

## RURAL DIVERSIFICATION AND AGRICULTURE IN YOGYAKARTA SPECIAL PROVINCE: A FRIEND OR FOE?

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### ABSTRACT

*The paper aims at examining the relationship between types and level of rural diversification and types agricultural regions in a small farming region of Yogyakarta Special Province (DIY). The research reveals a strong association between rural diversification associated with service sectors (RDS) and food crop production in the middle parts of DIY. Easy terrain in the zone is underlying the existing patterns of relation between the two variables. Rural diversification associated with small-scale industries (RDI) is negatively related to livestock production. In parts of DIY, they share the same location, but without systematic relation. Livestock products are exported to cater external market without processing at local level. Thus, rural diversification is not always linked with local agricultural development.*

**Key words:** rural diversification, agriculture development, rural Java

### INTRODUCTION

Yogyakarta special region (DIY) is among the most populous areas in rural Java with a very high population pressure on agricultural land. During the green revolution and the oil boom decade of the 1970<sup>s</sup>, agricultural development and remarkably generous investments in rural physical and social infrastructure have been the major starting points for the accelerated process of rural diversification in the province [Rijanta & Suhardjo, 2003]. The increasing availability of rural infrastructure throughout the province has enhanced social and spatial mobility to large sections of rural dwellers. At the same time, the increase of real incomes from agricultural production has provided a basis for the rise of rural-based non-farm activities [Manning, 1988; Jones, 1984; Rotge et al., 2000]. In the last thirty years, the process of rural diversification and agricultural development has been taking place simultaneously in this small farming region. Studies on the relationship between rural diversification in terms of rural non-farm activities and rural

development in Indonesia have gained its pace in the last two decades. growing literature on this subject is commonly dealing with micro level studies carried out at village and household levels. The existing studies also tend to have strong bias toward the relatively well-established non-farm undertakings as they purposively selected [Rijanta, 2006a]. Non-farm pursuits as managed by common rural households and its relationship with agricultural development to be neglected by the existing studies.

The great majority of non-farm activities and establishments in rural areas are parts of the households that are most of the time beyond the reach of existing studies. Moreover, none of the existing studies has been unravelling the role of macro level settings of the environment sufficiently, if not completely neglecting them. Such macro and level situations can be significant in determining the conditioning, or providing contextual niche for growth and development of non-farm activities and their relation with agricultural development at both regional and local levels. Thus, in the absence of such knowledge, interpretations of the positive contribution of rural non-farm activities in rural and agricultural development often misleading or contradictory.

This is not only the case of Indonesia, but also the present day state of affairs of the international literature on the subject [Davis and Bezemer, 2004; Davis, 2004; Start and Johnson, 2004; Kundu et al., 2003]. Thus, this study fills the gap of the lack of body of knowledge on the role of non-farm economic activities in rural and agricultural development in a predominantly small farming region. Taking into account the relationship between rural diversification and agricultural development. None of the existing studies pay attention to this theme and thus this study offers a new perspective on the dynamics and role of rural diversification in agricultural development of a small farming region. Nevertheless, no rigorous efforts are devoted to examine the nature of relationship between rural diversification and agricultural development as occur in the province.

From the perspective of regional development, a synergistic development between rural diversification patterns and agricultural development is a necessary precondition for the formulation of a more balanced rural development policy. A strong bias towards agricultural sector has been practiced in rural development policy in developing countries including Indonesia, more especially DIY [Maurer, 1994]. Rural development policy in a small farming region such as DIY should accommodate the importance of rural non-farm economy as an important ingredient of rural diversification in a small farming region. At the same time, the decreasing role of agriculture sector in income and employment provision [Huisman, 1994] should not underestimate its role in supplying staple food for ensuring food security for the whole community. Rural and regional development policy in a small farming region such as DIY should be able to arrive at a balanced combination between the farm and non-farm sides of the rural economy.

This research aims at assessing the relationship between rural diversification and agricultural types as developed in the rural regencies of DIY. The analysis would conclude the types of agricultural regions that lead to specific patterns of rural diversification in the province and to draw its consequences on rural development.

## THE METHODS

The research utilizes secondary data of village potential (*potensi desa*) collected in conjunction with the Economic Census 1996. The patterns of rural diversification are drawn by a set of selected variables from this economic census as follow: (1) percentage of households sending members to universities, (2) percentage of households depending on service sectors as main occupation, (3) percentage of households depending on handicraft and processing sectors as main occupation, (4) number of small-scale industry establishments per 100 households and (5) the number of motorized seats available per 100 population, a composite variable derived from weighted scoring to the number of motor cycles (score: 2) and the number of four wheel vehicles (score: 6). The types of agricultural regions in the province are identified through a factor analysis taking into account the presence of some 102 agricultural commodities as presence in the province, covering various crops and livestock.

The spatial patterns of rural diversification and types of agriculture are obtained through a factor analysis, taking into account a set of variables as mentioned above. The factor scores obtained from the analysis are mapped to identify the spatial patterns of rural diversification and types of agricultural regions. The relationship between rural diversification and agricultural types are explained through a correlation analysis in order to assess the strength, direction and significance of relationship. Spatial relation between rural diversification and types of agricultural region are explored through a map analysis. The spatial patterns of rural diversification and types of agricultural region in the province are compared to complement the statistical analysis. Interpretation of the output of statistical and spatial analyses is made on the basis of the theoretical frameworks that follow.

