# The Analysis of Labor and Economy in Central Java in 2010-2018

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**Abstract:** Employment and economic data play an important role in determining development priorities in a region. Determination of appropriate development priorities based on accurate analysis is expected to encourage the development of the region to be more well directed. This study aims to analyze employment data in general and disaggregated according to urban and rural areas and to analyze the economy of Central Java in attempt to determine the development priorities. The data used in this study are from BPS-Statistics Indonesia and BPS-Statistics of Jawa Tengah Province including employment data from the Central Java and Indonesian National Labor Force Survey (Sakernas) which published mid-yearly during the period of February 2015 to February 2019, Central Java Province and Indonesian Gross Regional Domestic Product (GRDP) data at current prices (adhb) from 2010 to 2018 and GRDP data on the basis of constant prices (adhk) from 2011 to 2018. The LQ method is used to analyze the employment data. Besides using LQ method, Klassen Typology method is also used to analyze the economy of Central Java. The results of the employment analysis based on the LQ method show that in general, the categories of Manufacturing, Construction and Accommodation and Food Service Activities in Central Java are excellent categories. In urban areas, the category of Agriculture, Forestry and Fishing; Manufacturing; Construction and Accommodation and Food Service Activities in Central Java are superior category. In rural areas, the category of Manufacturing; Electricity and Gas; Water Supply, Sewerage, Waste Management and Remediation Activities; Construction; Wholesale and Retail Trade, Repair of Motor Vehicles and Motorcycles; Accommodation and Food Service Activities; Information and Communication; Financial and Insurance Activities; Other Services Activities are superior in terms of the contribution of absorption of the employment in Central Java. The results of economic analysis based on the LQ method show that the category of Agriculture, Forestry and Fishing; Manufacturing; Construction; Wholesale and Retail Trade, Repair of Motor Vehicles and Motorcycles; Accommodation and Food Service Activities and Education are superior category in Central Java in terms of its contribution to total GRDP. The results of the Klassen Typology analysis state that Central Java is an area that has the potential to grow and develop economically.

**Keywords:** Central Java Province; economic; employment; klassen typology; LQ

## 1    Introduction

Development is a series of efforts to build, enhance and improve and develop sustainable and implemented as directed and gradually to realize national and regional development (Sengka, Mandei, Pangemanan, & Montolalu, 2015). One of the macro indicators that shows the successful implementation of development is economic growth. Changes or the rate of economic growth are obtained from data on GRDP at constant prices from year to year. The higher economic growth of a region reflects the better economic activity in the region (Todaro & Smith, 2008)

BPS data shows that economic growth in Central Java region fluctuates every year and tends to slow down. Central Java Province is one of the autonomous regions which has a certain area boundary with the second largest population on the Java Island. The economy of Central Java has a considerable contribution to the national economy. From year to year, the economy of Central Java makes the fourth largest contribution to the national economy after DKI Jakarta, East Java and West Java (BPS Indonesia, 2019). In 2018, Central Java's contribution reached 8.47 percent of the national economy. Therefore, the economic condition of Central Java is very influential on the national economy.

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The development in Central Java Province which is comprehensive and sustainable has improved the community economy (Rahman & Chamelia, 2015). However, urban and rural areas have differences in terms of the field of business they live in. Job opportunities in rural areas are less than urban ones. The difficulty of employment opportunities has been felt since the early seventies due to the fragmentation of agricultural land (Setiawan, 2008).

This condition is one of the foundations of this research, which aims to analyze employment data in Central Java Province, both in general and disaggregated according to urban and rural areas. Common problems related to employment include low wages and high unemployment and increasing population growth (Putri & Soelistyo, 2018). The limited choice of available jobs and sectoral absorption is a difficult choice for workers in choosing jobs. Working as a minimum with low working hours or still looking for the desired job (in other words still unemployed) sometimes inevitable choice for Indonesian workers.

Another purpose of this study is to analyze the economy of Central Java using GRDP data from adhb Central Java and Indonesia in 2010 to 2018 and GRDP data from 2011 to 2018. GRDP data at current prices according to industrial categories produces derivative indicators, one of it is the percentage distribution of GRDP showing structure economy or the role of each industrial categories in the economy of a region. The greater the value of the contribution of the industrial categories in an area to the total GRDP, the greater the role of the industrial categories in sustaining the economy in the region (Anisah, 2019). GRDP data at constant prices produce one of the macro indicators, namely economic growth. Economic growth is an indicator of the success of a region's development (Sukirno, 1996). Thus, the higher economic growth of a region, the wealthier the community will be despite another indicator which is the income distribution. The results of this study are expected to be the beneficial for decision makers in an attempt to determine the development priorities and determine strategic policies in the economic field as well as other related parties.

