

The Importance of Peri-urban Region in the Diversification of Rural Yogyakarta, Indonesia

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Abstract

Yogyakarta has experienced unprecedented levels of urbanisation in the last two decades. This places the DIY Province as the second most urbanized province in Indonesia after Jakarta. Urbanization in the province mainly occurs in the surrounding areas of Yogyakarta Municipality, leading to the formation of a relatively large peri-urban region. The peri-urban region of DIY hosts more than 60 percent of the population in the province. The process of urbanization in the peri-urban area has been accompanied by the diversification of the rural economy of the province. This paper aims at assessing the importance of the development of the peri-urban region in rural diversification in the province. The paper begins with a review of some theoretical issues, followed by an account of the present situation of the peri-urban region of Yogyakarta, its relationship with the growing rural diversification in the province and the future of peri-urban regions in the province.

I. Rural Diversification and Peri-Urban Development

The issues of rural diversification as a critical component in rural development in developing countries have attracted a considerable attention of scholars and development advisors since the 1970s. A large number of studies have investigated the role of non-agricultural economic activities in rural development (Demurger et al, 2010). Evidence from the developing world suggests that economic diversity in the countryside has the potential to foster local economic growth and alleviate the rural-urban income gap and rural poverty (Davis and Bezemer, 2003). Rural diversification can be defined as the process of the growing importance of non-agricultural employment and incomes for rural households as a consequence of their increasing participation in non-farm activities such as services, commercial and/or industrial activities, whether related or not to the agricultural sector and located both in the rural areas as well as in the nearby urban areas (Rijanta, 2006).

The spatial patterns of rural diversification depend on the relative location of villages to the nearby town with some spots of in-situ diversification owing to the degree of population density in the rural areas (Palacios et al, 2013). This means that proximity to urban centres and the easy access to urban areas are among the important determinants to rural diversification at the regional level. Eapen (1999) reported the process of rural diversification in Kerala of India as similar to the process experienced by South East Asian countries as revealed in the work of McGee (1991) who proposes the idea of *desakotasi* or Ginsburg *et al.*, (1991) who suggests the term *kotadesasi* to denote basic structural changes in the region surrounding the cities of South East Asia, more especially in Indonesia and Thailand (*cf.* Rigg, 1994 and 1998).

Following McGee (1991) the regions designated as *desakota* have six main features: (1) large population engaged in small-holder cultivation of rice, (2) increase in non-agricultural activities in areas that have previously been agricultural, (3) high population mobility, (4) intense mixture of land-use with agriculture,

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cottage industries, suburban development and other activities side by side, (5) increase of participation of women in non-agricultural activities, and (6) grey or invisible zones from the viewpoint of the state authority. The characterization of *desakotasi* region in Yogyakarta Province is not easy, as some of the features may be clearly present as postulated by McGee, but the others cannot easily be recognized in the field. Moreover, it is not easy to distinguish between the peri-urban and the *desakotasi* region. For the sake of availability of the data, in this paper peri-urban area of Yogyakarta denotes six districts bordering the Yogyakarta Municipality, *i.e.*: Depok, Mlati and Gamping (Sleman Regency), Kasihan, Sewon and Banguntapan (Bantul Regency).

In general, the spatial patterns of rural diversification in Java as reported by Jones (1984) show that the percentage of agricultural employment in the rural areas of the various districts tend to be lowest in districts close to medium to large cities (especially Jakarta, Surabaya and Bandung) and highest in those which are more isolated from medium to large cities. Although there are few exceptions, by and large, the areas surrounding big cities had the lowest proportion of employment in agriculture (Herslund, 2007). There may be a number of reasons. *First*, some cities had spilled over their boundaries, so that some of the population being recorded as rural was really sub-urban. *Second*, factories and service sector establishments built in rural areas were more likely to be located in areas close to the large cities than in remote areas. *Third*, rural dwellers in areas close to large cities could avail themselves of the opportunities to commute for urban jobs. Recent studies show that the tendency of concentration is even more pronounced in the surrounding areas of Jakarta, Bogor, Tangerang and Bekasi (JABOTABEK) as reported by Firman (1996 and 1997) and Rijanta (2006).

