The Determinants of Green and Non Green City: An Empirical Research in Indonesia

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Abstract

This study aims to identify the green and non-green city as well as the factors that affect the classification of green and non-green city in the urban agglomeration areas of Semarang and Yogyakarta in Indonesia. The data used is the secondary data sourced from the Central Bureau of Statistics (BPS), in 2000-2010 in 14 regencies / municipality . Analysis tools using multinomial logistic regression. The cities which classified into the green city are Semarang municipality, Sleman regency, Magelang regency and Klaten regency, and the other cities are non green city. Results of other studies showing population growth, the rate of industrial employment, the rate of education and the rate of government expenditure affect the classification of cities based on urban growth and environmental quality.The growth of per capita income have no effect, this means that the growth of per capita income can not be relied upon to predict the classification of cities based on urban growth and environmental quality. Results of this study are expected to provide information to municipalities as urban decision-making ingredient.The information of green and non green city can be used as a promotional tool for the regency/municapality. Publication of green city can be used to attract people and capital or investment.

Keywords: Urban, environment, green, agglomeration, multinomial, Indonesia.

1.Introduction

World population growth and the urban population so far always show improvement. The projected world population in 2030 will increase to 7.94 to 8.33 billion. While the urban population projections in 2030 to 4.72 to 5 billion or an increase of 48.6 to 57.8% (Zhang, 2008). Increase in urban population also experienced by Southeast Asian countries.

Based on 2030 projected percentage of population living in urban areas in ASEAN countries amounted to 60.7% or nearly equal to the rate of urbanization of the world at 60.8%. The increase in the urban population of Indonesia also experienced as one of the ASEAN countries. In 2000 the percentage of urban population by 42.1%, this figure is higher than other ASEAN countries (39.6%). In 2010 increased to 49.8%. Based on 2030 projected percentage of population living in urban areas in Indonesia amounted to 67.7%, higher than the projected level of urbanization of the world urban population percentage of 60.8% (Kuncoro, 2010; BPS, 2011). The growth of the urban population that continually exceed the carrying capacity geographical / space and the urban economy and the city will cause various problems both in terms of economic, social, political, and environmental security. These problems will be a serious challenge in the future, especially for urban and city management.

City population growth in the countries on the world is caused by three components: natural growth (natural increase of), migration (migration) and the change in status from rural areas to urban (reclassification of rural areas as urban), as well as in Indonesia (Thomas, 2008; BPS, 2011). The third cause of urban growth, migration from rural to urban areas is a major cause (Rodgers, D., et.al, 2011; Comola, M and Mello, L, 2010). Individual decisions to move from one place to another (migration) that causes the growth of the city is affected by the physical environment and the social environment (Royuela, V, et.al 2010; Xiao et.al, 2010; Clement, 2010; Oleyar, 2008; Lee and Huang, 2007; Newman, 2006). Physical environment and the social environment such as differences in climate, city aesthetics, servicing public goods and services, government policies (taxes or income), social interaction is an important factor why the city can compete with other cities and growing faster.

Urban population growth is often blamed for environmental degradation (Cropper and Griffiths, 1994). Impact of urban growth on environmental damage in the long term is if the city population or population growth has exceeded the carrying capacity of the environment. The more densely populated the lower the environmental quality of the city. This means that there is a correlation between population density and environmental degradation. This is the environment in which the natural environment is part of the quality of life as defined by Lambiri and Vicente (2007) which consists of the climate, soil / area, water, air, plants / forests and others. Hal ini di dukung oleh penelitian Fan dan Qi (2010), Cracolici, *et.al* (2010), Zheng, *et.al* (2010), McCarthy, *et.al* (2010), Ahmad dan Choi (2010), Todaro dan Smith (2006), Khatun (2009) dan Dutt (2009).

The results link between population density and the quality of the environment in contrast to the results of research from the Economist Intelligence Unit / EUI (2011) which examined on the 22 cities on the Asia about the green city index. Groups of cities with high population density is not always a low environmental quality and vice versa. The same thing also expressed by Thomas and Belt (1997) that the rapid population growth and slow is not an automatic ally of natural capital. Even Lopez (1998), Dasgupta (1995) suggested a link between population and the environment will vary from situation, policy recommendations will depend on a number of factors including the type of power source, density and rate of population growth, institutional agreements, and laws that govern the use of these resources. As a result there are not any general conclusions about the relationship between population and the environment. Differences in these results, interesting to study further the factors that determine the classification of cities based on urban growth and environmental quality.

