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Discussion Paper No. 01/2006

**Land property, tenure security and credit
access: a historical perspective of change
processes in China**

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Policy, University of Hohenheim

**Forschung zur Entwicklungsökonomie und -politik
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Discussion papers in this series are intended to stimulate discussion among researchers, practitioners and policy makers. The papers mostly reflect work in progress. This paper has been reviewed externally by Prof. Dr. Gertrud Buchenrieder, Institute for Agricultural Development in Central and Eastern Europe, and internally by Prof. Dr. Franz Heidhues, Institute for Agricultural Economics and Social Sciences in the Tropics and Subtropics (490a) and Prof. Dr. Erwin Reisch, Institute for Farm Management (410b).

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Abstract

The North China Plain is the country's granary: most of wheat and maize is supplied by this region in the northeast of China. Intensity of agricultural production has risen sharply in the last decades and the negative environmental effects like water scarcity, salinization and nitrate contamination have been widely acknowledged. In the wake of the country's rapid economic development it becomes at the same time more and more urgent to narrow the gap between the well-being of the urban and rural population.

In order to better understand the paths that lead to this present dilemma, this paper provides a historical overview of the development of the land and water markets and the rural financial system. It highlights the linkages and reciprocal restraints between these three sectors and gives some conclusions and policy recommendations on how to proceed in order to further a more sustainable development in the North China Plain.

Apart from literature review, data from an original farm household survey, conducted by the authors, is used to substantiate the arguments put forth in this paper.

Keywords: North China Plain, property rights, rural finance, sustainable development.

Land property, tenure security and credit access: a historical perspective of change processes in China

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1 Introduction

The purpose of this discussion paper is to provide a historical overview of the development of agriculture in China since the beginning of the reform era with emphasis on the North China Plain (NCP) and the linkages between land and water rights and the farmers' access to rural financial services. Today, the NCP is characterized by relatively high yields of winter wheat and summer maize and high, though inefficient use of fertilizer and water. Hence, the sustainable development of current agricultural practices is the overarching theme of our research project.¹

One common hypothesis in development economics is that more secure property rights to land would enhance the sustainability of resource use by providing an incentive to maintain soil fertility and the access to credit by allowing farmers to offer their land as collateral. However, the mortgage of arable land is prohibited in China.² At large, farmers merely have more or less secure land use rights, but not the full bundle of property rights.

Still, there are some obvious linkages between land and water use rights and credit access that deserve to be looked at. First, longer-term land use rights are likely to increase the incentive to make investments for enhancing the productivity of land and hence increase the (effective or potential) demand for credit. Second, financial institutions might see tenure security as a signal for the farmer's ability to repay a credit.

The paper is organized as follows: section 2 introduces the NCP as an agricultural region and presents preliminary results from an original survey of 337 farm households conducted in five locations in the NCP in Spring 2005.³ Section 3 reviews the political system of China starting from the national level down to the local level. Sections 4 to 6 introduce land, water and rural financial markets, respectively. As a synthesis, section 7 highlights the nexus between these three sectors and gives policy recommendations for improving their performance with the focus on sustainable development. The last section concludes.

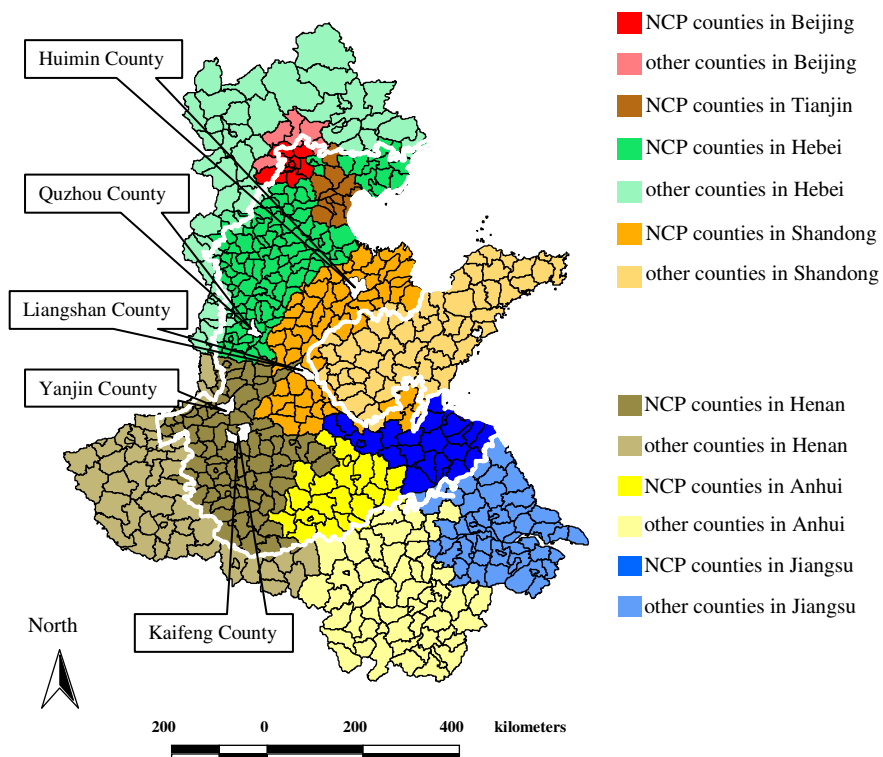
¹ The authors' research topic is embedded in the International Research Training Group of the University of Hohenheim and China Agricultural University, entitled "Modeling Material Flows and Production Systems for Sustainable Resource Use in the North China Plain" and funded by the German Research Foundation (DFG) and the Ministry of Education of the People's Republic of China.