A somewhat different picture of rural diversification is given by the case of Kerala in India where a region-based type of rural diversification is proceeding. Rural diversification as reflected in the growth of non-farm employment was dispersed following the presence of

urban centres and their rural surroundings, thus minimizing the need for rural-urban migration. Intra-spatial linkages induce the process. A more progressive growth of non-farm employment has been continuously increasing in the more recently transformed rural centres (Eapen, 1999). He further asserts that among crucial factors affecting rural diversification in Kerala are the cultivated area per agricultural worker, percentage of irrigated land in agricultural lands and distance to urban centres.

Eapen (1999) concludes that the Kerala case supports the hypothesis of McGee (1991) that emerging urbanization in parts of Asia with higher population density is region-based rather than city-based. Besides drawing people from rural areas to the city, this process largely utilizes an in situ population in the rural area itself. This high population density is favourable to the growth of rural non-farm employment through the establishment of rural non-farm enterprises to cater to local demands for various goods and services (Palacios et al, 2013). The process was further fuelled by remittance from some Gulf countries where migrant labourers from Kerala make their living (*cf.* Slater, 1991). Peri-urbanization grows much more rapidly in developing countries. The planning of institutional arrangements tends to be old-fashioned, with a lack of capacity to comply with this relatively new form of urbanization phenomenon. In addition to the degradation of environmental quality, rapid and uncontrolled peri-urbanization in developing countries often results in a deeper social differentiation and acute poverty (Tacoli, 2003 and Demurger, 2010).

After this introductory section, the paper aims at discussing the development of the peri-urban regions of Yogyakarta, its relationship with rural diversification in the rural areas as well as in the peri-urban regions itself and the importance of creative economy for the future of peri-urban regions in the province.

The paper is based on various researches related to rural development and rural diversification (Rijanta, 2006 and 2009), cultural economy in the peri-urban region of Yogyakarta (Rijanta, 2012), the effects of the use of ICT on population mobility and the location of