By using a multinomial logistic regression analysis, factors found that influence the classification of cities based on urban growth and environmental quality. Given the importance of environmental aspects in the growth of the city, then this aspect can be used as a promotional tool for the city. Sustainability of cities to continue growing not only be seen from the economic, social, political but variables that come into play is the environmental aspect. For the publication of the environmental quality of the town green is necessary for the city in addition to the economic, social, and political to attract people and attract capital / investment. Detailed presentation of this paper is divided into five sections. The second part of the literature review, the third part of the research methods, the results and subsequent discussion and final conclusions, limitations of the study and further research.

2. Literature review

To answer the research problem about the factors that influence the classification of green and non-green cities required literature review of the urban growth and environmental quality. Previous studies have analyzed the factors that determine the growth of cities by using variable economic, social, demographic, spatial, public policy and politics. Tiebout theory of Tiebout (1956) mentions that the main factor determining the growth of cities is the policy of the local government.

Assumption of this theory is that different local governments will offer different tax package and mobile society always expected to allocate their budgets in accordance with their wishes. This theory emphasizes that the extent and combination of standard financing local public goods and taxes paid by the public in the interests of local communities and the government politicians locally. Society would choose to live in an environment that meets local budgets the highest preference among the public service of the government and the taxes paid by the public. When people are not happy with the policy of the local government taxation to finance public goods are local, then they will exit (exit and voice) to move to another judicial area that matches their preferences. The amount of government expenditure showed the ability of governments to provide public services.

The conditions of service improvement in relation to the public good relations between the autonomous regions will provide competition conditions of competition between districts / cities to maximize satisfaction for the community. Public facilities that can be provided by the city government as an attraction / area depend on the amount of revenue and expenditure. Urban growth will increase if public facilities are provided more and more. The bigger the government expenditure, more and more public facilities can be provided so as to accelerate the growth of the city.

Endogenous growth theory (endogenous growth theory) of Romer (1990) argues the main factor driving growth is the role of research and development (research and development = R & D) and human capital. Endogenous growth theory is used as a basis to explain the source of urban growth. The rationale is as described by Glaeser, et.al (1995) that there is a relationship between the city and the success of entrepreneurial skills transmission. Movement of capital, labor and ideas between cities is higher than between countries. Similar feelings were expressed by Jacobs (1969) and Marshall (1980). Local differences in human capital and R & D activity is an important factor in explaining differences in levels of urban economic growth. A high level of education of the population, a skilled workforce and the greater number of R & D performed by companies that exist in a given area will encourage more rapid growth of the city. The higher the education level of the population in certain city, further encourage the growth of the city.

The theory of economic geography (new economic geography) recently pioneered by Krugman (1991) explains that the spatial dimension is important in describing aspects of urban development. Spatial dimensions (space / location) which is considered to be an important focus of geography by Krugman to be included in the economic analysis for the following reasons: First, the location of economic activity (where) in a country is an important topic. Second, the line between international economics with regional economics becomes increasingly blurred. Third, economic geography is the intellectual and empirical labs available.

Krugman thought often associated with the idea that the city is a place Perroux center (central place) and is a center of growth (growth poles) or development center (pole of development). Model of the central place mono sentris believe that the scale of city is very important and there is a tendency to accumulate economic activity towards the Primacy (primacy). Companies tend to be located in the cities to reduce transport costs on raw materials and products. Increasing the scale of the city is encouraging the growth of city. This means that the larger the city the higher the size of the city's growth.