² See Article 37 of the Guarantee Law of the People's Republic of China (PRC 2000a) for further information.

2 Agriculture in the North China Plain

The North China Plain mainly spans across Hebei, Henan and Shandong Province and parts of Beijing, Tianjin, Anhui and Jiangsu Province (Figure 1). With a size of 320.000 km², a population of 200 million people, a 50% share of total Chinese wheat production and 33% of Chinese maize production, respectively, this agricultural region is undoubtedly China's granary (Kendy *et al.* 2003).

Figure 1: The survey counties in the North China Plain



Courtesy of G.Bareth (BMBF-Project); the thick white line indicates the boundary of the NCP.

Figure 1 shows the location of the five survey counties, which were purposely selected with the focus on good spatial representation of the NCP and accessibility. Within each county, two townships and within these, two villages each were selected. Within each village, around 17 farm households were randomly chosen for interviews. This resulted in a total sample size of 337 households. An attempt was made to choose villages within certain clusters focused on our research questions. Therefore, our sample cannot claim to be truly representative for the research area.

³ IRTG "Sustainable Resource Use in the North China Plain", Field Survey: Spring 2005.

Table 1 gives an overview of the cropping patterns found in the survey counties. While the double cropping of winter wheat (October to July) and summer maize (July to September) constitutes the characteristic cropping pattern in the NCP, one can find a multitude of variations of this pattern, as Table 1 shows.

Overall, 64% of sampled farm households practice on at least one of their plots the conventional winter wheat and summer maize double cropping system, but the occurrence of this standard pattern differs widely between the survey counties. Intercropping and relay cropping⁴ of winter wheat with other, higher value crops is widespread, which inevitably reduces the area of grain production. Peanuts are an important alternative summer crop in Kaifeng and Yanjin county, while cotton is prevalent in all survey counties, but predominantly in Quzhou and Huimin. Cotton, which is sown in April, is occasionally planted in between the rows of winter wheat (relay cropping) or intercropped with maize but frequently also constitutes the sole crop on the respective plot. The latter option, the single cropping of cotton, is particularly widespread in Huimin and Quzhou county, where 76% and 87% of farmers, respectively, had in 2003-2004 at least one plot planted exclusively with cotton. On average, those farmers who practiced single cropping of cotton in Huimin and Quzhou devoted 35% and 41% of their total farm land, respectively, to cotton cultivation.

Finally, soybeans and water melons have some importance in Liangshan, and the latter also appear in Kaifeng and Huimin. A range of other crops, like garlic, grapes and fruit trees are of relevance in some of the survey counties, though their appearance is then, astonishingly, very clearly restricted to single villages.⁵

⁴ Relay cropping refers to the planting of a succeeding crop in between the rows of a preceding crop, while intercropping is the cultivation of two or more crops simultaneously on one plot.

⁵ Whether this extreme localization of production is, partly, still a remnant of the era of the People's Communes (see section 3) seems to be a worthwhile question for further research.

Table 1: Diversity of cropping patterns in the survey counties

County	Occurrence of crops or cropping patterns, 2003-2004 growing season (% of sampled households)*												
	winter wheat	summer maize	cotton	peanut	soybean	water melon	wheat & maize double cropping	wheat & cotton double cropping	maize & cotton double cropping	wheat single cropping	cotton single cropping	maize single cropping	wheat, maize & cotton triple cropping
Kaifeng	99	55	19	48	0	16	24	10	0	28	3	28	6
Huimin	87	77	85	0	0	3	54	3	0	16	76	1	15
Liangshan	94	68	69	9	32	24	36	39	1	20	35	5	5
Quzhou	97	91	90	0	0	0	81	1	0	12	87	4	4
Yanjin	97	85	18	57	3	0	51	4	0	6	3	1	0

Source: IRTG “Sustainable Resource Use in the North China Plain”, Field Survey: Spring 2005.

*) The first six columns indicate the percentage of sampled households growing the respective crop on one or more of their plots while the following columns show the percentage of households applying the particular cropping *pattern* on one or more of their plots. The actual acreage devoted to crops and cropping patterns, which is difficult to assess due to inter- and relay cropping, is not taken into account.

3 From national policies to rural governance

It is important to recognize that national policies are interpreted and transformed by various institutions and actors until they are implemented locally (Yao 2004). This is particularly true for China, where a salient feature of the political system is a considerable leeway for local governments in implementing national policies. In the realm of property rights, this ambiguity is conceived to be deliberate and purposive (Ho 2001). In order to understand this process, a brief outline of the political system of the People’s Republic of China from the national to the village level is presented in this section.

3.1 The National People’s Congress and the State Council

The National People’s Congress (NPC) is the highest legislative body of the People’s Republic of China. Its permanent representation is called the Standing Committee. The head of the State is the State President. He is selected by the NPC and exercises his power along with decisions of the NPC or its Standing Committee. The State Council, that is, the central government, is the executive body of the NPC. The head of the State Council is the Prime Minister. He is nominated by the State President and confirmed by the NPC (Yang 2004).

The various ministries are departments under the State Council. Of relevance to our research topic are the Ministry of Agriculture, the Ministry of Land and Resources and the Ministry of Water Resources.

3.2 Provincial, county and local governments

People's Congresses are also present in the lower administrative units of provinces, counties and townships. Alike, the governments at the level of provinces, counties and townships exert the same functions as the State Council on the national level and they are directly subject to the People's Congresses on the respective levels.