## THEORETICAL FRAMEWORKS

Rural diversification as represented by the growth and development of rural non-farm sector in the developing countries are often attributable to the development of agricultural sector [White, 1986; Basant, 1994]. Thus it is not surprising that rapid agricultural growth has been suggested as an alternative development strategy for less developed countries [Mellor, 1976; 1985]. Based largely on evidence from Asia, Kilby and Mellor argue that a development strategy focused on small farms will generate rapid, equitable and geographically dispersed

growth, because of labour intensive linkages with the rural non-farm economy [Haggblade *et al.*, 1989]. The strategy is deemed superior to either an import substitution strategies or to export-led growth strategies, especially in the context of an unfavourable environment for expanded global trade and finance.

Agricultural growth is considered to provide direct as well as indirect stimulus to the setting up of new activities through linkage effects, thereby facilitating industrialisation in addition to directly addressing the twin problems of poverty and unemployment in rural areas [Balisacan, 1993]. Mellor suggests to put agriculture in the centre stage and argued that rapid growth in agricultural production, through the linkage effects with non-agricultural production, can stimulate expansion of productive and employment intensive scale industrialization. The logic is that increased in food production, based on decreasing green revolution technology results in a large net national income. This income accrues to relatively large farmers, who do not spend the additional amount of food grains consumption or on capital or import in commodities, the demand for local non-agricultural goods and services is stimulated. Thus, the increasing demand for various goods and services in rural areas creates a favourable environment for the growth of rural non-farm activities.

Growth of such non-agricultural consumption expenditure is seen as the main driving force behind rural diversification, and thus rural development. However, he also envisaged the possibilities of productive reinvestment of agricultural surpluses by large commercial farmers to take advantage of the non-agricultural investment opportunities that were created by increased demand [Mellor, 1976]. Also in line with this view is White [1986] who asserts that agricultural income gained by medium and large farm households in rural areas will be followed by a higher expenditure on better quality food and non-food materials. These commodities are most likely produced in rural areas and leading to the growth of rural non-farm employment. Islam [1984] also suggests that an important precondition for a sustained growth of non-agricultural activities capable of generating attractive returns would be a dynamic and egalitarian agricultural sector. The linkage mechanism for mutually reinforcing growth in two sectors will not work fully unless agricultural growth is sufficiently egalitarian.

Empirical evidence from a comparison between Asia and Africa as presented in the work of Haggblade *et al.* [1989] reveals that agricultural growth linkages in Asia are by various measures greater than those in Africa. African rainfall patterns and the geology of its river basins preclude cost effective irrigation on a scale as large as in Asia. Hence, backward linkages into pump supply, canal construction and maintenance, all currently available in Asian countries, are simply unavailable in Africa. Furthermore, higher population density in Asia also supports a larger scale of business activities. In addition, African consumption patterns seem to be diversified into non-foods than in Asia.

In the Muda Region of Malaysia where a multi-million dollar irrigation scheme has been implemented and huge agricultural subsidies have been invested, agricultural growth was not followed by a sustained regional growth and diversification [Hart, 1989]. It is also noted that while there may have been a major expansion in off-farm (that is, agricultural) employment opportunities there is little evidence, from the sectors studied, to suggest that employment has materially increased in the region as a result of faster growth in other major components. Pointing to the huge and increasing capital outflows from the region, non-farm households are likely to continue to find greater scope for entrepreneurial investments elsewhere in Malaysia. The more lucrative local investments have already been made in providing extra goods and services demanded by farm households because of the project [Hart, 1989].

Comparing the situation in Taiwan and The Philippines, *Ranis* [1993] found that growth linkages from agricultural in the former are much larger than the later. In Taiwan, land and rural incomes are much more equally distributed. This is likely to lead to greater A to RNA linkages, since for any given income level, a more equal distribution tends to be associated with less expenditure on urban and imported consumer goods, while the agricultural technology used by small farms in a uni-modal land distribution is also likely to be produced locally. Household consumption patterns from their research further support this interpretation.

Similar conclusion to those of the Malaysian and Philippines case has been drawn in the study elsewhere by *Harriss* [1987]. She concludes that more than rice and more than agriculture leads non-farm economy in the agrarian regions studied. In particular, an examination of employment and incomes in mercantile, industrial and government activity reveals not only a massive concentration but also the existence of sizeable economic sector where income and demand for income elastic goods are relatively high. The process identified as crucial factors to explain the existing patterns of non-farm economy are as follows.

1. The inevitable growth of the non-local home and national market.
2. Growing regional integration in terms of commodity flows.
3. Increasing velocity of interaction especially amongst large firms, banks and financiers.
4. Imbalances in financial flows suggestive of a flow of agricultural surpluses to the urban/commercial/industrial economy.
5. The search by industrial capital for low costs of production [trading off the costs (on transport, transactions and information) of a non-metropolitan location against the cheapness of rural labour].
6. State support to this pattern of development mainly by taxing commerce to pay for support services such as infrastructure, electricity, utilities and subsidies on loans.