Income per capita as a measure of the market is a determinant of urban growth. Income per capita has a positive effect on the growth of city (Lo, 2010; Cheshire and Magrini, 2009; Salenusa, 2009; Brulhart and Sbergani, 2008; Moomaw and Alwosabi, 2004; Henderson, 2003, 2002, 2000 and Sarungu, 1990). Results of other studies mention that the effect of income per capita for urban growth is negative. The greater the per capita income will drive and lead the growth of new economic regions. This condition causes the concentration of residents who live in big city will decline, as more options for residents to live and seek employment in various cities. Likewise, if the city has reached the optimum scale, competition among companies and industries will gradually increase the prices of factors of production and the resulting relocation of economic activity to the suburbs (Ma, et.al, 2008; Moomaw and Alwosabi, 2007; Krugman, 1996; Ciccone and Hall, 1996; Glaeser, et.al, 1992). Even further, Coskey and Kao (1998) lead to the conclusion income per capita affects the growth of cities only in the long term, not short-term effect. Similar results of research studies that have been conducted by Sriwinarti (2005) for the case of Indonesia.

Development strategies that prioritize the modernization of industry, technology and the growth of metropolitan sophistication has led to imbalances in the geographic spread of opportunity and economic opportunities, as well as encourage a massive migration of people from villages to cities so that urban growth increases (Todaro and Smith, 2006). Hopes would have the opportunity to improve their quality of life (new job) in the field of non-agricultural (industrial) in cities is a pull factor (pull factor) and the narrowing of the field work in the place of origin (eg:land for agriculture in rural areas are increasingly narrowing) is a driving factor (push factor) migration. The presence of these migrants tends to increase labor supply in urban areas, while the supply of labor in rural dwindling value. The results of industry influence the growth of cities on one side have a positive effect. Growths of manufacturing companies encourage mobility of goods, services, factors of production including labor. Population will tend to come to the center of economic activity in cities - big cities because they will be easier to obtain employment. In this condition the country also supports the expansion of the industry by providing central infrastructure - urban center. Thus industrialization is a motivating factor for people to come into cities (Salenussa, 2009; Moomaw and Alwosabi, 2004; Henderson, 2002; Ades and Glaeser, 1995; Moomaw and Shatter, 1996; Sarungu, 1990). However Sriwinarti (2005) mentions that the industry has a positive effect the growth of cities only in the long term, while in the short term has no effect.

On the other hand, the results of the study mentioned negatively affect the growth of industrial cities. Industries tend to have much connection or business relationship between the company (inter-firm linkage) that spread not only in the city center and has an extensive network in the region (cities) others. With increasing levels of the industry and network connections to the outside of the more extensive and thus reduce the concentration only in the region (cities) specific (Carroll, 1982).

Related to the environmental quality, Cracolici, et.al (2010) mentions related to environmental policies in developing countries to be a plus point in measuring government performance. Publication of the city ranking based on environmental quality is very useful in choosing a location and well as a means of promotion for the city (Roback, 1982). According Pulselli (2006); Distaso (2007) for developing countries, the city ranking based on the quality of the environment is important to formulate policies and regulations relating to the environment.

Cole and Neumayer (2004) conducted a study in 86 countries of the world in the period 1971-1998 by means of regression analysis of panel data on demographic factors and environmental relationships. Demographic variables measured by the number of total population and urbanization (the percentage of the urban population). Although the focus of the relationship between demographic and environmental variables, Cole and Neumayer also incorporate economic variables are per capita incomes. While the environmental variables measured by CO_2 and SO_2 emissions. The results showed that the total population and increasing urbanization will lead to increased emission levels which also proportionally both CO_2 and SO_2 (sulfur dioxide). Similarly, per capita income has a positive effect on the environment.

Van Dijk and Mingshun (2005) conducted a study in four cities in China (Qinhuangdao, Maanshan, Taizhou, Wuhai) about the sustainability of the city in the period 1994-2000. Analysis tools used Urban Sustainability Index and the Analytical Hierarchy Process (AHP). Research results indicate economic conditions and significantly negatively associated with environmental indices in four cities, which means that there is a tradeoff between the environment and the economy. While economic conditions and the sustainability index related positively and significantly only in two cities (Qinhuangdao, Maanshan) which means the economy is just one factor that can improve the sustainability of the city, sustainable city can not be determined only by economic growth. Social conditions have stronger relationships and positive impact on the sustainability of the city than economic conditions. Environmental index is negatively related to the city sustainability index. Four cities in China in the period of the study showed towards sustainable development, but the city is still low even Wuhai likely unsustainable city.

