3 Development and state of rural institutions in China

This chapter provides an overview of the various stages in the development of rural institutions in China in general and some of which are also specified for Hebei. It is devoted to the historical development of institutions that supports the understanding of the micro-economic assessments in Chapter 7. As a starting point the term transition is explained.

3.1 Transition in rural China

Transition can either be defined or discussed focusing on sectoral transition (Spiertz and Oenema, 2004; Swinnen and Rozelle, 2006) or as an overall transition of the economy and society in the light of normative and positive economic theory. Also agrarian change can be analyzed from different perspectives (Rigg, 2006). One aspect is the deagrarianization which is driven by structural changes within the assessed economy. But also the assessment of poverty trends is included in studies on agrarian change as well as the analysis of changes in the culture and livelihoods of the rural population (Rigg, 2006), which can be seen as more societal changes then as structural changes.

Here the sectoral and the overall transitional view will be combined because from the early 1980s onwards the rural areas in China experienced at the same time a restructuring of production processes within the agricultural sector and an opening and system change occurring for the whole society and economy. Skinner et al. (2001) explicitly argue that the development in rural China has to be assessed with respect to the interaction between agriculture and the secondary sector but also in the context of changing environmental conditions (e.g. increases in environmental costs due to land use changes) and the impacts on local decision makers that arose from the orientation of the Chinese political economy towards markets.

McMillan and Naughton (1992) state that with the transition of a planned economy the whole set of fiscal, monetary, legal system, ownership and price institutions must be changed. Also Swinnen and Rozelle (2006) emphasize that the transition of a communist or socialist economy involves necessary changes in property rights regimes, an adaptation of incentive systems to improve labor and capital productivity and the creation of exchange institutions or markets that are more efficient than the ones under central planning of exchange. The most important effects of well functioning exchange institutions are that they facilitate
transactions between different economic agents and by this promote specialization and trade. Those institutions involve a price mechanism by which information about the degree of scarcity of specific factors is provided to consumers and producers (Swinnen and Rozelle, 2006).

The transition of former socialist or communist societies with centrally planned economic systems is discussed in the economic theory mainly from two different perspectives (McMillan and Naughton, 1992). The first way of transition discussed in theory and also observable with respect to some East-European societies is the “big bang”-approach. Theorists favoring this approach argue that private property rights and a market oriented system of allocation and distribution should replace the former system as soon as possible (Tsang, 1996). The school of thought promoting the second approach, “gradualism”, argues that a fast transformation of all spheres of society and the economic system at the same time is not appropriate especially for large and relative homogenous centrally planned communist societies (Gregory and Stuart, 2001). Because a fast and complete transition of a whole state system is accompanied by many stakeholders that loose influence, power or their economic basis a stepwise change of the structures provides a feasible way to prevent resistance from those interest groups. So the compensations necessary for people to agree to changes are lower if the gradualist approach is followed (Dewatripont and Roland, 1992). As Schüller (2002) explains the homo oeconomicus would favor the “big bang” to achieve efficiency in allocation and production and competition based actions and decisions as soon as possible. But if one thinks of the socio-economic actor as homo sociologicus (Schüller, 2002) this would not be the prime interest because the benefits of a fast transition could be outweighed by the risk that the transition becomes a failure due to high pecuniary and non-pecuniary transition costs. China was in a comfortable position as the institutional reforms in the agricultural sector started in the end of the 1970s. The society had recovered from the chaotic years of the Cultural Revolution and the economic system was relatively stable (Bajpai and Jian, 1996). As a consequence there was no need to transform the rural institutions too fast, as it might have been the case in East-European countries, where societies had to cope with a sudden break down of the economic and political structures at the same time.

Following Spiertz and Oenema (2004) transition in agriculture is seen as a process of sectoral change in response to internal or external drivers that results in a change of the incentives for the sectoral actors. The term transition itself implies that this process is anti-systemic (Ness and Raichur, 1989) by changing know institutions. Some examples for drivers of change are: population growth, market and price changes, policy changes, adoption of new technology, changes in the level of education of the rural population, and climatic changes or flood-
ing (Spiertz and Oenema, 2004). The actors respond by adapting their (production) decisions to the perceived changes.

*Figure 5* provides a graphical illustration of these processes. Transition as a process entails the movement from state determination of productive endowment and income values to market determination of those values (Benjamin et al., 2005). The change from a socialist to a market-oriented economy goes along with changes in factor prices. For example, returns to education or special skills are expected to be higher (Benjamin et al., 2005) than under the commune system that hardly rewarded differences in labor productivity or human capital.

Following Happe (2004) ‘structure’ is used here as a term that refers to an entity which consists of several components that are inter-related to each other. With respect to the agricultural sector those components are the farm firm or household itself and the available production factors land, labor and capital (Happe, 2004). The OECD (1995) defines structural changes in agriculture as the movement or exchange of production factors within the sector (e.g. among farm households), and between the agricultural, the industrial and the service sector of an economy.