Today's administrative institutions in China's rural areas are the successors of those of the era of the People's Communes (1958-1978, see Figure 2). Below the county level, the administration is organized in townships or towns, administrative villages, and the natural village, also known as *xiaozu*, which denotes a group of 30-40 households (Lohmar *et al.* 2002, p. 16).

Figure 2: Transformation of rural administrative institutions

<u>People's Communes (1958-1978):</u>		<u>1978- present:</u>
Commune	→	Township/town (<i>xiang/zhen</i>)
Production brigade	→	Administrative village (<i>xingzhengcun</i>)
Production team	→	Natural village/villagers group (<i>ciranzun/cunmin xiaozu</i>)

Sources: Adapted from Choate (1997), Ho (2001)

The basis for local governance is laid down in the “Organic Law on Villagers’ Committees”, passed by the National People's Congress in 1987 (Choate 1997). There is not a single village government, but several institutions that are deriving their authority from different superiors. The two most influential institutions are the Villagers’ Committee (*cunmin weiyuanhui*) and the local branch of the Communist Party. While the Villagers’ Committee (VC) is elected by the villagers, the members of the local Party branch are appointed by their superiors (Guo and Bernstein 2004). The VC is not an official governmental organ, but rather a self-sufficient local institution.⁶

Another important local institution is the Village Assembly. It is, as the name implies, a plenary assembly of the whole administrative village. Since a meeting of the whole village poses logistic problems, a Village Representative Assembly (VRA) is composed of representatives of groups of households. According to Choate (1997), the VRA is thus the highest administrative authority in a village.

⁶ Article 111 of the Constitution of the People's Republic of China (PRC 2004c, p. 49) refers to the VCs as “mass organizations of self-management at the grass-roots level”.

The extent to which a local self-government can be seen as grass-root autonomy is controversial. Yang (2004) points out that the State still manages to exert great influence on villages' decisions, primarily via the township and town governments.

4 Water market

This chapter concentrates on the supply and demand side of water for irrigation in the NCP. In the last decades, the use of groundwater has increased sharply in this region of China. Even in the Yellow River Basin, the use of groundwater has some significance. Since the supply and demand characteristics for groundwater and surface water are markedly different, both sources are given separate sections.

4.1 Institutions

The Chinese institutional arrangements for the management of water resources are complex. The highest executive body concerning water policies is the Ministry of Water Resources (MoWR). Additionally, the Ministry of Agriculture (MoA) has a stake in the field of agricultural water use. According to Lohmar *et al.* (2001) the Ministry of Geology and Mining is responsible for the assessment of groundwater levels. Theoretically, groundwater extraction permits would be issued depending on this assessment.

Subordinate to the MoWR are the Water Resources Bureaus (WRBs) on different administrative levels (provinces, prefectures, counties and townships). Besides from the MoWR, the WRBs receive instructions from their respective governmental bodies, that is, provincial, prefecture, county, and township governments. The single village is subordinate to the township government and the township WRB (Lohmar *et al.* 2001).

4.2 Supply and demand

Next to land and capital, supply and demand for water deserves special consideration since water scarcity is acknowledged to be a serious threat to agriculture in the NCP. The per-capita water supply in North China is merely one tenth of the world's average and competition for this resource between sectors and regions is rising (Holland 2000).

4.2.1 Groundwater

Obviously, the analysis of groundwater management must not only consider quantity, but also quality. However, the joint appraisal of quantity and quality of groundwater supply and demand is a complex issue and has not yet received much attention (Roseta-Palma 2003).

First, the excess groundwater which percolates back to the aquifer is possibly loaded with pollutants, nitrate in particular. Consequently, the quality of potable water as well as the productivity of groundwater for irrigation deteriorates. Second, the depletion of aquifers leads in some areas to the intrusion of salt water, likewise making the pumped water less suitable for irrigation purposes.

Ex ante, it is not at all clear, whether groundwater should be regarded as an exhaustible or as a renewable resource. Whether an aquifer is replenished by rainfall and deep percolation depends on the soil properties above the aquifer. Some aquifers with unfavourable soil structure might have properties of an exhaustible resource while others are constantly recharged. The respective situation has important policy implications. In case of an exhaustible aquifer, one cannot justifiably speak of a sustainable resource use, but rather of an appropriate rate of depletion. The concept of Marginal User Cost (MUC) is commonly applied in resource economics to evaluate the cost of using an additional unit of an exhaustible resource. It is the lost benefit of not being able to use this unit in the future (Koundouri 2004). At any rate, in recent years, groundwater extraction has been higher than the natural recharge in many areas of the NCP (Zhen and Routray 2002), indicating unsustainable use of this resource. The concept of MUC should be taken into consideration when designing pricing models for groundwater.

4.2.2 Surface water

In the survey region, water from the Yellow River (*Huang He*) is the main source of surface water. Four of the five survey counties are situated near the Yellow River Basin. Liangshan and Huimin almost entirely rely on Yellow River water, while Kaifeng and Yanjin increasingly use groundwater. The fact that also the Yellow River Basin is not spared from water scarcity became obvious when the river ceased to reach the ocean in 1997.

River Basin Commissions are authorised by the Ministry of Water Resources and are in charge of managing and supervising the water resources within their range. As one of them, the Yellow River Basin Commission does not have the power to make autonomous decisions on water allocation. Rather, it carries out overall river basin plans set up by the central government.⁷

⁷ Please refer to PRC (2004b), Articles 12 and 14 for details.

