

A Comparative Study on the Arrangements
of Customary Labor Institutions in Lowland
and Upland Hamlets of Rural Central Java

(中部ジャワ低地・高地村落における慣習的
労働組織に関する比較研究)

SUBEJO

スベジョ

SUMMARY

A Comparative Study on the Arrangements of Customary Labor Institutions in Lowland and Upland Hamlets of Rural Central Java (Subejo, 2011)

To date, studies on the custom of mutual help that is practiced among Javanese villagers have mainly focused on the activity that can be classified under *gotong royong*, which is a general term referring to collective action among villagers to pooling their labor power for the construction and maintenance of public facilities. However, only a few empirical studies examine the contemporary practices of mutual help institutions in rural Java and their mechanism of adaptation. A comparative study of the arrangement of labor institution practices in lowland and upland hamlets is likely will be a worthy contribution for learning the changing labor exchange process in both research sites. The comparative study will illustrate the adaptation strategies by local people in response to changing labor conditions.

The Study was conducted in 2002, 2008, and 2009. The study in 2002 was focused on the general condition of the research sites, general and functional characteristics of labor institutions, and socio-economic structure of surveyed households. In 2008, the field research was directed to analyze the transitional process of labor institution practices in surveyed hamlets. The final study was carried out in 2009 and focused on the arrangements of hired labor for farming operations in lowland hamlets and customary selling of collective labor in upland hamlets.

By analyzing labor institutions from the perspective of the influence of particular factors such as the expansion of labor markets, resource endowments and production risk, and technological changes, it has been confirmed that these factors have massively influenced the traditional labor exchange arrangements in rural areas. In general, rural communities have developed the various innovative strategies for creating institutional labor innovations that congruent with traditional and local norms.

In lowland hamlets where the economic structure is primarily based on non-farming income and where the geographical conditions are favorable and lower production risk for farming practices, the high population mobility and the strong impact of technological

changes in farming production systems have reduced the need for collective work for various farming activities.

In contrast, in upland areas where the economic structure is more dependent on farming, where there are significant geographical limitations and resource scarcity, facing higher production risk and where technological changes related to the mixed cropping system (agroforestry) have been implemented, villagers tend to demand and intensify traditional collective work arrangements such as *sambatan*, which, to some extent, has been supplemented by the newly introduced *prayaan* institution for coping with basic daily needs, including both farming and non-farming activities. However, *krubutan* practices still survive, despite the fact that the practices are arranged under strict rotation schedules.

Despite the transitional process that has occurred in the labor exchange institutions in rural Java, community members with tight social relationships have the capacity to adapt to the process of change. The arrangement of collective work for house construction and repair is still widely practiced. However, the division of labor and the diversification of villagers' income sources may enable well-off households to build modern houses. This possibility may reduce the need for collective work in the future because the construction and repair processes for modern houses require highly skilled labor.

In the lowland rice-growing areas of rural central Java, the practices of labor exchange for farming operations have been dramatically decreasing, and in some places, the practice has completely disappeared. Landowners could no longer rely on their own family labor or on the tradition of labor exchange. Instead, they found it convenient to hire group of laborers rather than having to deal with large numbers of individuals. The use of institutional labor innovation under various arrangements of hired labor is becoming predominant.

A significant influential factor in determining whether labor is hired for farming operations other than for harvesting and threshing is the involvement of non-farming jobs. Harvesting and threshing have been significantly influenced by three factors: the cultivation of land, the income level and the involvement of non-farming jobs. Land preparation is regarded as a task that requires skill and should be completed in a short period of time; hence, regardless of a household's socio-economic characteristics, farming households tend to hire tractor operators. For hoeing-leveling, transplanting and weeding, households whose members do not have non-farming jobs can complete these activities by

fully relying on the labor of family members, whereas households whose members have permanent non-farming jobs tend to hire labor more often than households whose members have temporary non-farming jobs.

The sense of income sharing under the spirit of moral economy is, to some extent, still alive. It can be found under the *bawon-bawon* and *bawon-operator* arrangements for harvesting and threshing. *Bawon-bawon* has been offered only among households that cultivate small areas of land, that have high incomes and whose members have non-farming jobs. *Bawon-operator* has been offered by households that cultivate small areas of land, that have low incomes and whose members have non-farming jobs. For lower-income households, the high share cost of *bawon-bawon* practices is not affordable; hence, they prefer offering the *bawon-operator* system.

Even though commercialization and modernization have had a dramatic influence on hired labor arrangements, farming households still prefer to hire laborers from among their neighbors, who commonly have close social relationships, often because they are relatives. Social relationships, which commonly develop within close residential proximity, are still perceived as important by villagers involved in labor contract arrangements. The transaction and arrangement of hired labor are likely not only perceived as economic or market transactions but are also related to the social relationship system in the community. To some extent, economic rationality and moral economy coexist in hired labor arrangements for various farming operations in wet rice villages of rural Java. However, the moral economy perception among villagers has become more limited.

Villagers in less favorable mountainous areas, who face more difficulties but keenly try to search for institutional innovations, have been transforming traditional labor arrangement practices for completing various daily tasks. The practice of traditional long-established labor exchange on farming operations has been widely supplemented by a new invented institution referred to as *prayaan*.

Prayaan has been considerably supplementing activities that must be done in a timely manner and require many laborers and/or delicate work. These activities include terrace field construction and repair, land preparation, weeding and activities related to timber and firewood. A relatively large number of group laborers and the lower labor payments for group members are perceived as incentives and advantage by members.

The *prayaan* arrangement embraces not only economic or profit interest but also socio-cultural dimensions. The higher prices for non-members, the maintenance of labor

charges for non-members in line with market prices, the mechanism of direct distribution of collected wages and the investment in productive assets have been among the pieces of evidence that the *prayaan* arrangement is a type of economic institution. However, the development of the system based on penalties that, to some degree, prevent opportunistic behavior of the members, the charging of lower labor rates if the work is hosted by members, the flexibility and priority for members in hosting laborers, and the mechanism of income disbursement for social and religious events indicate that *prayaan* is also oriented for social-cultural functions.

In Jati hamlet, which has access to less favorable resources, is remote, and is relatively far from the sub-central labor market (coastal region), and the survival of some traditional labor institutions has induced villagers to arrange *prayaan* labor primarily as an institution for earning income from either non-members or members. In Watugajah hamlet, which has access to better resources, has high people mobility, and is relatively close to the sub-central labor market, the reduction of some traditional labor institutions has induced villagers to arrange *prayaan* labor more as an institution for obtaining collective labor at cheaper price.

In short, the labor institution arrangements in the surveyed hamlets to some extent generally can be regarded as “independent institutions” that developed based on local collective initiatives. The development of these institutions reflects a high capacity and capability of the local people to collectively adapt various traditional labor institutions to support current basic daily needs.

In the case of labor institutions developed to complete various farming operations, these institutions can be assumed to be completely independent of formal governmental involvement. Most of these institutions have been arranged through initiatives undertaken by the local people.

Considering the effectiveness of the systems of various local institutions for supporting the daily needs of local people, there is the possibility for local government to directly become involved in or provide support to those existing institutions. Local governments must determine the proper mechanism and the type of supports in preventing the destruction of well-designed traditional systems. Well-designed and appropriate support from local governments is expected to enhance the capacity and capability of local people to strengthen economic access and to improve social and cultural life among local community members.

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LIST OF ABBREVIATION AND LOCAL TERMS

General terminologies:

Gotong royong: broader term of custom of mutual helps in Indonesia

Slametan: celebration of ritual feasts

RT: *Rukun Tetangga* (neighborhood groups consists of 15-40 households)

RW: *Rukun Warga* (neighborhood group association consist of 3-10 RTs)

Rukun: harmony atmosphere in the community

Kelurahan: village

Sedulur/sederek: siblings

Bawon: share harvest system

Tebasan: harvesting contract by contactor

Penebas: harvesting contractor

HYVs: High Yielding Varieties

Ani-ani: hand knife for rice harvesting

Tumpang sari: mixed cropping system between food crops and wood trees

Reboisasi/penghijauan: re-greening program by planting trees on the critical areas

FGDs: Focus Group Discussions

Larikan: checkrow planting system for rice cultivation

Borongan: contract system/contract labor group

Sawah: wet rice farming field

Morosepuluh: share harvest contract under 1/10 system

Morolimolas: share harvest contract under 1/15 system

Gethok tular: local mechanism for delivering the messages

Kethoprak: traditional Javanese drama

Gamelan: traditional music instruments for *kethoprak* performance

Kelompok pengajian: religious group

Al-Qur'an: holy book of Islamic community

Setengah hari: working period system for a half day (commonly 5 hours)

Terminologies on labor institutions:

Gerakan: collective action for constructing and maintaining public infra structures

Gugur gunung: mutual help for coping emergency events

Rewang: mutual help for enjoyment ceremonies

Layanan: mutual help for condolence ceremonies

Sambatan: long-term and non-strict requested mutual help

Krubutan: strict exchange labor under yearly basis

Gantian: strict exchange labor under seasonal basis

Prayaan: collective selling labor group

Buruh tani/buruh upahan: casual hired labor for farming

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S U B E J O

CHAPTER 1.

INTRODUCTION

1.1. Nature of Cooperation and Reciprocal Exchange

Social cohesiveness and conformity are common human goals. Stainfield (1997) concluded that human beings require nurturance as individuals and in their social relationships and that nurturing interactions are necessary to maintain social order and social cohesiveness. Social activities must be carried out in an atmosphere of trust and with a sense of cooperation and togetherness; that is, they must involve social bonds. Diekmann (2001) theorized that cooperation is the result of shared values and norms and norm-conforming behavior. A sense of connection is sustained by a set of social relationships that must be continuously re-instituted. The failure to sustain these relationships over time generates the social pathology of cultural disintegration.

As noted by North (1990), community¹ is an essential factor involved in maintaining social order. The key features of community are shared beliefs or norms, direct and complex relationships between members, and reciprocity.

Cooperative behaviors are ubiquitous among various types of societies, ranging from traditional or archaic communities² to advanced modern societies.³ According to Diekmann (2000), individuals may cooperate if each willingly acts in a manner that contributes to the welfare of others. In addition, Hayami (2001) states that a community

¹ Community in general has been regarded as a group of people having particular characteristics in common such as cultural, religious, ethnic, or other characteristics. Community is also a group of interdependent inhabitant residing in the same region and interacting with each other through particular relationships. With regard to community in rural Java, as has been advocated by some leading researchers on Javanese community such as Koentjaraningrat (1961), Jay (1969), and Geertz (1976), Javanese community has been continuously built under strong bonding of neighborhood spirit where possibly also overlapping with kinship and it was strengthened with multiple repeated daily activities and relationship. Therefore in common, Javanese community members in rural area have been sharing the identical sentiment.

²According to Ferdinand Julius Tönnies, community corresponds to the concept of “status.” Max Weber referred to community as “*Gemeinschaft*” in relation to status groups (Polanyi, 1944). Status dominates where the economy is embedded in non-economic institutions. It thus corresponds to an earlier condition that is related to reciprocity and redistribution.

³ According to Ferdinand Julius Tönnies, society corresponds to the concept of “contractus.” Max Weber frequently referred to society as “*Gesellschaft*” in relation to contract-type groups (Polanyi, 1944). Contractus is characteristic of a motivationally distinct economy in a society, namely, a market economy.

can be understood as an organization that guides its members to voluntarily cooperate based on consent and the coordinated division of labor to reach socially desirable goals.

Cooperative behavior is a part of human culture and has been necessary throughout human existence. Thus, it may not be realistic to assume that individuals always look out for themselves or that they do so by weighting the costs and benefits of their behavior. Clearly, Diekmann (2002) states that cooperative behaviors have a strong connection with social goals or preferences that are clearly embodied in one's social orientation. Many types of social orientation have been distinguished, but the three most common are the following: (1) "cooperative" (the goal is to maximize joint payoff); (2) "individualistic" (the goal is to maximize individual payoff); and (3) "competitive" (the goal is to maximize the positive difference between one's own and others' payoff). Further, Palameta (1998) argues that human economic decision making is rarely based on simple payoff maximization. Individuals anticipate and try to influence others' behavior. Strategies based on reputation building, trust, scorekeeping and punishment can flourish under conditions where the short-term costs of cooperation are outweighed by its long-term benefits.

However, human cooperation does not always function smoothly. North (1990) understood human cooperation as a kind of game. Cooperation is difficult to sustain when the game is not repeated, when there is an end game, when information on other players is lacking, and when there are many players.

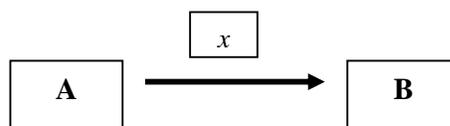
Human cooperation is related not only to the involved parties' social interests but also to their economic interests. Polanyi (1944) theorized that economic interests derive from man's dependence for his living upon nature and his fellow men. The concept of "economic" refers to man's interchange with his natural and social environment insofar as this results in supplying him with the means to satisfy his material desires. In summary, it is concluded that the "economy" can be defined as an organized process of interaction between man and his environment that results in a continuous supply of want-satisfying material means. The economy, then, is an organized process. Two concepts stand out, "process" and its "organization." Process suggests that economic analysis should be conducted in terms of motion. These movements refer changes in location or appropriation.

A study of how empirical economies are instituted should begin with how the economy acquires unity and stability through the interdependence and recurrence of its

parts. This is achieved through the combination of a small number of patterns, which may be called the “form of integration.” The major patterns include reciprocity, redistribution, and exchange. Reciprocity assumes a background of symmetrically arranged groupings; redistribution is dependent upon the presence of some measure of centrality in the group; and to produce integration, exchange requires a system of price-making markets (Polanyi, 1944).

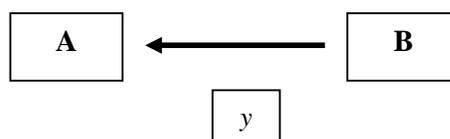
Further, Polanyi (1944) stated that the norms of integration merely reflect aggregates of individual norms: If mutuality between individuals was frequent, a reciprocal integration would emerge, and if sharing among individuals was common, redistributive integration would be present. Similarly, frequent acts of barter between individuals would result in exchange as a form of integration. Only in a symmetrically organized environment will reciprocal behavior result in economic institutions of any importance; only where allocative centers have been established can individual acts of sharing produce a redistributive economy; and only in the presence of a system of price-making markets will individuals’ exchange acts result in fluctuating prices that integrate the economy.

The terms “gift” and “reciprocal exchange” are traditionally used to describe the forms of the exchange mechanism. Gregori (2001) mentioned that under the classical definition, exchange is a *transaction* that is *reciprocated*. A transaction is the process whereby one transactor transfers an object to another transactor. This can be represented formally as follows:

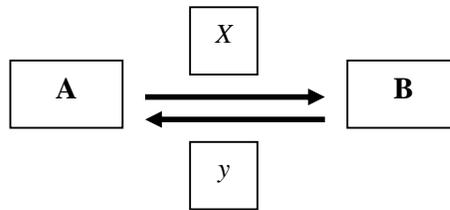


where A is the giver, B is the receiver, and x is the transferred object.

Reciprocation is the process whereby the initial transaction is reversed such that the receiver becomes the giver. This can be represented formally as



where A is now the receiver, B is the giver, and y is the reciprocated object. The reciprocation can be *simultaneous* in time or *delayed*. When it is simultaneous, it takes the classic form of an exchange



where A gives B object x in exchange for object y. When the reciprocation is delayed in time, this is called a delayed exchange. Exchanges, whether simultaneous or delayed, define three distinct relations: value, property, and social-the significance. The meaning of these relations will vary depending on the social context.

Practices of exchange in the community including labor exchange have been regarded by Ratner (2000) as the informal economy that is part of everyday household survival strategies in rural areas. The informal economy is often thought of as a kind of “safety net” for people who do not find a place in the formal economy.

Standard economic theory emphasizes that humans will behave rationally in all situations and transactions. Kangas (1997) states that economic discourse has been focused on the pursuit of self-interest and individual gain. The worldview has been that “homo economicus,” at his or her most extreme, heeds only the voice of the wallet to the exclusion of all other considerations. Wallet-directed behavior is also assumed to be logical: people are rational, they know what they want, and they pursue their goals in a rational manner.

In contrast, sociological explanatory models have stressed the social nature of human activity, thus emphasizing the normative basis of behavior. If norms and other social contracts require them to do so, individuals may act against their own economic interest; “homo sociologicus” dominates this explanation.

Classic economic theory portrays individuals as acting like homo economicus by striving to maximize their own economic advantage. The neoclassical paradigm expands on this concept by defining man as utilitarian, rational, and individualistic. In the most extreme versions of neoclassical theory, all human activity is reduced to a search for personal advantage. People in same social stratum have been assumed to have certain

common, group-specific interests that are evidenced in what they expect of social policies (Kangas, 1997).

Non-economic or normative bases of action are basic components of sociological explanations of human activity. The emphasis has been on homo sociologicus and on the understanding that people are directed by social norms and driven by desires for the common good. Instead of pursuing their own selfish goals and economic advantage, people hold the societal contract and social norms in high regard. Consequently, they may choose alternatives that appear to be at odds with economic rationality. Thus, social policy is regarded as a method of supporting the less fortunate and distributing life's uncertainties more equally among different social groups (Kangas, 1997).

The antithetical homo economicus and homo sociologicus are theoretical models that never occur in their pure form, and consequently, any assumption about actions based on these pure concepts is unrealistic. Man is neither homo economicus nor homo sociologicus alone, but instead "homo socio-economicus", who is directed by both individual interests and collective norms. Kangas (1990) thus argued that the pursuit of self-interest and moral motivations are forever at odds in the soul of homo socio-economicus.

Different situations may shape different aspects of human behavior. Stability is as a consequence of permanent moral norms that guide choice. For example, the most common and straightforward method of collective decision making is through the use of power. On an individual level, a choice between alternatives may be based on fairly random situational factors. Believing that their actions are not significant in the great scheme of things, individuals may feel free to act without restraint.

Based on experimental research, Kircher et. al, (1996) proved that the norm of reciprocity is stronger than rational egoistic money maximization. This was true during the bargaining phase of interactions as well as over time, when subjects had already traded several times and had the opportunity to learn about the different payoffs of cooperation and defection. The motive to reciprocal behavior partially offset motives of pure money maximization if interaction partners did not change over time and in market situations or one-shot dyadic interactions where the partner changed after each trading period.

Further, Kircher et.al, (1996) reported that human motivation could not be reduced to the rational pursuit of self-interest. The fact that many people tend to follow the norm of reciprocity is likely to have a non-negligible impact on social-economic cooperation.

Kircher's study implies the importance of differing personality characteristics in social interactions.

1.2. Classical Reviews on the Custom of *Gotong Royong*

Researchers in economic development have widely acknowledged that communities, together with states and markets, can play an important role in the development process. As mentioned by Hayami (2001), the community can be understood as an organization that guides its members to voluntarily cooperate based on consent and the coordinated division of labor to achieve socially desirable aims

The role and contribution of community to local economic development can be firmly illustrated by examining the mechanisms of human interaction and cooperation activities among involved local peoples. Especially in rural Java, human interaction and cooperation activities are closely connected with the activities or labor institutions in addressing problems of daily life.

Prior analyses of mutual cooperation activities in rural Java have commonly acknowledged that labor institution practices cannot be separated from traditional community norms and community practices of mutual aid, which are broadly known as *gotong royong*. It is important to consider these traditional types of cooperative relationships among community members, which have developed naturally over long periods of time. Some of these relationships have been reinforced on a daily basis and enable economic and social survival by cooperatively "sharing the burden."

The *Gotong royong* tradition is typical of an institution that by definition, as theorized by Ruttan and Hayami (1984), Ruttan (1989) and North (1990), articulates the rules of a society or organization that facilitates coordination among people by helping them form expectations that each person can reasonably hold in dealing with others. Institutions provide assurance regarding the actions of others and give order and stability to expectations in the complex and uncertain world of economic relations. That definition of an institution is also in line with the definition by Uphoff (1993), which defines institutions as complexes of norms and behaviors that persist over time by serving collectively valued purposes.

Village communities in rural Java maintain various labor institutions in line with their belief in the collective good of keeping strong mutual relations among community

members (Subejo and Iwamoto, 2003). Additionally, in the agricultural societies of Java, having good community relations is a highly valued social norm, and these relations are similar to those found in communities in Japan (Ishikawa, 1981). The Javanese peasant household attaches great importance to maintaining good relations with neighbors in the same community.

The broad term of *gotong royong* covers a wide range of activities in the village community, including communal projects to build and maintain rural infrastructures such as roads or irrigation facilities; emergency work to cope with natural disasters; mutual help for house construction or for daily agricultural operations; labor and financial support for important ceremonies (*slametan*); and other similar activities. As this paper will explore further, *gotong royong* activities still play a major role in rural Javanese daily life (Subejo and Iwamoto, 2003). Rosen (1975), for example, states that in spite of increasing social and economic differentiation through changes in landholding, there remains a strong sense of social equality among Javanese villagers. Mutual reciprocity is still highly valued in their moral perception.

As a traditional spirit of mutual help among community members, *gotong royong* reflects mutual group interest, solidarity, and responsibility. That spirit provides the group with the cohesiveness necessary for cooperative work and prevents conflict among group members. The underlying philosophy is that people cannot live a solitary existence; they need interactions with others, especially family members and relatives (Martaamidjaja and Rikhana, 1996).

Sullivan (1992) stated that a key term in *gotong royong* discourse designates that the ultimate achievement of mutual cooperation, working together, and neighborly virtue is expressed in tolerance and generosity. The paramount goal is communal harmony, a situation in which people live together peacefully and compatibly, which is commonly identified by the word "*rukun*" that means compatible and harmonious.

Other scholars have also reported on the importance of various types of *gotong royong* activities in Javanese rural community life (Kartodirdjo, 1978; Raharjo, 1979; Anonim, 1985; and Sairin, 2001). In general, they have argued that *gotong royong* activities are embedded in daily life and rural traditions. *Gotong royong* activities are not only oriented toward the pursuit of social purposes but also economic purposes.

With reference to the analysis of mutual help in two villages in Central Java conducted by Koentjaraningrat (1961), *gotong royong* practices can be grouped into seven

categories: (1) times of family bereavement and other calamities, (2) community work projects, (3) the preparation and celebration of ritual feasts (*slametan*), (4) the system associated with the upkeep of ancestral graves, (5) building and major repairs to homes, (6) various phases of agricultural production, and (7) certain activities connected with the duty of landholders to contribute labor for the benefit of their communities.

Bowen's (1986) study of rural Java concluded that collective works on *gotong royong* can be distinguished in terms of three different bases: direct exchange; generalized reciprocal assistance; and labor mobilized on the basis of political status. In addition, Sumarjan and Breazele (1993) mention that some natural and traditional community practices of communal burden sharing are utilized to ensure economic and social survival.

Although many studies have examined *gotong royong* practices in rural Java, an in-depth empirical study of current *gotong royong* practices is still needed. Koentjaraningart (1961) focused on categorizing mutual help activities in terms of their functions, but it is possible that these functions can be fulfilled by several labor institutions particularly. The study by Bowen (1982) that simplified *gotong royong* into three bases seems reductive given the variation of mutual cooperation in real practice. Meanwhile, the study by Sumarjan and Breazele (1993) mainly emphasized the function of *gotong royong*, but no clear investigation has yet been conducted on the type of relations, characteristics, and functions that are embedded in *gotong royong* practices.

Although the significance of *gotong royong* has been firmly acknowledged, the mutual cooperation relationship and *gotong royong* have undergone continual change in rural Java. This process of change has been accompanied by changes in community occupations and changes in community members' interests. Koentjaraningrat (1961) stated that the introduction of hired labor and machinery into particular agricultural operations in the late 1950s had already begun to supersede mutual-help activities in rural Java.

Rural communities no longer solely rely on pure social relations for motivation; instead, even the most traditional and isolated community also has an economic interest. Therefore, the community is also influenced by the market condition. Ishikawa (1981) stated that the development of a market economy in an agricultural society naturally depends on the degree of development of the market economy and the productive force in the outside economy.

1.3. Javanese Kinship and the Rural Community Custom of Mutual Help

In non-industrial societies, kinship⁴ groups commonly deal with problems that cannot be handled by families and households alone, such as problems involving defense, the allocation of property or the pooling of other resources. A common form of kinship group is the decent group, where the criterion of membership is descent from a common ancestor through a series of parent-child links (Haviland, 1993).

The basic form of the Javanese kinship system is *cognatic*. Thus, the families of the father and the mother hold the same position with regard to the children. The Javanese kinship system also classifies relatives according to generation, and the terminology of address makes distinctions according to seniority and sex (Geertz, 1961 and Sairin, 1982). Relationships and lines of descent through male and female relatives receive equal emphasis. After marriage, an individual's kin ties expand to include his or her spouse's kindred (Jay, 1969).

Distinctions based on kinship status are an integral component of interpersonal relations in Javanese society. Distinctions based on generation, relative age, sex, genealogy (relative relation by descent from some specific ancestor), and birth order are all features of the kinship system. Likewise, the possession of a title, wealth or position creates further important status distinctions in Javanese society (Sairin, 1992). In summary, Javanese society emphasizes status and ranking based on kinship and on wider criteria of wealth, position, and other distinctions.

In general, kinship ties in Javanese society engender obligations and responsibilities towards members of one's kinship group. These can be specified into attention and assistance in the form of labor services, monetary help, and moral support. Koentjaraningrat (1957) noted that upon entering adolescence, young Javanese men and women begin to develop a sense of obligation and responsibility toward relatives that enables them to strengthen mutual cooperation among members of their kinship group. From a social and moral point of view, neglecting one's obligations towards his or her kinsmen is a serious matter. Specifically, Jay (1969) found that primary and secondary

⁴Kinship is an extrapolation from the typical statuses of traditional ideology and practice (Hart, 2000).

kinsmen⁵ bear most of the obligations and expectations that Javanese villagers associate with the general concept of kinship.

The mutual cooperation pattern is likely linked to the marriage pattern among community members. “Market” may not be the best term to refer to marriage. The marriage market should be understood as having a very special cultural articulation. Bell (2002) stated that the selection of marriage partners is narrowly prescribed by socially recognized rules; such selection requires the kind of choice processes that define markets. In some cultures, marriage markets are confined to network alliances or to a geographically and or socially limited set of options.

The existence of a market is indicated when individuals or groups have the option of entering into competition to gain access to a set of benefits in exchange for the provision of benefits to another party. A market become more “perfect,” meaning equal, as the number of individuals or groups involved in this competition increases, thereby increasing the alternatives available to each party.

Because the marriage market is connected with social networks and cooperation patterns, in the original community where the marriage market is usually more limited, it will strengthen relationships among and cooperation between community members. According to Wellman (2002), there is evidence of a shifting pattern in the locus of the marriage market from the neighborhood to wider areas such as the city. This shift in the market also alters relationships and cooperation networks.

For Javanese villagers, the completion of daily activities and satisfaction of daily needs is not only strongly related to the mutual help system that developed under a system of kinship but is also strongly related to a system of “neighborship.”⁶ Neighborship is related to a villager’s value in the residential composition of their communities and has been an important factor in the maintenance of mutual cooperation practices. As noted by Jay (1969), the Javanese terms used to refer to people who are related in this manner have the same meaning as the English word “neighbor,” that is, “one who lives close by.” The distinction made by Javanese villagers between the roles of kinsman and neighbor does

⁵ Primary and secondary kinsmen include both pairs of one’s grandparents and their siblings, one’s parent’s siblings, one’s own sibling’s children and their children, and one’s own grandchildren.

⁶ Based on administrative hierarchy, in Javanese villages as in other places in Indonesia, each village is divided into hamlets. A hamlet is divided into *Rukun Warga*/RWs (“the neighbor-hood villages”) and RWs are subdivided into *Rukun Tetangga*/RTs (“neighborhoods”). Members can elect a chief of the RW and of the RT to a three-year term.

not make the two mutually exclusive. The same individual may be both one's kinsman and one's neighbor. In many contexts, the roles are conceptually and actually merged; there are also important occasions when the two roles are kept distinct.

In the understanding of Javanese villagers, residential proximity is important to daily relationships and cooperation. Characterized by limited social and economic access, it produces an inevitable interdependency among community members to maintain and fulfill their needs. *Tetangga*, which refers to a household's close residential area, is important to villagers. Members of nearby households can communicate and share more easily. Although kinship remains important in Javanese villages, the separation between houses among kinship group members in some cases has caused relationships with one's closest neighbors to become more important. Koentjaraningrat (1957) confirmed that in the Javanese kinship system, people commonly focus their attention and assistance on relatives and neighbors. However, attention and assistance are required not only by kinship group members and relatives but also by *rukun tetangga* (the neighborhood) and by members of all affiliations. A person has to act towards all members of their affiliations as if they were *sedulur* (siblings) or kinship members. According to Jay,⁷ an important part of the distinction between kin and neighbors is physical location. Sullivan (1992) argued that *rukun tetangga* (neighborhood) is the most important element in Indonesia's system of local government in Java, and it plays a very important role for its members.⁸

⁷ Jay (1969) argues that an important part of the distinction between kin and neighbor is physical location. When the villager makes this distinction (which only appears at low conceptual levels), he sees his kinsmen as spatially distant and scattered and his neighbors as a compact cluster with himself at the center. Neighbors are physically close; kin may be physically remote.

⁸ The *rukun tetangga* (neighborhood) is arguably the most important element in Indonesia's system of local government in Java. It is the primary regulator of the populace and is part of the larger administrative units of *rukun warga* and *kelurahan* (village). The formation of *rukun tetangga* provides a stable foundation for the civil-administrative structure. The relations between households within clusters seemed the closest, most spontaneous, and most neighborly of any grouping. Further, only in this group can one find the egalitarianism and thoughtfulness that are considered essential *gotong royong* traits (Sullivan, 1992). This illustrates that the neighborhood is important to its members. Residents tend to think of their fellow neighborhood-RT members as their closest allies. RT members frequently refer to each other as *sedherek* or *sedulur* (siblings). Kin terms are frequently extended to include RT neighbors. The labor sharing system is well established in the daily lifestyle of Javanese society. The households allocate labor activities to maintain good relationships. They thus tend to develop new ties and form closely knit groups corresponding to the *rukun tetangga* unit.

1.4. Labor Exchange Practices in Rural Java in Transition

In general, it has been argued that practices of customary collective labor exchange or reciprocal labor arrangements in farming communities tend to disappear as the labor market develops. As noted by Sajor (2000) and Roumasset (2004), a major trend in agrarian change in many Southeast Asian countries has been the disappearance of reciprocal labor and its replacement by hired labor. This trend corresponds to the degree of market penetration and level of commercialization of a particular agrarian economy.

The arrangement of an individual labor contract to exchange labor for money has rapidly become a common phenomenon among villagers. The labor contract is widely used in rural communities to completing farming and non-farming activities.

As reported by several studies concerning changes in customary labor exchange practices in rural Java (Koentjaraningrat, 1961; Hayami and Kikuchi, 1986; Gilingan, 2002; Suehara, 2005; Tsurata, 2005), the main factors determining the reduction of customary collective work practices consist of labor market development and technological change in farming operations.

Traditional collective labor practices have been decreasing or even disappearing in rural Java due to the use of hired labor for various farming operations. Villages located in the well-developed irrigated lowland area have experienced considerable growth in the use of hired labor due to the introduction of the green revolution in the 1980s. Manning (1999) argued that as a result of high-productivity high yielding varieties (HYVs), a higher proportion of rice output has been marketed and households now have enough cash income to hire laborers to conduct farming operations.

As Kano (1980) asserted, the growth of wage labor in rural Java in fact began earlier than the green revolution. Wealthy farmers with large holdings of wet rice farming land had a strong orientation toward commercial farming. These farmers began to hire wage labor and use modern inputs following the fertilizer revolution of the 1960s. Improvements in seed variety have also been accompanied by advances in production and labor use.

Regarding farming operations, hired labor is mainly used for peak season activities, such as rice transplanting and harvesting (Capistrano and Marten, 1986; Kikuchi and Hayami, 1999). In some cases, however, farm labor has been employed for wider activities, including land preparation, transplanting, weeding, harvesting and threshing (Kikuchi et al., (1980). Labor contracting for farming has advanced from the simplest type of contract, contracting for a daily wage regardless of the task, to more specific contracts,

such as contracts for skilled labor and piece-rate ream contracts. Tsurata (1999) argues that over time, villagers became more selfish, calculating and economic, demanding more strict returns to their labor. These villagers began to carefully calculate their wages based on acreage rather than the working day.

Focusing specifically on the relationship between labor market development and labor exchange in rural Java, a study by Subejo and Iwamoto (2003) concluded that farmers have become aware of the opportunity costs of labor and have begun to behave more economically rationally and to pursue their self-interest to a greater extent. Thus, the farmers' motivation to join a reciprocal type of labor institution tends to decrease sharply with time. As is illustrated by the case in the most developed area of lowland hamlets where labor markets develop rapidly, exchange labor institutions have been replaced by hired labor.

The influence of labor market expansion on the changing nature of labor exchanges also occurred in the case of rice farming activities in rural Java. A study by Kano (1980) reported that the introduction of HYVs accompanied by labor market development caused a dramatic change in rice harvesting practices.

Research on rice harvesting systems in rural Java reported that there are two types of *bawon* (harvest-share) systems in the lowland irrigated area of rural Java (Kikuchi, 1981; Sturgess and Wijaya, 1983). The first type is the most traditional, where anyone in the village can participate in harvesting and farmers cannot limit the number of harvesters who participate. The second type is new and a modification of the first type; harvesting participants are strictly limited to people who perform extra services without pay such as transplanting and weeding. Later, the second type also changed remarkably into a hired labor system under the *tebasan* system.

The change of the system from free access harvesting to more strict or limited access has been stimulated by economic considerations related to the labor market. Under increasing population pressure both inside and outside the village and due to a lack of farming resources, villagers in rural areas have been crowded out by limited job opportunities. Villages have experienced little labor market development, and thus, opportunities narrowed within them. As the number of harvesters rose beyond a certain point, significant losses occurred due to physical damage such as trampled crops and from cheating and stealing. There was an incentive for hosts to restrict the number of harvesters.

Only people who had contributed extra services such as transplanting and weeding were therefore allowed to join the harvesting.

However, technological changes in farming may have the potential to either weaken or strengthen labor exchange practices. Technological changes in rice cultivation usually tend to weaken the demand for labor. As noted by Squires and Tabor (1991), Indonesia experienced remarkable technological changes in rice production during the 1970s–80s under the green revolution program. Further, Schweizer (1987) noted that the initial pilot project for the green revolution in Java was started as early as the 1960s. Technological changes were implemented through the introduction of farming inputs, rice mills, hand tractors and harvesting systems.

Sinaga (1978) reported that the introduction of tractors had the potential to result in serious losses in employment opportunities for traditional laborers. With regard to the harvesting system, Hayami and Hafid (1979) stated that the new system permits the use of the sickle, thus reducing the number of workers needed. Since 1970, the traditional system of rice harvesting under the restricted *bawon* system of harvesting with the *ani-ani* (hand knife) has been rapidly replaced by a system called *tebasan* whereby farmers sell their standing crops to middlemen called *penebas* at some time before the harvest. The contractors are usually free from the traditional obligations of the village community, and they can employ smaller numbers of regular workers who usually have patron-client relationships. Typically, they pay cash wages or in kind to the laborers and use sickles for higher efficiency. In this way, the cost of harvesting is reduced. *Tebasan* is also regarded as a system that permits optimal control over the number of harvesters.

Although a more efficient harvesting system has been practiced on a large scale in the farming community of rural Java, to some extent, the traditional collective harvesting system under *bawon* is still practiced. It may still be possible to sustain the spirit of moral economy that attends to the security of the rural poor while the practice of that moral economy becomes more limited. White (2000) noted that the practice of *bawon* can be understood as communal pressure for the maintenance of harvest labor recruitment and payment arrangements as distributional arrangements that reflect the communal entitlement of rural people to share in rice production even when they do not control the land on which it is grown. As noted by some scholars (Koentjaraningrat, 1961; Hayami and Kikuchi, 1986; Naylor, 1990; and Gilingan, 2002), the perception of local solidarity and of moral economy is still shared among some villagers

Even though, generally speaking, modernization forces, such as labor market development and new technology, tend to weaken village community institutions including the labor exchange, Gillingan (2002) theorizes the possibility that labor exchanges will continue to survive even as markets develop. Technological considerations relating to teamwork dominate the decision to use exchange labor. Further, demand for such labor will be closely related to the characteristics of local production (e.g., crop choice, water use) and may persist even as the market develops.

The introduction of technological changes to dry land farming in the upland area, which is generally characterized by the involvement of collective work rather than individual work, has likely strengthened the practice of labor exchanges. Customary collective works under labor exchange practices are still highly regarded among villagers in the upland area, where the development of the labor market has been more limited. Sajor (2000) also contended that due to mediating factors, the commercialization of agriculture accompanied by labor market development did not have a negative effect on the reciprocal labor arrangement in every case. Thus, the reciprocal labor arrangement did not always diminish in proportion to the penetration and growth of commercialism in agriculture.

The knowledge that the deforestation of upland areas of rural Java might cause unstable agricultural practices and unstable livelihoods gave upland villagers a keen interest in growing trees and in related activities that support the success of agro forestry, as reported by Van der Poel and Van Dijk (1987). They have followed various strategies in response to differing local circumstances. The villagers' strategy can be understood from the perspective of technological change in related activities of agro forestry.

Technological farming changes in the uplands have introduced a mixed cropping system, locally called *tumpang sari*, between biennial (food crops) and perennial (wood tree) crops. In the upland areas where the impact of erosion is serious erosion, the introduction of a tree cropping system has been considered (Fillius, 1997). The mixed cropping system in the upland areas demands collective work for several activities such as terraced field construction and repair, activities related to timber and firewood, and manure transportation. The new farming system requires collective labor institutions. To adapt to the new technological requirements, villagers make use of community structures such as social relationships.