## 2    Methods

Central Java province is designated as the object of research by observing employment data and the influence of Central Java on the national economy. The employment data is obtained from BPS time series data including the employment data which is contained in the publication of the labor force situation in Indonesia which is published mid-yearly during the period February 2015 to February 2019. Other data related to the economy include Central Java and Indonesian GRDP data at current prices in 2010 until 2018 and GRDP at constant prices data is from 2011 to 2018. Employment data is taken from people aged 15 years and over with working status, which are divided into 17 industrial categories. The definition of working in the publication of labor force circumstances in Indonesia (BPS, 2019) is an economic activity carried out by someone with the intention of obtaining or helping to obtain income or profits of at least 1 hour (uninterrupted) in the past week. These activities include the activities of unpaid workers who assist in an economic business / activity.

The LQ method is used to analyze worker data, while the LQ and klassen typology methods are used to analyze the economy of Central Java. The results of this study are expected to be able to find out the industrial categories that have benefits and potential to develop based on the LQ analysis tools and the Klassen typology.

The klassen typology technique can be used to find out the description of the pattern and the structure of regional sectoral growth. This analysis bases the grouping of the industrial categories by looking at the growth and contribution of each category to the total GRDP of Central Java as the analysis area and Indonesia as the reference area.

**Table 1:** Classen Typology Matrix

| Average Sectoral Growth Rate | Average Sectoral Contribution To GRDP | |
|---|---|---|
| | Y (sector) ≥ Y (GRDP) | Y (sector) < Y (GRDP) |
| r (sector) ≥ r (GRDP) | Prime Sector | Developing Sector |
| r (sector) < r (GRDP) | Potential Sector | Underdeveloped Sector |

Source : Widodo, 2006
Notes:
Y sektor  = value of sector contribution i
Y GRDP   = average GRDP
r sektor   = rate of growth of sector i
r GRDP    = GRDP growth rate

Klassen typology is also one of the tools of regional economic analysis, namely an analytical tool used to describe the pattern and the structure of economic growth in a region (Rahayu, 2010). Whereas LQ analysis is a technique that compares the magnitude of the prime sector in an area to the magnitude of the prime sector at the national level. This technique is used to identify the internal potential of the area, which is the base sector and which is the base (non-base) sector. Location Quotient (LQ) analysis is used to find out the economic sectors in GRDP. Location Quotient (LQ) value> 1 means that the prime sector / category of business field in the analysis area is more dominant than the sector / category of business field in the reference area. Conversely, if the LQ value <1 means the prime sector / the industrial category is smaller in the analysis area than its role in the

reference area. LQ (Location Quotient) value can be said as a guide to be used as a basis for determining potential sectors to be developed (Rasyid, 2016).

Based on some of the descriptions above, this paper aims to analyze the employment data in general and disaggregated according to urban and rural areas and analyze the economy of Central Java. The results of the study are expected be able to describe the performance of Central Java and become a useful input for researchers, potential investors and the Central Java provincial government regarding efforts to improve the progress of the economy of Central Java.

## 3    Result and Discussion

### 3.1   LQ Analysis of Employment Data

The results of the LQ analysis in this study is compared the magnitude of the population aged 15 years and over with work status absorbed in each category of business fields in the area of analysis of the reference area. Central Java Province is an analysis area and Indonesia as a reference area. The employment data used are the results of the National Labor Force Survey (Sakernas) published by BPS-Statistics Indonesia. The employment data is published twice a year and since 2015 has been divided into 17 industrial categories. Thus, employment data in this study uses references from 2015 to 2019 according to the available data series.

