RURAL-URBAN LINKAGES, NON-FARM SECTORS AND FARMING PRACTICES IN YOGYAKARTA SPECIAL REGION (DIY)

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Intisari

Tulisan ini bertujuan menilai hubungan pertanian dan nonpertanian di tingkat rumah tangga di DIY, mengingat petani dengan lahan kecil mendominasi penguasaan lahan di perdesaan. Sampel rumah tangga dipilih secara random untuk mewakili empat tipe zona agro ekologikal di DIY dan mewakili perdesaan urban. Analisisnya menggunakan pengukuran statistik deskriptif. Hasil penelitian menunjukkan rumah tangga perdesaan yang mempunyai aktivitas terkait dengan nonpertanian cenderung memakai alat pertanian modern dan membayar buruh. Akan tetapi, beberapa petani pemilik lahan kecil di daerah perdesaan DIY yang tersisa terpaksa menggunakan pendapatan dari nonpertanian yang didapatnya dari daerah urban untuk meningkatkan hasil pertaniannya.

Kata kunci: hubungan desa kota, faktor pertanian, praktik pertanian, perdesaan DIY

Introduction

The issues of rural diversification through the development of non-farm sectors as a critical component in rural development in developing countries have attracted a considerable attention of scholars and development advisors since the seventies. A large number of studies have investigated the role of non-farm economic activities for rural development. 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). Given the failures of the industrialization strategy to trickle down wealth to the rural poor there is a felt need to restructure the development strategy of the past. The rural agricultural sector was to be regarded as having greater flexibility in labour absorption rather than a sector passively supplying labour to the industrializing urban sector. While the labour absorption of the agricultural sector in the aggregate appeared to be limited, it was the creation of rural non-farm employment through rural small-scale industries, trade and services that was more crucial in the restructured strategy (Eapen, 1999).

DIY is well known as a part of Indonesia where economic transformation has jumped from agriculture to service sectors rather than to manufacturing sectors. The province has been integrated into the capitalist economy since the colonial period through the establishment of sugar cane plantations and its processing industries, and now is among the most populous areas in rural Java with a very high pressure on agricultural land. During the era of green revolution and the oil boom

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decades of the 1970s and 1980s, agricultural commercialization and remarkably generous government investments in rural physical and social infrastructure have been the major starting points for the accelerated process of rural diversification (Rijanta and Suhardjo, 2003). The increasing availability of rural infrastructure throughout the province has increased the opportunities for 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; Maurer, 1991).

The most evident changes since the 1980s have been the improvement of rural-urban connections leading to the diversification of employment and income opportunities in the rural areas of the province (Rotge, 1992; 1993; Rotge *et al.,* 2000; Titus *et al.,* 1994; Huisman and Kragten, 1994). The excessive growth of public and private transportation means has also enabled rural labour to get involved in urban jobs with higher real incomes. The improved rural-urban connections have led to more productive utilisation of land and human resources in rural areas. At the same time, higher incomes gained from urban jobs have considerably strengthened the purchasing power of the rural dwellers and consequently lowered the threshold for various goods and services. This may have allowed the growth of more rural and regional based rather than city based non-farm activities. The province shows a considerable diversification in agro-ecological conditions and accessibility (Titus *et al.,* 1994; Huisman, 1994), and thus offers interesting opportunities for studying differential responses to rural diversification in the various types of areas.

The growth and development of rural non-farm sectors in small holding farming region are often attributable to the development of agricultural sector (White, 1986 and 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). Moreover, in the context of rural Asia, 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 industry-led import substitution strategies or to export-led growth strategies, especially in the context of an unfavourable environment for expanded global trade and finance.

The Objectives

The paper examines an intricate relationship between the developments of non-farm sector under various levels of rural-urban linkages in the development of the farm side of a rural household economy in various agro-ecological conditions of DIY. The relationship between non-farm and farm sides of household economy is important to understand, as this would give a better insight to the possible contribution of the non-farm economy to agricultural development in a predominantly small farming economy.