4.3 Policies

The following instruments of direct water supply and demand management are conceivable: tube-well permits, withdrawal permits, differential and penal pricing, direct regulation and sealing of wells, creating alternative water supply and promoting water saving technologies. The following sections review some of these instruments against the background of the North China Plain.

4.3.1 Water pricing

Social and economic incentives play a vital role for improving both the efficiency of land and water use. Raising the price for irrigation water could be seen as a means of providing incentives for more efficient irrigation. However, it is unclear, from which price level on farmers would adapt their water demand. Initially, the price elasticity of demand can be expected to be low in absolute terms, considering the presently low price level. For an effective price policy, one would have to have knowledge of the threshold price, which would lead to a demand reduction (De Fraiture and Perry 2002). This anticipated threshold price could in turn result in an intolerable reduction of farmers' income. Then, higher water charges could have the adverse effect of firstly lowering the profitability of agriculture and secondly providing a profit incentive for water supply organizations to extract even more groundwater. Shah *et al.* (1993) argue that inherent to the nature of groundwater, markets for this resource are impracticable. Alternatively, their proposal is to tax or subsidize, respectively, desirable and undesirable irrigation practices. Such an instrument could be based on either the irrigation technology or the cropping pattern. These two criteria are looked at more closely in the following subsections.

4.3.2 Water saving technology

If the outlined hypothesis of the relationship between pricing and water supply holds, other incentives for adopting water saving technology must be found. Lohmar *et al.* (2002) state that in groundwater irrigated areas, farmers are more likely to adopt water saving irrigation technology (WSI) because the water consumption can more easily be controlled than in surface irrigated areas. They provide figures, which show that the irrigation district of Luancheng in Hebei province, mostly irrigated by groundwater, has adopted more WSI (water hose conveyance, sprinkler irrigation etc.) than other irrigation districts. From this finding, the conclusion might be drawn that exact knowledge of water consumption and costs already provides an incentive for farmers to reduce water use.

However, the implementation of WSI might not at all be an adequate solution to the depleting groundwater tables. WSI is often viewed as a panacea for water scarcity. This view ignores the hydrological cycle, which is dealt with in the next section.

4.3.3 Cropping pattern

Kendy *et al.* (2003) argue, that a change in the cropping pattern might be the most effective approach to saving water. The only natural recharge of groundwater aquifers comes from infiltration through the soil. Additional recharge comes through irrigation. Discharge of water from the system comes through evapotranspiration, interception loss, surface run-off and removal of organic material. Hence, the greater the surface vegetation with crops, the higher the water loss by evapotranspiration and removal of plant produce.

Consequently, the only solution to sustain the groundwater tables might be to reduce the cropping index (see Zilkens 2004, p. 112). The imperative question is, whether this option is, firstly, acceptable without jeopardizing food security and secondly politically enforceable. A subsequent analysis would have to appraise possible alternatives, particularly less water demanding winter crops.

Making a shift in the production pattern is a difficult decision, however. Many factors must match up to induce the cultivation of a different crop. Besides cultivation knowledge, there must be a market access and demand. Both of the latter factors are more readily existent near large cities with a more diverse demand structure. This argument hints at the need to design water saving strategies adapted to regional and local conditions.

There are indications, that a change in the cropping pattern is already taking place. Shah *et al.* (2004) found in their field surveys that the cultivation of Bt-cotton⁸ has become popular in some areas because this crop is much less water intensive than wheat. This is in line with the findings in our survey.

5 Land market

This section concentrates on agricultural land. In China, agricultural land can either be owned by a collective or by the state, but not by an individual. The usual arrangement in rural areas is collective ownership, while state ownership dominates in urban areas.

⁸ Bt stands for *Bacillus thuringiensis*. It is a soil bacterium that produces chemicals toxic to insects. Having the respective Bt gene transferred to plants, these plants will also produce this chemical (Fang and Babcock 2003).

5.1 Institutions

As a complement to the Ministry of Water Resources, the Ministry of Land Resources is the executive institution for land related issues on the national level. Below the national level, the attribution of responsibilities again becomes difficult, as in the case of water. Agricultural land has initially been allocated to households at the beginning of the 1980s and the institutions controlling the land reallocation process today are mainly the leaders of the administrative village and the households groups at the natural village level. The usual argument for reallocations is the need to adjust land allocation to demographic changes in order to maintain an egalitarian land distribution among households. The calculus for redistributing land among households is therefore in most cases the number of household members.

5.2 Supply and demand

Arable land is scarce in China. Mainly due to conversion to industrial land, the country loses one million hectares of agricultural land every year (Wu 2004). The argument for egalitarian land distribution through administrative reallocations must be seen in this light.

On the one hand, it could be expected that farmers might then be more willing to consent to reallocations or even expropriations of land in areas with good non-farm income opportunities. On the other hand, where land plays a more important role for income, the need for equal land distribution and hence for administrative reallocations becomes more important. Confirming this argument, Kung (1995) found that in regions with little non-farm employment and high dependence on land, inhabitants implicitly consented in reallocations. Our survey data cannot confirm a strong link between opinions on reallocations and non-farm income, but they can verify that the majority of farmers approve reallocations (60%), while only 10% explicitly disapprove.

Today, there is a small land rental market but most farmers depend on the land they have and are therefore not willing to rent out part of it. To what extent reallocations are a substitute, or complement, to the present land rental market is controversial (Brandt *et al.* 2002).