Land resource use in various types of land utilization types may serve as an example of this case. *Braay* [1994] asserts that in Japan, China and Taiwan patterns of land use in forms of rice cultivation and economic diversification brought about a modernization characterized by an unusual degree of balance between the rural and urban development. Land resource endowment determines the possibilities and prospects of agriculture sector development and determines the non-farm activities [Gordon, 1999]. The role of local land resource endowment to promote in situ rural diversification is not mentioned in the existing literatures. Most of the literature related to this is highlighting the role of agricultural basis in promoting rural diversification through various types of linkages.

Complementing to the above works, *Davis* [2004] asserts that determinants to rural diversification are the types of agricultural development in the widest sense. Agricultural development determines the growth and development of rural non-farm economy through various mechanisms. According to *Ho* [1987] the relationship between agriculture and rural non-agriculture activities is an interdependent one. Agriculture is related to rural non-agricultural activities directly through forward and backward production linkages, and indirectly through the consumption demands of farm households. He further asserts that in the case of rural development in developing countries consumption linkages are among important mechanisms to stimulate the growth of non-farm sectors. Thus, agricultural growth and rising farm household incomes are likely to generate considerable demand for non-agricultural goods and services in rural areas.

*Evans* [1992] has constructed a model of rural-urban development based on a mutually reinforcing pattern of linkages between a town and its hinterland. This spurs the growth of both agriculture and non-agricultural activities. The growth of agricultural incomes spur the demands for food and other consumer goods, which leads to the creation of non-farm jobs and the diversification of urban activities, especially in small towns close to the areas of agricultural production. This in turn absorbs rural labour surplus and raises demands for rural agricultural commodities, and once again boosts agricultural productivity and incomes. This is what so called a virtuous circle of model of rural development. An empirical study using the model in a resource frontier region of Sarawak Regency, West Papua Province did not lead to a conclusive outcome. The rural-urban linkages are emanating from the poor infrastructure and stagnating independent village economy across the regency. This has led to a weak rural non-farm linkages and rural-urban interaction in this resource frontier region [Rijanta, 2006b].

Similar model is constructed by *Douglass* [1998] for the case of Java in the context of a reciprocal rural-urban interaction in order to overcome the rural-urban divide in development and planning. Recent research shows that agricultural development normally generates a virtuous cycle, in which expansion of agriculture fuels non-farm sector growth, and vice versa.

[Wandschneider, 2003]. The relative importance of rural non-farm employment may either increase or decrease during the initial stages of agricultural development, depending on changes in the intensity of labour use in agriculture as it modernizes. The impact of agricultural growth on the local non-farm sectors also depends on the strength of supply and demand linkages within a particular region. These linkages are critically determined by land distribution patterns; the share of local agricultural produce processed within production areas; the intensity of input use in agriculture; the proportion of local savings that are channelled to investment within the region; and the local component of consumer demand.

**RESULTS AND DISCUSSION**

The process of rural diversification in the context of DIY is mainly induced by aspirations for better living conditions emanating from higher educational attainment of the population and generous investment on rural infrastructure in the past [Rotge *et al.*, 1995; 2000]. Thus, improvements in the educational attainment on one hand and improvement in the rural infrastructure on the others have stimulated the process of rural diversification. This is the case of DIY where educational attainment of the population is among the highest in the country and at the same time the road density is also far above the national average figure. The condition is partly obtained through the windfall gain from oil boom revenues in the 1970s from which the most basic physical (roads, bridges) and social infrastructures (schools, health service centres) have been constructed. As an outcome of the process, the production structure of the rural areas has been transformed towards the higher importance of non-agricultural pursuits, which may be located either within or out side the province.

Based on a factor analysis of the five variables just mentioned in the research method, it can be shown that this group of variables is clustering into two different factors. The two factors explain some 70 percent of the variance. The rest are explained by variables that are not included in the analysis. The first factor consists of three variables mainly associated with rural diversification oriented toward service sectors and the second factor comprises two variables related to handicraft processing and small-scale industries. The first factor is named rural diversification associated with service sector development (RDS) that explains about 40 percent of the variance, whereas the second is called rural diversification associated with rural industries (RDI), which explains some 30 percent of the variance. The middle parts of the province are among the most diversified parts, either for the RDS (Fig. 1) or the RDI types of rural diversification (Fig. 2). The most diversified area is stretching along the main corridors connecting Yogyakarta Town to the neighbouring regional centres such as Wates, Bantul, Sleman, Magelang and Klaten. Yogyakarta Municipality and its surrounding rural sub-regencies compose the core of this economic heart.

In order to understand various variables determining the RDS and R correlation analysis has been made. From the outcome of the correlation ana one can see that the RDS is much more satisfactorily explained by the variabl mentioned in the theoretical frameworks. But, the RDI is not much related to variables as it is shown by a weak and insignificant correlation. The correl between various independent variables and rural diversification (RDS and RI summarised in Table 1.