Ma, et.al (2008) conducted a study in the city of Beijing with a cross section of 1997 and 2002 on the relationship between urbanization and urban growth and landscape changes in the structure of city. The analysis technique used geographic information systems. The results showed that urbanization and urban growth leads to reduced agricultural land, green areas and water absorption. Dutt (2009) conducted a study of factors that affect the quality of the environment in 124 countries in the period 1984-2002.

The explanatory variables used are income (GDP), population density, governance, political institutions, public expenditure on education, length of school year and socioeconomic factors. Variables that described the quality of the environment as measured by carbon dioxide emissions (CO_2) per capita. Research results showed that GDP, population density has a positive effect on the environment, while governance, political institutions, public expenditure on education, socio-economic conditions negatively. This shows that the state government good governance, strong political institutions, both economic and social conditions for greater investment education the less the level of pollution emissions.

Khatun (2009) conducted a study in 43 countries in Asia and Africa on the variables that lead to environmental degradation with analysis tools Principal Component Analysis (PCA). Variable used is GDP per capita, fertility rate, fuel consumption, water supply, sanitation and electricity. The results showed that the high fertility rate led to high population growth. High population growth also led to high levels of environmental degradation. Jat, et.al (2009) conducted a study on the impact of urbanization on catchment water underground in India 1989 -2005. Analysis tools used Geographic Information Systems (GIS). Variables used urbanization, infiltration of water underground. The results showed a very rapid growth of city led to increased consumption of land for industry, education, recreation. This leads to reduced water infiltration place so that the quality of the environment disturbed.

Fan and Qi (2010) conducted a study in 31 provinces in China in the period from 2003 to 2006 on the relationship between urbanization and the environment. Analysis tools used correlation and Urban Sustainability Index (USI). Research results show there is a positive correlation between urbanization as measured by the number of city residents with environmental damage. Other research is showing profiles cities in China based on the index of economic, social and environmental. The profile shows only three cities in China, namely Urumqi, Chendu, and Shanghai that has not changed in relation to economic development and the environment during the years 2003 - 2006 to maintain its environmental means. This suggests that over time the negative impact of economic development against environmental damage.

Xiao, et.al (2010) conducted a study on the performance aspects of the city by the environment (sustainable cities) in 112 Chinese cities by using urban sustainability index (USI). Indicators used basic needs (basic needs), resource efficiency (resource efficiency), environmental hygiene (environmental cleanliness), physical environment (built environment) and environmental sustainability commitment (commitment to future sustainability). Research results indicate that the factors affecting the performance of sustainable city commitment to environmental sustainability is the start of the planning, implementation, monitoring and evaluation carried out by the government, private and public. Results of other studies showed no association between economic growth as measured by GDP per capita and the performance of sustainable cities.

Zheng, et.al (2010) conducted a study in 35 cities in China the period 1997 to 2006 about the factors that affect the environment (pollution particles and SO_2). Instrument panel regression analysis used data. The explanatory variables used are urban population, per capita income, foreign investment, and labor demand and rainfall industry. The results showed that the urban population on the environment while positively significant foreign investment and significant rainfall negatively on the environment. Another result of per capita income and labor demand industry proves positive effect on the environment.

3. Methodology of Research

In the context of urbanization process, it is interesting to note the emergence of several mega cities (mega cities) or urban agglomeration (urban agglomeration) which has its own charm. In Indonesia, this process has made the movement and location of the settlement activities from Jakarta to the city - the surrounding cities of Bogor, Tangerang and Bekasi. The results Henderson, et.al (1996) reinforced by the results of the research collaboration between The Australian National University (ANU), United Nation for Population (UNFPA) and BPS (2000) of the urban agglomeration areas in Indonesia. The results of these studies, urban agglomeration areas in Indonesia are divided into seven regions agglomerations are located in seven Provinces. The seven areas of urban agglomeration is an agglomeration area of Jakarta, Bandung, Semarang, Yogyakarta, Surabaya, Makassar and Medan. Of the seven areas of urban agglomeration, agglomeration five regions located on the island of Java. This is consistent with the concentration of the Indonesian population is still largely exist in Java. The research was conducted in the agglomeration Semarang and Yogyakarta.