Source: Adapted from Spiertz and Oenema (2004).

*Figure 5: Drivers of change in agricultural production structures*

As suggested by the feedback loop it is not always possible to clearly distinguish between the cause and effect of externally induced changes due to the simultaneity of change in the sector but also society wide. Based on the interactions of rural actors, especially agricultural households, with other sectors and administrative levels of the state societal and policy changes during the opening process of China also influenced the structure of the agricultural sector. Farm households are the core production decision unit in the agricultural sector of Hebei. Their decisions about the provision of off-farm labor had an impact on the
development of non-agricultural industries. Institutional changes regarding land use rights, the abolishment of the commune system, and the stronger focus on agricultural subsidies influenced on the other side the decision processes of the farm households. In general, the agricultural sector is of great importance for the development of an economy at its early stages (von Urff, 1982) because it provides food and non-food commodities and labor force that could be used in other sectors (Swinnen and Rozelle, 2006).

With respect to the development of the agricultural sector in Hebei one can identify some inhibitors of change:

(1) The de facto breakdown of the formerly centrally organized extension service. This resulted in a gap in knowledge transfer about up to date farming methods and pest control that could only partly be replaced by private actors, such as sellers of agricultural inputs.

(2) Urbanization in combination with the reclassification of rural agricultural land into urban development or infrastructure land.

(3) Population growth that further contributed to land fragmentation and by this facilitated the trend of decreasing farm size.

(4) At the same time also the share of elderly people, who are less productive due to their age and health status, increased.

(5) Politically induced changes in the price and distribution system that are observed in general in whole China.

This list does not claim to be complete. What is clear is that the assessment of the changes in rural institutions has to involve the discussion of societal and political factors influencing the transition. Therefore time related variables are included in the microeconomic assessment later in this work that might unveil impacts of policy or macroeconomic changes on rural households’ decisions.

3.2 Rural China prior the period of communism

Over a long period of time (from the first dynasties until the appearance of the People’s Republic) land was privately owned in China. Almost 50% of the cultivated land before the socialist revolution was owned by landlords. The landlords rented land to peasant households so that a system of independent but fragmented agricultural production and decision units, private farms, existed in rural China (Lin, 1997).

Land was the most important component in a system that Zhao and Wen (1999) describe as a “combination of intergenerational and inter-temporal trans-
fer of wealth, with emphasis on intergenerational transfers” (p. 3). Land protected its owners in two ways from old age poverty. First, land was traditionally inherited to the sons of the family after the death of the father. Being aware of the heritage to receive the young generation behaved well with respect to their parents and provided their income to the intergenerational household (intergenerational transfer). In the case of a loss or non-existence of children aged land owners could, as a second way to ensure old age security, sell the land or rent it out (inter-temporal transfer) and by this make a living either from the revenues generated by the land sale or from the land rent flows (Zhao and Wen, 1999).

Before the foundation of the People’s Republic of China in 1949 income inequality was relatively high in China (Rozelle, 1994). Roll (1980) calculates a Gini coefficient for income of 0.443 for overall rural China in the 1930s. Brandt and Sands (1990) estimated Gini coefficients with respect to income for three villages in northeastern Hebei in the 1930s of 0.346, 0.349 and 0.391 respectively and 0.46 for the province as a whole. In the 1930s rural households in China derived a significant share of their income from sideline agricultural income such as weaving and spinning (Roll, 1980). Income earned by those sideline activities and a higher share of household laborers being involved in non-agricultural activities contributed positively to income inequality reduction. The marginal contribution of these variables to inequality reduction was lower than the negative impacts on income equality stemming from the amount of owned farm land or the amount of hired agricultural laborers (Roll, 1980). The land reform contributed to a decrease in local income inequality but did not address reasons and did not change inter-regional inequality (Roll, 1980). In addition, the rural population received a dividend from the abolition of land rents (at the expense of the former landlords) and changes in the tax system (Roll, 1980).

Before the revolution in 1949 most agricultural taxes were related to the amount of land owned or farmed and tax collection was in the responsibility of provincial governments. The tax system was regressive; the higher the amount of taxed items the lower the tax rate. In 1951/52 a progressive tax system based on per capita crop income was introduced which helped in reducing inequality in overall household incomes (Roll, 1980).
3.3 Collectivization

This section reviews the main features of the period of a collectively organized agricultural production system in China to build the basis for discussing institutional changes that occurred during the reform of the sector (see chapter 3.4).

Hartford (1985) provides an overview of seven principles that have been the basic characteristics of the collectivized agricultural production system in rural China from the beginning of the collectivization in the 1950s up to the structural reforms of the agricultural production from 1978 onwards:

1. Every kind of (quantitative) allocation of material inputs and distribution of monetary funds between all levels of production units was planned centrally. Production units at lower hierarchical levels had to deliver predetermined amounts of output to higher hierarchies.

