8 Conclusions

It was the aim of this study to assess the development of rural institutions, households’ well-being and the labor market allocation decisions of farm households in Hebei province between 1986 and 2002.

General shortcomings of this work are the limited availability of individual and village level data, which restricted the power of the application of panel data models. There exist also some problems regarding the quality of the secondary data set like the use of the same IDs for different observations. Methodologically the study only applies static models. So, future research could focus on the application of dynamic models to assess agricultural households’ labor allocation behavior.

Overall the assessment resulted in several implications for policy makers and further research which are presented separate for the specific topics addressed in the analysis chapters 6 and 7 in the following concluding sections.

Poverty development

With the first research question it was asked how poverty levels developed in Hebei province between 1986 and 2002 and it was hypothesized that absolute poverty declined over this period.

It is shown in this study that well-being improved and less people are considered being poor in rural Hebei province in 2002 than in 1986 besides the fact, that rural households might be more sensitive to fluctuations in productivity when comparing the new market oriented institutional systems with the former communist one (Benjamin et al., 2005). Although absolute poverty decreased in Hebei over this period, 1986 to 2002, the poverty decomposition indicates that if rural households in Hebei are poor then two thirds of poverty is explained as being chronic poverty. Using the approach developed by Duclos et al. (2008), transient poverty contributes less to total poverty in 2002 than estimated by Jalan and Ravallion (1998). The latter find, through their analysis of poverty in China over the years 1985 to 1990, that half of the squared poverty gap and more than one third of the mean poverty gap is found to be transient poverty. From this part of the analysis it can be concluded that the choice of instrument really matters when measuring the relative importance of chronic and transient poverty. For political and social decision makers it is worth to notice the difference in results of both methods. Depending on the poverty decomposition method used there are differing suggestions regarding policy programs to identify rural poor in China. The question is if policies for poverty elimination should
concentrate on measures to improve permanent well-being of the rural households or if they should be oriented to lower the exposure to transient poverty or the exposure to uninsured income risk as proposed by Jalan and Ravallion (1998). It is recommended that investments in measures to reduce chronic poverty should be continued, since they proofed to be successful over the last three decades. In addition market oriented instruments such as crop insurances should be implemented to reduce severe fluctuations in agricultural income due to bad harvests and by this lower the probability that rural households experience periods, during which they can not cover their living expenditures from own production and income.

Poverty levels are more unequal between different villages. This means that poverty levels are more different when comparing villages with each other instead of comparing the level of poverty of households within one village. So the location of the household strongly affects its well-being. Therefore measures to prevent inequality in poverty should focus on the development of institutions at the village level (Benjamin et al., 2005) or community development (Liu and Sicular, 2008). But poverty levels are also more unequal among households which differ in their labor market participation. The impact on inequality is lower for households that are stronger involved in non-farm activities. This indicates that supporting rural families in diversifying their labor allocation might also be a way to prevent inequality in well-being in a specific location.

For future research, a more comprehensive data set of the RCRE including village, household and individual level information for the period 2003-2009 could be used to better distinguish between personal, family and location characteristics in explaining differences in poverty. Information about the development of market prices for grain or other agricultural inputs could be included into further poverty assessments because Benjamin et al. (2005) show that strong fluctuations in market prices for grain also let poverty rates vary strongly in rural China.

**Income decomposition**

Two of the research questions were devoted to the composition of agricultural households’ income and the inequality in income among households.

It is found, that non-agricultural income contributes stronger to income inequality among rural households in the same location than income earned from agricultural production. So, even though on one side providing individual farm households an insurance against income fluctuations due to unforeseen yield and price changes for agricultural outputs by diversifying income, on the other side, non-agricultural income also contributes to differences in well-being especially
within the same village. Currently the inequality increasing effect of non-farm income on household income inequality is stronger than the risk-insurance effect, which would make incomes between households more equal. There are several reasons why households are unequal with respect to their off-farm income. It can be assumed that off-farm wages are higher the better qualified laborers are. Individual characteristics and abilities of household members would therefore be a reason why income is distributed unequally. As discussed, inequality in qualification but also in income can be beneficiary for the whole economy, since it incaourages the laborers to compete for higher incomes and is by this promoting economic development. The approach to equalize income of rural laborers during the commune system was a failure because it provided no incentives to the individual workers to put more effort into work. Recently policy makers are concerned about rising inequality in well-being especially between rural and urban areas. If the rural areas can not keep speed with well-being improvements in urban areas then migration (legally or illegally) takes place, which challenges urban work and social institutions systems.