**Table 2.** The Results of LQ Analysis of Central Java in 15 Years Age and Over with Working Status by Industrial Categories

| Industrial Categories | LQ Rate Value | | |
|---|---|---|---|
| | General | Urban | Rural |
| A. Agriculture, Forestry and Fishing | 0.90 | 1.12 | 0.80 |
| B. Mining and Quarrying | 0.57 | 0.36 | 0.67 |
| C. Manufacturing | 1.49 | 1.43 | 1.69 |
| D. Electricity and Gas | 0.90 | 0.87 | 1.07 |
| E. Water Suppy, Sewerage, Waste Management and Remediation Activities | 0.85 | 0.74 | 1.27 |
| F. Construction | 1.25 | 1.08 | 1.47 |
| G. Wholesale and Retail Trade; Repair of Motor Vehicle and Motorcycles | 1.00 | 0.95 | 1.16 |
| H. Transportation and Storage | 0.74 | 0.71 | 0.88 |
| I. Accommodation and Food Service Activities | 1.09 | 1.05 | 1.34 |
| J. Information and Communication | 0.57 | 0.51 | 1.14 |
| K. Financial and Insurance Activities | 0.87 | 0.80 | 1.53 |
| L. Real Estate Activities | 0.26 | 0.27 | 0.52 |
| M, N. Business Activities | 0.61 | 0.58 | 0.95 |
| O. Public Administration and Defense, Compulsory Social Security | 0.57 | 0.58 | 0.61 |
| P. Education | 0.83 | 0.90 | 0.75 |
| Q. Human Health and Social Work Activities | 0.81 | 0.87 | 0.78 |
| R, S, T and U Other Services Activities | 0.91 | 0.82 | 1.32 |

Source: Labor Force Situation in Indonesia 2015-2019, processed.

The results of the LQ analysis in table 2 state that in general without sorting out urban and rural areas, there are three superior industrial categories in Central Java Province, namely categories C, F and I. By using data from the population aged 15 years and over who work on Sakernas results, it can be interpreted that in general, the number of people with working status absorbed in the three categories for the total working population in Central Java Province is greater when compared to the same conditions nationally.

In urban areas, there are four superior industrial categories in Central Java Province, namely categories A, C, F and I. The results of this analysis can be interpreted that in urban areas, the number of people with working status absorbed in the four categories of the total working population area urban areas in Central Java Province are larger than the population working in urban areas which are absorbed in all four categories nationally against the total national working population specifically in urban areas. The calculation is indicated by the average LQ valued at more than 1. This condition is the reason for the superiority of categories A, C, F and I in Central Java Province for the absorption of the population with working status in urban areas based on LQ analysis.

It is interesting to note that based on the results of the LQ analysis, the superior industrial categories in rural areas are more than in urban areas and in general. Central Java's superior industrial categories for rural areas

includes the categories C, D, E, F, G, I, J, K and a combination of R, S, T and U. The results of the LQ analysis state that in rural areas, the number of workers absorbed in the categories C, D, E, F, G, I, J, K and the combined R, S, T and U for the total rural area workers in Central Java Province are greater than the number of rural area workers absorbed in the same category in the reference area , namely Indonesia to the total rural area workers in Indonesia. The results of the average LQ of workers for rural areas worth more than 1 are the causes of excellence in the categories C, D, E, F, G, I, J, K and the combination of R, S, T and U in Central Java Province for rural areas based on analysis LQ. According to rural and urban segregation, it can be interpreted that the rural areas of Central Java have more superior industrial categories than their urban areas, in terms of absorption of workers.

LQ analysis is not only done on the employment data but also on the economic data. Previous research related to economic data besides using LQ analysis, also used the Klassen Typology analysis. Putra and Yadnya (2018) used the Klassen and LQ Typology analysis tools overlaying the conclusion that the leading sectors in the Sarbagita region were the wholesale and retail trade; repair of motor vehicles and motorcycles; financial and insurance activities; education; accommodation and food service activities; information and communication; manufacturing and public administration and defence, compulsory social security categories (Putra & Yadnya, 2018). Nuraini and Setiartiti (2017) in their research in the city of Magelang using Klassen's analysis showed that the city of Magelang was included in the classification of advanced and rapidly developing regions with high economic growth and per capita income (Nuraini & Setiartiti, 2017).

The officially economic data from BPS-Statistics Indonesia does not sort out urban and rural areas. Therefore, this study analyzes economic data using the Klassen LQ and Typology analysis tools without sorting urban and rural areas.

