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ACTUAL MIGRATION AND POTENTIAL DESTINATIONS FOR MIGRATION IN INDONESIA IN TERMS OF HUMAN DEVELOPMENT



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Acknowledgment

"Leave your land and explore foreign fields. Go out! You shall find replacements for those you have left. Give your all, the sweetness of life will be tasted after the struggle" - Imam Syafei

Migration has been a very interesting topic for me as I have been a migrant all my life, from cities to remote areas. I've seen the area growing as the migrants come. That is why this thesis such an emotional curiosity that I tried to make it scientific.

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Abstract

Unequal development in Indonesia has been the main consideration of constructing the foundation of this thesis. The purpose of this study, firstly, is to explain the effect of human development on migration. Second, it aims to identify regions in Indonesia, particularly outside Java Island, that can become potential destinations for migration. Both bivariate and multivariate regression analysis are performed in order to seek the association between the in-migration rates and human development indicators. Cluster analysis and index construction are performed to address the second objective. It is found that among all variables of human development indicators, mean years of schooling is the best predictor to explain the migration into an area. Unemployment rates do not seem to be very useful to measure human development, since examining this variable gives rather strange results. Consequently, this variable is excluded in the index construction. Regions in the eastern part of Indonesia tend to have the least potential to become destinations for migration. On the other hand, regions in the western part of Indonesia have the best potentials. When regions on Java Island are excluded, these potential regions are mainly located in the provinces of North Sumatera, West Sumatera, Riau, and East Kalimantan.

Keywords: migration, human development, potential destinations, developing countries, Indonesia.

1. Introduction

1.1 Background

Human development is a concept which was first introduced by the United Nations as an approach to measure development by combining social and economic indicators. One basic way to measure human development is through the use of the Human Development Index (HDI), which is a composite index, comprised of aspects such as life expectancy, educational attainment and income. However, the entire concept of human development is not only determined by the HDI, as it covers additional dimensions including poverty, gender issues, empowerment and also ecological issues. With a vision for economic and social progress, the first Human Development Report (HDR) by the United Nations in 1990 sought to contribute to the increase in well-being by enlarging the choices and capabilities of people (UNDP, HDR 1990). These choices pertain to education, medical health facilities, as well as entertainment to satisfy leisure needs. In general, the HDI for developed countries is higher than that of developing ones. According to the United Nations Development Programme, the highest HDI value in 2010 was that of Norway (93.8) while the lowest was that of Zimbabwe (14.0). For the same year, the HDI value for Indonesia was 60.0, which indicates a medium level of development.

Indonesia is the fourth most populous country in the world after China, India and USA (World Bank, 2013). As an archipelago country, Indonesia has five main islands, i.e. Java, Sulawesi, Sumatera, Irian Jaya and Kalimantan (Figure 1.1.). Java is the smallest among the five islands, with its share being only 6.9 % of the total area of the country; however, 57.5 % of the total population lives there (Statistics Indonesia, 2010). Meanwhile, Kalimantan Island, also known as Borneo, the largest island which covers 28.5 % of the total area, is only inhabited by 5.8 % of the total population (Statistics Indonesia, 2010). The population imbalance among regions has caused several socio-economic problems limiting access to public educational, health care and entertainment facilities which are poorly developed outside of Java. Thus, the development in Indonesia is considered as 'Javacentric' given that socio-economic and infrastructural developments have been concentrated mainly on this island (Muhidin, 2002).

This disparity has influenced the human development index for each of the regions in Indonesia. The HDI shows that regions in Java tend to have higher indices than those outside. For instance, HDI for the special capital region (DKI) Jakarta Province is 77.03 while for Papua only 64.00 (Statistics Indonesia, 2012). One possible explanation for this is that in highly urbanized regions like Jakarta, access to public facilities such as schools and hospitals is easier while in Papua it is quite difficult. Many regions in Java are also more urbanized. This is also one of the pull factors which motivate people to migrate to more attractive urban destinations. Jakarta, in particular, is the most favourable destination for migration. This is understandable since Jakarta acts as the centre for government as well as business activities. Additionally, some of Jakarta's neighbouring regions have also become preferable for migration in recent years. Jakarta and its neighbours have built a large-scale metropolitan area named Jabodetabek (comprised of Jakarta, Bogor, Depok, Tangerang and Bekasi), also known as Greater Jakarta. These localities have become suburban areas where many people employed in Jakarta choose to live there because of cheaper housing and better environment (Asri and Hidayat, 2005). Most regions of Greater Jakarta are from the West Java

Province. Accordingly, the number of in-migrants to this province is relatively high, where one-third of them come from Jakarta (Muhidin, 2002).

Figure 1.1 Map of Indonesia with the location of the five big islands



The social and economic disparity in Indonesia is possibly due to its archipelago characteristics and large number of inhabitants in combination with the inadequate and uneven distribution of public facilities. As a result, Resosudarmo and Vidyattama (2006) found that some provinces in Indonesia are consistently among the five richest and others among the five poorest. According to their research, East Kalimantan, Riau, and Jakarta have always been among the richest provinces, whereas East Nusa Tenggara and West Nusa Tenggara have always been among the five poorest. From 1971 to 2002, GDP per capita for the richest provinces was about ten times higher than that of the poorest. Table 1.1 shows that the coefficients of variations of provincial per capita GDP are higher compared to some other developing countries in Asia, Africa, Europe and Latin America as shown in Table 1.2. In fact, the trend is increasing for GDP without mining. This indicates that the variability of GDP in every province in Indonesia is quite substantial. In other words, regional income disparity in Indonesia is considerably severe.

Table 1.1. Coefficient of Variation of Provincial per capita GDP, Indonesia, 1971-2002

1971		1983		1996		2002	
With mining	Without mining	With mining	Without mining	With mining	Without mining	With mining	Without mining
0.882	0.469	1.231	0.603	0.840	0.681	0.855	0.790

Source: Resosudarmo and Vidyattama (2006).

Table 1.2. Coefficient of Variation of Several Developing Countries, 1996-1997

Country	Year	
	1996	1997
Brazil		0.563
China		0.692
India		0.387
Mexico		0.473
Nepal	0.157	
Pakistan		0.186
Philippines		0.530
Poland	0.206	
Rumania	0.189	
Russia		0.625
Thailand		0.797
Uganda		0.274
Uzbekistan		0.353
Vietnam		1.067

Source: Shankar and Shah (2003) in Resosudarmo and Vidyattama (2006).

The three richest provinces mentioned previously are located in different islands. East Kalimantan is on Kalimantan Island, Riau is on Sumatera Island, and Jakarta is on Java Island. In addition, some provinces outside Java such as North Sumatera, Riau and East Kalimantan are considered as the most competitive provinces in Indonesia in terms of foreign direct investment (Rahmadian, 2012). Therefore, they can be expected to be potential destinations for migration driven by economic factors. Nevertheless, even though Jakarta has the smallest area compared to the other three provinces, it has received the largest number of in-migrants. According to the Population Census (Statistics Indonesia, 2010), the population density of Jakarta is 14,469 inhabitants per km², which exhibits much more density when compared to the national average of only 124 inhabitants per km². Thus, it is not surprising that Jakarta is the most crowded region in Indonesia.

The high population density in Jakarta has caused several environmental problems, most notably air and water pollution, and especially floods. Floods inevitably occur every year in Greater Jakarta, and it does not seem to be getting better this day. The government has responsibilities to solve the problem for instance by building dams and rivers recovery. However, the public itself also plays a role in this issue. The growth of metropolitan Jabodetabek has caused the growing slums areas in the cities, and many in the riverbanks. Domestic waste that is unmanaged stimulates the circumstance. Those people who live in these areas often just throw out their domestic waste to the river. Flood does not only cause material loss, but also fatalities. Dozens of people died during the flood in Jakarta every year (Huffington Post, 2010;

Jakarta Post, 2014). Flood is not only the major problem in Jakarta, as traffic congestion, air and water pollution are unsolved dilemmas in this city. The United Nations (2013) reported that the water system in Jakarta is not efficient, and thus, 80 % of its inhabitants should use underground water. The use of underground water has resulted in the depletion of land surface and other problems related to flood. This water crisis not only happened in Jakarta, but on Java Island in general. According to Pawitan (2009), the water supply on the island has reached a critical level. Pawitan additionally stated that this major problem is a result of the direct consequence of population density which adds to deforestation, water pollution and the alteration of land use. Moreover, the Indonesia Environmental and Climate Change Policy Brief acknowledged similar issues pointing to low water quality in Java and Bali (Wingqvist & Dahlberg, 2008). This situation is generated as a consequence of industry, lack of wastewater treatment, as well as domestic waste which are driven by high population demand.

Another challenge urban regions are faced with is air pollution. Generally, in Java, the air quality is considerably deteriorating. According to the World Bank (2009), the level of PM₁₀ concentration in Jakarta in 2005 was 2-3 times higher than the optimal level suggested by WHO Air Quality Guideline. It is higher in Surabaya, the capital of East Java, where it is about five times the guideline. Aside from industrial effects, air pollution is also caused by public transport and private vehicles. The growth of the metropolitan Jabodetabek has triggered this situation. More people working in Jakarta are living in the Bodetabek area and being daily commuters have increased the use of private vehicles as a result of the lack of an adequate public transportation system in these cities. The number of private vehicles, i.e. motorcycles and cars, in Jakarta increased significantly during the period 1998-2002 (Asri and Hidayat, 2005). Such circumstances cause severe traffic congestion in Jakarta and its suburbs, which consequently contributes to the worsening of air quality. In 1998, reportedly 3,000 people died because of the high level of air pollution in Jakarta (Resosudarmo and Napitupulu, 2004). Apart from the insufficient transport and water systems which fall within the responsibilities of the government, the dense population also plays a role in these problems.

Those problems above, particularly in Jakarta have urged the government finding an alternative site to relocate the capital. As President Susilo Bambang Yudhoyono stated that Jakarta is no longer ideal to inhabit and thus relocating the capital should be taken into consideration (Huffington Post, 2010). The relocation of the capital has been an issue for a long time, as the first president Soekarno ever suggested moving the capital to Kalimantan. Furthermore, his successor Soeharto, considered Jonggol in West Java province as the new capital. This relocation issues has been a huge debate as some people support the argument, while other do not. This debate has emerged again in Yudhoyono's administration as the condition of Jakarta become worse. However, this issue remains unanswered due to budget and other political concerns.

The environmental problems of migrant-receiving regions, in addition to the socio-economic disparities between the island of Java and the rest, inevitably lead to the idea and necessity of discovering other potential regions for destinations and development. Such areas do not face similar problematic circumstances and may be capable of offering a comparable quality of life in order to reduce problems in urban regions as well as upgrade the development in rural areas.

1.2 Objective and Research Questions

The aim of this study is first to explain the effect of human development on migration. To do so, the research question and sub-questions are:

1. What is the effect of human development on migration into a region?
 - To what extent do mean years of schooling affect migration into a region?
 - To what extent does literacy rate affect migration into a region?
 - To what extent does adjusted expenditure per capita affect migration into a region?
 - To what extent does life expectancy at birth affect migration into a region?
 - To what extent does poverty rate affect migration into a region?
 - To what extent does unemployment rate affect migration into a region?

Secondly, this study attempts to explore which regions in Indonesia, particularly outside of the island of Java, can be potential destinations for migration. To accommodate this objective, the research questions are as follows:

2. How are the characteristics of regions, based on the human development indicators?
3. Which region(s) in Indonesia, particularly outside of Java Island, can be potential destinations for migration?
4. How does the actual migration fit the potential destinations for migration?

1.3 Relevance of the study

Academic relevance

This study intends to contribute to migration research, specific to Indonesia but in its context as a developing country. As a growing nation and among the most populous in the world, Indonesia still struggles with many common demographic concerns. Some issues are prioritized more than others, such as those relating to health, education, economy and politics. Much research and attention have been allocated in analysing these aspects, as the government particularly focuses more on these areas. Migration, on the other hand, is not a widely preferred research topic, but is nonetheless very crucial, as one in eleven Indonesians is classified as a migrant. This study is not only relevant to demography, but can be useful in regional planning research as well.

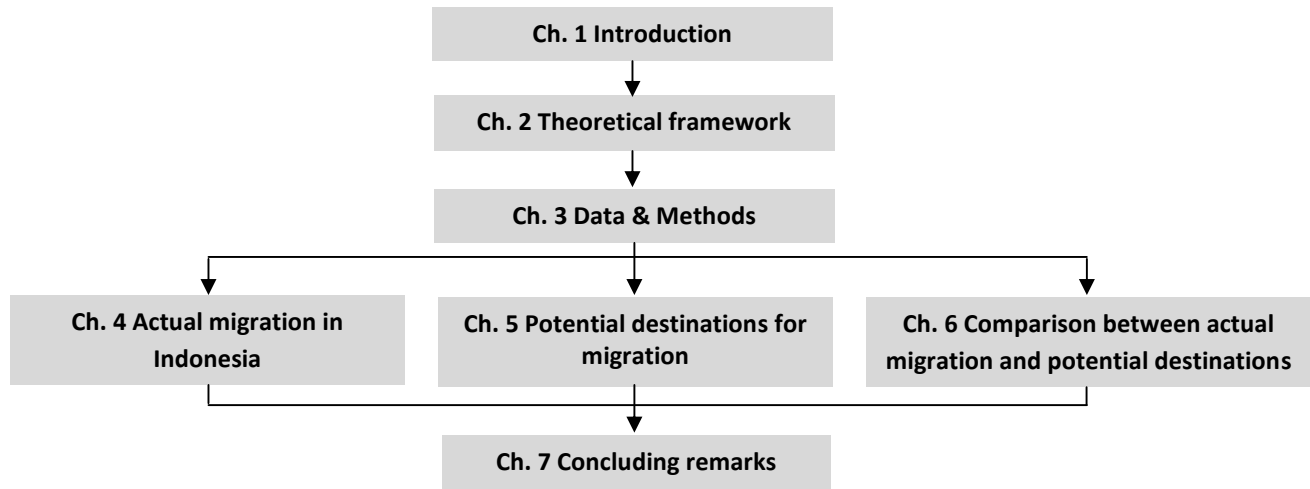
Societal relevance

Although the age structure of the Indonesian population is no longer young (the median age of the Indonesian population is 27.2 years), the number of people in productive ages is greater than the number at non-productive ages. Given that the peak of migration occurs at younger and productive ages (Mulder, 1993), it is relevant for policy makers to craft strategies to accommodate youth needs in the context of migration. The findings in this study are expected to suggest policy recommendations which the government can use to prepare the regions that can be potential destinations for migration as well as promoting them in order to attract potential migrants.

1.4 Structure of the thesis

In this chapter, the background, objectives, research questions and relevance of the study have been presented. This thesis is constructed six additional chapters as illustrated in Figure 1.2.

Figure 1.2. Structure of the thesis



Chapter 2 assembles brief reviews of the main theories of migration and earlier research on the topic related to human development. The final part of this chapter includes the conceptual model which frames the main concepts in the study and the relationship between them. This conceptual model helps build the hypotheses which are presented in this chapter as well.

Chapter 3 discusses the data availability and data sources. The different analytical techniques used for the study are also specified in this chapter, as well as the operationalization of data processing.

Chapters 4, 5 and 6 discuss the results or empirical findings of this study. Actual migration is discussed in chapter 4 and the potential destination for migration in chapter 5. Chapter 6 serves as a comparison between actual migration and potential destinations for migration.

Finally, **Chapter 7** summarizes the main findings of the thesis and refers back to the initial research questions, in addition to pinpointing some topics that could be considered in future research.

2 Theoretical framework

2.1 Why do people migrate?

Some earlier theories of migration explain the propensity to migrate. One of the theories in migration research is the push-pull theory. This theory implicitly is an economic theory of migration and elaborated the causes of migration. The push-pull model suggests a number of push factors that induce people moving out from the areas of origin, and some pull factors that attract migrants to certain areas of destination (see Table 2.1).

Table 2.1. Push and pull factors of migration

Push factors	Pull factors
<ul style="list-style-type: none">• Decline in a national resource or the prices it commands; decreased demand for a particular product or service; exhaustion of mines, timber or agricultural resources.• Loss of employment due to incompetence, changing employer's needs, or automation or mechanization.• Discriminatory treatment on the grounds of politics, religion or ethnicity.• Cultural alienation from a community.• Poor marriage or employment opportunities.• Retreat due to natural or humanly created catastrophe.	<ul style="list-style-type: none">• Improved employment opportunities.• Superior income-earning opportunities.• Opportunities for specialized training or education.• Preferable environment or general living conditions.• Movement as result of dependency on someone else who has moved, such as spouse.• Novel, rich or varied cultural, intellectual or recreational environment (especially the city for rural populations)

Source: Boyle et al (1998:67)

Another theory that explains migration is the neoclassical macro-economic theory. This theory explains the development of labour migration at the macro level within the economic development process. This theory assumes that an individual makes a rational decision to migrate based on economic factors (Castles and Miller, 2009). Todaro (1976) explained some reasons why people migrate beside the primary economic motives which are '(a) to improve their educational or skill level (also an ultimately economic motive); (b) to escape social and cultural imprisonment in homogenous rural areas; (c) to escape from rural violence and political instability; and (d) to join family and friends who had previously migrated to urban areas'. (Todaro, 1976: 66)

2.2 Migration and development

2.2.1 Migration, human development and quality of life

The term human development term refers to ‘both the process of widening people’s choices and the level of their achieved well-being’ (HDR, 1990: 10). This concept arises as a new approach to measure development which usually only focuses on economic development, while the primary objective of development is to benefit people. Developing Sen’s capability approach, Alkire (2002) derived the dimensions of human development from basic human values, central human capabilities, dimensions of wellbeing, political liberalism, to prudential values of development. Wright (2012) argued that the UNDP Human Development Report 2009 that uses the capability approach ‘does not tackle wellbeing outcomes specifically’ (Wright, 2012: 26). Next to this, using human wellbeing analysis instead of the capability approach, Wright found that (international) migration enhanced the wellbeing of Peruvian migrants in London, and reconstructs their new understanding of ‘living well’. Based on the capabilities-based concept of development by Sen (1999), De Haas and Rodríguez (2010) confirmed that human mobility is a vital element of human development. Sen used the human capability concept that proposes human beings to have freedom to enhance the substantive choices they have. De Haas and Rodríguez considered this as to fit the human movement (i.e. migration). They stated that the movement can enable people to enhance their capabilities, related to, among other things, health, education, and earnings.