Table 1. Summary of Correlation Between Various Types of Rural Diversificati and Selected Agricultural Related Variables, 1996

Variables Related to Agriculture Conditions	Rural Diversificati	
	RDS	RI
Agricultural lands per 1000 inhabitants	0.618 **	-0.26
Percentage of households depending on agricultural occupation	-0.815 **	-0.36
Factor scores for food crop region	0.455 **	
Factor score for livestock region	-0.328 **	
Percentage of irrigated lands to total village areas	0.501 **	-0.10

- means very weak and insignificant correlation indices that have been omitted  
 means significant at 99.9 percent or  $\partial = 0.01$  and \* means significant at 99.9 percent or  $\partial = 0.1$

RDS = Rural diversification associated with service sectors

RDI = Rural diversification associated with small-scale industries

Source: Podes Data, 1996

From the table it is obvious that the availability of agricultural land village level is among the important factor pushing the rural people to participa non-farm activities related to the service rather than to small-scale industries. means that rural diversification in the province is a response to the inability agricultural sector to absorb productively the existing labour force in rural a But, at the same time there is an opportunity for complementary non- employment in the urban region of Yogyakarta. Higher educational level of rural population in the province has led to higher aspiration to better li conditions that cannot be fulfilled by income generated from employmen agricultural sector as such. Thus, in the context of a predominantly small farm area like DIY, rural diversification is an intelligent escape from the other deteriorating economic situation.

The presence of rural small-scale industries in the province is not rel systematically and significantly to agricultural sector. The lack of relation between the agricultural sector and RDI is a reflection of the fact that rural so

scale industries as present in the province is mostly associated with natural resources other than agricultural lands, rather than with abundant rural labour force. The presence of natural resources for rural small-scale industries tends to be exclusively separated from natural resources for agricultural activities. Thus, there is a distinct pattern of distribution between the agricultural and small-scale industries. Rural small-scale industries tend to be more widely distributed over the region of DIY, utilizing available natural resources as present locally. The agglomeration of small-scale food processing industries in the core region of DIY has not been able to counter balance the spread of other industries in the rest of the province.

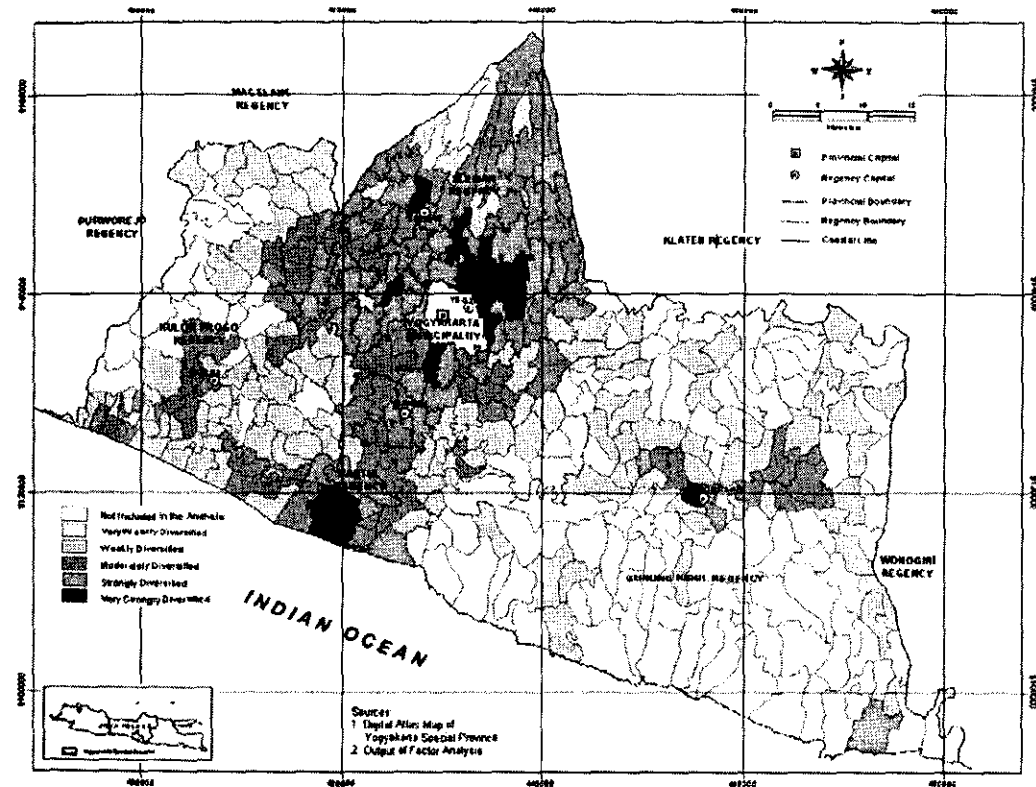


Figure 1. Spatial Pattern of Rural Diversification Associated with Service Sectors, Yogyakarta Special Province, 1996

Differences in the topography, soil fertility and rainfall patterns across the regions influence the relative cost of agricultural production. This would give rise over time to some regions having a comparative advantage in the production of food crops, and other regions having a relative advantage in rural-based non-agricultural activities. These mutual and reciprocal markets for manufactured goods

among the cash crop producing farm population and for agricultural pro among rural non-agricultural workers represent the commercialisation of agricultural sector [Graabowsky, 1995]. Thus the development of agricul sector leads to the growth of various services related to the provision of agricul inputs and marketing of agricultural commodities.