Consideration of agglomeration Semarang and Yogyakarta chosen as the object of study is the agglomeration of both regions are located in Java Island of Indonesia's population concentrated place. According to BPS (2000) is one of the characteristics of urbanization growth of cities far beyond administrative boundaries of the city to the surrounding area. Agglomeration of seven regions in Indonesia, Semarang and Yogyakarta agglomeration area shows characteristics of urbanization as mentioned BPS (2000) are two districts in the urban agglomeration of Yogyakarta (DIY), which is administratively located in the province of Central Java (Semarang agglomeration), namely Klaten regency and Magelang regency. Other considerations, in general, areas of high urban population, has a low environmental quality and vice versa. Agglomeration Semarang and Yogyakarta region is a region that does not include the criteria so exciting to be the object of research. The average percentage of urban population in urban agglomeration areas of Java is 69.82%, while the average Environmental Quality Index (EQI) of 53.43. Urban agglomeration areas in Semarang (Central Java Province) percentage of urban population is low (below average) in the amount of 56.2% and a low environmental quality index (below average) is equal to 50.48, while the urban agglomeration area of Yogyakarta (Yogyakarta Province) is the percentage of the urban agglomeration area of high (above average) is equal to 70.2% and high environmental quality index (above the average) is equal to 71.91.

The data used in this study secondary data obtained from the Central Bureau of Statistics in the urban agglomeration of Semarang and Yogyakarta. This study uses data for 2000 -2010 and covers 14 regencies / municipality (appendix 1). Methods of data collection were obtained by documentary studies.

The variables used in the study is the growth of the city (CG), the growth of per capita income (PCAP), the rate of industry employment (IND), the rate of education (EDU), population growth (POP), the rate of government expenditure (GOV), environmental quality is measured by an index of the average single index of arable land, clean water production amount and the average rainfall. Calculation of each component forms environmental quality by using the method of maximum - minimum. Environmental quality and the growth of the city categorized as high if the index of environmental quality and urban growth as measured by the index of primacy above the average of all regencies/municipality in the urban agglomeration of Semarang and Yogyakarta. Conversely environmental quality and urban growth regencies / municipality categorized as low if environmental quality index and the growth of the city below average.

The model used is based on the base model of the Multinomial logistic regression (Hair, 1998, Gujarati, D and Porter, 2009) in which the dependent variable in the form of the following categories.

$$P = \frac{1}{1+e^{-(\beta_0+\beta_1 PCAP_{it}+\beta_2 IND_{it}+\beta_3 POP_{it}+\beta_4 EDU_{it}+\beta_5 GOV_{it})}} \quad (1)$$

where
P: Probability, e: base rate logarithm
Equation 1, if converted into logarithmic regression equation as follows

$$\text{Ln}\frac{P}{1-p} = \beta_0 + \beta_1 PCAP_{it} + \beta_2 IND_{it} + \beta_3 POP_{it} + \beta_4 EDU_{it} + \beta_5 GOV_{it} + e_{it} \quad (2)$$

This study uses four classifications of cities based on urban growth and environmental quality. The classifications are as follows.
1 = green city, a city of high city growth and high environmental quality
2 = a city of high city growth but low environmental quality.
3 = a city of low city growth but high environmental quality.
4 = a city of low city growth and low environmental quality.

The classification of these four, there should be one chosen as the reference category for comparison analysis or benchmark. Green city was chosen as the benchmark in this study. Thus the model in each city classification is as follows.

$$\text{Ln}\frac{P}{1-p} = \frac{P(Yi=\text{a city of high city growth but low environmental quality})}{P(Yi=green\ city)}$$
$$= \beta_6 + \beta_7 PCAP_{it} + \beta_8 IND_{it} + \beta_9 POP_{it} + \beta_{10} EDU_{it} + \beta_{11} GOV_{it} + e_{it} \quad (3)$$

$$\text{Ln}\frac{P}{1-p} = \frac{P(Yi=\text{a city of low city growth but high environmental quality})}{P(Yi=green\ city)}$$
$$= \beta_{12} + \beta_{13}PCAP_{it} + \beta_{14}IND_{it} + \beta_{15}POP_{it} + \beta_{16}EDU_{it} + \beta_{17}GOV_{it} + e_{it} \quad (4)$$

$$\text{Ln}\frac{P}{1-p} = \frac{P(Yi=\text{a city of low city growth and low environmental quality})}{P(Yi=green\ city)}$$
$$= \beta_{18} + \beta_{19}PCAP_{it} + \beta_{20}IND_{it} + \beta_{21}POP_{it} + \beta_{22}EDU_{it} + \beta_{23}GOV_{it} + e_{it} \quad (5)$$