The development of *prayaan* (collective labor selling) in mountainous upland hamlets has been reported by Subejo and Iwamoto (2003) as a kind of adaptation strategy by rural villagers to cope with the difficult tasks of farming operations. *Prayaan* was also developed as a strategy to gain monetary payments that may improve the household income. In addition, the villagers also still practice traditional labor exchanges, such as *krubutan* and *sambatan*, which maintain the principle of labor reciprocity. As reported by Cataculan and Mercado (2001), collective local labor actions based on local initiatives for landcare in upland areas have been regarded as appropriate for farming practices in the fragile mountainous areas. This strategy may also significantly contribute to the prevention of resource degradation from severe soil erosion, loss of biodiversity, and sedimentation in downstream areas like rivers, coastal areas, and farmlands.

Rural communities have certain capacities to adapt and adjust the practices of the old institutions based on the influence of external factors. These capabilities include the following: kinship, neighborhood and friendship. Cox (2008) argues that households in developing countries depend on friends and relatives for their livelihood and sometimes for their survival; help exchanged within kin networks affects the distribution of economic wellbeing. Additionally, Tsurata (2005) and Zeitlin *et.al.* (1991) found that in rural communities, most villagers depend on relatives and close neighbors (often one and the same) to establish family support systems. As reported by Jay (1969), Javanese villagers developed both kin and non-kin relationship support systems. Villagers maintain a positive sense of support that comes from frequent daily interaction and from a sense of mutual trust and obligation.

In summary, the changes in labor institutions that stem from villagers' practices in labor exchanges are a type of institutional innovation of the labor arrangement in rural areas. Leading researchers on such institutional innovation (Ruttan and Hayami, 1984; Hayami and Kikuchi, 1986; Ruttan, 1989; and Hayami, 1998) theorize that there is a possibility of interrelated and interdependent factors, including resource endowments, technology, cultural endowments and institutions at work in such transformations. With the pressure of a growing population, resource scarcity will lead the adjustment to the rising economic value of labor and expansion of the labor market. Technical changes are considerably different from the previous traditional farming techniques used in rice growing areas, and these changes induce a higher yield. These factors have facilitated the

emergence of a new pattern in the employer-laborer relationship which constitutes an institutional labor innovation.

Cultural endowments may influence the supply of institutional innovation. Cultural endowments including religion and ideology make some forms of institutional change less costly. The traditional moral obligation in the Japanese village community to cooperate in joint communal infrastructure maintenance, for example, has made it less costly to implement a rural development program than in societies where such traditions do not prevail (Ruttan and Hayami, 1984). In a similar manner, a strong mutual aid tradition that is rooted among Javanese villagers likely also played an important role in the process of institutional labor innovation in rural Java. Furthermore, as argued by Hayami (1998), because of the critical importance of cultural and social norms in enforcing institutional arrangements, it is likely that the arrangements are designed to be consistent with the common cultural norms in society, and more concretely, designed to be congruent with traditional institutional forms.

In short, it is possible to claim that particular factors such as labor market expansion, advances in farming-related technology and scarcity in resource endowments have caused the deterioration of labor exchange practices in many rural communities. Cultural endowments in the form of traditional cooperation patterns of *gotong royong* that often persist in the community of rural Java are expected to potentially influence the changes of institutional labor arrangements. However, it is likely that the process is more complicated than such a statement would suggest. Villagers, as individuals and as members of a community that hold particular social relationships in that community, have the capacity to create strategies of adaptation and to transform traditional institutions into new, modified institutional innovations that provide them with advantages and security.

1.5. Perspectives and Objectives of the Study

From a review of the related literature, it can be understood that alongside rural labor market development, Javanese peasant households still attach great importance to maintaining good relations with neighbors in their community. These relations are manifested in several types of mutual cooperation institutions. Mutual reciprocity norms are still highly valued in the moral perception of the villagers. However, as the labor market has expanded and the economy has developed, new work arrangements such as

hired labor contracts have replaced traditional collective labor exchanges in favorable areas such as flat rice field villages.

In spite of continual labor market development, due to certain factors, community members in mountainous and remote area that commonly face resource scarcity and a lack of labor market development widely recognized and practiced traditional collective labor exchange arrangements to complete various task. Further, although the role of traditional labor exchanges has been diminished in areas with better resources and a highly developed labor market, villagers in these areas still invite fellow villagers to participate in typical traditional events such as home construction and repair. As an adaptation mechanism, some local people have developed strategies that combine labor market development with a spirit of social solidarity to face challenges related to natural resources and local ecology.

To date, studies on the custom of mutual help that is practiced among Javanese villagers have mainly focused on the activity that can be classified under *gotong royong*, which is a general term referring to collective action among villagers to pooling their labor power for the construction and maintenance of public facilities. However, only a few empirical studies examine the contemporary practices of mutual help institutions in rural Java and their mechanism of adaptation. A detailed and comprehensive study of labor institutions under the framework of *gotong royong* should include the various institutions, systems and mechanisms that direct not only non-farming activities but also farming activities.

Therefore, this study attempts to describe the current situation of mutual help in rural Java, which is characterized by varying conditions in terms of physical, social and economic resource endowments. The study will begin with the broad concept of the mutual help custom known as *gotong royong* followed by an analysis of customary collective work that is strongly related to farming operations. In brief, the study objectives can be simplified into following themes:

1. Analysis of the general features of labor institution practices in rural Java, which will consist of (a) the description of the types, characteristics, and functions of labor exchange, (b) the categorization and principles of labor institutions, and (c) analysis of the changes and continuity of labor institution practices.
2. Analysis of the transitional process of traditional labor exchange practices among agrarian communities in rural Java, including (a) the characteristics and arrangements

of labor exchanges among farming and non-farming activities and (b) the changing process of labor exchange for farming operations

3. Analysis of the disappearance of traditional labor exchange practices in favor of hired labor arrangements. This analysis focuses on the following issues: (a) changes in the socioeconomic condition of research sites and farming operations, (b) functions and contract types of hired labor, (c) household employers' characteristics and the use of hired labor, (d) employees' characteristics and the transaction and allocation of hired labor, and (e) social relationships and labor tying arrangements.
4. Analysis of the arrangements and structures of collective labor selling as a new type of labor exchange that combines the principle of traditional labor exchange with a modern market mechanism. This analysis will focus on (1) the characteristics and functions of institutions and (2) a comparison of the institutional arrangements in two surveyed hamlets. The analyzed characteristics and functions include group structure and membership, labor functions or type of activities, purposes or mechanism of income disbursement and group assets, and the penalty system. The comparison of institutional arrangements will examine wage labor structure, historical processes and background, the income structure of the group, and the distribution of income from working group activity.

1.6. Research Method and Analytical Framework

1.6.1. General research method

The basic structure of the research is a “comparative study” conducted in two typical areas that have different conditions in term of their physical, geographic, economic and social aspects. The first area is located in a flat region and is generally characterized by more abundant resources, greater mobility and access to job opportunities, and relatively weaker social relationships. This area will be referred as the “lowland hamlet.” The second area is located in a mountainous region and is generally characterized by a scarcity of resource endowments, geographic isolation, limited mobility and an underdeveloped labor market. This area will be referred to as the “upland hamlet.”

Previous empirical studies generally confirm that practices of traditional labor institutions in rural areas including rural Java have changed considerably. The process of change has been dramatic in areas with better resources, greater mobility and access to job

opportunities, and advanced labor market development. However, traditional labor institutions still serve some important functions for villagers such as emergency response and ceremonial and house construction activities. In areas where resources are scarce and geographic isolation is more persistent, however, traditional labor institutions are still used to meet daily needs. Labor institutions serve both farming and non-farming functions.

A comparative study of the arrangement of labor institution practices in lowland and upland hamlets is the proper approach to learn about the changing labor exchange process in both research sites. The comparative study will illustrate the adaptation strategies by local people in response to changing labor conditions.

Transformations or changes in the arrangements of labor institutions from time series data could not be used due to the unavailability of data for the same issues on any common points of time. Therefore, instead of time series data comparison, Focus Group Discussions (FGDs) in the surveyed hamlets have been fully analyzed to discover transitional processes of labor institution arrangements. Results of FGDs could confirm that each region characterized by particular resource endowments has their own transitional processes to arrange labor institutions to complete farming and non-farming operations.

We asked hamlet heads to choose a range of farming families representing different household statuses in the landholding structure for our sample of interview subjects. In addition to farming households, we interviewed representatives of farming operators or leaders of hired labor groups and group leaders of collective labor selling (*parayaan*). The first study analyzes the general features of labor institution practices in surveyed hamlets (see Chapter 2). In each hamlet, 30 households were selected and interviewed, for a total of 120 households in the four surveyed hamlets. The second study examines the transition process of labor exchange practices in surveyed hamlets (see Chapter 3). In each hamlet, 30 households were selected and interviewed, for a total of 120 households in the four surveyed hamlets. The interviewed sample households were the same households as in the case of the first study.

The disappearance of traditional labor exchange practices that are replaced by hired labor arrangements in lowland hamlets is traced in the fourth study (see Chapter 4). This study focused only in lowland hamlets due to the fact that incidences of casual hired labor in upland hamlets are quite rare, or much less intense, as compared to the cases in lowland hamlets. In each hamlet, 30 households were selected and interviewed, for a total of 60

households in the two surveyed hamlets. The interviewed sample households were the same households as in the first and second studies. An additional 12 persons, as representatives of farming operators and, or, leader hired labor groups, and group leaders of collective labor selling have been interviewed.

Finally, the fifth study discusses the arrangements and structures of collective labor selling groups in upland hamlets (see Chapter 5). This study focused only in upland hamlets as those practices only exist in that area. In each hamlet, 30 households were selected and interviewed, for a total of 60 households in the two surveyed hamlets. The interviewed sample households were the same households as in the first and second studies for upland hamlets. In addition, 23 persons, which were group leaders of collective labor selling (*prayaan*), have been interviewed.

1.6.2. Analytical framework of the study

The study uses four stages of analysis to consider the general characteristics and structures of rural labor institutions. The first stage addresses the general features and nature of labor institutions in rural Java with a particular focus on their functional characteristics. After establishing a common understanding of the principals and working system of labor institutions, the next stage focuses on the institutions that are closely related to various farming operations.

In the second stage of analysis, the study concentrates on the transitional process of traditional labor exchange practices for farming and non-farming operations in upland hamlets and for non-farming operations in lowland hamlets. The main focus of the study is on *Sambatan* and *Krubutan*.

The two remaining analytical stages deeply examine contemporary practices and newly developed institutions of labor arrangement in relation to labor market development. The focus of third study is the historical process through which customary exchange labor is replaced by *buruh tani* (hired labor) in lowland hamlets. This stage focuses on the types and structures of hired labor arrangements for various farming operations.

The fourth stage of analysis focuses on *prayaan*, the unique labor institution that is widely practiced in upland hamlets. That institution involves collective labor selling and was created by local people to advance their economic and social interests and as a mechanism to overcome the obstacles presented by limited farming resources in the region.

Table 1.1 below presents the analytical framework used to examine the general structures of labor institutions in rural Java and at each stage of analysis in detail.

Table 1.1. Analytical Framework of the Study

Function of institutions	Name of labor institutions *)	Purposes	Existence by sites	Charcteristics of Reciprocity	Type of Compensation **)	Participants/ members	Stages of analysis					
							1	2	3	4		
Non-farming Operations	<i>Gerakan</i>	Collective action-public	Lowland & Upland	Non-strict & Long-term	Social validation	Fix	First analysis (Chapter 2)					
	<i>Gugur Gunung</i>	Collective action-private	Lowland & Upland	Non-strict & Long-term	Social validation & Labor	Flexible						
	<i>Rewang-Layatan</i>	Ceremonial-private	Lowland & Upland	Non-strict & Long-term	Labor	Flexible						
	<i>Sambatan</i>	Private	Lowland & Upland	Non-strict & Long-term	Labor	Flexible						
Farming Operations	<i>Sambatan</i>	Private	Lowland & Upland	Non-strict & Long-term	Labor	Flexible			Second Analysis (Chapter 3)			
	<i>Krubutan/Gantian ***)</i>	Private	Upland	Strict & Short-term	Labor	Fix						
	<i>Prayaan ***)</i>	Private	Upland	Strict & Short-term	Labor & Money	Fix						
	<i>Buruh Tani/Hired Labor</i>	Private	Lowland	Strict & Short-term	Money & or in kind	Fix						
											Fourth Analysis (Chapter 5)	
											Third Analysis (Chapter 4)	

Note:

*) brief explanation on each labor institution:

Gerakan = collective action for constructing and maintaining public infra structures

Gugur gunung = mutual help for coping emergency events

Rewang = mutual help for enjoyment ceremonies

Layatan = mutual help for condolence ceremonies

Sambatan = long-term and non-strict requested mutual help

Krubutan = strict exchange labor under yearly basis

Gantian = strict exchange labor under seasonal basis

Prayaan = collective selling labor group

Buruh tani/buruh upahan = casual hired labor for farming

**) = all activities will be served with simple meal except for *sambatan* which commonly will be served with luxurious meals

***) = the activities mainly for farming operations, only very few cases those have been used for non-farming operations

CHAPTER 2.

RESEARCH SETTING

2.1. General Condition of Research Sites

Field research was conducted in the Yogyakarta Province, central part of Java Island (Figure 2.1). Four hamlets with different social, economic, and geographic conditions were selected as research sites (Figure 2.2 Table 2.1). The following hamlets were studied: Planggok and Somokaton in Margokaton Village of Sleman District, in northwest Yogyakarta; Watugajah in Girijati Village and Jati in Giricahyo Village in the Gunung Kidul District, in southern Yogyakarta. General conditions of surveyed hamlets visually are shown in Appendix 1-3.

Field research was conducted in 2002, 2008, and 2009. The study done in 2002 focused on the general condition of the research sites, general and functional characteristics of labor institutions, and socio-economic structure of surveyed households. In 2008, the field research was directed to analyze the transformation or transition process of labor institution practices in surveyed hamlets. The final study was carried out in 2009 and focused on the arrangements of hired labor for farming operations in lowland hamlets and customary selling of collective labor in upland hamlets.

The selection of study sites considered the transitional process of labor institution practices in the research sites, with differences in resource endowments and job opportunities. The first two hamlets are located in the lowland area, which has the most favorable resources and high population mobility. The third hamlet is located in the hilly area but close to the coastal area, where villagers to some extent have access to off-farm jobs. The last hamlet is situated in the most remote area, which has the most unfavorable resource endowment and quite limited access on off-farm jobs.

Water availability and soil conditions are important aspects of the research sites' physical conditions. Water availability is greater in Planggok and Somokaton; therefore, farmers in these areas enjoy relatively better conditions. In contrast, the irrigation conditions in Watugajah and Jati are much less favorable. Both hamlets are located on a hilly area that was built on a hard coral reef. While Watugajah can draw on springs for paddy production in the rainy season, Jati has no source of water other than rainfall.

Farmers in Jati can generally grow only upland crops once a year, whereas farmers in Watugajah can grow paddy in the rainy season and secondary crops in the first dry season.

The risk conditions of farming activities in the surveyed areas are closely related to certain physical and geographical factors including water, soil and weather conditions. With the exception of the hamlet of Jati, it has been comprehensively reported that the limitations and conditions of the geographical/physical factors, such as water, soil, and climate, are essential in determining the performance of cropping patterns that, in turn, determine farming income as noted by Suryantini (2002); Suryantini, Yagi, Kiminami and Iwamoto (2003).

As reported by Suryantini, Yagi, Kiminami and Iwamoto (2003), “production risk” of farming in upland areas is generally much higher than in lowland areas. Facing an insufficient water supply in the hilly areas of the Watugajah hamlet, for example, is one of the reasons for low productivity of paddy. Villagers owning relatively flat farming fields can grow only paddy in the rainy season using water from natural springs, from traditional channels or from rainfall.

In the hamlet of Jati, water resource is a much more serious concern as farmers must rely solely on rainfall, which means they are only able to grow rain-fed paddy mixed with secondary crops. The soil in the upland areas is formed from limestone and thus has a limited capability to retain rainfall. This factor contributes to the low fertility rates of the soil, a common problem with the soil in the upland hamlets. This means that the villagers must add manure to upgrade the fertility levels of the soil. In lowland areas located close to volcano sites, soil is composed of volcanic deposits and sediments, resulting in highly fertile soil. The primary production risk in the lowlands, in contrast to the soil problems of the uplands, is rat attacks on the paddy fields.

In response to production risks on farming, as argued by Suryantini (2002), villagers in upland hamlets are primarily small scale farmers who tend to behave as “risk averse”. Farmers who have extensive experience in farming have the knowledge to select those crops that are suitable for their farming lands given the known resource restrictions. To cope with the threat of drought, villagers practice mixed cropping (agroforestry), which includes crops that have the capability to grow in the event there is a severe lack of water.

The agroforestry cropping pattern as a production risk cropping strategy maintains mixed cropping between food crops and trees, and is an important farming system in upland areas. In this system, farmers can grow a combination of rain-fed paddy, corn,

peanut and chili plants together with trees. They also can grow fodder grass, which is quite important for the feeding of their livestock. As it has been further argued by Mercer (2004), farming in mountainous areas is generally a risky and uncertain endeavor. The introduction of agroforestry has been found to have the potential to not only increase farmers' incomes but to solve some of the more difficult environmental problems.

Java Island

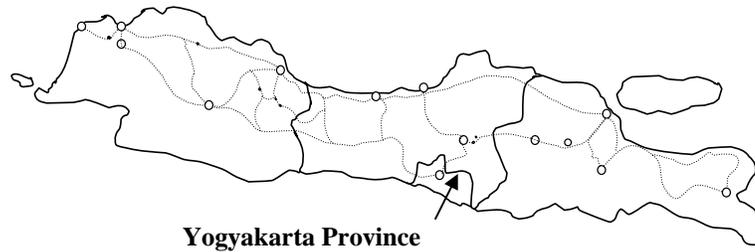


Figure 2.1. Map of Research Site on Java Island

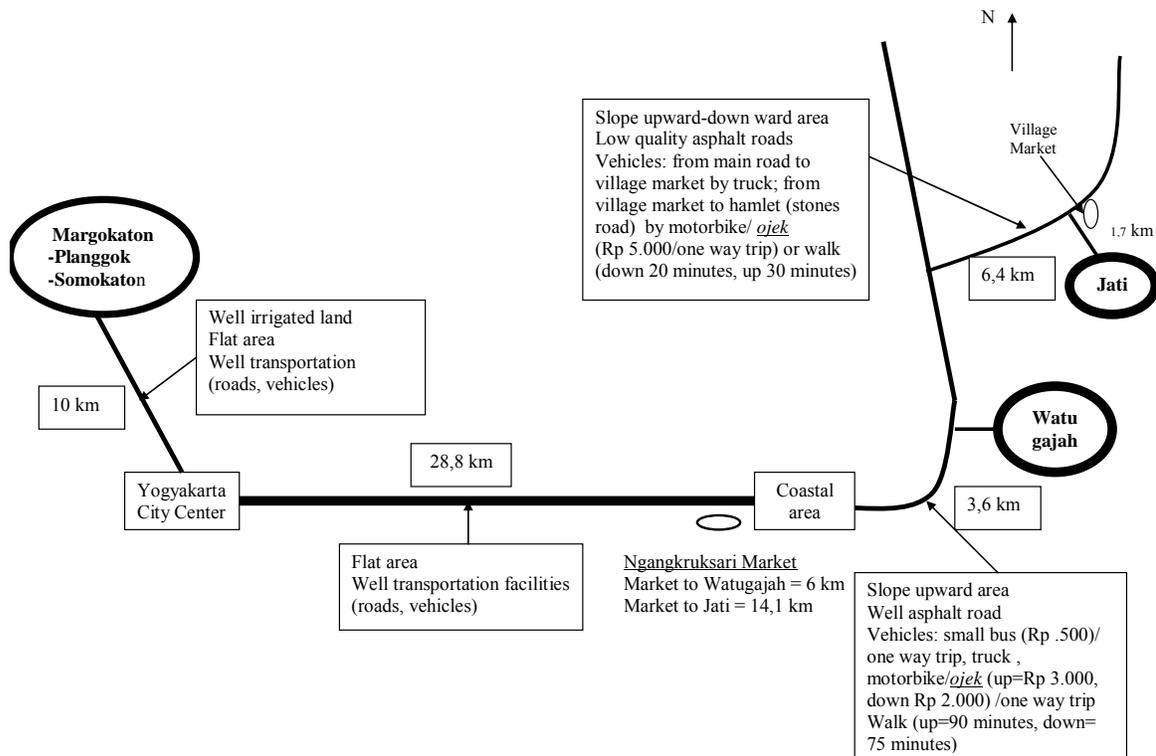


Figure 2.2. Map of the Four Surveyed Hamlets

Watugajah and Jati are located approximately 30-40 kilometers from the city center, making it difficult for villagers to commute to the city center for daily work. In this sense, Jati has the worst access to a city. Several years ago, a small truck provided informal transportation from a marketplace near Jati to a coastal area that hosted a local wholesale market, retail shops, and tourist industries. This transportation link permitted the people of Jati to connect with "other worlds": selling products at the market, buying daily necessities for their own consumption or trading, and working in the tourist industries, such as hotels and shops. Thus, the hamlet of Jati has been separated from "the outside world" for many years, and this has likely contributed to the persistence of older types of labor institutions.

Table 2.1. General Conditions of the Research Sites

Research site (hamlet)	Planggok	Somokaton	Watugajah	Jati
Village	Margokaton	Margokaton	Girijati	Giricahyo
District	Sleman	Sleman	Gunung Kidul	Gunung Kidul
Area condition*)	lowland	lowland	upland	upland
Type and structure of land	clay, flat	clay, flat	clay/limestone, terraced	limestone, terraced
Distance from city center (km)	10	10	32.4	40
Road condition	asphalted	asphalted	asphalted/ traditional	traditional
Transportation facilities:				
a. Public	small car	small car	small bus/truck	truck/motor bike
b. Private	motor bike/bicycle	motor bike/bicycle	motor bike	motor bike
Irrigation system	technical	traditional	traditional/rain-fed	rain-fed
Population (a)	430	604	641	622
Number of households (b)	97	163	130	115
Average size of household (person/household)=(c)=(a)/(b)	4.4	3.7	4.9	5.4
Total land area (ha) :	41.3	44.5	191.5	129.5
-Paddy field	31.0	23.0	22.1	-
-Dry field	-	-	144.2	127.0
-Compound	6.8	17.1	25.2	2.5
-Others	3.5	4.4	-	-
Average size of farmland (ha)	0.32	0.14	1.28	1.10

Source: Village data in 2002

Note : *)= lowland refers to flat rice growing area while upland refers to mountainous and hilly areas

The socio-economic situation has played a considerable role in determining community life and structure in rural Java. The basic community structure can be examined using an analytical framework on household economic and social structures. The following section provides a detailed description of the socio-economic situation of the surveyed hamlets.

2.2. Economic Structure of Households

In general, the role of landholding has been important in representing the household economic structure in agrarian communities. This section highlights the landholding structure in the surveyed hamlets. As shown in the previous section, the condition of the surveyed hamlets can be divided into two general categories, namely upland and lowland hamlets.

Resource holding in the hamlets is analyzed based on land ownership. The average of land ownership in upland hamlets is far larger than in the lowlands, with a proportion of 1.29 and 0.34 ha, respectively. The type of land in the upland area is dry land (73.8%), and villagers apply a mixed cropping system. In the lowlands, villagers depend on wet land (77.4%), even though it is quite small in size, so they can grow paddies 2-3 times a year. Due to the high level of owned farmland, the demand for farm labor in the uplands is also high. This also means that the mobilization of labor is quite important for villagers (see in detail in Table 2.2).

Table 2.2. Average and Stratum of Landholding in Lowland and Upland Hamlets

Land holding type and stratum	Unit		Proportion (%)	
	Upland	Lowland	Upland	Lowland
1. Land holding types	ha/HH	ha/HH		
Wet land	0.21	0.26	16.1	77.4
Dry land	0.95	0.02	73.8	4.6
Home garden/compound	0.13	0.06	10.1	18.0
Total	1.29	0.34	100.0	100.0
2. Landholding stratum (ha)	HH unit	HH unit		
0.00-0.50	20	48	33.3	80.0
0.51-1.00	9	11	15.0	18.3
1.01-1.50	9	1	15.0	1.7
1.51-2.00	10	0	16.7	-
>2.00	12	0	20.0	-
Total	60	60	100.0	100.0

Source: Sample household surveyed in 2002

More strictly, categorizing household land ownership based on land stratum indicates that a large proportion of villagers in the lowland hamlets have very small-sized pieces of land (approximately 80% of villagers have less than 0.50 ha of land).

As typical of farming areas, the household economic structure is considerably characterized by a farmland owning structure. However, in the area where population

mobility and off-farm job opportunities are widely available, the composition of land holding likely does not represent the structure of household income.

An analysis of the farm household economy primarily focuses on the farm's type of agricultural production. Agricultural production can be examined based on the amount of sales and cash expenditures. In terms of sales, farmers in lowland hamlets do quite well, with sales of catfish accounting for the greatest percentage of income at 48.4% of total sales; paddy selling accounts for the second largest farming income at 36.0%; and secondary crops account for 9.6% of the total sales. In contrast, the farmers in hilly areas depend on livestock (29.4%), timber and firewood (25.0%) and vegetable production (27.4%) (Table 2.3).

Catfish production has been common among villagers, especially in the Planggok hamlet as irrigated water is available the entire year (this commodity was introduced in 1995) (Iwamoto *et al.*, 2003). Catfish ponds have been built side-by-side with paddy fields because it is easy to convert paddy fields into catfish ponds and vice versa.

Catfish has been regarded by villagers as a highly profitable business that is accompanied by high risks. The business also requires relatively large investments, mainly for pond construction, baby fish, and feeding. Business risks related to catfish production include fish diseases and price fluctuations of baby fish, feed and mature catfish in the market. In 2002, approximately 10 sample households in the Planggok hamlet experienced losses from the catfish business, varying from 0.2-6.7 million IDR in a year. By contrast, the most successful farmer made a net profit of approximately 13.0 million IDR in a year.

The year 2002 can be regarded as exceptional, especially in respect to the catfish business. The catfish business was highly unstable that year, resulting in many farming household losses for those villagers dependent upon catfish in the lowland areas. To generate a more accurate picture of the normal conditions for the catfish business, our data have been adjusted regarding input, output, and profitability profile of the catfish business by following a similar study in the same hamlets conducted by Iwamoto, Hartono and Fukui (2003).

When compared to the lowlands, we find that agricultural cash expenditures in the uplands are far less than those cash expenditures in the lowlands. The main expenditures for farmers in the uplands are as follows: hired labor (54.9%), fertilizer (27.2%) and cash rent (6.7%). Farming expenditures among farmers in the lowland areas include: catfish production (54.6%), cash rent (12.4%), fertilizer (10.2%) and hired labor (10.2%).

Table 2.3. Structure of Cash Household Income in Upland and Lowland Hamlets in 2002

No	Cash income component	Upland		Lowland	
		(000 IDR/ household/year)	%	(000 IDR/ household/year)	%
1	Agricultural product sales				
	Paddy	20	0.7	1,928	36.0
	Other crops	829	27.2	497	9.6
	Fruit	278	9.1	101	1.9
	Timber/Fire wood	756	24.8	0	-
	Home garden	274	9.0	125	2.3
	Livestock	892	29.3	91	1.8
	Fish	0	-	2,638	48.4
	Total agricultural sales (a)	3,049	100.0	5,381	100.0
2	Agricultural cash expenditure				
	Seed	92	27.2	48	1.5
	Fertilizer	22	6.4	317	10.2
	Pesticide	0	-	46	1.5
	Irrigation	0	-	0	-
	Farm tool (reparing)	2	0.4	3	0.1
	Feed for livestock	0	-	96	3.1
	Fish production *)	0	-	1,701	54.6
	Tax	15	4.3	19	0.6
	Hired labor	186	54.9	319	10.2
	Machine & animal	0	-	182	5.8
	Cash rent	23	6.7	386	12.4
	Others	0	-	5	0.2
	Total agricultural cash expenditure (b)	339	100.0	3,116	100.0
3	Agricultural cash income (1) = (a-b)	2,710		2,265	
4	Income ratio (c) = (1/a*100)		88.9		42.1
5	Non-agricultural cash income				
	Agric. wage labor	180	8.1	350	5.0
	Non-agric wage labor	229	10.3	778	11.1
	Trading	481	21.5	1,740	24.8
	Artisan	329	14.7	500	7.1
	Transportation	0	-	180	2.6
	Gov. officer	0	-	930	13.3
	Household industry	0	-	778	11.1
	Remittance	515	23.1	811	11.6
	Rent income	499	22.3	518	7.4
	Pension and Others	0	0.0	417	6.0
	Total non-agricultural cash income (2)	2,234	100.0	7,002	100.0
6	Total cash income (3)=(1+2)	4,944		9,267	
7	% of agricultural cash income (4)=(1)/(3)*100		54.8		24.4
8	% of non-agricultural cash income (5)=(2)/(3)*100		45.2		75.6

Source: Sample household survey in 2002

Note: *) fish production includes expenditures for hired labor, baby fish, feeding and medicines

Clearly, there is a sharp contrast between lowland and hilly areas in terms of the composition of farming cash expenditures. In the lowlands, the income ratio (ratio of net income to gross income) is comparably low, at only 42.1%. Consequently, the proportion of agricultural net income in the lowlands is far less than that in the upland hamlets (88.9%). The result indicates that agricultural income is decreasing when compared to

non-agricultural income in lowland hamlets. This is in line with the work by Fukui (2009) who studied the economy of households in the same hamlets and reported that farming income from 1999-2002 had decreased considerably.

Concerning the composition of total cash income, the income share of agricultural products is predictably low in lowland hamlets (24.4%) where the major income sources include non-agricultural wage labor, work in the public sector, trading, and self-employed artisan-type occupations (e.g., carpenters or masonry). The substantial contributions of remittances from family members are also pronounced.

Villagers in hilly areas with limited access to off-farm jobs are highly dependent on agricultural production. Over half of the total household incomes in upland hamlets are earned through agricultural production (54.8%). An emphasis on the importance of agricultural production and a higher ratio of agricultural income to non-agricultural income in upland hamlets is also in line with the study by Iwamoto (2009).

Artisan-type jobs, such as carpenters or masons, are also important in both hamlets. Trading is the most common business for rural women, and long working days are rewarded with a low daily return. Remittances also contribute substantially.

With regard to the level of commercialization, the process has likely been more pronounced in lowland areas and is especially evidenced by the selling of the staple food crop: paddy. The rate of paddy selling in upland hamlets is far lower, on average 0.02 million IDR (5.4%), as compared to that in lowland hamlets, on average 1.77 million IDR (85.1% of total production).

Another crucial issue reflected in the household economy is asset holding of farming households. Asset holding likely plays an important role in guaranteeing that the requisite needs of the household are met year to year even when income is less than adequate for a given period of time

Asset holdings among Javanese villagers are commonly accumulated through the assets inherited from parents of both the wife and the husband's families and the various efforts of independent households through their businesses. The property inheritance system in Javanese communities may differ from that of other parts of Japan. In rural Java, the common rule for property inheritance, as reported by Jay (1969) and Hardjono (1987,) states that all children have a similar right to inherit the parents' properties in equal manner. In reality, however, there have been cases where the male received twice the

property as the female. Therefore, while in principle all descendents have the right to inherit equal amounts of the properties of the parents; this is not always the case.

As displayed in Table 2.4, there are differences in terms of asset holdings between households in lowland and upland hamlets. In lowland hamlets, the most important assets are a motorbike (48.6%), cattle (9.6%), a car (8.5%) and trees (8.4%). The trees typically grown by villagers in lowland hamlets are fruit-bearing trees planted in their home gardens. The ownership of a motorbike in lowland hamlets is an extremely important possession as it allows villagers to access non-farming job opportunities outside their immediate area. Maintaining better road conditions in the hamlet and village, therefore, also plays a critical role in allowing the villagers, using their motorbikes, to pursue non-farming jobs over a wider area.

Table 2.4. Assets Holding of Farming Households in Upland and Lowland Hamlets

Types of household assets	Upland hamlets (No. HH)		Average Lowland		Lowland hamlets (No. HH)		Average Upland	
	Planggok 29	Somokaton 30	000 IDR/ HH	%	Watugajah 30	Jati 31	000 IDR/ HH	%
Farming tools	205	134	169	1.9	334	268	301	2.6
Livestocks								
- Cattle	96	1,605	863	9.6	4,984	4,143	4,557	39.3
- Goats	189	177	183	2.0	381	601	492	4.2
- Chicken	127	137	132	1.5	90	87	89	0.8
- Others	21	21	21	0.2	3	-	1	0.0
Trees	837	674	754	8.4	3,460	3,620	3,541	30.5
Durable goods								
- TV	528	428	477	5.3	553	403	477	4.1
- Bicycle	286	270	278	3.1	13	3	8	0.1
- Motorbike	3,942	4,769	4,363	48.6	1,914	655	1,274	11.0
- Car	1,552	-	763	8.5	-	-	-	-
Finacial assets								
- Gold	287	655	474	5.3	344	377	361	3.1
- Deposit	127	318	224	2.5	426	476	451	3.9
Others	524	50	283	3.1	80	17	48	0.4
Total	8,721	9,238	8,984	100.0	12,583	10,650	11,600	100.0

Source: Adapted and calculated from Takashino (2009)

In contrast to the assets of households in lowland hamlets, the most important assets of the farming households in the upland hamlets are cattle (39.3%) and trees (30.5%). Assets in the upland hamlets represent those items necessary for daily farming production. The assets structure is also closely related to the practices of the agroforestry system whereby the villagers grow many kinds of trees either for the timber or the fruits. Villagers also grow fodder grass in the terrace farming land. Fodders collected from the cultivated

grass and from the leaves of particular trees provide feed for their major asset - livestock, mainly cattle and goats. Maintaining the terraced farming fields requires a collective labor force. This work force is important for asset accumulation and income earnings for the upland farming households.

2.3. Social Structure

With regard to social factors, attention is mainly focused on the strong kinship relations among villagers. To fulfill daily needs, villagers are closely interdependent with their neighbors and relatives. Kinship ties overlap considerably with neighborhood relations. Mutual help among relatives has been practiced from generation to generation, especially in finance, labor exchange, and ceremonial (*slametan*) activities. Jay (1969) stated that the villagers consider the presence of a guest crucial to the ritual; the guest helps ensure the ritual's efficacy by witnessing its performance as one witnesses a legal document. The concept of *slametan* is that of a placid existence that arises from the absence of troubles and obstacles.

Before analyzing kinship relationships and mutual aid among relatives, it might be useful to analyze the household and productive labor structures. In this study, a household by definition, as documented by Elliott and Gray (2000), refers to a *commensal* (a place for sharing the same food or eating together) and a residential unit, which may consist of not only primary relatives (family of orientation or family of procreation), but also distant kin or non-kin.

With regard to family type in rural Java, both nuclear families and stem families⁹ are quite common. In many cases, after a married couple becomes independent, they reside in their own house nearby their parents; occasionally, however, the married couple chooses to move away from their families. It is also possible that a young couple with small children will live in the same house as one of their parents. Additionally, there are instances where the aging parents move in with one of their children, often the result of the failing health of one or both of the parents.

⁹ A nuclear family is a two-generation family consisting of a father and mother and their children or a single, possibly widowed, parent and his/her children. While, a stem family is a three-generation family consisting of a father and one or more of their usually married male offspring live together, unmarried female children also stay in the family until they are married (Elliott and Gray, 2000).

The structure of the household and the productive labor force is displayed in Table 2.5. The dominant structure of household size in both lowland and upland hamlets is quite similar. In the upland hamlets, 50% of the households consist of 3 to 4 persons while 35% of the households have 5 to 6 persons. In the lowland hamlets, 40% of the households are made up of 3 to 4 persons while 41.7% have 5 to 6 members. Thus, the average number of people in an upland household is 4.3, whereas the average number of people in a lowland household is only slightly higher at 4.5¹⁰.

With regard to the productive labor force, again the numbers between the two areas appear quite similar. In the upland areas, 61.7% of the households show a productive labor force of 3 to 4 persons, whereas 23.3% of the households indicate a labor force of less than 3. In the lowland hamlets, 61.7% of the households report a labor force of 3 to 4, whereas 21.7% of the households report a labor force of less than 3 persons. Again, the average productive labor force per household in both areas is very similar with upland hamlets at 3.5 persons and lowland hamlets at 3.3 persons. Although the productive labor forces of the two regions are comparable, the household labor force in the lowland hamlets is engaged in significantly more non-farming jobs because they have a much greater opportunity to do so than households in the upland hamlets.

Concerning the overlap between neighborly and kinship relations, the proximity of living locations enables relatives and neighbors to participate in mutual help with fewer difficulties. Kinship relations have contributed to the strengthening of mutual ties among community members. Close kinship relations developed at the research sites, where relatives include parents and siblings of husband and wife. By definition, each household has four parents if the household has a married couple. In general, there is no remarkable difference in terms of average number of relatives among villagers in upland and lowland areas. The average number of relatives in upland and lowland areas is 10.3 and 9.9 persons per household, respectively (Table 2.6). A larger number of relatives who live near each other is an advantage and enables the convenient arrangement of mutual help activities.

¹⁰ By comparing to population data in four surveyed hamlets as previously analyzed in Table 2.1, average size of household in lowland area is 4.4 and 3.7 people/household in Planggok and Somokaton respectively. While average size of household in upland area is 4.9 and 5.4 person/household in Watugajah and Jati respectively. In sum, average size of household in lowland is 4.1, while in upland that is 5.2 people/household. This phenomenon indicates that average size of household in upland is larger as compared to lowland. The average size of household from population data as shown on Table 2.1 seems more natural as compared to data of sample households. There is a possibility of some biases on the household size condition of selected sample households.