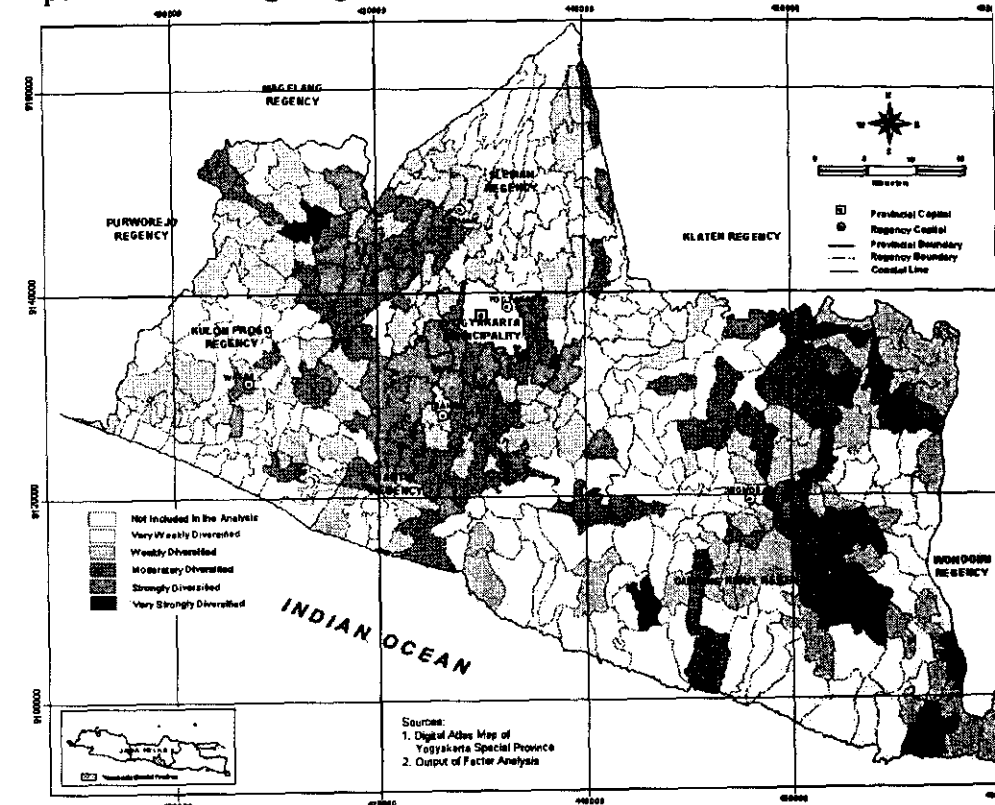


Figure 2. Spatial Pattern of Rural Diversification Associated with Small-scale Industries, Yogyakarta Special Province, 1996

From a comparison between the RDS map and the map of typology agricultural regions in the research area, RDS is related to the presence of inten lowland agriculture producing cash crops to cater local and regional ma demand (Fig. 3). To some extent, these areas represent among the most devel farming systems in which combination of agricultural and non-agricult activities are the rule rather than an exception. Moreover, the importance of non-farm side of the agricultural economy is gaining its pace, putting agricultural sector as secondary activities in terms of incomes and employm But, this is not the case of RDI in which systematic relationship with the fa scores of various types of agriculture in the province cannot be observed. reflects an absence of systemic linkages between the rural small scale indust and the type of agricultural regions.

Rural diversification associated with service sector development (RDS) is positively correlated with food crops production and negatively correlated with livestock production (Fig. 4). The RDS and food crops production areas correlate at 0.509 and significant at 0.01. This means that there is a fairly strong, positive and very significant correlation between the two variables. The association between food crop production and RDS is explained through two possibilities as follows. First, food crop production in the heart of Yogyakarta has been combined mutually with non-farm activities related to service sectors either *in situ* or in the urban region of Yogyakarta. This has been possible as food crop production in this region is carried out with an advanced irrigation network, inherited from the colonial government. Naturally, time allocation in farming activities on an irrigated field is very regular and predictable that allowing for a productive combination with non-farm activities [Braay, 1994]. In this regards, the relatively strong relationship between RDS and the score for food crops production region is reflecting mutual relationship between the farm and non-farm pursuits at household level.

Second possible explanation is that no such combination occurs. But, there is a growing number of landless households in the region the growth of diversification oriented with service sector is more a kind of response to growing market for the services and goods in the Yogyakarta urban region. The unprecedented growth of the 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 labour and consumption linkages. The growth of service sectors in the 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 areas. A consumption linkage between the urban region of Yogyakarta and the hinterlands occurs in forms of a regular supply of foodstuff not only from the surrounding region of the Province. Other provinces in Java also supply parts of the foodstuff to DIY. This is especially important for agricultural commodities such as fish, milk, eggs, vegetables and flowers.