4. Interpretation of Descriptive Results

Classification of cities based on urban growth and environmental quality in the urban agglomeration of Semarang and Yogyakarta in full can be found in appendix 1. The cities which classified as the green city are Semarang municipality, Sleman Regency, Magelang Regency and Klaten Regency, and the other city are classified as green city. The results of data processing by using SPSS 16 software and multinomial logistic regression models can be found in appendix 2, the empirical findings indicate that the growth of income per capita (PCAP) has no effect on the classification of cities based on urban growth and environmental quality. It is based on the fact that there is no statistically significant throughout the city classification. This shows there is no difference between the classification and the green city and high growth city but low environmental quality, the city urban growth is low but high environmental quality, and the city with low urban growth and low environmental quality based on per capita income growth. In other words, the growth of per capita income has no effect and can not be relied upon to predict the classification of cities based on urban growth and environmental quality. The results support the research of Xiao, et.al (2010) which concluded that the factors affecting the performance of sustainable city (town performance that not only pay attention to economic factors, but pay attention to social environmental factors) is the environmental sustainability commitments ranging from planning, implementation, monitoring and evaluation carried out by the government, private and public. There is no relationship between well-being as measured by GDP per capita and sustainable city performance but rather on policy outcomes and leadership.

Empirical findings indicate that population growth (POP) affects the classification of cities based on urban growth and environmental quality. It is based on the fact showed statistically significant in all classifications town city urban growth is high but low environmental quality (sig = 0.065), the city urban growth is low but high environmental quality (sig = 0.000) as well as the city's urban growth is low and low environmental quality (sig = 0.000). It showed there is a difference between the classifications of the green city with the high growth but low environmental quality city, the low urban growth but high environmental quality city, as well as the city with low urban growth and low environmental quality based on population growth. In other words, population growth has influence and can be relied upon to predict the classification of cities based on urban growth and environmental quality. Negative sign on the coefficient of population growth in all of the higher classification of the city shows the probability of population growth in the city were classified with high urban growth but low environmental quality, the city urban growth is low but high environmental quality as well as the city's urban growth lower and lower environmental quality is less to be classified as the green city. This means, the higher the population growth probability to be classified into in the green city. Results of this study of the city's growth is consistent with the results of Cheshire and Magrini (2009) and Moomaw and Shatter (1996), Krugman (1996) the greater number of the population as a measure of the market, the greater the benefits of agglomeration effects and further encourage the growth of the city. The results of this study, in terms of the quality of the environment is consistent with the results of the Economist Intelligence Unit research / EUI (2011), a city with a high population growth, green city index is also high.

Empirical findings indicate that the rate of industrial employment (IND) effect on the classification of cities based on urban growth and environmental quality. It is based on the fact a positive sign and statistically significant in the city classification of high urban growth but low environmental quality (sig = 0.023). It showed there is a difference between the classification of the green city with the high growth but low environmental quality city based on the level of industrial employment. As for the classification of green cities and towns that urban growth is low but high environmental quality and low urban growth and low environmental quality has no difference in the rate of industrial employment. It is based on the estimation results in both the classification the rate of industrial employment is not significant .

In other words, the rate of industrial employment has no effect and can not be relied upon to predict the classification of the city that city growth is low but high environmental quality and the city urban growth and environmental quality are equally low. Positive sign on the coefficient of the rate of industrial employment in the higher classification of the city shows the level of probability industrial opportunity to be classified as high urban growth city is greater than the green city. The rate of industry employment higher , causing the resulting output is also higher. The industrial outputs affect the increasing levels of pollution. Increased pollution causes poor quality of the environment. The results are consistent with the results of the study Zheng, et.al, 2010; Fan and Qi, 2010; Cracolici et.al, 2010; Khatun, 2009; Dutt, 2009; Ma et.al, 2008; Diastoso, 2007; Van Dijk and Mingshun, 2005; Cole and Neumayer, 2004.