Table 2.5. Household Structure and Productive Labors in Surveyed Hamlets in 2008

A. Proportion of Household based on Household Members

Household or family members (persons)	Number of households (unit)		Proportion of households (%)	
	Upland	Lowland	Upland	Lowland
< 3	6	6	10.0	10.0
3 to 4	30	24	50.0	40.0
5 to 6	21	25	35.0	41.7
> 6	3	5	5.0	8.3
Total	60	60	100.0	100.0

B. Proportion of Household based on Number of Productive Labors

Number of productive labors (persons/HH)	Number of households (unit)		Proportion of households (%)	
	Upland	Lowland	Upland	Lowland
< 3	14	13	23.3	21.7
3 to 4	37	37	61.7	61.7
5 to 6	8	9	13.3	15.0
> 6	1	1	1.7	1.7
Total	60	60	100.0	100.0

C. Average of household member and productive labors

Household by average	Persons/Household	
	Upland	Lowland
1. Household members	4.3	4.5
2. Productive labors	3.5	3.3

Source: Sample household survey in 2008

Table 2.6. Kinship Relations (Parents and Siblings) in Surveyed Hamlets

Location	Number of sample households	Number of parents and siblings (both sides)				Living places			
		Total	Parents	Brothers	Sisters	Same house	Same hamlet	Same village	Other villages
Upland	60	619	240	197	182	118	193	124	180
Lowland	60	595	232	177	186	85	193	80	236
<u>Average (person per household)</u>						<u>Composition (%)</u>			
Upland		10.3	4.0	3.3	3.0	19.1	31.2	20.0	29.1
Lowland		9.9	3.9	3.0	3.1	14.3	32.4	13.4	39.7

Source: Sample household survey in 2002.

Approximately half (50.2% in upland and 46.7% in lowland) of parents and siblings live in the same hamlet (including those in the same house). When including those who live in the same village, the percentage increases to 70.3% for upland and 60.2% for lowland areas. In general, population mobility in both the lowland and upland hamlets is relatively low. We assume that the low mobility resulting from the proximity of living location enables relatives to participate in mutual help with fewer difficulties.

The practice of inviting/being invited to ceremonies (*slametan*) among parents and siblings is common at the research sites. Both in upland and lowland areas, households typically invite each other to their *slametan* ceremonies at rates of 89.1% and 87.4%, respectively. Mutual help in financing has also been quite common in upland and lowland areas at rates of 82.6% and 75.5%, respectively. Mutual help in labor is also provided among households of relatives in both upland and lowland hamlets at rates of 78.5% and 73.4%, respectively (Table 2.7). Kinship relations function as a basic unit through which kinship members can receive mutual support for financing, farming operations, and ceremonial activities.

Table 2.7. Mutual Help among Parents and Sibings in Surveyed Hamlets

Location	Mutual help*)				Invitation to <i>slametan</i> (%)*)	
	In money (%)		In labor (%)		Yes	No
	Yes	No	Yes	No		
Upland	82.6	15.5	78.5	19.6	89.1	6.8
Lowland	74.5	23.8	73.4	24.9	87.4	9.4

Source: Sample household survey in 2002.

Note: *) Mutual help among parents and siblings who belong to different households

Neighborhood is also an important source of gift-giving support among the community. As the residential proximity in rural areas is considerably high, villagers know each other well, enabling community members to conveniently provide mutual support to neighbors on a daily basis. The close living arrangements of neighbors also facilitates smooth daily contact and interaction among them. Cooperative and collective work is more likely to be persistent under a strong sense of neighborliness.

Strong social relationships are widely and strongly appreciated by the Javanese community. Schweizer (1989) noted that the Javanese community considers neighborly harmony (*rukun*) extremely important. Participation in the *slametan* and readiness to help neighbors spontaneously are thought to be suitable ways of expressing this value.

Although commercialization, expansion of job opportunities, and population mobility have clearly occurred in the lowland areas, there is no remarkable difference in terms of social structure, especially in kinship relations among community members in lowland and upland hamlets. Basically, the social structure in both lowland and upland hamlets is quite strong.

2.4. General Types and Characteristics of Labor Institutions

Villagers have organized institutions dedicated to specific daily activities and purposes. Some institutions support similar activities and purposes. For instance, in finishing farming operations, villagers employ labor from several types of institutions such as various exchange labor and hired labor. The present study focuses not only on the general functions of village labor institutions, but also on the specific types and characteristics of these institutions in the different hamlets studied. The following discussion explains the major characteristics of each labor institution. The current study identified the following seven categories of labor institutions practiced in the four surveyed hamlets: *gerakan*, *gugur gunung*, *rewang* and *layatan*, *sambatan*, *krubutan/gantian*, *prayaan* and *buruh tani* (Table 2.8). Based on villagers' reports, these were the only labor institutions practiced in the surveyed areas. Several activities related to labor institutions arrangements in surveyed hamlets are visually shown in Appendix 4.

(a) *Gerakan* is a joint activity in which community members construct or maintain public facilities. At national level, labor service activities for maintaining public infra structures are commonly practiced and acknowledged as *kerja bakti* that means labor for service. This activity is typically initiated by formal leaders in the community, such as hamlet heads and RW/RT chiefs. Such work projects include constructing, repairing, or cleaning mosques, meeting rooms, roads, irrigation channels, springs, graveyards, and guardhouses. The organization of activity varies from RT to RW or even hamlet level. The working schedule and manner of contribution to the joint effort are flexible. The frequency of each activity depends on the conditions of each public facility.

(b) *Gugur gunung* is a joint activity to cope with emergency needs such as fires, landslides, and house destruction. The community, therefore, gives this activity the highest priority. *Gugur gunung* is commonly organized at the RT level, but in the case of large disasters, the hamlet as a whole coordinates joint work. Because of the critical importance of these activities, participation is extremely high, approaching nearly 100 percent. In the case of emergencies, the person who first discovers the affected area delivers the information to community members immediately for deliberation and action. The work is

typically continued until the rescue or rehabilitation work is completed. The majority of participants come from RT or RW or even the greater hamlet.

(c) *Rewang* and *Layatan*. Both *rewang* and *layatan* involve mutual help for important ceremonies in the village. *Rewang* is conducted at the ceremonial feast for marriages, circumcisions, or celebrations of pregnancy. *Layatan*, however, is mutual help for funerals. Participants contribute by sharing labor or costs (money and food materials) for the ceremonies. It is also important for participants to share the joys or sadness of the host family. Participants commonly consist of neighbors and relatives.

Table 2.8. General Characteristics of Labor Institutions in the Four Surveyed Hamlets

Type	Characteristics of Institutions
A. Labor Institutions for Non-farming Operations	
<i>Gerakan</i>	Joint activities by community members to maintain public facilities such as mosques, meeting rooms, roads, irrigation channels, springs, graveyards, and guardhouses
<i>Gugur Gunung</i>	Joint activities by community members to cope with emergencies such as fires, landslides, and destruction of house
<i>Rewang/Layatan</i>	Mutual help for ceremonial activities such as funeral, marriage, and circumcision
<i>Sambatan</i>	Requested mutual help for house construction and/or repairing
B. Labor Institutions for Farming Operations	
<i>Sambatan</i>	Requested mutual help for terrace making, wood transportation, etc.
<i>Krubutan</i>	Exchange labor among small group members for farming activities and domestic work (yearly basis). In some cases, villagers referred <i>krubutan</i> type institution as <i>gantian</i> , which has been arranged on a seasonal basis
<i>Prayaan</i>	Joint sales of labor to obtain cash income or to create joint assets for the group
<i>Buruh upahan/buruh tani</i>	Hired labor compensated in cash or in kind

Source: Interviews in 2002

(d) *Sambatan*¹¹ is requests to neighbors or relatives made by a client family who wishes to build or repair a house or cattle/goat shed or cage. In Planggok and Somokaton, *sambatan* can be also issued at the time of brick baking, and in Jati and Watugajah, for major agricultural operations, wood transport, or terrace construction. *Sambatan* is reciprocal aid

¹¹ *Sambatan* literally means "requests". *Sambatan* is an institution for providing assistance in response to a neighbor's request (Sullivan, 1992).

in which the reciprocity appears to be flexible. The client family is not expected to give immediate returns to their assistants and neighbors and strictly equal compensation of labor is not required. Asymmetrical help, therefore, may be available to the poor who cannot equally return the kindness of neighbors. Natural limits on kindness apply, however, and those who frequently call for *sambatan* will often have strained relations within the community.

(e) *Krubutan* is joint work that rotates among members of a small group. Normally this involves approximately five people from different households who gather in one group and work together, with the positions of the work team rotating among the households involved. This is the strictest type of labor exchange among the types observed in the four hamlets, since it demands rigid reciprocity and equality in work sharing. Separate *krubutan* groups are organized for men and women, and the groups consist of neighbors, friends, and relatives. Group members gather every day, typically in the afternoon, and work together for agricultural operations, terrace making, wood fetching, and processing of agricultural products, among other activities. In some cases, villagers have regarded *krubutan* as *gantian*. Practice of *gantian* is a simplified type of *krubutan*. It is generally organized only during the rainy season; thus, it can be referred to as a seasonal collective labor group. The number and composition of members is similar to that of *krubutan*. Members rotate work for farming operations, mainly involving land preparation and seed planting.

(f) *Prayaan* is group work similar to *krubutan/gantian*, but it differs in that it requires compensation through cash payments. At the same time, *prayaan* is different from casual hired labor due to its emphasis on the group. In fact, it can be seen as the group sale of labor, and the pricing differs sharply depending on whether the client is a member or non-member. The numbers of groups and of group members are flexible. The groups are organized separately by gender. Women's groups work mainly in agricultural operations, while men's activities are much broader, comprising agricultural operations, wood and stone collecting, terrace making, and plastering works.

The group activity is typically done once a week in the afternoon. The participation of members is high (80-90 percent), and absent members are required to pay a penalty in cash. In using *prayaan*, prices are specifically set for members and non-members.

Members can employ a *prayaan* group at a cheaper price. Although the actual price levels differ for each *prayaan* group, all groups use the same principle to distinguish insiders from outsiders (see Table 2.9).

Table 2.9. Labor Charge of Wages of *Prayaan* Activity

Hamlet Group of	Watugajah		Jati	
	Men	Women	Men	Women
For members	500-2,000	300-2,500	2,500-5,000	1,000-4,000
For non-members				
a. Same RT	1,500-2,000	1,500-2,000	3,000-5,000	3,000-5,000
b. Same hamlet	5,000	3,500-5,000	4,000-7,000	3,000-7,000
c. Same village	7,000	7,000	7,000-10,000	7,000

Source: Interviews in 2002

Note: In all cases, all workers are given meals.

(g) *Buruh upahan* or *buruh tani*/hired labor is a type of contractual arrangement between employer (land owner) and employee. Employees offer labor and in return get wages that can be in cash or in kind. The contract is typically not written or formal, but is informal or a trust-based agreement. The most common form of wage paid in rural Java is cash. The calculation of wage paid is mainly on the basis of a half day or a full day of work. Hired labor can be utilized to complete various farming activities.

Most labor institutions in the surveyed hamlets are organized around gender. Through FGDs, it is noted that villagers perceive differences between genders in terms of physical strength and psychological factors. Furthermore, the villagers see these differences as important reasons for the gender separation in the organization of labor institutions. Because there exists a considerable difference between the physical strength of males and females, the types of activities that each gender can efficiently handle are also considerably different. Males are assumed to possess greater physical power; hence, they are assigned those tasks and activities that require greater strength. Villagers believe that if males and females are randomly mixed, when completing activities that require great strength there will be an unequal balance of labor. By separating groups based on gender, it is assumed that the physical strength of all group members will be relatively equal thus eliminating problems that might arise in the event of an inequality. Pertaining to the psychological differences, the villagers feel that when working with members of the

same gender a more collaborative, pleasurable working atmosphere is created which leads to greater efficiency.

In the case of collective action-*gerakan*, male activities are predominantly related to construction work, whereas female activities center around cleaning and maintaining public infrastructures. For activities related to coping emergencies, *gugur gunung* (e.g., fires, natural disasters) the males take control of the rescue efforts while the females commonly prepare meals for the labor force and participate in other support activities. For ceremonial events, *rewang* and *layatan*, male activities usually deal with ceremonial preparations while women prepare meals and serve the guests.

In case of requested mutual help, *sambatan* (e.g., house construction and repairs), the males' responsibilities are related to construction activities while, again, the females prepare meals. For labor institutions related to farming operations including *sambatan*, *krubutan*, *prayaan* and hired labor, males commonly undertake those tasks that require physical strength such as land preparation (in the lowland area), terrace construction and repairs, timber transportation, livestock shed construction and repairs while females assume the less physically challenging tasks such as transplanting, weeding, manure transportation, product processing, and harvesting.

However, there are several activities that, in principle, technically could be performed by both males and females. For example, in the case of upland farming operations, land preparation and manure and firewood transportation are tasks that both men and women can efficiently complete. Nevertheless, as previously mentioned, the mixing of males and females in the same labor force is considered unacceptable because of the inequalities in physical strength between the two genders would make it difficult to maintain equity of labor. Moreover, there are perhaps some psychological reasons that allowing the genders to work together could be disadvantageous to the overall efficiency level of the labor force, although in principle the activities could be successfully carried out by both males and females.

2.5. Categorization and Principles of Labor Institutions

Surveying major characteristics of each institution allows us to define the categories of labor institutions in the hamlets surveyed. This categorization involves at least four dimensions: (1) purpose, (2) timing of reciprocity (immediate, short-term, and long-term

reciprocation), (3) strictness/equality of reciprocity (equal or unequal), and (4) compensation including money, labor, social validation, and benefits drawn from public goods (Table 2.10).

Table 2.10. Categorization of Labor Institutions in Rural Java

Name of Labor Institutions	Purpose		Timing of Reciprocity			Equality of Reciprocity		Type of Reciprocations		
	Public	Private	Immediate	Short-term	Long-term	Strict	Non-strict	Labor	Money*)	SV, B
<i>Gerakan</i>	+			(+)	(+)	(+)	(+)			+
<i>Gugur Gunung</i>	(+)	(+)			+		+	+		+
<i>Rewang, Layatan</i>	(+)	(+)			+		+	+		+
<i>Sambatan</i>		+			+		+	+		+
<i>Krubutan/Gantian</i>		+		+		+		+		
<i>Prayaan</i>		+		+		+		+	+	
<i>Buruh Upahan</i>		+	+			+			+	

Note: + = existence, (+) = existence in more than one sub-category, SV = social validation, B = benefit drawn from public goods; *) = in case of *buruh upahan* for harvesting activities, reciprocation can in the forms of money and or in kind

Based on the framework of purpose, the institutions can be classified into three groups. The first group is *gerakan*, which provides public goods to the community. It is widely considered to be a “collective action”. The second group is an institution that seeks to satisfy “public needs” through such activities as *gugur gunung*, *rewang*, and *layatan*. In application of *gugur gunung* activity for emergency cases, villagers expect other community members to voluntarily provide assistance to the victims. In this way, villagers consider that their institutions are not only for private, but also for public benefit. For ceremonial events, villagers expect that all members will behave naturally; in this case, the institution is considered to meet not only private interest, but also public interest. The third group is institutions for “purely private” purpose such as *sambatan*, *krubutan/gantian*, *prayaan*, and *buruh upahan*. The activities of these institutions typically occur within the framework of contracts.

With regard to the timing of reciprocity, the analytical framework can consider immediate, short-term, and long-term reciprocity. In the case of immediate reciprocity, reciprocation is given or received immediately after the work is completed. Short-term reciprocity is on the time scale of one month to one year. Long-term reciprocity takes on the order of several years. The institutions can be classified into three groups based on the timing of reciprocity. The first group is an institution in which reciprocation can be either short- or long-term; this is the case of *gerakan*. Villagers can use public goods in the short-

term or long-term. The second group includes institutions in which the reciprocation is long-term: *gugur gunung*, *rewang*, and *layatan*. Reciprocation can take quite a long time, since many villagers believe that contributions should be compensated over several years, sometimes even through generations. The third group is institutions in which reciprocation is short-term, such as *krubutan/gantian*, and *prayaan*. The fourth group is an institution in which reciprocation is guaranteed to be immediate: *buruh upahan*.

Institutions can be categorized based on whether equality of reciprocation is strict (equal) or non-strict (unequal). This leads to three groups of institutions. The first group is an institution in which reciprocity can be either strict or non-strict, as in the case of *gerakan*. Villagers may use public goods in a way that reflects their sense of balance between contribution and reciprocation. Nevertheless, in some cases, villagers intentionally use more than their contribution, which is the case of free riders. The second group is institutions in which reciprocation is likely to be non-strict: *gugur gunung*, *rewang*, and *layatan*. If community members do not use the labor institution, this means that they only contribute but do not receive reciprocation or that the contribution is not equal to the reciprocation. The asymmetry between give and take is likely to be accepted with generosity. The third group is institutions in which reciprocation occurs strictly within the framework of a contract, such as *sambatan*, *krubutan/gantian*, *prayaan*, and *buruh upahan*. The practice of *sambatan* constitutes an exception, since reciprocity is less strict, primarily in the case of poor families, as such families are not required to return an equivalent amount to those who provide them with support.

Institutions can be classified into three groups based on reciprocation types. For several institutions, *krubutan/gantian*, *sambatan*, *gugur gunung*, *rewang*, and *layatan*, contributions are compensated by labor. The type of compensation for hired labor is cash. For *prayaan*, compensation consists of both cash and labor. Regardless of the type of compensation, all of the participants in labor institution activities receive meals. In some institutions oriented to meet purely public interests or a mixture of public and private interests, the reciprocation type is also a form of social validation¹². Those institutions include *gerakan*, *gugur gunung*, *rewang*, *layatan*, and *sambatan*. In the case of collective action or *gerakan*, rural people may contribute labor, money, or construction materials as reciprocation depending on the form of social validation and the benefits available from

¹² Active contributors to collective action receive social validation from community members. This validation need not involve financial gain, and it is sometimes referred to as socio-emotional goods (Robinson and Flora, 2003).

public goods. Members who do not contribute to collective action receive a penalty, which can vary from a cash fine, a strong caution from community leaders, and social sanctions, such as malicious gossip, to even expulsion for severe offenders.

Whether social norms or contracts drive the reciprocity mechanism strongly affects the type and equality of reciprocation. The institutions that govern based on social norms typically have specific mechanisms to discipline the offenders. Appropriate contributors receive social validation, whereas offenders and “free riders” receive various social sanctions. For the institutions that govern on a contractual basis, the consequence of breaking rules or contributing unfairly is termination of the contract. The direct consequence for offenders is difficulty in recruiting labor for various activities. From the perspective of the employee who violates a contract, the consequence is difficulty in finding work. In this way, terminating a contract is regarded as a type of sanction.

The institutions oriented toward the public good, such as *gerakan*, *gugur gunung*, *rewang*, and *layatan*, can be considered as a type of informal insurance or risk-sharing strategy¹³. The contributions of people can be understood as a type of premium¹⁴ or social investment in this social insurance system. They should contribute even though they cannot expect reciprocation unless they face emergency events or otherwise require assistance.

2.7. Changes and Continuity of Labor Institutions

It appears that much of the farming and the non-farming work in rural Java, both in the lowland and the upland areas, is managed and completed through the collective labors of *gerakan*, *gugur gunung*, *rewang* and *layatan*, *sambatan*, *krubutan*, and *buruh upahan*, as reported by several leading researchers (Koentjaraningrat (1961; Kartodirdjo, 1978; Rahardjo, 1979; Anonim, 1985; Soemarjan and Breazele (1993; and Sairin, 2001). Meanwhile, collective labor selling by such labor institutions as *prayaan* or similar organizations with similar characteristics is quite prevalent among the villagers in the

¹³ Rural poor in Asian countries are typically vulnerable to various potential risks; therefore, they have developed various risk-coping strategies (Balisacan and Fuwa, 2007).

¹⁴ To maintain the effectiveness of community-based safety nets, all of the community members must contribute appropriate insurance premiums based on the principle of reciprocity dictated by customs and norms (Hayami, 2006b).

mountainous areas of rural Java as indicated by some studies (Kartodirdjo, 1978; Rahardjo, 1979; and Sairin, 2001).

The daily practices of labor institutions have changed significantly. Villagers in the most remote hamlet, Jati, characterized by the most unfavorable resources and lowest access to mobility and job opportunities but they have the strongest social relationships, continue to practice all of the labor institution types. Watugajah, in contrast, is experiencing a transition process. Villagers in Watugajah have the medium condition of the factors. In contrast, in the lowland areas of Planggok and Somokaton, characterized by the most favorable agricultural resources, highest access to upward mobility and job opportunities, and relatively weak social relationships and the market economy penetrates massively, causing a remarkable decrease in labor institution practices.

The characteristics of agricultural resources, mobility access, expansion of job opportunities, and social relationships play important roles in defining the types, persistence, and changes in labor institution practices. The following discussion explores these factors in greater detail. Collective action for maintaining public infrastructures is organized more often in upland hamlets where roads paved by soil and stone are easily damaged during the rainy season. In lowland hamlets, where the opportunity cost of labor has become more expensive, community members contribute either by participating in the work and by contributing food, construction materials, or money. Social sanctions against absent members in the forms of malicious gossip, excommunication, and expulsion remain heavier in Jati and Watugajah, which reflect the tight structure of these communities. Indeed, the cohesion of the communities in Planggok and Somokaton seems to have weakened because of increasing employment in off-farm activities.

In Jati and Watugajah, where most of the land is mountainous, farmers typically grow large trees to provide construction timber in compounds surrounding the house. In addition, housing settlements are located in steep areas. These conditions carry some risks, and the probability of natural disasters is high. Hence, villagers value the existence of institutions linked to coping with emergencies. It is common for community members to offer assistance spontaneously in any emergency. During the last decade, the frequency and labor-intensiveness of ceremonial activities has changed significantly. In particular, the duration of ceremonies in all hamlets has become shorter and simpler, such that marriages last only one day. In Planggok and Somokaton, women's contributions to cooking and serving guests have decreased, and it has become common for the host family

to employ hired labor for the ceremony. Most respondents said that they expect this tendency to become much more pronounced in the future.

Table 2.11. Persistence of Labor Institutions in Four Surveyed Hamlets

Labor Institutions	Research Sites			
	Planggok	Somokaton	Watugajah	Jati
<i>Gerakan</i>	+ NF	+ NF	+ NF	+ NF
<i>Gugur Gunung</i>	+ NF	+ NF	+ NF	+ NF
<i>Rewang/Layatan</i>	+ NF	+ NF	+ NF	+ NF
<i>Sambatan</i>	+ NF, (+) F	+ NF, (+) F	+ F, + NF	+ F, + NF
<i>Krubutan/Gantian</i>	(+) F, (+) NF	(+) F, (+) NF	+ F, + NF	+ F, + NF
<i>Prayaan</i>			F *), NF *)	F *), NF *)
<i>Buruh upahan/buruh tani</i>	+ F	+ F	+ F	+ F

Source: Interviews in 2002

Note: + = the persistence of the labor institution, (+) = disappearance of the labor institution, *) = newly introduced or invented; NF = Non-farming operations, F= Farming operations,

In brief, the persistence of labor institutions practiced by villagers is shown in Table 2.11. In regards to labor institutions that arranged for non-farming activities such as *gerakan*, *gugur gunung*, *rewang/layatan* and *sambatan* remain highly regarded by villagers in four surveyed hamlets. However, labor institutions that arranged for farming operations such as *sambatan*, *krubutan/gantian* and *prayaan* have currently only been highly regarded by the villagers in upland hamlets.

Sambatan is reciprocal aid between neighbors, but its reciprocity is more flexible than typical exchange labor. The client family is not expected to provide immediate compensation to their assistants and neighbors, and strictly equal compensation is not required. Moreover, the frequency and importance of *sambatan* has decreased with the increase of non-agricultural job opportunities. In Planggok and Somokaton over the last 15 years, hired labor has taken over some activities formerly carried out by *sambatan*. The activities in lowland hamlets are only arranged for house construction and repairing.

In lowland hamlets, hired labor has commonly been used for farming operations for a long time. In the transitional hamlet of Watugajah, hired labor is used for limited farming operations. Villagers who have difficulties in exchanging labor, such as widows, elderly, civil servants, and teachers, have begun to employ hired laborers, although this remains limited in scale, being restricted mainly to rice-planting and woodcutting. In contrast, hired labor remains quite limited in the upland and remote hamlet of Jati. As

mentioned above, exchange labor is much more important than hired labor, especially in this remote area.

With the development of the market economy, farmers have become aware of the opportunity costs of labor. As a result, they have begun to behave in an economically rational manner and have pursued their self-interest to a greater extent. Thus, the motivation of farmers to join reciprocal types of labor institutions tends to decrease sharply with time. As shown by the example of Planggok and Somokaton, hired labor has replaced exchange labor institutions.

Opportunistic behavior is the principal factor that can create disadvantages for group work. The institutions of labor exchange rely on the following mechanisms to prevent such opportunistic behavior from harming group activities: (1) limited membership of a group, (2) close daily contact among neighbors, and (3) overlapping kinship and neighborhood relations. Limited membership of groups is a crucial factor for solving the problem of cooperation. A small number of group members allows direct monitoring, peer monitoring, and tracking of personal reputation. These strategies are essential for controlling moral hazard among members. Close daily contact and overlapping relationships among group members are referred to as closure of social networks. The closure network is effective for sustaining cooperative behavior. Closeness and overlapping relationships among villagers may determine the cohesiveness of the social structure and, in turn, encourage the effective application of a social sanction system.

Even in Planggok and Somokaton, areas with easy access to urban centers, kinship relations remain tight, especially for ceremonial purposes. Exchange labor for farming operations, however, has been replaced completely by hired labor in both hamlets. The four hamlets studied in the present research reflect different stages in the transition of labor institutions. The impact of the market economy will likely weaken the stabilizing function of the rural community. But the process will not be so simple. For example, people in the Jati and Watugajah hamlet invented rather unique labor institution, *prayaan*, which combined the principle of market economy with that of a non-cash economy. Therefore, although the penetration of the market economy into isolated areas cannot be prevented, mechanisms of mutual support practiced by rural people from generation-to-generation can still slow the socially destabilizing effects of the market.

A detailed analysis of the practices of customary exchange labor arrangements and various farming operations and transformation processes of them in the upland hamlet as

well as the replacement of them by hired labor contract in lowland hamlets will be done comprehensively in the next three chapters.

2.8. Conclusions

A novel categorization of labor institutions in rural Java has been studied using an analytical framework based on (1) purpose, (2) timing of reciprocity (immediate or long-term reciprocation), (3) strictness or equality of reciprocity (equal or unequal), and (4) type of compensation or reciprocation (money, labor, social validation, and benefits drawn from public goods). In general, labor institutions are conducted and maintained under the principle of reciprocity. The ways of applying the reciprocal principle can be simplified into two categories: (1) reciprocity based on social norms and (2) reciprocity based on a contractual arrangement.

The non-farming labor institutions, such as *gerakan*, *gugur gunung*, *rewang* and *layatan*, and *sambatan*, practiced by villagers have remained highly regarded by villagers in the four surveyed hamlets. However, labor institutions that arranged for farming operations, such as *sambatan*, *krubutan/gantian* and *prayaan*, have currently been highly regarded only by the villagers in upland hamlets.

In rural Java, especially in the hilly areas of the Gunung Kidul District, various types of labor institutions for mutual assistance continue to play an important role, especially in farming operations. Some factors such as agricultural resources favorability, mobility access, job opportunities and tightness of social relationship have influenced the changes and maintenance of labor institution practices. In areas with more abundant resources, greater mobility and access to job opportunities, as well as weaker social relationships and labor institutions for mutual assistance have tended to drastically decline.

CHAPTER 3.

CHANGES IN TRADITIONAL TYPES OF LABOR EXCHANGE IN AGRARIAN COMMUNITIES IN RURAL JAVA

3.1. Introduction

Labor exchange based on the principles of solidarity and reciprocity has been widely practiced by many communities as a way to support basic daily activities. In a broader sense, as summarized by Gillingan (2002), labor exchange is characterized by the mobilization of labor under a rotational system among involved parties. Labor time is traded reciprocally without pay, with the possible exception of a midday meal. Additionally, Suehara (2005) explained that in an exchange system, every receiver of labor must return to the giver the same amount of labor.

Villagers in rural Asian and African countries have commonly organized traditional labor exchanges. Typical labor exchange practices have been studied by several scholars. Koentjaraningrat (1961) has studied *gotong royong* among Javanese villagers. Suehara (2006) has studied the labor exchange system in rural Japan known as *yui* and the system practiced by the Congolese in Africa called *lilikimba*. Chung Young-il (1981) has analyzed the transformation of spontaneous and voluntary labor exchanges in Korean agriculture, which have commonly been termed *pumasi* and *dongdyure*. Tsurata (2005) has reported on traditional labor exchange practices in rural Thailand called *ao raeng*. Additionally, Tilarakatine and Somaratne (2002) have studied labor exchange practices in rural Sri Lanka known as *attam*.

In rural Java, labor exchange has been an institution widely used by community members to complete farming and non-farming operations. It is referred to by the broader term of *gotong royong* spirit. An empirical study by Subejo and Iwamoto (2003) on *gotong royong* practices in rural central Java suggested nine institutional categories based on the analytical framework of function and purpose, timing and strictness of reciprocity and type of reciprocation.

In line with modernization and the commercialization of rural areas, however, labor exchange practices have been changing considerably. As documented by some studies, the main factors influencing changes in labor exchange are labor market expansion and

technological changes to farming operations. In other words, collective labor exchanges have transformed considerably (Koentjaraningrat, 1961; Hayami and Kikuchi, 1986; Gillingan, 2002; Suehara, 2005; Tsurata, 2005).

In many communities, labor market development and technological changes have considerably weakened traditional labor exchanges. A previous study in a farming area of rural Java by Subejo and Iwamoto (2003) contended that farmers had become aware of the opportunity costs of lost labor and had begun to behave more economically and conservatively by increasingly pursuing their self-interests. Thus, farmers' motivation to join a reciprocal labor institution tended to sharply decrease with time. In the lowland area where labor markets developed rapidly, exchange labor institutions were replaced by hired labor. Meanwhile, labor exchange practices were still highly regarded among villagers in the upland area where the labor market's development had been more limited.

Even though forces of modernization such as labor market development and new technology tend to weaken village community institutions such as labor exchange, Gillingan (2002) theorized the possibility of labor exchange's survival even as markets develop. Technological considerations requiring teamwork have heavily influenced decisions to use exchange labor, and demand for exchange has closely correlated to characteristics of local production (e.g., crop choice, water use) that may persist even as the market develops.

As reported by Fillius (1997), the introduction and spread of a mixed cropping system in the upland areas generally demanded collective work for activities related to timber and firewood, manure transportation, and terrace field construction. Technological changes such as these have likely strengthened the practices of labor exchanges.

In the case of the lowland rice growing areas, on the other hand, the introduction of new technologies, such as HYVs and farming machinery, have considerably weakened the role of traditional labor exchanges. However, despite the widespread use of new technologies in rice farming areas, certain farming operations, such as transplanting, harvesting and threshing, still require a collective workforce.

New farming systems required new institutions for organizing a collective workforce. To adapt to the new technological requirements, villagers made use of community structures. Rural communities have shown themselves to be capable of adapting and adjusting older institutional practices to account for external factors. Community structures and especially social relationships, such as kinship, neighborliness

and friendship, have played an important role in responding to the changes caused by external factors.

Cox (2008) argued that households in developing countries depend on friends and relatives for their livelihood and sometime their survival. Help exchanged within kin networks affects the distribution of economic well-being. Tsurata (2005) and Zeitlin et al. (1991) found that in rural communities most villagers depend on relatives and close neighbors (often overlapping) in establishing family support systems. As analyzed by Jay (1969), Javanese villagers developed both kin and non-kin relationships as support systems. Villagers developed a positive sense of support from frequent daily interaction and from a sense of mutual trust and obligation.

Subejo and Iwamoto (2003) reported that in the farming areas of rural Java, certain labor exchanges have been regarded as important labor sources for both farming and non-farming activities. Among these labor institutions, *sambatan* and *krubutan* are two typical traditional labor exchanges that have been widely practiced by villagers. *Sambatan* has been important for certain farming and non-farming operations, especially house construction and repair in remote mountainous areas. In contrast, the role of *sambatan* in the flat rice growing area has been limited to only house construction and repair. *Krubutan* arrangements have also been important for various farming operations, especially in mountainous areas.

The previous findings generally confirm that external influences on farming, such as labor market expansion and technological advances, have caused traditional labor exchange practices to deteriorate in the communities. However, the process is likely not so simple. Villagers, as individuals and as parts of a community embedded in social relationships, have the capacity to modify traditional institutions into continuing to be advantageous to them.

By considering influencing factors such as labor market expansion, technological changes, and social relationships, this study analyzes and compares the transformations of *sambatan* and *krubutan*, two types of traditional labor exchange arrangements used by villagers in rural Java to complete farming and non-farming operations.

3.2. Materials and Methods

Field research was conducted in 2002 and 2008 across four hamlets of the rural Yogyakarta Province that were selected for their different social, economic, and geographic conditions. The following hamlets were studied: Planggok and Somokaton in the Margokaton Village of Sleman District in northwest Yogyakarta, Watugajah in the Girijati Village and Jati in the Gircahyo Village of the Gunung Kidul District in southern Yogyakarta. The former two hamlets are lowland hamlets, and the latter two hamlets are upland hamlets.

Data for this study were collected using interviews, focus group discussions (FGDs), and analysis of documentation. Personal interviews conducted for the study were what Henn et al. (2006) called the face-to-face interview. The interviews were conducted with selected households and community leaders, including hamlet heads and neighborhood chiefs. Focus group research, as termed by Gibbs (1997), was also used in this study. FGD, in principle, organizes the discussion with a selected group of individuals to gain information about their views on and experiences of a topic. The benefit of FGDs includes gaining insights into people's shared understanding of everyday life and the ways in which individuals are influenced by others in a group situation.

To pinpoint the sample households to be used for interviewing, we asked hamlet heads to choose a range of farming families representing different household statuses in the landholding structure. In each hamlet, 30 households were selected and interviewed, meaning that a total of 120 households were interviewed in the four surveyed hamlets. The interviewed households in each hamlet represented about 20–30% of the total households in the hamlet. The interviewed sample households were the same households as in the first study (see sample household size in Chapter 2).

Interviews were conducted using a questionnaire that had been pre-tested with a selected group of village members. Survey results were analyzed using descriptive and analytical methods. Several related variables in the survey data were selected that pertained to theoretically relevant issues, such as the general condition of the research sites, proportion of kinship relation, mutual helps and farming labor inputs. For the qualitative and descriptive analysis, we reviewed and categorized qualitative responses that dealt with issues raised by the theory, such as the general characteristics of institutions, the categorization of labor institutions and the institutions' persistence level.

FGDs were held in each hamlet to obtain more detailed knowledge, in addition to the surveys and to the cross-checked results from direct interviews.

3.3. Characteristics and Arrangement of Labor Exchanges

A wide range of mutual cooperation systems have been realized through several types of labor institutions in rural Java. As reported by a previous study on rural Java by Subejo and Iwamoto (2003), labor institutions can be divided into public purpose and private purpose categories. Mutual help for public purposes includes activities for building and maintaining public facilities, such as village roads, school buildings, irrigation canals, meeting places, mosques, public squares, public ponds, public graveyards, and natural springs. Activities may be initiated voluntarily by villagers or required by community leaders. Mutual help for private purposes is based on the basic principle of cooperation and the spirit of reciprocity.

Reciprocity can be guaranteed either in the short-term and be strictly equal (strict type) or in the long-term and be non-strictly equal (non-strict type). In the case of strict reciprocity, reciprocation is given and/or received immediately. Long-term reciprocity means that reciprocation will be given or received over a longer time period. Based on the type of compensation, reward or reciprocation can be categorized into the following three categories: (1) cash or money, (2) labor, and (3) both cash and labor.

The study is focused on the following two types of customary traditional labor exchanges practiced by the rural community of Java: (1) long-term and non-strict reciprocity, called *sambatan*, and (2) short-term and strict labor exchange, called *krubutan*. Several activities related to *sambatan* and *krubutan* arrangements in surveyed hamlets are visually shown in Appendix 5.

3.3.1. Sambatan

Sambatan literally means “requested mutual help”. It is a type of exchange labor that is characterized by long-term and non-strict reciprocity. The general function of this institution is to expedite work and to help each other. *Sambatan* activities include both non-farming and farming work.

When villagers need labor mobilized, they will ask relatives, neighbors and/or friends to provide help. In return for the labor contribution, invited persons will be served

a meal that day. In addition, the household host will be ready to provide reciprocal labor support whenever it may be needed. The reciprocation will be given in the long-term, depending on the need of the participant. In *sambatan*, reciprocity is categorized as non-strict; for instance, one person often gives support more frequently than another person. In the case of house construction, it is possible that one household already inherited a house from a parent and may not receive reciprocation unless reconstruction work becomes necessary during his or her lifetime. There is no fixed membership on the exchanged help activities. The number of invited participants depends on the scope and type of activity.

Sambatan arrangements are differentiated by gender. Men are invited for construction-related activities, whereas women participate in meal preparation. Food served to workers during house construction is usually better than average quality as the activity is regarded by villagers as a special occasion. If the number of invited participants is relatively large, the household will serve several very good meals, requiring the wife to invite neighbors or relatives to help with the meal preparation.

For farming operations, *sambatan* arrangement between men and women are also arranged separately. Whether the host is the husband or the wife, the wife usually prepares the meal in the morning. The number of participants in a farming operation is commonly small; therefore, meal preparation can be done by the wife alone. The wife and husband as hosts will bring the meal to the field to be served to the participants.

The inviting process of *sambatan* differs slightly by location. In the lowlands, the host family usually visits and directly requests other members, who are expected to give the needed assistance. In the uplands, if a host family requires a smaller number of people, the requesting process is carried out by the host directly. If it requires a larger number of people, as in the case of house construction, the requesting process may be taken over by a neighborhood group (*rukun tetangga/RT*) chief on behalf of the host.

Sambatan for farming has disappeared almost completely in the lowlands. In contrast, villagers in both lowland and upland areas still practice *sambatan* for non-farming operations, such as house construction and repairs. To some extent, *sambatan* persists.