### 3.2 LQ Analysis of Economic Data

LQ analysis of economic data is done by comparing the percentage distribution of GRDP at current prices (adhb) in each industrial categories in urban areas in the area of analysis of the reference area. The distribution of GRDP percentage at current prices (adhb) according to the industrial categories shows the structure of the economy or the contribution of each category of business in the economy of a region. The great contribution of the industrial categories shows the great role of these categories in supporting the economy in a region.

Table 3. The Results of Average LQ Analysis Based on GRDP at current price (adhb) and Central Java Industrial Categories in 2010-2018

| Industrial Categories | LQ Results | Notation | Category |
|---|---|---|---|
| A. Agriculture, Forestry and Fishing | 1,14 | + | Superior |
| B. Mining and Quarrying | 0,25 | - | Not Superior |
| C. Manufacturing | 1,66 | + | Superior |
| D. Electricity and Gas | 0,08 | - | Not Superior |
| E. Water Suppy, Sewerage, Waste Management and Remediation Activities | 0,90 | - | Not Superior |
| F. Construction | 1,05 | + | Superior |
| G. Wholesale and Retail Trade; Repair of Motor Vehicle and Motorcycles | 1,05 | + | Superior |
| H. Transportation and Storage | 0,69 | - | Not Superior |
| I. Accommodation and Food Service Activities | 1,04 | + | Superior |
| J. Information and Communication | 0,88 | - | Not Superior |
| K. Financial and Insurance Activities | 0,73 | - | Not Superior |
| L. Real Estate Activities | 0,59 | - | Not Superior |
| M, N. Business Activities | 0,21 | - | Not Superior |
| O. Public Administration and Defense, Compulsory Social Security | 0,77 | - | Not Superior |
| P. Education | 1,21 | + | Superior |
| Q. Human Health and Social Work Activities | 0,77 | - | Not Superior |
| R,S, T and U Other Services Activities | 0,95 | - | Not Superior |

Source: Central Bureau of Statistic, 2019

The results of the LQ analysis in table 3 state that there are six excellent industrial categories in Central Java Province, namely categories A, C, F, G, I and P. By using the adhb GRDP data, it can be interpreted that the six categories were declared superior in Central Java Province due to its contribution to the total economy of

Central Java Province are greater than the contribution of these six categories to the total economy of Indonesia. This condition is indicated by the average LQ GRDP adhb in the past nine years worth more than 1.

### 3.3 Klassen Typology Analysis of Economic Data

The Klassen Typology Analysis in this study was conducted by comparing the rate of growth and contribution of each industrial categories in the analysis area (Central Java Province) with its reference area, namely Indonesia. The results of the Klassen Typology analysis are shown in Table 4 and Table 5 below.

**Table 4**. The Results of Typology Analysis in Central Java in 2010-2018

| Code | Industrial Categories | Central Java Province | | Indonesia | | Klassen Typology |
|------|------------------------|-----------------------|--|-----------|--|------------------|
| | | Development Rate | Contribution Rate | Development Rate | Contribution Rate | |
| A | A. Agriculture, Forestry and Fishing | 2,52 | 15,25 | 3,99 | 13,31 | KW 2 |
| B | B. Mining and Quarrying | 5,89 | 2,25 | 1,33 | 9,34 | KW 4 |
| C | C. Manufacturing | 5,18 | 34,95 | 4,76 | 20,86 | KW 1 |
| D | D. Electricity and Gas | 6,21 | 0,09 | 5,02 | 1,13 | KW 4 |
| E | E. Water Suppy, Sewerage, Waste Management and Remediation Activities | 2,47 | 0,07 | 4,67 | 0,07 | KW 3 |
| F | F. Construction | 5,45 | 10,24 | 6,64 | 9,91 | KW 2 |
| G | G. Wholesale and Retail Trade; Repair of Motor Vehicle and Motorcycles | 5,13 | 13,81 | 5,13 | 13,25 | KW 2 |
| H | H. Transportation and Storage | 7,05 | 3,00 | 7,43 | 4,56 | KW 4 |
| I | I. Accommodation and Food Service Activities | 6,33 | 3,03 | 5,83 | 2,92 | KW 3 |
| J | J. Information and Communication | 10,28 | 3,20 | 9,76 | 3,62 | KW 3 |
| K | K. Financial and Insurance Activities | 5,11 | 2,86 | 7,14 | 3,94 | KW 3 |
| L | L. Real Estate Activities | 6,61 | 1,65 | 5,33 | 2,79 | KW 4 |
| M&N | M, N. Business Activities | 9,23 | 0,34 | 8,32 | 1,62 | KW 4 |
| O | O. Public Administration and Defense, Compulsory Social Security | 2,65 | 2,89 | 3,80 | 3,83 | KW 4 |
| P | P. Education | 10,56 | 4,06 | 6,01 | 3,23 | KW 1 |
| Q | Q. Human Health and Social Work Activities | 9,05 | 0,81 | 7,37 | 1,04 | KW 3 |
| R, S, T&U | R,S, T and U Other Services Activities | 6,43 | 1,49 | 7,89 | 1,60 | KW 4 |