2. All means needed for agricultural production have been owned collectively.

3. The production was oriented at large scale. The production teams had to fulfill pre-determined production plans and worked on relatively large and unified fields.

4. Based on a system of work points every member of the production team received its income according to a unified distribution system based on the net income of the production team.

5. Ideally every commune provided all services to its members so that they were integrated in a system that provided consumption goods and social services but also organized the political life among the commune members.

6. All people that were not able to take care for their well-being themselves got provided all necessary goods and services to satisfy basic living, health and education needs under a system of welfare guarantees.

7. The rural population was assigned to specific production and exchange units (cells). It was aimed to keep those units as self-reliant as possible. Individuals required the permission of the unit before changing the location of residence.

Looking at these principles describing how the agricultural production was organized and was intended to be working, it is obvious that the system was lacking mechanisms that allowed for incentives for both, individual workers but also local decision makers to improve production and to use scarce resources as efficiently as possible. Lin (1988) explains that close supervision in agricultural production goes along with high supervision costs and therefore reduces the incentives to work as part of an agricultural production team. In addition, rural
labor productivity was very low due to relative low amounts of arable land per capita (de Janvry et al., 2005).

From the point of view of politics, the agricultural sector was not of first priority. It was considered to support the development of other industries and to provide support for urban development (Gale et al., 2005) and industrialization (Karplus and Deng, 2008). This was reflected in the socialist price system which set high prices for industrial products and low prices for agricultural outputs and via this mode of price setting lowered the real income of farmers (de Janvry et al., 2005).

But the socialist ideology was oriented to diminish inequality especially among the rural population (Rozelle, 1994). As Roll (1980) shows in his seminal assessment of income inequality development in China in the early 1930s and 1950s, rural Gini coefficients, with respect to income, declined from the 1930s to the 1950s. Putterman (1990) indicates that in the 1960s and 1970s there was hardly a change in intra-rural income inequality.

Because most social and health care services were also provided by the collective they were by this likely to contribute to equalization in well-being among the rural population. Therefore, Benjamin et al. (2005) argue that household’s well-being was less sensitive to household’s productivity during communism than it might have been from the start of the transition of rural China until now.

3.4 Policy changes during the transition and the development of market institutions

Over the last two to three decades the completely centrally planned and organized economic system has been replaced by an institutional framework in which a Party-state decides about the parameters that condition market forces (Lin, 2009). This process started between 1976 and 1978 as Chinese policy makers formulated higher levels of efficiency in production and (resource) allocation as important topics in economic policy (Krug, 1990).

1978 is often referred to as the starting point of opening reforms or structural change in rural China (Lin, 1988; Swinnen and Rozelle, 2006) due to the fact that in this year institutional changes, like the provision of incentives to individual households to increase production and some relaxations in the quota system started in Anhui province and later resulted in the HRS, that was gradually implemented in the other regions of China and formally accepted in 1981 (see an overview in Jia and Fock, 2007).
Due to the focus of the present work, the institutional frameworks regarding the use of land and the generation of income by rural households will be reviewed in this part. Beside national laws and provincial regulations the local institutional setup varies strongly. This is a major challenge especially for foreign researchers. Therefore the institutional framework is outlined based on how it should be according to national regulations, but if possible references are made to actual patterns and differences between different locations in Hebei based on own qualitative information.

One has to have in mind, that policies that have been formulated to explicitly address a specific, e.g. macroeconomic, topic implicitly also affect the development and distribution of welfare and income (Roll, 1980). For rural China examples for such implicit impacts could be adjustments in the foreign exchange rate system that occurred often in the 1980s and 1990s (Wang, 2004). Also China’s WTO accession influenced its terms of trade and changed relative prices between agricultural and industrial products. Carter and Zhu (2009) find evidence that the opening of China to world trade had a positive impact on those relative prices and therefore agricultural producers could be expected to economically profit from relative to industrial products higher rewards for their outputs.6 But also the decentralization of fiscal revenue raising and public spending (Zhang and Zou, 1998) can have an impact on rural (economic) development, for example with respect to public spending for health care and education. Between 1986 and 1995, public spending for education decreased from a share of 63.4% in Chinese overall public spending to a share of 45.6% (Zhang and Fan, 2004).

Even if it is argued that decentralization in general is enhancing the efficiency in revenue collection and spending, Zhang and Zou (1998) find for the period 1987 to 1993 a negative relation between fiscal decentralization and economic growth on provincial level. This might be due to the general political turbulence-

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6 As can be seen from Mundell’s (1961) discussion about optimal currency areas, flexible exchange rates based on national currencies work well for countries with high internal but low international factor mobility. Wang (2004) considers a Mundell-Fleming model as being applicable for the assessment of China’s real exchange rate between 1980 and 2002. He considers the opening of China’s trade, the elimination of price controls, the increased orientation towards markets and other institutional changes during the reform process as leading to a higher relevance of applying macroeconomic models developed to assess open economies (see Krugman and Obstfeld, 2004, for a theoretical discussion of related macroeconomic models).