Through FGD, it was noted that perceptions of the continuity of *sambatan* differed in the four hamlets. In the Jati hamlet, there had been no significant change in *sambatan* practices over the last 30 years. In the Watugajah hamlet, there had been some changes. If any member used *sambatan* more often than others, they became the subject of severe

gossip among villagers. That person usually would develop a somewhat negative reputation among villagers. Those kinds of sanctions functioned as an indirect control mechanism so that *sambatan* would not be so frequently used in the future.

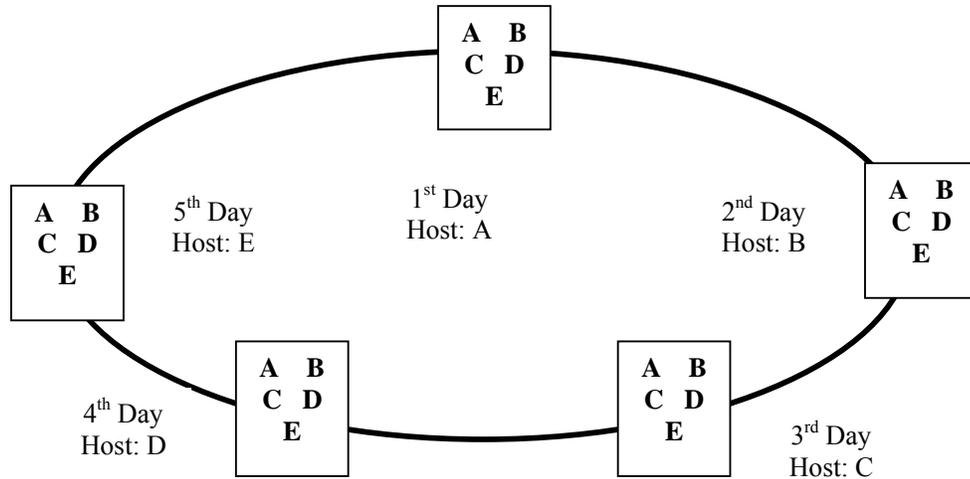
In Planggok and Somokaton, the villagers' mode of daily life was more independent and closer to suburban style. *Sambatan* activity in that area had changed considerably in the last 15 years. The frequency and duration of house construction had decreased. *Sambatan* for house building in Planggok and Somokaton had not completely disappeared. Some hamlet members still used it for house demolishing and roof installing. Other completion tasks for house construction and repairing were done by skilled-hired labor.

3.3.2. *Krubutan*

The second type of labor exchange is called *krubutan*. *Krubutan* literally means "doing together quickly." This activity can be categorized as a general type of labor exchange. The basic principles in *krubutan* are strict equality and reciprocity over a certain period of time (short-term and strict reciprocity). In daily practice, the activities of a *krubutan* group are usually conducted on a yearly basis. The labor group has a fixed membership and group members regularly make agreements about the work-rotation (Figure 3.1). Members of *krubutan* may be close neighbors, friends, and relatives. The advantages of *krubutan* are mainly perceived to be mutual help for work acceleration, eased work burden, harmonized group members, and maintained work spirit and motivation. *Krubutan* still exists only in upland hamlets.

Krubutan commonly has been important for various farming operations. *Krubutan* labor is also arranged separately between men and women. Concerning meal preparation, the wife usually prepares the meal in the morning, whether she or her husband is hosting the work. The number of group members is commonly small, so meal preparation can be done by the wife of the host. The wife and husband as hosts bring the meal to the field to be served to the participants.

A high concentration of *krubutan* in the upland hamlets can be found especially during the rainy season. That season is the most appropriate time for farmers in hilly and mountainous areas to grow various agricultural crops. *Krubutan* activity is commonly carried out in the afternoon from 12.00 a.m. to 16.00 p.m.



Note: A,B,C,D and E = group members; — = working rotation/cycle

Figure 3.1. Mechanism of Work Rotation of *Krubutan*

Villagers in the most remote of the surveyed hamlets, Jati, have widely practiced *krubutan* traditional exchange labor. All surveyed households had experienced a *krubutan* group and activities. However, several cases of a member being terminated from group activities existed. Based on a household survey of 30 households in 2008, 23 husband-side of households (76.7%) and 20-wife side of households (66.7%) were still part of a *krubutan* group. Member termination from the group commonly resulted from causes such as aging, health problem, childbirth, or business, the former of which was common for non-farmers such as village officers, rural traders and teachers.

Krubutan groups have a fixed membership, which generally consists of 4-5 people. The membership has been arranged among close neighbors, who in some cases overlapped as neighbors and relatives, in what can commonly be categorized as long-term labor institution. Daily interaction, residential proximity and close social and psychological relationships likely played an important role in the group formation. *Krubutan* can also be regarded as a quite stable institution according to the group's life expectancy. Identified *krubutan* groups had on average lasted for 20.5 years among male groups and 15.3 years among female groups (see Table 3.1).

The lifecycle of a *krubutan* group begins with the group's formation by particular households, commonly close neighbors and relatives. If there is case of member termination, the household begins by searching for an appropriate household member to fill the terminated person's position. For instance, a husband can be represented by an

adult son or son-in-law and a wife can be represented by adult daughter or daughter-in-law. In the cases of households that cannot find a replacement to join the group, the household will stop being part of the group. To maintain the retired member's position, however, the group can recruit a new member from a new household and or a member from a previously dissolved neighboring group.

Table 3.1. Group Number, Member Relationship and Age of *Krubutan* Group in Jati

Gender	Group a)	Number of group member (person)	Relationship with the interviewed HH (peson)		
			Relative	Neighbor	Relative-Neighbor
Male	1	4	-	3	-
	2	4	-	3	-
	3	4	-	3	-
	4	5	-	4	-
Average		4.3	-	3.3	-
Female	1	5	-	4	-
	2	4	-	3	-
	3	6	-	3	2
Average		4.8	-	3.3	2.0

Source: Sample household Survey, August 2008

Note : a)=survey has been done on the household basis and 30 households have been interviewed, due to each household belong to different *krubutan* group; among *krubutan* groups only can be identified 4 groups for male and 3 groups for female; analysis is also only focused in Jati hamlet where *krubutan* arrangement and activities have been much more prominent.

b) = age of group is accounted based on when the group has been set up according to the interviewed household

The main principle of a typical strict labor exchange such as *krubutan* is equality in contribution and return of cost and benefit. Some scholars, including Koentjaraningrat (1962), Hayami and Kikuchi (1986), Gilingan (2002), Suehara (2005) and Tsurata (2005), have claimed that in rural Asian countries, practices of customary exchange labor is arranged for specific purposes or activities, such as transplanting and harvesting. Therefore, similar cultivated farmland area among group members is likely necessary. Members' owning similar areas of land seem helpful in maintaining equality between contribution and return of labor exchanged among people. Each member hosts the same activity, hence a big difference in farmland holding will cause some unequal labor exchange.

Compared to the labor exchange process in other Asian countries, the practice of arranging *krubutan* in upland rural central Java seems quite unique. No characteristic patterns in terms of cultivated land area, income, or age of group members are observed in households that set up *krubutan* groups. Table 3.2 indicates that there are no significant household characteristics at play and presents the average structure of the interviewed households. The relatively homogenous landholding status of villagers in upland hamlets

(as displayed on Table 2.2) is likely to help to smooth the labor exchange process under the *krubutan* system.

Maintenance and existence of a *krubutan* group is likely not fully determined by each member holding a similar area of farmland. Considering the long duration of these group arrangements, it is possible that when the groups were originally set up, the members held similar areas of farmland. Particular households may have significantly improved their household income, hence allowing them to accumulate more land.

Krubutan groups have created mechanisms for maintaining short- and long-term equalities. Short-term equality is achieved based on the number of working hours allotted to each member regardless of the type of activity.

The typical characteristic of *krubutan* is the variety of activities that the labor group contributes to, including farming but also non-farming operations. There is flexibility for members, which allows them to arrange labor tasks that fit their needs. Villagers commonly perceived that similar farming land ownership is not necessary for group formation because each member can propose an activity that fits his or her needs. For instance, if a group consist of members A, B, C and D, it is not necessary for each member to use the group labor for the same farming operation, such as land preparation. The activities can be chosen by each member. In one working cycle, A may host labor for land preparation, B for firewood collection, C for terrace repair and D for weeding. The basic principle is a standard amount of working hours, which was generally 4 hours in the surveyed area. Whether the type of activity involved hard or light labor was not considered.

The variety of requested activities hosted by household members can be analyzed based on the dominant hosted activities. Land preparation was a very common farming activity arranged by male and female groups. *Krubutan* labor was also commonly used for weeding by female groups. Male groups often utilized *krubutan* labors for supporting farming activities, such as firewood transportation as well as timber cutting and transportation. Female groups often supported stone collecting and transportation, firewood transportation, and weeding (Table 3.3).

However, collecting data on the type of *krubutan* activity that each household was involved in over the past year was difficult, as it included possibly over a hundred group working schedules. The question of type of activity was simplified by using only the

dominant activity that each interviewed household hosted the group for. In reality, the activities of *krubutan* groups were much more diversified than the data show.

Table 3.2. Structure of *Krubutan* Labor Group by Gender in Jati hamlet in 2008

Gender	Group	Number of group member (person)	Average of cultivated land (000 m ² /HH)	Average of income (million IDR/HH/year)	Average of % non-farming income	Average of age of members (years) (a)
Male	1	4	0.88	7.25	60.62	57.5
	2	4	1.81	6.31	21.29	51.0
	3	4	1.74	5.65	22.72	40.0
	4	5	1.48	5.78	22.38	50.0
Average HH (from total interviewed HH)			1.70	6.00	37.73	49.3
Sig. diff. between group 1 & average HH			NS	NS	NS	NS
Sig. diff. between group 2 & average HH			NS	NS	NS	NS
Sig. diff. between group 3 & average HH			NS	NS	NS	NS
Sig. diff. between group 4 & average HH			NS	NS	NS	NS
Female	1	5	2.29	5.87	28.08	44.0
	2	4	0.45	3.04	8.1	51.0
	3	6	1.24	5.51	45.16	42.8
Average HH (from total interviewed HH)			1.70	6.00	37.73	48.2
Sig. diff. between group 1 & average HH			NS	NS	NS	NS
Sig. diff. between group 2 & average HH			NS	NS	NS	NS
Sig. diff. between group 3 & average HH			NS	NS	NS	NS

Source: Sample household Survey, August 2008

Significant difference: NS = non-significance

a) = age of formal name of joining the group member

Table 3.3. Dominant Activities of *Krubutan* Groups Hosted by Members In Jati in 2008

Category of operations	Type of dominant activities	No. of Hosting HH		Proportion of HH	
		Male	Female	Male	Female
Main farming operations	Land preparing	7	11	33.3	64.7
	Weeding	0	2	-	11.8
	Harvesting	1	0	4.8	-
	Cassava pelling	0	1	-	5.9
Supporting farming operations	Terrace repairing	2	0	9.5	-
	Timber cutting and transporting	3	1	14.3	5.9
	Firewood transportating	6	2	28.6	11.8
	Livestock shed const. and repairing	2	0	9.5	-
Non-farming	Stone collecting and transporting	2	3	9.5	17.6
Total		21	17	100.0	100.0

Source: Sample household survey in August 2008

Note: interviewed households have been asked what kind of activity which the most dominant during the latest one year when he or she acted as host of the group activities

Villagers also contended that over a year, all members will potentially request group labor for a variety of activities, ranging from light to hard work on farming and non-farming operations. In this sense, equality of contribution and return is possible.

To further discuss traditional types of labor exchange arrangements, the next two sections will discuss in detail labor exchanges for non-farming operations and for farming operations, respectively.

3.4. Labor Exchange for Non-Farming Operations

The changing process of labor exchange practices for non-farming operations has been clearly observed. Although labor exchange developed a mechanism for balancing reciprocity through its flexibility, its ability to adapt to the dynamically changing internal and external community conditions is only newly developed.

Community members have adjusted the practice of cooperative labor for house construction and repair. The expansion of off-farm job opportunities and technological changes in house construction results in fewer requests for labor support for longer periods of time. Starting about ten years ago, villagers in the lowland hamlets invited labor support for house construction for a maximum of one day. If the construction work was not finished in that time, they selected a certain number of laborers to continue working under a hired payment system. In the case of upland hamlets, the durability was slightly stronger. They shifted from a labor exchange to hired payment system after two days. The selected laborers then worked as hired skilled labor.

Villagers in both upland and lowland areas used *sambatan* for house construction and repairs. Men were usually involved in construction work, whereas women were involved in food or meal preparation for construction work participants. The present study approached household involvement from a gender (men and women) and status (host and participant) perspective. Hosts were asked about the experiences of inviting people to provide support at *sambatan* events and participants were asked about the experiences of being invited to a *sambatan* event during the last year. With regard to gender, 37 men (61.7%) in the uplands and 43 men (71.7%) in the lowlands hosted *sambatan* for house building and repairing. Meanwhile, the number of women hosts in upland and lowland areas was 9 persons (15.0%) and 11 persons (18.3%), respectively. The proportion of involved men was significantly larger than that of women. From a geographical perspective, villagers in the lowlands were relatively more involved in hosting events.

The number of participants invited for house construction depended on the size and scale of the construction project. Villagers still demanded labor mobilization from labor exchanges because house construction requires a large number of labors. Men participated in construction, whereas women cooked and prepared meals for the workers.

Non-involved households did not necessarily perceive labor exchange work to be unimportant; these villagers had not yet had an opportunity to build a new house or repair

an old one. Houses in both lowland and upland rural areas are usually built in the traditional style and are relatively durable. Some villagers claimed that these houses can be used for 40-50 years. A significant amount of time generally passes before reconstruction work or rebuilding is needed once a young couple inherits a new house from a parent. These couples have no need to invite people for house construction.

The socio-economic status of the villagers is likely correlated with their behavior during *sambatan*. In this analysis, a household's socio-economic status is related to whether the hosts are men and women or men only. The number of invited participants and their economic status were compared as part of the analysis. In the upland areas, the average number of participants (men-days) invited in the category, which included both male and female hosts, was 6.5 men and 2.9 women, whereas the average number of invitees when only men were the hosts was 7.4 persons. The economic status of men and women who served as hosts together was better than that of men who served as hosts without women; the two groups displayed an average income of 5.0 million IDR/household/year and 4.5 million IDR/household/year, respectively. In terms of income per capita, men and women hosts also fared better than their exclusively male peer hosts, with 2.1 million IDR/person/year and 1.5 million IDR/person/year, respectively. Men and women hosts also held more land, with 1.9 ha/household as compared to 1.3 ha/household (see Table 3.4).

Theoretically, households with men and women hosts are better able to invite more participants because they are better economically situated. In reality, however, they invited an almost identical number of participants

Table 3.4. Household Involvement as Host and on *Sambatan* for Non-Farming and Economic Characteristic of Household in Upland Hamlet

Involvement types	Involvement of HH		Av. of Participants (man-days) a)		Average productive labors (person/HH) b)	Average Landholding (ha/HH)	Average of Income (000 IDR/HH/year)	Income per capita (000 IDR/person/year)
	No. of HH (unit)	%	SM	SW				
No Involvement c)	23	38.3	-	-	3.7	1.09	5,444	1,605
S-Men	29	48.3	7.4	-	3.5	1.25	4,545	1,483
S-Men and S-Women	8	13.3	6.5	2.9	3.0	1.90	4,965	2,066
Total/Average	60	100.0	7.2	2.9	3.5	1.27	4,945	1,607
Sig. Difference (X ²)		**		NS		**	*	*

Source: Primary data analysis in 2002 and 2009 (participants data was collected in 2009, while the other data were collected in 2002)

Note: SM= sambatan for men, SW=sambatan for women; a)= average of male and female participants is only calculated based on

the groups which the data are available; b) = productive labors are household members who live together under age

between 15 and 70 years old, c) = no involvement includes no involvement at all and involvement on farming activities

Significant difference=: **) = significant at $\alpha = 5\%$; *) = significant at $\alpha = 10\%$, NS=not significant

Generally speaking, the demand for male labor for traditional-style houses in the upland area did not differ because the size and style of the houses that are common in the area is a traditional form and it likely is not so different among households. The demand for female labor for meal preparation should theoretically be similar. Lower-income households, however, only invited male laborers, whereas better-off households invited both male and female laborers.

Wealthy households felt socially obligated to provide various better-quality foods in larger quantities to invitees. Luxurious meals include very high-quality rice, a wide variety of better-quality dishes (beef, chicken, egg, tofu, and *tempe*¹⁵), and various vegetables and snacks. Therefore, the household hosts need women laborers to assist with meal preparations. This phenomenon can be seen as a sort of altruistic behavior displayed by better-off villagers in remote rural areas.

In contrast, lower-income households commonly feature exclusively male hosts who invite only men to work with them, and they tend to use female family members exclusively for meal preparation. The household hosts generally serve simpler meals than those served by richer households. The meals commonly include ordinary rice, a narrower range of dishes (egg, tofu, and *tempe*), some vegetables and snacks.

As shown in Table 3.5, household behavior regarding house-building activities in the lowland hamlets is quite similar to the pattern displayed in the uplands. The average number of participants invited in the joint male-female category was 9.2 men and 3.0 women. The average number of invitees included by the men-only hosts was 6.7. The economic situation of the former was better than that of the latter, however, with average incomes of 10.1 million IDR/household/year and 9.6 million IDR/household/year, respectively. In terms of income per capita, male and female hosts fared better than exclusively male hosts, with 3.2 million IDR/person/year and 2.9 million IDR/person/year, respectively.

Households that enjoyed a better economic standing tended to involve male and female hosts in house construction events. As shown in Table 3.5, the number of male *sambatan* laborers invited from neighboring households by male and female hosts in wealthy households is significantly larger than the number of participants invited by male-only hosts.

¹⁵ *Tempe* is popular traditional dish that made by fermented and compacted soybean. *Tempe* commonly can be served in the forms of dried or boiled.

Because of their superior economic conditions, wealthy households in the lowlands may construct modern-style houses that require a larger number of supporting laborers, both male and female. In addition, due to the size of the houses constructed by better-off villagers, more male laborers are required, and the quantity of meals to be provided is also much higher, which increases the demand for supporting women laborers. In contrast, lower-income households with restricted economic resources invite only male laborers. Poorer villagers will also commonly serve lower-quality food this less variety than do affluent villagers.

Male-only hosts in the lowland areas display lower economic status. Presumably as a result, households in that area tend to build smaller, traditional houses by inviting neighbors and relatives. They still invite a relatively large number of men to provide exchange labor. These households only offer relatively simple meals; therefore, the need for female laborers is lower because they are not needed for meal preparation. The wife of the host, possibly supported by a daughter, could prepare the meal alone for the small group of participants.

Table 3.5. Household Involvement as Host and on *Sambatan* for Non-Farming and Economic Characteristic of Household in Lowland Hamlet

Involvement types	Involvement of HH		Av. of Participants (man-days) a)		Average productive labors (person/HH) b)	Average Landholding (ha/HH)	Average of Income (000 IDR/HH/year)	Income per capita (000 IDR/person/year)
	No. of HH (unit)	%	SM	SW				
No Involvement c)	17	28.3	-	-	3.5	0.36	8,637	2,447
S-Men	33	55.0	6.7	-	3.3	0.33	9,656	2,923
S-Men and S-Women	10	16.7	9.2	3.0	3.2	0.29	10,123	3,164
Total/Average	60	100.0	7.3	3.0	3.4	0.33	9,267	2,829
Sig. Difference (χ^2)		**	**		**	*	*	*

Source: Primary data analysis in 2002 and 2009 (participants data was collected in 2009, while the other data were collected in 2002)

Note: SM= sambatan for men, SW=sambatan for women; a)= average of male and female participants is only calculated based on the groups which the data are available; b) = productive labors are household members who live together between the age 15 and 70 years old; c) = no involvement includes no involvement at all and 1 case of involvement on farming activity

Significant difference: **)= significant at $\alpha = 5\%$; *)=significant at $\alpha = 10\%$, NS=not significant

Although exchange labor on house building has been slightly changing, villagers still commonly perceived the activity to be advantageous. Although *sambatan* for house construction and repair is a private interest, villagers have broadly perceived it to be beneficial for the public interest. Villagers commonly expected to be invited, even though they may never personally act as host because they believed that their descendants may have the need to host labor for house construction. Invitation to and participation in the activity therefore serves the public interest. Serving as a host or participant not only fulfills private needs but also maintains social-public relationships.

With regard to the phenomenon of continued household involvement in house building, Schiwezer (1989) contended that in the Javanese community, house building and road construction have been included as part of the village ritual sphere. By extension, in personal and social crises, calculated reciprocity (help me and I will help you) and altruistic transfer (the rich give more) occurs and the community spirit is fostered at the norm level.

Altruistic behavior in house building has persisted, especially among the upland villagers. The villagers still share a common understanding that even though rich households could afford to pay for skilled labor, they would still invite a certain number of men and women neighbors to give support. They also served high quality meals to fulfill social expectations.

3.5. Changes in Traditional Labor Exchanges for Farming Operations

Labor exchange practices for farming operations in the surveyed hamlets have changed significantly. The process of change to labor exchange correlates to the process of technological change in farming and of labor market expansion.

Before the new system of rice cultivation, demand for collective labor work was high, especially for land preparation, planting, and harvesting. Under traditional labor exchange, men arranged for land preparation, including hoeing, plowing, and harrowing. Women usually arranged exchange labor for rice transplanting and harvesting.

The introduction of new rice technologies in irrigated lowland areas in the 1970s impacted labor arrangement and mobilization. In this sense, it can be regarded as institutional labor innovation. The introduction of new systems of transplanting, land preparing, and harvesting reduced the demand for labor mobilization. Farming labor exchange practices have continuously decreased since then. Labor for farming operations has been largely replaced by hired laborers.

Practical new technologies, such as HYVs that require row-line planting, hand tractor mechanization, and sickles for harvesting instead of traditional tools, have influenced labor arrangements and mobilization. The new transplanting system required specific skills that not all women farmers possessed. The new method for paddy planting, the *larikan-checkrow-planting* system, is an exchange labor institution that superseded the *borongan-contract* system for paddy planting, which basically involving six to seven

persons. Hand tractors also reduced the demand for labor mobilization. The increasing use of sickles for rice harvesting also greatly reduced the demand for labor mobilization.

Rural infrastructure development in the lowlands, which included rural roads, rural markets and public transportation, increased rural people's mobility significantly. Non-farm job opportunities, such as trading, construction labor and rural industries, also increased near villages, sub-districts and in the city districts about 5 km from the villages.

Since the beginning of the 1980s, the practice of traditional labor exchange for farming has generally disappeared in the lowland areas; it has become very common among villagers to hire labor for land preparing, rice planting, and harvesting. Technological changes in paddy farming, expansion of the labor market, and off-farm job opportunities likely significantly impacted labor exchange practices.

Another remarkable technological change for farmers in the lowland areas was the introduction of catfish production in 1995. With the excellent water availability conditions in the lowlands, especially in Planggok, farmers could use the water for both paddy and catfish productions. Catfish has been in high demand in the city center, which is located only about 15 km from the village. Catfish ponds have been built alongside paddy fields, and it is easy to convert paddy fields into catfish ponds and vice versa.

Pond construction requires labor arrangements. Traditional labor exchanges used to be possible but, since the beginning of the 1980s, the practice had disappeared from the village. Reviving it would be difficult and require high transaction costs. Catfish pond construction, especially for modern cemented ponds, requires skilled or talented labor. Therefore, farmers depended on hired labor from the labor market for fish pond construction instead of the customary labor exchange.

In contrast with the lowlands, where technological changes inhibited the practice of labor exchanges, the introduction of new technology in the upland areas has preserved the practice of traditional labor exchanges to some extent. A mixed cropping system in mountainous areas has necessitated collective work for several activities, such as terrace field construction and repair, activities related to timber and firewood, and manure and soil transport. Additionally, villagers have also increased the amount of livestock they raise. These farming operations require a mobilization of labor. Therefore, the need for labor exchange has remained high.

In the upland hamlets, technological changes in farming resulted from the introduction of wood trees around the mid-1970s under the Land Rehabilitation Program.

As noted by Filius (1997), mountainous areas of Java such as the Gunung Kidul district were almost treeless at the beginning of the 1960s. Tree growth helped maintain agricultural productivity because trees can reduce erosion and enrich the soil. By 1975, the Indonesian government began to seriously implement a soil conservation program under the Re-greening Program of *Reboisasi* or *Penghijauan*. The goal of the re-greening program was initially to plant trees on ridges constructed on private land. Seedlings were provided free of charge by the program and the program farmers initially received a grant to cover the cost of labor for planting and maintenance.

However, food crop variety has not changed considerably since then. No new technologies were introduced for upland rice production as was the case with HYVs introduction in the lowlands. Change was limited to the introduction of trees. The greening program introduced tree planting in critical areas, such as mountainous and hilly areas. Central and local governments provided free tree seeds and also subsidized fertilizers. Mahogany, teak and acacia seeds, among others, were distributed in the area.

Sources of labor for completing various farming operations in Jati and Watugajah were more diverse, and include family, traditional exchange labor (*krubutan* and *sambatan*), newly introduced collective selling labor (*prayaan*), and hired labor.

Labor input from *krubutan* and *sambatan* institutions remains especially important in Jati, where *krubutan*, the strictest type of exchange labor, still accounted for 19.2% of labor input in agriculture. In Watugajah, labor contribution from *krubutan* was 5.8%. *Sambatan* labor's role in farming operation in both hamlets was relatively low in comparison with the proportion of *sambatan* labor input in Jati and Watugajah, which was 0.8% and 0.5%, respectively. Transportation activities in Jati were exceptional, with a 23.2% proportion. These activities include transporting manure, harvesting products, timber and firewood (see Tables 3.6 for details).

In Jati, where exchange labor was still important, 36.0% of labor inputs for land preparation and weeding were done using *krubutan*. *Prayaan* was used for various operations, particularly for transplanting (28.6%) in Watugajah and for land preparation (15.3%) in Jati. In Watugajah, hired labor performed a significant proportion of land preparation (18.0%), fertilizer/pesticide application (12.8%), and harvesting (12.8%).

If one compares the levels of *krubutan* labor use by type of operations in both of the surveyed hamlets, similar trends emerge. For weeding activity, however, the proportion of labor provided by *krubutan* arrangements in Jati is much higher (35.9%); in Watugajah, it

is only 2.7%. Geographical disadvantages play a role in Jati because most of the farming fields in the mountainous areas require collective labor that may be assured through *krubutan*. Meanwhile, the farming fields in Watugajah are slightly different; some parts of the farmland are relatively flat, and hence, weeding work can, to some extent, be handled by family labor. Thus, the need for *krubutan* labor may be lower.

In Watugajah and Jati, forestry production, which includes timber and firewood, still contributed considerably to farming income. The use traditional exchange labor for forestry production in Jati and Watugajah was also substantial. Needless to say, *krubutan* working groups still played an important role, especially for cutting and transporting timber and firewood. In Jati, *sambatan* labor still contributed to the cutting and transporting of timber and firewood, even though in a relatively small proportion. *Prayaan* was important in the Jati hamlet for activities related to forestry operations. Detailed analysis and discussion of *prayaan* arrangements and systems will be done separately in Chapter 5.

In sum, the findings confirm that the transformation of traditional labor exchange arrangements for farming operations has likely occurred alongside newly introduced labor exchanges. The transformation process, in some cases, has also been connected to technical problems related to farming operations. Supplementing newly invented institutions is another mechanism of adjustment and adaptation to the demands of technological change and economic interest. Although villagers have started to practice a newly introduced institution, *prayaan*, they still use traditional types of exchange labor, such as *sambatan* and *krubutan*, to complete various farming operations (Table 3.7).

With regard to the time required for work completion, farming operations can be categorized into two groups. The first group consists of operations that should be completed within a strict timeframe and include land preparation, planting, weeding, and harvesting. The second group includes operations that can be completed within a non-strict timeframe and includes terrace field construction, manure transportation and application, post-harvesting, livestock shed construction, and activities related to timber and firewood.

Households hosted *sambatan* the least and *prayaan* the most (Table 3.7). Invitation of *sambatan* labor for farming operations was flexible in terms of frequency and number of laborers. Recently, in line with improvements in the labor market and off-farm job opportunities, invitation of large numbers of laborers and frequent activity under the *sambatan* system have been socially and economically costly. Employing labor under

krubutan was still highly regarded by villagers, especially for activities that can be done within strict time limits, such as land preparation, and non-strict activities, such as terrace field construction and activities related to timber and firewood. Several activities that needed to be done within a strict timeframe were adjusted in the rainy season by supplementing the usual *sambatan*, such as land preparing, with *krubutan*.

Table 3.6. Sources of Labor Input for Various Farming Operations in Watugajah and Jati Hamlet

Hamlet	Categorization of operations	Type of farming operations	Labor Sources (%)					Total
			Family	<i>Krubutan</i> *)	<i>Sambatan</i>	<i>Prayaan</i>	Hired	
Watugajah	Main farming operations	Land preparation	62.8	17.2	2.0	0.0	18.0	100.0
		Seeding/transplanting	54.9	10.3	1.5	28.6	4.7	100.0
		Fertilizer/pesticide application	86.3	0.9	0.0	0.0	12.8	100.0
		Irrigation/watering	100.0	0.0	0.0	0.0	0.0	100.0
		Weeding	85.4	2.7	0.2	4.6	7.1	100.0
		Harvesting/threshing/rrying	79.0	4.7	0.0	3.5	12.8	100.0
		Manure and products transportation	90.7	0.4	0.0	7.6	1.3	100.0
		Processing (peeling)	100.0	0.0	0.0	0.0	0.0	100.0
	Supporting farming operations	Timber and firewood cutting	93.5	0.0	0.0	0.0	6.5	100.0
		Timber and firewood transportation	55.0	20.9	0.0	0.0	24.1	100.0
		Total	78.6	5.8	0.5	6.4	8.6	100.0
Jati	Main farming operations	Land preparation	46.6	36.0	0.0	15.3	2.1	100.0
		Seeding/transplanting	77.9	13.8	0.3	6.5	1.5	100.0
		Fertilizer/pesticide application	94.8	1.7	0.0	3.5	0.0	100.0
		Irrigation/watering	100.0	0.0	0.0	0.0	0.0	100.0
		Weeding	51.5	35.9	0.0	8.1	4.6	100.0
		Harvesting/threshing/rrying	88.4	5.7	1.1	3.5	1.3	100.0
		Manure and products transportation	76.2	0.7	23.2	0.0	0.0	100.0
		Processing (peeling)	100.0	0.0	0.0	0.0	0.0	100.0
	Supporting farming operations	Timber and firewood cutting	44.6	11.1	3.8	36.0	4.4	100.0
		Timber and firewood transportation	24.5	7.8	7.7	58.3	1.7	100.0
		Total	70.7	19.2	0.8	7.1	2.2	100.0

Source: Sample household survey in 2002.

Note: *)=*krubutan* in Watugajah hamlet commonly has been practiced limited only on seasonal basis especially in the rainy season and locally it has been called as *gantian*

Planting in the uplands is generally simpler than in the lowland areas. Crop planting is done through the dispersal of seeds, such as upland rice and corn. The activity usually can be done by family members and labor exchange is not as frequently used for planting.

Villagers used to employ *sambatan* labor for weeding. This activity is more productive if done in a timely way and is characterized by delicate and time-consuming work. Weeding can be finished with either a large number of participants or a high frequency of small group labor. Large numbers of laborers can be invited under *sambatan* labor. However, invitation of a large number of *sambatan* laborers for weeding has recently been perceived by villagers as inappropriate. They reluctantly made their invitations based on the participants' opportunity costs. Frequent invitation of fewer laborers can be done principally through *krubutan* arrangements. It also seems inappropriate because it takes longer and several rotations. Household hosting of weeding

was high among women due to the delicate work involved. Such activities have been regarded among villagers to be more suitable for women.

Table 3.7. Composition of Supplementary Arrangement of Labor Exchanges for Farming Operations in Upland Hamlets

Category of operations	Type of Farming Operations	Number of Involved HH as Host (unit)								
		<i>Sambatan</i> *)			<i>Krubutan</i> *)			<i>Prayaan</i> *)		
		Men	Women	Total	Men	Women	Total	Men	Women	Total
Main farming operations	Terrace field construction and repairing	1	-	1	6	3	9	16	-	16
	Land preparing	5	6	11	13	14	27	12	15	27
	Planting & transplanting	1	-	1	-	-	-	-	2	2
	Manure transportation and application	1	-	1	-	-	-	-	-	-
	Weeding	-	-	-	-	2	2	3	9	12
	Harvesting	-	1	1	-	1	1	-	1	1
	Post harvest/processsing	1	-	1	-	-	-	-	-	-
Supporting farming operations	Livestock shed construction	5	-	5	1	-	1	2	-	2
	Activities related to timber&firewood **)	7	4	11	11	6	17	15	-	15
Total		21	11	32	31	26	57	48	27	75

Source: Household Survey in August 2008

Note: *) = data of household as host on *sambatan* was the activity which has been experienced during the latest one year; while data of household as host on *krubutan* and *parayaan*, it was observed of experienced activities on the latest season; interviewed was done in August (first dry season) which was in between the most busy season (rainy) and slack season (second dry season); **) = activities include cutting, collection and transportation

With regard to harvesting, family members usually harvest the crops gradually. Crop materials, such as leaf and crop stems, were also commonly perceived by villagers in upland areas to be additional farming products. In the uplands, harvesting main food crops, such as corn, peanuts and cassava, can occur over a relatively longer period. Timing for crop harvesting is also adjusted to livestock feed collection. Crop materials are important sources of livestock feed for most villagers. Harvesting farming products that require a relatively shorter timeframe and collective work may alternatively use a shared harvesting system (*bawon*), especially in the upland paddies. Large land-holding households in upland areas may invite close relatives and/or close neighbors who are facing economic hardships to help in paddy harvesting; in return for their labor, participants receive part of the harvested paddy depending on the social and kin-relationship (in general it is about one-fifth of total harvested products). Villagers have perceived this *bawon* system to be a social safety net because the output is shared among certain inner circle households. The *bawon* system in the upland areas differs from the system in the lowland areas, where people can freely take part in harvesting, or the system that was implemented later, where the participants are strictly limited to people who took part in crop transplanting and weeding.

Activities that are not categorized as needing to be completed within a strict timeframe, such as livestock shed construction, usually still depend on traditional work

arrangements, especially *sambatan*. Invitation of *sambatan* labor for livestock shed construction is quite similar to that for house construction. Household involvement has been high among men.

In the upland hamlets, *sambatan* arrangements for farming operations have been quite flexible; people can invite labor for any purpose regardless of activity. If anyone is asked to provide labor for land preparation, he or she will receive labor support in return for either a similar or different activity, such as terrace field construction, firewood transportation, and others, depending on the need of the host.

A typical strict labor exchange (*krubutan*), which exists only in the upland hamlets, has only been used for various agricultural operations. Reciprocity is measured in working hours, not by similarity of activity or land size. Generally, as is the case in rural Asia, exchange labor is based on activity; for instance, if A invites B, C, D and E for rice transplanting, in return, A will help the others with rice transplanting.

Supplementary arrangements have been added to labor exchanges practiced by villagers to complete various farming activities. However, *krubutan* has still been regarded as an important labor source for particular activities, such as manure transportation and application, harvesting, and post-harvesting. The phenomenon for livestock shed construction and repair is especially similar to house construction, where villagers depend more on *sambatan* labor.

With changing farming technology, labor market improvements, and more opportunities for population mobility in the upland hamlets, the practice of labor exchange for farming operations will continuously adjust to these related factors.

3.6. Conclusions

Particular factors such as the expansion of labor markets, technological changes and resource scarcity have influenced traditional labor exchange arrangements in rural Java. In the lowland hamlets, where the economic structure is primarily determined by non-farming incomes, favorable geographical conditions for farming practices, flexibility in population mobility and the strong impact of technological changes in farming production systems have reduced the need for collective work for various farming activities. The great influence of off-farm job opportunities also likely exposed villagers to opportunity cost. However, mutual help for non-farming has been still commonly practiced.

In contrast, the economic structure of the upland areas is more determined by farming, geographical limitations, and higher resource scarcity. Therefore, production risk and technological changes within the mixed cropping system resulted in villagers tending to demand for traditional collective work arrangements, such as *sambatan*, which to some extent was supplemented by the newly introduced institution of *prayaan*, intended to help villagers cope with basic daily needs via farming and non-farming activities. However, *krubutan* practices still occurred despite the practice's strict rotation schedule. The smaller influence of off-farm job opportunities and labor markets, which is due to the isolation of the area, resource scarcity and higher production risk likely also strengthened the reliance of the villagers on collective work arrangements.

A transition process with regard to labor exchange practices occurred in both the lowland and the upland hamlets. *Sambatan*, which had the most flexible membership and hosting practices, changed notably. People in the upland areas still shared a common understanding moral economy and practiced altruistic behaviors, especially with regard to non-farming activities such as house construction and repair. However, they started to supplement ordinary labor with skilled labor and also shortened invitation periods for ordinary laborers to 1-2 days. Altruism behaviors still exist to some extent in both lowland and upland areas, including offering luxurious meals and a wider variety of food and inviting large numbers of laborers from neighbors. These activities help villagers to maintain social status and personal reputation, and their continuing prevalence is particularly visible in the behavior of affluent households. *Sambatan* for farming has almost completely disappeared in the lowlands, and its practice in the uplands has also decreased. Frequent *sambatan* labor invitations have been criticized by villagers, and the opportunity costs have also stimulated reluctance to intensify such activity. Additionally, villagers have become more reluctant to invite *sambatan* laborers because they are aware that once they invite villagers, they will accumulate psychological debt, and they expect difficulty maintaining reciprocal relationships in this context because their own opportunity cost will likely increase in the future.

Labor arrangements under the *krubutan* system, which generally has a more rigid membership and hosting system, were still widely practiced for various farming operation in the upland hamlets. However, as the number of *krubutan* group members is small (3-5 persons), this condition to some extent reduced transaction costs and facilitated flexible arrangements, such as choice of rotation day, type of work, and postponement of working

days. Participants had the advantage of arranging *krubutan* for activities that could be done flexibly, such as terrace construction as well as repair and activities related to timber and firewood collection and transportation. *Krubutan* was also important for activities that must be done within a strict timeframe, such as land preparation.