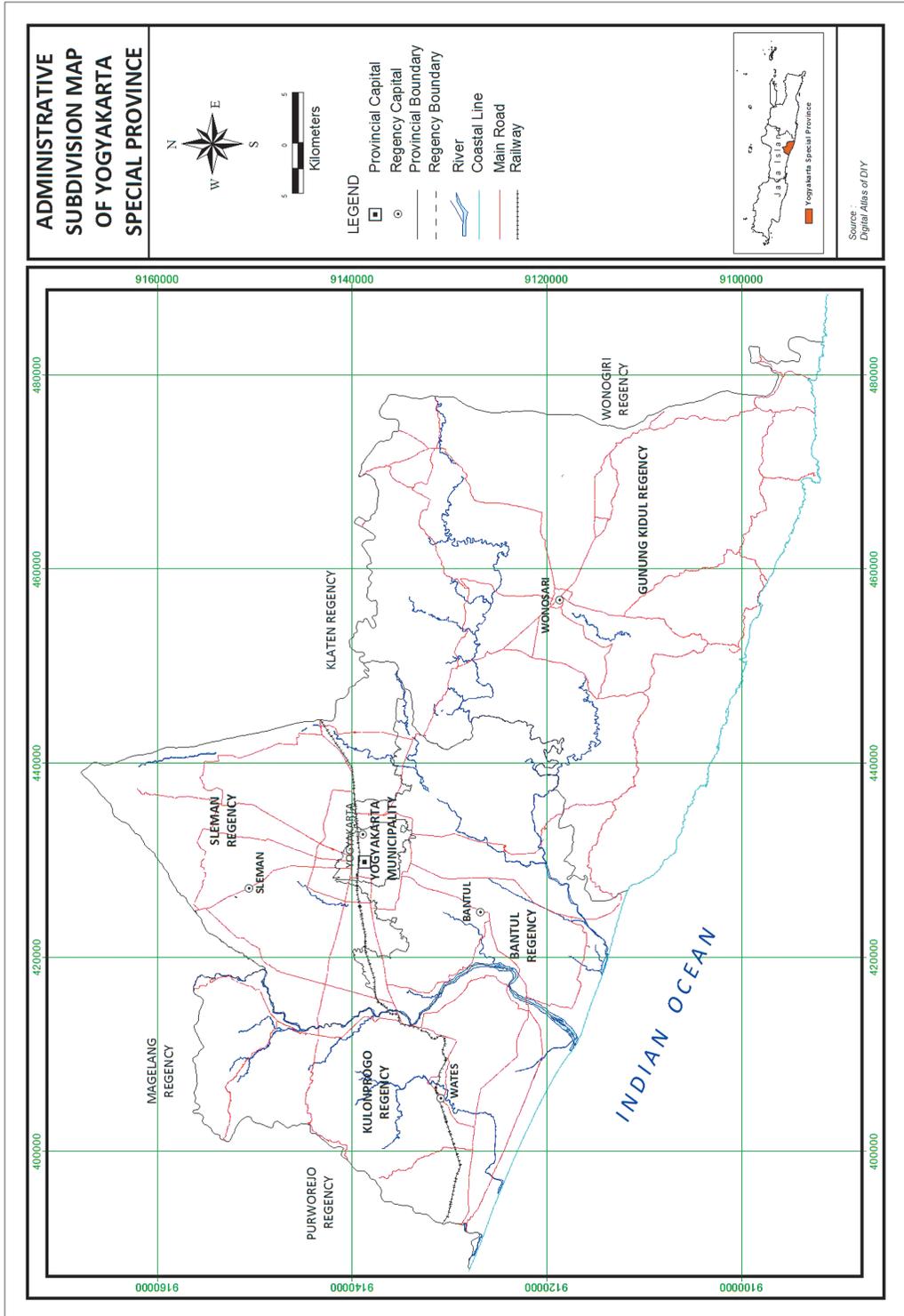


Fig. 1 Administrative Subdivision Map of Yogyakarta Special Province

economic services (Rachmawati and Rijanta, 2012), and the motivation of farm households in preserving agricultural land and activities in the peri-urban region of Yogyakarta (Rijanta, 2013).

II. Peri-Urban Regions of Yogyakarta

The peri-urban regions of Yogyakarta occupy the volcanic plain in the middle zone of the province. Yogyakarta Municipality is located at the centre of this zone. This zone has been the most favourable location of human activities for centuries, even since the Mataram Kingdom in the eighth century. The terrain in the middle zone is also conducive to facilitating the growth of larger settlements. It is not surprising to find that this part of the province has developed as the main settlement of Yogyakarta Municipality and its peri-urban regions. Endowed with the most fertile lands, the middle part of the province has been the main agricultural settlement for many decades. This is also the most probable reason for the strong concentration of infrastructure development and establishment of various plantations and their processing facilities by the colonial government. More recently, the area has been the main supplier of foodstuff to the whole province and elsewhere. But, the farm economy has declined in terms of regional revenue and the area is rapidly being converted to non-farm economic landscape.

Another notable change in the demographic variables of DIY (Daerah Istimewa Yogyakarta: Yogyakarta Special Region) can be observed from the inter-regional difference in population density. There has been a growing tendency of densification across the regencies in the province in the last 45 years. The most substantial increase in population density is encountered in the peri-urban regions of Yogyakarta covering Bantul and Sleman Regencies where the population density figure has doubled. This is consistent with the fact that these regencies are also strongly urbanized. The figure does not include Yogyakarta Municipality as the population density is extremely high in comparison to those in the partly-rural regencies. At present, population

density in Yogyakarta Municipality is not less than 12,000 inhabitants/km² or roughly 120 inhabitants/hectare. This is about 5 to 6 times more densely populated in comparison to the most densely populated peri-urban regions of Yogyakarta, as a part of Sleman and Bantul Regencies. From the point of view of environmental quality, high population density in Yogyakarta Municipality and its peri-urban region can be harmful to the city as it may cause over exploitation of groundwater, more intense traffic congestion and declining air quality due to the densification process.