Usually, the core purpose of migration is to search for better living in terms of economic, well-being, education, or even security (Wright, 2012). But it may also be motivated by quality of life. It can be achieved in rural areas as well. A study in the northern Netherlands showed that the motivation about quality of life plays an important role in determining people’s to move to less-popular rural areas in general, but not one particular rural area (Bijker, 2013). In Bijker’s research, popular and less-popular areas were defined by average house prices. However, the study showed that less-popular areas attracted more migrants with lower educational level, while commonly rural in-migration is often linked with the movement of middle-class families from the city who are retired or people who commute to nearby urban centres for employment (Smith and Philips, 2001; Stockdale, 2006 as cited by Bijker 2013). Boyle et al (1998) also described some studies about migration to the countryside which relate to improve the quality of life. Some environmental reasons are the pull factors from the area of destination. Yet, these studies are conducted in developed countries where the social as well as economic development is quite similar among regions. The results might be different for a developing country, such as Indonesia because the inequality of socio economic development is considered quite wide. However, there must be some less urbanized regions that might have comparable quality of life with the urbanized ones.

2.2.2 Migration, poverty reduction, and employment

The Human Development Report 2009 stated that opportunities to enhance well-being can be achieved by moving across the national borders. Such pattern appeared at the border of United States and Mexico (UNDP, 2009). The US’ regions with lowest HDI are still above the highest HDI of Mexican’s regions in the border. It is thus suggested that international migration could expand the opportunities to improve well-being. In line with this, internal migration also plays an important role in improving well-being. Also according to the report, this pattern is shown in China where the migration flows portrayed the movement of people to regions with higher human development. The study showed that migration can reduce

poverty. The poverty-reducing effect of internal migration that has been studied in several countries demonstrate that in some regions in India poverty rates in households with a migrant fell by about half between 2001/2 and 2006/7. Similar results are also found in Bangladesh. The report also examined the cases of Indonesia between 1994 and 2000, and found that poverty is lower for migrant households than those of non-migrants. The trend showed that there is a significant decline in poverty in migrant households while in non migrants household the rate is considerably consistent.

When people migrate, they manage to increase their well-being including income, education, and personal security. Hence, international as well as internal migration is the fastest way to improve people's welfare and opportunities (Münz, 2013). Münz also stated that migration and (internal) mobility is considerably related to poverty reduction. The poverty-reducing effect is likely because of the money sent back home by migrants, also known as remittance, which is used to improve the quality of life by migrant families. Although the impact of remittances on the receiver countries is still debated, they play an important role in improving the living standard of the households that receive them (Newland, 2003). Remittances have become a new 'development mantra': the money sent home by migrants is thought to promote local, regional and national development (Kapur, 2004, in Castles and Miller 2009). Migrants send money to their families back home to improve living standards, raising education, health, and upgrade settlement. Remittances benefit migrant households and contribute to poverty reduction also in the country of origin (Castles and Miller, 2009).

The migration flow in Indonesia showed that most people migrate to regions with high GDRP per capita and low unemployment (Darmawan, 2007). The pattern for such indicators usually dominated by certain regions (provinces) including Jakarta, East Kalimantan, and Riau. To reduce economic disparity among regions in Indonesia Darmawan suggested to create job opportunities especially in regions with high unemployment in order to grow economic development and adding options to migrate not only to certain regions (especially big cities). Nevertheless, Darmawan only examines migration with those two indicators (GDP and unemployment), and seems to ignore other indicators such as health, education, and other indicators that can etcetera. Study in India also showed, there is a significant positive association between both in- and out-migration with per capita income, percentage of people in the labour force and share of state gross domestic product in the non agricultural sector (Bhagat, 2010).

As indicated above, poverty and employment are important factors for migration propensity. It is then possible to take these indicators into account to see the relationship between them.

2.3 Conceptual model and hypotheses

The conceptual model of this study is mainly derived from the classic push-pull theory. Some of the pull factors that are mentioned before are represented by the human development indicators.

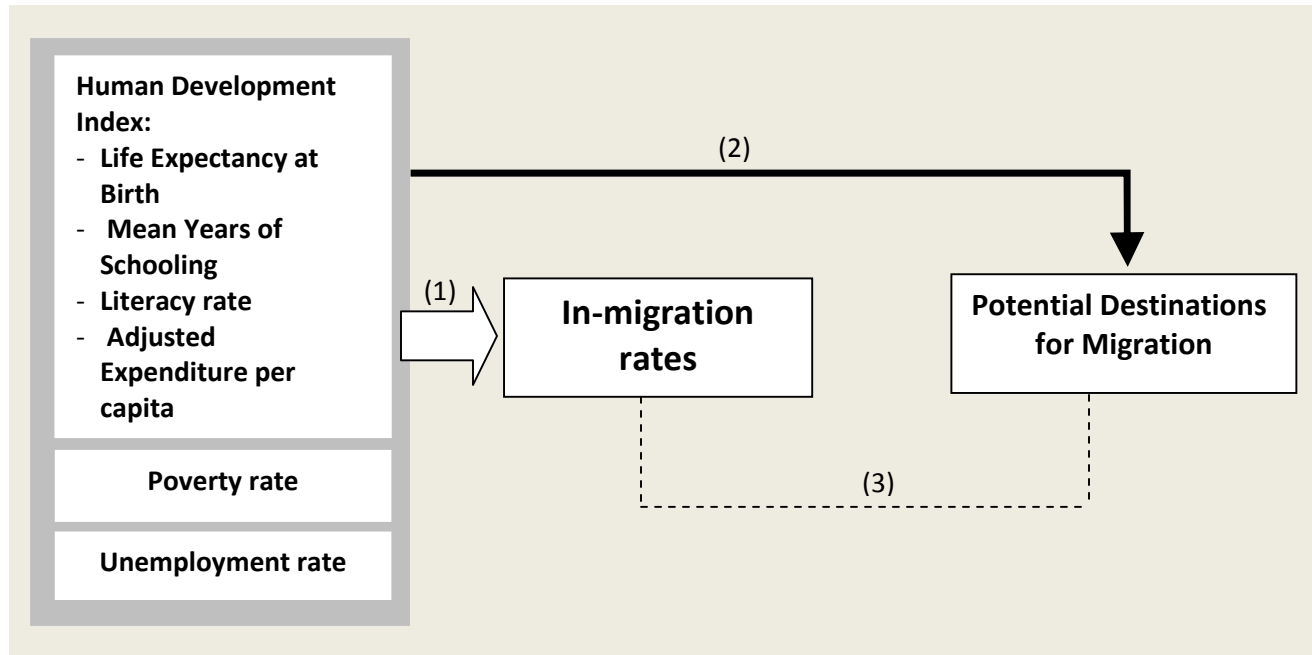
Table 2.2. Pull factors of migration and human development indicators

Pull factors of migration	Indicators of human development
Education	Mean Years of Schooling, Literacy Rate
Economy	Adjusted expenditure per capita, Poverty rate
Employment opportunities	Unemployment rate
Health/better environment	Life expectancy at birth, CO ₂ emissions per capita (carbon footprints)

The environmental issues have been an important concern in human development. The Human Development Report in 2006 and 2007 specifically discussed about environment and human development using several indicators including CO₂ emissions and carbon footprints. However, given the availability of data for these indicators is considered not possible for regional level in Indonesia, therefore this variable is excluded from the conceptual model.

As such, the conceptual model can be illustrated as follows:

Figure 2.1. Conceptual Model



Arrow (1) denotes the impact of the human development indicators on in-migration rates. This impact is analysed in Chapter 4. Arrow (2) indicates the construction of potential destinations for migration by human development indicators which analysed in Chapter 5. Both cluster analysis and index construction is discussed in Chapter 5 which defines regions with potential destinations for migration. Finally, the

dotted line (3) indicates comparison between the in-migration rates and potential destinations for migration that have been defined by the index in Chapter 5. This discussion is presented in Chapter 6.

With regard to the conceptual model, this study expects that:

Both human development index, life expectancy at birth, mean years of schooling, literacy rate, and adjusted expenditure per capita, of a region are positively associated with migration into that area.

Next to this, the poverty rate and unemployment rate of a region are negatively associated with migration into that area.

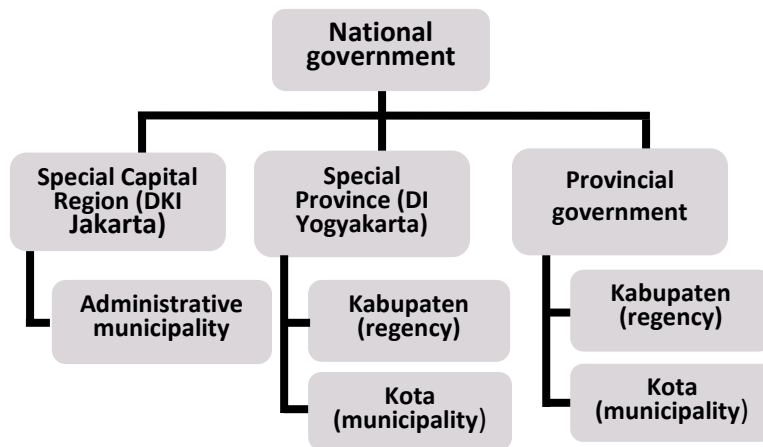
Furthermore, the potential destinations for migration are regarded to be regions with low poverty rate, low unemployment rate, and high HDI components.

3 Data and methods

3.1 Data Sources

This study uses secondary data obtained from Statistics Indonesia (BPS). They were derived from the Indonesian Population Census 2010, the National Socio-economic Survey (SUSENAS), and the National Labour Force Survey (SAKERNAS). All calculation of each indicator has been done by BPS at the macro level (regional). The units of observation of this study are all 497 regencies and municipalities in Indonesia. In 2010, Indonesia consists of 33 provinces which are divided into 497 regions. The regional government in Indonesia is distinguished by provincial government and its subordinate level namely the regency/municipality. There are 90 regions that are classified as municipality whereas the remaining is having status as regency.

Figure 3.1. Regional government in Indonesia according to Law 32 of 2004



Source: Fahmi (2013)

Although under the same provincial government, regencies and municipalities have some different kind of demographic characteristics. One obvious difference is the size. In this regard, the municipalities are smaller than the regencies. Further, municipalities usually consist of all urbanized villages also known as sub districts, while regencies only comprise of small number of urbanized villages while most of the area are considered rural. The determination of an area to be regarded as urban or rural is made in accordance with the Decree of chairman of BPS no. 37/2010. According to such a decree, the classification of urban and rural areas is based on the density of population, percentage of agricultural households, and provision or access to urban facilities (i.e. schools, hospitals, local markets, cinemas, and percentage of households with access to electricity and telephone). Next, each village is determined as urban or rural based on its score on the said indicators, which has been scaled in advance.

Moreover, on account of the fact that every capital of a province, as the seat of government as well as the centre of economic activities, is a municipality, this makes municipalities become more developed and urbanized.

3.1.1 Migration Data

Migration data are derived from the Indonesian Population Census 2010. For Indonesia, a census is often used as the main source of internal migration data since there is no population register-based data. This census is held every ten years and the latest was held in 2010. The data on number of recent in-migrants per region are used in this study. Those data are accessible on Statistics Indonesia's (BPS) official website. The in-migration rates used in this analysis are calculated from the number of recent in-migrants divided by the total population in the region.

$$\text{rate of in - migration} = \frac{\text{number of recent in - migrants}}{\text{mid - year population}} * 100\%$$

3.1.2 Data on the HDI and HDI components

The calculation of Human Development Index and its components has been done by BPS and published annually. Many of them, particularly, mean years of schooling, literacy rate and adjusted expenditure per capita were derived from Susenas. This survey conducted on quarterly basis in all provinces in Indonesia. The resulted socio-economic indicators from the survey can be presented annually at regional level i.e. regency and municipality. Data about HDI and its components are available in BPS' official website and accessible for public. In addition, the data used in this study are the data of 2010.

3.1.3 Poverty and unemployment data

Similarly to the other socio-economic indicators, poverty rates were also derived from Susenas, whereas the unemployment rates were derived from Sakernas. This survey also conducted on quarterly basis. Sakernas is aimed to monitor the prompt indicators of Indonesian labour market which follow the Key Indicators of the Labour Market (KILM) recommended by ILO (the International Labour Organization). Indicators related to national labour market are presented annually on regional level. Data about poverty and unemployment are also accessible on BPS' official website. The data used in this study are the data of 2010.

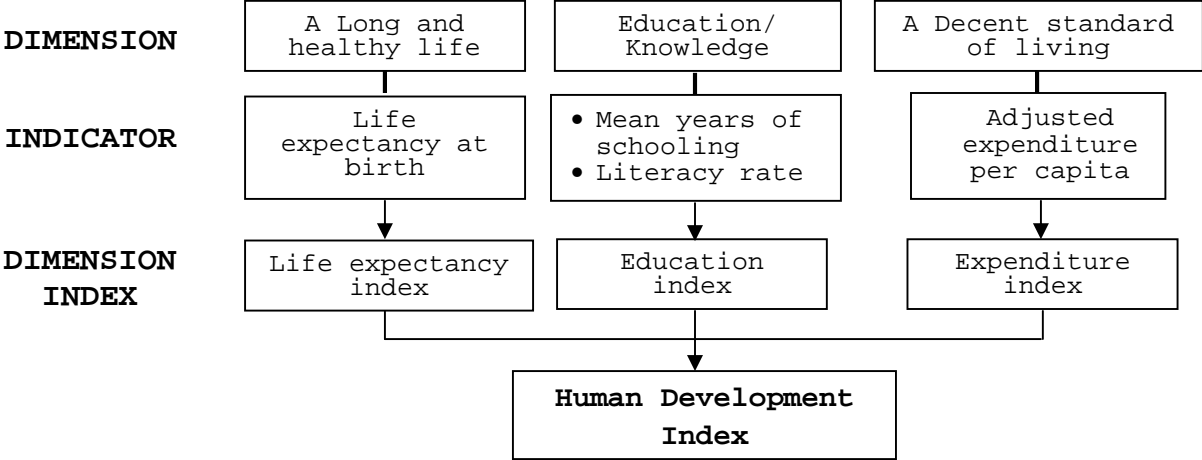
3.2 Definition of concepts

Migration is defined as "relocation not only of the place of residence, but also of activities in other life course trajectories" (Mulder and Hooimeijer, 1999, p.179). According to this definition, changing residence between neighbouring regions without changing the daily activity space cannot be considered as internal migration. However, due to data availability, this study uses recent migration data in which migration is defined as the number of people who lived in a different regency/municipality in the period of survey compared with five years ago.

The Human Development Index is a composite index of three basic dimensions i.e. a long and healthy life, education/knowledge, and a decent standard of living. The first dimension is represented by life

expectancy at birth, second dimensions comprises two indicators which are mean years of schooling (MYS) and expected years of schooling. Finally, gross national income per capita is used as indicator of decent standard of living (UNDP, 1990). In the context of Indonesia, some adjustments have been made in order to calculate the index. Instead of using expected years of schooling to determine the education dimension for HDI, the authority institution (in this case Statistics Indonesia) used the literacy rate. Furthermore, BPS uses adjusted expenditure per capita as proxy to gross national income per capita as defined by UNDP to measure the decent standard of living. Therefore, the HDI components in Indonesia can be illustrated in Figure 3.2. as follows:

Figure 3.2. Components of the human development index



Life expectancy at birth is the average number of years a newborn could expect to live if prevailing patterns of age specific mortality rates at the time of birth were to stay the same throughout the child’s life (UNDP).

Mean years of schooling is the average number of years people aged 15 years and older spent in formal education (BPS, Statistics Indonesia).

Literacy rate is the percentage of people aged 15 years and older which is literate, determined by those who can read and write in Latin alphabet or others (BPS, Statistics Indonesia).

Poverty rate is defined as the number of people who have an average income per month under the poverty line (BPS, Statistics Indonesia). In 2010, the average poverty line in Indonesia was IDR 211,726 (BPS, Statistics Indonesia).

Unemployment rate is the percentage of unemployed to the number of people in the labour force (BPS, Statistics Indonesia).