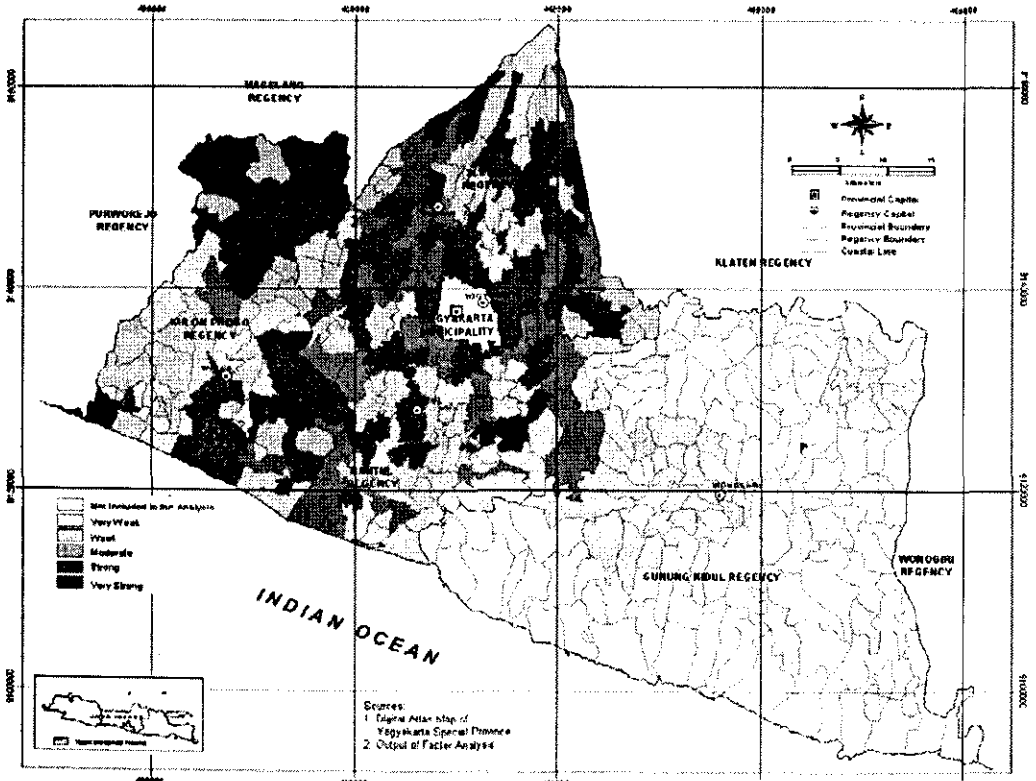


Figure 3. Spatial Pattern of Agricultural Regions Associated with Cash Crop Production, Yogyakarta Special Province, 1996

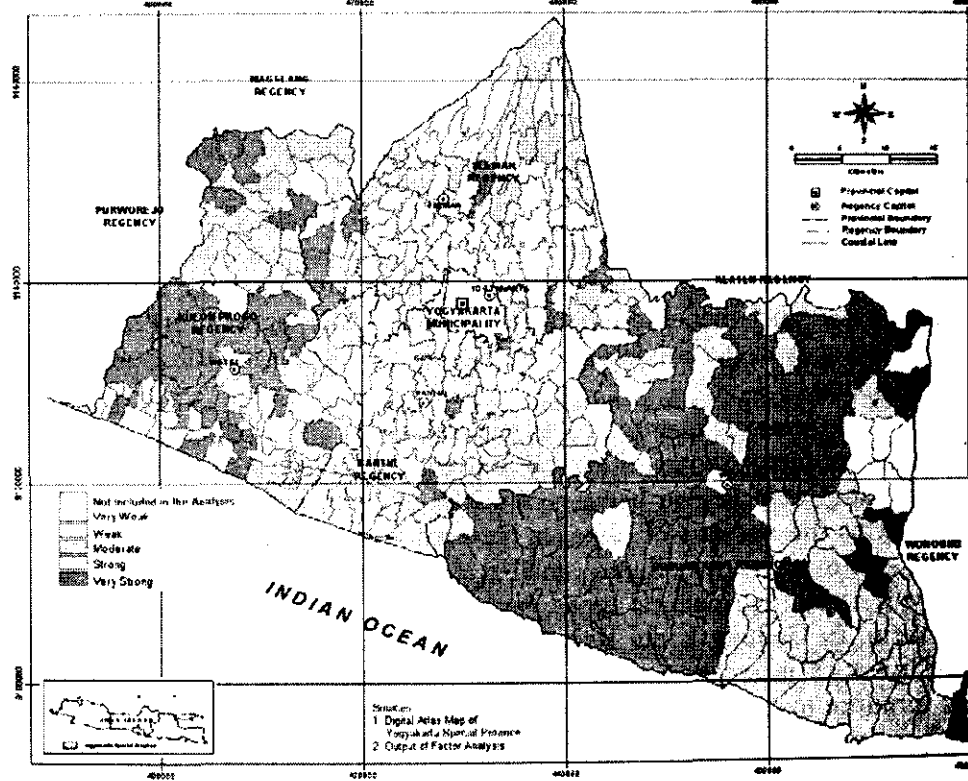


Figure 4. Spatial Pattern of Agricultural Regions Associated with Livestock Production, Yogyakarta Special Province, 1996

## CONCLUSION

Third, the growth of RDS in the heart of DIY Province is partly a process of an *in situ* rural diversification as a part of a *desakotasi* process [McGee, 1987; Ginsburg *et al.*, 1991]. The growing population density in the surrounding areas of the provincial capital has allowed for the growth of non-farm activities to cater locally growing market. Higher population agglomeration in the region provides a sufficient threshold for various goods and services that previously only available in the city. Or, this can be a productive response to locally growing opportunities, as the *desakota* region is also the area of a mixture of various economic establishments partly relocated from the urban centre. It is believed that these three possible explanations occur in one or another part of the regions.