Population growth in the DIY Province has been traditionally very low, resulting from very low natural growth accompanied by a strong out migration. Nevertheless, there is a notable variation among the regencies and municipality. The peri-urban regions of Yogyakarta such as parts of Sleman and Bantul Regencies have experienced the highest population growth as an outcome of in-migration gain. The peri-urban regions of Yogyakarta have been able to attract a substantial number of temporary migrants as university students from all parts in Indonesia attend the higher educational facilities located in the regencies. Such facilities further generate various economic activities at the local scale related to the provision of services and goods for these students from all over the country.

Yogyakarta Municipality as the provincial capital of DIY shows a rather exceptional pattern of population growth. The urban centre of DIY has a strong tendency to negative population growth. This means that the absolute number of population in the city declines over time. The declining population growth in an urban setting of developing countries is rather an extraordinary phenomenon, as in many cases high population growths are the rule. This occurs partly due to the deteriorating environmental quality, the application of high disincentives of living in the urban centre through property taxes and more expensive transportation cost. On the other hand, the peri-urban regions of Yogyakarta have experienced substantial population growth. In many cases, the urban population of Yogyakarta purchase their second or third houses beyond the city

boundary, more especially in the peri-urban regions for better environmental quality. This leads to the relatively rapid formation of the peri-urban regions of Yogyakarta.

The development of new settlements in the peri-urban regions of Yogyakarta has led to an unprecedented problem of traffic congestion on the main road to the city centre, especially during the peak hours in the morning and early evening. The effects of higher tax on land and house ownership in the city has stimulated the conversion of residential houses to business and commercial buildings in order to catch up with the higher taxes levied on the respective properties. Facing the higher taxes in the city, many land and house owners rented out their properties simply to pay the tax and maintenance cost of the houses. Some of them have been forced to sell their assets due to the high property tax on their buildings.

The unprecedented growth of the peri-urban region in the province has occurred only in the last two decades. An agglomeration economy, which has been developed on the basis of education, tourism and trade sectors, is bringing about an extensive backward linkage to the surrounding rural hinterlands mainly through demand for labour and consumption linkages. The growth of service sectors in the peri-urban region of Yogyakarta has provided employment opportunities to the population residing in the neighbouring villages, leading to the more diversified economic structure of the rural hinterlands. A consumption linkage between the peri-urban region of Yogyakarta and its hinterlands occurs in forms of a regular supply of foodstuff not only from the DIY Province. Other provinces in Java also supply some proportion of foodstuff to the urban regions of Yogyakarta, especially fish, milk, fruit and flowers.

III. Rural Diversification and the Peri-Urban Regions

The peri-urban region of Yogyakarta exhibits a central role in the development of the surrounding rural areas through the diversification of the rural economy and various mechanisms of linkage. *First*, many activities growing in

the peri-urban region of Yogyakarta are simple: spillover activities from the city centre that cannot be accommodated due to high land prices. This is especially relevant for services related to tourism and higher education facilities that demand larger size of lands for their buildings such as campuses or hotels. *Second*, the relatively large scale activities in the peri-urban region of Yogyakarta have generated the development of new settlements that lead to greater population in the agglomeration area of Yogyakarta. *Third*, greater agglomeration of population in Yogyakarta and its peri-urban regions has led to a higher demand for foodstuffs and handicrafts that are mostly produced in the rural areas of the province. Besides, there is a relatively strong spatial association between the agricultural and service sector in the province. *Fourth*, for many decades, the peri-urban region of Yogyakarta has been well endowed with infrastructure that facilitates the development of non-agricultural economy. *Fifth*, some parts of the peri-urban region of Yogyakarta have been well integrated with the global economy since the colonial era through the cultivation and export of commodities catering to international markets. Local economic talents have been developed since then, especially in the provision of various inputs to the production process in the colonial economy.