3.3 Analytical Methods

3.3.1 GIS' Natural breaks (Jenks) classification

To study the migration patterns of regions I have used Geographic Information System (GIS) classification with natural breaks (Jenks) method. This classification divides data into classes based on natural groups in the data distribution. The method is based on the Jenks' natural breaks algorithm that seeks to reduce variance within classes and maximizes variance between classes (ESRI, 2014). Adopting the number of categories in the human development index classification which is four, all classifications used in this study are also divided into four categories. This method has been used to classified regions based on their in-migration rates (Figure 4.1) and index of potential destinations for migration (Figure 5.2). This four classes' categorization is distinguished into the categories of low, medium, high, and very high.

3.3.2 Linear regression

Linear regression has been used to analyse the relationship between the human development indicators and current migration. **In-migration rate** is considered as dependent variable. The indicators from human development are considered as independent variables. They are **life expectancy at birth, mean years of schooling, literacy rate, adjusted expenditure per capita, poverty rate, and unemployment rate**. There are 497 regions i.e. regencies and municipalities in Indonesia examined in this analysis. Both bivariate and multivariate linear regression has been used to seek relationship between the dependent variable and all independent variables. The regression analysis has been carried out using SPSS.

3.3.3 Cluster analysis

Cluster analysis has been used to classified regions based on variables from human development indicators as mentioned in 3.3.2. Since the variables are measured on different scale, then it is necessary to standardised the variables before further analysis, otherwise the result would be misleading. In line with categorisation in 3.3.1 which is adopted the HDI's four categories, this analysis also employs a classification into four groups using K-means clustering method. In K-means clustering method, we can set number of clusters in advance, the algorithm called *k-means* given that 'a case is assigned to cluster for which its distance to the cluster mean is the smallest' (Norusis, 2008 : 372). This process has been done iteratively until the cluster means did not change much between successive steps and each case has their permanent cluster. Result of this analysis has been mapped using ArcGIS (Figure. 5.1).

3.3.4 Index of potential destinations for migration

To determine the potential destinations for migration, an index calculation has been done. The index for every region has been derived from all independent variables as mentioned in 3.3.2. Firstly, each indicator has been divided into four categories in a scaling system of 0 to 3 (see Table. 3.1). The categorization has been done by using quartiles. The next step is calculating score of every region for all indicators, so that all regions have their own score for each indicator. Further, the scores of each variable are summed up to

obtain a value of total score of every region. This value has been used to calculate the index of potential destinations for migration.

Table 3.1. Scale for calculating score on human development indicators of Indonesian regions

Scale	Mean Years of Schooling	Literacy rate	Adjusted Expenditure per capita	Life Expectancy at birth	Poverty rate
0	< 6.90	< 89.95	< 612.19	< 66.92	> 19.44
1	6.90-7.61	89.95-95.44	612.19 -629.44	66.92-68.55	13.18-19.44
2	7.62-8.74	95.45-98.10	629.45 -636.414	68.56-70.44	9.01-13.17
3	> 8.74	> 98.10	> 636.414	> 70.44	< 9.01

Unemployment rates were not included in the index because the association between unemployment and migration appeared to be in an unexpected direction (see later chapters).

Adopting calculation of dimension index of the human development, the index construction for determining potential destinations for migration has been done by applying a similar formula as follows:

$$Index = \frac{X - X_{min}}{(X_{max} - X_{min})}$$

Where, X is the observed value (total score) of each regions.

X_{min} is the minimum value of total score, while X_{max} is the maximum value a region can obtain from the scoring. Since the maximum value is 15 and the minimum value is 0; and given the HDI value in Indonesia is measured on the scale of 0 and 100, therefore the index also rescaled to 100. Hence, the formula became:

$$Index = \frac{X}{15} * 100$$

Finally, using the GIS' natural breaks (Jenks) all regions have been classified into four categories based on their index.

3.3.5 Comparison between actual migration and potential destinations for migration

In order to compare the actual migration and potential destinations for migration, the categorisation from GIS' natural breaks (Jenks) for in-migration rate and index of potential destinations for migration has been re-categorised respectively. The new categories are presented in Table 3.2.

Table 3.2 Re-categorisation of in-migration rates and index of potential destinations for migration

In-migration rates		Index of potential destinations for migration	
Old Category	New Category	Old Category	New Category
0.22-3.75 (low)	Low	0.00-20.00(low)	Low
3.76-7.54(medium)		20.01-46.67(medium)	
7.55-13.40(high)	High	46.68-73.33(high)	High
13.41-23.33(very high)		73.33-100.00(very high)	

The new categories both from the in-migration rates and the index have been overlaid to obtain regions that can be classified into four groups, as follows:

- Group one comprises regions with low in-migration rates and low index (**low-low**)
- Group two comprises regions with low in-migration rates and high-index (**low-high**)
- Group three consists of regions with high in-migration rates and low index (**high-low**)
- Group four contains regions with both high in-migration rates and index (**high-high**)

Based on the classification above, regions in the groups two and four can be regarded as the most potential destinations for migration.

4 Actual migration in Indonesia

4.1 Internal migration in Indonesia

The history about internal mobility in Indonesia has begun since the early 1900s which there was a massive resettlement of people from Java to the outer islands. This interprovincial mobility continued after the independence in 1945 as the new ruling Indonesian government implemented the same planned migration, or called *transmigrasi* (transmigration). This government policy as well as the concentration of economic and governmental activities on Java and in particular Jakarta, are considered to be most important factor in explaining interregional mobility in Indonesia (Muhidin, 2002; Van Lottum and Marks, 2012). Although it is no longer the main priority of the current government programmes, the transmigration is still managed by the Ministry of Manpower and Transmigration (Kemenakertrans).

According to the 2010 Population census, the distribution of recent migrants varies across regions. Figure 4.1 shows the classification of regions according to the in-migration rates. Regions with the lowest in-migration rates are coloured dark green. The next category is for regions with medium in-migration rates which are marked by light green colour. Orange and red colours indicate regions with high and very high in-migration rates. At a glance, this figure shows that regions with high levels of in-migrants are concentrated in the centre of Sumatera Island, clustered on the northern side of Kalimantan but scattered on the other side of it. They are also dispersed in eastern part of Indonesia, mainly on Papua Island. On Java Island, they are clustered on the western side of the Island, primarily dominated by municipalities in DKI Jakarta Province and its neighbours.

The highest in-migration rate in Indonesia is in the regency of Tana Tidung which is located in East Kalimantan Province. Almost a quarter of the population in this city is classified as in-migrants. The second and third highest in-migration rates are found in the regency of Teluk Wondama of West Papua Province and the municipality of Banda Aceh of Aceh Province where two of ten citizens of these regions can be considered as migrants. These regions are located on outside Java Island which undeniably interesting because it indicates that people mobility in Indonesia is shifted, whilst in the past people migrate to Java but today they have considered the regions outside Java as a choice of destination. Muhidin (2002) found that during the period of 1966-1971, regardless of the origin, 56.3 % of Indonesia's inhabitants have chosen Java as the destination for migration. The number increased later during 1985-1990, in which 58.4 % of Java population were recent in-migrants. In 2010 however, the total recent in-migrants in Java was only 3.74 %. Meanwhile, the lowest in-migration rate is in the regency of Lanny Jaya in Papua Province which had only 0.22 % migrants of the total population. Similarly, only 0.28 % of the population in the regency of Sumenep of East Java Province were migrants.

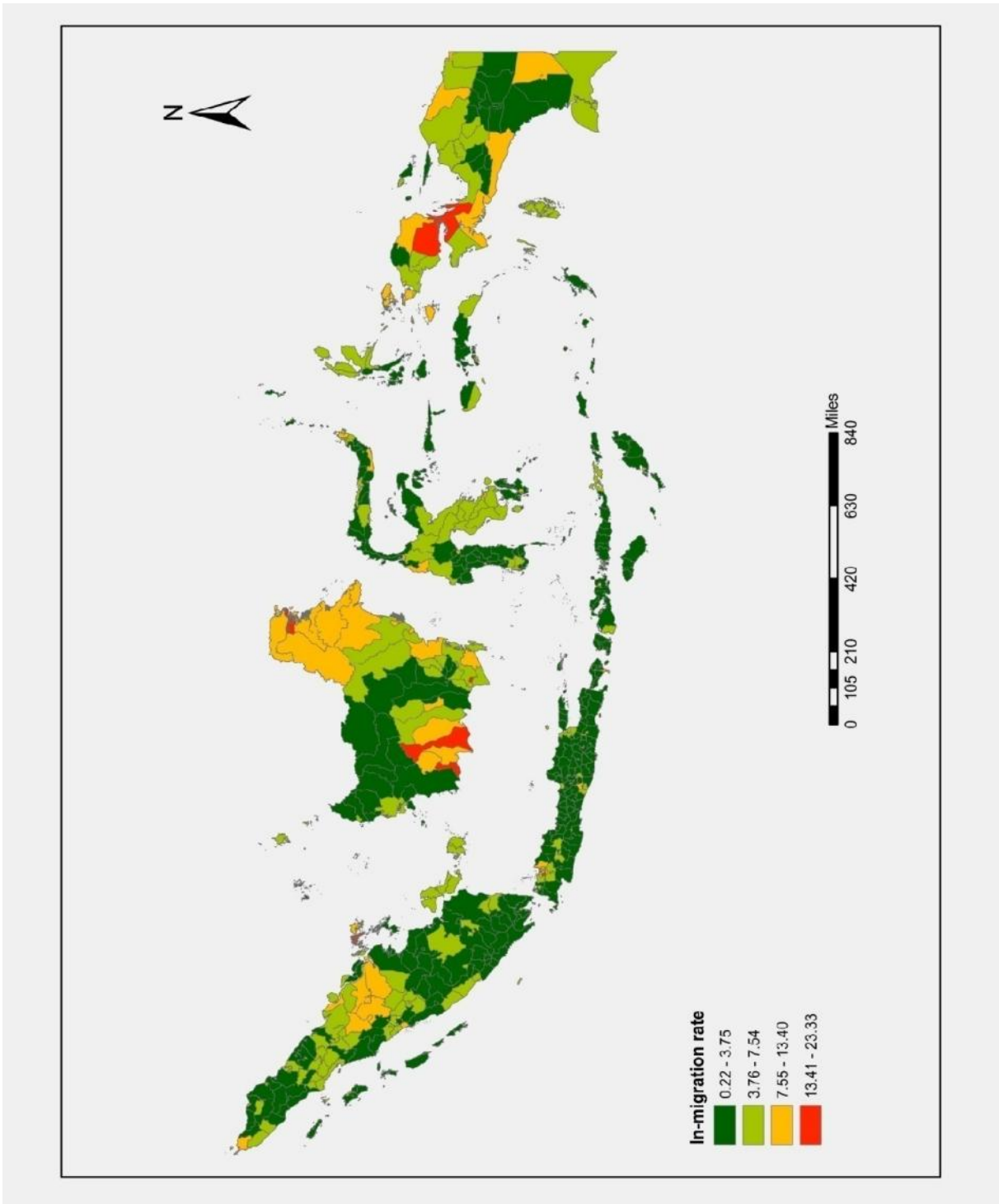
There are 11 regions in the category of **very high migration rates** which are indicated by red colour. The regions are specified by in-migration rates between 13.42 and 23.33 %. They are scattered over four big islands. On Sumatera Island, the municipalities of Banda Aceh, Bukit Tinggi, and Batam have the highest migration rates of all 151 regions on the island. For Java Island which consists of 118 regions, the municipalities of Tangerang Selatan and Yogyakarta have the highest in-migration rates among all. These regions, both of Sumatera and Java, are quite urbanized as shown by their local government status as

municipality. Regions which are classified as municipalities are considered to be more developed than regencies, and frequently is the provincial capital. In this category, Banda Aceh and Yogyakarta are capital cities of each province. However, the result shows differently on Kalimantan and Papua Islands where most of the regions with high in-migration rates are regencies which have rural characteristics. On Kalimantan Island the regencies of Seruyan, Sukamara, and Tana Tidung have the highest rate of in-migration. Banjarbaru of South Kalimantan is the only municipality that is in this category. On Papua Island, Teluk Bintuni and Teluk Wondama are two regencies with the highest in-migration rates.

Orange colour indicates regions with **high migration** rates (7.55-13.40 %). There are 72 regions in this category mainly situated in the center of Sumatera Island. The majority of them are regencies and municipalities from Riau and Riau Islands Provinces. Those provinces are eminent for mining and oil industries. Moreover, some municipalities in West Sumatera are also in this category namely the municipalities of Padang, Sawahlunto, Payakumbuh, Pariaman, and Padang Panjang. Meanwhile on Java Island, all municipalities in DKI Jakarta Province belong to this category, except for the municipalities of East Jakarta and West Jakarta. They are surrounded by their neighbouring municipalities from other provinces which have even higher rate i.e the municipalities of Tangerang Selatan, Bogor, Depok, Tangerang, and Bekasi. In fact, the municipality of Tangerang Selatan in Banten Province has a very high in-migration rate. Not all capital cities of every province on Java Island are in this category, only the municipality of Bandung of West Java Province. The remaining capital cities are in the category of medium in-migration rates.

On Kalimantan and Papua Islands, more than half of the regions have high rates which are quite interesting. East Kalimantan Province in particular is the most favourite of all four provinces in Kalimantan. The in-migration rates in this province are quite similar among all regencies and municipalities, except the regencies of Kutai Barat, Kutai, and Penajam Paser Utara. This can be related to the status of East Kalimantan as an oil producing province. Besides, this pattern is rather interesting because the rates for regions in the northern side of the province are higher than those in the southern. Since the data used in this study are gathered from the 2010 database, it is notable to consider that in 2012 regions in the northern side of East Kalimantan have merged and formed a new province, called North Kalimantan. A quite similar result is also found for Papua Island where many regions apparently have high migration rates. In West Papua Province, more regions have higher rates compared to regions in Papua Province. Most noticeably interesting is the regency of Raja Ampat in West Papua Province which consists of many small islands and while considered remote has a relatively high number of in-migrants. It could be related to its tourism development. Jayapura and Manokwari, the capital cities of the two provinces on Papua Island, also have higher migration rates.

Figure 4.1 The in-migration rates of Indonesian regions, 2010



Source: Statistics Indonesia, data processed by author.

Almost 55 % of regions in Indonesia are in the category of having **low migration** rates. These are indicated by dark green. Clusters of region in this category are found in every island, including Java. In fact, most regions in Java are in this category especially Central Java and East Java Provinces. On Sumatera Island, they are mainly located in the Southern side of it which consists of the provinces of Jambi, South Sumatera, and Lampung. The Bangka Belitung Province which used to be part of South Sumatera Province has higher migration rates which indicate by the colour light green. This colour signifies a **medium migration** rate in a region. On Sumatera Island regions with this category are mainly found in North Sumatera and Riau Provinces. On Java Island the pattern appears in municipalities. All capital cities in Java apparently are included in this category, except Yogyakarta and Bandung. Among them, the capital of Banten Province, Serang municipality has the lowest in-migration rate. Although this province is considerably young as it was formed in 2000, migrants seem to prefer Tangerang and Tangerang Selatan over the capital as the destinations for migration. This is probably related to their direct border to Jakarta. This was possibly one consideration assigning Serang as the capital, since the more developed Tangerang and Tangerang Selatan are more crowded. Sometimes, people mistakenly considered Tangerang municipality as the capital of Banten Province for its rapid development. Moreover, in outer island there are also clustered regions in Sulawesi island which dominated by regions from Southeast Sulawesi.

4.2 Migration and Human Development

Prior to the regression analysis, it is important to figure out the correlation among the variables in order to observe whether there is any collinearity among them. The correlation matrix in Table 4.1 shows that although some variables i.e mean years of schooling and literacy rate indicate a quite high correlation (0.736), it cannot be concluded that they are technically collinear. Accordingly, these two variables are still included in the model. For the remaining variables, the correlation between each variable is rather low, most of them are below 0.5, and thus all variables are included in the model.

Table 4.1 Correlation among the independent variables

Variables	Mean Years of Schooling	Literacy rate	Adj Expenditure per capita	Life expectancy at birth	Poverty rate	Unemployment rate
Mean years of schooling	1	0.736	0.456	0.452	-0.529	0.573
Literacy rate	0.736	1	0.416	0.242	-0.617	0.385
Adj Expenditure per capita	0.456	0.416	1	0.333	-0.614	0.336
Life expectancy at birth	0.452	0.242	0.333	1	-0.339	0.289
Poverty rate	-0.529	-0.617	-0.614	-0.339	1	-0.324
Unemployment rate	0.573	0.385	0.336	0.289	-0.324	1

A quite interesting correlation is found between the unemployment rate and all other variables. The unemployment rate is positively correlated with both mean years of schooling, literacy rate, adjusted expenditure per capita, and life expectancy at birth. But with poverty rate, it is negatively correlated. The

high number of unemployed in Indonesian regions in Indonesia that are dominated by educated people could possibly explain why the unemployment rate is positively correlated with both mean years of schooling and literacy rate. It is worth noting that 54 % of the unemployed are people with high school diploma and above, in which more than 25 % of them are college graduate (Statistics Indonesia, 2010). Given the national average of mean years of schooling is 7.9 years and the minimum years spent in formal education for high school graduate is 12 years, it is thus people with high school diploma and above can be considered as having high education in Indonesia. Erdem and Tugcu (2012) stated that the rise of this *army of jobless* related to the failure of the government in a country to link the educational system and the availability of jobs in the labour market in order to accommodate the working age youth needs of jobs. Their study showed that there is a correlation between education and unemployment rate in Turkey in which higher education graduates increase the unemployment rate both in the long-run and short-run. This is in line with similar graduate unemployment problem in Germany which link to the expansion of higher education (Schomburg, 2000). This is also consistent with what happened in Spain (Mora, Garcia-Montalvo, Garcia-Aracil, 2000), and in the United Kingdom (Woodley and Brennan, 2000), which correspond to the increasing of graduate unemployment in the early 1990's. This also occurred in Norway between 1987 and 1995 in which the rate of unemployment rose within people with higher education (Arnesen, 2000).

