and Quarrying, Electricity and Gas Procurement, Water Supply, Waste Management, Waste and Recycling, Construction, Wholesale and Retail Trade; Car and Motorcycle Repairs, Transportation and Warehousing, Accommodation and Food & Beverage Services, Information and Communication, Financial and Insurance Services, Real Estate, Corporate Services, Government Administration, Defense and Mandatory Social Security, Education Services, Health Services and Social Activities, and other Services are not considered basic sectors or comparative advantages in Kediri city as seen from the LQ value, which is <1 . This means the 16 sectors cannot be relied on to provide or contribute to Kediri's economic growth. Therefore, the Kediri city government must import from other regions or countries to meet the demand within the Kediri region.

According to the data above, the sector that contributes to Kediri City's economy, namely the manufacturing industry sector, has experienced a decline from 2018 to 2021, which can be attributed to economic shocks that have affected Kediri City during that period. As a result, the shocks have also affected the regional food security capacity in Kediri City.

4.2. Shift Share

The shift share model analysis results also show changes that occurred due to the COVID-19 shock that impacted the entire world, including Indonesia, with implications for Kediri City. The three components shown here are the effects of economic growth (NIJ), industrial mix (MIJ), and competitive advantage (CIJ).

According to the table above, the advantage of economic resilience in Batu City in the sectoral structure or the advantage of each sector is indicated by positive shift share values using the shift share calculation model of each sector in the average year of

TABLE 3: Calculation Results of Shift Share Analysis of three cities from 2018-2021.

Sectors	Shift share of Batu City	Shift Share of Malang City	Shift Share of Kediri City
Agriculture, Forestry, and Fisheries	-1,7E+17	93808.29872	-3.263092E+03
Mining And Quarrying	7,57E+14	25344.3763	-9.769582E-01
Manufacturing industry	-8,8E+17	9859307.261	-5.218137E+06
Electricity and Gas Procurement	-5,3E+11	16621.81837	-3.316394E+01
Water Supply, Waste Management, Waste, and Recycling	-7,7E+11	86192.26478	-4.494776E+02
Construction	-1,3E+17	5463102.628	-7.037372E+04
Wholesale and Retail Trade, Car and Motorcycle Repairs.	-1,4E+18	13056446.16	-6.376649E+05
Transportation And Warehousing	1,57E+15	1124892.846	5.994961E+04
Accommodation And Food & Beverage Services	-8,8E+15	1846150.935	-2.187401E+04
Information And Communication	-1,8E+17	2415989.977	2.329206E+04
Financial And Insurance Services	-3,5E+15	1048570.98	1.984910E+04
Real Estate	-3E+15	636728.565	-2.394509E+04
Corporate Services	-1E+13	325508.224	-7.006290E+03
Government Administration, Defense, And Mandatory Social Security	-1,1E+15	499037.233	6.184329E+02
Education Services	-9,2E+15	3160191.607	-3.138678E+04
Health Services and Social Activities	-2,1E+14	1285977.181	6.684429E+02
Other Services	2,91E+15	1166379.027	-1.540617E+04

Source: Processed results 2023

analysis from the highest to the lowest, with the highest being the Mining and Quarrying sector, Transportation and Warehousing, and other services. This suggests that when COVID-19-related shocks hit Batu City between 2019 and 2021, they had little impact on economic resilience, particularly in the Mining and Quarrying, Transportation and Warehousing, and other services sectors. This is indicated by a change in the shift share value during and after the COVID-19 pandemic. The sector's shift value remains positive, implying that it can grow rapidly and contribute to Batu City's economic growth. It has strong economic resilience when economic shocks occur and in the future. Meanwhile, the Education Services sector, Accommodation and Food and Beverage Services,

Manufacturing Industry, Water Supply and Waste Management, Corporate Services, Government Administration, Defense, and Mandatory Social Security, Electricity and Gas Procurement, Information and Communication, Financial and Insurance Services, Real Estate, Agriculture, Construction, Health Services and Social Activities are all experiencing shocks as a result of the COVID-19 pandemic. These sectors have poor resilience and slow growth with negative shift share values. Therefore they can only contribute a little to economic resilience or growth in Batu City when economic shocks occur.