The Research Methods

Considering the great variations of the agro-ecological conditions in the province a set of villages has been selected for a detailed household survey. Variation in agro-ecological conditions in the province is simplified into four categories namely (1) dry upland subsistent agriculture, (2) wet upland commercialized agriculture, (3) wet lowland intensive agriculture with *sawah* as a predominant land use and rice as an important crop, and (4) wet lowland

agriculture where *sawah* is less dominant land use. These categories of agro-ecological conditions are derived from systematic classification using two variables representing agricultural conditions and village elevations. The topographic map of the province has been be referred to determine upland and lowland areas and the most dominant types of land use as a representation of the agricultural systems in the province. Given the limited number of villages covered by the URGE[1] database as the main data source for this research, it is possible to select four villages representing the above mentioned criteria (Table 1).

Table 1
Schematic Presentation of The Types of Research Villages by Agro-Ecological Conditions as Represented by Elevation and Types of Farming Systems

		Elevation	
		Lowland	Upland
Types of Farming Systems	Wetland	Srimulyo (Piyungan, Bantul)	Wonokerto (Turi, Sleman)
	Dryland	Brosot (Galur, Kulon Progo)	Tepus (Tepus, Gunung Kidul)

Apart from these four rural villages representing varied agro ecological conditions in the province, Maguwoharjo, another village in the urban sprawl of Yogyakarta is selected to serve as a control village. The village is experiencing a rapid economic and spatial transformation, as it is shown by the growth of urban-related land use and economic activities in large scales. The village is a host of some private universities, an airport, some factories, four-star hotels and many other high-order service centres. It is also important to note that the economy of the villagers has been transformed toward the importance of non-farm activities.

In order to arrive at the household samples, a hamlet (*dusun*) had been purposively selected to best represent the characteristics of a selected village. The *dusun* is selected purposively to be as close as possible to the conditions of the sample villages as just described. Thus, five *dusun*s are selected to represent five villages under study. Household samples are drawn from the most recent list of household heads as available in the records of *kepala dusun*'s office. The household sample is randomly taken from the list of *kepala dusuns*. Some 50 samples are taken from each *dusun*, thus in total some 250 households are available. As the sample of households in each *dusun* is derived from different total numbers, they are not proportional in nature. Thus, the sample set allows for an interregional comparison but does not statistically represent the general picture of the province as they are taken from different size of population. Data processing was done through simple statistical process using SPSS Win Version 11.0 that allows for various data manipulation necessary to achieve the research objectives. Some techniques ranging from simple tabulation and cross tabulation were employed to identify interregional patterns of distribution of various variables related to rural diversification.

Theoretical Perspectives

Diversification of the rural economy in areas with an inadequate supply of land and an

[1] University Research for Graduate Education Program of the Ministry of Education and Culture provided financial supports for a survey research covering 12 villages in DIY to facilitate graduate studies at the Faculty of Geography, Gadjah Mada University from 1996 – 1998. This study focuses on five out of twelve villages available from the URGE Database, representing four distinct agro-ecological conditions as present in DIY.

abundant surplus of labour has led to varied, and sometimes, contradictory interpretations. First, rural diversification has been viewed as a symptom of economic marginalization (Hartman, 1985; Long, 1984; Harris, 1991). This interpretation is based on the assumption that involuntary involvement in non-farm activities is often the rule rather than an exception. Thus, according to this view, rural non-farm activities are explained by the supply-push rather than demand-pull factors. Often rural non-farm activities are undertaken as a part of occupational multiplicity for a bare subsistence (*cf.* White, 1976, 1979, 1986; Jones, 1984 and Hart, 1986).