7 According to Zhang and Fan (2004) public spending in China comprises expenditures for research and development, for education, and for the construction and maintenances of irrigation schemes, roads, electric power plants and grids and communication facilities.
es during this time. Zhang and Zou (1998) argue that a central level fiscal system can better support investments in public goods that have nation-wide positive externalities in societies that are at early stages of economic development.

In China land, as the core input factor for agricultural production, serves two main goals of policy makers. It is the basis for the country’s food subsistence and fulfills traditionally a social security function (Zhao and Wen, 1999). According to Lin (2009) land is perceived society wide as so important for food production and provision of at least some part of old age security, especially to the rural population, that this perception even outweighs positions such as the need of exclusive property rights, the principle of utility maximization and the request for fully functioning (land) markets.

The first sentence of Article 2 of the Chinese Land Administration Law (in force since 1 of January 1999) states, that:

“The People's Republic of China practices socialist public ownership of land, namely, ownership by the whole people and collective ownership by the working people.”
(National Development Reform Commission, 2010)

As a consequence of this, the agricultural land in rural areas belongs to the rural collective as mentioned in the 2nd sentence of Article 8 of the Land Administration Law.

“Land in rural and suburban areas shall be owned by peasant collectives, except for those portions which belong to the State as provided for by law; house sites and private plots of cropland and hilly land shall also be owned by peasant collectives.”
(National Development Reform Commission, 2010)

Or as Chin (2005) points out, the farmers’ collective nongmin jiti holds the ownership of the land but it is not clearly defined who the farmers’ collective is. According to the first two sentences of Article 14 of this law, there is the possibility to issue user rights for agricultural land. Land contracts should be concluded for a period of 30 years. But quite often land is found to be reallocated before the end of the official allocation period for example because of changes in the village population (Lohmar et al., 2001).

Article 3 of the Rural Land Contract Law of the People’s Republic of China (RLCL) explains that a contract system should be applied for entitling user rights of land in rural areas (MoA, 2010). But also in this law no clear definition of the composition of the collective economic organizations in the countryside is provided. This leads to difficulties in applying the law in practice. Who should decide how to allocate the land and to whom? According to Skinner et al. (2001) the responsibility for land use decisions lays mainly in the hands of province, county and town(-ship) decision makers. Chin (2005) states that at the basic ad-
ministrative level, the village, de facto the village leaders control the distribution of the land. This is partly confirmed by results of own surveys (Böber, 2008 and 2009) where farmers stated that there have been reallocations in villages beside official reallocations and without the need to reallocate land use rights due to correct for changes in the composition of the population in the villages. Such “out of turn” reallocations at village level, accepted or even arranged by town or province administration, quite often occur to change the legal status of land from “agricultural land” into “non-agricultural land” that is allowed to be used for e.g. infrastructure construction (Lin, 2009). Lin (2009) hints towards another conflict that arises with respect to land use rights, their allocation and the conversion of land between different purposes. Due to the hierarchical relationships in the Chinese political system there is hardly a possibility for rural (farmers’) collectives to claim their rights. So the state or urban administration can convert rural to urban land without the need to involve rural stakeholders in the decision process. The ordo-liberal principle of freedom of decision about private property (see Eucken, 2004) does not hold for the current conditions in the Chinese economy. Farmers, besides their re-granted responsibilities for agricultural production, still do not possess land titles or are not allowed to rent-out or rent-in land in some regions. But the transition from “a planned economy under the law of exchange value” to a “socialist market economy with Chinese characteristics” (Sachs and Woo, 1997) provided the rural population with more direct decision power over their agricultural production, off-farm labor allocation and by this ultimately also over their income and overall well-being.

Decentralization also took place with respect to the monitoring of environmental resources resulting in sometimes overlapping and not well structured responsibilities and funding sources (Rozelle et al., 1997). The degradation of natural resources directly affects human health but also increases human insecurity due to the uncertainty of the links between pollution and the future development of the living base (UNDP, 2008).

The introduction of the household responsibility system shifted the decision about household’s labor allocation from the collective to individual households. At the same time, the emergence of township and village enterprises offered employment opportunities especially in industrial production (Qian, 2000). So households that where endowed with more labor than needed for agricultural production practically got a chance to supply this surplus labor to off-farm jobs. Fan (1990) cites Lin (1987) who finds that the introduction of the household responsibility system as one major institutional change in rural China was responsible for 60% of the growth of agricultural production in China between 1980 and 1984, and for around 51 percent of the poverty reduction during the same time (Fan et al., 2004). Even with improved possibilities for rural households to
decide about labor allocation rural labor markets as such did not function perfectly in the 1990s (Benjamin and Brandt, 1997).