5.3 Policies

From 1979 on, the Household Responsibility System (HRS) established farm households as the principal units of agricultural production. The formerly collectively owned land was allocated to households, which were granted use rights to this land. Only after some time, in 1984, this new system was officially sanctioned. In this national approval of the HRS, the right to rent land and hire labour was included (Lohmar *et al.* 2002). Initially, 15-year land use rights were supported, with an extension to 30 years in 1993 (Prosterman *et al.* 1998).

In spite of these provisions, village governments continued with land reallocations before the use right period expired. According to Prosterman *et al.* (1998, p. 21) the revised Land Administration Law (LAL) of 1998 helped to stop this disregard of national policies⁹. It stipulates that an agreement of at least two-thirds of the Village Assembly is needed for an adjustment of land within the use right period.¹⁰ The most urgent policy objective therefore seems to be the enforcement of national land rights policies. Brandt *et al.* (2002) point out, that an alteration of local officials' incentives could be a promising approach.

While the HRS undoubtedly boosted peasants' incentives to engage in agricultural production there is recent concern that growth in rural areas has slowed down, indicating that the potential benefits from this reform may have been fully exploited (Sonntag *et al.* 2005). Political measures have to be taken to avert this development, yet further property right reforms are unlikely. Present policies are rather directed at consolidating and enforcing the generally accepted property right paradigm.

This is a still ongoing process. The Rural Land Contracting Law (*nong cun tu di cheng bao fa*) of 2002 intended to deepen the security and transferability of contractual land management rights. In this law, Villagers' Committees are discouraged from interfering in land management contracts between farmers. However, the law provides for two exceptions: the VC may readjust contracted land when all members of the lessee's household have moved out of the village and are presently not any more registered as agricultural residents. Secondly, the VC may readjust land in case of natural disasters. Reiterating the LAL, two-thirds of the Village Assembly or the Village Representative Assembly must approve of such readjustments, which shall then be restricted to affected households only (Huang 2004). However, our survey shows clearly that reallocations before the end of the use right period are still common practice.

⁹ The law is sometimes translated as Land Management Law or as Land Administration Law. The most often used translation is Land Administration Law.

¹⁰ see PRC (2000b), Article 14 for details.

Grain self-sufficiency has been a declared goal of the central government for a long time. In this context, it is reasonable to expect that all policies related to land allocation are designed bearing this overarching goal in mind. The Agriculture Law (1993) states in Article 31 (PRC 2004a):

“The State takes measures to protect and enhance the comprehensive capacity for grain production, steadily to raise grain production level and to ensure grain safety.

The State establishes the system of protection for arable land and provides special protection to capital farm land according to law.”

Not long ago, farmers had been compelled to provide a grain quota to the state. Officially, this quota system has been abandoned. In our survey, however, all four interviewed village leaders of Quzhou county claimed that farmers are still compelled to plant some wheat and maize. Recalling from section 2 of this paper that single cropping of cotton is most prevalent in Quzhou, one may suspect that the spread of cotton cultivation is seen as a threat to wheat and maize provision. However, further field work should clarify what the underlying reasons for the aforementioned planting requirements in Quzhou are.

6 Rural finance development in China

It has been widely proclaimed that a deepening rural financial market spurs rural economy and couples the reforms of other markets, especially that more secure land property rights improve credit access (Norton 2004). Yet, as mentioned in the introduction, the use of arable land as collateral is prohibited in China. In this regard, the practical linkages between secure land use rights and credit access can therefore be hypothesised to be weak. However, as section 7 will further argue, there are still some conceivable linkages between the land, water and credit market in China. In order to better understand the present situation of the credit market in rural China, section 6 gives an overview of the transition of the rural financial system and concentrates on both the demand and supply side.

6.1 Transition of the rural financial system in China

The rural financial system witnessed four great transformations since 1949, when the People's Republic of China was founded. The first occurred in 1958, when the Rural Credit Cooperatives (RCCs) were incorporated into the People's Communes and became a part of the collective economy instead of being operated in a manner of a cooperative organization in

the literal sense. Industry development was the main driving force in that period, when the bulk of input factors, natural resources, labour force and capital were accumulated to advance Chinese heavy industry. But reform was called for because the rural economy was depressed by public ownership.

The second transition took place after the introduction of the HRS in 1978, which increased agricultural production remarkably. Degraded to one part of the Agricultural Bank of China (ABC), RCCs were under the control of local governments, which played a critical role in developing township enterprises. Triggered by the Asian financial crisis in 1997, the central government decided to get RCCs back under the supervision of the People's Bank of China (PBC) because of the increased ratio of bad assets to total assets.

Consequently, in the third stage, RCCs became independent from the ABC and were placed under the supervision of the PBC, which exerted rigorous influence on the operation of RCCs, especially in the loan business. The PBC introduced the agricultural on-lending program by providing cheap credit loans to RCCs in 1998, with a growth rate of 20% for agricultural loan portfolios (Cheng and Xu 2004). Though the RCCs were afraid to infringe the regulation of the PBC, they had to concentrate more on projects that had lower risks and higher capital return. RCCs were placed in such a dilemma that the strong propensity to be operated as a commercial bank was restrained by the government's goal of offering financial support in rural regions. In this period, shortage of formal finance in rural China worsened. Meanwhile, a variety of informal financial institutions sprang up. However, informal finance was banned by the central government because illegal operations often took place in that period and it had potentially negative impacts on the stability of national finance.