Because income inequality is mainly explained by individual or household characteristics, it should be addressed at this level. To some extent, educational differences could be balanced by providing equal schooling to children. Currently, education expenditures differ strongly between regions in China because provincial and local governments are responsible for education and they are likely to distribute financial resources for education depending on the local development stage (Liu and Sicular, 2008). But because also individual physical factors like for example differences in the nutrition of children (Luo et al., 2009) have an effect on human capital and future abilities to participate in highly productive occupations, it is not possible to reach full income equality by just providing education. Therefore, policy measures that address e.g. nutritional deficiencies of children, like the provision of information about linkages between sufficient nutrition and children’s abilities to parents and teachers or the provision of sufficient meals, especially in boarding schools, have to be applied to equalize rural well-being in the long run. A better balanced nutrition might help especially poorer groups of the rural population to be able to increase their knowledge and skills. Up to now it was a policy aim to increase the well-being in rural areas in the sum, but more care should be taken on the distribution of well-being.

However, any measure to equalize income should be implemented with great care because equalizing income among a population could also decrease incentives to be more productive, as already discussed in the theoretical part of this work. In consequence, non-market measures (subsidies or other income support) to equalize income among the rural population might also be a danger
for overall economic development of rural areas in Hebei especially compared to urban areas. During the period of the centrally planned socialist economy China already experienced problems arising from low incentives to work (efficiently), because of central redistribution. Policy makers should be aware that centrally planned measures of income support for the rural population reduce the possibilities of the rural economy to allocate production factors, in the present case especially labor, in the most efficient way. The agricultural and non-agricultural production in Hebei would not only be not Pareto optimal but also the potential to (re-) adjust input combinations to increase the agricultural output in a sustainable manner could hardly be fully utilized.

Separability of labor demand and supply

As hypothesized, separability is rejected for the data set at hand so that it can be concluded that labor market constraints existed in rural Hebei during the analyzed period. In contrast to Bowlus and Siclar (2003) and Kuiper (2005), no significant difference between households that are full-time farm households and those providing family labor for off-farm purposes is found. So, labor market constraints affect the two distinguished household groups to the same extent. Wang (2007) also confirms non-separability regarding households’ decision to supply family labor off the farm and to hire agricultural labor instead.

Future research should further assess whether differences in separability of household decisions are found by including wage variables available, individual characteristics (age, education, skills) and exact (hourly) labor occupations, also for different agricultural activities such as manual work versus supervision activities, of each household laborer into the model.

Labor market participation of rural households

Based on the research questions which factors determine the labor allocation decisions of the assessed agricultural households it was hypothesized that education and the provision of specific training might enable laborers in farm households to better devote their labor to farm or off-farm occupations.

The results presented in section 7.2.3 confirm that rural households in Hebei are more likely to participate in off-farm labor markets if household members are better educated and receive training to acquire special skills. Better education provides better access to usually higher paid jobs. The highest return to education is found with respect to high schools. According to the statistical yearbook of Hebei, in 2008 around 30% of all school-age children enter institutions of higher learning, hence are enrolled in schools beyond senior secondary
schools (ACMR 2010) but this number includes rural and urban children. For rural areas it can be assumed that high school enrollment rates are lower than for urban areas (Zhang et al., 2002). Hence, infrastructural investments in high schools in rural areas should be increased (see also Zhang et al., 2002) and high school enrollment rates of children in rural Hebei should be improved, to empower children to move out of agricultural production in their later work life. So, this positive externality of education should encourage local and central governmental bodies to invest in schooling, despite the ongoing debate about the decentralization of revenue raising and spending from the central to the provincial and even local administrative level (Zhang and Zou, 1998). Providing financial support to enable rural children to participate in higher education was also recommended by Liu and Sicular (2008) and would help to improve off-farm labor market participation of households in rural Hebei. Investment in the rural areas in Hebei province and in the agricultural sector should not only be seen as capital investment or money transfer. It is the investment in skills and knowledge that helps facilitating the transformation of agricultural traditional labor intensive production systems to modes of production that require less labor and by this offer the chance to allocate labor to industry and services (Schultz, 1964). Also Wang (2007) argues that improvements in education are likely to increase the heterogeneity among the rural labor force and by this encourage farm households to supply better educated family labor off the farm and to hire more farm labor as long as the marginal off-farm income is equal or higher than the marginal costs of hired labor. If policy makers in the future want to improve the possibilities for rural labor to migrate, then investment in human capital is one promising starting point.