Cities with strong resilience and competitiveness can be identified by measuring the shifts of the shift share value. According to the data, Malang was the only city that survived the COVID-19 shock. This can be seen by the fact that each sector produces positive numbers. This shows that the sectors are very competitive and can grow rapidly. This suggests that Malang City's economy will not be affected by disruptions caused by pandemics or economic recessions in the future because Malang City has a strong economic resilience that can provide high competitiveness for its local economy. The results of the shift share analysis above reveal that the influence of 17 components in GRDP has contributed positively to economic growth in Malang.

Meanwhile, Kediri was one of the cities that suffered the impacts of the COVID-19 crisis shock. The results of the shift share analysis by looking at the impact of economic growth (DIJ) above also revealed that there are five sectors with positive numbers but are still very low, including the health services and social activities sector at 6.68, followed by government administration at 6.18, transportation and warehousing at 5.99, information and communication at 2.32 and financial services and insurance at 1.98. Furthermore, 12 sectors in Kediri city have a negative average value, including the Agriculture, Forestry, and Fisheries sector at -3.26, Mining and Quarrying at -9.76, Electricity and Gas Procurement at -3.31, Water Supply, Waste Management, Waste and Recycling at -4.49, Construction at -7.03, Wholesale and Retail Trade; Repair of Cars and Motorcycles at -6.37, Accommodation and Food & Beverage Services at -2.18, Real Estate at -2.39, Company Services at -7.00, Education Services at -3.13, and other services at -1.54.

The data above show that five economic sectors in Kediri city have positive values, indicating that these five sectors have grown rapidly in East Java within the same sector. However, this is still considered insufficient economic resilience because most of these sectors have negative values, indicating that Kediri City has relatively poor competitiveness. Meanwhile, 12 sectors have negative values, indicating that these 12 sectors cannot expand as quickly as the same sector in East Java.

The findings of this study are consistent with research undertaken by (Angulo et al., 2018), which revealed that all provinces in Spain expanded their specialization following the crisis. The hardest affected areas are in eastern and northern Spain, including Girona, Tarragona, León, Ourense, Cantabria, Gipuzkoa, and Navarra. The worst state is indicated by a change in numbers from positive to negative.

4.3. Klassen Typology

TABLE 4: Klassen Typology Analysis Results.

<p>Quadrant I Developed and Fast-Growing Sector (<i>Developed Sector</i>) $si > s$ and $ski > sk$ Batu City Agriculture, Forestry, and Fisheries Sector Malang City Water Supply, Waste Management, Waste and Recycling Construction Wholesale and Retail Trade, Car and Motorcycle Repair Financial and Insurance Services Education Services Health and Social Services Other Services Kediri City</p>	<p>Quadrant II Developed but Depressed Sector (<i>Stagnant Sector</i>) $si < s$ and $ski > sk$ Batu City Construction Wholesale and Retail Trade; Car and Motorcycle Repair Transportation and Warehousing Education Services Health and Social Services Other Services Malang City Transportation and Warehousing Corporate Services Kediri City Manufacturing industry sector</p>
<p>Quadrant III Potential Sector (<i>Developing Sector</i>) $si > s$ and $ski < sk$ Batu City Mining and Quarrying Manufacturing Industry Electricity and Gas Procurement Accommodation and Food & Beverage Services Information and Communication Financial Services and Insurance Real Estate Malang City Mining and Quarrying Manufacturing Industry Electricity and Gas Procurement Accommodation and Food & Beverage Services Information and Communication Real Estate Government Administration Defense And Mandatory Social Security Kediri City Transportation and warehousing Financial services and insurance Government administration, defense, and social security Health services and social activities</p>	<p>Quadrant IV Relatively Underdeveloped Sector (<i>Underdeveloped Sector</i>) $si < s$ and $ski < sk$ Batu City Water Supply and Waste Management Corporate Services Government Administration, Defense, and Social Security Malang City Agriculture, Forestry, and Fisheries Kediri City Agriculture, forestry, and fisheries Mining and quarrying sector Electricity and gas procurement Water supply, waste management, waste, and recycling Construction Wholesale and retail trade, Car and Motorcycle Repair. Accommodation and Food & Beverage Services Information and communication Real estate Corporate services Underdeveloped services Other services.</p>