Since the opening policy started in China’s rural areas in 1978 the institutions and regulations for the agricultural markets and the price system were changed several times. Heerink et al. (2007) list at least three main periods or stages in the development of market structures in the rural areas. They see the first period lasting from the end of the 1970s till 1984. This period is characterized by the responsibility of the farm households to produce state mandated fixed amounts of agricultural products and by a state buying-up system with state fixed prices. From Šik (1968) one learns that such a centrally planned and controlled system seeking for equality gives more or less no incentive for individual engagement and productivity improvement. But Sen (1966) argues that Chinese leaders have been aware of lacking incentives and encouraged local political leaders to increase outputs by offering non-monetary incentives. He shows in his assessment of labor allocation in cooperative systems that even a system of centralized labor allocation decisions can lead to a Pareto optimal allocation of labor and a maximization of social welfare. Puttermann and DiGiorgio (1985) discuss several combinations of centralized and community level decision making and voting procedures about individually or collectively organized agricultural production. They find that democratic local choices about the degree of collectivity might be more efficient than centralized decisions and could increase social welfare of the local communities. If local communities are provided with the choice between individual household farming or agricultural production organized in a collective their decisions would be mainly influenced by the following motives: level of community control over land allocation, the equality in access to land and to how far the institutional parameters of the allocation decisions are defined in a democratic manner (Puttermann and DiGorgio, 1985).

Transactions costs, which are in general the costs of finding a contract partner, setting up a contract and enforcing agreements (North, 1990), are higher in a collective decision system (Berggren and Karlson, 2003) but this is not discussed by Puttermann and DiGorgio (1985).

Heerink et al. (2007) state, that the Chinese government readjusted the price system to encourage developments in the rural areas by rising prices for output. So it can be argued that the political decision makers were partly aware of the discouraging nature of plans, the negative impact of distorted rural-urban price systems and the low labor productivity (in rural areas) in a centrally planned economy. The policies applied in the second period between 1985 and 1993 seem to confirm this argument. According to Heerink et al. (2007) a dual price system was installed. This system focused on state mandated fixed prices for a state planned fixed quota that had to be delivered of every agricultural product.
to the state on the one side. On the other side farmers were allowed to sell above quota amounts for market prices. To raise the agricultural production the prices for products in the contract farming system were quite often increased. Qian (2003) also mentions the dual-track concept regarding prices that allowed farmers to sell (grain) production above the quota requirements to market prices.

Heerink et al. (2007) see 1994 as starting point of the third period. In the end of 1994 the former procurement system was again put in force for grain (Buschena et al., 2005). The motivation behind this re-installment was the promotion of grain production instead of producing cash crops as rapeseed or cotton. The reason for this behavior was to produce enough grain to reach self-sufficiency in grain supply in China (Chen, 2006). Because of this, state intervention into market processes remained persistent especially for grain.

With opening the market for food and also for housing in urban areas the policy makers lowered the barriers for the rural population to migrate to cities even beside the fact that they continued the *hukou* system (de Janvry et al, 2005).

At the beginning of the reforms possibilities for provincial and local governments to tax and collect fees for investment have been linked to locally generated revenues. At the same time the ability of the central government to redistribute funds between provinces was limited by putting a cap on the taxation of state owned industrial companies (Rozelle, 1994). Some local leaders responded to those changes by increasing the taxation of local industries to subsidize agricultural production (Rozelle, 1994). But in reality the tax burden on the agricultural population was not relieved. In 2002 the tax-for-fee reform started with the aim to sum up all local fees rural residents were confronted with in a single agricultural tax (Kennedy, 2007). But still this agricultural tax was a burden for the rural population. In addition the tax revenues to local administrations were lower than the revenues from the fees collected before. Empirical studies indicate that the lower revenues might have resulted in a less efficient provision of services, especially due to deficiencies in local transfer systems, and this might have negatively affected rural areas especially in the poorest regions (Kennedy, 2007).