Meanwhile, RDI is not related to any types of agriculture. This is rather surprising as indeed small-scale industries are parts of the main ingredient of the economic structure of DIY. The lack of systematic relationship between RDI and any of the factors scores for agricultural types indicate that the great majority of the rural-small scale industries are now undertaken as main occupation which are established exclusively from agriculture both structurally and spatially. In structural terms, rural small-scale industries in the clusters are commonly taken as primary occupation. Some of them have been inherited from previous generations. Thus, some of them are presently skilled or manpower based rather than natural resource based industries. The past dependency on local natural resources has been terminated due to natural resource depletion at each locality. In the context of DIY, this is very relevant for the case of bamboo in the Minggir Cluster of Sleman Regency or Dlingo Cluster of Bantul Regency and clay in the case of Kasongan Cluster of Bantul Regency and wood in the case of Bobung Cluster in Gunung Kidul Regency. The raw material inputs in these rural industry clusters are now imported from other regions. Nevertheless, the clusters are sustaining the available skills, manpower and marketing networks. Thus, local agricultural and non-agricultural linkages in the production process of small-scale industries in DIY is commonly lacking.

In spatial terms the distribution of RDI regions is also exclusively unrelated to any one of the factor scores of agricultural types. This means that there are no significant spatial coincidence between the RDI and the agricultural types. This further confirms the absence of linkages between agricultural production and the local small-scale industries. Some small-scale industries may share the same location with certain agricultural types, but there is no functional linkages found between them. In Gunung Kidul Regency for example, villages with high factor scores of livestock production may host small-scale industries dealing with stone carving, furniture making or cassava processing. There is no or limited functional relationship between the livestock production and small-scale industries, but they are simply sharing the same space for production.

A mixed relationship between agricultural types and rural diversification occurs in the research area. RDS tends to be concentrated in the middle parts of the province, sharing the same spatial patterns with agricultural regions associated with the presence of food crops. The physical conditions in the middle zone seem responsible to explain the relationship between the two. Easy terrain, fertile soil and abundant ground water in the zone has allowed for the growth of agricultural and urbanized settlement. This gives sufficient thresholds for various types of agricultural activities that are mostly accommodating rural dwellers of the surrounding area of the region. The relationship between RDS and agricultural regions associated with livestock production tend to be negative. The strong RDS regions are associated with lower scores of regions associated with livestock production. This means that there is no spatial association between the two variables. Livestock production needs an extensive space for production, whereas the RDS requires intensive occupation of lands for an agglomeration economy.

Rural diversification associated with rural industries (RDI) in DIY do not show any clear relationship with either agricultural region associated with food crops production or agricultural region associated with livestock production. The RDI regions are overlapping with the high scores of agricultural regions associated with livestock production. But, this does not mean that there is no systemic linkage between them. The livestock products from the respective agricultural regions are commonly marketed to cater regional and national markets rather than processed in local manufacturing plants. The existing rural small-scale industries are not productively linked with the existing agricultural commodities. Rather, there is a strong association between RDI and the presence of natural resources (such as clay, stone and sands) allied with certain types of agricultural features. Therefore, RDS is positively determined by the presence of agricultural regions associated with food crop production and negatively related with agricultural regions associated with livestock production. Indirect relationships between RDS and agricultural regions associated with food crops production materialize only when there is a sufficient agglomeration on an easy terrain in the case of middle zone of DIY.

This implies that rural development in the middle zone of the province should be directed toward an optimum utilization of the growing agglomeration economy through potential linkages emanating from the urban economy. In the middle of the province, an agricultural diversification toward tree crops may be beneficial to the development of rural small-scale industries through the provision of raw material inputs, which are increasingly lacking. This coincides with the depopulation process and declining population pressure on lands that would be suitable for a land conversion towards tree crops in the environmentally sensitive areas which are partly in a closer proximity to the rural small-scale industrial clusters.

The declining population pressure on agricultural lands in the province may be permitting farm and non-farm linkages in a more productive and sustainable manner.

## REFERENCES

Balisacan, A.M. (1993), Agricultural Growth, Landlessness, Off-Farm Employment and Rural Poverty in the Philippines, *Economic Development and Cultural Changes*, 41(3), 553-562.

Basant, R. (1994), Economic Diversification In Rural-Areas - Review Of Processes With Special Reference To Gujarat, *Economic and Political Weekly*, 29(39), 107-116.

Braay, F. (1994), The Rice Economies: Technology and Development in Asian Societies, Blackwell, Oxford.

Davis, J.R. and D.J. Bezemer (2004), *The Development of the Non-farm Economy in Developing Countries and Transition Economy: Key Emerging and Conceptual Issues*, DFID and Natural Resource Institute, University of Greenwich, Greenwich.