It is understandable that income and education are positively correlated. People with good education are expected to have better employment and in the same time earn satisfying income. However, the positive correlation between unemployment and income is rather strange. This is probably related to the high number of highly educated unemployed that presumably occurred in urban areas. These areas with high unemployed are also the areas with many highly educated, among whom the employed earn a relatively high income. Besides, less educated employed who work in informal jobs in urban areas also earn higher than those in the rural. This income disparity also possibly explains the negative correlation between unemployment rate and poverty rate. Moreover, it could be an indication of poor condition of economic inequality in Indonesia. During the early 2000s until today the Gini ratio in Indonesia is widened. In 2002, the national Gini ratio was 0.329, and rose to 0.413 in 2013 (Statistics Indonesia, 2014).

4.2.1 Bivariate linear regression analysis

Table 4.2 summarizes the bivariate regression between in-migration rates as the dependent variable and each independent variable i.e. mean years of schooling, literacy rate, life expectancy at birth, adjusted expenditure per capita, poverty rate, and unemployment rate. In addition, human development index also included as the independent variable to seek the association between them. All parameters are apparently highly significant, with 99 % significance level. The explained variances vary. For **human development index**, though not very high, 14.6 % of the variation in the migration rate is explained by this variable. This human development index comprises several indicators related to the fulfillment of basic needs to improve well-being. The regression coefficient is 0.257, and as expected, is positive. This confirms the theory that migrants tend to move to better places, in this case, regions with a higher human development index. Meanwhile for **life expectancy at birth**, the explained variance is 0.069 which is rather low. This means that the variable that represents health dimension can only explained 6.9 % of the variation in the migration rate. The coefficient is positive as expected. Accordingly, the life expectancy at birth is

positively associated with the in-migration rate. The higher the life expectancy in a region the more likely it becomes a preferred destination for migration.

Table 4.2 Bivariate linear regressions of in-migration rate to Indonesian regions

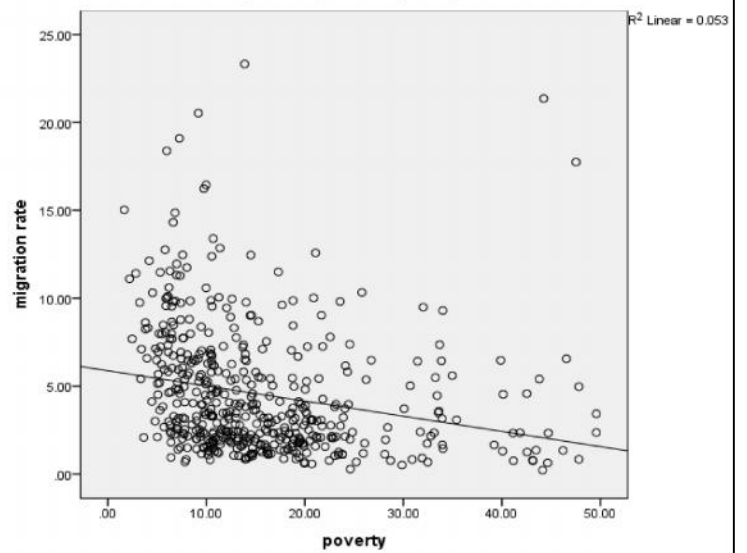
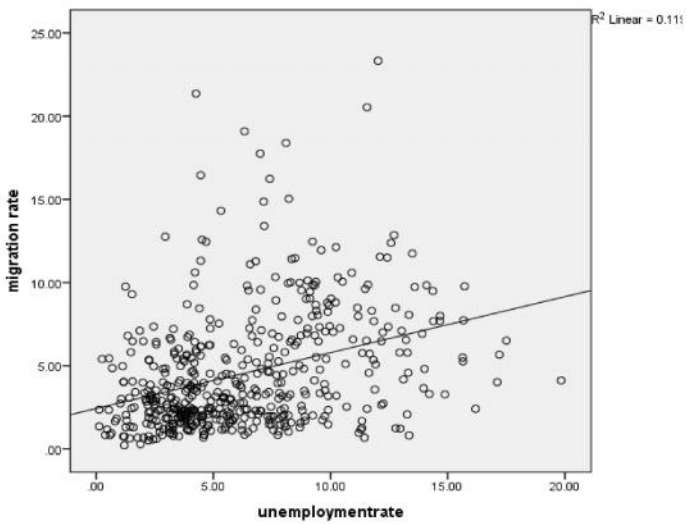
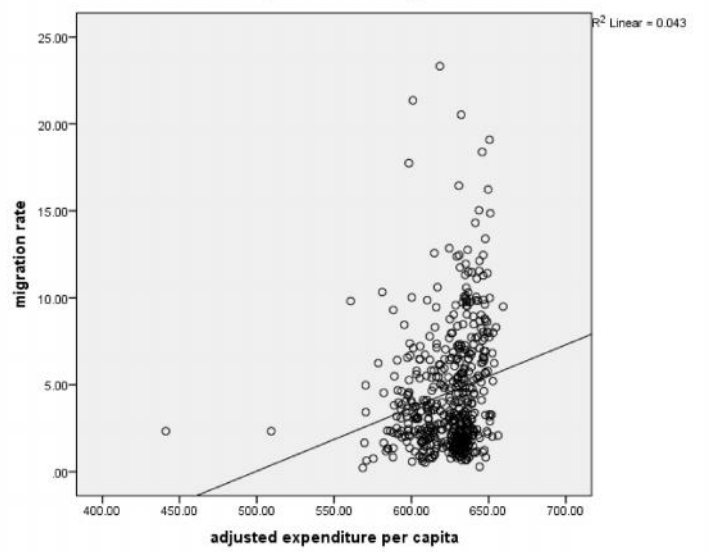
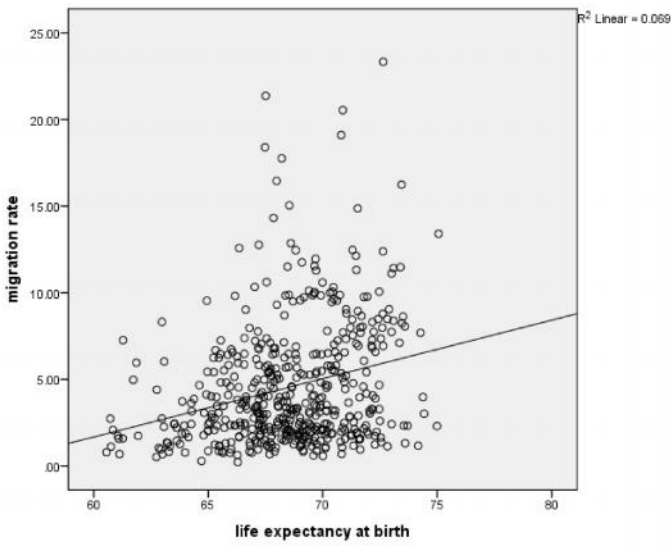
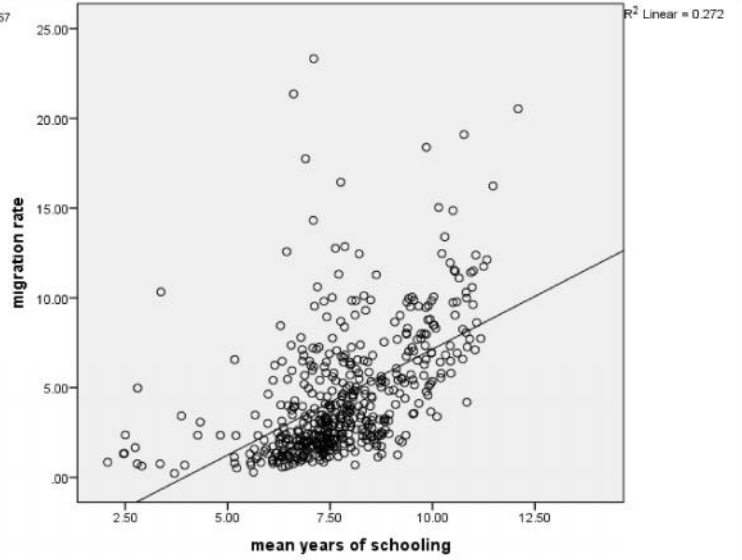
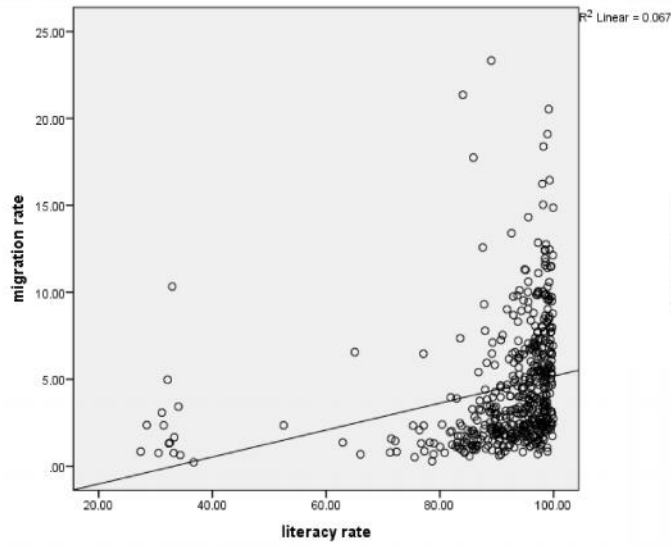
Variables	B	Std Error	T	Sig	R ²
Human Development Index	0.257	0.028	9.200	0.0000	0.146
Life expectancy at birth	0.337	0.056	6.050	0.0000	0.069
Mean Years of Schooling	1.179	0.087	13.589	0.0000	0.272
Literacy rate	0.077	0.013	5.983	0.0000	0.067
Adjusted Expenditure per capita	0.036	0.008	4.713	0.0000	0.043
Poverty rate	-0.086	0.016	-5.267	0.0000	0.053
Unemployment rate	0.336	0.041	8.196	0.0000	0.119

N= 497

The education dimension in human development is represented by two variables which are mean years of schooling and literacy rate. In line with the expectations, both variables are positively associated with the in-migration rate. The regression coefficients are positive and statistically significant. Since mean years of schooling measures the average duration of people's education in a region, it could then be said that migrants tend to choose regions with more educated citizens. Education in fact is an important motive for people to decide to move (Todaro, 1976). Although it cannot be concluded that preferred regions have better education system, the model itself showed that regions with better education indicators are more likely to be destination for migration. The **mean years of schooling** explained 27.2 % of the variation in the in-migration rate, which is quite high. It is remarkable how this variable alone explains the migration rate better than the HDI itself. On the contrary for **literacy rate**, the value is pretty low. It only explains 6.7 % of the variation.

Adjusted expenditure is used as a proxy for income. It was assumed that regions with high per capita expenditure have a better quality of life for the people compared to regions with lower expenditure. According to many studies, economic motives underlie most the migration propensity (Todaro, 1980; Van Lotum and Marks, 2012). As we can see in Table 4.1, **adjusted expenditure** explained 4.3 % of the variation in migration rates which is quite low. Adjusted expenditure per capita is positively associated with in-migration rates. The regression coefficient is 0.036 and positive, in line with the expectation. Hence it can be said that the higher per capita expenditure in a region, the more likely it is preferred destination for migration. This is in line with the Todaro migration model (1980) which explained the gain of expected income in migration destination rather than actual earnings in the area of origin is the fundamental factor that affects propensity to migrate. Higher expenditure indicates higher average income, lower poverty, and lower unemployment in a region. We can see then that **poverty rate** is negatively associated with in-migration rate, the parameter is statistically significant and conform the expectation. This suggests that regions with low poverty rates are more desirable destinations for migration as well. The variation explained by the model is 5.3 %, which is indeed low.

Figure 4.2. Scatter plots : in-migration rates and human development indicators



However, as opposed of what expected, **unemployment rate** is positively associated with migration rates. It was expected that influenced decision to migrate is to region with low unemployment, so that the chance to find a desirable job is higher. As de Groot et al (2011) found that not only job changing, but also being unemployed have a positive effect on the probability of moving. However, the result shows otherwise in which the regression coefficient is 0.336, positive and statistically significant. This indicates that the higher unemployment rate in a region, the higher the number of migrants into a region. This result is a bit strange since theory suggests that one of the reasons of why do people migrate is for occupational reasons (Todaro, 1976). Nevertheless the model does not imply what causes what. It could be the large number of migrants causes the high unemployment rate. The variance explained is rather high. It explained 11.9 % of the variation in migration rates.

The scatter plots of each variable as shown by Figure 4.2 signifies that there are no extreme outliers in the data. There might be an indication of heteroscedasticity in the data set, however is not severe.

4.2.2 Multivariate linear regression analysis

Up to this point, we can conclude that all variables of human development indicators are statistically significantly associated with migration rates. A Multivariate regression model would determine the association between migration rates and all six variables of human development altogether.

The total variation explained by this model is 30.9 % which is fairly high. While in the bivariate model, all parameters are significantly associated with in-migration rates, in this model apparently, there are only two variables which are significant, namely mean years of schooling and literacy rate. As expected, mean years of schooling has positive association with migration rate, with the regression coefficient 1.56. On the contrary, literacy rate shows a negative association with migration rate. It is actually interesting to see the changing sign of the coefficient between bivariate and multivariate model when all variables included in the model. Apparently, given a certain level of schooling, literacy is negatively associated with the in-migration rate. In fact, literacy rate is not the only variable which the sign changes. Regardless of significances, the parameter of adjusted expenditure per capita also becomes negative in this model, although the value is very low and not significant, too. This could be related to the dual labour market. According to the dual labour market theory, jobs are divided into two sectors i.e primary and secondary sectors, in which jobs in the primary sector are considered better with high wages, security, and substantial responsibility whereas the latter is characterized otherwise (Bulow and Summers, 1986). Given that the literacy rate and expenditure are negatively associated with the in-migration rates, while mean years of schooling is positively associated, this possibly indicates that most people in Indonesia work in the secondary sector which filled by less educated people or illiterate and has low income. Meanwhile the primary sector is filled by people who are more educated.

Unlike in the bivariate model, life expectancy at birth is negatively associated with in-migration rates and apparently not statistically significant (see Table 4.3). Although the direction of the association the poverty rate and unemployment rate follow the bivariate model, the parameters for the variables are also not statistically significant.

Table 4.3 Multivariate regression model : in-migration rates and human development indicators

Variables	B	Std Error	T	Sig	R ²
Model		2.979			0.309
Constant	3.954	6.561	0.603	0.547	
Life expectancy at birth	-0.001	0.056	-0.019	0.985	
Mean Years of Schooling	1.56	0.153	10.197	0.000	
Literacy rate	-0.084	0.019	-4.526	0.000	
Adjusted Expenditure per capita	-0.006	0.009	-0.723	0.470	
Poverty rate	-0.016	0.021	-0.770	0.442	
Unemployment rate	0.056	0.045	1.245	0.214	
N = 497 F = 36.441 p=0.000					

It is worth noting that the unemployment rates are still positively associated with in-migration rates in this model. This might implies the unusual condition of employment in Indonesian regions. Some possible explanations of the counter-intuitive correlations between unemployment rate and all other indicators have been discussed. Because of these unexpected correlations, it is considered that unemployment rate is not a good measurement for further analysis (i.e. the index construction). Thus, this variable is excluded from the index calculation in Chapter 5.

4.3 Conclusion

More than half of regions in Indonesia have low in-migration rates, which are indicated by the rate of in-migration between 0.22 and 3.75 %. Only 0.02 % of the regions have very high in-migration rates (13.41 – 23.33 %). Among all regions, the regency of Tana Tidung of East Kalimantan Province has the highest in-migration rate (23.33 %) whereas the lowest in-migration rates belong to the regency of Lanny Jaya of Papua Province. In-migration rates for municipalities, which are typified by urban characteristics, are usually higher than those of regencies.

From both bivariate and multivariate models, we can see that apparently mean years of schooling is the best predictor of in-migration rates. In the bivariate model, mean years of schooling alone explains the variation of the in-migration rate as much as 27.2 %, which is even higher than the HDI itself. Furthermore, in multivariate model it could be seen that all other variables are quite strongly associated with mean years of schooling. Only this variable and literacy rate that is statistically significant. Given that correlation between those two is rather strong, and apparently the beta coefficient of literacy rate is quite small and is not consistent with the bivariate model, it is therefore we can conclude that mean years of schooling explains in-migration rates better than the other variables.