Despite transformations in the labor exchange institutions in rural Java, community members with close social relationships had the capacity to adapt to the process of change. In the broader sense, villagers in both upland and lowland hamlets had basic principles guiding social relationships. Kinship relationships, often overlapping with neighboring relations, were still predominant among villagers. These basic relationship structures minimized the difficulties of arranging collective work among villagers, at least for house construction and repair. However, the division of labor and the diversification of villagers' income sources enabled well-off households to build modern houses. This possibility may reduce the need for collective work in the future as the process requires highly skilled construction labor.

CHAPTER 4.

HIRED LABOR ARRANGEMENTS FOR FARMING OPERATIONS: THE CASE STUDY OF A WET RICE VILLAGE OF RURAL JAVA

4.1. Introduction

Labor sources in farming operations have generally been supplied by family, exchange and hired labor. During periods of high labor demand, labor can be attained through exchange and provided by hired laborers. However, due to processes of modernization and agricultural commercialization, practices of labor exchange and norms regarding hired labor in farming areas have changed considerably. In remote and less favorable areas, such as upland areas, labor exchange has generally been the norm, and hired labor has been less typical. In contrast, the practice of labor exchange has been notably decreasing in lowland areas, which are characterized by better mobility and more favorable resources. In such cases, the high demand for labor has been addressed using hired labor.

As previously discussed on Chapter 1, practices of labor exchange in farming in the low-land, rice-growing area of central Rural Java have disappeared, and the need for labor has been addressed using hired labor contracts and family labor. Technological changes in farming and labor market expansion have quickened the change. The situation is the opposite of that of upland villages in which labor exchange is still quite active.

This study will be focused on hired farm labor arrangements in lowland areas of rural central Java. How farming households' background determines in the various arrangements made will be the main concern of the study.

The use of hired labor for various farming operations has been very common among Javanese¹⁶ villagers located in well developed, irrigated lowland areas since the green revolution began in the 1980s. Manning (1999) argues that as a result of high productivity, high-yielding varieties (HYVs), a higher proportion of rice output was marketed and households had enough cash income to hire laborers. Hired labor is mainly used for peak-season activities, such as transplanting and harvesting rice (Capistrano and Marten, 1986; Kikuchi and Hayami, 1999). The activities in some cases have been employed for a wider

¹⁶ In Java, hired labor for certain farming work was introduced during Dutch colonization. As reported by Boomgaard (2009), at least since 1650, some operations related to farming in Java have been arranged using a monetary payment system.

range of activities, including land preparation, transplanting, weeding, harvesting and threshing (Kikuchi et.al., (1980).

There are a few typical characteristics of hired labor in farming. Kikuchi and Hayami (1999) confirm that hired labor will be employed if the activity demands large quantities of labor in short periods and if progress can be evaluated based on visible effort outcomes, such as transplanted area or harvested quantities. In contrast, family labor is used mainly for tasks that require care and judgment and are not associated with immediate visible outcomes, including water and pest control, fertilizer application and seeding. The physical requirements of tasks completed by family labors are not as important.

As proposed by Rogaly (1997) and Takane (2008), the categorization of hired farm labor based on duration of labor activity includes categories of (1) casual or daily labor and (2) seasonal labor. Casual workers are hired on a daily basis, and wages are paid upon task completion in cash or in kind, whereas with seasonal labor, laborers are engaged for long-term contacts – for instance, during crop periods – and payment is agreed upon in advance.

The use of hired labor in farming is likely to be connected with the economic structure and resources of farming households. The influence of land-holding size¹⁷ is debatable. As reported by Benjamin (1991) and Mulyo and Fukui (2006), small-scale farming by individuals with their own holdings tends to be associated with family labor. Working on farms without using hired labor means saving money. Another argument is that there is an inverse relationship between hired labor absorption and farm size, as has been reported by Kikuchi et.al. (1980), Nehen (1987) and Enete (2005). Larger farms likely depend on hired labor more as compared to small farms in completion of farming production.

Household income is also likely to determine capacity to hire labor. Janvry et al. (1991) note that higher labor productivity in the context of food crop production, which may generate more income in many areas, including rural Java, has created a greater need for labor and hence encouraged the hiring of laborers.

Labor arrangements for farming have progressed from simple, non-task-dependent daily wage arrangements to more specific contracts, including skilled labor contracts and

¹⁷ In general, it is acknowledged that regardless of farm holding size and holding status, the phenomenon of hired labor usage is already common for Javanese farmers. Nehen (1987) notes that since about the 1980s, the use of hired labor such as tractor services has been common in wet rice-*sawah* land preparation not only among large farmers who can afford to buy them but also among small farmers who hire tractor services from other farmers.

piece rate contracts for teams. Tsurata (1999) argues that villagers are becoming more selfish, exacting and economic-minded, demanding more specific returns; they are beginning to make careful calculations based on acreage rather than paying by the workday.

However, the changing process of labor arrangements is not as simple as that argument would suggest. A study in rural Java by Kikuchi and Hayami (1999) reveals that villagers choose specific labor-contract arrangements consistent with the norms of their particular rural village communities and that contract forms change according to changes in community norms.

Roumasset (2004) suggests that labor contracts have evolved in a stylized manner. During stage I, labor is provided by the farm household based on an exchange agreement with the residents in the village. During Stage II, hired labor emerges. At first, laborers are hired on a wage basis, and there is no differentiation between workers with respect to task. As horizontal specialization increases, “piece-rate workers” are hired for selected tasks. The third phase of stage II marks the emergence of “piece-rate with team labor” and “specialized wage labor”. In stage III, the piece-rate team labor setup continues to replace individual contracts, specialized wage labor and most of household labor. In the other words, contracts are ranked according to specialization.

The institution of piece rates, as in case of transplanting conducted by teams, involves efforts to ensure efficiency and control the moral hazards associated with labor recruiting and supervision costs by relying on direct contact between the farm operator and the team leader, who maintains a reputation for reliability. Farmers pay competitive wages to secure labor on a timely basis (Naylor, 1990 and Roumasset, 2004). Specific types of skilled labor include tractor and thresher services. Heytens (1990) reports that the use of fuel-driven threshers has rapidly increased in Java. Machine threshing is much faster than the alternative.

Farm labor transactions are closely related to the type of operations being conducted and gender segmentation. As noted by Burton and White (1984), Rogali (1997), Rigg (2004) and Lastaria-Cornhiel (2006), labor payment has tended to differ based on operational and gender structures and contract systems. There are some differences between the wages paid to men and women; men commonly do the heavier or physically demanding jobs and therefore receive a higher wage.

In addition, Hart (1986) reveals that while some workers are hired simply based on daily contracts, seasonal tightness is often associated with the emergence of other exclusionary models such as that of contract labor groups (*borongan*). Employers use these arrangements not only to recruit and discipline laborers but also to exercise social control.

Rogali (1997) indicates that to avoid recruitment costs, people who know each other well often enter into long-term labor arrangements. Similarly, Bardhan (1983) suggests that labor-tying arrangements and social relationships among the involved parties are important to agricultural labor contracts. Hart (1986) also notes that via contractual arrangements that involve selectively extending 'privileges' to particular workers, employers are better able to ensure not only an adequate labor force but also a hard-working and docile one. On the other hand, Manning (1999) refers to exclusion in labor arrangements as in the case of harvesting as part of a more general trend towards profit-maximizing behavior. One advantage for employers of creating a group of attached workers is the reduction in transaction costs associated with recruiting and supervising labor for more intensive rice cultivation.

However, in practice, restricted and specific contracts also coexist with other labor-tying arrangements that enable poorer villagers to benefit from participating in various hired labor arrangements. Takane (2008) and Olivia (2007) contend that commonly, villagers share a feeling of moral obligation, sensing that wealthy farmers should provide opportunities for poorer people by giving them a chance to engage in farming as hired laborers. In addition, Kikuchi and Hayami (1999) note that in rural Java, where most farmers are owner-operators instead of tenants, dependency on hired labor is equally great despite the typical limitations on farm size; a social norm of income- and work-sharing prevails. This norm that dictates well-to-do members of the village community should provide income-sharing opportunities to poor neighbors by not working themselves.

Because villagers in lowland wet rice village have been experiencing a massive progress of commercialization and modernization of farming practices, it is expected that they will depend more on hired labor for farming. The expansion of non-farm jobs and income generated from these activities also may have an influence on the process.

Functions of labor have also likely been developed under various arrangements linked with the socio-economic characteristics of households, including landholding size, income level, and the availability of family labor. Households with large holdings, higher

income and more non-farming jobs likely depend more on hired labor for farming operations.

The supply of hired laborers is also likely to be linked with household economic background. Farming households with lower income and restricted access to non-farming jobs may rely more on farming hired labor as substantial sources of household income. Wage levels to some extent indicate the skill of laborers, which will be determined based on the type of contract and gender separation. The contract system guides the workings of the market economy.

However, to some extent, hired labor in rural areas is not solely based on market economics; rather, the moral economy is still a factor for villagers. Tight social relationships and ties between employers and employees likely indicate the co-existence of market and moral economies.

In short, based on the results of previous studies on hired labor arrangements in rural areas, especially in Java, the objective of this study is to consider several issues related to current hired farm labor arrangements. These include (1) the changing socioeconomic conditions of research sites and farming operations, (2) the functions and contract types associated with hired labor, (3) household-employer characteristics and hired labor use, (4) employee characteristics, transactions and the allocation of hired labor, and (5) social relationship and labor-tying arrangements.

4.2. Material and Methods

Field research was conducted in 2009 in two hamlets in a rural area in central Java: Planggok and Somokaton in Margokaton Village of the Sleman District in Northwest Yogyakarta. These hamlets are located in a flat-lowland area where rice growing is the most common type of agricultural production. The data for this study were collected using interviews, focus group discussions (FGDs¹⁸), and the analysis of documentation. Personal interviews were conducted face-to-face in the study following Henn et al. (2006). The interviews were conducted with selected households and community leaders, such as hamlet heads and neighborhood chiefs. FGDs, which Gibbs (1997) termed focus group research, have been used in this study. FGDs in principle are organized discussions with a

¹⁸ The benefits of FGDs include insights into people's shared understanding of everyday life and the ways in which individuals are influenced by others in a group situation (Gibbs, 1997).

selected group of individuals intended to gain information about their views and experiences with a topic.

The study area was restricted to lowland hamlets due to the prevalence of casual hired labor in these areas, something that is much rarer in upland hamlets. To determine households for interviews, we asked hamlet heads to choose appropriate farming families in proportion to the households' landholding structure. In each hamlet, 30 households were selected and interviewed, for a total of 60 household interviews. The interviewed households in each hamlet represented about 20-30% of the total households in the hamlet. The sample households interviewed in this case were the same households that were used for the first and second studies of the lowland hamlets (see sample household size in Chapter 2 and 3).

In addition to sample farming households, 12 individuals were selected to represent working group leaders and/or farming operators. The interviews were very useful for collecting information about transaction mechanisms, labor allocation, labor-tying arrangements and social relationships among the parties involved in hired labor practices.

The interviews were conducted using a questionnaire that had been pretested with a selected group of village members. The survey results were analyzed using descriptive and analytical methods. The survey data addresses several related variables theoretically relevant to the use of hired labor, such as the general condition of research sites, the function of hired labor, contract arrangements, transaction mechanisms, labor allocation, labor-tying arrangements and social relationships. In our qualitative and descriptive analyses, we reviewed and categorized qualitative responses to questions related to dynamic changes in hired labor arrangements in the surveyed hamlets. FGDs were held in each hamlet to obtain more detailed knowledge than would have been possible using surveys alone and to crosscheck the results of the direct interviews.

4.3. Results and Discussion

4.3.1. Changing in Farming Operations

In wet rice villages in rural Java, demand for collective farm work before the appearance of the new system of rice cultivation was considerably high, mainly for land preparation, transplanting, and harvesting. Men arranged labor exchanges for land

preparation that included hoeing, plowing, and harrowing. Meanwhile, women usually arranged exchange labor for rice transplanting and harvesting.

The introduction of new rice technologies—for example, in transplanting, land preparation, and harvesting – has reduced the demand for labor mobilization. Farming labor exchange practices have been continuously shrinking. Labor for farming operations has been largely substituted for by hired labor.

Practical new technologies under green revolution program, such as HYVs, which require row-line planting, mechanization through hand tractor services, and the use of the sickle for harvesting instead of traditional tools, have influenced labor mobilization. The new method of paddy planting, called the *larikan* checkrow planting system, is an exchange labor institution that has superseded the *borongan* contract system put in place by rice planting groups. The use of hand tractors has also reduced the demand for labor mobilization. The increasing usage of sickles for rice harvesting has also greatly reduced the demand for labor mobilization.

In line with rural infrastructure development in the lowlands, including the construction of rural roads, rural markets and public transportation infrastructure, rural people's mobility has increased greatly. Non-farming job opportunities in areas such as trading, construction and rural industries have also been increasing near villages, in sub-districts and in the city districts about 5 km from the villages.

Since the large-scale green revolution began, the practice of labor exchange for farming has commonly disappeared in lowland areas; it has become very common among villagers to use hired labor for land preparation, rice planting, and harvesting. Technological changes in paddy farming, the expansion of the labor market, and off-farm job opportunities are likely to play important roles in the changes in labor exchange practices.

Another remarkable technological change in farming for farmers in lowland areas was the introduction of catfish production. Given the excellent water availability conditions in the lowlands, especially in Planggok, farmers can use water for both paddy and catfish production. Pond construction requires labor arrangements. The construction of catfish ponds, especially for modern or cemented ponds, requires skilled labor. Therefore, farmers depend on hired labor from the labor market for the construction of fish ponds instead of using the customary labor exchange procedures. However, during the last

season, when this study was taking place, there were no cases of fish pond construction or repair reported by the surveyed sample households.

4.3.2. Functions and Contract Types of Hired Labor

There were 60 interviewed households in the study. There were two households that were surveyed that had not recently hired farm labor because they were no longer involved in farming operations. However, both of those households had hired farm laborers several years ago. These two households were excluded from the next steps in the analysis so that a total of 58 households involved in farming were included.

In general, farming households in Planggok and Somokaton rely on fewer sources of labor in farming operations; villagers use only family and hired labor, and family labor is the predominant source (see Table 4.1). Hired labor conducts a larger fraction of labor activities in both of these hamlets than in Watugajah and Jati, where family labor still predominates.

Table 4.1. Sources of Labor Input for Various Farming Operations in Planggok and Somokaton Hamlet

Type of farming operations	Proportion (%)							
	Planggok				Somokaton			
	Family	Hired	Total		Family	Hired	Total	
Land preparation	69.8	30.2	100.0	13.7	63.4	36.6	100.0	14.7
Seeding/Transplanting	44.3	55.7	100.0	22.9	46.1	53.9	100.0	17.0
Fertilizer/Pesticide application	97.3	2.7	100.0	5.4	99.1	0.9	100.0	6.1
Irrigation/Watering	100.0	0.0	100.0	11.4	97.4	2.6	100.0	10.7
Weeding	84.7	15.3	100.0	24.7	92.9	7.1	100.0	19.9
Harvesting/Threshing/Drying	70.5	29.5	100.0	16.7	62.6	37.4	100.0	30.4
Packaging/Transportation	76.9	23.1	100.0	0.4	65.2	34.8	100.0	0.3
Others	46.4	53.6	100.0	4.9	100.0	0.0	100.0	0.9
Total	71.5	28.5	100.0	100.0	72.3	27.7	100.0	100.0

Source: Sample household survey in 2002.

Family labor on average accounts for 71.5% and 72.3% of total labor input in Planggok and Somokaton. Because exchange labor is no longer used in Planggok and Somokaton, the balance is covered by hired labor at rates of 28.5% and 27.7%, respectively.

Over half of the transplanting work is done by hired labor under the *borongan* contract system. Use of the traditional harvesting system (*bawon*¹⁹) remains common

¹⁹ This is a system in which community members can participate freely in rice harvesting (Hayami and Kikuchi, 1986).

together with use of the *tebasan* system²⁰. Non-family members perform 30-40% of harvesting work. Land preparation under the *borongan* system also depends on hired labor involving a tractor or buffaloes (30.2% of total labor for land preparation in Plangkok and 36.6% in Somokaton). In contrast, family members apply fertilizer and pesticides and practice weeding.

A detailed analysis of farming operations arranged under hired labor has been conducted as shown in Table 4.2, examining the functions of hired labor under various contract arrangements. The most common farming operations that are the responsibility of hired labor are land preparation using tractors (100.0%), transplanting (81.0%) and harvesting and threshing. Harvesting can be done by family members or via the *bawon*²¹ or *tebasan*²² system. Threshing can be done using any of these three methods or by hired operators. If family labor is excluded, the combined total amount of harvesting and threshing done using hired labor is 67.3%. Overall, the largest proportion of harvesting-threshing activity was done using the *tebasan-tebasan* system (32.8%), followed by family labor (31.0%). The *Bawon* labor system, however, is still used to some degree in harvesting and threshing activity, with the *bawon-bawon* system used in 15.5% of cases and the *bawon-operator* system in 17.2% of cases. A considerable number of households also used hired labor for a broader range of activities, including hoeing and leveling (20.7%) and weeding (19.0%).

When rice fields are harvested under the *tebasan* system, threshing work is automatically handled by contractors, and threshing operator are commonly employed; when fields are harvested by family members and using the *bawon* system, family members, operators, and *bawon* laborers can do the threshing. When the *bawon* system is used for harvesting, if the host asks the *bawon* laborers to perform the threshing, their share of what is harvested will be higher, whereas if the host asks the threshing operator to do this work, the *bawon* laborers' share will be correspondingly lower.

The arrangement of rice harvesting and threshing is, at least to some extent, also closely related to rice marketing. Households that arrange their activities by family labor

²⁰ This is a in which farmers sell standing crops to merchants who employ workers to harvest crops irrespective of where they live (Hayami and Kikuchi, 1986).

²¹ *Bawon* is a harvest-share system in which village fellows/participants take part in rice harvesting and as a return or payment each participant will get in kind-harvest wage which commonly between 1/10 and 1/15 of harvested crop depending on the relations between employer and harvester.

²² *Tebasan* is type of crop selling contract, commonly rice is sold as a standing crop to *penebas* buyers from inside or outside village who bring their own harvesting teams.

and the *bawon* system will commonly use their harvested rice for both stock and household consumption. However, in some cases, it is possible for them to sell some unhusked rice after it is threshed. On the other hand, households that offer harvesting and threshing by the *tebasan* system sell their crops immediately for the much-needed cash. As White (2000) has observed in his study of rural Java, it is quite common for *tebasan* rice farmers to be primarily motivated by financial need, to either repay debts or purchase household necessities.

Table 4.2. Usage of Hired Labor for Various Farming Operations in Margokaton Village in 2009

Type of farming operations	Household (HH) that Employed Hired Labors (as Host)	
	HH Unit**	Percentage
Land preparation-tractor	58	100.0
Hoeing and leveling	12	20.7
Seedling	1	1.7
Transplanting	47	81.0
Weeding	11	19.0
Harvesting (H) and Threshing (T)		
a. Family*(H) - Family* (T)	18	31.0
b. Family* (H) - Operator (T)	1	1.7
c. <i>Bawon</i> (H) - <i>Bawon</i> (T)	9	15.5
d. <i>Bawon</i> (H) - Operator (T)	10	17.2
e. <i>Tebasan</i> (H) - Operator (T)	19	32.8
f. <i>Tebasan</i> (H) - <i>Tebasan</i> (T)	1	1.7

Source: Sample household survey September 2009

Note: Employment of hired labors has been surveyed for rainy season (May-August 2009)

Households who did harvesting under *tebasan* system, threshing work will be arranged by middlemen/harvest contractor completed by operator and or *tebasan* labor

*) = operation by family is not included on hired labor category, family labor has been used for comparing use of labor in case of harvesting and threshing and also for getting the structure of completion of those activities

***) = total interviewed households for the analysis is 58

In general, there are two types of farming operations that determine whether households use hired laborers or family labor. When a significant workforce or collective labor is required to complete arduous tasks in a short period of time, a hired labor contract will usually be arranged. Another type of farm work can be done individually by family members; the tasks are not as specialized, and they can be completed within a longer period. Land preparation, transplanting, harvesting and threshing are examples of the first type of work, whereas weeding, hoeing and leveling, fertilizer and pesticide application, irrigation work and other activities fall under the second category. However, the availability of family labor at the right time, opportunities for off-farm and non-farm jobs and considerations related to flexibility and practicality have prompted households to expand the kinds of work done by hired labor to include weeding and hoeing or leveling. Land preparation and transplanting have traditionally been regarded as activities that must

be completed within appropriate, strictly specified time intervals. For the last several years, villagers have agreed to increase the uniformity of the timing for transplanting to reduce the damage caused by rat attacks.

The contracts arranged with hired farm laborers at the research sites call into five categories: (1) skilled labor, (2) piece work done by a team, (3) daily labor, (4) the *bawon* system and (5) the *tebasan* system.

Skilled or specialized wage labor is provided by people with specific talents, who are highly capable of completing specific tasks such as tractor and threshing operation. A team that provides piece work performs contract labor with wages paid on “a piece work basis”. For instance, in transplanting and weeding a 0.25 ha farming field, a team might be paid a total of 120,000 IDR. Daily labor entails an individual labor contract, and the labor is paid on a work-day basis; for instance, one might be paid 15,000 IDR/person for one day (6 hours) of working time. In the case of share-harvested output (*bawon*), there will be an individual contract agreed upon by the host and the laborer, and the laborer will be paid in kind based on a share agreement. For instance, if harvester can harvest 100 kg of unhusked rice in a day under a 1/10 or *morosepuluh* system, the laborer will be paid 1/10 of what he has harvested (10 kg of unhusked rice). Under a harvesting contract (*tebasan*), the contractor or middlemen will buy standing rice crops before the harvest, usually 1 week or 10 days before the crop is ready for harvest. The middlemen will usually ask the *bawon* laborers to work for a smaller proportion of their harvest than will individual owners.

Table 4.3 shows that skilled hired labor is the most prominent choice in farming households for tractor service (98.2%) and thresher service (66.7%). The piece rate system is commonly used for transplanting (95.3%) and weeding (26.7%). Daily labor is important for hoeing and leveling (90.5%), seeding (100.0%) and weeding (73.3%). The *bawon* system is very important for harvesting (45.2%) and threshing work (31.6%), whereas the *tebasan* system is typically used to complete a harvest (53.4%).

The proportion of contract types used to hire labor within the surveyed area indicates a particular evolutionary pattern. If we consider the evolutionary patterns of labor contracts as introduced by Roumassets (2004), we recognize that the reliance on hired labor at the research sites most likely represents the later part of the second stage of labor contract development and that these sites should be about to move into the final stage. The proportion of daily wage labor has been proportionally decreasing.

In general, hired labor contract arrangements made with skilled laborers and teams conducting piece work have been becoming more popular among rice growers in rural Java. Skilled hired laborers can conduct activities such as land preparation using tractors and threshing. The use of fuel-powered threshers has rapidly increased in Java, which may make returns higher because of reduced harvesting losses and higher-quality output; there is less rice broken, drying is easier, and winnowing is more effective.

Table 4.3. Number of Farming Operation Using Hired Labor by Contract Arrangemets in Margokaton Village in 2009

Type of farming operations	Contract Arrangement of Hired Labor (number of cases)						Contract Arrangement of Hired Labor (% of cases)					
	Skilled Labor a)	Piece-work with team b)	Daily labor c)	Bawon	Tebasan	Total	Skilled Labor a)	Piece-work with team b)	Daily labor c)	Bawon	Tebasan	Total
Land preparation-tractort	111	0	2	0	0	113	98.2	-	1.8	-	-	100.0
Hoeing and leveling	0	2	19	0	0	21	-	9.5	90.5	-	-	100.0
Seedling	0	0	1	0	0	1	-	-	100.0	-	-	100.0
Transplanting	0	83	2	0	0	85	-	97.6	2.4	-	-	100.0
Weeding	0	4	11	0	0	15	-	26.7	73.3	-	-	100.0
Harvesting	0	0	1	33	39	73	-	-	1.4	45.2	53.4	100.0
Threshing	38	0	0	18	1	57	66.7	-	-	31.6	1.8	100.0

Source: Sample household survey September 2009

Note: Employment of hired labors has been surveyed for rainy season (May-August 2009)

a)= skilled labor in local term is called as "tukang" (specifically called as "tukang traktor" for tractor operator and tukang treser for treshing operator)

b)= piece work with team in local term is called as "borongan" (specifilly called as "borongan tandur" for transplanting team work and "borongan matun" for weeding team work)

c)= daily labor regardless type of farming operation is called as "buruh harian" or "buruh dinan"

The piece work wages received by planting workers under "the contract system" allow farmers to pay laborers according to their productivity. In response to increased competition in the labor market, many farmers have discarded the use of traditional labor hiring practices that were previously designed to accommodate large labor surpluses and instead now pay cash wages to ensure adequate and timely available labor.

However, this generalization does not necessarily apply to each type of farming work or operations. It is possible that each type of work has a different historical background based on particular circumstances and technological changes.

Land preparation was traditionally conducted by family labors or through exchange labor using buffalo, cattle and/or manual hoeing. The activity can be categorized as arduous work that requires real strength. The introduction of tractors at the time of the green revolution implementation has changed the labor arrangement at play. The majority of farming households have been depending more on tractor services (which involve skilled labor contracts). They consider it will be more convenient and faster to use this method. However, some farming households have continued to use family labor and to employ daily labor for land preparation.

Historically, rice transplanting activities have been the responsibility of family members or have involved exchange labor. With traditional seed varieties in use, there were no special requirements associated with planting, and ordinary, unskilled laborers could perform this activity. HYVs, introduced as part of the green revolution, required skill at rice transplanting work. Still, it is possible for family laborers to perform this work, though it is difficult for just one person to complete such a task because synchronization is required in arranging a standard distance line for transplanting. Hence, the individual assigned this task must do the work with a high degree of precision and very quickly. Some farming households have started to ask transplanting teams to complete this task. Seeding, irrigation work, and fertilizer and pesticide application are historically seen as family labor. There are no special skills required, and no collective works is necessary. There have been no remarkable changes in standard practice here.

For a long time, weeding has been completed by family members and or through exchange labor. There is no special skill required to weed, so an ordinary worker can perform this activity. Weeding is also not an arduous task, though it is a bit delicate. However, because family labor may be limited and because non-farm job opportunities are expanding, each household may not be able to fully rely on family laborers to complete the necessary weeding. Thus, some households have asked teams of hired laborers to complete this task under a piece work arrangement and have asked day laborers to finish the job.

Harvesting has traditionally been done under the *bawon* system. It is also performed using family labor if land is limited and family labor is available at the appropriate time. Tasks should be completed in a short amount of time, and they require collective work. In the beginning, the opportunity to participate in the harvesting was offered to an unlimited number of participants. However, later on, only selected people as determined by the household hosts were invited to participate. In the 1980s, a new harvesting system was put in place called *tebasan*. Under *tebasan*, middlemen will solicit hired labor to conduct the harvesting under the *bawon* system. Since that system was established, two systems have coexisting in the village. Rice transportation from the fields is considered part of the task of harvesting.

Threshing does not require special skill; ordinary laborers can perform it. Traditionally, threshing has been done by family laborers if they are also conducting the harvesting or is the responsibility of *bawon* laborers as part of a harvesting job. Since the

recent introduction of threshing machine, threshing operators have also been able to complete this task. One consequence of threshing machine use is that a decreasing share of the output is assigned to *bawon* laborers because they no longer perform the additional task of threshing. The use of thresher machines among farming households is still very new; indeed, it has been practiced only since 2008 in the research sites.

4.3.3. Households Economic Structure and Usage of Hired Labor

Some previous studies have emphasized that the higher the income household, the larger the area of cultivated land and the smaller the number of productive family laborers, as they tend to be highly involved in non-farming jobs and tend to use hired labor more.

In terms of cultivated land, households are either small or large. Households have been grouped into low and high income levels. The data collection process for household income was conducted in 2002. However, that year was an exceptional year for farming production, especially for catfish growers. Some farmers experienced significant losses due to the high catfish mortality rate and because of increases in the price of feed, whereas the price of the output, harvested catfish, has been relatively stable. To overcome this problem, household income from catfish has been adjusted to the normal year.

Household member participation in non-farming jobs can fall into one of three categories: (1) no work on non-farming jobs, (2) temporary work on non-farming jobs and (3) permanent work on non-farming jobs. Temporary non-farming jobs include small trading, snack-making, handicraft-making, brick-making, carpentry, and construction labor. Correspondingly, permanent non-farming jobs include shop-keeping, teaching, governmental work, police work, and factory work. If a household member engages in both temporary and permanent non-farming work, his or her job is categorized as a permanent non-farming job.

The findings of this study regarding the relationship between household characteristics and the tendency to hire labor for farming operations are rather complex. Determining factors that affect hiring decisions for certain farming operation include aspects of socio-economic context and relationships. Our results indicate an influential relationship between household characteristics including cultivated land, income level and involvement in non-farming jobs and hiring behavior for various kinds of farming work as displayed in Tables 4.4, 4.5 and 4.6.

Table 4.4. Usage of Hired Labor by Cultivable Land in Margokatun Village in 2009

Cultivable land (ha/HH)	Household number	Unit & % of households	Household number using hired labor (unit and %)										
			Land prep tractor	Hoeing-leveling	Seedling	Transplanting	Weeding	Harvesting and Threshing					
								Family - Family	Family - Operator	Bawon-Bawon	Bawon-Operator	Tebasan-Operator	Tebasan-Tebasan
Small (<= 0,33)	34	No. HH %	34 100.0	7 20.6	0 0	27 79.4	7 20.6	10 29.4	0 0	6 17.6	8 23.5	6 17.6	1 2.9
Big (>0,33)	24	No. HH %	24 100.0	5 20.8	1 4.2	20 83.3	4 16.7	5 20.8	3 12.5	1 4.2	2 8.3	13 54.2	0 0
Statistical sig a)			NS	NS	NS	NS	NS	NS	NS	**	**	*	NS

b) statistical significance on frequency of using hired labor between households cultivating small and large farming land, N.S. indicates no significant difference, ** significant at $\alpha=5\%$, * significant at $\alpha=10\%$

If we combine and compare the analysis results with an eye toward the factors predicted to influence labor hiring patterns, two tendencies emerge: (1) involvement in non-farming jobs significantly influences hiring decisions for tasks such as hoeing, leveling, transplanting and weeding, and (2) harvesting and threshing are significantly influenced by cultivated land, income level and, again, involvement in non-farming jobs.

If we focus in greater detail on farming activities besides harvesting and threshing, those for which families' hiring patterns are only influenced by work on non-farming jobs, we find that land preparation by tractor service and seeding are not significantly different from one household category to the other. Land preparation tends to be regarded as an arduous task that may require skill and should be completed in short time. Regardless of a household's socio-economic characteristics, a farming household will tend to ask a hired laborer to use a tractor for this purpose, noting that this is a more convenient option and that the work should be completed on time. Seeding, on the other hand, tends to be done by hiring laborers only under very specific conditions, such as when the household is facing a health problem. Indeed, when a hired worker is used, it will be because there is a strict timeframe within which the seeding must be completed. In such rare cases, a household may request hired labor. Usually, rice seeding in the surveyed hamlets has been finished using family labor.

Table 4.6 shows that there is a significant difference between household groups in terms of the kinds of laborers that they hire for hoeing and leveling, transplanting and weeding. Households without non-farming jobs can complete those activities, thus allowing the household to rely fully on family labor, whereas in households in which certain individuals hold permanent non-farming jobs, hired labor tends to be more intensively involved in farming than in households in which some family members have

temporary non-farming jobs. Household involvement in non-farming jobs also likely affects hiring decisions related to farm operation. Households with permanent non-farming jobs have fewer chances to focus on various farming activities than is the case when some work is temporary or nonexistent; hence, they tend to hire more labor.

Table 4.5. Usage of Hired Labor by Income Level in Margokatun Village in 2009

Income level (000 IDR/HH/year)	House- hold number	Unit & % of house- holds	Household number using hired labor (unit and %)										
			Land prep tractor	Hoing- leveling	Seedling	Transplant ing	Weeding	Harvesting and Threshing					
								Family - Family	Family - Operator	Bawon- Bawon	Bawon- Operator	Tebsan- Operator	Tebsan- Tebsan
Low income (≤ 9.46)	31	No. HH %	31 100.0	6 19.4	1 3.2	26 83.9	5 16.1	10 32.3	1 3.2	1 3.2	6 19.4	13 41.9	0 0
High (>9.46)	27	No. HH %	27 100.0	6 22.2	0 0	21 77.8	6 22.2	8 29.6	2 7.4	6 22.2	4 14.8	6 22.2	1 3.7
Statistical sig a)			NS	NS	NS	NS	NS	NS	NS	**	**	*	NS

a) statistical significance on frequency of using hired labor between households cultivating small and large farming land, N.S. indicates no significant difference, ** significant at $\alpha=5\%$, *significant at $\alpha=10\%$

The second part of our analysis is focused on hiring patterns for harvesting and threshing. By combining and summarizing the results from Tables 4.4, 4.5 and 4.6, we can determine the influencing factors and hiring patterns for labor based on household socio-economic characteristics can be simplified and as shown in Table 4.7.

Table 4.7 shows that regardless of cultivated land and income level, households with enough family laborers indicating no involvement on non-farming jobs tend to finish harvesting and threshing tasks themselves.

Households with a small amount of cultivable land, higher income and more involvement in temporary and permanent non-agricultural work tends to hire a significant amount of labor for harvesting and threshing under the *bawon-bawon* system. However, higher-income households with small plots of cultivated land and non-farming jobs may still use family labor to manage and supervise *bawon* practices.

That a large proportion of higher income households offer poorer households the opportunity to participate in *bawon* for harvesting and threshing suggests that the ideal of a moral economy is still fairly prevalent. In a sense, this is a way for richer households to share their income.

Harvesting and threshing under the *bawon-operator* system is popular with households that have a small amount of cultivable land, have lower income at their disposal and work more temporary and permanent non-agricultural jobs. For those who own smaller plots of cultivable land, the option of using the *bawon-bawon* system still

exists, but the individuals in this household category face income-based limitations. They may perceive themselves as being unable to pay the high transaction costs associated with *bawon-bawon* practices. To solve this problem, they may use the *bawon*-operator system instead. Under this system, they still offer some degree of income-sharing by using the *bawon* system for harvesting, but they reduce costs and speed up the process by asking an operator to conduct the threshing.

Table 4.6. Usage of Hired Labor by Household Involvement on Non-Farming Jobs in Margokaton Village in 2009

Involvement on non-farming jobs	Household number	Unit & % of households	Household number using hired labor (unit and %)										
			Land prep tractor	Hoing-leveling	Seedling	Transplanting	Weeding	Harvesting and Threshing					
								Family - Family	Family - Operator	Bawon-Bawon	Bawon-Operator	Tebasan-Operator	Tebasan-Tebasan
Without non-farming jobs	9	No. HH %	9 100.0	0 0	0 0	3 33.3	0 0	7 77.8	0 0	0 0	0 0	2 22.2	0 0
Temporary non-farm jobs	27	No. HH %	27 100.0	4 14.8	0 0	22 81.5	2 7.4	7 25.9	2 7.4	4 14.8	5 18.5	8 29.6	1 3.7
Permanent non-farm jobs	22	No. HH %	22 100.0	8 36.4	1 4.5	22 100.0	9 40.9	4 18.2	1 4.5	3 13.6	5 22.7	9 40.9	0 0
Statistical sig a)			N.S	**	NS	**	**	**	NS	**	**	*	NS

a) statistical significance on frequency of using hired labor among households without non-farming jobs, with temporary non-farming jobs and with permanent non-farming jobs; difference, **significant at $\alpha=5\%$; *significant at $\alpha=10\%$, N.S. indicates no significant
Note: Employment of hired labors has been surveyed for rainy season (May-August 2009)

No-non Farm = household members do not involve on non-farming jobs; Temporary non-farming jobs= among the households member involve on non-farming job which can be done temporarily such as small trader, snack making, handicraft, construction labor, carpenter, brick making; Permanent non-farming jobs= among the households members involve on non-farming jobs which should be done under permanent contract such as shop keeper, teacher, officer, police, factory worker, etc.);

Table 4.7. Trend of Using Hired Labor on Harvesting and Threshing in Margokaton in 2009

Farming operations		Larger proportion in using hired Labor by		
Hervesting	Threshing	Cultivated land	Income level	Inv. on non-farm jobs
Family	Family	NS	NS	WNF
<i>Bawon</i>	<i>Bawon</i>	S	H	T, P
<i>Bawon</i>	Operator	S	L	T, P
<i>Tebasan</i>	Operator	B	L	T, P

Note: NS=no significant different, S=small, B=big, L=low, H= high, WNF= without non-farming jobs, T=temporary non-farming jobs, P=permanent non-farming jobs

Conducting one's harvesting and threshing under the *bawon-bawon* and *bawon*-operator systems likely implies a belief in the moral economy, with wealthy families convinced that they must guarantee that villagers have the bare minimum necessary for survival.

The last method is that in which the harvesting and threshing are conducted via the *tebasan*-operator system. This seems to be an option mostly for households with a great deal of cultivable land, lower income and more involvement in temporary and permanent

jobs. Even if a household has a relatively large amount of cultivable land and participates in non-farming-related work, if it faces an income shortage, it will tend to ask a *tebasan*-operator to provide harvesting and threshing services. They seem motivated to sell standing paddy crops to *tebasan* contractors because of their lower income; taking this step allows them to earn cash sooner, when their crops are close to maturity. Harvesting and threshing are then coordinated by middlemen under the *tebasan* system.