Source: Processed results, 2023

Based on the results of the GRDP Sector Classification at Constant Prices of Batu City, Malang City, and Kediri City in 2018-2021, the Klassen Typology Analysis revealed that Kediri City's economic sectoral resilience is the most affected by the COVID-19 shock. Therefore, Kediri City continues to have poor adaptive resilience because many economic sectors, such as Water Supply and Waste Management, Corporate Services, Government Administration, Defense, and Social Security, are still classified as relatively underdeveloped sectors (Quadrant IV). Kediri City relies heavily on the manufacturing sector, which is the only sector that shows resilience and strong competitiveness, which can also contribute significantly to economic growth in the event of a future economic crisis.

However, this contrasts with the other two cities in East Java, Batu City and Malang City, which possess strong economic resilience and have not experienced a shift in points in conditions before and after the COVID-19 pandemic. This demonstrates that the two cities can endure economic shocks both now and in the future since they rely on numerous sectors to contribute to their economies, as shown in the Quadrant I and Quadrant II tables. These economic sectors indirectly contribute significantly to the two cities' economic resilience, competitiveness, and growth.

5. Conclusions

Based on the analysis results of competitiveness and comparative advantage of the three cities in East Java discussed above, the following conclusions can be drawn:

1. Based on the Location Quotient analysis results, Batu and Malang cities show strong competitiveness and comparative advantage when the COVID-19 pandemic causes an economic shock. This demonstrates that both cities have comparative advantages that can contribute significantly to regional economic growth. In contrast, Kediri is one of the cities that has been negatively impacted by the COVID-19 shock, and as a result, it has relatively poor competitiveness and comparative advantage.
2. According to the Shift Share analysis results in the three cities, Malang is one of the cities with strong competitiveness and resilience, as it is not significantly affected by the COVID-19 shock. On the other hand, Batu City and Kediri City experienced relatively slow growth during the COVID-19 pandemic. Batu City had three fast-growing economic sectors, while Kediri City had five rapidly increasing economic sectors despite the COVID-19 disruption.
3. The results of the Typology Klassen analysis show that Malang City continues to dominate the developed and fast-growing sector (Quadrant I) with seven sectors, followed by Batu City with one sector. Batu City dominates the developed but depressed sector (Quadrant II) with six sectors, followed by Malang City with two sectors, and Kediri City with one sector. Malang and Batu cities dominate the potential sector (Quadrant III) with seven potential sectors, while Kediri only has five. Kediri City dominates the relatively underdeveloped sector (Quadrant 4) with twelve sectors, Batu City with three sectors, and Malang City with one sector.

6. Suggestion

The recommendations based on the conclusions are as follows:

1. It is important to map the potential resilience of the regional economy, both sectoral and from a financial standpoint. This can help local governments develop policies to promote inclusive and sustainable economic recovery.
2. Local governments can establish a monitoring system for regional economic conditions from both a macroeconomic and a microeconomic perspective. This can help local governments provide business stimulus to regional business actors.
3. Data research on post-COVID-19 regional economic resilience can be developed using a qualitative approach to describe changes in household groups' economic and financial behavior for future research.

This article is the research output funded by Dipa State University of Malang through LPPM State University of Malang in 2023.

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