A substantial contribution to the existing patterns of rural diversification comes from the tourism sector. The construction of hotels and other tourism facilities in the last 10 years has been mostly located in the peri-urban region of Yogyakarta because of the increasing land price, traffic congestion, higher taxes on property and unfavourable environmental quality in the city centre. Moreover, the strong image of Yogyakarta as the safest province and the implementation of decentralization policies since 2000 have had a substantial effect on the level of investment in the province. This process gives ample opportunities to the nearby rural areas in forms of temporary employment in construction, and at the same time leads toward more diversified rural areas.

The tourism sector still offers substantial backward linkages to rural areas through the increasing demand for foodstuffs, handicrafts,

and employment. In sum, the process of interaction of the Yogyakarta peri-urban region and the rest of the world seems to be the decisive factor in guiding the existing patterns of rural diversification in both the spatial and structural senses. Thus, it is not surprising that a resource-poor province like DIY could maintain a relatively high living quality through its strong ties with the wider economic environment. The service economy of the province that strongly links it with the rest of the world seems to be an important contributor to the slow growing but relatively stable economic situation. Moreover, the service economy as developed in the province has a strong multiplier effect on the production and employment creation in agriculture, manufacturing and service sectors either within Yogyakarta peri-urban region and or its rural hinterlands.

Moreover, the peri-urban region of Yogyakarta is well connected with both the national and international economies through the provision of higher educational services. Campuses of some 95 percent of 104 of the state and private universities and academies are presently located in the peri-urban regions of Yogyakarta (BAPPEDA DIY and PADCO, 2003). This number of higher education facilities is far above the local need for such services. Higher education services as the main core of activities for the population of the growing peri-urban region of Yogyakarta has led to the growth of allied services, such as room rental, laundry, food processing, and photo copy services.

At present, DIY is host to more than 100 state and private universities as well as institutes with a student body of close to 300 thousand. The image of a safer city boasted by Yogyakarta, with its excellent state and private universities, gives comparative advantage to the province as a whole. Linkages emanating from the educational services offered by the existing universities have been able to generate a very typical economic landscape. This is demonstrated by an intensive process of economic diversification mostly in the peri-urban regions of Yogyakarta. Rural economic transformation in this urbanizing region has taken place from agricultural to service sectors rather

than to manufacturing industries.

But, at the same time the on-going development of urban settlement of Yogyakarta has led to worsening problems of traffic congestion, groundwater depletion and degradation of environmental quality. Dependency on urban employment of most people living in the urban region of Yogyakarta has made traffic jams more severe along the roads to and in various parts of the city. Water resource in the most diversified parts of the province has been in a great danger for over-exploitation due to its fast growing inhabitants with a much higher demand for water for a modern lifestyle. At the same time, a large-scale land use conversion toward more intensive use of lands at the upper parts of the Sleman Regency has worsened the ground water supply for the peri-urban regions of Yogyakarta where rural diversification process takes place. Thus, in general there is a growing threat to sustainability of the most diversified parts of the province where the heart of economic activities is prevailing.

The peri-urban regions of Yogyakarta have developed in six districts in the Bantul and Sleman Regencies, adjacent to Yogyakarta Municipality. These districts have become predominantly urban only since the 1990s. More than 50 percent of population of the Bantul and Sleman regencies have resided in the peri-urban regions of Yogyakarta, forming a significant agglomeration in the DIY Province. The continued urbanization process in Bantul and Sleman Regencies as a consequence of the spillover from Yogyakarta Municipality has strengthened the tendency of agglomeration in the middle zone of the province. This greater urban agglomeration, including the peri-urban regions, creates a substantial threshold for various urban services and to some extent also forms a sizeable market for various commodities from rural areas of the province as well as from the rest of Indonesia.

Under the existing degree of urban agglomeration, the greater Yogyakarta urban region hosts some 1.3 million of DIY or close to 60 percent of the population of the province (BAPPEDA DIY and PADCO, 2003 and Rijanta, 2003). This is a sizeable agglomeration that gives plenty of opportunity to its rural

counterparts to supply various basic necessities mainly derived from primary production. Thus, the peri-urban regions of Yogyakarta provide a large market for various services and goods that are locally produced through non-farm economy in situ or in the surrounding rural areas (Rijanta and Suhardjo, 2003).