Empirical findings indicate that the rate of education (EDU) affects the classification of cities based on urban growth and environmental quality. It is based on the reality shows negative sign and statistically significant in the classification of the city urban growth is low but high environmental quality (sig = 0.000) and the city's urban growth lower and lower environmental quality (sig = 0.002). It showed there is a difference between the classification of green cities and towns that urban growth is low but high environmental quality and the classification of the city and the lower city growth lower environmental quality by the rate of education. As for the classification of green cities and towns that high urban growth but low environmental quality no differences by the rate of education . It is based on the estimation results on the classification of the city urban growth high but a low level of environmental quality , the rate of education is not significant. In other words, the rate of education has no effect and can not be relied upon to predict the classification of his hometown city high growth but low environmental quality city. Negative sign on the coefficient of the rate of education in the city classification showed the higher of the rate of education , the higher the probability to be classified as high urban growth but low quality city and the low urban growth and low environmental quality city is lower than entering the green city or the higher the rate of education the higher the probability to be classified as green city is a city of high urban growth and high environmental quality.

One's education level affects the mindset and the dissemination of information. The higher the education, people can assimilate more information and to apply instruments to protect the environment. Information about matters relating to the environment as factors that lead to environmental degradation, the actions that should be taken to protect the environment for the mutual benefit will be more easily understood and implemented for highly educated people. The results support the research Cracolici, et.al, 2010; Dutt, 2009; Diastoso, 2007; Worldbank, 2000. Education affects the environment as measured by the level of pollution. The higher the education, the less the level of pollution, which means the higher the quality of the environment and the probability of a green city entered the higher classification.

Empirical findings indicate that the rate of government expenditure (GOV) affects the classification of cities based on urban growth and environmental quality. It is based on the fact a positive sign and statistically significant in the city classification of high urban growth but low environmental quality (sig = 0.083), and the city's urban growth is low but high environmental quality (sig = 0.063). It showed there is a difference between the classifications of the green city with high growth but low environmental quality city and the classification of the urban growth is low but high environmental quality city based on the rate of government expenditure. As for the classification of green cities and low urban growth and low environmental quality city has no differences based on the rate of government expenditure. It is based on the estimation results on the classification of cities that low urban growth and environmental quality low , the rate of government expenditure is not significant. In other words, the rate of government expenditure has no effect and can not be relied upon to predict the classification of the city and the lower city growth lower environmental quality. Positive sign on the coefficient of the rate of government expenditure in the higher classification of the city shows the rate of government expenditure probability classification of a high growth but low quality city and low urban growth but high environmental quality city is greater than green city. The results are consistent with the results of the study Xiao, 2010, et.al; Dutt, 2009; Gyourko and Tracy, 1991.

4. Conclusions, limitations and further research

The Growth of per capita income does not affect the classification of cities based on urban growth and environmental quality.

Population growth affects the classification of cities based on urban growth and environmental quality. This means that there are differences in the classification of cities based on population growth. The higher the probability of population growth of the city, the higher to be classified as high growth but low environmental quality city, the low urban growth but high environmental quality city and low urban growth and low environmental quality city is lower to be classified as the green city.

The rate of Industrial employment affects the classification of the city high urban growth but low environmental quality. This means that there is a difference between the green city and the high urban growth but low environmental quality city based on the rate of industrial employment. The higher level of probability the rate of industrial employment of a city classified as high growth but low quality city greater than to be classified as the green city. In other words, the rate of industrial employment can only be relied upon to predict the classification of city high urban growth but low environmental quality.

The rate of education affect the classification of the city urban growth is low but high environmental quality and urban low urban growth and environmental quality is low. This means that there is a difference between a city and a green city urban growth is low but high environmental quality and classification of the city and the lower city growth lower environmental quality by the rate of education. The higher the rate of education probability to be classified as a low growth but high environmental quality city and low urban growth and environmental quality city is lower compared to be classified into the green city. In other words, the rate of education can only be relied upon to predict the classification of the low urban growth but high environmental quality city and low urban growth and low environmental quality city.

The rate of government expenditure affects the classification of the high urban growth but low environmental quality city and a city with lower urban growth and high environmental quality. This means that there is a difference between the green city with high urban growth but low environmental quality city and low urban growth and high environmental quality city based on the rate of government expenditure. The higher the rate of government expenditure, the higher the probability to be classified as a high growth but low quality of the environment city and the low urban growth but high environmental quality city is higher than green city. In other words, the rate of government expenditure can only be relied upon to predict the classification of a high urban growth but low environmental quality city and low urban growth and high environmental quality city.