Second, rural diversification has been viewed in a more optimistic way as a capital accumulation in the rural areas. This process of capital accumulation is seen as a corner stone for further growth and development of the rural economy (Svensson, 1991) as well as further social differentiation (Breman and Wiradi, 2004). This view asserts that rural diversification in Java cannot only be understood as an involutionary process in the Geertz (1974) connotation or as a socio-economic marginalization (Titus, *et al*., 1994). Rotge (1992) and Rotge, *et al.,* (1995 and 2000) in their recent studies in the province have shown that the higher level of rural diversification in terms of employment sources reflects a dynamic economic development. Maurer (1991) argues that the diversification of the rural economy in the DIY and Java in general is not only a result of successful agricultural development supported by the oil-boom gain but is also related to the higher educational attainment and skill improvement leading to job specialization away from agriculture, rather than occupational multiplicity (*cf.* White, 1976). It is notable from the fact that educational attainment and human development indexes in the province are the highest in Indonesia (UNDP, 2001). Thus, it is very likely that rural diversification in the province is strongly stimulated by the higher educational attainment.

In a more recent observation, Huisman and Kragten (1997) arrived at the same conclusion that in Bantul regency of DIY non-farm rural activities are not marginal by definition, but can be viable dynamic undertakings. In their research village of Manding, rather spectacular developments in the sub sector of leather good processing has taken place. Cottage industries there have grown to medium-sized firms in a short time span only. Farmers in the area increasingly face the problems of finding farm labourers, which shows that the non-farm activities have started to out-compete agricultural work in this micro context. In an increasing number of households, considerable proof of capital accumulation has been found. No explicit statements on the effects of non-farm development on agricultural development in the village have been made by these authors.

Mellor (1976) suggests to put agriculture in the centre stage and argued that rapid growth in agricultural production, through effects of linkages with non-farm production, can stimulate expansion of productive and employment intensive small scale industrialization. The logic is that increased in food production, based on cost decreasing 'green revolution' technology results in a large net national income. If this income accrues to relatively large farmers, who do not spend the entire additional amount of food grains consumption or on capital or import intensive commodities, the demand for local non-farm goods and services will be 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-farm consumption expenditure was 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 rural non-farm investment opportunities that were created by increased demand (Mellor, 1976). Also in line with this view is White (1986) who asserts that the 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 thus leading to the growth of rural non-farm employment. Islam (1984) also suggests that an important precondition for a sustained growth of non-farm activities capable of generating attractive returns would be a dynamic and egalitarian agricultural sector. The linkage mechanism for mutually reinforcing growth of the two sectors will not work fully unless agricultural growth is sufficiently egalitarian.

The emergence of rural non-farm activities is also seen as a sign of economic development. Those who support this interpretation commonly argue that the emergence of non-rural farm activities is a transitional phenomenon that will disappear as the rural economy is growing (Kada, 1987). Experiences of the East Asian nations are commonly quoted by those supporting this interpretation in which the growth of rural non-farm activities are not only bringing sustainable economic growth but also leading to more equal income distribution and more decentralized development spatially (Ho, 1979, 1982), (Oshima, 1984, 1987), (Anderson and Leiserson, 1980) and (Balassa, 1991).

The East Asian type of rural diversification is characterized by a very high and sustainable economic growth with an egalitarian income distribution and spatially decentralized rural development. The process was initiated by a highly productive and commercialized agriculture, based on an egalitarian land resources distribution because of successful implementation of land reform in the past (Shand, 1986; Ho, 1979; 1982). This gave an incentive to owner cultivators and productivity of smallholdings was lifted with modern technology on the small intensively cropped holdings. The increasing rural prosperity has expanded the demand for producer and consumer goods and services and thereby stimulating linkages with rural-based activities of manufacturing, distribution and servicing (Shand, 1986). The growth of rural non-farm activities in the East Asian countries is reflecting an economic progress, or in the words of Koppel and Hawkins (1994) they are following a developmental path of rural diversification.