According to the outcome of Population Census 2010, the population of DIY is about 3.3 million. Close to two thirds of them live in the peri-urban regions of Yogyakarta, taking advantage of the environmental services, easy access to the city, and highly accessible public services. The terrain in the middle zone of the province is also conducive to facilitating the growth of larger settlements. The most urbanized region of DIY is thus concentrated in Yogyakarta Municipality and its peri-urban regions.

The process of urbanization in the province has proceeded at a slower pace in comparison to the most rapidly urbanized province of West Java, but slightly faster than those in Java and Indonesia in general. Urban population of DIY has increased more than four fold from 406,337 in 1971 to 1,798,513 in 2000. Greater agglomeration of population in the peri-urban region of DIY gives an opportunity for economic diversification in nearby rural areas through various linkage mechanisms. Given the specific nature of the dominant economic base of the urban agglomeration area of DIY, the strong effects in its rural areas are very evident. The educational services, tourism, and trade in the urban region of DIY have strong ties with the agriculture and non-agriculture production in the rural hinterlands of DIY and elsewhere.

The peri-urban region of Yogyakarta coincides with the location of fast growing settlements in the province. The majority of the settlers have strong ties with service sector employment in Yogyakarta Municipality, as many of them also previously lived in the city centre. The service economy of DIY has been developed as a dual sector including higher educational services and tourism. Both sectors have strong linkages with the rural economy, especially through backward and consumption linkages. The non-agricultural economy

in rural areas of DIY is strongly linked with consumers in Yogyakarta Municipality and its peri-urban regions, including domestic and international tourists. This is very typical linkage developed between the rural small-scale industries producing various handicrafts and the tourism sector, for example the furniture industries and the education service sector in Yogyakarta. In addition, the consumption linkages are emanating from foodstuffs (meat, chicken, eggs, vegetables, cereals, milk and fruits) supplied by the rural agricultural sector to the urban market that partly comprises students and tourists. In the process of production in the urban service sector in the peri-urban regions, one can see that there is a great demand for various types of labour partly originating from the rural hinterlands. This is obvious from the daily mobility of people from the areas surrounding Yogyakarta urban region. All of the peri-urban regions of Yogyakarta are located within commuting distance of various parts of the rural areas of the province.

Many studies on rural development in developing countries confirmed the importance of infrastructure as an important determinant to rural diversification. During the last 25 years infrastructure development in the province has fuelled rural development through this diversification process. The asphalt road density of the province, for an example, has doubled in Kulon Progo Regency, and there has been a threefold increase in Yogyakarta Municipality and Bantul Regency, fourfold in Sleman Regency, and tenfold in Gunung Kidul Regency. The middle zone of the province, where the peri-urban region is located, is also well endowed with transportation networks. This is also the case for communication networks, well demonstrated by the fact that some 95 percent of telephone connections (BPS, 2003) in the province were located in the middle zone of DIY where the peri-urban regions developed.

The peri-urban regions of Yogyakarta coincide with six districts in Bantul and Sleman Regencies, surrounding Yogyakarta Municipality. There is no doubt that peri-urban regions of the province are among the most developed, owing to the past pattern of devel-

opment that has been initiated in the location by the colonial and post-independence authorities. Thus, it is undeniable that various modern economic activities tend to take place in the regions, taking advantage of the excellent infrastructure support. The same trend appears in the use of energy and clean water. The data on the use of electricity and clean water supply confirm that the middle zone of the province is the most developed in infrastructure availability, which further facilitates rural diversification.

Infrastructure, including irrigation networks in DIY, has been well developed since well before independence by the colonial government. This is also the case for various social and economic service facilities, which are spread over regions with the easiest terrain of the province especially in the heart of the province. The irrigated villages in Yogyakarta Province have been integrated to the international economy since the colonial era through sugar cane plantation. Local people used to work with external agents such as the lower management of the sugar plantation and factories. Continuous contacts such external agents have made the people in the lowlands surrounding the Yogyakarta peri-urban regions much more open to outsiders. In the context of present day Yogyakarta and its peri-urban regions, one can see that there is a strong spirit to accommodate outsiders with various socio-cultural backgrounds. This seems to be a part of the explanation for the existing process of rural diversification oriented toward the service sector.