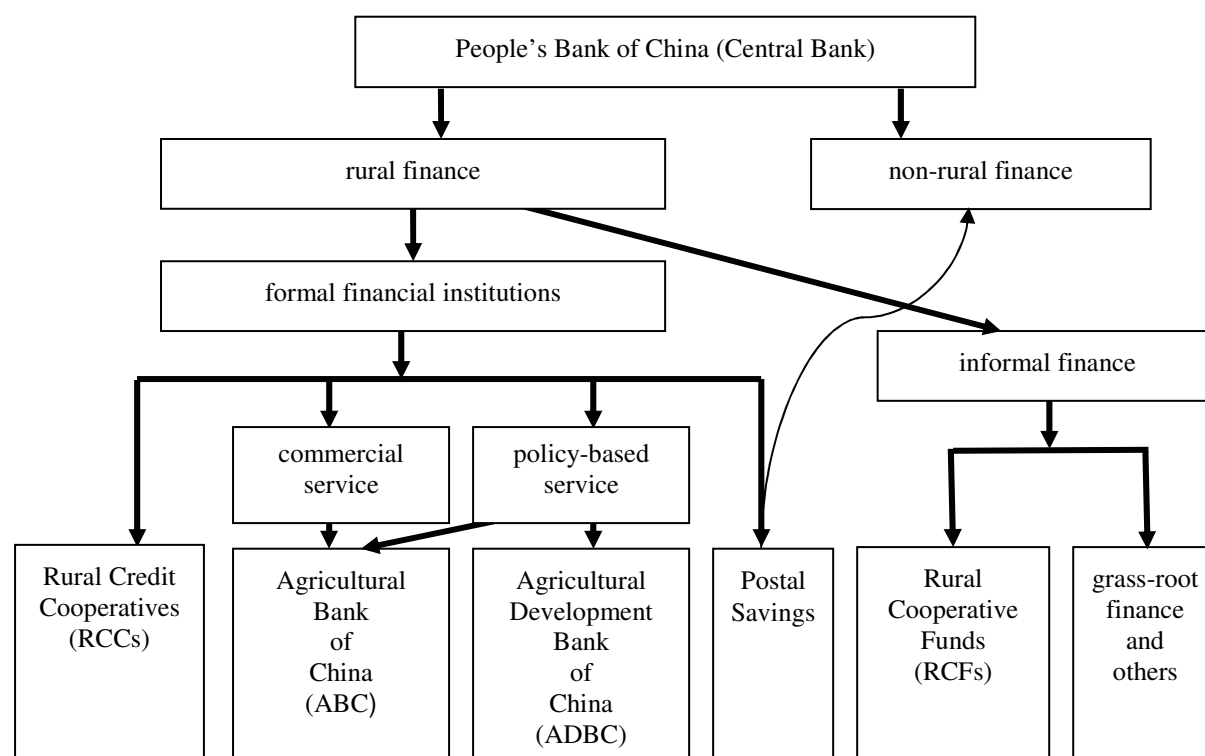
In the fourth stage, the poor services of RCCs, together with depressed prices for agricultural products and the great political pressure resulting from the low living standard of rural households, forced the central government to further the reform of the RCCs. With this background, the State Council enacted the "Pilot Plan to Deepen the Reform of Rural Credit Cooperatives" in 2003 in order to clarify the ownership of RCCs and to place them under the direct supervision of local governments instead of the hitherto existing joint involvement of the PBC and the RCC County Union (RCCU), which is a legal entity on its own (Cheng and Xu 2004, p. 135). A variety of ownership arrangements were allowed due to differences in economic development of different regions of the country.

The transition of rural finance in China is retrogressive. Had the financial reforms in the mid 1990s been broader and more consistent, the cost of commercialization of the ABC could have been reduced (Cheng and Xu 2004). Had the pressure from interest rates and the entry of new institutions been relaxed, market competition could have been activated and the shortage of rural funds might have been mitigated.

6.2 Supply side

The PBC, which is the Central Bank of China, functioned as an agricultural bank until 1979 when the state-owned Agricultural Bank of China (ABC) was founded mainly to provide financial funds to the agricultural sector. The Agricultural Development Bank of China (ADBC) was founded in 1994 with the intention to peel off the policy-based business of the ABC. RCCs broke away from the ABC and were operated under the direct supervision of the PBC since 1996 (see Figure 3). Below, the various supply side institutions and their transitions are discussed in more detail.

Figure 3: Structure of rural financial institutions



Source: designed by authors

6.2.1 Rural Credit Cooperatives (RCCs)

Though RCCs are theoretically operated according to cooperative principles, they were never actually run this way because basic principles of a cooperative organization, like mutual support, democratic management and non-profit orientation, have never really been features of RCCs (Xie 2001). While township RCCs are independent juridical persons, they are required to report both to the RCC County Union (RCCU) and the county branch of the PBC. The high amount of non-performing loans (NPLs) of RCCs is mainly due to five reasons. The first one is the improper intervention of local governments. The second reason is due to the transfer of large amounts of NPLs of the ABC to RCCs when the latter were separated from the Agricultural Bank of China. Thirdly, RCCs suffered a great loss due to “inflation-proof bank savings” required by the PBC. The fourth part came from the take-over of NPLs accumulated by the Rural Cooperative Funds (RCFs), which were closed down by the government because of their high financial risks. The last part is attributed to the RCCs themselves owing to their poor management. With the intention to liberalize the rural financial market, the government is currently envisioning to provide soft funds, i.e. preferential funds with little or no interest, in order to strip off the NPLs from the RCCs.