A village study from the Philippine as reported by Angeles-Reyez (1994) reveals that the village has been experiencing greater landlessness due to increased population pressure and land reform regulations, decreasing farm size, and more unequal distribution of farms. This situation has released labour for non-farm activity both in the village and nearby towns. The relative incomes of large farmers increased significantly because of growing share of land rent accrued to them. The relative income position of the landless workers would have deteriorated if not for the marked increases in non-farm works. The stronger linkages through modern highway systems and transportation facilities stimulated the increased commitment to non-farm work. Undoubtedly, the increase of non-farm rural employment opportunities has moderated the deterioration of income distribution within rural areas.

Comparing the situation in Taiwan and the Philippines, Ranis and Stewart (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 agricultural to non-farm 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. Another study from India (Grabowski, 1995) shows that agricultural development is among an important factor explaining the non-farm income levels in which an increase of 100 rupees of agricultural incomes will result in an increase of 64 rupees of non-farm incomes. This breaks down to 25 rupees to small towns and 39 rupees in the rural town, indicating the important role of the smaller centres in rural non-farm development.

Results and Discussion

A traditional view to the relation between farm and non-farm activities at household level is that the surplus gained from the farm may be further reinvested on non-farm activities (Mellor, 1976; White, 1986; Kada, 1987) as demonstrated in the experiences of some present day developing countries. This does not mean that the rural economies of developing countries do not diversify accordingly due to the limitation of the small scale of agricultural in producing surplus gain. It is commonly accepted that rural diversification may occur in rural areas either with or without agricultural income surpluses. Recent experiences in developing countries show that the flow of resources is mainly occurring from non-farm surplus to the farm resource and activities rather than the other way round.

This study confirms that rural diversification in forms of non-farm activities would bring to an improvement in the household agricultural assets and more advance farming practices. Thus, rural diversification is believed to have some positive effects to the development of agricultural sector in given area through reinvestment of parts of the surplus gained from non-farm activities. Investments on farm implements are very substantially higher in households with non-farm rather than without non-farm activities as discussed earlier. However, this section gives a closer look to the performance of non-farm households with as rural-based and urban-linked type of non-farm activities in accumulating agricultural resources.

Rural diversification in a small farming region of DIY gives some effects on the increase of land resources controlled by the respective households, more especially those with some economic linkages to urban areas. In villages with relatively abundant land resources such as Tepus and Wonokerto, households with access to urban economy through urban-linked non-farm activities reported more gain of lands rather than those rural-based counterparts. The same pattern is occurring in Maguwoharjo, the most urbanized village where greater percentage of urban-linked households gain lands more than their rural-based counterparts (Table 2). Different patterns are reported from Brosot and Srimulyo where small farm size is predominant. No land transfer is reported in Brosot that an assessment whether urban-linked households perform better in land acquisition is not possible to make. In Srimulyo Village, there is a rather surprising observation where rural-based non-farm households have been able to accumulate lands better than their urban-based counterparts are.

Table 2
Size of Lands Obtained from Other Villagers by Villages and Types of Rural-Urban Linkages[2], 1998 (percent)

Land Size (M^2)	Brosot		Srimulyo		Tepus		Wonokerto		Maguwoharjo	
	Rural-Based	Urban-Linked	Rural-Based	Urban-Linked	Rural-Based	Urban-Linked	Rural-Based	Urban-Linked	Rural-Based	Urban-Linked
None	100,0	100,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0	0,0
Up to 999	0,0	0,0	0,0	3,8	0,0	0,0	28,6	7,7	12,5	0,0
1000 - 2499	0,0	0,0	0,0	15,4	11,1	0,0	7,1	7,7	0,0	5,1
2500 - 4999	0,0	0,0	9,1	7,7	0,0	0,0	0,0	0,0	0,0	0,0
5000 - 7499	0,0	0,0	0,0	0,0	11,1	13,3	0,0	0,0	0,0	0,0
=>7500	0,0	0,0	90,9	73,1	77,8	86,7	64,3	84,6	87,5	94,9
Total (%)	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Total (n)	12	34	11	26	15	18	14	13	8	39

Source: Primary Data, 1998.