5 Potential destinations for migration: where to migrate?

5.1 Cluster analysis

Before we begin to identify which regions can be potential destinations for migration, it is useful to first descriptively classify regions based on their human development indicators that could act as pull factors for migration (Figure. 5.1.). Table 5.1 shows the final cluster center using the k-means clustering method.

In this classification, **cluster one** indicates regions in which the poverty rates is highest among all other clusters. Although it is not the lowest, value of mean years of schooling, literacy rate, and life expectancy in this cluster are rather low, only slightly better than cluster two. Furthermore for expenditure, this cluster has the lowest value among other regions; this means that regions in this cluster have the lowest regional income, or in another word poor regions. Nevertheless, regions in this cluster have lower unemployment rate. Given that the education indicators also have low values, it can be an indication that most people in this cluster works in informal sectors, probably in agricultural activities. This possibly explains the low income value. As such, we could say that these regions do not have much potential to become the destinations for migration. This cluster only comprises two regions which are the regency of Sabu Raijua of East Nusa Tenggara and the regency of Tambrauw of West Papua. Both regions are from the eastern part of Indonesia.

Table 5.1. Final cluster centers

Variables (standardized)	Cluster			
	1	2	3	4
Mean years of schooling	-1.47682	-2.64616	-0.31039	0.91507
Literacy rate	-1.30396	-4.30162	0.05399	0.41155
Adj expenditure per capita	-7.31835	-1.78347	-0.17262	0.62428
Life expectancy at birth	-0.65706	-0.88210	-0.36154	0.79802
Poverty rate	2.88685	2.74505	0.11246	-0.56717
Unemployment rate	-0.73737	-1.24299	-0.40428	0.92211

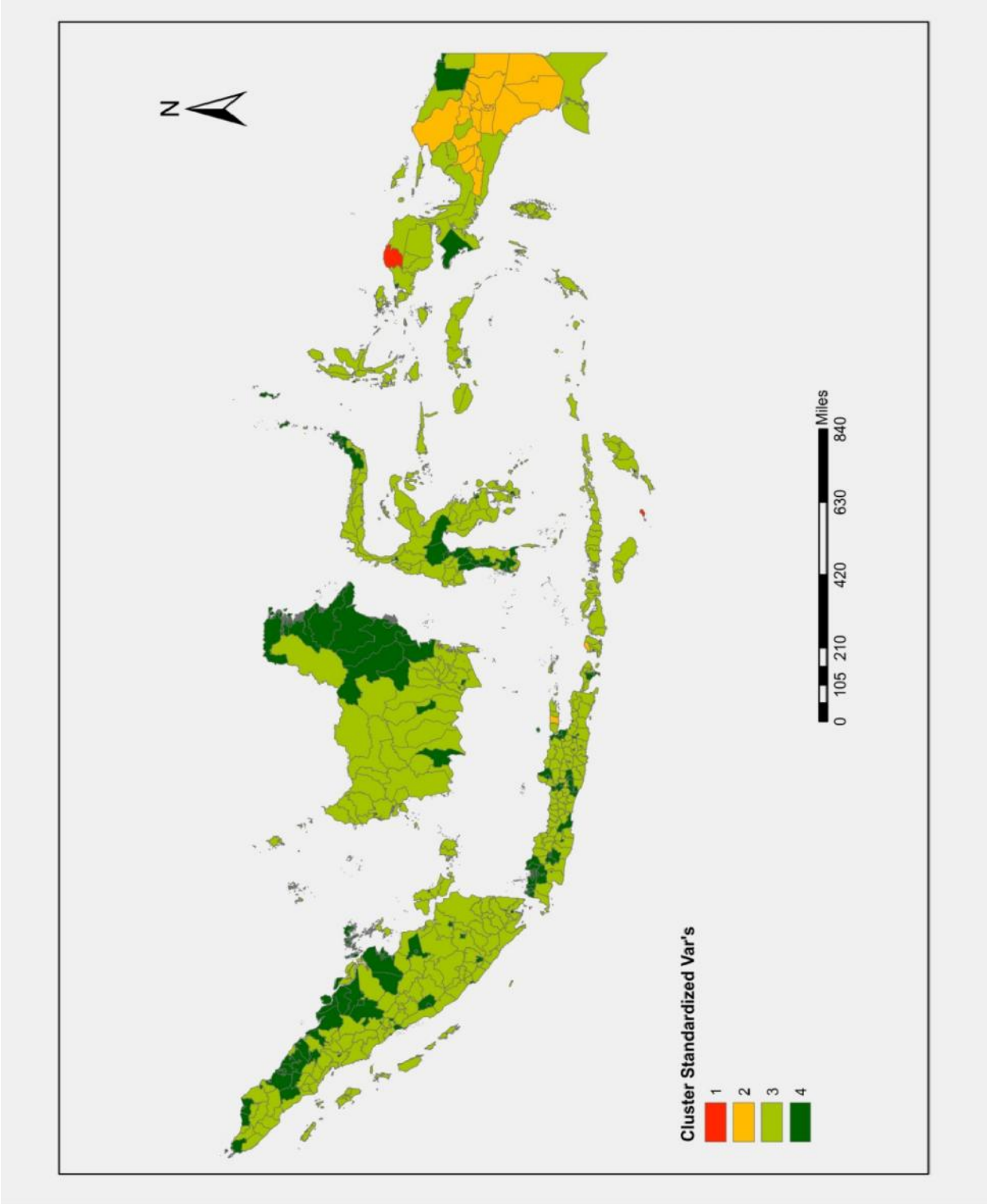
Cluster two actually has similar characteristics to cluster one, but it has poorer situation especially in education and health. In fact, value for mean years of schooling, literacy rate, and life expectancy are the lowest of all other clusters. Value for poverty rate is a bit lower than cluster one. In addition, in terms of income, this cluster is better than cluster one. The most interesting is that the value for unemployment rate is the lowest of all clusters. However, it could not necessarily be said that these regions have quite potential for migration with regard to employment reasons since the income is low and the poverty is high. Coloured by orange, there are 19 regions in this cluster where almost 90 % of them are on Papua Island. The remaining ten percent are the regency of Sampang in East Java Province and the regency of Lombok Utara in West Nusa Tenggara Province. It comes as a surprise that Sampang of East Java province is in this cluster. The regency of Sampang is the only region that does not locate in the eastern part. In addition, given that this regency is part of East Java Province is also interesting. This regency is situated on Madura Island which is different from the Java main island. It is commonly known that regions in Madura are less developed compared to their neighbours on the main island. Apparently, Sampang regency is the least developed. Although this cluster is slightly better than cluster one on

unemployment and income, still the low value in education as well as health indicators do not seem to make regions in this cluster favourable for destinations for migration.

Cluster three could be indicated to have better condition than cluster one and two, with much higher value for literacy rate and lower value for poverty rate than the two previous clusters. Apparently, this cluster has the largest membership, in which about 63 % of all the regions are in this cluster. They are evenly distributed in every part of Indonesia. On Sumatera Island, almost all regions along the western to the southern side of the island are grouped in this cluster. On Kalimantan Island, all the regions except the eastern part and every capital city of the provinces are in this cluster. Similarly in Java, where the regions that grouped in this cluster are scattered across the island, except for DKI Jakarta Province and some municipalities in this island.

Marked by dark green, **cluster four** is described as regions with higher value in every indicator than other clusters, except the poverty rate. The value of poverty rate in this cluster is lower than other three clusters which indicates a better condition. However, the higher value in unemployment rate implies otherwise. There are 164 regions in the cluster which are clustered in northern side of Sumatera, eastern Kalimantan, DKI Jakarta and its surrounding regions, and southern side of Sulawesi. Some municipalities and the capital of province in Java are also in this cluster such as Semarang (Central Java), Surabaya (East Java), and Yogyakarta (DI Yogyakarta). Furthermore in Kalimantan, they are mainly located in the east to northern part of the island. Meanwhile, in Papua, there are only municipalities of Jayapura, Sorong, and the regency of Fakfak of West Papua Province in this cluster. This cluster is mainly dominated by capital cities and/or municipalities which are considered to be more urbanized. Here we can see that the so-called urbanized regions unemployment is a major problem. These regions have a considerably high value for unemployment rate compared to other clusters, which means that these regions have large number of unemployed. Indeed, it is undeniable that the low unemployment rate in rural areas or less urbanized regions i.e. regencies, is affected by the economic sector. Most people in regencies are working in agriculture and informal sectors which required less skill, and thus people might easily find a job. Meanwhile, in urban areas, competition in the labour market is quite intense. In these areas there could be many people who have similar qualification, and thus the competition is quite stiff. Some of them are eventually unemployed because the number of available jobs still cannot meet the needs of jobseekers. Regarding these characteristics, these regions supposedly have better potential to be destination for migration. However, k-means clustering does not show which regions have the best potential to be destinations for migration. This method only classifies regions based on their similarity with regard to human development indicators.

Figure 5.1. Classification of Indonesian regions based on the k-means clustering of human development indicators, 2010.



Source: Statistics Indonesia, data processed by author

5.2 Index of potential destinations for migration

The unemployment rate variable is excluded from the index calculation, given that the association between this variable and other variables are considered not informative and does not measure what it is supposed to (see the index value of all regions in appendix). We then classified the index of potential destinations for migration into four categories. Category one consists of regions with index between 0.00 and 20.00 which is the lowest. Accordingly, we could say that regions in this category have **low index**, and thus have the least potential to become destinations for migration. This category comprises 88 regions which are mainly situated in the eastern part of Indonesia, especially on Papua and Nusa Tenggara Islands. Apparently, 20 regions have index of 0.00, and thus it could be said that these regions have bad situation in all indicators. All of them are located on these Papua and Nusa Tenggara Islands. This is not very surprising as in the cluster analysis in 5.1 we obtained similar result (cluster 1 and 2). This category is marked with red. We can see that this colour also occurs in western part of Indonesia, including on Java Island, especially in regions of east Java Province, and in some regions on Sumatera Island. Interestingly, the pattern shows that most of these regions are located in coastal areas. It is worth mentioning that all regions on Madura Islands which is part of East Java Province are also in this category. This rings a bell, as one region from Madura Island is included in cluster two in 5.1, which defined as region with poor situation. Besides, regions on Nias Islands which are part of North Sumatera Province, and Mentawai Islands of West Sumatera Province are in this category. Some regions in the main island of Sumatera that are marked with red also situated in the coastal area, namely the regency of Seluma in Bengkulu Province, the regencies of Pesawaran and Lampung Selatan in Lampung Province. Furthermore, on Java Island there are some 'red' regions that positioned in the coastal areas, for instance the regency of Indramayu of West Java Province and the regency of Brebes of Central Java Province. In addition, some regencies from East Java Province including Jember, Situbondo, Tuban, and Probolinggo that also have similar characteristic. The same with Java and Sumatera, two other big islands i.e Kalimantan and Sulawesi have similar circumstances. As we can see in Figure 5.2, most of regions with red colour are positioned on the coast. This pattern indicates that regions in the coastal areas tend to be less developed.

The second category is marked with yellow and contains regions with index between 20.01 and 46.67, so that we can say it is in the **medium index** category. As many as 165 regions (33%) in Indonesia are in this category. The regions are spread out on Java and Sulawesi Islands, and considerably clustered in southern side of Sumatera and western side of Kalimantan Islands. It is quite interesting to see how regions are clustered on a certain island. For instance, all regions in West Kalimantan Province except the capital city, Pontianak, are grouped in this category. Another region in this province that is not in this category has lower index, and is included in category one. Therefore, the province has least potential compared to three other provinces on the island. The difference is somewhat noticeable, at a glimpse figure 5.2. shows that the other part of the island is dominated by light or dark green colour. There is only one region in East Kalimantan Province that is included in this category, which is the regency of Tana Tidung, and four regions in South Kalimantan Province. West Kalimantan Province is actually slightly uneasy to access by its neighbouring provinces by land transportation or by direct flight. Therefore, development spread effects from its neighbours did not really affect the macro indicators in the province. Meanwhile for three other provinces (i.e East Kalimantan, South Kalimantan, and Central Kalimantan), they can directly be reached by road as well as by plane. This can explain the situation in West Kalimantan Province which is seemingly quite different from its neighbours. On the other hand, the

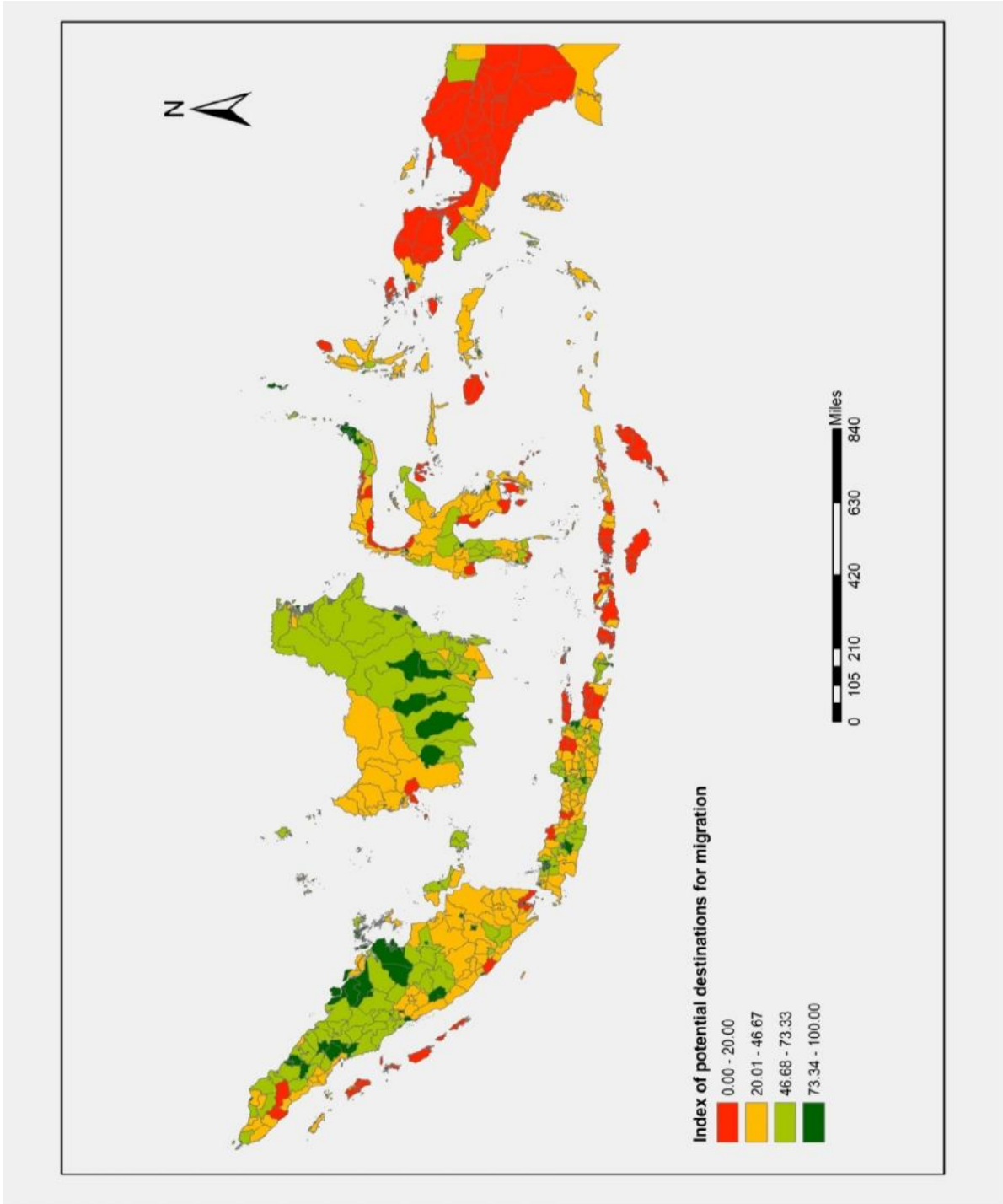
clustered southern part of Sumatera comprises some provinces including South Sumatera, Bengkulu, and Lampung. There are only two regencies from these provinces that have higher index category, with additional municipalities including the capital of each province. The remaining regions are included in this category.

Category three comprises 150 regions with index between 46.68 and 73.33 which can be defined as **high index**. It can be seen that there is a cluster of regions in the centre of Sumatera (mainly from North Sumatera, Riau, and West Sumatera Provinces), the eastern to northern part of Kalimantan Island, and on Bali Island. Fortunately, few regions from Papua Island are in this category, namely the regency of Fak-Fak in West Papua Province, in addition the regency of Jayapura and the municipality of Jayapura in Papua Province. This indicates the under development in the eastern part of Indonesia since only few regions in this island have high index value.