6.2.2 Agricultural Bank of China (ABC)

Due to the Asian financial crisis in 1997, the Chinese central government strengthened its control on commercial banks and reduced the number and variety of financial institutions below the county level. The ABC, originally a main force in the rural financial system, withdrew from rural areas. Consequently, the number of branches below the county level was reduced, especially those branches with loan activities because of high ratios of loan defaults and comparatively more profitable loans in urban areas. As a consequence, the proportion of agricultural loans to total loans decreased greatly from 15.2% in 1989 to 7.8% in 2001 (Cheng and Xu 2004).

6.2.3 Agricultural Development Bank of China (ADBC)

The ADBC, founded in 1994, was initially severely short of funds. The volume of fiscal allocation, which is its main source of funds, had not been adequate. Consequently, refinancing (subloans) from the PBC accounted for large part of its fund inflows.

The ADBC, which was primarily responsible for carrying out policy-based lending, mainly engaged in three activities: the first was offering funds for grain purchasing and grain distribution systems for sensitive agricultural products like rice, wheat, cotton and edible oil.

The second was enabling the construction of basic facilities and services needed by rural communities, such as irrigation systems, power lines, schools and some other infrastructural investments. The third function was poverty alleviation. The last two functions, however, were transferred to the Agricultural Bank of China in 1998 because the ADBC was not able to accomplish this policy-based business due to the aforementioned lack of funds. Hence, the original intention to separate policy-based business from the ABC, currently operated as a commercial bank, failed again.

Ironically, though a “policy bank”, the ADBC has to be run as a commercial bank and has to take cost and profit into consideration, resulting in more commercial activities. The higher proportion of short-term loans to the total amount of loans reflects its inclination to commercialize (Gu 2003).

6.2.4 Postal Savings

Postal Savings (PS), founded in 1986, are savings-only financial institutions and absorb vast rural funds (Cheng and Xu 2004). Because the interest on these savings is higher than that of the RCCs, the bulk of rural funds are channelled via PS to urban areas and non-agricultural rural activities. Being blamed for resulting in a shortage of funds in agriculture, the interest on savings of Postal Savings was reduced in 2004.

The existence of Postal Savings can be regarded as the result of redistribution among interest groups. It is an iron rule that funds move from the place of lower marginal value to the place of higher marginal return. Consequently, if it was not PS, some other financial institution would have benefited from this flow of financial resources. Although it is in vain to blame PS, one fact that can not be ignored is that rural financial institutions, especially RCCs, were weakened due to the scarcity of savings, trapped in the vicious circle of capital formation (Heidhues and Buchenrieder 1999).

6.2.5 Informal finance

In the period of the People’s Communes (PC) from the 1950s to the end of the 1970s, a great deal of power was handed over to villages and a high amount of funds was accumulated there. Along with the demise of the PC, 25% of the original and newly accumulated collective funds were misappropriated (Du 1998). On the other hand, owing to the vitality triggered by the HRS, Township and Village Enterprises (TVEs) starved for funds to develop agricultural production and adjust agricultural patterns. It was in this situation that Rural Cooperative Funds (RCFs) were founded by local governments with the purpose of liquidating collective funds and mobilizing them for financial services. With the development of RCFs, the sources

of funds became more diversified. When RCFs were founded in 1985 their only funding resource were collective funds. Later on, public accumulation of village collectives, personal shares and income of villages earned by renting out collective land, were also pooled in to meet the local governments' strong intention of developing the local economy. Though RCFs boomed in the early 1990s, debts and risks increased sharply due to overly expanded business and over-intervention from the local community leaders (Guo 1995). Furthermore, the depressed performance of TVEs exacerbated the situation of RCFs. For the sake of stabilizing the domestic financial situation, RCFs were announced illegal and closed down nationwide in 1999, with the defaulting loans shifted to the RCCs.

6.3 Demand side

Demand for finance in rural China is characterized by several aspects. First, owing to the large population and the low income level, loans are typically small in scale. Second, as rural households are producers and consumers alike, their demand varies tremendously. Large disparities in natural endowments, local culture and customs influence the households' behaviour and make such diversities more distinctive.

Generally, rural households and township enterprises are two main groups on the demand side. Rural households can roughly be divided into three socio-economic types: poor households, autarkic households and market-oriented households. Poor households, struggling to sustain themselves, demand funds for consumption, with higher credit risk correspondingly. Autarkic households are the stable customers of the micro credit of RCCs because they pay more heed to their reputation, which is of great significance in rural communities. Market-oriented households, though more ambitious to attain a higher standard of living and often having higher education, often lack collateral (He 2001). Presently, there is no other formal financial supply to rural households in China except the micro credit of RCCs, though they often fail to satisfy the demand due to the reasons addressed above.

As for another major demand side group, township enterprises can be divided into two types: local-resource oriented enterprises and industrialized agricultural enterprises. The former ones, which are conventional enterprises in rural regions, have a substantial credit risk, paired with excessive and improper intervention from local governments. The latter ones are more promising and receive more credit because they meet the need of re-adjusting and optimizing the agricultural structure in China.

7 Linkages between land, water and rural financial markets

A number of factors make rural households credit constrained, and hence investment constrained. Incomplete and insecure property rights to land and water undoubtedly constitute one of these factors. The questions arise, what impact a further reform of land property rights would have on easing the investment constraints of rural households, which households would benefit most and what kind of investments these households would make. Carter and Olinto (2003) found in the case of Paraguay evidence, that poor, liquidity-constrained households might not benefit at all from property rights reforms.