Davis, J.R. (2004), The Rural Non-farm Economy, *Livelihoods and their Diversification: Issues and Options*, DFID and Natural Resource Institute, University of Greenwich, Greenwich.

Douglass, M. (1998), A Regional Network Strategy for Reciprocal Rural-urban Linkages: An Agenda for Policy Research with Reference to Indonesia. *Third World Planning Review*, 20(1), 1-33.

Evans, H.E. (1992), A Virtuous Circle Model of Rural-Urban Development: Evidence from a Small Kenyan Town and its Hinterland, *Journal of Development Studies*, 28(4), 640-667.

Ginsburg, N., B. Koppel and T.G. McGee (1991), The Extended Metropolis: Settlement Transition in Asia, University of Hawaii Press, Honolulu.

Gordon, Ann (1999), *Non-farm Rural Livelihoods*, Natural Resource Institute, University of Greenwich, Policy Series 4, Greenwich.

Graabowski, R. (1995), Commercialization, Non-agricultural Production, Agricultural Innovation and Economic Development, *Journal of Developing Areas*, 30, 41-62.

Haggblade, S., P. Hazell and J. Brown (1989), Farm-non-farm Linkages in Saharan Africa, *World Development*, 17(8), 1173-1201.

Harriss, B. (1987), Regional Growth Linkages from Agriculture, *Journal of Development Studies*, 23(2), 274-289.

Hart (1989), The Growth Linkage Controversy: Some Lessons from the Case, *Journal of Development Studies*, 25(4), 571-575.

Ho, S.P. (1982), Economic Development and Rural Industry in South Korea and Taiwan, *World Development*, 10(11), 973-990.

Huisman, H. (1994), *Planning for Rural Development: Experience, Alternatives, Cases from Indonesia and Lesotho*, Netherlands Geographical Studies, Utrecht.

Islam, R. (1984), Non-farm Employment in Rural Asia: Dynamic Growth or Proletarianization?, *Journal of Contemporary Asia*, 14(3), 1634-1662.

Jones, G.W. (1984), Links Between Urbanization and Sectoral Shifts: Employment in Java, *Bulletin of the Indonesian Economic Studies*, 120-157.

Kundu, A., N. Sarangi and B.P. Dash (2003), *Rural Non-farm Employment and Rural-urban Interdependencies*, Overseas Development Institute, Working Paper 196, London.

Manning, C. (1988), Rural Employment Creation in Java: Lessons from the Revolution and Oil Boom, *Population and Development Review*, 14(1), 80.

Maurer, J. (1991), Beyond the Sawah: Economic Diversification in Four Villages, 1972-1987, pp 92-112, in Alexander, Paul, P. Boomgard and B. White (Editors), 1991, *In the Shadow of Agriculture: Non-farm Activities in the Javanese Economy, Past and Present*, Royal Tropical Institute, Amsterdam.



McGee, T.G. (1987), *Urbanization or Kotadesasi - The Emergence of New Regions of Economic Interaction in Asia*, Working Paper, Environment and Policy Institute, East West Center, Honolulu.

Mellor, J. (1976), *The New Economics of Growth: A Strategy for India and Developing World*, Cornell University Press, Itacha.

Mellor, J. (1985), Determinants of Rural Poverty: The Dynamics of Production, Technology, and Price, in John Mellor and Gunvant M. Desai, (Editors) *Agricultural Change and Rural Poverty*, The John Hopkins, London.

Ranis, G. (1993), Rural Non-farm Activities in Development, *Journal of Development Economics*, 40, 75-101.

Rijanta, R. (2006a), Some Spatial Dimensions of Rural Diversification in Yogyakarta Special Province (DIY), Indonesia: Does History Matter? *Regional Views*, 19, 17-29.

Rijanta, R. (2006b), Rural Diversification in Yogyakarta Special Province, *Unpublished PhD Dissertation*, School of Graduate Studies, Gadjah Mada University, Yogyakarta.

Rijanta, R. and A.J. Suhardjo (2003), Defining Rural Diversification in A Small-Farming Region: The Case of Yogyakarta Special Region, *The Indonesian Journal of Geography*, 35(2), 107-124.

Rotge, V.L., I.B. Mantra and R. Rijanta (1995), *Rural-urban Integration in Java: Consequences for Regional Development and Employment*, United Nations Centre for Regional Development, Report Series No. 6, Nagoya.

Rotge, V.L., I.B. Mantra and R. Rijanta (2000), *Rural-urban Integration in Java: Consequences for Regional Development and Employment*, Ashgate Publisher, London.

Start, D. and C. Johnson (2004), *Livelihood Options? The Political Economy of Access, Opportunity and Diversification*, Overseas Development Institute, Working Paper No. 233, London.

Wandschneider, T. (2003), *Determinants of Access to Rural Non-Employment: Evidence from Africa, South Asia and Transition Econ*. World Bank, DFID and Natural Resource Institute, University of Greenwich. NRI Report No: 2758, Greenwich.

White, B. (1976), Population, Involution and Employment, *Development Change*, No. 7, Sage, London.

White, B. (1986), *Rural Non-Farm Employment in Java: Recent Developments, Issues and Research Needs*, ISS Advisory Service, The Hague.