It is found that unearned income (TRANFERS) reduces rural labor supply to non-farm agricultural activities. This confirms the conclusion of the income inequality assessment, that subsidies to increase rural household incomes need to be handled carefully. In the short run, an increase in income might satisfy people but might as well reduce their labor time spent in off-farm activities. Consequently, the respective off-farm labor productivity might decline due to a loss of work specific knowledge over time. So in the long run, a permanent and even increasing governmental income support, for example in the form of per area subsidies, might have a negative effect on the off-farm income earning potential of rural laborers and by this widen the inequality gap between urban and rural areas in Hebei. This result is very important considering current agricultural policy approaches of providing subsidies that are aimed to increase rural households’ incomes. Even if per area subsidy for sowing wheat might provide income to the farmers in the short run, it discourages them to participate in off-farm labor markets. This was also confirmed by farmers who explained that they
worked less outside the village after they received a fixed amount of Yuan per area land sown with wheat (Böber, 2009). They did not only reduce the labor supply to off-farm activities (less rural to urban labor migration) but they also reduce their efforts regarding agricultural production. So, wheat fields of those farmers showed a higher proportion of weeds, since weeding is a relatively labor intensive activity in wheat production in Hebei. The result is that the transfer (per area subsidy) that was earmarked as a contribution to increase the wheat production, was considered by the farmers as a kind of lump sum income transfer that they did not necessarily use for agricultural production purposes such as investment in mechanization. The farmers are aware that they are not monitored regarding the output of wheat.

For further research it would be especially interesting to use the most recent RCRE data (2003-2009) for investigating which impacts the mentioned changes in the agricultural tax and subsidy system had on off-farm labor market participation or labor supply decisions of farm households in Hebei. Since recent years, the RCRE survey also collected information on all individuals in the household. So, it would be interesting to apply multinomial models to assess the determinants of individuals’ labor market participation as done in de Janvry and Sadoulet (2001) or to analyze more possible labor market participation regimes as done in Benjamin and Kimhi (2006). If possible, this data should also be used to assess the impact of seasonal effects or the composition of family labor in comparison to the composition of hired labor (Deolalikar and Vijverberg, 1987) on the labor allocation decisions of rural households.

The power of the chosen model to explain the labor allocation of the assessed households could be improved if additional information about the characteristics and extend of land rental markets could be included as well as information about the village level wage and unemployment rates. That information is available with the village level questionnaire of the RCRE surveys.

**Persistence of farm structures**

Regarding the persistence of the decision to be either a part-time or full-time farm household the hypothesis was that the longer the farm household remained in a specific state the less likely it will be, that it changes to the alternative state. It is evident that farm households frequently supply (some) family labor outside the own farm. So, there is indication that secondary and tertiary labor markets are accessible. But a change in farm regime is less likely to happen the longer the household remained in the full-time farming state. This important insight should fuel programs that increase the degree of specialization in agricultural production so that the knowledge of experienced agricultural laborers is improved.
kept and is used to improve production efficiency. The existence and creation of off-farm employment possibilities might lead to a lower amount of rural labor fixed in agricultural production and might also increase overall household income and reduce poverty. But the land market restrictions might still be a reason that hinders this labor specialization process by keeping farm sizes small.

In comparison to the study of Brosig et al. (2009) the effects from the existence and intensity of land markets could not be assessed here. Because it was found during stakeholder interviews in Hebei (Böber, 2009) that the de facto regional and village level institutional set ups regarding land use and land renting differ between locations, it would be valuable to include village level land use rental patterns into the analysis of household’s choice between full- and part-time farming.

For further assessments of the determinants of either full- or part-time farming persistence and for explaining which persons are more likely to be either a specialized agricultural or non-agricultural laborer, it is necessary to analyze individual level data about labor market occupations, as already discussed. Also the inclusion of the amount of income earned by individuals from different sources could be a promising variable to explain farm structures. Even if panel data on individual household members are available it might be difficult to assess individual preferences and tastes that are responsible for the choice to be either full-time or part-time involved in agricultural activities.

The institutional system in rural China in general, and Hebei in particular, is still subject to policy induced changes also due to the complexity of differing local economic and environmental conditions even within one province. Even if China is not a fully competitive market economy one could follow the constituting principles of economic policy formulated by Eucken (2004) and argue that the institutional or the policy framework should be kept stable for some time to allow economic agents, and especially farmers, to adjust their behavior to changing institutional conditions. For specific crop, per area or fertilizer subsidies to show their success or failure it might take at least two or three cultivation periods until farmers adjust their sown area or fertilization practice. That agricultural and social policies change and that those adjustments happen in response to changing world market or environmental conditions or the increasing inequality among societal groups is not a negative development as such. But policy makers should give the agents the time to react to the adjustments.

As the development in rural China since 1978 has shown, decentralized approaches to adjust rural institutions can be successful in improving the income and poverty situation of rural households, mainly because a central authority can hardly possess full information about the local requirements, e.g. of the labor market. Therefore, it might be beneficial for the future economic development
of Hebei’s rural economy to allow local decision makers to adjust the institutional framework (e.g. regarding the distribution of land-renting and water rights) to their needs. Such a decentralized course of action might also be better suited to find location specific solutions for the increasing environmental problems (e.g. nitrate leaching, declining groundwater tables) caused by the intensive agricultural production in Hebei and the North China Plain. Even if the negative externalities caused by environmental degradation affect usually more areas than just the region where the environment is degraded the measures to reduce these negative effects have to be adjusted in a way that preventive measures are accepted by the agents in the region where the negative effects originate from.