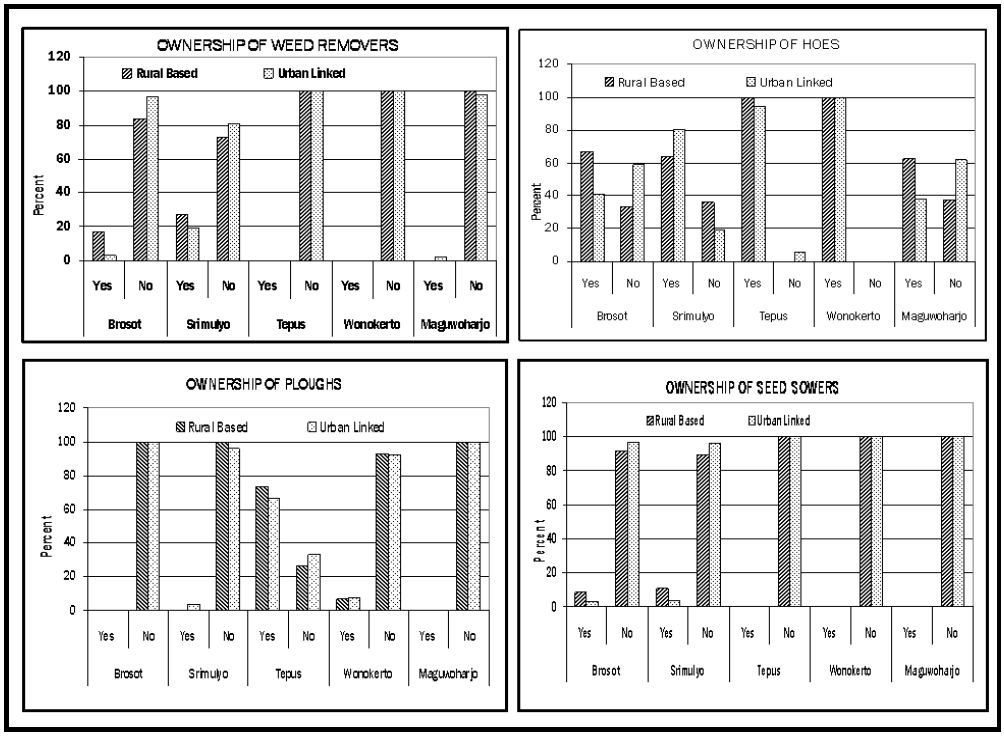
This means that to some rural dwellers among important way to accumulate wealth is through participation in non-farm activities with urban linkage nature. Incomes from the urban economy can be transferred to the village and lands can easily be purchased when an opportunity is emerging. Land accumulation through urban income surpluses is among important mechanism in which the non-farm economy affects the agricultural sector at household level.

Albeit a strong differences in performance in acquiring land resources between the two groups of non-farm households, rural diversification does not give any impacts on the significant differences in farm implement ownership between the urban-linked and rural-based non-farm households. No clear patterns can be observed from the data, but one can conclude that both groups do not report a significant degree of mechanization as shown by the lack of use of various modern farm implements (Figure1). This is most probably due to a diseconomy of scale of investments in modern farm implements. The small sized farms in the research villages do not allow for such a long-term investment. Nevertheless, it seems to be rather premature to conclude that urban-linked non-farm affects agricultural development positively. Some worrying trends can be observed from the farming practices at the household level of the urban-linked and rural-based non-farm households.