Category four is marked in dark green indicates regions with index between 73.34 and 100.00 which can be defined as regions with **very high index**. The highest index in this category is 100.00 which consist of 18 regions. They are scattered on the islands of Java, Sumatera, Kalimantan, Sulawesi, and Maluku. It is somewhat surprising that the municipalities of Ambon and Ternate obtain high score on all indicators. These municipalities are located on Maluku Islands which situated in the eastern part of Indonesia. Except the regency of Siak in Riau Province, all regions with index of 100.00 are municipalities. On Sumatera Island, seven regions with index of 100.00 are from the provinces of West Sumatera, Riau, and Riau Islands. Meanwhile on Java, they are all municipalities in DKI Jakarta Province with additional the municipality of Depok in West Java Province. On Kalimantan Island, the capitals of both East and Central Kalimantan have the index 100.00. The capital of North Sulawesi also has the same situation. Although the majority of regions in this category are municipalities, about 25 % of them are regencies. It is quite interesting to see that apparently in North Sulawesi Province, all regions have high index or very high index except Bolaang Mongondow Selatan regency. Even the regency of Talaud Islands, adjacent island of Sulawesi that consists of many small islands obtain very high index. Similar thing also happens in Bali Province. Most regions in these two provinces are regencies. It is quite remarkable finding because looking at their status as regencies signified that they are not the kind of urbanized region like municipality. However, these provinces are eminent with tourism potential, especially ocean tourism. Bali Island for instance, is an eminent island in Indonesia which is well-known worldwide for its tourism. It appears that all regions in this province except for the regency of Karang Asem, evidently are in category four or three which indicate high index. Furthermore, the province of North Sulawesi is also well known for its marine tourism as the Bunaken national park which is an 890 km² marine park, is located in this province. This indicates that well-managed tourism can probably affect the life of a region's citizens and enhance the macro indicators in the province. It is thus important to take that into account. Initiatives from both local people and government to develop tourism have led into regional development. It indicates that regencies although they are not as urbanized as municipalities, could have similar potential as municipalities. In addition, this also indicates that living in a regency which is mainly rural is not necessarily that bad. In fact, regions in Bali and North Sulawesi Provinces are not the only examples. Situated next to the world's largest volcanic Lake Toba, the regency of Toba Samosir in North Sumatera Province also obtain high index. Some regencies from this province are also in this category including the regencies of Karo, Tapanuli Selatan, and Tapanuli Utara. Regions in this category could be considered to have potential being destinations for migration. Unfortunately, despite the tourism potential in the eastern

part of Indonesia, not many regions in this area are in this category. On Papua Island, only the municipality of Sorong is included in this category. Meanwhile on the islands of Nusa Tenggara, only the capital of each province (i.e West Nusa Tenggara and East Nusa Tenggara) obtain high indices.

Figure 5.2. Classification of Indonesian regions based on the index of potential destinations for migration.



Source: Statistics Indonesia, data processed by author.

5.3 Conclusion

The k-means clustering shows that regions that have better values in most human development indicators are grouped in cluster four. Except the unemployment rate that is higher in this cluster, all other variables in this cluster are considered have good results (low poverty rate; mean years of schooling, literacy rate, income, and life expectancy at birth, that are averagely higher than other clusters). Municipalities are mostly included in cluster four, which indicates that high rate of unemployment is major problem in those urban regions. Cluster three indicates regions with medium value of human development indicators in which most of regions in Indonesia are in this cluster (63 %). Meanwhile, cluster two and one have similar characteristics that could indicate that regions in these clusters are poorly developed. They are mainly in eastern part of Indonesia especially on Papua Island. These two clusters have low value for unemployment rate which indicates low number of unemployment. However, the low income and high poverty rate possibly implies that people in these regions are either working in agriculture with low income or having informal jobs. In addition, situated in the very east of Indonesia with lack of development and limited access, causes the living cost in this island is quite expensive since most items are imported from outer island. This could also result in the high poverty rate in these regions.

The lowest index category is dominated by regions from eastern part of Indonesia, mainly on Papua Island. This is in line with cluster one and two in the previous cluster analysis discussion (k-means clustering). Nevertheless, it does not mean that the western part of Indonesia is free from these circumstances. There are some regions in Sumatera, Java, or Kalimantan in this category. It is worth noting that apparently regions which are positioned in the coastal areas on those islands have low index. The very high index category comprises 94 regions which have index between 73.34 and 100.00. As such, these regions can be considered as the most potential destinations for migration. Most municipalities are grouped in this category which signifies that living in the cities is rather favourable, given that the macro indicators shows good value, which is why people are more likely to choose urban over the rural regions to migrate. However, some regencies in this category show high values as well. In fact, 25 % of regions in this category are regencies. There are also some regencies from outside Java that have very high index value. Most of them have tourism potential that is well-managed by the local government. To sum up, we could say that regencies, which are mostly rural, could have similar quality as in urban municipalities. Next to this, one might prefer municipalities to regencies as destinations to migrate if they are similar. However, given the crowded population as well as some environmental issues in the cities, one should put some regencies into consideration to be favourable destinations for migration.

6 Actual migration versus potential destinations for migration

6.1 Comparison between in-migration rates and index of potential destinations for migration

The index obtained from the previous analysis was then compared with current in-migration rates to observe to what extent the most potential regions are having the highest migrants or the other way around. Most regions in Indonesia are in **low migration and low index** (low-low) category (48.5 %). This category indicated by red colour. We can see that there are clustered regions in every island. Since the index is low, regions in this category might not be attractive for migration. This possibly explained the low in-migration in these regions.

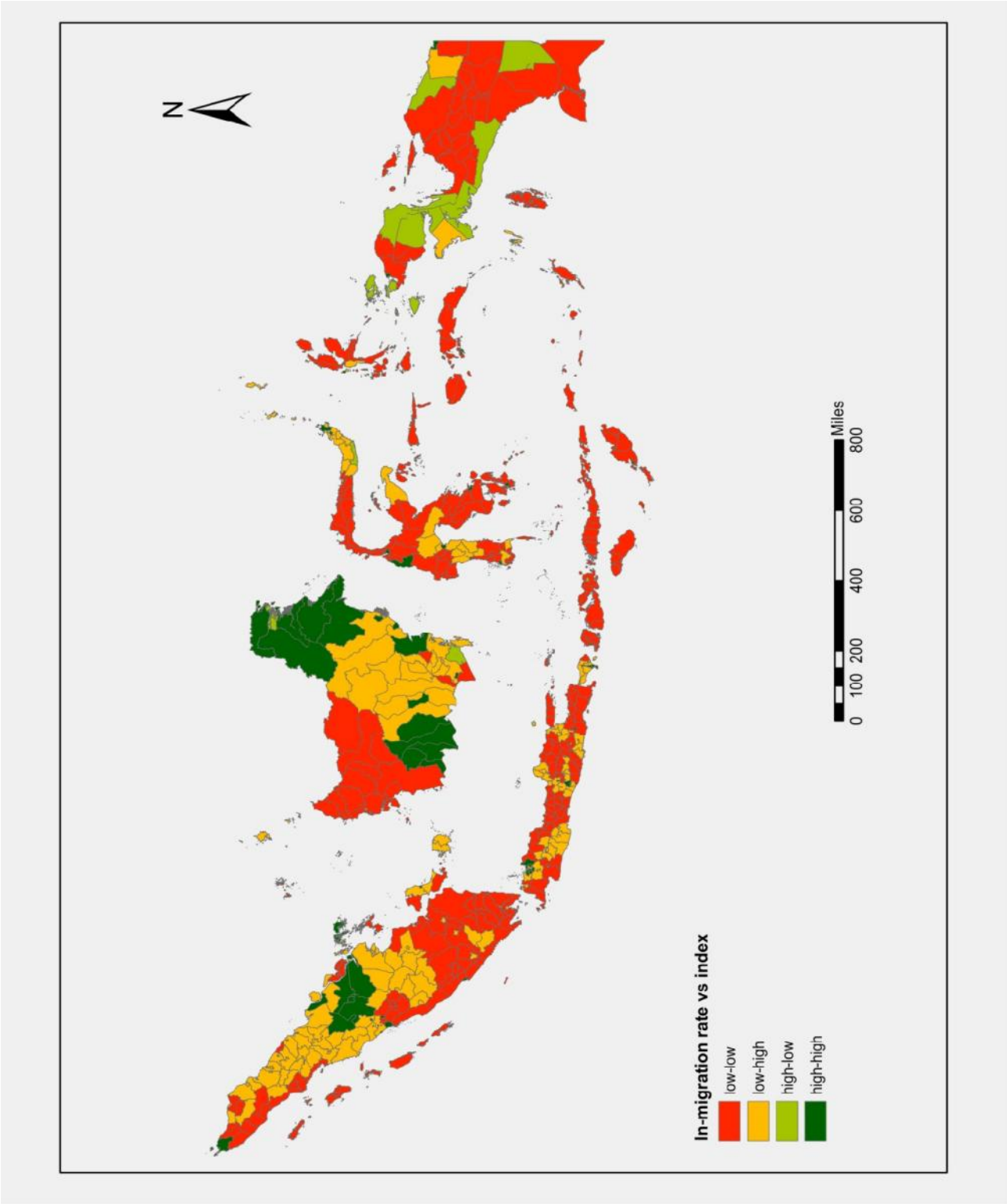
Apparently, about 34.8 % of the regions are included in category two which is the combination of **low migration rates and high index** (low-high) (Table 6.1). This number is quite high, as 173 regions are in this category. The regions are marked in yellow (Figure 6.1). For municipalities with high population, it is actually quite good because the size of the municipalities which is usually smaller than regencies, high in-migration rates will make the regions more crowded. High number of in-migrants continuously can affect population density, and could cause environmental problems if it is not well-managed. However for regencies, these regions should be favourable destinations for migration. The high index that they have indirectly indicates that these regions have adequate requirements to fulfil the needs of their citizen, including education, economy, and health. Some regions with index 100.00 and low rates of in-migration are the municipalities of East Jakarta , Central Jakarta, and the municipality of Manado in North Sulawesi. Apparently, it turns out that many regions from Sumatera Island are in this category as they are clustered in the western to northern side of the island. Some of them have a very high index namely the regencies of Toba Samosir, Deli Serdang, the municipalities of Binjai and Tebing Tinggi, both from North Sumatera Province with index 93.33. In addition from this island, some regions from Riau Province are also included in this category with index of 86.67.

Table 6.1 The in-migration rates vs Index of potential destinations for migration

In-migration rates	Index	
	Low	High
Low	241 (48.5%)	173 (34.8%)
High	12 (2.4%)	71 (14.3%)

Furthermore, on Bali Island where almost all regions have high and very high index, there are some regions with the highest index namely the regency of Gianyar (index 73.33). Meanwhile, on Kalimantan Island, the regency of Barito Utara is in this category with index 86.67. Finally on Sulawesi Island, the regency of Minahasa and the municipalities of Kotamobagu and Bitung both have highest index (86.67). On Papua Island, the regencies of Jayapura and Fakfak are also in this category though they do not obtain very high index. Given that the low in-migration rates they have, regions in this category are having the best potential to be new destinations for migration.

Figure 6.1 In-migration rates versus index of potential destinations for migration



Source: Statistics Indonesia, data processed by author

There are 12 regions (12.4 %) that have **high migration rates despite the low index (high-low)**. They are mainly situated on Papua Island. It is somewhat interesting to observe in a long-term whether migration could make these regions more developed or the other way around. The pattern, however, is quite similar to cluster two in **Figures 5.1** in which many regions on Papua Island are in that category because of their similarity in low unemployment rates, given the regions in that cluster have the combination of very low value in unemployment rates and also low value in other indicators. We can therefore link these findings that migrants come to Papua possibly for employment reasons. Papua is well-known for its mining exploitation managed by multinational companies located in Mimika regency of Papua Province. This regency is included in this category in which the migration rate is high while its index is only 13.33.

The **high-high category** indicates regions with high migration rates and high index as well. Marked in dark green, they are obviously clustered in the East and Central Kalimantan Provinces, West Sumatera Province, Riau Province, and DKI Jakarta Province and its surrounding. Indeed it is somewhat surprising to find the municipalities of Central Jakarta and East Jakarta are not classified in this category considering all others municipalities in DKI Jakarta have a high number of in-migrants. It is whether the cities are no longer attractive for migrants, or they are actually the migrants contributors for their neighbours. However, since the data used only pertains to one point of time (2010), it cannot be observed how the in-migration rates in these cities changes in a longer period. This category mainly contains regions that are capital cities or municipalities. Among regions that have very high index (100.00) only Siak of Riau Province which classified as regency whereas all other regions are municipalities.

6.2 Conclusion

Since the objective of this study is to discover which regions can be destinations for migration, thus we can conclude from that regions that have the best potential to be destinations for migration are regions with combination of high index and both low and high in-migration rates. Apparently, most of regions in these categories are mainly situated in the western part of Indonesia. As such, we could regard that regions in the western part of Indonesia have better potential to be destinations for migration. Most regions on Sumatera Island are clustered in the provinces of North Sumatera, West Sumatera, and Riau. On Kalimantan Island they are clustered in the provinces of South Kalimantan, Central Kalimantan, and East Kalimantan. Furthermore on Sulawesi Island, they are clustered in the provinces of North Sulawesi and South Sulawesi. Regions with high index and low in-migration rates can be considered as new destinations for migration. Some regions that have highest index (more than 90.00) and low in-migration rates including:

- The regencies of Toba Samosir and Deli Serdang, the municipalities of Tebing Tinggi and Binjai; in North Sumatera Province.
- The municipality of Sungai Penuh in Jambi Province.
- The municipalities of East Jakarta and Central Jakarta of DKI Jakarta Province.
- The regencies of Sidoarjo, the municipalities of Mojokerto, Madiun, and Surabaya; in east Java Province.

- The municipality of Manado in North Sulawesi Province.
- In addition the municipality of Bandung and Semarang, both from West Java and Central Java Provinces.

It is also interesting to see that many regions outside Java Island have the highest indices. It gives an indication that the development outside Java is also growing. As the main focus of this study is to identify destinations for migration especially in regions outside Java since the population density in Java has already high, the list below presents some regions outside the island of Java with highest index (more than 90.00) and high in-migration rates. The high number of in-migrants indicates that these regions are favourable for migration.

- The municipalities of Padang, Padang Panjang, and Bukittinggi; in West Sumatera Province.
- The regency of Siak, the municipalities of Pekanbaru and Dumai; in Riau Province.
- The municipalities of Pangkal Pinang and Batam; in Riau Islands Province.
- The municipality of Denpasar in Bali Province.
- The municipality of Palangka Raya in Central Kalimantan.
- The municipalities of Balikpapan, Samarinda, Bontang; in East Kalimantan Province.
- The municipalities of Makassar and Pare-pare; in South Sulawesi Province.
- The municipalities of Ambon and Ternate; in Maluku Province.

7 Concluding remarks

7.1 Conclusion and discussion

The theory of cumulative causation of migration explains the continuation growing of migration stream in a region once the flow begins (Massey, 1990; Fussel and Massey, 2004). This usually happens from rural to urban region. In Indonesia, some regions on Java Island have been most favourable destinations for migration for a long time. This makes the government implemented a planned-migration programme to relocate people from over populated regions (Java Island) to less densely regions (i.e. outside island of Java) in order to balance the population and development. Yet, Java remains to be favourite destination to date as the theory of cumulative causation of migration explains. Java Island is overwhelmed by high population density that has indirectly caused some environmental issues, such as flood, air and water pollution. Demands from the large population deliver consequences for the development, industry, and the environment in the regions.

This study has attempted to incorporate the human development concept as the pull factors of migration in relation with the propensity to migrate which indicated by the in-migration rates in a region. The human development is determined as the pull factors of migration and represented by several indicators that cover economic, education, occupation, and health sector.

The first objective of this study was to explain the effect of human development on migration rates into a region. It was expected that some independent variables are positively associated with in-migration rates in a region (i.e. mean years of schooling, literacy rate, adjusted expenditure per capita; life expectancy at birth); and some are negatively (poverty rate and unemployment rate). When analyzing respectively with bivariate regression analysis, the association between all independent variables and dependent variable are statistically significant. It appears that the in-migration rate in a region is positively associated with human development index, life expectancy at birth, mean years of schooling, literacy rate, and adjusted expenditure per capita, as expected. Moreover, it is negatively associated with poverty rate which is also in line with expectation. On the other hand, the in-migration rate is positively associated with unemployment rate which opposed the expectation.

It was evident that propensity to migrate is affected by economic, educational, or occupational reason (e.g Mulder, 1993; Todaro, 1976; van Lottum and Marks, 2012). Regarding education, it appears that the in-migration rates are positively associated with both mean years of schooling and literacy rate. A striking finding was the variation in in-migration rates that can be explained by the mean years of schooling alone is 27.2 %. It is higher than any other variables, including the human development index itself. Finding from multivariate analysis is also consistent with bivariate model. The education indicators are the only variables that are statistically significant. Apparently, all other variables are quite strongly associated with mean years of schooling. As such, we could say that mean years of schooling is the best predictor for in-migration rates in a region. It seems that education is quite an important factor that affects propensity to migrate. Consistently with theory, the in-migration rates and income are positively associated in bivariate model. A quite interesting finding was the association between in-migration rates and unemployment rates which in contrast with expectation, is positive. Theory suggests that decision to migrate is to improved employment opportunities, it is then logical to expect that regions with low unemployment rates are preferable. However, the results from both bivariate and multivariate regression showed otherwise.

This indicates that this variable might not be a good measurement to represent the employment situation in Indonesia.

In order to discover regions that can be potential destinations for migration as in the second objective, we first classify the regions based on their human development indicators. We then set four clusters by using the k-means clustering. Regions that have lowest value are mainly situated in the eastern part of Indonesia. However, the unemployment rates in these regions are lower indicates low number of unemployed. It is possible to reckon that people in these regions worked in informal sector or agriculture sector given the education and income value in these regions are quite low. Regions which indicated good values in every indicator are mainly in cluster four. Only the problem in this cluster is high rates of unemployment. Given that most of municipalities are in this cluster, it could be a sign of major issue in urban regions which is high number of unemployed. However, given the combination of low poverty rate and high income in these regions, the unemployed in these regions are probably young people who just entered the labour market and still get some support from their family. Regions in this cluster could presumably have better potential to be destination for migration.