Historically, manufacturing industries, especially batik and hand-woven cloth, have been the main core of economic diversification in Yogyakarta, prior to the great depression during the first half of the 1930s. In addition, the location of sugar factories in 1937 was more widely spread on the lowlands of the province (Segers, 1988), partly in the present day peri-urban region of Yogyakarta. The middle part of DIY province as the most fertile agricultural land area is the focus of the concentration of sugar processing plants. The spatial distribution of sugar processing plants is the main factor stimulating the present day rural diversification through various linkages. The

introduction of sugar processing plants in the rural areas has brought about a more diversified rural economic structure as shown by the employment and income composition.

Present patterns of rural diversification are consistent with those of 1996 in which Yogyakarta and its peri-urban regions play an important role as the economic crux of the province. Given the unavailability of employment data with the same details as those in 1996, no rigorous comparison can be made with the previous data. Nevertheless, there is a similar spatial distribution of non-farm households in 2000 and 2003 with the situation of 1996. Thus, there seems to be no significant shift in spatial patterns of rural diversification during the period of 1996–2003. Strongly diversified areas coincide with the peri-urban regions of Yogyakarta and some spots of more diversified areas can be observed in smaller centres, beyond the peri-urban regions.

Under the existing transportation networks from Yogyakarta and its peri-urban regions in Bantul and Sleman Regencies, the great majority of rural population can easily access economic opportunities in the regions which are within the commuting zone from their villages. Most people in these villages find non-farm employment either on a permanent or temporary basis in the adjacent Yogyakarta peri-urban regions. Thus, it can be observed that the main roads entering Yogyakarta are always filled with commuters on motorcycles during the peak hours in the morning and late afternoon. This is somewhat different from what was reported by Mantra (1978), that the great majority of commuters from Bantul and Sleman Regencies used bicycles as a means of transportation. A new economy of commuting has come of age in which the commuting range from the city centre has increased tremendously, leading to the greater dependency of the rural people on the urban economy.

IV. The Future of Peri-Urban Regions: the Creative Economy and ICT

As the existing development of settlements in the peri-urban regions tend to be uncontrollable, due to the weak or ineffective control of

the government of the respective regencies, a worrying situation is emerging. The organic development of this zone, as shown by the predominantly leap frog pattern of settlement growth, would lead to a problem of spatial inefficiency and the threat of environmental degradation. Once this problem occurs, it would be very difficult or time consuming to correct, as it would involve long term investments in the form of houses, public buildings and infrastructure.

As the most diversified villages also spatially coincide with the peri-urban regions of the province with easiest access to the urban region of Yogyakarta, land prices in the areas are also among the most expensive in the province. Many villages in the peri-urban regions depend on village land rents (*bondho desa*) for their main revenue. These more diversified villages have been able to attain greater incomes from this source. Moreover, villages with the best spatial coincidence or relative location to peri-urban regions of Yogyakarta may have greater opportunity to undertake business of their own. Villages within the urban region of Yogyakarta may enjoy a lot of revenue from a highly commercialised land rents. Moreover, some villages on the borders and within the urban region of Yogyakarta constructed many office buildings and kiosks for rent. These kinds of villages have been able to collect revenue from many kinds of business transaction, ranging from land purchase transaction, land certification, land rent transaction, shares from share cropped lands, location permits, to building permits and legalizations of various documents for business activities (Rijanta, 2009).

The higher village revenue of villages in the peri-urban regions of Yogyakarta seems to stimulate stronger capability of the village to finance their own development projects. The revenue obtained from investing village resources in business or collecting fees for various services is actively practiced by the village administration. Many peri-urban villages of Yogyakarta with strong association with service sector employment have been able to construct various kinds of infrastructure and other public buildings necessary for the village community. Under the current autonomy, there

is a greater awareness of the villagers of their capacity to directly control the management of village assets. Thus, there is optimism that in the future the capability of managing the high valued common resources in the vicinity of Yogyakarta urban region would be a crucial factor for the advancement of these rapidly urbanizing villages (*cf.* Lange, 2013).