To finally counterweigh discrimination against agricultural production by heavily taxing farm outputs directly or rural labor indirectly, e.g. by forcing households to provide it as an input to infrastructure construction, China started the abolishment of all central state and local agricultural taxes and fees in 2004 (Gale et al., 2005). By 2006 the agricultural tax was abolished (Yu and Jensen, 2009). In addition subsidy programs have been initialized to provide income support to rural households. Currently different measures of direct and indirect income support for farmers are applied at province and county levels (Gale et al., 2005). Some examples are fertilizer subsidies that lower purchase prices,
area related subsidies if households plant grain crops but also direct support if farm households invest in mechanization (13 billion Yuan in 2009 for agricultural machinery purchases; peopledaily, 2010). It is planned to reform this fragmented subsidy system so that farmers are only supported ones per year to stabilize subsidy flows (Chang and Zhang, 2010). With all these policy measures the Chinese government aims to solve the ‘San-Nong’ problem, which consists in the relatively declining income from farming in comparison to non-farm income and by this the widening of the gap between rural and urban income (Yu and Jensen, 2009). However, the average amount of subsidies received by every farm household was rather low (Gale et al., 2005). As Huang et al. (2011) state, in 2002 the central government provided subsidies to agriculture that were equal to only 0.007 per cent of the agricultural output. So it was questionable if these measures significantly increase agricultural and total income. Also the goal of stabilizing and securing grain production hardly seemed to be achievable with average payments of 10 Yuan per mu if grain crops are planted (Gale et al., 2005). The policies to support farmers changed radically since 2002. In 2008, 95 billion Yuan have been provided as subsidies for the agricultural sector (Huang et al., 2011). Around 82 per cent of this amount were made up by grain subsidies (liangshi butie) and input subsidies (nongzi zonghe butie). Huang et al. (2011) conclude that the subsidies do not lead to any distortions in farmers’ decisions regarding the amount of area of land sown with grain or in the decisions about the use of fertilizer. So, subsidies can rather be seen as income transfers to rural households than as influencing the grain production area and consequently the grain output. But such a type of income transfer (unearned income) might have distorting effects on the labor time allocation decisions of the households regarding different agricultural or non-agricultural occupations, as will be assessed in part 7 of this work.

The second most important (non-labor) production factor for agriculture, besides land, is water. Because production in Hebei province heavily depends on irrigation and almost 80% of irrigation water originate from groundwater (Zhang et al., 2008), the distribution and management of water is crucial for agricultural producers and the society as a whole. The importance of a reasonable management of the production of water is increased in face of declining groundwater resources all over North China. Water provision and distribution is regionally organized in several ways. In the period of de-collectivization private ownership of tube wells significantly increased (Zhang et al., 2008). Major characteristics especially of the markets for groundwater in North China are that they are informal, localized, unregulated and impersonal (Zhang et al., 2008). Water is provided to farmers sometimes from the village, sometimes from a farmers’ association but also from private entrepreneurs. Usually, the latter ones are local
residents that privately invested in digging wells and building tube infrastructure (Böber, 2009). So even though de jure water is the property of the people (Zhang et al., 2008) de facto water management institutions are not transparently organized and lack efficiency (Varis and Vakkilainen, 2001) and it is quite likely to observe that no one in the different administrative bodies that are involved in ground water management seems to assume him- or herself being responsible for the implementation of existing laws and rules (Zhen and Zoebisch, 2006). In addition Zhen and Zoebisch (2006) explain that there are no monitoring and reporting methods included in the existing regulations for ground water management. Although the price of water seems to be reflecting the actual costs for ground water pumping (Zhang et al., 2008), price distortions might arise in the water market as soon as state interventions bias the prices for energy.

3.5 Farm households in China and Hebei

3.5.1 General overview

In China more than 200 million farms exist (Swinnen and Rozelle, 2006). However, one has to bear in mind that the concept of a farm in China differs from the concepts of farms in Europe, the U.S. but also in other parts of Asia. For example McConnell and Dillon (1997) distinguish six basic farm types for Asia (excluding China):

Type 1: Rather small family farms with subsistence agriculture
Type 2: Farms that are still small family farms but partially commercialized
Type 3: Small family farms that are independent and specialized
Type 4: Small and dependent family farms (where the farm family does not possess the de facto power to make decisions)
Type 5: Large family farms that are commercialized and specialized
Type 6: Commercial farms, which are managed by hired personnel and mainly focusing on mono-cropping systems

During the transition, most of agricultural land was transferred via the use right system to farm households, so that the majority of arable land in China still is cultivated by family farms on a small scale (Swinnen, 2009).

At present the actual size of an average Chinese (family) farm is rather small in comparison to the size of production units during commune time. There are also new developments regarding the participation of agricultural households in
businesses other than agricultural production. In 2008, around 14.8 million households in Hebei are classified as rural household, which equates to around 70% of all households in Hebei (Hebei Statistical Yearbook 2009 available at ACMR, 2010).

Sandrey and Edinger (2009) summarize, that it is not easy to define what is meant by a small farm or a small-holder farm household in China. Elements of the former communal system can still be found in the institutional setting in rural China. So, Sandrey and Edinger (2009) refrain from the concept of clearly defined individual farm households but assume that it is more appropriate to use the concept of farming cooperatives to describe the linkages between rural households. In the present study, the farm households are considered to be individual decision units, even if they sometimes depend on community level cooperation like regarding the exchange harvesting machinery.

As Zhu (1991) explains, the term ‘peasant household’ is usually applied to differentiate between rural households and households of workers and state employees. De facto, almost every rural household can be considered as a unit of agricultural production or farm household. This is mainly due to the fact that at least in the villages assessed here, almost 96% of households possessed use rights for agricultural land and devoted at least some hours of work to the allocated plots. In addition the household head is usually classified as ‘rural’ according to the hukou system. Also Chen et al. (2004) state, that Chinese households are classified as rural as long as they engage to some extent in agricultural production no matter if they devote household labor to non-agricultural occupations.