The potential destination for migration is classified by the index. Again, the eastern part of Indonesia is dominated by regions that have low index value. However there are also some regions from the western part, for instance on Sumatera and Java Islands. What is interesting, regions with low index on those islands are positioned on the coast. People in these regions usually work in fishing sector. In Indonesia, this sector is not really promising particularly for traditional fishermen which are actually unfortunate, given the characteristic of the country as an archipelago and many people in coastal areas work in this sector. Meanwhile, the highest index category comprises regions in which many of them are municipalities. Regions that are regencies in this cluster have some similarity that is quite interesting; they are usually regencies with tourist attraction that is well-managed. The regency of Toba Samosir for instance, is located next to Lake Toba that is really famous in the country. This regency obtains the highest index of all regions in Indonesia. Furthermore, some regencies in North Sulawesi Province, which also eminent in tourism potential have very high index. Regions in Bali Island as the most famous island in Indonesia regarding the tourism also have high index. All regions in this island in fact, are in very high index or high index category.

Based on the clustering and the index, we can conclude that regions in the eastern part of Indonesia have less potential as destinations for migration. Regions which are municipalities or regencies with tourism have better potential to be destination for migration. The best potential destinations for migration are regions with both high index and high in-migration rates. Meanwhile, regions with high index and low in-migration rates can be regarded as the new destinations for migration. Although some regions from Java Island are in these categories, but given the crowded population and some environmental problems in the cities in Java, we might not consider these regions to be destination for migration. As such, we put regions outside Java Island to be most potential destinations for migration. Some of them are mainly in the provinces of North Sumatera, West Sumatera, Riau, East Kalimantan, central Kalimantan, and South Sulawesi, and North Sulawesi. It is also striking that most regions that have highest index (more than 90) are not from Java, but they are dispersed on all other island.

The environmental issues regarding to some major cities in Indonesia, especially Jakarta, has been a main consideration. However, in the process of discovering potential destinations for migration by constructing

an index, this issue is not included related to data availability. There is no indicator to represent the issue in regional level. Thus, it becomes the limitation of this study. Environmental issue is obviously one important subject when trying to discover potential regions. In this study, all regions in Jakarta inevitably obtain high index. However, if there is a valid indicator that could be used to measure the environment, Jakarta might not get such a result. This environmental issue can be considerable in further research.

The mapping indeed gives a beneficial addition to the analysis. It showed regions with specific pattern. For instance in this study, there are pattern of low index regions that are positioned on the coast, regions with tourism development tend to have better index, and most importantly different results between urban and rural regions. This study did not distinguish regions by their urban and rural status, which is apparently quite important findings as the pattern show so. These patterns can be considerable in further research.

Migration is indeed a complex process. Informing people that there are potential regions that are worth living in does not automatically make people move to such areas. It certainly needs government and policy makers to facilitate and promoting regions in order to attract potential migrants.

7.2 Reflection on unemployment rate data

The unemployment rate is defined as percentage of unemployed to the number of people in the labour force. This unemployed are opposed of people who are working. The definition of working in Sakernas, as the main source of employment data, is ‘an activity done by a person who worked for pay or assisted others in obtaining pay or profit for the duration at least one hour during the survey week. Including an unpaid worker who help an economically activity/business’ (BPS, 2012). This definition is quite loose given the minimum number of hour to be defined ‘working’ is only one hour in a week. This cut-off point of one hour is easily accomplished in rural areas as the main economic sector in these areas is agriculture. However, in urban regions where most jobs are considered formal or probably ‘semi-formal’ and required a normal working hours, this is relatively not easy. People either have a job or not at all. This is possibly explains the low unemployment rates in the rural areas (most of these are regencies).

The result from cluster analysis in chapter 5 showed such a pattern. Regions with high unemployment rates are clustered in the urban municipalities whereas the regencies showed lower rates of unemployment. If we link the findings on cluster analysis (Table 5.1) and the correlation matrix (Table 4.1), it is somewhat connected. The correlations between unemployment rates and all other variables are rather similar to cluster four. Cluster four contains regions with high value of mean years of schooling, literacy rate, adjusted expenditure per capita, life expectancy at birth, and unemployment rate; and low value of poverty rate. The mapping of this result indicates that regions in this cluster are dominated by urban municipalities. Concurrently, the correlation between unemployment rates and all other variables indicated that the situation usually occurred in urban regions. Positive correlation between unemployment rates and both mean years of schooling and literacy rate implies that there is an indication of better educated unemployed. This usually happens in urban regions since people in rural areas work in Indonesian agricultural sector that required less skill or education. Positive correlation between unemployment rate and adjusted expenditure per capita might indicate income inequality. This also usually happens in urban regions because of the various economic sectors with wide range of salaries. So

that, even the unemployment rates are high in the cities, the average income is still quite high. A negative correlation between unemployment rates and poverty rates also indicates the economic disparity. The fact that the gini ratio of Indonesia is widened every year supports this assumption. This presumably happens particularly in urban regions as well, since the economic disparity in rural areas is considered less severe than in the cities.

The indications mentioned above imply a strong difference between urban and rural regions in Indonesia, in particular in employment. Hence, in this study the unemployment rate measurement might be considered as biased.

References

- Alkire, S. (2002). Dimensions of Human Development. *World Development* 30(2), pp. 181-206.
- Arnesen, C.Å. (2000). Higher Education and Graduate Employment - Higher Education and Graduate Employment in Norway. *European Journal of Education : Research, Development and Policies* 35(2), pp.221-228.
- Asri, D.U., & Hidayat, B. (2005). Current Transportation Issues in Jakarta and Its Impact on Environment. *Proceedings of the Eastern Asia Society for Transportation Studies* 5, pp. 1792-1798.
- Boyle, P., Halfacree, K., Robinson, V. (1998). *Exploring Contemporary Migration*. New York : Longman.
- Bulow, J.I., & Summers, L.H. (1986). A Theory of Dual Labor Markets with Application to Industrial Policy, Discrimination, and Keynesian Unemployment. *Journal of Labor Economics* 4 (3), pp. 376-414.
- Bhagat, R.B. (2010). Internal Migration in India: Are the Underprivileged Migrating More? *Asia –Pacific Population Journal* 25(1), pp. 27-44.
- Bijker, R. (2013). *Migration to Less Popular Rural Areas : The Characteristics, Motivations and Search Process of Migrants*. Groningen : Rijkuniversiteit Groningen.
- BPS (2012). *Statistical Yearbook of Indonesia 2012*. Jakarta : Badan Pusat Statistik.
- BPS (2010). Indonesia Population Census 2010 Database. Retrieved from <http://sp2010.bps.go.id/>
- BPS (2010). Data on the HDI and HDI components. Retrieved from http://bps.go.id/ipm.php?id_subyek=26¬ab=0
- BPS (2014). Gini Ratio by Province. Retrieved from http://www.bps.go.id/eng/tab_sub/view.php?kat=1&tabel=1&daftar=1&id_subyek=23¬ab=6
- Castles, S., & Miller, M. (2009). *The Age of Migration 4th Edition*. London : Palgrave McMillan.
- Darmawan, B. (2007). *Perkiraan Pola Migrasi Antar Provinsi di Indonesia Berdasarkan 'Indeks Ketertarikan Ekonomi'*. Jakarta : Lembaga Demografi Fakultas Ekonomi Universitas Indonesia.
- De Groot, C., Mulder, C.H., Das, M., Manting, D. (2011). Life Events and The Gap Between Intention To Move and Actual Mobility. *Environmental and Planning A* 43, pp.48-66.
- De Haas, H., & Rodríguez, F. (2010). Mobility and Human Development : Introduction. *Journal of Human Development and Capabilities: A Multi-Disciplinary Journal for People-Centered Development*, 11(2), pp.177-184.
- Erdem, E., & Tugcu, C.T. (2012). Higher Education and Unemployment ; A Cointegration and Causality Analysis of The Case of Turkey. *European Journal of Education* 47 (2), pp.299-310.

ESRI (2014). Natural Breaks (Jenks). Retrieved from http://webhelp.esri.com/arcgisdesktop/9.2/index.cfm?topicname=natural_breaks_jenks

Fahmi, F.Z. (2013). *Creativity on The Move : How Creative Economy Policies Work in Indonesian Cities*. Groningen : Rijkuniversiteit Groningen (Master Thesis).

Fussell, E., & Massey, D.S. (2004). The Limits to Cumulative Causation: International Migration From Mexican Urban Areas. *Demography* 41 (1), pp. 151-171.

Huffington Post (2010, September 30). Indonesia Mulls Plans to Relocate Capital City. Retrieved from http://www.huffingtonpost.com/2010/09/30/indonesia-mulls-plans-to- n_745036.html

Massey, D.S. (1990). Social Structure, Household Strategies, and the Cumulative Causation of Migration. *Population Index* 56(1), pp. 3-26.

Mora, J., Garcia-Montalvo, J., & Garcia-Aracil, A. (2000). Higher Education and Graduate Employment - Higher Education and Graduate Employment in Spain. *European Journal of Education* 35(2), pp. 229-238.

Muhidin, S. (2002). *The Population of Indonesia Regional Demographic Scenarios Using A Multiregional Method And Multiple Data Sources*. Amsterdam: Rozenberg Publishers.

Mulder, C.H. (1993). *Migration Dynamics: A Life Course Approach*. Amsterdam : Thesis Publishers.

Mulder, C.H., & Hooimeijer, P. (1999). Residential Relocations in the Life Course. In: Van Wissen, L., Dykstra, P. (Eds). *Population Issues : An Interdisciplinary Focus*, pp.159-186. New York : Plenum.

Münz, R. (2003). Demography and Migration : An Outlook for the 21st Century. *Migration Policy Institute* 4, pp. 1-13.

Newland, K., (2003). *Migration as a Factor in Development and Poverty Reduction*. Retrieved in September 24, 2013 from <http://www.migrationinformation.org/Feature/display.cfm?ID=136>

Norušis, M.J. (2008). *SPSS Statistics 17.0 Statistical Procedures Companion*. New Jersey : Prentice Hall Inc.

Rahmadian, E. (2012). *City Network Analysis in Indonesia : An Investigation of The Most Powerful Cities in Indonesia in Terms of Foreign Direct Investment and Competitiveness*. Rotterdam : IHS Rotterdam (Master Thesis).

Resosudarmo, B.P., & Napitupulu, L. (2004). Health and Economic Impact of Air Pollution in Jakarta. *The Economic Record* 80, pp. 65-75.

Resosudarmo, B.P., & Vidyattama, Y. (2006). Regional Income Disparity in Indonesia: A Panel Data Analysis. *Asean Economic Bulletin* 23, pp. 31-44.

Schomburg, H. (2000). Higher Education and Graduate Employment - Higher Education and Graduate Employment in Germany. *European Journal of Education* 35(2), pp.189-200.

Sen, A.K. (1999). *Development as Freedom*. New York : Anchor Books.

The Jakarta Post (2014, Januari 27). Flood Death Toll Rise to 23 People. Retrieved from <http://www.thejakartapost.com/news/2014/01/27/flood-death-toll-rises-23-people.html>

Todaro, M.P. (1976). *Internal Migration in Developing Countries A Review of Theory, Evidence, Methodology and Research Priorities*. Geneva : International Labour Office.

Todaro, M.P. (1980). Internal Migration in Developing Countries : A Survey. In Easterlin, R.A (Eds). *Population and Development Change in Developing Countries*, pp.361-402.

Pawitan, H. (2009). In The Jakarta Globe, March 24, 2009. Population Problems Put Pressure on Java's Water Supplies. Retrieved October 30, 2013 from <http://www.thejakartaglobe.com/archive/population-problems-put-pressure-on-javas-water-supplies/>

The World Bank (2009). *Investing in A More Sustainable Indonesia: Country Environmental Analysis*. Jakarta : The World Bank.

The World Bank (2013). Total World Population. Retrieved September 24, 2013 from <http://data.worldbank.org/indicator/SP.POP.TOTL/countries?display=default>

The World Bank (2013). PM10, Country Level (Micrograms per Cubic Meter). Retrieved October 30, 2013 from <http://data.worldbank.org/indicator/EN.ATM.PM10.MC.M3>

United Nations (2013). *Jakarta, Indonesia*. Retrieved October 30, 2013 from <http://www.un.org/cyberschoolbus/habitat/profiles/jakarta.asp>

UNDP (2009). *The Human Development Report 2009 Overcoming Barriers : Human Mobility and Development*. New York : Palgrave Macmillan.

UNDP (1990). *The Human Development Report 1990*. New York : Oxford University Press.

Van Lottum, J., & Marks, D. (2012). The Determinants of Internal Migration in A Developing Country : Quantitative Evidence for Indonesia. *Applied Economics* 44(34), pp. 4485-4495.

Wingqvist, G.O., Dahlberg, E. (2008). *Indonesia Environmental and Climate Change Policy Brief*. Retrieved October 29, 2013 from <http://www.sida.se/Global/Countries%20and%20regions/Asia%20incl.%20Middle%20East/Indonesia/Environmental%20policy%20brief%20Indonesia.pdf>

Woodley, A. Brennan, J. (2000). Higher Education and Graduate Employment - Higher Education and Graduate Employment in the United Kingdom. *European Journal of Education* 35(2), pp.239-250.

Wright, K. (2012). *International Migration, Development and Human Wellbeing*. Basingstoke : Palgrave Macmillan.

Appendix

Index of potential destinations for migration of Indonesian regions

	Regions	Index		Regions	Index
1	Kab. Simeulue	40.00	38	Kab. Humbang Hasundutan	66.67
2	Kab. Aceh Singkil	33.33	39	Kab. Pakpak Bharat	46.67
3	Kab. Aceh Selatan	40.00	40	Kab. Samosir	60.00
4	Kab. Aceh Tenggara	53.33	41	Kab. Serdang Bedagai	60.00
5	Kab. Aceh Timur	53.33	42	Kab. Batu Bara	46.67
6	Kab. Aceh Tengah	60.00	43	Kab. Padang Lawas Utara	60.00
7	Kab. Aceh Barat	33.33	44	Kab. Padang Lawas	60.00
8	Kab. Aceh Besar	60.00	45	Kab. Labuhan Batu Selatan	66.67
9	Kab. Pidie	46.67	46	Kab. Labuhan Batu Utara	73.33
10	Kab. Bireuen	60.00	47	Kab. Nias Utara	13.33
11	Kab. Aceh Utara	46.67	48	Kab. Nias Barat	13.33
12	Kab. Aceh Barat Daya	40.00	49	Kota Sibolga	73.33
13	Kab. Gayo Lues	20.00	50	Kota Tanjung Balai	66.67
14	Kab. Aceh Tamiang	53.33	51	Kota Pematang Siantar	86.67
15	Kab. Nagan Raya	20.00	52	Kota Tebing Tinggi	93.33
16	Kab. Aceh Jaya	26.67	53	Kota Medan	86.67
17	Kab. Bener Meriah	46.67	54	Kota Binjai	93.33
18	Kab. Pidie Jaya	46.67	55	Kota Padang Sidempuan	73.33
19	Kota Banda Aceh	86.67	56	Kota Gunung Sitoli	33.33
20	Kota Sabang	66.67	57	Kab. Kepulauan Mentawai	13.33
21	Kota Langsa	66.67	58	Kab. Pesisir Selatan	46.67
22	Kota Lhokseumawe	80.00	59	Kab. Solok	40.00
23	Kab. Subulussalam	26.67	60	Kab. Sawahlunto/Sijunjung	46.67
24	Kab. Nias	20.00	61	Kab. Tanah Datar	73.33
25	Kab. Mandailing Natal	66.67	62	Kab. Padang Pariaman	53.33
26	Kab. Tapanuli Selatan	80.00	63	Kab. Agam	66.67
27	Kab. Tapanuli Tengah	46.67	64	Kab. Lima Puluh Koto	53.33
28	Kab. Tapanuli Utara	80.00	65	Kab. Pasaman	66.67
29	Kab. Toba Samosir	93.33	66	Kab. Solok Selatan	46.67
30	Kab. Labuhan Batu	66.67	67	Kab. Dharmas Raya	40.00
31	Kab. Asahan	66.67	68	Kab. Pasaman Barat	53.33
32	Kab. Simalungun	66.67	69	Kota Padang	100.00
33	Kab. Dairi	53.33	70	Kota Solok	86.67
34	Kab. Karo	80.00	71	Kota Sawah Lunto	86.67
35	Kab. Deli Serdang	93.33	72	Kota Padang Panjang	100.00
36	Kab. Langkat	66.67	73	Kota Bukittinggi	100.00
37	Kab. Nias Selatan	13.33	74	Kota Payakumbuh	86.67