In this study there are some limitations that can not be avoided. The limitations associated with the limited data available. The limitations are: Measurement of urban growth variables using a data-dependent urban population data from Census of Population. The organization of Indonesia Population Census every ten years so as to obtain data on the annual number of urban population using the results of data SUPAS and projections from the BPS. Data on environmental quality in unit regencies/ municipality is very limited, so as to obtain quality indicators wider environment there are obstacles. The study's findings indicate the need for further development: the development of a research model by incorporating environmental variables not only the physical environment (nature) but the cultural environment and the social environment, making the ranking of cities based on quality and environmental performance.

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Appendix 1
The Classifications of cities Based on City Growth and Environmental Quality

Regency/municipality	CG_EQ										
	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Grobogan Regency	LL	LL	LL	LL	LL	LL	LL	LH	LH	LH	LH
Demak Regency	LH	LH	LL	LH	LL	LH	LH	LL	LH	LL	LH
Semarang Regency	LH	LH	LH	LH	LH	LH	LH	LH	LH	LH	LH
Temanggung Regency	LL	LL	LL	LL	LH	LL	LL	LL	LH	LH	LH
Kendal Regency	LL	LL	LL	LL	LH	LL	LL	LL	LH	LL	LH
Salatiga municipality	LH	LH	LH	LH	LH	LH	LH	LH	LH	LH	LH
Semarang municipality	HH	HL	HH	HL	HH	HL	HL	HL	HL	HH	HH
Kulon Progo Regency	LL	LH	LL	LL	LL	LL	LL	LH	LL	LL	LL
Bantul Regency	LL	HL	LL	HL	HL	LL	HL	LL	HL	HL	HL
Gunungkidul Regency	LH	LH	LH	LH	LH	LH	LL	LH	LL	LL	LH
Sleman Regency	HH	HH	LH	HL	HL	HH	HL	HL	HL	HL	HH
Yogyakarta municipality	LL	HL	LL	LL	HL	LL	LL	LL	LL	LL	LL
Magelang Regency	HH	LH	HH	LH	LH	HH	LH	HH	LH	LH	LH
Klaten Regency	HL	HL	HL	HL	HL	HL	HL	HL	HL	HL	HH

Note: H= High L= Low

Appendix 2
Result of Multinomial Logistic Regression Analysis

Criteria[a]		Parameter Estimates							
		B	Std. Error	Wald	df	Sig.	Exp(B)	95% Confidence Interval for Exp(B)	
								Lower Bound	Upper Bound
The City of high city growth but low environmental quality	Intercept	43.936	27.085	2.632	1	.105			
	pcap	-.002	.092	.000	1	.983	.998	.833	1.196
	ind	.205	.090	5.190	1	.023	1.228	1.029	1.465
	pop	-3.614	1.960	3.398	1	.065	.027	.001	1.257
	edu	.055	.038	2.090	1	.148	1.057	.981	1.139
	gov	.106	.061	3.007	1	.083	1.111	.986	1.253
The City of low city growth but high environmental quality	Intercept	175.838	42.796	16.882	1	.000			
	pcap	-.027	.081	.110	1	.740	.974	.831	1.140
	ind	-.021	.076	.076	1	.783	.979	.844	1.137
	pop	-12.340	3.031	16.578	1	.000	4.371E-6	1.150E-8	.002
	edu	-.227	.058	15.170	1	.000	.797	.711	.893
	gov	.118	.064	3.468	1	.063	1.126	.994	1.275
The City of low city growth but low environmental quality	Intercept	168.543	42.748	15.545	1	.000			
	pcap	-.030	.083	.131	1	.717	.970	.825	1.142
	ind	-.120	.077	2.443	1	.118	.887	.763	1.031
	pop	-11.774	3.027	15.126	1	.000	7.706E-6	2.042E-8	.003
	edu	-.172	.057	9.246	1	.002	.842	.753	.941
	gov	.098	.063	2.368	1	.124	1.103	.974	1.248

a. The reference category is: green city.