Needless to say, when harvesting and threshing are conducted by via the *tebasan*-operator system, households are likely not only to have large cultivable tracts of land (and thus to need a large labor force) but also to be intensely involved in non-farming work (and hence to face certain difficulties in attempting to monitor and supervise the *bawon* system process). Even though they are working non-farming jobs, these jobs are unlikely to provide them with sufficient reliable income for their household. This fact seems related to job types. Such non-farming jobs typically offer relatively low wages or returns; such permanent non-farming jobs include factory work (3 persons), shop-keeping (3 persons), village office staff (2 persons) and drivers license distributor (1 person). Because of their limited educational background, these individuals are paid at a low rate. On the other hand, temporary non-farming jobs of this type include snack processing and sale (2 persons), brick-making and baking (2 persons), assistant-level construction work (2 persons), construction work (1 person) and small-scale vegetable sales (1 person). The profit and wages associated with these activities has been also regarded as unstable because they are limited and seasonal.

Because household members are taking and permanent non-farming jobs, such households are likely to face some degree of difficulty focusing on and managing farming operations. Hence, they are unlikely to be successful in managing farming operations. Although they have access to large swaths of cultivated farmland, the productivity of that land tends to be relatively low. The average income in the farming sector for households involved in non-farming jobs that require hired labor for harvesting under the *tebasan*-operator system is 2.18 million IDR/household, which is slightly lower than the average household income in the farming sector, which is 2.48 million IDR/household.

4.3.4. Employee Characteristics and Transactions and Allocation of Hired Labor

The results of the study indicate that in terms of employee status, poorer households participate more intensively. Richer households may offer poorer households various chances for participation through hired labor contacts for various farming jobs.

As shown in Table 4.8, there is a significant difference between household income levels based on their employment status. Household income data was collected for 2002. The employer-only households have the highest average income (11.22 million IDR/household/year). They are commonly more involved in non-farming jobs (90.0%) in which wages are better than those in farming (see Table 4.8).

Among households holding the status as employers and employees, only thresher operator who has average income at 9.51 million IDR/household/year comparably higher than average of households income (9.46 million IDR/household/year). Tractor operators, with income of 9.05 million IDR/household/year, are slightly better off than other employee types.

Table 4.8. Average of Household Income based on Employment Status in Margokaton

Employment Status in Farming operations	No. HH	%	Average Income (000 IDR/HH/Year) *	Involvement on Non-Farm Jobs (%)			
				Without Non-farm	Temporary Non-farm	Permanent Non-farm	Total
Employers only	30	51.7	11,215	10.0	40.0	50.0	100.0
Employers and Employees							
a. Daily wage laborers**)	12	20.7	7,074	25.0	50.0	25.0	100.0
b. Tractor operator	1	1.7	9,045	-	100.0	-	100.0
c. Transplanting laborers	4	6.9	8,138	25.0	50.0	25.0	100.0
d. <i>Bawon</i> laborers	10	17.2	5,735	20.0	50.0	30.0	100.0
e. Thresher operator	1	1.7	9,511	-	100.0	-	100.0
Total/average	58	100.0	9,457				

(Note: * $X^2=76,033$; $df=6$; $p<0,01$)

Source: Primary data analysis in 2002 and 2009

In cases of household members involve on more than one of farming hired labor activities, the categorization of employee has been regarded on the activity/operation which more it was dominant/intents during the latest one season

*) = average income has been calculated from households survey in 2002, **) = at the time of survey in 2002, the households involved on tractor and thresher operator had no such activity, machines has been recently bought and operated, hence the income did not include income from machine operating, villagers recently has commonly regarded them as among better off households; ***) = daily labor includes hoeing and leveling, weeding, fertilizer application

**) = daily labor includes hoeing and leveling, weeding, fertilizer application

However, the income level of machine operator households is not completely representative of current household income. In 2002, those households had not yet bought and operated tractors and thresher machines. The funds necessary to purchase these machines came from family members or relatives working in other cities. The current income machine operator households should be higher because a considerable amount of

income should come from machine operating activities. Based on the FGDs conducted in 2009, it appears that these individuals are among the most well-off households in the hamlets.

Bawon laborers are categorized as those households with the lowest income level (5.76 million IDR/household/year). *Bawon* laborers represent the poorer class in the village, those who also commonly face restricted access to non-farming jobs. Consequently, they depend more on harvesting and threshing under the *bawon* arrangement, and it is expected that wealthy farming households inside and/or outside village will offer such assistance.

For rich households with sufficient family labor to monitor *bawon* practices, the *bawon* system tends to involve choosing neighboring households or relatives who commonly live nearby to participate in harvesting and threshing tasks.

The income level of laborers assigned to do transplanting is better than that of *bawon* and daily laborers. The skill and productivity of these teams team is likely to play an important role in helping them to secure this level of income. Even though the average income of this group is lower than that of tractor and thresher operators, the former are at an advantage because they do not need to provide the capital necessary for operators to procure the machines that they need.

Some employee characteristics that we take into account here are group leader status, operator status and daily labor. Table 4.9 indicates that hired laborers are assigned to particular tasks based on their gender. Transplanting is a female domain, whereas land preparation services such as tractor and thresher services are considered to be a male domain. Males can take part in the harvesting, even though this is more commonly a female task. Membership in a particular working group, including a person's relationship to the operator and assistant operator, tends to develop over a long period of experience working with the group. In some cases, members are absent from certain activities for personal reasons such as health problems and attendance at social events. Permanent termination of membership also occurs due to health problems, aging or the departure from the group of certain other members.

Table 4.9. Characteristics of Working Group Leaders/Contractors, Members/Assistance in Margokaton in 2009

Operator No.	Gender Type	Age (years)	Type of farming operations	No. Members	Education (years)	Owning farm-land (ha)*	Capital for machine**	Econ. Level ***	Personality ****	Residential of members	Proportion of members (by gender, %)			Working periode (Years)
											M	F	Total	
1	Female	62	Transpl. group	6	4	0.06	-	L	VG	RT	-	100.0	100.0	18
2	Female	50	Transpl. group	7	4	0.02	-	L	VG	RT	-	100.0	100.0	10
3	Female	55	Transpl. group	5	6	0.06	-	L	VG	RT	-	100.0	100.0	20
4	Female	43	Transpl. group	5	12	0	-	L	VG	RW	-	100.0	100.0	8
5	Male	52	Tractor-operator	2	6	0.03	S	M	G	RT	100.0	-	100.0	11
6	Male	30	Tractor-operator	1	12	0	S, R	M	G	RT	100.0	-	100.0	6
7	Male	45	Tractor-operator	1	9	0.07	S	M	G	RW	100.0	-	100.0	19
8	Male	40	Tractor-operator	1	6	0.1	SL	M	G	RT	100.0	-	100.0	9
9	Male	51	Thresher operator	0	9	0	S	M	G	-	-	-	-	-
10	Male	30	Thresher operator	1	9	0	R	M	G	RT	100.0	-	100.0	2
11	Male	42	Thresher operator	0	12	0.06	S	M	G	-	-	-	-	-
12	Female	60	Harvest contractor	12	6	0.06	-	H	VG	Hamlet	25.0	75.0	100.0	9

Source: Sample hired labors-operators interview, September 2009

Note: gender type: M=male, F=female; residential: RT= neighborhood, RW= neighborhodd association; Social relationship: R=relative, N=neighbor, F=friend

*) all of respondent having land for housing/compound; **) S = Saving, R = remittance from relatives, SL= selling land; ***) : L= Low, M = Middle, H = High

****) : VG = very good, G = good; economic level as compared to other villagers and personality has been evaluated by interviewing of hamlet heads

Machine operators are commonly younger than the group leaders and contractors working on transplanting and harvesting, respectively. Similarly, operators possess a relatively higher education level.

Even though there is no clear pattern of land ownership among group leaders and operators, there are different levels of household economic status associated with different groups. Contractors, who are generally skilled workers and have a wider network that allows them to earn more income, are in the highest position. Then it is followed by operators, who earn higher wages and can also expand the services that they provide. Those who work in transplanting have the lowest economic status. Contractors and operators must accumulate capital and assume a greater degree of risk, and they must also be quite skilled, whereas those working in transplanting need no capital and assume less risk, but the jobs require more skill.

In general, those who work in transplanting, operators and contractors are friendly and are good at networking. Having this type of personal character is very important and can even be considered a form of social capital used to keep work transactions running smoothly. A good personality also plays an important role in maintaining social relationships with hosts or clients.

Based on this study, it appears that at the research sites, contract arrangements were mainly casual or regular basis. There were no households using long-term contact systems

(e.g., seasonal hired labor). Seasonal or yearly share tenancy systems²³ and crop tenancy systems were not considered as seasonal hired labor systems because share tenancy does not involve paid labor in the traditional sense as perceived by the local people; instead, there are shared input and output mechanisms at play.

Farm transaction systems and labor allocation are closely related to the type of operations being run and to gender segmentation. Consequently, labor payment systems must be analyzed based on their operational structures, gender-based structures and contract systems. As noted by several researchers (Burton and White, 1984; Rogali, 1997; Rigg, 2004 and Lastaria-Cornhiel, 2006), there is usually some difference between the wages paid to men and women. Men usually do the heavier jobs, those requiring greater physical strength or 'brief bursts of excessive energy', and this is seen as a reason why they deserve higher payment.

Unit wages tend to vary based on the task, the type of arrangement and the gender of the person completing the work. The wages for daily paid labor are paid based on daily work (commonly 5 hours per day) at a rate of 15,000-20,000 IDR/person/day for male labor and 12,000-17,000 IDR/person/day for female labor. The piece rate for teams doing transplanting or weeding is generally 110,000-120,000 IDR/2,500m², whereas the rate is 140,000-150,000 IDR/2,500m² for hoeing. Skilled hired labor contracts for land preparation are paid at a rate of 140,000-150,000 IDR/2,500m² for tractor services and 5,000-7,000 IDR/quintal of un-husked rice for threshing.

Rice threshing machine is still quite new adopted in the surveyed areas that has been introduced since 2008. This machine is regarded as relatively an expensive tool, therefore only rich people could afford to purchase the machine. For operating threshing machine, the owner who usually also rich farmer could serve as direct operator and or possibly ask the other person as operator of the machine. Payment of threshing service is basically in cash with the unit of calculation for each one quintal of threshed rice. Operating of threshing machine is mobile, service can be done in the yard of farmer house and or in the rice field, it depends on the negotiation between operator and rice owner or rice contractor.

Meanwhile the wage rate for harvesting typically depends on the type of *bawon*. The *Bawon* system as used by individual farmers offers laborers a more generous share of what they harvest than does the share system used by contractors. When an individual farmer

²³ However, a study conducted by Kurosaki (2004) in rural Myanmar includes seasonal laborers employed for a cropping season who were responsible for various farm operations as seasonal hired laborers. There is no detailed explanation given as to whether the host and tenant share the farming inputs.

asks a laborer to participate, the common share system affords the laborer 1/10 (*morosepuluh*) and the farmer 9/10. In contrast, if a middlemen/contractor solicits the laborer's participation, the common share system affords the laborer 1/15 (*morolimolas*) and the contractor 14/15.

The average number of participants varies considerably from one farming activity to the next. For daily labor, the number of laborers can be 1 to 5 persons depending on the scale of the work. When a team is working for a piece rate, there tend to be about 3-7 persons per team. Skilled labor for tractor services requires 2-3 persons, whereas thresher services require 1-2 persons. When a contractor organizes a harvest, the number of participants is usually larger, varying from 2 to 20 persons, whereas an individual farmer may only invite 3 to 7 persons to be involved.

The coverage area for hired labor is also slightly different for different types of operations. Hired laborers or employees conducting daily labor, weeding, hoeing and harvesting commonly come from the same hamlet and are invited by individual farmer. For tractor services, transplanting and threshing, hired labor may come from throughout a village. When middlemen organize a harvest, the coverage area may widen to include an entire sub-district and even neighboring sub-districts.

After converting the average wage rates based on the contract system, activity and worker gender into an hourly wage rate, we can see that piece work rates for teams and rates for skilled hired labor are better than daily wage rates (Table 4.10). Skilled tractor operators are paid the most per hour (10,000 IDR/person/hour), followed by teams of laborers working on transplanting (7,500 IDR/person/hour) and threshers with skilled labor contracts (7,000 IDR/person/hour). The wage rate for tractor operators is comparably high, but the number of opportunities is very limited, and this task requires a high skill level. On the other hand, there are more opportunities for transplanting, a high skill level is also required, and the work is arduous and requires attention to detail. This makes it potentially difficult for newcomers to enter this labor market.

Compared with the wage rate for non-farm jobs, the wage rate for tractor operators in the skilled hired labor system and for teams conducting transplanting under the piece rate system is comparably higher than wage rate of laborer on non-farm jobs. However, in general, wage rates for non-farm jobs are better than wages for other forms of hired farm labor.

There are at least three transaction mechanisms for arranging hired labor: (1) the host solicits workers and negotiates with individual laborers to arrange daily labor and harvesting, (2) the host negotiates with a group leader to determine a piece rate for a team working on transplanting, hoeing and weeding, or (3) the host negotiates with the main operator to develop a contract for highly skilled labor (i.e.).

In almost cases in farming, the work schedule is determined based on negotiations between the host and the laborers or the group leader, and wages are negotiated based on typical market prices. However, when a harvest is orchestrated by a contractor, the contractor determines the work schedule.

Table 4.10. Conversion of Wage Rate per hour by Type of Operations for Farming and Non-farming in Margolaton Village in 2009

Work sector	Type of contract system	Type of operations	Gender	Working unit	Max Wage per working unit (a)	No of labors (b)	No of hours (c)	Total hours d=(b*c)	Wage/hour e= (a/d) IDR
Farming	Daily labor	various farming operations	Male	1 day (5 hours)/person	20,000	1	5	5	4,000
			Female	1 day (5 hours)/person	17,000	1	5	5	3,400
	Piece-work with team	Transplanting	Male	2500 m2 ***	120,000	4	4	16	7,500
			Female-male	2500 m2 ***	120,000	4	5	20	6,000
			Male	2500 m2 ***	150,000	4	9	36	4,167
	Skilled labor-tractor	Land preparation*)	Male	2500 m2 ***	100,000	2	5	10	10,000
Male			1 kuintal wet unhusk rice	7,000	1	1	1	7,000	
Non-farming	Daily labor	Skilled construction labor	Male	1 day (7 hours)	50,000	1	7	7	7,143
	Daily labor	Asisstant to const-lab**)	Male/female	1 day (7 hours)	40,000	1	7	7	5,714
	Daily labor	Carpenter	Male	1 day (7 hours)	50,000	1	7	7	7,143

Source: Sample hired labors-operators interview, September 2009

Note: *) = total wage contract for land tractoring is about 150.000 IDR/2500m2; cost for oil 30.000 IDR and depreciation cost of machine is expected about 20.000 IDR/operation

**) = male laborers commonly are more predominant as assistance to construction labor

***) = area of 2500 m2 of rice field in local term (Javanese) has been called as *seprapat* that means 1 quarter of hectare, this unit has been commonly regarded as a convenience unit for calculating and transacting of work unit and payment unit. In case of transplanting and weeding, one team work with 4 members could complete one unit of working area in 5 hours, after taking a rest for a while in afternoon they possibly to work for another one working unit in the afternoon

There is no substantial difference between the wage distribution schedules for the different types of work. Wages are commonly distributed between one day and one week after the task or work is complete. Wages for harvesting are commonly paid in kind (in unhusked rice), but in some cases, laborers can ask their contractor to provide them with cash payment instead based on market prices. Wages paid for teamwork are usually distributed equally, and group leaders are not given a commission. For tractor services, the main operator will receive a slightly higher proportion than the assistant even though in some cases the two individuals work in rotation.

It is noteworthy that teamwork arrangements for hired labor contracts, as when piece rates are paid regularly to teams for a long period, can create a stable and intimate relationship. Often, a team may have been working together for many years. Its members

are often neighbors and relatives who reside in the same community. Such long-term relationships bolstered by geographic proximity will promote effective and efficient mechanisms of organizing and completing assigned tasks.

Trust and mutual understanding develop among group members, which in turn facilitate smooth task allocation. The group also has a flexible mechanism for excusing group members from work for important events such as funerals and feast ceremonies and to address health problems. After time off from group activities, the member can smoothly join the group in completing its next set of tasks.

Hired labor contracts between employees and employers may, in some cases, include various types of remuneration, not simply the exchange of currency or food. Because these farms are located in small hamlets and villages, they encourage working relationships among neighboring households. As a result, the working relationship between hired labor and farming households often develops through social relationships, something that creates a mutual sense of trust.

Because their workers are often friends, neighbors or family members, affluent households may have close relationships with their hired laborers. Giving food as a gift is a common practice in these communities, and our FGDs showed that affluent farming households also occasionally offer credit to poor households. In return, these poor laborers provide other services to their employers, such as domestic and personal services.

As clearly argued by Hayami (1998), in many rural Asian communities, the patron-laborer relationship is not merely based on economic exchange; rather, it also includes expressions of gratitude by laborers for the goodwill of their farmer-patron for providing them with job opportunities and a stable income. Such a personal relationship is further strengthened through the exchange of gifts, credit and personal services. A sense of moral obligation and the fear of damaging this patron-client relationship tend to motivate laborers to maintain a conscientious work ethic and to refrain from social behavior that might be seen as offensive by their patron.

4.3.5. Social Relationship and Labor Tying Arrangements

Hired farm labor at the research sites is likely to be closely related to the social and physical proximity of the related parties. Social relationships, which include kinship, neighborhood membership and friendship, are still perceived as important to hiring arrangements. The sense of strong social relationships among the villagers has been

maintained via joint labor. The tight labor network and the role of social relationships in hired labor contracts is also tied to the geographical proximity of the hosts' and laborers' residence. These dynamics help to mold the perceptions of the hosts regarding the group leaders, operators and organizers.

The people who reside in the same community, which may extend into the hamlet, are able to determine distributional outcomes and provide mutual assistance within both families and communities in times of hardship. The purpose of mutual insurance networks is for people above the minimum standard of living to help others who have fallen or are in danger falling below the minimum, so that they in turn can receive if they should fall upon hard times. In short, the moral economy can be viewed as one in which a subsistence ethos guarantees at least minimal provisions to all households.

In jointly analyzing social relationships and residential proximity (see Tables 4.11 and 4.12), we achieve results that show how labor arrangements are determined. In general, social relationships are still very important to the parties involved; along with geographical proximity, they help to determine labor contract arrangements.

Table 4.11. Type of Social Relationship between Employers and Employees by Farming Operations in Margokaton in 2009

Type of farming operations	Number of cases							Proportion of cases						
	R	N	F	RN	RF	NF	Total	R	N	F	RN	RF	NF	Total
Land preparation-tractor	20	62	7	18	1	5	113	17.7	54.9	6.2	15.9	0.9	4.4	100.0
Hoing and leveling	0	15	0	6	0	0	21	0	71.4	-	28.6	-	-	100.0
Seedling	0	1	0	0	0	0	1	-	100.0	-	-	-	-	100.0
Transplanting	7	57	3	14	3	1	85	8.2	67.1	3.5	16.5	3.5	1.2	100.0
Weeding	1	13	1	0	0	0	15	6.7	86.7	6.7	-	-	-	100.0
Harvesting	5	46	7	11	3	1	73	6.8	63.0	9.6	15.1	4.1	1.4	100.0
a. Daily labor	0	0	1	0	0	0	1	-	-	100.0	-	-	-	100.0
b. <i>Bawon</i>	2	19	1	8	3	0	33	6.1	57.6	3.0	24.2	9.1	-	100.0
c. <i>Tebasan</i>	3	27	5	3	0	1	39	7.7	69.2	12.8	7.7	-	2.6	100.0
Threshing	5	33	9	8	1	1	57	8.8	57.9	15.8	14.0	1.8	1.8	100.0
a. Skilled Labor	3	23	9	2	0	1	38	7.9	60.5	23.7	5.3	-	2.6	100.0
b. <i>Bawon</i>	2	9	0	6	1	0	18	11.1	50.0	-	33.3	5.6	-	100.0
c. <i>Tebasan</i>	0	1	0	0	0	0	1	-	100.0	-	-	-	-	100.0
Total	38	227	27	57	8	8	365	10.4	62.2	7.4	15.6	2.2	2.2	100.0

Source: Sample household survey September 2009

Note: Employment of hired labors has been surveyed for rainy season (May-August 2009)

R = relative, N = neighbor, F = friend; Relationship has been accounted from the perspective of hosts/employers

Regardless of the type of task at hand, neighborhood relationships are still very important (62.2%). Next in importance are relationships characterized by both neighborhood and kinship ties (15.6%), whereas the proportional importance of the other relationships is less than ten percent. In term of geographical proximity, for people to reside in the same hamlet is still regarded as the most important (84.7%), followed by

residence in the same village (14.2%). Only a very small part (1.1%) of labor arrangements include neighboring villages.

Table 4.12. Residential Area of Employees (Group Leaders and Operators) by Operations in Margokaton in 2009

Type of farming operations	Number of cases				Proportion of cases			
	Same Hamlet	Same Village	Neighboring Village	Total	Same Hamlet	Same Village	Neighboring Village	Total
Land preparation-tractor	90	23	0	113	79.6	20.4	-	100.0
Hoeing and leveling	21	-	0	21	100.0	-	-	100.0
Seedling	1	0	0	1	100.0	-	-	100.0
Transplanting	76	9	0	85	89.4	10.6	-	100.0
Weeding	14	0	1	15	93.3	-	6.7	100.0
Harvesting	60	11	2	73	82.2	15.1	2.7	100.0
a. Daily labor	1	0	0	1	100.0	-	-	100.0
b. <i>Bawon</i>	33	0	0	33	100.0	-	-	100.0
c. <i>Tebasan</i>	26	11	2	39	66.7	28.2	5.1	100.0
Threshing	47	9	1	57	82.5	15.8	1.8	100.0
a. Skilled Labor	28	9	1	38	73.7	23.7	2.6	100.0
b. <i>Bawon</i>	18	0	0	18	100.0	-	-	100.0
c. <i>Tebasan</i>	1	0	0	1	100.0	-	-	100.0
Total (A)	309	52	4	365	84.7	14.2	1.1	100.0

Source: Sample household survey September 2009

Note: Employment of hired labors has been surveyed for rainy season (May-August 2009)

R = relative, N = neighbor, F = friend; Residential area has been accounted from the perspective of hosts/employers

A detailed analysis by activity group must separately consider tractor services, hoeing and seeding, transplanting, weeding, harvesting and threshing. There is only one case of seeding, so this can be considered an exceptional case.

Neighborhood relationships are intensely important to tractor services, with a figure of 54.9%. However, the other relationships are also considerably important. Strong spirit of neighborhood has also been confirmed by residential area, with arrangements among people who live in the same hamlet indicated to be important (79.6%); however, fellow labors from neighbors inside hamlet sometime is not enough, and it should be expanded into the entire village (20.4%). It is easy to see based on the nature of tractor services why some might have this view; the number of tractors and operators in the hamlet is limited, whereas the number of hosts is far larger, and there is a demand for individuals who can quickly adjust to strict time schedules to accommodate similarities in transplant timing. Again, because tractor services require a high skill level and a great deal of capital, supply is more limited than demand.

For hoeing and leveling, the arrangements have been made mainly by neighborhood (71.4%) and based on joint neighborhood-kinship ties (28.6). These tasks have been assigned to parties living only in the same hamlet (100.0%). The intimacy of the social relationships involved and the residential proximity of these individuals are likely very great. This activity does not require special skills or capital, and any laborer can enter the

market. However, hosts tend to prefer to invite their close neighbors and relatives residing in the same hamlet to help them, especially when those individuals are experiencing financial difficulties. An interest in sharing work and a belief in the ideal of a moral economy seem to have an impact on how these activities are arranged.

Neighborhood relationships are important to how transplanting activities are organized, with a score of 67.1%; however, the other relationships are also important. The social relationships involving the actors at play is likely to be weaker than in the context of hoeing and leveling. These activities tend to involve not only those individuals who are living in the same hamlet (89.6%) but also those throughout an entire village (10.6%). This activity requires skill, and the number of qualified groups in the hamlet is also limited. In addition, farming households must often quickly complete the transplant process due to water problems and to prevent rat attacks; hence, some hosts may ask groups from a neighboring hamlet to help them if they cannot find laborers from inside the hamlet who are available during the expected time frame.

The characteristics of the social relationships among the parties working on weeding are somewhat similar to those of the relationships prevalent in transplanting. Neighborhood relationships are very important, with a proportion 86.7%; however, again, the other relationships are important. Social relationships are weaker here than the relationships in the hoeing-leveling arrangement. In this case, the participants are not just those living in the same hamlet (93.3%); rather, the group extends into a neighboring village (6.7%). This activity is delicate and time consuming and requires skill, and the number of working groups in the hamlet is also limited. The time frame for completion can be longer; however, postponement will have a negative impact on rice growth and performance. The villagers usually finish the weeding process in a short time; hence, some hosts may ask groups from the neighboring hamlet if they cannot find labor from inside the hamlet for the expected time frame.

Harvesting can be completed through daily labor or under the *bawon* or *tebasan* system. In the case of daily harvesting contracts, social relationships under *bawon* are stronger than under *tebasan*. Neighborhood relations are still important for both arrangements; however, overlapping neighbor-kinship relationships are very clear under the *bawon* system (24.2%). All *bawon* laborers also come from a very small residential area within the same hamlet. In contrast, a number of *tebasan* laborers come from other parts of the village and even from neighboring villages (28.2% and 5.1%, respectively).

Whereas *bawon* contracts are very commonly arranged among parties within the same hamlet, the *tebasan* procedure is commonly organized by contractors from the hamlet who recruit outside the hamlet, often including their fellow workers in the network. Contractors from outside the hamlet commonly solicit laborers from the hamlet in which they reside.

Threshing can be conducted by skilled thresher operators or under the *bawon* or *tebasan* system. The *tebasan* system is only one option. In this context, social relationships under *bawon* are stronger than when the individuals involved are skilled laborers. Neighborhood relationships are still important to both arrangements; however, overlapping neighborhood and kinship relationships are very clear in the *bawon* context (33.3%), and friendship is important to skilled labor contracts (23.7%). All *bawon* laborers also come from very nearby residential areas within the same hamlet. However a significant number of skilled laborers come from the same village and even from neighboring villages (23.7% and 2.6%, respectively). Threshing completed by threshers is becoming popular; however, the number of machines and operators in the hamlet is limited. This activity also requires special skill and a large amount of capital. If *bawon* contracts are very commonly arranged among parties within the same hamlet, skilled threshers often reside outside the hamlet. Farming households may solicit skilled laborers from outside the hamlet if they cannot find sufficient labor inside the hamlet or motivated by work reputation, preference and friendship relations.

In harvesting and threshing under the *bawon* system, social relationships are very strong, and the individuals involved reside in one small area within one hamlet. In this sense, the *bawon* arrangement is likely to involve close-knit relationships between the host and the invited participants in a smaller area, thus permitting them to intensify daily contact with one another and identify which households are really in need of income-sharing. Meanwhile, *tebasan* contracts are perceived more as regular economic transactions under market mechanism and emphasize social relationships and close-knit residential areas to a smaller extent. However, this system is less prevalent than the *bawon* arrangement.

Residential proximity has been recognized not only as indicating similarity between administrative or official groupings of households but also as tied to physical location. In fact, this second factor is likely more important than administrative boundaries. When laborers come from neighboring villages, they commonly reside close to the border. Contractors working on harvests sometimes come from neighboring villages that may

offer a better price for paddies. Meanwhile, when laborers work based on daily or individual contracts, it is very common for contractors only to search for workers from the same hamlet. They usually know the performance and record of each laborer and have close social relationships with them.

People who commonly reside in the same community (which may be extended into a larger hamlet) are able to arrange distributional outcomes and provide mutual assistance within both families and the greater community in times of hardship. Mutual insurance networks such as this ensure that people who are above the minimum standard of living can help others who have fallen or are in danger of falling below that minimum; then, they can also seek help if they someday require assistance. In short, a moral economy can be viewed as one in which a subsistence ethos guarantees at least minimal provisions to all households.

Consistent, long-term relationships between hosts and group leaders and/or laborers facilitate mutual trust. Each party continually notes the reputation of the other parties involved. A decrease in reputation may also delay further work contracts. Breaking a contract appears to cause delays in wage payment by the host as agreed upon in previous negotiations. On the laborer's side, breaking contract can mean providing low-quality, unreliable services or working on an irregular schedule.

However, in the FGDs, it emerged that in several cases, both employers and workers broke contract. After these issues occurred, each involved party recorded that negative experience and then made corresponding decisions regarding its future work relationship with the party in question. For a host, this might mean seeking a different group or operator that might provide better service or be more reliable. On the other hand, if a host did not follow through with a contract, the group leader or operator might be reluctant to accept future requests for work. In this sense, the principles of the market economy are at work; there is a kind of "hidden competition" among employers and employees.

The best type of transactions between employers and group leaders or operators were seen as more convenient and simpler, with no need for the host to deal with many laborers (as, for example, when hiring day laborers). This level of convenience, in turn, reduces transaction costs considerably and enhances the effectiveness and efficiency of the contract. Additionally, when employers and group leaders or operators all reside in a small area, almost everyone knows each group member well. In fact, even if a host only negotiates with the group leader, he or she knows the reputations of the group members.

This then allows farming contracts to be enforced efficiently. Finally, in Java, a social norm of income- and work-sharing prevails in rural farming. This norm dictates that well-to-do members of the community provide income-sharing²⁴ opportunities to poor neighbors by not doing the work themselves.

The coexistence of principles of economic rationality and moral economy in hired labor arrangements can be seen in the particular labor arrangements made here. Economic rationality clearly drives the increased preference for skilled labor for land preparation and threshing and encourages the hiring of groups compensated at a piece rate for transplanting services. However, casual hiring is still common within farmer households. Employing day laborers for hoeing, leveling, weeding and harvesting are still popular among the villagers.

Hoeing and leveling still involve a fair number of work-sharing arrangements in which villagers offer jobs to day laborers from poorer households. This can make the work take longer and may mean providing more meals for more people over several working days. However, access is not totally open for villagers. In this sense, the distributional income mechanism is more limited depending on the host's preferred selection mechanism, and tight social relationships tend to play a role.

Another case of farming activity is rice harvesting. From an economic perspective, villagers will obtain greater benefits from selling standing rice under the *tebasan* system. Villagers not only get quick cash payments (though whether they receive them in advance or after the harvest depends on negotiation), but they also need not use the *bawon* system. Villagers can avoid the social obligation associated with providing a share of the harvest output to fellow villagers.

However, not all villagers only use the *tebasan* system; rather, high-income households in which some individuals are working temporary or permanent non-farming jobs are still using the direct *bawon* system even though this means that they must provide some of the harvest output to the selected participants.

Through the FGDs, we determined that some households use two mechanisms for harvesting, the *tebasan* and *bawon* systems. If they are in need of cash, they will quickly sell certain paddy plots and then use the *bawon* system to harvest the remaining plots,

²⁴ Takane (2008) argues that commonly villagers share the feeling of moral obligation whereby wealth farmers should provide villagers with opportunities to engage in task-contracted casual labor. The labor arrangement conveys the image of both an economic contract and social obligation

offering income-sharing to selected people. The host will commonly use the harvested as rice stock during the year.

The economic rationale for using *the tebasan* system is clear when contractors are managing the process. The share of harvested output offered to laborers is lower in such cases than that provided when individual farmers themselves hire the laborers directly. Contractors also do not provide meals for laborers, whereas individual farmers commonly will do so.

In short, to some extent, the income distribution mechanism commonly referred to as the moral economy is still at work through various labor arrangements. However, it is becoming more limited and associated with tight social relationships and laborer capabilities or skills, especially when offered to poorer households by wealthy households with temporary or permanent non-farm jobs.

4.4. Conclusions

In lowland, rice-growing areas in rural central Java, the practices of labor exchange within the context of farming have dramatically decreased, and even disappeared. Landowners can no longer rely on family labor or on labor exchange. Instead, they find it convenient to hire group of laborers rather than deal with large numbers of individuals. Hired labor arrangements have become more predominant.

The most common types of hiring in farming are land preparation using tractors, transplanting and harvesting and threshing. These activities require collective labor and arduous tasks and should be completed in a short period of time. However, a considerable number of households also use hired labor for wider ranges of activities, including weeding and hoeing or leveling. The *bawon* system is still also considerably common among villagers. The most common arrangement at the time of this study was casual or regular labor under various types of contracts. There were no long-term contact systems, and neither seasonal hiring nor permanent labor was offered.

The most significant factor in determining hiring for farming operations excepting harvesting and threshing is involvement in non-farming jobs; in contrast, hiring for harvesting and threshing has been significantly influenced by three factors: cultivated land, income level and involvement in non-farming jobs. Land preparation is regarded as a difficult task which that requires skill and should be completed in a short period of time.

Hence, regardless of farming households' socio-economic characteristics, they households tend to request tractor services. Families without non-farming jobs can complete hoeing, leveling, weeding and transplanting using family labor, whereas households with permanent non-farming jobs tend to hire more laborers than do households with temporary non-farming jobs.

Income-sharing based on the ideal of the moral economy still occurs to some extent. We can see this in the *bawon-bawon* and *bawon-operator* arrangements for harvesting and threshing. *Bawon-bawon* has been offered only among households with small amounts of cultivable land, high income and non-farming jobs. The *bawon-operator* system has been offered by households with small amounts of cultivable land, low income and non-farming jobs. For lower-income households, the high share cost associated with *bawon-bawon* practices is not affordable; hence they prefer the *bawon-operator* system.

Harvesting and threshing as handled by *tebasan* operators is likely the domain of households that enjoy large tracts of cultivable land, have lower income and work more temporary and permanent non-farming jobs. Households with lower income status seemingly feel the need to sell standing paddy crops to *tebasan* contractor to obtain cash soon after crops mature. Even though they are involved on non-farming jobs, they are unlikely to secure sufficient reliable income because of the types of jobs they are doing.

In general, labor contracts are moving toward a stage at which the proportion of daily wage labor is becoming getting smaller in comparison with that of skilled labor and piece work by teams. However, each farming operation involves different processes based on historical factors, technological change and the impact of the expansion of non-farming job opportunities.

Piece rates for teams and rates for skilled laborers are higher than the rates associated with other contract arrangements. Piecework wages and skilled labor contracts allow farmers to pay laborers based on labor productivity. Compared with the wage rates for off-farm jobs, wage rates for tractor service for skilled labor and team piece rates for transplanting work are higher. However, in general, the wage rates of off-farm jobs are better than those associated with other farming operations.

Employees have different experiences based on gender and operations. Households that include individuals who work as both employers and employees have lower income than do households in which all individuals only play the operator role. Operators have achieved higher education levels and have the available capital necessary to run a

business, whereas group leaders are less educated and have no capital but are highly skilled and have well developed social networks. Harvesting contractors have a large amount of capital and a wider social network that facilitates smooth business operations even beyond the village level.

Although commercialization and modernization have dramatically influenced hired labor arrangements, farming households still prefer to hiring laborers from neighboring areas and with whom they often also have close social relationships, whether as neighbors, as relatives, or as both. The types of social relationships that are commonly developed among people living within close geographic proximity of one another are still perceived as important by villagers, as is shown in prevalent labor contract arrangements. The transactions and arrangements associated with hired labor are likely to be perceived not just as economic or market transactions solely but also as part of the system of social relationships that exists within the community. To some extent, economic rationality and moral economy coexist in farm labor in wet rice villages in rural Java. However, community idealism regarding the concept of a moral economy is becoming more limited.

CHAPTER 5

ARRANGEMENTS AND STRUCTURES OF COLLECTIVE LABOR-SELLING *PRAYAAN* IN UPLAND HAMLETS

5.1. Introduction

5.1.1. Review of Related Papers

It has been widely recognized that for completing various tasks related to both farming and non-farming operations, villagers in rural areas have been fully employing various labor sources supplied by family, exchange and hired labor.

The most common case of this is when labor is exchanged and hired during the period of high demand, for instance, on farming operations. However, due to the process of modernization and agricultural commercialization, practices of labor exchange and hired labor in farming areas have been changing considerably. In remote and less favorable areas such as the uplands, the practice of labor exchange has been commonly used, whereas hired labor has been less developed. In areas characterized by better mobility and more favorable resource access, such as in the lowlands, the practice of labor exchange has decreased remarkably; the high demand for labor has been met by hired labor. As argued by Manning (1999) and Kikuchi and Hayami (1999), the use of hired labor for farming operations has been very common among Javanese villagers located in well-developed, irrigated lowland areas since the introduction of the green revolution in the 1980s.

One feature of the common labor arrangements depicted by various studies is that in irrigated lowland areas, the arrangement of hired labor has developed quickly, whereas in less favorable areas, such as in hilly regions, labor exchange forms are more likely to exist. However, due to the high variations in physical and socio-economic conditions in the rural areas of Java, a generalized pattern of labor arrangements for all villages and villagers likely cannot be applied.

Despite the strong relationships that villagers have developed and strengthened in the face of limited access to resource endowments in the mountainous area, awareness and motivation of an opportunity cost among villagers have been vividly increasing with time. With regard to opportunity cost, Naylor (1986) contended that in rural Java, the increase of opportunity cost has evidently increased the awareness of a labor force searching for

more profitable activities in various farming operations; hence, more households have involved themselves in several types of hired labor arrangements.

As reported in Chapter 3, it has been confirmed that in the mountainous hamlets of rural central Java, a transition process of the labor exchange arrangements on farming operations is producing increased use of supplementary arrangements, combining traditional and new types of labor exchanges or institutional labor innovation. This transition process, in some cases, is connected to resource endowments and production risk, technical problems and raising of opportunity cost on farming operations. As an adaptive response to both the demands of technological change, production risks and the increased awareness of economic interest, villagers have developed a new institutional labor innovation by forming hired collective labor, the so-called *prayaan*.

The institutionalization of *prayaan* labor has been considerable for the activities required to be done on time needing a huge number of laborers or involving intricate work. These activities include terrace field construction and repair, land preparation, weeding and activities related to timber and firewood. The role and importance of *prayaan* to farming operations has been amply described by villagers. *Prayaan* practice is a kind of socio-economic adjustment for completing various farming activities. The relatively large number of group laborers and the lower labor payment per group member are perceived as incentives and advantages by members who make use of the labor system. *Prayaan* labor can be used flexibly both for jobs on strict timelines and those that are not.