	Regions	Index		Regions	Index
75	Kota Pariaman	80.00	115	Kab. Rejang Lebong	46.67
76	Kab. Kuantan Singingi	66.67	116	Kab. Bengkulu Utara	40.00
77	Kab. Indragiri Hulu	86.67	117	Kab. Kaur	33.33
78	Kab. Indragiri Hilir	86.67	118	Kab. Seluma	13.33
79	Kab. Pelalawan	66.67	119	Kab. Mukomuko	33.33
80	Kab. Siak	100.00	120	Kab. Lebong	40.00
81	Kab. Kampar	73.33	121	Kab. Kepahiang	33.33
82	Kab. Rokan Hulu	66.67	122	Kab. Bengkulu Tengah	46.67
83	Kab. Bengkulu	86.67	123	Kota Bengkulu	86.67
84	Kab. Rokan Hilir	66.67	124	Kab. Lampung Barat	33.33
85	Kab. Kepulauan Meranti	40.00	125	Kab. Tanggamus	40.00
86	Kota Pekanbaru	100.00	126	Kab. Lampung Selatan	20.00
87	Kota Dumai	100.00	127	Kab. Lampung Timur	33.33
88	Kab. Kerinci	80.00	128	Kab. Lampung Tengah	40.00
89	Kab. Merangin	53.33	129	Kab. Lampung Utara	33.33
90	Kab. Sarolangun	60.00	130	Kab. Way Kanan	33.33
91	Kab. Batang Hari	60.00	131	Kab. Tulang Bawang	46.67
92	Kab. Muaro Jambi	73.33	132	Kab. Pesawaran	20.00
93	Kab. Tanjung Jabung Timur	46.67	133	Kab. Pringsewu	46.67
94	Kab. Tanjung Jabung Barat	53.33	134	Kab. Mesuji	33.33
95	Kab. Tebo	60.00	135	Kab. Tulang Bawang Barat	46.67
96	Kab. Bungo	66.67	136	Kota Bandar Lampung	80.00
97	Kota Jambi	86.67	137	Kota Metro	73.33
98	Kota Sungai Penuh	93.33	138	Kab. Bangka	73.33
99	Kab. Ogan Komering Ulu	66.67	139	Kab. Belitung	73.33
100	Kab. Ogan Komering Ilir	33.33	140	Kab. Bangka Barat	40.00
101	Kab. Muara Enim	46.67	141	Kab. Bangka Tengah	53.33
102	Kab. Lahat	40.00	142	Kab. Bangka Selatan	33.33
103	Kab. Musi Rawas	26.67	143	Kab. Belitung Timur	53.33
104	Kab. Musi Banyuasin	40.00	144	Kota Pangkal Pinang	93.33
105	Kab. Banyuasin	46.67	145	Kab. Karimun	80.00
106	Kab. Ogan Komering Ulu Selatan	53.33	146	Kab. Kepulauan Riau	73.33
107	Kab. Ogan Komering Ulu Timur	33.33	147	Kab. Natuna	53.33
108	Kab. Ogan Ilir	26.67	148	Kab. Lingga	40.00
109	Kab. Empat Lawang	26.67	149	Kab. Kepulauan Anambas	40.00
110	Kota Palembang	80.00	150	Kota Batam	100.00
111	Kota Prabumulih	80.00	151	Kota Tanjung Pinang	73.33
112	Kota Pagar Alam	73.33	152	Kab. Adm. Kepulauan Seribu	66.67
113	Kota Lubuk Linggau	46.67	153	Kota Jakarta Selatan	100.00
114	Kab. Bengkulu Selatan	46.67	154	Kota Jakarta Timur	100.00

	Regions	Index		Regions	Index
155	Kota Jakarta Pusat	100.00	195	Kab. Wonogiri	46.67
156	Kota Jakarta Barat	100.00	196	Kab. Karanganyar	53.33
157	Kota Jakarta Utara	100.00	197	Kab. Sragen	40.00
158	Kab. Bogor	60.00	198	Kab. Grobogan	40.00
159	Kab. Sukabumi	40.00	199	Kab. Blora	46.67
160	Kab. Cianjur	26.67	200	Kab. Rembang	40.00
161	Kab. Bandung	80.00	201	Kab. Pati	53.33
162	Kab. Garut	53.33	202	Kab. Kudus	66.67
163	Kab. Tasikmalaya	60.00	203	Kab. Jepara	60.00
164	Kab. Ciamis	53.33	204	Kab. Demak	53.33
165	Kab. Kuningan	46.67	205	Kab. Semarang	66.67
166	Kab. Cirebon	26.67	206	Kab. Temanggung	60.00
167	Kab. Majalengka	26.67	207	Kab. Kendal	40.00
168	Kab. Sumedang	60.00	208	Kab. Batang	33.33
169	Kab. Indramayu	20.00	209	Kab. Pekalongan	46.67
170	Kab. Subang	46.67	210	Kab. Pemasang	26.67
171	Kab. Purwakarta	53.33	211	Kab. Tegal	46.67
172	Kab. Karawang	40.00	212	Kab. Brebes	20.00
173	Kab. Bekasi	66.67	213	Kota Magelang	80.00
174	Kab. Bandung Barat	66.67	214	Kota Surakarta	80.00
175	Kota Bogor	86.67	215	Kota Salatiga	93.33
176	Kota Sukabumi	80.00	216	Kota Semarang	93.33
177	Kota Bandung	93.33	217	Kota Pekalongan	73.33
178	Kota Cirebon	73.33	218	Kota Tegal	66.67
179	Kota Bekasi	93.33	219	Kab. Kulon Progo	53.33
180	Kota Depok	100.00	220	Kab. Bantul	73.33
181	Kota Cimahi	86.67	221	Kab. Gunung Kidul	40.00
182	Kota Tasikmalaya	66.67	222	Kab. Sleman	80.00
183	Kota Banjar	60.00	223	Kota Yogyakarta	86.67
184	Kab. Cilacap	46.67	224	Kab. Pacitan	46.67
185	Kab. Banyumas	46.67	225	Kab. Ponorogo	40.00
186	Kab. Purbalingga	40.00	226	Kab. Trenggalek	60.00
187	Kab. Banjarnegara	33.33	227	Kab. Tulungagung	66.67
188	Kab. Kebumen	33.33	228	Kab. Blitar	66.67
189	Kab. Purworejo	60.00	229	Kab. Kediri	40.00
190	Kab. Wonosobo	33.33	230	Kab. Malang	40.00
191	Kab. Magelang	53.33	231	Kab. Lumajang	20.00
192	Kab. Boyolali	40.00	232	Kab. Jember	13.33
193	Kab. Klaten	60.00	233	Kab. Banyuwangi	33.33
194	Kab. Sukoharjo	66.67	234	Kab. Bondowoso	13.33

	Regions	Index		Regions	Index
235	Kab. Situbondo	20.00	275	Kab. Bangli	53.33
236	Kab. Probolinggo	13.33	276	Kab. Karang Asem	46.67
237	Kab. Pasuruan	26.67	277	Kab. Buleleng	53.33
238	Kab. Sidoarjo	93.33	278	Kota Denpasar	93.33
239	Kab. Mojokerto	66.67	279	Kab. Lombok Barat	6.67
240	Kab. Jombang	60.00	280	Kab. Lombok Tengah	6.67
241	Kab. Nganjuk	46.67	281	Kab. Lombok Timur	6.67
242	Kab. Madiun	33.33	282	Kab. Sumbawa	20.00
243	Kab. Magetan	66.67	283	Kab. Dompu	26.67
244	Kab. Ngawi	26.67	284	Kab. Bima	20.00
245	Kab. Bojonegoro	20.00	285	Kab. Sumbawa Barat	26.67
246	Kab. Tuban	13.33	286	Kab. Lompok Utara	6.67
247	Kab. Lamongan	33.33	287	Kota Mataram	53.33
248	Kab. Gresik	66.67	288	Kota Bima	46.67
249	Kab. Bangkalan	13.33	289	Kab. Sumba Barat	0.00
250	Kab. Sampang	13.33	290	Kab. Sumba Timur	0.00
251	Kab. Pamekasan	6.67	291	Kab. Kupang	0.00
252	Kab. Sumenep	20.00	292	Kab. Timor Tengah Selatan	0.00
253	Kota Kediri	80.00	293	Kab. Timor Tengah Utara	6.67
254	Kota Blitar	93.33	294	Kab. Belu	6.67
255	Kota Malang	86.67	295	Kab. Alor	26.67
256	Kota Probolinggo	60.00	296	Kab. Lembata	6.67
257	Kota Pasuruan	73.33	297	Kab. Flores Timur	26.67
258	Kota Mojokerto	93.33	298	Kab. Sikka	26.67
259	Kota Madiun	93.33	299	Kab. Ende	13.33
260	Kota Surabaya	93.33	300	Kab. Ngada	46.67
261	Kota Batu	86.67	301	Kab. Manggarai	13.33
262	Kab. Pandeglang	33.33	302	Kab. Rote Ndao	6.67
263	Kab. Lebak	26.67	303	Kab. Manggarai Barat	0.00
264	Kab. Tangerang	66.67	304	Kab. Sumba Barat Daya	0.00
265	Kab. Serang	46.67	305	Kab. Sumba Tengah	0.00
266	Kota Tangerang	86.67	306	Kab. Nagekeo	26.67
267	Kota Cilegon	93.33	307	Kab. Manggarai Timur	13.33
268	Kota Serang	60.00	308	Kab. Sabu Raijua	6.67
269	Kota Tangerang Selatan	86.67	309	Kota Kupang	86.67
270	Kab. Jembrana	66.67	310	Kab. Sambas	26.67
271	Kab. Tabanan	66.67	311	Kab. Bengkayang	33.33
272	Kab. Badung	86.67	312	Kab. Landak	26.67
273	Kab. Gianyar	73.33	313	Kab. Pontianak	33.33
274	Kab. Klungkung	60.00	314	Kab. Sanggau	40.00

	Regions	Index		Regions	Index
315	Kab. Ketapang	26.67	355	Kab. Berau	73.33
316	Kab. Sintang	26.67	356	Kab. Malinau	53.33
317	Kab. Kapuas Hulu	40.00	357	Kab. Bulongan	66.67
318	Kab. Sekadau	26.67	358	Kab. Nunukan	66.67
319	Kab. Melawi	26.67	359	Kab. Penajam Paser Utara	73.33
320	Kab.Kayong Utara	13.33	360	Kab. Tana Tidung	40.00
321	Kab. Kubu Raya	26.67	361	Kota Balikpapan	100.00
322	Kota Pontianak	73.33	362	Kota Samarinda	93.33
323	Kota Singkawang	40.00	363	Kota Tarakan	86.67
324	Kab. Kotawaringin Barat	73.33	364	Kota Bontang	93.33
325	Kab. Kotawaringin Timur	86.67	365	Kab. Bolaang Mongondow	66.67
326	Kab. Kapuas	73.33	366	Kab. Minahasa	86.67
327	Kab. Barito Selatan	80.00	367	Kab. Kepulauan Sangihe	73.33
328	Kab. Barito Utara	86.67	368	Kab. Kepulauan Talaud	80.00
329	Kab. Sukamara	66.67	369	Kab. Minahasa Selatan	80.00
330	Kab. Lamandau	80.00	370	Kab. Minahasa Utara	86.67
331	Kab. Seruyan	66.67	371	Kab. Bolaang Mongondow Utara	60.00
332	Kab. Katingan	73.33	372	Kab.Kep. Siau Tagolandang Biar	66.67
333	Kab. Pulang Pisau	60.00	373	Kab.Minahasa Tenggara	53.33
334	Kab. Gunung Mas	80.00	374	Kab.Bolaang Mongondow Selatan	46.67
335	Kab. Barito Timur	60.00	375	Kab.Bolaang Mongondow Timur	66.67
336	Kab. Murung Raya	66.67	376	Kota Manado	100.00
337	Kota Palangka Raya	100.00	377	Kota Bitung	86.67
338	Kab. Tanah Laut	46.67	378	Kota Tomohon	86.67
339	Kab. Kota Baru	53.33	379	Kotamobagu	86.67
340	Kab. Banjar	60.00	380	Kab. Banggai Kepulauan	13.33
341	Kab. Barito Kuala	46.67	381	Kab. Banggai	53.33
342	Kab. Tapin	53.33	382	Kab. Morowali	40.00
343	Kab. Hulu Sungai Selatan	60.00	383	Kab. Poso	40.00
344	Kab. Hulu Sungai Tengah	53.33	384	Kab. Donggala	33.33
345	Kab. Hulu Sungai Utara	53.33	385	Kab. Toli-Toli	26.67
346	Kab. Tabalong	66.67	386	Kab. Buol	40.00
347	Kab. Tanah Bumbu	46.67	387	Kab. Parigi Moutong	20.00
348	Kab. Balangan	40.00	388	Kab. Tojo Una-Una	33.33
349	Kota Banjarmasin	80.00	389	Kab. Sigi	33.33
350	Kota Banjar Baru	86.67	390	Kota Palu	80.00
351	Kab. Pasir	73.33	391	Kab. Selayar	26.67
352	Kab. Kutai Barat	60.00	392	Kab. Bulukumba	53.33
353	Kab. Kutai Kertanegara	73.33	393	Kab. Bantaeng	46.67
354	Kab. Kutai Timur	60.00	394	Kab. Jeneponto	20.00

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395	Kab. Takalar	40.00	435	Kab. Mamasa	46.67
396	Kab. Gowa	53.33	436	Kab. Mamuju	40.00
397	Kab. Sinjai	33.33	437	Kab. Mamuju Utara	53.33
398	Kab. Maros	46.67	438	Kab. Maluku Tgr Barat	40.00
399	Kab. Pangkajene Kepulauan	26.67	439	Kab. Maluku Tenggara	53.33
400	Kab. Barru	46.67	440	Kab. Maluku Tengah	46.67
401	Kab. Bone	40.00	441	Kab. Buru	20.00
402	Kab. Soppeng	60.00	442	Kab. Kepulauan Aru	33.33
403	Kab. Wajo	60.00	443	Kab. Seram Bagian Barat	33.33
404	Kab. Sidenreng Rappang	53.33	444	Kab. Seram Bagian Timur	33.33
405	Kab. Pinrang	60.00	445	Kab. Maluku Barat Daya	33.33
406	Kab. Enrekang	53.33	446	Kab. Buru Selatan	13.33
407	Kab. Luwu	60.00	447	Kota Ambon	100.00
408	Kab. Tana Toraja	46.67	448	Kota Tual	73.33
409	Kab. Luwu Utara	60.00	449	Kab. Halmahera Barat	33.33
410	Kab. Luwu Timur	60.00	450	Kab. Halmahera Tengah	26.67
411	Kab. Toraja Utara	33.33	451	Kab. Kepulauan Sula	46.67
412	Kota Makassar	93.33	452	Kab. Halmahera Selatan	33.33
413	Kota Pare-Pare	93.33	453	Kab. Halmahera Utara	40.00
414	Kota Palopo	80.00	454	Kab. Halmahera Timur	33.33
415	Kab. Buton	26.67	455	Kab. Pulau Morotai	20.00
416	Kab. Muna	20.00	456	Kota Ternate	100.00
417	Kab. Konawe	33.33	457	Kota Tidore Kepulauan	53.33
418	Kab. Kolaka	46.67	458	Kab. Fak-Fak	53.33
419	Kab. Konawe Selatan	33.33	459	Kab. Kaimana	33.33
420	Kab. Bombana	13.33	460	Kab. Teluk Wondama	6.67
421	Kab. Wakatobi	13.33	461	Kab. Teluk Bintuni	13.33
422	Kab. Kolaka Utara	20.00	462	Kab. Manokwari	20.00
423	Kab. Buton Utara	26.67	463	Kab. Sorong Selatan	13.33
424	Kab. Konawe Utara	26.67	464	Kab. Sorong	26.67
425	Kota Kendari	86.67	465	Kab. Raja Ampat	13.33
426	Kota Baubau	66.67	466	Kab. Tambrauw	0.00
427	Kab. Boalemo	20.00	467	Kab. Maybrat	20.00
428	Kab. Gorontalo	33.33	468	Kota Sorong	80.00
429	Kab. Pohuwato	33.33	469	Kab. Merauke	26.67
430	Kab. Bone Bolango	53.33	470	Kab. Jayawijaya	0.00
431	Kab Gorontalo Utara	13.33	471	Kab. Jayapura	53.33
432	Kota Gorontalo	66.67	472	Kab. Nabire	13.33
433	Kab. Majene	46.67	473	Kab. Yapen Waropen	20.00
434	Kab. Polewali Mandar	20.00	474	Kab. Biak Numfor	40.00

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475	Kab. Paniai	6.67	487	Kab. Supiori	26.67
476	Kab. Puncak Jaya	20.00	488	Kab. Memberamo Raya	0.00
477	Kab. Mimika	13.33	489	Kab. Nduga	0.00
478	Kab. Boven Digoel	6.67	490	Kab. Lanny Jaya	0.00
479	Kab. Mappi	0.00	491	Kab. Memberamo Tengah	0.00
480	Kab. Asmat	6.67	492	Kab. Yalimo	0.00
481	Kab. Yahukimo	0.00	493	Kab. Puncak	6.67
482	Kab. Pegunungan Bintang	0.00	494	Kab. Dogiyai	6.67
483	Kab. Tolikara	0.00	495	Kab. Intan Jaya	0.00
484	Kab. Sarmi	6.67	496	Kab. Deiyai	0.00
485	Kab. Keerom	26.67	497	Kota Jayapura	73.33
486	Kab. Waropen	0.00			