7.1 Hypotheses

Secure property rights are often hypothesised to have a positive credit supply effect through the provision of collateral as well as a positive credit demand effect (Feder and Feeny 1991). The demand effect may result from an increased willingness to make agricultural investments and from an increased perceived ability to repay the credit in the future. However, this increased potential demand for loans will only be realised when the expectations of receiving a credit, on-time and unrationed, also increase. Hence, the credit supply side must also signal the availability of credit.

As stated above, the use of groundwater is not sustainable in many regions of the NCP. Provided, that the affected farmers are aware of this resource depletion, one could assume that the relative land and water tenure insecurity aggravates the depletion. In addition, when farmers can expect to lose the use right over their land in the long-run due to the reallocation process described above, they are unlikely to invest into the water provision for this particular land.

The right to transfer land, then, might have the effect of reducing the “investment regret effect” as described by Carther and Yao (2002). The possibility of transferring out land to other farmers in the future increases the willingness to make investments in land and on the other hand its absence leads to an investment disincentive, at least in the face of good non-farm income opportunities. The original investor would then “regret” having made a land improvement investment if he wanted to rent out the land.

7.2 Empirical suggestions

The question whether more secure land rights induce investment in land has not been unambiguously answered for the case of rural China. Li *et al.* (1998) found that indeed long-term use rights encouraged land-saving investments, namely the application of organic

fertilizer instead of mineral fertilizer. Their argument is that the more labour intensive application of organic fertilizer pays off after a longer time than mineral fertilizer, so only households that expect to cultivate their plots for the coming years would be willing to apply organic fertilizer. Deininger and Jin (2002) also come to this conclusion in their study on the impacts of long-term land use rights in three Chinese provinces.

Although arable land is not allowed to be used as collateral, the case is different for so-called waste land¹¹. It remains to be seen, whether this is a first step towards allowing the pledging of arable land as collateral. However, Schwarzwald *et al.* (2002, p. 173) have shown, that farmers in China may be on the one hand often not even fully aware of the rights they legally enjoy. In their survey of 1617 rural households in 17 Chinese provinces around 13% of farmers claimed that they already had the right to mortgage their land use rights. On the other hand, more than 50% of the interviewees negated the question, whether the right to mortgage should be included in their land use rights. This is a surprising fact and the authors give no explanation as to why farmers hold this view.

When arguing for increased loans to rural areas, it is of particular interest to differentiate between fungible and non-fungible financial services. Credit may be given only for particular purposes, like agricultural investment or it may be given for any purpose. In order to encourage farmers to invest in sustainable production technologies, providing such non-fungible credit could be an appropriate policy instrument. The term used for providing non-fungible credit in China is “policy lending” (*zhengce daikuan*). Though selective credit policies are controversial (Adams *et al.* 1984, Von Pischke *et al.* 1983), in the context of our research topic, policy lending for land and water productivity improvements (and hence for input efficiency improvements) is of particular concern.

If the general guideline is in favour of supervised credit, a catalogue of permissible or desirable purposes needs to be developed. Next, the applicant’s eligibility for credit needs to be evaluated. A step in this direction has been taken with a newly developed micro-loan classification system which groups households into four or five eligibility categories (Gale *et al.* 2005).

Finally, appropriate and affordable monitoring devices are needed after having extended a loan to a household. This includes the question, when households can be considered to have used the loan for the intended purpose. After having purchased inputs like livestock or fertilizer, these goods could be resold on the local market, undermining the intended use. This

¹¹see PRC (2000a), Article 34 (3) and Article 37 (2).

risk is negligible for the construction of immovable facilities, like wells and greenhouses, as well as for planting orchards. Still, some kind of monitoring is needed if such credit programs are to work. *Ex ante*, credit should therefore be seen as additional liquidity for the household and not straight away as farm input (Von Pischke and Adams 1980). The need to monitor the use of supervised credit may therefore lead to prohibitive costs.

Concerning the issue of permissible and desirable loan utilization, our focus is on the environmental impact of loan implementation. Loan supply for greenhouse construction is worth consideration, since greenhouse cultivation is truly water-saving. At the same time, greenhouse cultivation of vegetables in the winter increases monetary returns to inputs, high prices for vegetables presumed (Lohmar *et al.* 2003). In some areas within our survey region, greenhouses are already widespread.

In 2004, the reduction and ultimately the elimination of agricultural taxation began nationwide. The trend is towards subsidizing agriculture and here, again, the environmental impact of subsidies should be taken into consideration. Despite the aforementioned negative impacts, the construction of groundwater tube-wells is still subsidized in some of the survey villages underlying this work.

8 Conclusions

In most general terms, the three thematic pillars – the land, water and the rural financial markets – have in common, that through their functioning, scarce resources are allocated to different sectors of the society. This discussion paper highlighted that in all three markets, the central government claims the final decision-making power and on the other hand, local institutions still have some scope for tailor-made solutions.

In the past, urban areas have been given priority over rural areas for land and capital. This resulted in a widening income gap rising to intolerable levels of disparity. The low income in rural areas furthers production with high, inefficient amounts of the relatively cheap inputs of mineral fertilizer and water. Negative externalities are not internalized and any attempt to introduce an “environmental tax” borne by farmers does not seem to be politically feasible at the moment.

While low income constitutes the problem, directing more funds to rural areas and triggering farm and non-farm investments should be part of the solution. As mentioned before, the recent development of tax reduction and subsidization points in the right direction, though the consideration of environmental consequences of production practices is still insufficient.

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