The *prayaan* arrangement among villagers in the upland areas can to some extent be regarded as a livelihood strategy and diversification, as proposed by Ellis (1998). It is the process by which rural families construct a diverse portfolio of activities and social support capabilities to survive and improve their standards of living.

In short, related factors including natural resource access and geographical conditions, the increased awareness of opportunity costs, and the spirit of unity and harmony are thought to determine *prayaan* arrangements. Given the apparent variation in some of those factors for each surveyed hamlet, it appears that villagers in each hamlet may have certain unique mechanisms and strategies for developing and entering into the *prayaan* arrangements. These variations may also produce the different responses among villagers that tend to result in conflicts of interest.

The invisible conflict of interest among members seems to be related to differences in the economic characteristics of households. Households with better economic

performance tend to propose lower labor charges because their main goal is not wage earning but rather the chance to use collective labor to complete their huge farming and non-farming tasks. In contrast, less affluent households have different preferences regarding labor charges; they propose higher labor charges because their focus is on the potential income source. Because these households tend to have smaller cultivated areas, their need for *prayaan* labor is not as great, and hence, the higher income attached to a high wage rate for labor is the primary incentive for them in joining *prayaan* activities. In areas where geographical conditions are extremely varied, there are likely to be different motivations among villagers using and joining in *prayaan* labor arrangements.

Prayaan has been developed as an adaptation and adjustment strategy comprising the various interests of members and shaped according to variations in related socio-economic and physical factors. The *prayaan* system can also likely be regarded as playing a key role in the transitional stage of labor market development.

Although *prayaan* is well established as a prominent labor institution contributing to farming and non-farming operations and household income in rural Java, research work on *prayaan* practice is still very limited and not comprehensively developed. Therefore, a detailed study of *prayaan* arrangements based on group management mechanisms and household involvement will be very valuable. It will significantly contribute to a general understanding and explanation of how socio-economic and other related factors have determined the arrangement of collective hired labor in the upland area of rural Java.

5.1.2. Objectives of Research

In short, the objective of this study of current *prayaan* group practices is twofold, focusing on (1) the characteristics and functions of *prayaan* and (2) a comparison of *prayaan* arrangements in two surveyed hamlets. The analysis of characteristics and functions will explore group structure and membership, labor functions or type of activities, purposes or mechanism of income disbursement and group assets, and any penalty system, and the comparative analysis of *prayaan* arrangements will consider wage labor structures, historical processes and backgrounds, income structures of the groups, and the distribution modes of *prayaan* income.

5.1.3. Research Material and Methods

Field research was conducted in 2008 and 2009, covering two mountainous hamlets of the rural area in central Java-namely Watugajah in Girijati Village and Jati in Giricahyo

Village of the Gunung Kidul District in southern Yogyakarta. These hamlets are located in a rain-fed, hilly area.

Both hamlets are situated on a hilly area built on a hard coral reef. While Watugajah draws on some springs for paddy production in the rainy season, Jati has no source of water other than rainfall. Farmers in Jati generally can grow only upland crops and only once a year, whereas farmers in Watugajah can grow paddy in the rainy season and secondary crops in the first dry season.

Data for this study were collected using interviews, focus group discussions (FGDs²⁵), and an analysis of documentation. Personal, face-to-face interviews were conducted following Henn et al. (2006). The interviews were done with selected households and community leaders including hamlet heads and neighborhood chiefs. FGDs that Gibbs (1997) termed Focus Group Research were also applied in this study. FGDs, in principle, organized discussion with a selected group of individuals to gain information about their views and experiences of a topic.

The main issue on the study is on the arrangements and structures of collective labor selling groups in upland hamlets. The study was done and focused only in upland hamlets due to practices of those institutions only exist in upland hamlets and there was no existence of those in lowland hamlets. Regarding the sample households for interviewing, we asked hamlet heads in 2008 to choose appropriate farming families in proportion to the households' structure in landholding.

In each hamlet, 30 households were selected and interviewed, meaning that a total of 60 households were interviewed in the two surveyed hamlets. The interviewed sample households were same households as the case of the first and second studies for upland hamlets (see sample household size in Chapter 2 and 3). The interviewed households in each hamlet represented about 20-30% of the total households in the hamlet. Interviews focused on the socio-economic characteristics of surveyed households and their involvement on *prayaan* labor arrangements.

In addition to sample household survey, in 2009, all *prayaan* group leaders or persons in charge of the groups in both hamlets were interviewed. In Jati, there were 19 groups, whereas in Watugajah, there were 14 groups. The interviews have been very useful for collecting information on group functions and characteristics, wage structures

²⁵ The benefits of the FGDs include gaining insights into people's shared understanding of everyday life and the ways in which individuals are influenced by others in a group situation (Gibbs, 1997).

and mechanisms, group income and asset accumulation and also *Prayaan* group structures. Interviews were conducted using a questionnaire that had been pre-tested with a selected group of village members. Survey results were analyzed using descriptive and analytical methods. FGDs were held in each hamlet to obtain more detailed knowledge in addition to the surveys and to cross-check the results from direct interviews.

5.2. Basic Characteristics and Functions of *Prayaan* Groups

5.2.1. Group Structure and Membership

As briefly described in chapter 2, the collective labor selling arranged under *prayaan* group management is quite unique. Villagers have acknowledged that *prayaan* literally means “doing together with great power quickly”. *Prayaan* is group work similar to the traditional exchange labor-*krubutan*, but it differs in that it requires compensation through cash payments. At the same time, *prayaan* differs from casual hired labor in its emphasis on the group. In fact, *prayaan* can be seen as the group sale of labor, and the pricing differs sharply depending on whether the client is a member or non-member.

The numbers of members in *prayaan* groups are fixed, but there is variation between *prayaan* groups, from approximately 10 to 20. As depicted in Table 5.1, the average number of *prayaan* group members in Jati is slightly smaller than in Watugajah, with 12.9 and 17.1 persons, respectively.

The groups are organized separately by gender (see Table 5.1 and 5.2). *Prayaan* members are usually groups of close neighbors. Group arrangement has been commonly based on the neighborhood where the members reside. If the neighborhood group is large enough, it is possible that it will be divided into more than one group. There is no obligation for members of a neighborhood group to join a *prayaan* group. However, there is a strong expectation among that villagers will join the group. In some cases, villagers who have side jobs (such as trading, skilled construction work, teaching and so on) do not join the group. A widow or her son can represent a deceased husband to continue group membership, and in some cases, a dead or aging member drops membership without the supplementation of an alternate family member.

The most common type of *prayaan* is based on the neighborhood group, but there are a few cases where *prayaan* groups are formed from common interest associations such as cultural and religious groups. *Prayaan* groups are also commonly formed of members

residing in the same community at the lowest administrative level, namely the *rukun tetangga* (RT) (see Table 5.2). Hence, the number of group members almost represents the number of members of a neighborhood group, and the members know each other well and are aware of personal reputations.

As found in the survey, there is one male *prayaan* group that originally formed from a cultural group. Members of *prayaan* groups are also co-members of traditional Javanese popular drama groups (locally called *kethoprak*). *Prayaan* have been formed to support the existence and activities of cultural groups from the same village.

Incomes collected by *prayaan* groups have been used to cover various expenses of the cultural groups such as traditional musical instruments (called as *gamelan*), costumes and other group properties. Each *kethoprak* group is also oriented for two purposes: performances celebrating local festivals and requested performances celebrating important individual events such as circumcisions and marriage ceremonies. The invitations *kethoprak* groups receive to perform come from within their own villages as well as from neighboring villages.

These performances by individual invitation have also aimed at generating group incomes. After a certain number of years, the accumulated money of the group can be used for improving group property and perhaps even as income to be distributed among individual group members.

There are also some *prayaan* groups that have originated from religious group (locally known as *kelompok pengajian*). Religious groups are commonly formed by households from the same hamlet, and these groups also need funds to support their activities. Hence, the income from *prayaan* can be used to fund these activities as well.

Several types of religious group activities include gathering to recite *Al-Qur'an*, inviting preachers or religious scholars to give lectures and celebrating religious ceremonies and festivals. Funds are commonly used for snacks, ceremonial props and décor and transportation costs and fees for invited speakers.

Typical group formation based on neighborhood groups in rural farming areas and including the *prayaan* reflects the process of social interaction as a strategy for dealing with uncertainty. The group plays an important role and enhances the capability of the members to cope with the tasks and troubles. As theorized by Doney and Malderez (1997), the group is a substantial source of motivation and a kind of instrument of support and maintenance for regularly dealing with people who may hardly know each other.

Returning now to the idea of the labor supply, *prayaan* members receive cash payment as coordinated by a group leader. Most activities of the *prayaan* also include simple meals provided by the host, which are typically prepared by wife of host in the morning. Although the number of participants is relatively large, meal preparation can usually be done by the wife alone or with the help of supporting family members. The wife of the host will prepare the meals regardless of whether the work is being done by the group of the husband or that of the wife herself. The meal is typically a very simple and ordinary type of rural meal, and therefore, the preparation does not consume much time. Wife and husband then bring the meal to the field to be served for the participants.

The average number of group activities within a year is 15.7 in Jati and 20.8 in Watugajah. In both hamlets, female groups are likely more active, with higher numbers of activities yearly, and by location, *prayaan* groups in Watugajah are slightly more active. In terms of the monthly distribution of activity, male groups worked 1 time (Jati) to 1.5 times (Watugajah) in a month, while female groups worked 1.5 times (Jati) to 2 times (Watugajah) in a month (see Table 5.1). The phenomenon might be connected to the type of activities that the respective groups are engaged in, which will be addressed later.

Prayaan groups are managed with simple rules and a minimum of administrative work, which is confirmed by the structure of the group committee. On average, 50.0% of male groups and 40.0% of female groups have only a chairman of the committee for handling all managerial and administrative works. Only 33.3% of *prayaan* groups in Jati and Watugajah (Table 5.2) have a system using multiple chairmen and a secretary. Administrative and managerial tasks are generally simple, and thus, one committee member is often capable of handling these tasks.

Table 5.1. General Characteristics of *Prayaan* Groups in Jati and Watugajah in 2009

Hamlet	Gender	Number of groups		Average number of group members	Average number of group activities/Year
		Number	%		
Jati	Male	11	57.9	14.0	13.6
	Female	8	42.1	11.4	18.5
	Total/Average (A)	19	100.0	12.9	15.7
Watugajah	Male	7	50.0	16.9	17.4
	Female	7	50.0	17.3	24.1
	Total/Average (B)	14	100.0	17.1	20.8
Jati and Watugajah	Male	18	54.5	15.1	15.1
	Female	15	45.5	14.1	21.1
	Total/Average (A+B)	33	100.0	14.7	17.8

Source: *Prayaan* Group Leaders Survey September 2009

Table 5.2. Residence of Members, Group Formation and Committees of *Prayaan* Group by Gender in Jati and Watugajah in 2009

Hamlet	Gender	Residences of Member *			Origin of Group Formation				Group Managing Committee **				
					Neighbor Group	Cultural Group	Religiuous Group	Total	C	C - S	C - T	C - S - T	Total
		RT	RW	Total									
Jati	Male (unit)	10	1	11	10	1	0	11	5	4	1	1	11
	%	90.9	9.1	100.0	90.9	9.1	-	100.0	45.5	36.4	9.1	9.1	100.0
Jati	Female (unit)	8	0	8	8	0	0	8	3	4	0	1	8
	%	100.0	-	100.0	100.0	-	-	100.0	37.5	50.0	-	12.5	100.0
Watugajah	Male (unit)	7	0	7	7	0	0	7	4	2	0	1	7
	%	100.0	-	100.0	100.0	-	-	100.0	57.1	28.6	-	14.3	100.0
Watugajah	Female (unit)	7	0	7	6	0	1	7	3	1	0	3	7
	%	100.0	-	100.0	85.7	-	14.3	100.0	42.9	14.3	-	42.9	100.0
Jati and Watugajah	Male (unit)	17	1	18	17	1	0	18	9	6	1	2	18
	%	94.4	5.6	100.0	94.4	5.6	-	100.0	50.0	33.3	5.6	11.1	100.0
Jati and Watugajah	Female (unit)	15	0	15	14	0	1	15	6	5	0	4	15
	%	100.0	-	100.0	93.3	-	6.7	100.0	40.0	33.3	-	26.7	100.0

Source: *Prayaan* Group Leaders Survey September 2009

Note: *= residential area of members: RT = *Rukun Tetangga* (neighborhood group), RW = *Rukun Warga* (neighborhood group association)

**= Group managing committee (GMC): C = Chairman, S = Secretary, T = Treasury; GMC tasks are to manage and organize group including simple administrative works

In principle, hosts can order *prayaan* labor through a direct transaction with the group leader or group committee. An order for labor should be delivered at least one week before work scheduling, as one week is the expected time for the group committee and members to arrange the activity. In responding to labor requests, the groups commonly apply the principle that the first order will be first served; however, in case of conflicting work orders made by two persons with different status, priority will be given to the host who has status as a group member. After receiving an order from a potential host, the group leader or committee member will deliver the schedule to group members on a day when group members are working. For an emergency labor request, the group committee may decide to accept the order and deliver the schedule to members by visiting some members and then letting the information pass to the remaining group members through an informal network locally known as *gethok tular*.

In general, a *prayaan* group is a long-term institution that has likely been established for one to three decades. However, some groups dissolve by members' agreement after 2, 3 or 5 years. The group may reform later. Such a dissolution is typically followed by the distribution of group assets among members.

Currently, the average *prayaan* group in Jati dates back 4.0 years, whereas the average group in Watugajah has been established for 6.2 years (Table 5.3). There is no significant difference in the average group age between the male and female groups in Jati, but in Watugajah, the female groups are relatively older entities.

Although villagers commonly hold that *prayaan* groups are open to new members, there are, in fact, some cases of group restriction of new members. In Watugajah, all

prayaan groups (regardless of gender) are open to new members, but in Jati, only 9 male groups (81.8%) and 5 female groups (62.5%) are open to new members (Table 5.3). New members typically come from new households or couples residing in the same neighborhood. The most common reason for refusing new members is the difficulty of administrative recording of income and asset holding. In the case of a group without assets, it is easier to handle new members. For instance if a group has been invited to 10 working activities, a new member can join by paying 10 times the payment adjusted with the wage rate of each activity. New members also can join a group that has dissolved when it is reforming.

Resignation of group members before a group's dissolution has occurred among a large number of *prayaan* groups, as shown by Table 5.3. Among female groups in Jati, 4 groups (50.0%) had members resign, and in the case of the corresponding male groups, 3 lost members through resignation (27.3%). In Watugajah, these figures are 3 (42.9%) and 4 (57.1%) for male and female groups, respectively.

Table 5.3. Group Age, Joining and Resigning Rules of *Prayaan* Group by Gender in Jati and Watugajah in 2009

Hamlet	Gender	Group Number		Average of Group Age (Years)	Group opening and resigning membership				Reasons of terminating members (group unit)					
		Unit	%		Group opening (unit)	Member resigning (unit)	% group opening	% member resigning	Dead	Elderly	Busy	Having baby	Moving out	Total
Jati	Male	11	57.9	4.5	9	3	81.8	27.3	1	2	0	0	0	3
	Female	8	42.1	3.4	5	4	62.5	50.0	0	1	2	1	0	4
	Total/average	19	100.0	4.0	14.0	7.0	74.9	40.3	1	3	2	1	0	7
Watu-gajah	Male	7	50.0	5.1	7	3	100.0	42.9	0	3	0	0	0	3
	Female	7	50.0	7.3	7	4	100.0	57.1	0	3	0	0	1	4
	Total/average	14	100.0	6.2	14	7	100.0	51.0	0	6	0	0	1	7
Jati and Watu-gajah	Male	18	54.5	4.8	16	6	88.9	33.3	1	5	0	0	0	6
	Female	15	45.5	5.4	12	8	80.0	53.3	0	4	2	1	1	8
	Total/average	33	100.0	5.1	28	14	85.1	44.8	1	9	2	1	1	14

Source: *Prayaan* Group Leaders Survey September 2009

Note = After a certain number of years, the group will disband, and assets will be distributed based on member agreement.

A new group will commonly form, with most of the previous members joining.

New members may be recruited, and a certain number of members will resign for various reasons.

Several reasons exist for cessation of membership, including death, elderly, sufficient income from a private business, the birth of a baby and leaving the community. The most common reasons for giving up membership are old age and sufficient personal income from a private business. In the case of aging members, there remains the possibility of substitution by an appropriate and capable family member such as a son or son-in-law for a male group and a daughter or a daughter-in-law for a female group. Members who quit the group for a private business (such as having a profession other than

farming, e.g., a trader, teacher or village officer) commonly resign without membership substitution.

5.2.2. Functionality of *Prayaan* Labor

In general, women's groups work mainly in agricultural operations, whereas men's activities are much broader, comprising agricultural operations and non-farming operations such as plastering and home construction or repair.

Prayaan labor functions can be simplified into three categories—namely, (1) main farming operations, (2) supporting farming operations and (3) non-farming operations. In general, male and female groups differ in their type and degree of specialization (in detail see Table 5.4).

Table 5.4. Functions of *Prayaan* Labor by Gender in Jati and Watugajah in 2009

Hamlet	Gender (number of groups and proportions)	Main Farming Operations						Supporting Farming Operations					Non-Farming Operations	
		Land Preparing	Transplanting	Manure transporting	Manure application	Weeding	Harvesting	Terrace construction & repairing	Timber & firewood Transportation	Slashing and burning	Home garden cleaning	Cage construction & repairing	Sand & Stone collecting	House construction & repairing
Jati	Male (11 groups) % group	6 54.5	1 9.1	0 -	1 9.1	2 18.2	1 9.1	6 54.5	9 81.8	6 54.5	2 18.2	2 18.2	1 9.1	2 18.2
	Female (8 groups) % group	8 100.0	1 12.5	1 12.5	0 -	7 87.5	0 -	0 -	1 12.5	4 50.0	2 25.0	0 -	1 12.5	1 12.5
Watu- gajah	Male (7 groups) % group	7 100.0	0 -	3 42.9	1 14.3	4 57.1	1 14.3	1 14.3	5 71.4	1 14.3	0 -	1 14.3	3 42.9	1 14.3
	Female (7 groups) % group	6 85.7	3 42.9	5 71.4	0 -	3 42.9	1 14.3	0 -	4 57.1	2 28.6	1 14.3	0 -	1 14.3	0 -
Jati and Watu gajah	Male (18 groups) % group	13 79.0	1 9.1	3 42.9	2 11.7	6 44.2	2 11.7	7 48.8	14 78.1	7 48.8	2 18.2	3 16.9	4 34.4	3 16.9
	Female (15 groups) % group	14 93.9	4 35.3	6 61.6	0 -	10 74.1	1 14.3	0 -	5 48.2	6 42.9	3 21.4	0 -	2 13.4	1 12.5

Source: *Prayaan* Group Leaders Survey September 2009

With regard to main farming operations, there is a clear tendency for female *prayaan* labor to be used for land preparing (93.3%), weeding (74.1%) and transplanting (35.3%), whereas male labor is important in finishing land preparation (79.0%), weeding (44.2%) and manure transport (42.9%). The higher frequency of female group activity noted in Table 5.1 is likely related to labor function, and female labor is much more important for completing hoeing, which should be done frequently throughout the whole year and especially at the beginning of each season. Female labor, thus, seems very important for tackling main farming operations, which are commonly characterized by delicate and intensive work.

For the supporting farm operations, which are mostly characterized by hard tasks that require more power, the role of male labor groups is more prominent. Male group labors are crucial for the completion of timber and fire wood transportation (78.1%), the

slashing and burning of field bushes (48.8%), terrace construction and repair (48.8%), manure transportation (42.9%) and home garden cleaning (18,2%). The female group labor is important for manure transportation (61.6%), firewood transportation (48.2%) and slashing and burning (42.9%). These supporting farming activities generally are not required frequently throughout the year compared with the main farming activities, but this work does require extra power.

Male *prayaan* labor groups in Jati have been essential to the construction and repair of terraced farming fields (both important activities in mountainous farming areas), as shown in Table 5.4. Because some parts of farming fields in Jati are located on steep hillsides, it would be extremely difficult to establish the farms at all without collective labor support and manpower. Accordingly, villagers regard *prayaan* labor as crucial to this aspect of their lives.

The role of *prayaan* labor for non-farming activities has been important among male labor groups chiefly in the form of sand and stone collection for home building materials (34.4%) and in housing construction and repair (16.9%). Female groups also have certain roles in collecting sand and stone for construction (13.4%).

5.2.3. Purposes of *Prayaan* Groups and Asset Development

In the case of casual dyadic and/or group hired labor transactions, wages (either in cash or in kind) are quickly distributed to the group as per the classical economic transaction. The mechanism of collected wage distribution for *prayaan* labor, which includes equal direct distribution to each member, to large a extent also manifests commercialized behavior in as much as the practice of *prayaan* labor arrangements contain elements of a casual labor contract. However, the *prayaan* arrangement is unlike the mechanism at work in an ordinary hired labor transaction because it has been embedded in the socio-cultural and local behavior of the members. The mechanisms and motivations driving the participation in and offering of *prayaan* labor are interconnected within a context of related factors.

The advantage of the *prayaan* labor arrangement compared to casual labor can be seen in both the purposes of the arrangement and in the allocation of collected labor wages and group income. The *prayaan* group not only offers direct distribution of cash to the members but also accommodates other purposes such as accumulating joint assets

(livestock, kitchen ware and ceremonial materials for rent), allocating development and social funds, and allocating religious funds (see Table 5.5 for details).

Wages charged for individual labor are not directly distributed after being paid by hosts or users but will be collected as group income that might be used for several purposes depending on the members' agreement. In general, direct distribution to members is broadly practiced by *prayaan* groups. The time for monetary distribution depends on the specific members' agreement; in various cases, income is distributed at the end of the year, approaching a religious ceremony or *ramadhan*, or possibly after group income has been collected for 2-3 years. The decision mostly depends on the agreements of the groups' members.

Table 5.5. Disbursement and Wage of *Prayaan* Groups in Jati and Watugajah in 2009

Hamlet	Gender	Number of groups based on disbursement of collected wage and income *)					Total
		DD	JAL	DSF	RF	DSF-RF	
Jati	Male	8	1	0	1	1	11
	Female	8	0	0	0	0	8
Watugajah	Male	2	0	4	1	0	7
	Female	5	0	1	1	0	7

Source: *Prayaan* Group Leaders Survey September 2009

Note: *)= disbursement of collected wage: DD= direct distribution, JAL= joint assets in the form of livestock (goats), from the same RW, DSF= development and social fund, CF= cultural fund including asset for performance properties for rent, RF= religious fund for various religious activities

The majority of groups have been direct distributing cash to their members. In Jati, of 11 male and 8 female groups, only 3 groups have disbursed collected income through direct distribution as well as allocation for social and religious funds. For the other groups, the collected income is directly distributed to their members. Even though the proportion of groups directly distributing income is larger in Watugajah, a certain number of groups have proposed that the group income be used for other purposes (mainly social and religious funds) in addition to direct distribution.

In terms of asset accumulation as of September 2009, the average of total group assets for male groups is much higher than for female groups regardless of location, with 8.26 and 1.75 million IDR/group, respectively (see Table 5.6). By location, the average group assets for both male and female groups in Jati are much higher than those in Watugajah. In general, male groups have more diversified assets, whereas female groups only have assets in the form of kitchen ware and cash. Approximately 65.0% of female group assets are in the form of kitchen ware that is to be rented out.

Table 5.6. Structure of Accumulating Assets of *Prayaan* Groups by Gender in Jati and Watugajah in 2009

Hamlet	Gender	Involved Group (% and average)	Asset Accumulation						Total
			Kitchen ware	Furniture	Goat	Money in cash	Cultural properties	Floor mats & ceremonial equipments	
Jati	Male	Involved group	3	2	1	1	1	1	
		Total Group	11	11	11	11	11	11	
		% of group	27.3	18.2	9.1	9.1	9.1	9.1	
		Average (IDR/group)	800,000	450,000	1,800,000	300,000	4,500,000	100,000	7,950,000
		% of asset	10.1	5.7	22.6	3.8	56.6	1.3	100.0
	Female	Involved group	3	0	0	2	0	0	
		Total Group	8	8	8	8	8	8	
		% of group	37.5	-	-	25.0	-	-	
		Average (IDR/group)	1,700,000	-	-	750,000	-	-	2,450,000
		% of asset	69.4	-	-	30.6	-	-	100.0
Watugajah	Male	Involved group	0	0	0	4	0	0	
		Total Group	7	7	7	7	7	7	
		% of group	-	-	-	57.1	-	-	
		Average (IDR/group)	-	-	-	612,500	-	-	612,500
		% of asset	-	-	-	100.0	-	-	100.0
	Female	Involved group	2	0	0	5	0	0	
		Total Group	7	7	7	7	7	7	
		% of group	28.6	-	-	71.4	-	-	
		Average (IDR/group)	300,000	-	-	558,800	-	-	858,800
		% of asset	34.9	-	-	65.1	-	-	100.0
Jati and Watugajah	Male	Involved group	3	2	1	5	1	1	
		Total Group	18	18	18	18	18	18	
		% of group	27.3	18.2	9.1	47.5	9.1	9.1	
		Average (IDR/group)	800,000	450,000	1,800,000	550,000	4,500,000	100,000	8,200,000
		% of asset	9.8	5.5	22.0	6.7	54.9	1.2	100.0
	Female	Involved group	5	0	0	7	0	0	
		Total Group	15	15	15	15	15	15	
		% of group	33.9	-	-	58.2	-	-	
		Average (IDR/group)	1,140,000	-	-	613,429	-	-	1,753,429
		% of asset	65.0	-	-	35.0	-	-	100.0

Source: *Prayaan* Group Leaders Survey September 2009

5.2.4. Penalty Systems for Absent Members

Group members of *prayaan* habitually have shared a common sense of obligation to fulfill the task or labor service charged to the group. There are at least three mechanisms adopted as optional support strategies by the various groups. First, as has generally been urged among members, each member will be present for the activity, unless absent for a particularly important reason. In case of an emergency, the second option is that some adult family member temporarily represents the husband or wife in the labor task. Most commonly, a son or son-in-law will represent an absent male, and a daughter or daughter-in-law will represent an absent female. Asking (possibly paying) non-family members to substitute for an absent group member is not common and is regarded as improper by members. Villagers consider asking a non-member to represent the absent member as a paid laborer to be a breach of member solidarity. If neither of the two previous options

can be applied for some reason, the final option for members facing an absence is to pay a penalty in cash.

The economic function of *prayaan* has been widely noted, but the social function of *prayaan* is also strongly emphasized by members. This social function can be approached through an understanding of the penalty system arranged by each group for its members.

In a system of common economic activity, a contract arrangement between involved parties can be ended by either party at will. For example, if a laborer wants to be absent from work for a certain day, he or she can propose to be absent and in return will not receive payment. In the *prayaan* case, the system is not strictly motivated by an economic contract but also by a social function of maintaining unity and solidarity among members.

In contrast to casual labor contracts, members of *prayaan* groups are unable to resign or be absent from group activities as they wish by simply giving up payment for that day. In interviews, group members contended that if this system were to be applied, it would break the sense of solidarity among members, and comparatively rich members would tend to be absent more often because their opportunity costs are much higher.

By applying a penalty for absent members, one which is commonly higher than the labor charge, and assessing the penalty charge based on a member's reason for absence, a system is designed to control member unity and solidarity by keeping all members present for all group activities. This strategy reveals the penalty not only as an economic consequence but also as social sanction oriented toward the maintenance of communal solidarity among group members. Members understand that their relationship is not of a short-term nature such that the risk of breaking a rule will be small in consequence. Instead, they see that the relationship is long-term and consists of repeated transactions representing not only a collective labor contract but also containing the other shared daily activities that will determine the relationship in the future. Thus, the consequence of breaking the rule is much stronger. Moreover, in cases of habitual absenteeism, there will be social gossip among group members. This represents the kind of communal characteristic at work in the *prayaan* arrangements. The average penalty both in Jati and Watugajah is higher when hosts are non-members rather than members because the labor charge for non-members is higher as well.

From another perspective, the attendance behavior of *prayaan* members is likely related to the continuity and existence of the labor group. Hosts of *prayaan* labor (either members or non-members) commonly expect they will receive the full labor force from

the *prayaan* labor group. Hosts have considered the most appropriate work to accordance with the number of members of the *prayaan* labor group. Uncertainty in the *prayaan* labor supply caused by absent members will make a poor impression on member and non-member hosts. As members will have the chance to request *prayaan* labor themselves and will then expect to get the full force of the group's labor, there is an incentive for him or her to participate consistently in group activities. For outsider hosts, any uncertainty or bad performance of group labor may give a negative impression, leading to a reluctance to order labor group in the future. Thus, this is also an incentive for members to be actively present. Member attendance is important for determining the group's performance, which in turn may ensure the continuity of group activity.

Penalty charges are also classified based upon the type of reason for the absence, which might be a health problem, attendance at a social event, or something private. The penalty charge for health problems and attending social event reasons is generally lower than would be case for private business reasons. Members see the two former reasons as naturally occurring and understand that most villagers will face similar circumstances, but absent members still pay a penalty at the rate previously decided by group. In the case of private business, the charge of penalty is higher, which to some extent is supposed to prevent members from being absent in favor of private business. Despite the fact that *prayaan* group members strongly urge one another to participate in any group activities, some cases of absenteeism persist.

Considering attendance rates, group members generally maintain a low level of absenteeism. In 2009, the average rates of absenteeism for male and female groups in Jati were 4.9% and 5.4%, respectively. In Watugajah, the average rates of absenteeism for male and female groups were 4.2% and 4.2%, respectively. Close daily contact and long-term and repeated transactions that tend to interrelate various social relationships likely have been important in preventing members from being absent from group activities. Nonetheless, members of high income households have greater opportunities to hold non-farm jobs (thus earning more), but they are not likely to emphasize this matter. Given that the frequency of *prayaan* group work is only twice or three times (at most) in a month, most group members can allocate the time properly for joining *prayaan* activities.

5.3. Comparison of *Prayaan* Arrangements in Jati and Watugajah

5.3.1. Structure of Wage Labor Prices

The structure differentiating hosts of *prayaan* labor is generally more complicated in Jati, whereas in Watugajah, the structure is simpler and differentiates only between members and non-members. In both hamlets, prices are set—in principle—for members and non-members using *prayaan* group labor. In Jati, pricing for labor takes into account the user's status as a (non-) member, and among members, the distinction is made between members who requested work once in one work rotation and those who have asked more than once within one rotation; members who ask for labor more frequently will be charged more than the standard price. Members can employ a *prayaan* group at a cheaper price than those outside the group. Although the actual price levels differ for each *prayaan* group, all groups use the same principle to distinguish insiders from outsiders. In general, labor prices for non-members (for both male and female groups) are considerably higher than those for member hosts.

Labor prices for both members and non-members in Jati are higher than in Watugajah (Table 5.7). This confirms the pricing trend reported by a previous study in 2002 (Table 2.7). Examining the data by gender, prices for male labor are slightly higher than for female labor. By using the price of labor in 2002 as a standard, the actual price has accordingly increased. This situation has been caused by socio-economic changes such as improvement of farm commodity prices, increasing oil prices and an increase of villager awareness of opportunity costs, all of which in turn lead to the increase of labor price.

Focusing on host status, in the two hamlets, labor prices charged for non-members are much higher than for members. However, the groups likely set up very similar pricing structures for non-member hosts, which likely results in stiff competition among *prayaan* labor groups. While prices set for members vary more widely, these depend on the will and agreement of the members.

Regarding gender, labor prices both for hosts holding member status and for those who do not are considerably different in both hamlets. The male labor price is much higher, especially in Jati, where the average member labor prices for male and female groups are 5,750 and 3,600 IDR/person/activity, respectively. For non-members, the prices for male and female labor are 12,714 and 7,571 IDR/person/activity, respectively. In

Watugajah, the average member labor prices for male and female labor are 1,714 and 1,357 IDR/person/activity, respectively. If *prayaan* labor is used by non-members, those prices climb to 10,000 and 5,125 IDR/person/activity, respectively.

The pattern of wage rates can be confirmed by converting the wage rate into a wage based on working hours per person (Table 5.8). The wage rate per laborer per hour for both male and female workers hosted either by members or non-members in Jati is higher than that in Watugajah.

Table 5.7. Wage Rate of *Prayaan* in Jati and Watugajah in 2009

Hamlet	Gender	User Categories	Groups		Wage Rate by User Status (IDR/person/activity) a)				
					Member		Non-member		
			No.	%	M	M 2rot	RT	RW	NMN
Jati	Male	M *	4	36.4	4,250	-	-	-	-
		M-NM	6	54.5	8,000	-	-	-	12,333
		M-RT-NM	1	9.1	5,000	-	8,000	-	15,000
		Total & Avg. Male	11	100.0	5,750	-	8,000	-	12,714
		Standard deviation			3,009		-		2,483
	Female	M-M2-NM	1	12.5	2,000	5,000	-	-	7,000
		M-NM	5	62.5	4,000	-	-	-	7,200
		M-RT-RW-NM	1	12.5	5,000	-	6,000	7,000	7,000
		M-RW-NM	1	12.5	3,000	-	-	7,000	10,000
		Total & Avg. Femal	8	100.0	2,800	5,000	6,000	7,000	7,500
		Standard deviation			1,488	-	-	-	1,470
Watugajah	Male	M	5	71.4	1,600	-	-	-	-
		M-NM	2	28.6	2,000	-	-	-	10,000
		Total & Avg. Male	7	100.0	1,714	-	-	-	10,000
		Standard deviation			699				-
	Female	M	3	42.9	1,667	-	-	-	-
		M-NM	4	57.1	1,125	-	-	-	5,125
		Total & Avg. Femal	7	100.0	1,357	-	-	-	5,125
		Standard deviation			535				500

Source: *Prayaan* Group Leaders Survey September 2009

a) User status: M = member, M2rot= member who asked more than once in a group working cycle, RT= non-member from the same RT, RW= non-member from the same RW, NM= non-members, NMN= non-members who possibly come from the same RT, RW, hamlet, village and or neighboring Village (in case of Watugajah, the differentiation of non member of RT, RW and NMN does not exist, *prayaan* groups only refer non-members)
*) = among 11 male *prayaan* groups in Jati, 2 groups offered labor service only for members, while another 2 groups have a policy for offering labor service to non-members but there were no labor order during 2009

The wage rate of casual labor for male and female in both hamlets is 15,000 and 10,000 IDR/person/working unit, respectively. The common working unit is a half day or 5 working hours (locally called as *setengah hari*). The average wage rates per working hour for males and females are 3,000 and 2,000 IDR/person/hour, respectively.

By comparing average wage rates of *prayaan* labor for non-members and for casual labor, it can be seen that wages for *prayaan* labor in Jati have been slightly lower, whereas those in Waugajah are significantly lower. Due to the fact that the working hours per working unit of *prayaan* labor are slightly shorter than for casual labor, wages of *prayaan* labor in Jati per working hour for both male and female groups are much closer to the wages of casual labor, whereas in Watugajah, the wage rate of *prayaan* labor has been moderately lower compared with the wages of casual labor.

Table 5.8. Average *Prayaan* Wage per Labor per Working Hour by Gender in Jati and Watugajah in 2009

Hamlet	Gender	Unit	Average Wage (Host: Member)	Average Wage (Host: Non-member)
Jati	Male	IDR/person/hour	1,591	2,929
	Female	IDR/person/hour	781	1,813
Watugajah	Male	IDR/person/hour	393	2,500
	Female	IDR/person/hour	304	1,125

Source: *Prayaan* Group Leaders Survey September 2009

In Jati, which is handicapped by the steepness of the farming land, terrace construction and repair and timber and firewood collection and transportation are regarded as important activities demanding huge collective effort. Although the *prayaan* group is relatively large and the price level of the labor is not so different from that of casual labor, demand for group labor is still high. In Watugajah, on the other hand, where the handicap of steep terrain is not as dramatic, the demand for collective labor is comparatively lower than in Jati. In some cases, groups that offer additional services for non-members have set up somewhat lower wage rates relative to casual labor to improve the competitiveness of group labor. Nonetheless, the main orientation of labor service among *prayaan* groups in Watugajah is to serve member needs.

5.3.2. Historical Process and Background of *Prayaan*

Prayaan activities have been commonly regarded as a newly introduced labor institution used in the upland area for completing several types of farming and non-farming operations. However, because certain aspects of rural life vary between the surveyed hamlets, the principles of *prayaan* arrangement can be similar in some respects but also different in the others. In general, villagers in both hamlets assume that *prayaan* practices originated among local people without copying or importation from other areas or neighboring villages.

In Jati, the early 1970s witnessed the introduction of a mixed cropping system between food crops and tree plantation, later known as the agro-forestry system, and the emerging opportunity of agricultural product commercialization-especially firewood and timber resources. To some extent, the practices of the *prayaan* group were then set up for organizing huge collective labor efforts at cheaper prices, but the system also developed to offer labor to non-members at a higher labor price. Thus, *prayaan* was arranged for generating additional income for group members.

As a collective labor group developed to serve not only member but also non-member needs, the *prayaan* group had an incentive to propose higher labor prices for non-members. Whereas in Jati, *prayaan* groups are generally oriented toward collecting income from non-members, there is an exceptional case where two male groups have been set up only to provide labor for members of the group (see footnote at Table 5.7).

In Jati, the principle of selling labor for earning income is relatively stronger than the perceived importance of equality in labor allocation for its members. This is also reflected by the higher price charged for non-members. Facing some difficulties in accessing job opportunities away from farms inside and outside the area, villagers have arranged *prayaan* as a labor market creation. Therefore, members have less moral binding to manage equal labor allocation. Interestingly, members still practice another labor institution (the traditional exchange labor-*krubutan*) for certain operations to apply the principle of equality in labor service and return.