If this interpretation is correct, then there is new fact that albeit the non-farm households tend to spend more on farming activities rather than the farm ones, the effects of rural diversification on agricultural development is constrained by the small farm size operated by most farming households. Thus, the effects of rural diversification would not give a maximum benefit to agricultural development

[2] Rural based type households are households without any members working in the urban areas, urban linked type households are households with at least one members working in urban areas of DIY or

Figure 1
Ownership of Some Selected Farm Implements of Rural-Based and Urban-Linked Non-Farm Households by Villages, 1998



on areas with smaller farm size. On the contrary, areas with greater farm size would benefit more from reinvestment of surplus gained from the non-farm economy of the households. As small farming households commonly dominates the villages under study, only limited effects of rural diversification on agricultural development can be reported. Few rich farmers in the predominantly small farming villages may have been able to reinvest their non-farm surplus on farm implements and other expenditure in farming.

From this point, one can see that the process of agricultural development fuelled by income surplus obtained through rural diversification as occurring elsewhere (Evans and Ngau, 1991) cannot be established in DIY. The specifically small farm size in the province prohibits reinvestment of non-farm surplus. Besides, the unfavourable government policy on agricultural commodity price has been well known as one the stumbling blocks for agricultural development in Indonesia. Recent reduction of subsidy from prices of farm inputs, import licensing of some agricultural commodities and the price intervention through various mechanisms give many disincentives investments on farming activities. In other words, parts of the agricultural development policy in Indonesia may have hampered rather than stimulated the process of rural diversification beyond agricultural sector through various linkages.

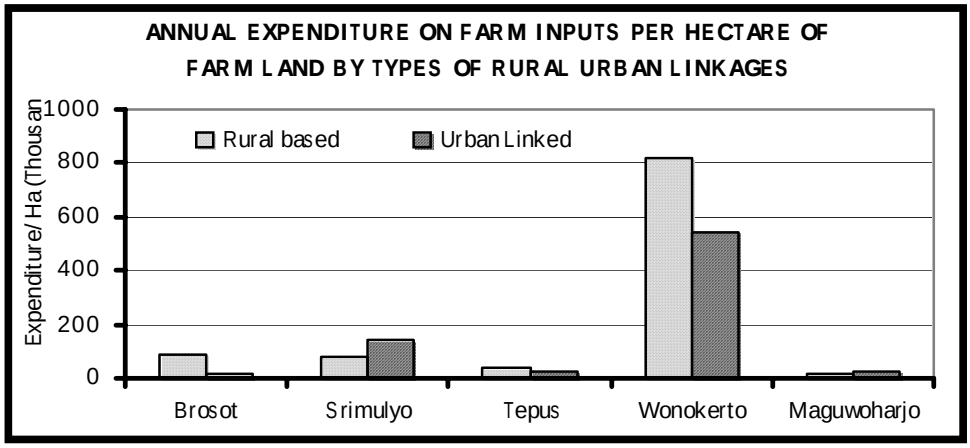
This raises an important issue concerning the policy mix in agricultural development in which the balance between incentives and disincentives should be maintained. Under the existing economic situation, providing a cheap

price for various commodities is favourable for the government, urban population and non-farm producers utilizing agricultural commodities as their production inputs. But, this situation does not give a necessary condition for agricultural development in most rural areas of DIY. Under the existing farm size and intensity of farming, it would be difficult if not impossible to improve the income of farming households without increasing the price of agricultural commodities. Price increase is the only opportunity to boost the incomes of rural households through farming, as higher intensity of application of modern inputs on their small farms would bring to an unsustainable farming practice. Under the existing agricultural technology, the law of diminishing returns as applied in agricultural production seems to be a stumbling block for agricultural development and thus farming incomes.

Nevertheless, a thin ray of hope on the effects of non-farm surplus on agricultural development may be reflected by the strong tendency of differences in the use of modern inputs and external labour in farming between the rural based and urban linked households. But, this is only valid in few villages under study. The wet lowland village shows a notable exception where expenditure on farm inputs made by the urban-linked households is rather significantly higher than that of the rural-based households (Figure 2). This is also in line with the use of paid labour in farming. The urban-linked households in the village behave rationally in farming by hiring farm labour and at the same time concentrating on non-farm activities as their main occupation.