Notes:
Prime sector (KW 1)
Developing sector (KW 2)
Potential sector (KW 3)
Latest sector (KW 4)

Table 4 states that in the last nine years, the results of the Klassen Typology analysis divided the seventeen GRDP industrial categories into four quadrant classifications. The four quadrants in the Klassen typology are based on the average growth rate and the contribution of the GRDP industrial category is classified in the following table.

**Table 5** . Classification of Industrial Categories according to Average Growth Rate and Contribution in Central Java Province at 2010-2018: Klassen Typology

| **Quadrant 1** | **Quadrant 2** |
|----------------|----------------|
| Prime sector: Category C and P | Developing sector: Categories A, F and G |
| **Quadrant 3** | **Quadrant 4** |
| Potential sector: Categories E, I, J, K and Q | Latest sector: Categories B, D, H, L, combined M & N, O and combined R, S, T and U. |

Category C and P are business field categories included in quadrant 1. Prime sector is the coverage of quadrant 1, indicating that the average growth rate and contribution of the two categories in Central Java Province exceed national.

Quadrant 2 is stated as a developing sector. The business field category included in quadrant 2 illustrates that the contribution of each of the following categories, namely category A, F and G to the total GRDP of Central Java Province exceeds the same conditions at the national level. However, the average growth rate of this category in Central Java Province is smaller than the average growth rate of the same category in Indonesia.

Categories E, I, J, K and Q are in quadrant 3, expressed as potential sectors. It can be interpreted that the five categories have a smaller contribution to the economy of Central Java Province but the growth rate is greater than the same category in Indonesia.

The remaining four categories, E, H, O and Q, are included in Quadrant 4, which is the latest sector. The categories included in quadrant 4 are categories with the average growth rate and the value of their contribution to the total GRDP of Central Java Province that smaller than the average growth rate and contribution value of the same category in Indonesia. The business field categories included in quadrants 1, 2 and 3 are superior categories based on the results of the Klassen Typology analysis because there is still potential to progress and develop with attention from the Central Java Province.

## 4. Conclusion

The results of the LQ analysis using the employment data from the Sakernas results show that rural areas in Central Java have more categories of superior industrial than urban areas and in general without regional segregation. In general, there are three superior industrial categories in Central Java Province, namely categories A, C and I. In urban areas, there are four superior industrial categories in Central Java Province, namely categories A, C, F and I. In rural areas, category C, D, E, F, G, I, J, K and the combination of R, S, T and U is a superior industrial category in terms of absorption of the population with working status. The results of LQ Analysis on economic data state that there are six superior business field categories in Central Java Province related to their contribution to the total economy, namely categories A, C, F, G, I and P. The categories of industrial included in quadrants 1, 2 and 3 is a superior category based on the results of the Klassen Typology analysis because there is still the potential to progress and develop with the attention of the Central Java Provincial government.

Quadrant 1, Prime sector based on the results of the Klassen Typology analysis are categories C and P. Categories A, F and G are included in quadrant 2: developing sectors. Categories E, I, J, K and Q are included in quadrant 3: potential sectors. The categories E, H, O and Q are included in quadrant 4: latest sectors with an average growth rate and the value of their contribution to the total GRDP of Central Java Province. smaller than the average growth rate and contribution value of the same category in Indonesia.

As a province that has entered the era of demography bonus, it is a challenge for the Province of Central Java in preparing and facilitating the absorption of the working age population in the labor market. In the demographic bonus period, the analysis of which economic sectors need to be developed in order to achieve economic growth that increases employment, is an important thing for Central Java Province. The results of this study are expected to provide benefits for researchers, potential investors and policy makers related to the strategy to determine the development priorities of Central Java province.

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