Wang (2007) provides a slightly changed definition of Nakajima’s (1986) definition of the farm household that is applied here. Instead of behaving strictly profit-maximizing the rural farm household is defined as “semi-commercialized” rural production unit that uses a mix of purchased input factors and input factors available from the household’s endowment, especially family labor and land (Wang, 2007). The output of the farm household’s agricultural production is partly consumed by the household itself and partly sold. The distinction between own consumed and marketed outputs is relevant especially for the discussion of income and poverty trends.

### 3.5.2 Part- and full-time farm households

The assessment of differences between full-time and part-time farm households is one of the major aims of this study. Poverty indices are calculated separately for the sub samples containing full- and part-time farm households respectively.
in chapter 6. In chapter 7.1 separability is tested for part- and full-time farm households and in chapter 7.3 an ex-post analysis of intra-sectoral change with respect to trends in farming population and farm size is applied. Therefore it is necessary to distinguish different types of rural households with respect to part-time and full-time farming activities.

Different concepts can be used to define part-time and full-time farming. One group is based on the sources of income and the other on the allocation of working time to on-farm and off-farm activities. According to Ahearn and Lee (1991) there are advantages of both concepts. The income-based concepts are useful in cases of yearly collected data without panel data character and have the advantage that they display which proportion of the household income is derived from farm and off-farm work. Income-based concepts offer a good possibility to analyze the diversification abilities and strategies of rural households. In contrast to these income-concepts the time-based concepts define part-time farming in a different way. Time-based concepts allow detecting the activities to which the household in total or the individual household member devote their available working time. The disadvantage of this concept is the difficulty to draw conclusions on the contribution of a given activity to the livelihood and the well-being of the household based on the amount of hours spent on that activity. This is particularly difficult because of a high variation in the required amount of working time for different types of farm products (Ahearn and Lee, 1991). As Fuller (1991) states there is the potential for an operator bias if only the time allocation or income sources of the main operator (often the household head) are considered. An operator’s labor could be substituted by family members so that the operator can work part-time off the farm and the farm as such could still be counted as full-time farm. Following Croll (1994) the household in China is seen as an economic, social and political unit that determines production and consumption and utilizes family labor, land, capital and other resources. Furthermore she describes the most typical form of a Chinese household as one consisting of 4-6 members belonging to two to three generations (Croll, 1981). Although family per economic definition of input factors may not be regarded as an “input factor” it could well be argued that the ties and specialization inside the family and the social functions of a family provide a necessary basis especially for the functioning of a rural economy. Chinese farmers that devote some part of their labor time outside the own agricultural production are officially considered to be part-time workers rather than being classified as part-time farmers as in other countries (Zhu, 1991). So, according to Zhu (1991) the terms ‘peasant household’ and ‘farmers’ families’ are used interchangeably in China when referring to a rural household that is involved in farming.
The interest to look at part-time farming activities arises from the fact that part-time farming can be seen as one part of many problems discussed in relation to agriculture (Hildreth, 1991). Zhou et al. (2001) state, that part-time farming is likely to evolve in societies or economic systems where land is a scarce resource and distributed equally and the transfer of land or land use rights is restricted. Some of the problems listed by Hildreth (1991) are of importance for discussing part-time farming in China. One of these problems is the distribution of income within the agricultural sector but also between agriculture and the other sectors. As can be seen in Chapter 6.2.1 there is rising importance and an increase in the share of income components derived from non-farming activity in the income composition of rural households in Hebei. Other aspects discussed are the impacts of part-time farming on land use patterns (Hildreth, 1991), land-use intensity (Suh, 1985) and the intensity of fertilizer and pesticide use among part-time farm households (Phimister and Roberts, 2006).

Rawski (1972) mentions, that the holding of multiple jobs was a strategy of peasants in ancient China to achieve a higher standard of living by complementing agricultural production with craft work and retail activities. Croll (1994) sees the development of part-time farming as a phenomenon that was new for rural areas in China as it became obvious in the 1980s. It arose with rising numbers of Chinese farmers working full-time as wage earners outside the farm. In parallel to the argumentation of Chaplin et al. (2003) it could be assumed that households’ diversification of production activities in present China is a process of decreasing dependence on agricultural activities and that the strategy to diversify farming activity can contribute to rural development. De Janvry et al. (2005) find positive spillover effects from non-farm activities to the agricultural production. So part-time farming is seen as a way for rural households to compensate for failures in credit or insurance markets that would increase the risk to well-being of the household if agricultural income is fluctuating strongly due to fluctuations in production as well as due to in- and output price fluctuations.