Members classified as affluent farmers holding large farms on sloping land likely prefer to ask for *prayaan* labor more frequently, given that the price for members is lower than the local casual labor price. For members who may need less frequent work due to smaller land holdings or flatter locations, there is an incentive to propose a higher labor price even though the labors are employed by other members. If the labor price set for members is too low, there is no incentive for members who less frequently employ *prayaan* labor to participate.

The geographical variation of farm land in Jati is rather high. Some farming plots are located on very steep terrain, and as a consequence, those farmers need collective labor more frequently for terrace construction and repair, timber cutting and transportation, and land preparation. Those activities continue year to year. As a result, these landholders have a higher need for collective labor such as through *prayaan*.

In Jati, 55.7% of males and 50.5% of females had no experience in being labor hosts in 2009 (as shown in Table 5.9). In addition to the fact that only a minority of *prayaan* members are hosting *prayaan* activities, some members who might be characterized as affluent households have been requesting *prayaan* labor more frequently. Those households are likely the ones holding larger areas of cultivated land. For them, while working within the group may still be important as a source of economic gain, the chance to use frequent *prayaan* labor to complete large tasks on their land (which may be characterized by scattered plots and/or steep terrain) is likely the more important

motivator. Cultivating these areas will require more collective work, and thus, it is quite understandable that they have a keen interest in employing *prayaan* labor. Meanwhile, a relatively larger proportion of members who do not host *prayaan* labor possibly come from lower income households for whom the prime motivation to join the *prayaan* group is the possibility of additional income from collected wage labors.

As previously mentioned, the labor price charged for non-members is higher than for members. Villagers in Jati consider the minimum labor price per person per activity when it is employed by members to be at least equal to 1 kilogram of rice (the price in 2009 being about 4,000-6,000 IDR/kilogram depending on the rice quality) and should be much higher for non-members. The Jati hamlet is situated in a very remote area with less favorable access to resources, and thus, the chances of other job opportunities are much more limited. *Prayaan* likely has been more strongly regarded as an important source for additional household income and assets for poorer villagers. In addition, the collective system efficiently finishes large and difficult tasks in a short time.

In Watugajah, the historical background of *prayaan* group development has been somewhat different from the case of Jati. *Prayaan* among male villagers was developed slightly later than in Jati. Beginning in 1974, *prayaan* was arranged only among males and was established to complete huge tasks that needed large labor forces quickly and only for members. Later, members agreed that in addition to labor as repayment, the host of the labor should pay a small amount of cash to be used for a social or community fund. *Prayaan* arranged among females was introduced in 1980. Villagers perceived that continuation of a long-term and non-strict reciprocity of labor institution such as *sambatan*, which, in principle, has the ability to accomplish large tasks, was becoming more difficult to manage. Growing opportunity costs meant that frequent requests for *sambatan* labor would be socially unaccepted and might provoke social gossip. In addition, because *sambatan* labor commonly should be served with luxurious meals, it is perceived to be more expensive than asking *prayaan* labor, which generally is only served with a simple daily meal and comes at a low, set cost.

Villagers in Watugajah have regarded *prayaan* as a labor institution that represents the later development of traditional exchange labor or *krubutan*. In the development of *prayaan*, the principle of opportunity cost has to some extent also been adopted in addition to the basic principle of *krubutan*, which asserts that each group member will contribute and receive service in equal manners. Despite the fact that the principle of *krubutan*

cannot be applied precisely, there remains among members a general perception that each member should host and labor equally. Accordingly, they prefer to set the labor price for members at a relatively lower level to reduce the burden of high labor payments (i.e., those of casual labor) and benefit all members. Among members, there is a kind of shared moral binding on equal rights with regards to using *prayaan* labor, and this also likely prevents members from opportunistic behaviors such as overuse of group labor at very cheap prices.

Table 5.9. Frequency and Proportion of Household Serving as Host of *Prayaan* in Jati and Watugajah in 2009

Hosting frequency	Household Side: Male				Household Side: Female			
	No. of Households (unit)		Proportion (% HH)		No. of Households (unit)		Proportion (% HH)	
	Jati	Watugajah	Jati	Watugajah	Jati	Watugajah	Jati	Watugajah
0	83	14	55.7	12.0	45	9	50.0	7.4
1	54	81	36.2	69.2	37	76	41.1	62.3
2	7	22	4.7	18.8	6	32	6.7	26.2
3	4	0	2.7	-	1	5	1.1	4.1
4	1	0	0.7	-	1	0	1.1	-
Total	149	117	100.0	100.0	90	122	100.0	100.0

Sig diff. between Jati and Watugajah

**

**

Source: *Prayaan* Group Leaders Survey September 2009

Significant difference: ** significant at $\alpha=5\%$

In short, the *prayaan* arrangement in Watugajah has developed through two steps. First, *prayaan* came into being as a collective labor arrangement and collective social fund founded on the principle of solidarity. In the second stage, *prayaan* no longer purely applied the principle of traditional exchange labor (or *krubutan*) that held that service and return would be almost equal, and to some extent, the idea of opportunity cost was adopted, supporting the idea that members who hosted labor more frequently should pay more.

Compared to Jati, in Watugajah, labor allocation from *prayaan* has been relatively equal. As shown in Table 5.9, most members have had experience in employing *prayaan* labor. The proportion of households who did not have the experience of hosting stands only at 12.0% and 7.4% for male and female, respectively.

Due in part to the fact that most *prayaan* members have hosted *prayaan* labors in Watugajah, the labor allocation for members is more even than in Jati. This result is in line with the main goal of the *prayaan* labor arrangement: to assist members in obtaining collective labor. As *prayaan* has been regarded more as a modification of exchange labor in Watugajah, the proportion of members attending the activities is also slightly higher

than that in Jati, and the number of activities attended and total activities per year for *prayaan* members in Watugajah also reflect a similar tendency.

However, looking closely at the labor allocation among *prayaan* members in Watugajah, it cannot be said that the situation is precisely equal, such as is meant to be the case of according to the principle of equality in the *krubutan* arrangement. A number of households did not ask for labor, and at the same time, other households made more than one work order during a single working allocation. All of this makes following the basic principle of traditional *krubutan* more difficult, and hence, they have started to introduce a certain amount of labor costs even for members.

Watugajah is located near the coastal region as sub-central labor market, and the job opportunities have expanded. That said, certain collective labors are still needed. Although there is greater opportunity to obtain non-farming jobs and local people tend to be busier, they still have keen interest in maintaining collective groups such as *prayaan*. Preservation of the pure traditional exchange labor such as *krubutan* has become more difficult to practice among villagers. As an adaptive solution, they can maintain *prayaan* for certain activities by providing labor at a lower cost, especially among members, and a higher price if labor is requested by non-members.

In Watugajah, *prayaan* labor is mostly oriented toward member needs, and a high priority is placed on maintaining a sort of “give and take” among group members. Borrowing the rural household strategy introduced by Ellis (1998), the behavior of *prayaan* members in Watugajah indicates that households are risk averse, and they are prepared to accept lower income for greater security, which, in this sense, is the security of having collective labor to accomplish various farming operations that are large and time-sensitive.

Only in a few cases is labor offered to non-members, an activity that can only be approved when there is no demand among the members, and priority is given to neighboring households lacking family laborers (e.g., the home of a widow) or to the elderly or those having health problems. To a certain degree, the sense of mutual help or assisting unfortunate fellow neighbors still exists among *prayaan* groups in Watugajah when they offer labor service for non-members. FGD revealed that non-member requests will be accepted if there is no request from the group members. Labor charges for non-members are higher than for members but still considerably lower than the price of labor on the market.

Although limited, there are some cases of *prayaan* labor in Watugajah provided to non-members. Prices set for non-members are also lower than in Jati. This is likely caused by internal group rules and the mechanism of labor allocation. Hosts cannot ask for just a part of the labor group; once they ask the group, they must fully use of all of the members. On the other hand, a host can recruit a smaller number of individual casual labors at the labor market price, which is higher. To increase the competitiveness of the group labor price, some *prayaan* groups offering service to non-members set a lower price. If they set a price at the same level as that of casual labor, they may face difficulties in receiving work orders because of their lack of group size flexibility. Hosts will choose casual labor as they need. By slightly lowering labor price, however, there is an incentive for the host to employ the *prayaan* group. For group members, this is also a boon because they can finish the task more quickly than a smaller group in normal working hours.

Addressing the higher price set up for non-members in both hamlets, the structure indicates that economic motivation has been working well when labors are used by non-members, despite the fact that there are no close social and psychological ties binding them with the members. Users holding non-member status, in some cases, have also been classified into three different groups-namely, (1) non-members from the same RT, (2) non-members from the same RW and (3) non-members (from different RW, hamlet or even village). Non-member hosts who reside closer under administrative boundaries will get better prices compared to those from different neighborhoods. This is evident (as shown in Table 5.7) in that the value of the standard deviation for members is larger than for non-members. Wage labor set up for members is the result of compromising among group members and consideration of the individual conditions of group members.

5.3.3. Income Structures of *Prayaan* Groups

Prayaan groups earn incomes from several sources such as labor charges, penalty charges, livestock sales and rental fees for kitchen tools and furniture used by members and non-members for social and ceremonial activities. Regardless of location, the average total group income in 2009 for male groups was higher than for female groups at 2.84 and 1.19 million IDR/group, respectively (see Table 5.10). Comparison of group incomes by location shows that the average group income for both male and female groups in Jati was higher than the same figures in Watugajah. In general, labor charges and penalty charges

are the main sources of group incomes, and together, they represent about 70-90% of total group incomes.

What makes *prayaan* labor so distinct from casual hired labor is the accumulation of group assets that may be used for additional income generation for the group. Group assets, in general, can be described as including kitchen ware and furniture for rent, livestock for breeding and selling, money in cash, cultural props for performances and renting out mats for ceremonial activities.

Table 5.10 shows that incomes from labor charges (for all hosts) and penalty charges for member absenteeism are actually much larger in Jati than in Watugajah. The proportion of group income from labor charges for male and female groups in Jati is 34.0% and 34.7%, respectively, whereas those figures for Watugajah are 30.5% and 33.8%, respectively. The proportion of penalty charges as a share of total income for male and female groups in Jati is 5.6% and 5.2%, whereas in Watugajah, the proportion is only 0.8% and 1.5%, respectively. In Watugajah, group incomes are dominated by labor payments from members, with the male and female group proportions standing at 62.8% and 49.3%, respectively.

In both hamlets, the average frequency of labor service hosted by members is relatively higher than the case of labor hosted by non-members. In Jati, the difference in average frequency of labor hosted by members and non-members is not as high as it is in Watugajah, where labor hosted by members is much more predominant. Relatively large amounts of labor wages from non-members in Jati likely result from both the considerable proportion labor done for non-members in conjunction with the higher price charged to non-members.

Prayaan groups differentiate labor prices for hosts into more complicated classifications including members, non-members from the same RT, non-members from the same RW, and non-members from different RW and wider administrative borders. This phenomenon likely represents higher attention to social relationships among members and non-members. Non-members holding status as closer neighbors have priority and lower rates for labor compared to non-members from different communities. Several groups apply simpler schemes for differentiating among user statuses by charging non-member hosts higher prices than those for members. In principle, members should benefit from cheaper prices, but it is also evident that members are focused on economic

gain in the form of the higher prices for non-member projects, which in turn will generate a significant contribution to member incomes.

Table 5.10. Type of Income Sources of *Prayaan* Group by Gender in Jati and Watugajah in 2009

Hamlet	Gender	Involved Group (% and average)	Type of Income Sources of Groups						Total (1 - 6)
			Labor charge		Penalty charge		Goat selling (5)	Renting fees (6)	
			Host: member (1)	Host: non-member (*) (2)	Host: member (3)	Host: non-member (4)			
Jati	Male	Involved group	11	7	10	4	1	5	
		Total Group	11	11	11	11	11	11	
		% of group	100.0	63.6	90.9	36.4	9.1	45.5	
		Average freq/year	10.2	5.4	10.2	6.0	2.0	10.2	
		Average (IDR/group)	727,364	1,016,143	117,500	168,000	600,000	363,000	2,992,007
	% of income	24.3	34.0	3.9	5.6	20.1	12.1	100.0	
	Female	Involved group	8	8	8	8	0	3	
		Total Group	8	8	8	8	8	8	
		% of group	100.0	100.0	100.0	100.0	-	37.5	
		Average freq/year	11.4	7.4	11.4	7.4	-	7.3	
Average (IDR/group)		468,000	425,780	120,875	64,125	-	150,000	1,228,780	
% of income	38.1	34.7	9.8	5.2	-	12.2	100.0		
Watugajah	Male	Involved group	7	1	5	1	0	0	
		Total Group	7	7	5	5	7	7	
		% of group	100.0	14.3	100.0	20.0	-	-	
		Average freq/year	17.4	7.5	11.5	2.0	-	-	
		Average (IDR/group)	790,000	384,000	74,200	10,000	-	-	1,258,200
	% of income	62.8	30.5	5.9	0.8	-	-	100.0	
	Female	Involved group	7	1	6	1	0	2	
		Total Group	7	7	7	7	7	7	
		% of group	100.0	14.3	85.7	14.3	-	28.6	
		Average freq/year	23.0	4.0	10.6	4.0	-	5.0	
Average (IDR/group)		513,786	352,000	61,857	16,000	-	97,500	1,041,143	
% of income	49.3	33.8	5.9	1.5	-	9.4	100.0		

Source: *Prayaan* Group Leaders Survey September 2009

Note= *) in Jati among 11 female *prayaan* groups, 2 groups offered labor service for members only

5.3.4. Income Distribution and Shares of *Prayaan* Income

This study explores household economic structures using household income. Household income generally is regarded as a prime indicator of the household's ability to cope with daily life problems. Income structure likely has determined the household's involvement and behavior in *prayaan* activities, including their motivation for participation in the group activities.

To understand the relationship between household income and household involvement in *prayaan* activity, it will be useful to examine the share of household income generated from *prayaan* work relative to the total income of the household. This situation, to some extent, will indicate the important role of *prayaan* income in overall household income.

As shown by Table 5.11, there is a significant difference in terms of the proportion of lower and high income groups of *prayaan* male and female members in both hamlets in 2009. The involvement of lower income households in *prayaan* work is significantly

higher than that of high income households. In line with the income categorization of households, the average incomes between lower and high income households in the two surveyed hamlets are significantly different. Looking more specifically at the average household income from *prayaan* work in both hamlets, incomes generated by male and female groups were higher for higher income households (except for female groups in the Jati hamlet).

As clearly shown by Table 5.11, comparison of *prayaan* income to total household income per year confirms that *prayaan* income has played an important role for lower income households. Due to the fact that their total incomes are much smaller (despite their average *prayaan* income being slightly smaller than higher income households), the proportion of *prayaan* income in total income is considerably higher for lower income households.

Table 5.11. Share of *Prayaan* Revenue Based on Household Income, Average Frequency of Activity in Jati and Watugajah in 2009

Hamlet	Gender	Income Level (million IDR/HH/year)	Involved HH		Average HH Income (000 IDR/HH/year) (a)	Average <i>Prayaan</i> revenue (000 IDR/HH/year) b)	Prop.of <i>Prayaan</i> Income (c)=(b) / (a)*100%	Average frequency activity/year
			Unit	%				
Jati	Male	Low (<4,74)	15	62.5	1,742.0	112.7	4.4	12.2
		High (>= 4,74)	9	37.5	8,062.0	132.6	1.9	14.9
		Total/Average	24	100.0	4,112.0	120.2	3.5	13.2
	Sig. diff. low and high			**	**	*	*	*
	Female	Low (<4,58)	13	68.4	2,547.0	100.9	5.6	18.5
		High (>= 4,58)	6	31.6	8,968.0	77.4	0.9	15.8
		Total/Average	19	100.0	4,574.7	93.5	4.1	17.6
	Sig. diff. low and high			**	**	*	**	*
Watugajah	Male	Low (<= 5,34)	18	75.0	2,549.0	32.1	1.4	16.4
		High (> 5,34)	6	25.0	7,819.0	52.7	0.7	20.6
		Total/Average	24	100.0	3,866.5	37.3	1.2	17.5
	Sig. diff. low and high			**	**	*	*	*
	Female	Low (< 5,02)	18	72.0	2,411.0	32.8	1.9	23.1
		High (>= 5,02)	7	28.0	11,713.0	49.3	0.6	25.9
		Total/Average	25	100.0	5,015.6	37.4	1.5	23.9
	Sig. diff. low and high			**	**	*	*	*

Source: *Prayaan* Group Leaders Survey September 2009

Note: (b) = In cases of *prayaan* groups offering direct distribution of group income to members,

the *prayaan* income has been directly accounted for from the amount of direct distribution to each member.

For *prayaan* groups that did not directly distribute collected income, the *prayaan* income for each member is the amount of money allocated by the group for social and religious activities divided by the number of group members

Significant difference: ** significant at $\alpha=5\%$, * significant at $\alpha=10\%$

For each site in 2009, the shares of *prayaan* income for lower income households for male and female groups in Jati were 4.4% and 5.6%, while shares of *prayaan* income for high income households for male and female groups were 1.9% and 0.9%. In Watugajah, although *prayaan* income has been relatively important for lower income households, the proportions for male and female groups are lower than are the case in Jati, at 1.4% and

1.9%, respectively. The shares of *prayaan* income for high income households for male and female groups are 0.7% and 0.6%, respectively.

Prayaan has been particularly important as a potential income source for lower income households, especially in Jati. In a lower household where both husband and wife participate in *prayaan* work, the household might obtain almost 10% of its total income from *prayaan*, while for high income households, that number might be only 3% annually. In Watugajah, *prayaan* incomes tend to be a smaller share of total household incomes.

As previously described in Table 5.6, the share of income is likely in accordance with the purpose of the group. In Jati, most of the groups have arranged *prayaan* for direct distribution of collected wages and group incomes, leading to a higher wage rate. A considerable number of members in these groups did not ask for labor service, and they likely belong to relatively poor households. In Watugajah, on the other hand, a considerable number of groups have arranged *prayaan* for collecting social and religious funds instead of direct distributions. Lower wage rates in Watugajah have resulted in lower amounts of collected wages and group income. Hence, the contribution of *prayaan* income to the total is smaller than in Jati.

The importance of *prayaan* income for farming households in Jati can also be confirmed by the importance of *prayaan* labor inputs for various farming operations. Based on the foregoing analysis of labor sources in farming operations (Table 3.6), one can see that in Jati, the role of *prayaan* labor is greater than is the case in Watugajah.

5.4. Conclusions

Despite the remoteness of the rural area and the limitation of resource endowments, strong social relationships have been developed continuously in the upland villages; however, the transformative power of a growing awareness of opportunity cost among villagers cannot be underestimated. The perception of the importance of opportunity cost has been increasing over time. The growth of opportunity costs has increased the awareness of labor force in the search for more profitable activities in various farming and non-farming operations; hence, more households' members have become involved in several hired labor arrangements.

Villagers in less favorable areas are facing more difficulties but are keenly trying to innovate. They have been transforming labor arrangements to complete various daily

tasks. The practice of traditional labor exchanges for farming operations has been widely supplemented by a new invented institution, the so-called *prayaan*. The *prayaan* is also considered a mechanism of adjustment and adaptation to the demands of technological change and a growing expectation of economic returns. *Prayaan* has been substantially implemented for activities needing to be done quickly or requiring large numbers of laborers and or delicate workers. These activities include terrace field construction and repair, land preparation, weeding and activities related to timber and firewood. Relatively large numbers of laborers and lower labor costs for group members are perceived as incentives and advantages by members. The group labor can be used for work that is time-sensitive or work that is not. Specialization and division labor among *prayaan* groups by gender can also be seen by the types of work (including main farming operations, supporting farming operations and non-farming operations) the groups engage in.

Prayaan arrangements embrace not only economic or profit interests but also a socio-cultural dimension. Arrangements charging higher prices for non-members, maintaining labor charges for non-members in line with the market price, employing a mechanism of direct distribution of collected wages and investment of productive assets have been cited as evidence that the *prayaan* arrangement is a type of “economic institution”. On the other hand, the development of the penalty system that to some degree prevents opportunistic behavior of members, the establishment of lower labor charges for work hosted by members, the flexibility and priority given to members in hosting labor, and the mechanism of collected income disbursement for social and religious events indicates that *prayaan* is also oriented toward a function of “social-cultural institution”.

Household economic structure has likely determined household behavior in participating in and hosting *prayaan*. Households experiencing better economic performance seem to propose lower labor charges because their primary motivation is not wage gaining but rather the chance to use collective labor for the completion of their own huge farming and non-farming tasks. On the other hand, less affluent households have different preferences regarding labor charges; they prefer to propose a higher labor charge because it will be a better potential income source for them in the future. In Jati, with its unfavorable geography and restricted access to off-farm job opportunities, *prayaan* income has been important as an income source for poor members and an important labor source for high income members. However, in Watugajah, which enjoys better access to resources and jobs, involvement in *prayaan* is important for providing members with

collective labor at a cheaper price. In addition, locals still have an incentive for pursuing additional income or collecting funds for social activities.

Characterized by some variations regarding historical background, local perceptions, functionality and geographical conditions, *prayaan* groups among villagers in Jati and Watugajah have been developed as innovative adaptations and adjustments to the local circumstances. The growth of *prayaan* practices also reflects the situation of each hamlet from the point of view of labor market development. In Jati, the lack of resources, the remoteness, the relatively long distance from the sub-central labor market (coastal region) and the survival of some traditional labor institutions have induced villagers to arrange institutional group labor namely *prayaan* as an institution for earning income from either non-members or members. In Watugajah, the greater access to resources, better mobility, the relative proximity to the sub-central labor market and the atrophy of some traditional labor institutions have led villagers to arrange *prayaan* labor more as an institution for making collective labor cheaply available to members. The *prayaan* arrangements in both Jati and Watugajah show a sort of transitional process of labor market development in a rural area.

CHAPTER 6.

CONCLUSIONS

Studies on the custom of mutual assistance practiced among Javanese villagers have primarily focused on activities occurring under the broad idea of *gotong royong*, which generally refers to the collective action among villagers to pool the labor force for constructing and maintaining public facilities. Thorough empirical studies on the contemporary practices of mutual help institutions for the completion of farming and non-farming operations in rural Java and on the mechanism of adaptation of these practices will be very useful to improve the understanding of variations in the related institutions, systems and mechanisms as well as the understanding of the way that the adaptation of these practices is in line with the development of the labor market and also the conditions regarding to resource endowments, production risk and technological changes. Cultural endowments that represented by strong mutual help tradition under various traditional cooperation patterns in rural Java is also highly considered.

A novel categorization of labor institutions in rural Java has been studied using an analytical framework based on (1) purpose, (2) the timing of reciprocity (immediate or long-term reciprocation), (3) the strictness or equality of the reciprocity (equal or unequal), and (4) the type of compensation or reciprocation (money, labor, social validation, or benefits drawn from public goods). In general, labor institutions are maintained under the principle of reciprocity. The manner in which the reciprocity principle is applied can be simplified into two categories: (1) reciprocity based on social norms, and (2) reciprocity based on a contractual arrangement.

The non-farming labor institutions, such as *gerakan*, *gugur gunung*, *rewang* and *layatan*, and *sambatan*, practiced by villagers have remained highly regarded by villagers in the four surveyed hamlets. However, labor institutions that arranged for farming operations, such as *sambatan*, *krubutan/gantian* and *prayaan*, have currently been highly regarded only by the villagers in upland hamlets.

The functions and performance of labor institutions that support rural community life in rural Java as discussed in this paper to some extent also indicate the advantages of community functions as a social safety net system. Villagers in rural areas commonly face

various risks, and the high level of uncertainty may strengthen the practices of labor institutions to overcome the problems associated with these risks.

The practices of labor institutions in rural Java have changed considerably. These changes have been more dramatic in lowland areas, which typically have more abundant resources, greater mobility and access to job opportunities, and weaker social relationships. In these areas, labor institutions based on mutual assistance have tended to decline. However, the functions of labor institutions to some extent are still important to villagers, at least for coping with emergency, ceremonial and house construction activities. For villagers in upland areas, where the scarcity of resources and production risk are much greater and geographic isolation is more persistent than in the lowland regions, the implementation of the labor institution's practices for daily needs will constantly be important. The functions of labor institutions cover various activities, including both farming and non-farming events.

By analyzing labor institutions from the perspective of the influence of external community factors such as the expansion of labor markets and technological changes, it has been confirmed that these factors have massively influenced the traditional labor exchange arrangements in rural areas. In lowland hamlets where the economic structure is primarily based on non-farming income and where the geographical conditions are favorable for farming practices, the high population mobility and the strong impact of technological changes in farming production systems have reduced the need for collective work for various farming activities. The influence of off-farm job opportunities also likely exposed villagers to opportunity costs. However, mutual help for non-farming activities is still going well.

In contrast, in upland areas where the economic structure is more dependent on farming, where there are significant geographical limitations, and where technological changes related to the mixed cropping system have been implemented, villagers tend to demand and intensify traditional collective work arrangements such as *sambatan*, which, to some extent, has been supplemented by the newly introduced *prayaan* institution for coping with basic daily needs, including both farming and non-farming activities. However, *krubutan* practices still survive, despite the fact that the practices are arranged under strict rotation schedules. The smaller influence of off-farm job opportunities and labor markets due to isolation also likely strengthen the reliance on collective work in upland areas.

The transition of labor exchange practices has occurred in both lowland and upland hamlets. *Sambatan*, which has the most flexible membership and hosting practices, has been changing notably. People in upland areas still share a common understanding and practice altruistic behaviors, especially for non-farming activities such as house construction and repair. People in lowland areas especially wealthy households have started construct modern-style houses that require a larger number of supporting laborers, both male and female. While in upland areas, generally speaking, the demand for male labor for house constructions for even wealthy households almost same with for others because the size and style of the houses that are common in the area is a traditional and it likely is not so different among households. However, wealthy households in upland areas felt socially obligated to provide various better-quality foods in larger quantities to invitees. Therefore, the household hosts need women laborers to assist with meal preparations. This phenomenon to some extent can be seen as a sort of altruistic behavior displayed by better-off villagers in remote rural areas.

Sambatan for farming has almost completely disappeared in the lowlands, and its practice in the uplands has also decreased. Frequent invitation of *sambatan* labor is criticized among villagers, and opportunity costs also stimulate reluctance among villagers to intensify the activity. Villagers also become more reluctant to invite *sambatan* laborers because they are aware that once they invite neighboring households in the village, they will accumulate psychological debt, and they expect difficulties in maintaining reciprocity because their own opportunity cost will likely increase in the future.

Labor arrangements under the *krubutan* system, which is generally more rigid as the result of fixed membership and hosting, are still widely practiced for various farming operations in upland hamlets. However, as the number of members in a *krubutan* group is small (3-5 people), the transaction costs are reduced to some extent, and there can be more flexibility in the arrangements, for example, in choosing the rotation day, in choosing the type of work, and in the postponement of working days. Participants have the advantage of arranging *krubutan*, especially for activities that can be done flexibly, such as terrace construction and repair and activities related to timber and firewood collection. *Krubutan* is also important for activities that must be done in a strict timeframe, such as land preparation.

Prayaan, which is typically rigid in terms of fixed membership, but flexible regarding hosts, is still widely practiced for various farming operations in upland hamlets.

Even though membership is fixed, members have advantages such as lower payments and priority with respect to the use of labor compared to non-members. Households have the advantage of arranging *prayaan* labor, especially for activities that require large numbers of workers, such as terrace field construction, land preparation, activities related to timber and firewood, and delicate work activities such as weeding. By combining the prioritization of group members' requirements and lower payments for members for labor usage, *prayaan* will likely evolve in the future.

Despite the transformation process that has occurred in the labor exchange institutions in rural Java, community members with tight social relationships have the capacity to adapt to the process of change. In the broader sense, villagers in both upland and lowland hamlets understand the basic principles regarding social relationships. Kinship relationships, which often overlap with neighbor relationships, are still predominant among villagers. The basic structures of these relationships bring about fewer difficulties in the arrangement of collective work among villagers, at least for house construction and repair. However, the division of labor and the diversification of villagers' income sources may enable well-off households to build modern houses. This possibility may reduce the need for collective work in the future because the construction and repair processes for modern houses require highly skilled labor.

In the lowland rice-growing areas of rural central Java, the practices of labor exchange for farming operations have been dramatically decreasing, and in some places, the practice has completely disappeared. Landowners could no longer rely on their own family labor or on the tradition of labor exchange. Instead, they found it convenient to hire group of laborers rather than having to deal with large numbers of individuals. The use of hired labor is becoming predominant.

The most common uses of hired labor in farming are land preparation using tractors, transplanting and harvesting-threshing. These activities require a large amount of labor, are arduous and should be completed in a short amount of time. However, a considerable number of households also used hired labor for other activities such as weeding and hoeing-leveling. The *bawon* system is still practiced among villagers. The *bawon* system is based on a period of arrangement, and the most common implementation of the *bawon* system at our research sites is casual or regular labor under various types of contract arrangements. There is no long-term hired contact system such as seasonal hired labor or permanent labor.

A significant influential factor in determining whether labor is hired for farming operations other than for harvesting and threshing is the involvement of non-farming jobs. Harvesting and threshing have been significantly influenced by three factors: the cultivation of land, the income level and the involvement of non-farming jobs. Land preparation is regarded as a task that requires skill and should be completed in a short period of time; hence, regardless of a household's socio-economic characteristics, farming households tend to hire tractor operators. For hoeing-leveling, transplanting and weeding, households whose members do not have non-farming jobs can complete these activities by fully relying on the labor of family members, whereas households whose members have permanent non-farming jobs tend to hire labor more often than households whose members have temporary non-farming jobs.

The sense of income sharing under the spirit of moral economy is, to some extent, still alive. It can be found under the *bawon-bawon* and *bawon-operator* arrangements for harvesting and threshing. *Bawon-bawon* has been offered only among households that cultivate small areas of land, that have high incomes and whose members have non-farming jobs. *Bawon-operator* has been offered by households that cultivate small areas of land, that have low incomes and whose members have non-farming jobs. For lower-income households, the high share cost of *bawon-bawon* practices is not affordable; hence, they prefer offering the *bawon-operator* system.

Harvesting-threshing, which done by a *tebasan-operator*, is likely the domain of households that cultivate large areas of land, that have lower incomes and whose members have temporary and permanent jobs. The earning of a lower income apparently urges households to sell standing paddy crops to *tebasan* contractors to obtain cash as soon as the crops reach maturity. Even though the members of these households have non-farming jobs, these jobs are not likely to be secure enough to ensure reliable income for households.

With respect to the proportions of different contract types for hiring labor, composition of contract shows that proportions have been changing. In general, the proportion of daily wage labor has been decreasing, in contrast to the proportion of skilled labor and piece work with a team. However, each farming operation has a different story with respect to the influence of history, technological changes and the expansion of non-farming jobs.

In terms of wages, the wages of hired labor working under a piece rate with a team and the wages of skilled labor are higher than those for other contract arrangements. The piece work wage and skilled labor contracts allow farmers to pay laborers according to the laborers' productivity. Compared with the wages for off-farm jobs, the wages of tractor operators under a skilled hired labor system and of transplanting laborers under a piece rate with a team are comparably higher than the wages of laborers working off-farm jobs. However, in general, the wages for off-farm jobs are better than those for other jobs done by hired laborers in farming operations.

Employees have been separated by gender and type of farming operations or jobs. Households that are both employers and employees have lower incomes than households that act as only employers. Operators have higher education levels and more capital for running the business. Group leaders for transplanting have lower education levels and no capital but are highly skilled and have an extensive social network. Harvesting contractors need a large amount of capital and a wide social network to support smooth business covering a wide area beyond the village level.

Even though commercialization and modernization have had a dramatic influence on hired labor arrangements, farming households still prefer to hire laborers from among their neighbors, who commonly have close social relationships, often because they are relatives. Social relationships, which commonly develop within close residential proximity, are still perceived as important by villagers involved in labor contract arrangements. The transaction and arrangement of hired labor are likely not only perceived as economic or market transactions but are also related to the social relationship system in the community. To some extent, economic rationality and moral economy coexist in hired labor arrangements for various farming operations in wet rice villages of rural Java. However, the moral economy perception among villagers has become more limited.

In the remote rural areas where resources are limited, strong social relationships typically develop continuously; however, awareness of the opportunity costs among villagers cannot be underestimated. The perception of the importance of opportunity costs has been increasing over time. Improvement in the opportunity cost has increased the awareness of the labor force about more profitable activities in various farming and non-farming operations; hence, more households have members involved in several hired labor arrangements.

Villagers in less favorable areas, who face more difficulties but keenly try to search for innovations, have been transforming labor arrangement practices for completing various daily tasks. The practice of traditional long-established labor exchange on farming operations has been widely supplemented by a new invented institution referred to as *prayaan*. This system is considered to be a mechanism of adjustment and adaptation to the demand of technological changed and the increase in the expectation of economic interest. *Prayaan* has been considerably supplementing activities that must be done in a timely manner and require many laborers and/or delicate work. These activities include terrace field construction and repair, land preparation, weeding and activities related to timber and firewood. A relatively large number of group laborers and the lower labor payments for group members are perceived as incentives and advantage by members. Laborers can be used both for activities that require completion within a strict time frame and those that do not. Specialization and division labor among *prayaan* group members by gender occurs for different types of operation, including primary farming operations, supporting farming operations and non-farming operations.

The *prayaan* arrangement embraces not only economic or profit interest but also socio-cultural dimensions. The higher prices for non-members, the maintenance of labor charges for non-members in line with market prices, the mechanism of direct distribution of collected wages and the investment in productive assets have been among the pieces of evidence that the *prayaan* arrangement is a type of economic institution. However, the development of the system based on penalties that, to some degree, prevent opportunistic behavior of the members, the charging of lower labor rates if the work is hosted by members, the flexibility and priority for members in hosting laborers, and the mechanism of income disbursement for social and religious events indicate that *prayaan* is also oriented for social-cultural functions.

Household economic structure has likely determined household behavior with respect to participating in and hosting *prayaan*. Households with a better economic performance tend to propose lower labor charges because their main motivation is not to earn money but rather to have a higher chance of using collective labor to complete their extensive farming and non-farming tasks. In contrast, less affluent households have different preferences regarding labor charges; they prefer higher labor charges because these wages will be potential income sources for them in the future. In Jati, which is located in an unfavorable area with limited access to off-farm job opportunities, *prayaan*

income is an important income source for poor members of the society and an important labor source for high-income members. However, in Watugajah, which is located in an area with better conditions, the involvement in *prayaan* is a way for members to have access to a large amount of inexpensive collective labor. In addition, *prayaan* members also have the incentives of earning additional income and collecting funds for social activities.

Characterized by variations regarding historical background, local perceptions about people, and geographical conditions, villagers in Jati and Watugajah have been developing *prayaan* groups as a way to adapt to the local situation. This adaptation also reflects the situation of each hamlet from the point of view of labor market development. In Jati hamlet, which has access to less favorable resources, is remote, and is far from the sub-central labor market (coastal area), and the survival of some traditional labor institutions has induced villagers to arrange *prayaan* labor primarily as an institution for earning income from either non-members or members. In Watugajah hamlet, which has access to better resources, has high people mobility, and is relatively close to the sub-central labor market, the reduction of some traditional labor institutions has induced villagers to arrange *prayaan* labor more as an institution for obtaining collective labor at cheaper price. The *prayaan* arrangements in both Jati and Watugajah show a short of transitional process of labor market development in a rural area.

In short, the labor institution arrangements as studied in the surveyed hamlets generally to some extent can be considered as “independent institutions” that developed based on local collective initiatives. The development of these institutions reflects a high capacity and capability of the local people to collectively adapt various traditional labor institutions to support current basic daily needs. This strategy can also be understood as a mechanism of the creation of a traditional safety net and a local security system to deal with various uncertainties.

The exceptional case that involves formal local government involvement is the arrangement of collective labor under the *gerakan* system for the construction and maintenance of public infrastructure. In some cases, village governmental offices supported by the local government have tried to combine governmental development projects and participation of the local community. Contributions from local government can be in the form of money or construction materials, while local participation is in the form of labor services. However, in many cases, collective labor services under the

gerakan system have been arranged through the agreement of hamlet and neighborhood association members without direct contact or links with governmental development programs.

Specific involvement of neighborhood associations or hamlets in the organization and support of ceremonial events proposed by community members can be perceived as a local initiative without formal governmental links. Local people with neighborhood associations independently arranged this support system.

In the case of labor institutions developed to complete various farming operations, these institutions can be assumed to be completely independent of formal governmental involvement. Most of these institutions have been arranged through initiatives undertaken by the local people.

Considering the effectiveness of the systems of various local institutions for supporting the daily needs of local people, there is the possibility for local government to directly become involved in or provide support to those existing institutions. Local governments must determine the proper mechanism and the type of supports in preventing the destruction of well-designed traditional systems. Well-designed and appropriate support from local governments is expected to enhance the capacity and capability of local people to strengthen economic access and to improve social and cultural life among local community members.

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Technical irrigation for rice cultivation



Flat wet-rice growing area



Portable threshing machine for harvested rice



Well constructed roads connecting villagers

Appendix 1. General Conditions in Lowland Area
(Plangkok Hamlet and Somokaton Hamlet, September 15, 2009)



Mixed food crops cultivated in flat area during rainy season



Agroforestry system in mountainous areas



Fuel wood as one of important income sources



Condition of rural roads

Appendix 2. General Conditions in Upland Area (Watugajah Hamlet)
(September 10, 2009)



Collective works for land preparations



Terrace farming fields in mountainous area



Newly constructed terrace fields



Timber transportation using collective works

Appendix 3. General Conditions in Upland Area (Jati Hamlet)
(September 4, 2010)



Gerakan for road repairs



Sambatan for house repairs



Krubutan for land preparations



Prayaan for timber transportations

Appendix 4. Activities of Labor Institution in Upland Area (Jati Hamlet)
(August 20, 2008)



Sambatan for house repairs



Sambatan for firewood transportations



Krubutan for land preparations



Krubutan for cassava peeling

Appendix 5. Activities of *Sambatan* and *Krubutan* in Upland Area (Jati Hamlet), (August 25, 2008)