Apart from the wet lowland village, urban-linked households in the wet upland village also hire more farm labour than rural-based households do. On the contrary, rural-based households in this village spend more on modern farming inputs. The rural-based households seem to be rational risk takers who are willing to spend on farm inputs but hire less labour from out side the households. This is possible as the rural-based households in the context of wet upland village rural-based households are only involved in non-farm activities with local linkages. Thus, greater

Figure 2
Annual Expenditure Patterns on Farm Inputs of Rural-based and Urban-linked Households, 1998



attention to farming is possible as in fact farming is a primary occupation to most rural-based non-farm households. To sum up, rural-based households tend to intensify the use of own labour in combination with high level of input use in order to maximize agricultural production. On the contrary, urban-linked households tend to accumulate wealth mainly via non-farm pursuits and put farming as secondary activities. Thus, it is plausible for this group of rural households to hire more labour in compensation to their absence from full time farming and using less modern inputs in farming practices.

Conclusions

Rural non-farm economies that grow in the studied areas are commonly reflecting an optimal combination of various opportunities and limitation at household and regional level. The nature of non-farm activities carried out by the rural dwellers reflects higher aspiration for better living under various agro ecological zones. Given the inability of agricultural sector to provide employment to most of the youth in all villages, rural non-farm economy has been developed indigenously in situ by making use of external opportunities. Urban economy has become the main outlet for their labour power. Under the existing population density and purchasing power of the rural people, rural-based non-farm activities or establishments can be a viable endeavour, especially in villages with favourable infrastructure supports and progressing agricultural economy. Although agricultural sector has a serious limitation in absorbing labour of the youth, its role in providing linkages with other economic activities remains very significant. Thus, agricultural sector in the rural diversification process plays a pivotal role through various linkage mechanisms.

The relationship between the farm and non-farm sides of the household economy has been examined through the differences between the urban-linked and rural-based non-farm households in the procurement of lands, mechanization, use of farm implements, expenditure on farm inputs and hired labour. Urban-linked non-farm households tend to be able to attain land purchase more than the rural-based counterparts. With a small exception in the dry upland village, rural non-farm households tend to spend more on farm inputs and hire more external labour for farming. This indicates a situation where their income surpluses from the urban non-farm pursuits are further invested on lands, farm inputs and labour that leas to better farming practices. It is valid in most of the studied villages. Thus, it can be generalized that the development of urban-linked rural non-farm sectors tends to benefit the rural agricultural sector. This implies that under the absence or decreasing amount of subsidy to farmers in Indonesia, non-farm economy can be a source of funding for agricultural activities at micro level, at least for the procurement of modern farm inputs.

Nevertheless, urban-linked non-farm households do not demonstrate higher purchase or use of farm machineries in their farming practices. Small farm size does not allow for this as there is a diseconomy of scale for such efforts. Even in the upland areas where farm size is relatively large, no substantial use of farm machineries are reported. Moreover, under the existing labour surplus economy of rural Java and higher seasonal agricultural wage, using external labour is considered to be the most appropriate solution in farming under such small size of lands. Households with strong basis of urban-linked non-farm economy do not completely abandon their involvement in farming but tend to leave the agricultural side of their household economy

to other persons, especially relatives or neighbours through share cropping, mortgaging or renting. The existing rural diversification has not been able to drive rural households to leave the farms in all types of agro-ecological zones in the province. The remaining strong ties between rural households and their farms in the context of growing non-farm economy is reflecting risk avoiding behaviour of subsistent farmers who rely on their lands for subsistence and treat non-farm incomes as a supplement to their household incomes. For most rural households in the province, farming on a small piece of land can be an insurance against shocks as well as they have experienced in the recent crisis.

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