In the classification of part-time and full-time farm households of Brosig et al. (2009) every household that allocates all family labor to on-farm production is considered as full-time farm household. Households that allocate some or all of the family labor to off-farm occupations and still farm any amount of land are classified as part-time farm households. This definition of part- and full-time farm households is applied in chapter 7.3 for the assessment of the persistence of those farm types over the period 1986 to 2002. The choice of this definition allows consistently adapting the model of Brosig et al. (2009) to the recent study. For the income and poverty assessments (chapter 6) farm households are defined as being part- or full-time farm households based on the information provided in
the data set about the self classification of farm households as to which activity
they devote their labor time.

Both definitions above refer to the distribution of labor time to distinguish
between part- and full-time farm households. As already discussed (and further
elaborated in chapter 6) a large proportion of farming was and still is subsistence
agriculture. If agricultural products are not marketed but consumed by the
household itself an income based classification of farmers would likely under-
state the share of farm income in total income if a large share of the products is
not sold in markets but consumed by the household. So, more households might
be classified as part-time farm households than in the case where a labor time
based classification is chosen.

In chapter 7.2 households are grouped in four different labor market partici-
pation regimes that are defined by using the information about the allocation of
family labor time combined with the information if non-family labor is em-
ployed by the household.

3.6 Alternatives to small scale farming?

This part shortly addresses the question, if there is the possibility to adopt an
institutional structure for rural Hebei province that allows the creation of larger
and less scattered farms. The small size of the farm “enterprise” can especially
be a problem for agricultural households when they want to market their produc-
tion since their market power is rather low compared to the market power of
middlemen or wholesalers.

In North and North-East China (e.g. Heilongjiang province and Inner Mon-
golia Autonomous Region) farm sizes are larger than in Hebei because the popu-
lation density is lower so that family based farms cultivate more land. Besides
family farms, the state operates large farms which can exploit economies of
scale regarding their production and have market power also with respect to the
processing and marketing of their products. The World Development Report
(WDR) for 2008 presents an example of a marketing cooperative for water mel-
ons. This kind of farmer cooperative is seen as a measure to enable small farm
households to get linked to the supply chain.

As long as land use rights are distributed based on population size to guaran-
tee equality among the rural population in a specific location and a large share of
population remains classified as rural, it is obvious that farm size will remain
small in Hebei. Voluntary and market induced (as opposite to mandatory
state/policy forced agglomerations) farmer associations with appropriate mecha-
nism to control individual members’ behavior could be a feasible way to over-
come the disadvantages of small farm entities especially with respect to their low market power compared to agricultural input suppliers or wholesalers. Because no representative data about such institutions are available in the examined data set those possibilities of overcoming potential inefficiencies of family farms in Hebei due to scale inefficiencies will not be further discussed in this work.

In terms of production efficiency farms in Hebei do not have to be explicitly larger as long as rural institutions allow for the application of improved technologies or the efficient use of labor. As Schultz (1964) argues, changes in farm size, either farms getting larger or smaller, may be a consequence of a modernization process in agriculture but are not a pre-condition for modernization. Small farms can be efficient if they are provided with sufficient knowledge about farming technologies and practices and if the household laborers are adequately educated. So it is rather a question of factor proportionality instead of asking for the “right” size of a farm (Schultz, 1964).

3.7 Summary

This chapter provides the background information about the development and recent state of rural institutions in Hebei province and reviews different approaches to define part- and full-time farming.

After centuries of private land ownership and market based agricultural production systems the aim of policy during the communist period was to reorganize the rural institutions to distribute land more equally and by this also to achieve a lower inequality in income and well-being among the rural population. The organization of farms into collectives and the introduction of non-market price systems lowered the incentives for individual agricultural workers but also for the collective production units to produce sufficient amounts of agricultural outputs (especially grain) as efficiently as possible. Based on the household registration system around 70% of all households in Hebei are currently classified as rural. A farm household is defined in this study as an agricultural production decision unit that may follow the motive of profit-maximization (among others) and acts as a semi-commercial unit that is self-sufficient to some extent. Farm households are classified into part- and full-time farms based on the allocation of household family labor time to farming or to off-farm activities instead of distinguishing farm types based on the shares of income derived from agricultural production and off-farm activities. Different classifications of farm households will be applied in the following chapters.
Exchange institutions that function well should contribute to an efficient allocation of production factors and should also contribute to prices and income values that are determined by the market rather than the state. The transition of an agricultural production system is a stepwise process that is fueled by internal and external drivers and results in the change of incentives of decision units in the agricultural sector. During the stepwise transition of institutions in rural China more rights and responsibilities were assigned to the agricultural households. Many of these households were not limited anymore in their possibilities to earn income and to allocate their family labor to only agricultural production. Instead, the share of part-time farm households rose. Already in ancient China a mixed system of agricultural production and the provision of family labor off the farm was considered as improving the household’s well-being.

Another finding of this chapter is that the current system of rural institutions differs strongly within Hebei. In addition to national and provincial laws and rules, village and community level differences with respect to agricultural production systems are observed. Those differences are included in the empirical assessments in chapters 6 and 7 by the use of village dummy variables. Further information to reflect differences in institutions are not available.