Most recently the work of Gibson and Wisniewski (2004) reported the importance of the cultural economy in Yogyakarta Province. The cultural economies as denoted by these authors are partly linked with the growing creative economy in the province. Excepting Jakarta Capital, Yogyakarta is the only province in Indonesia with a highly significant presence of firms related to the production of cultural goods. The number of firms producing cultural goods in Yogyakarta Province is about 0.63 per 10,000 inhabitants, which is much less than the 5.67 per 10,000 inhabitants of Jakarta Province. But this figure is substantially higher than the 0.34 per 10,000 inhabitants at the national level (calculated from Table 2 of Gibson and Wisniewski, 2004). This indicates that the cultural related activities in Yogyakarta and its peri-urban regions are making an important contribution to the diversification of the provincial economy in general. The position of Yogyakarta Province as an art and tourism centre in Indonesia has significantly contributed to the diversification of the whole provincial economy, even in the rural hinterlands beyond the city. Small-scale industries have been increasingly more important sources of employment and incomes for the rural population in the province.

The recent report on urbanization in DIY by Rachmawati and Rijanta (2012) shows that there are some early signs for the new development of a new type of urbanization in the province as the use of ICT would lead to some shift in population mobility and the location of economic services. A case study conducted in Yogyakarta Municipality and its peri-urban regions shows that the use of ICT has reduced the travel distance, travel duration, travel costs and direction of movement. Moreover, the use of ICT has led to the decentralization of some economic services away from the city centre.

This development shows the increasing importance of the peri-urban regions of Yogyakarta as the new locations for urban settlements which is (partly) ICT based. The research further asserts that virtual space will become increasingly important in the future urbanization process, urban development and more decentralized urban spatial structure in the province.

As a consequence of the decentralization of economic activities toward the peri-urban regions of the province, farm land prices have been increasing tremendously. Nevertheless, few farmers have been maintaining their agricultural lands and activities in the peri-urban regions of DIY (Rijanta, 2013). The motivation for preserving agricultural lands can be grouped into economic motives (the fulfilment of subsistence, speculation for better land values, expectations for future investment), socio-cultural motives (land as a symbol of social status and family identity, land as inheritance), and ethical motives (land as a source of staple food for coming generation must be maintained, and the benefits of the land as agricultural land should be preserved forever). The strong perception of the land as an economic commodity in society in the region seems to have been propelling the process of land conversion. Communities are most likely to see land as an economic commodity while only a small fraction can see the ethical perspective. However, the concept of land as a legacy for future generations should not be changed. The conversion of agricultural land to different uses appears an inevitable part of this overall process of the creation of a viable future for rapidly growing and changing communities.

V. Conclusions

The peri-urban regions of Yogyakarta have developed in the most favourable parts of the province, *i.e.* the middle zone where the terrain is relatively flat and water resources are abundant. Historically, greater sized settlements have been established in the zone, owing to the generous infrastructure development since the colonial era. The peri-urban regions of Yogyakarta have been strongly diversified towards the importance of non-farm activities

associated with the service sectors. Moreover, there is also a strong (inter) dependency between the peri-urban regions and the rural hinterlands of the province and elsewhere. This is well reflected in the intense mobility of resources, materials and population from the rural hinterlands to Yogyakarta Municipality and especially to its peri-urban regions as new centres of urban settlements.

New types of economy, *i.e.* cultural economy and creative economy have developed mainly in the peri-urban regions of Yogyakarta. At the same time, there is a tendency to reduction of travel distance, cost and time for population mobility as a consequence of the use of ICT in accessing some economic services. There is also a new tendency for decentralization of the locations of economic services. All these trends would lead to new types of urbanization where decentralization (rather than centralization) of services toward the peri-urban regions is the rule. Consequently, the future spatial structure of the city would be partly dependent on the intensity and coverage of the use of ICT by the urban population and the dynamics of land price in the peri-urban regions.

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