

# DETERMINANTS OF INSTITUTIONAL CHANGE

## A Survey and an application to rural resource use in China

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### Abstract

Our principal aim is to explain institutional change in natural resource use in rural China since the end of the 1970s. Thus, the paper starts with a survey of the various theories of institutional change. They range from transaction cost focused theories in the field of the New Institutional Economics to evolutionary approaches with almost no behavioural assumptions in the field of Classical Institutionalism. In discussing four examples of institutional change in land and water use in rural China we show which theories offer insights in explaining those changes. Depending on the type of actors involved and the degree of development of market-type exchange mechanisms different theories provide useful insights to explain the respective institutional change. We conclude that researchers will benefit from taking a multiple-theoretical perspective.

**Keywords:** Institutional change, land, water, rural China

**JEL codes:** P21; P26; P37; Q18; Q28

### Introduction

Nowadays it is common in the economic literature to acknowledge the role of institutions as an additional determinant of human behaviour beside the traditional factors which are considered such as preferences, technologies, income and prices. However, the answers to the question what explains the building and change of institutions form a cacophonous picture. Still in 1989, P. Bardhan claimed that many institutionalists were reluctant to consider 'endogenous institutions' (Bardhan (1989), p. 3).<sup>1</sup> For instance, (North, 1991) assumed them to be exogenously formed. Since then the situation has changed and a number of authors analyse institutional change and its determinants. However, a unique and concise theory does not exist, which was also argued by Dixit (2009), who claimed in his presidential address to the American Economic Association that understanding the process of institutional change is still undertheorised. The combination of theories of institutional change and natural resource use is even less analysed so far. When looking for the keyword "institutional change" Thomson's Web of Knowledge returns 1,874 articles in the social sciences. Combining the term with "natural resource\*" or

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<sup>1</sup> In Bardhan's view theories "are all equally murky on the mechanism through which new institutions and property rights emerge" (Bardhan (1989), p.7).

"theory" returns 110 and 391 results, respectively. The combination "institutional change + theory + natural resource\*" yields 21 results only (as of August 2013).<sup>2</sup>

Against the background of transition economies' heterogeneous experiences in terms of general economic growth, development of livelihoods in rural areas and the pressure on natural resources, it can be easily concluded that institutions play a central role. Especially situations of crisis, low income and poverty, the understanding of the persistence of inefficient, ineffective and even dysfunctional Bardhan (2005) institutions is highly relevant to help societies to improve the livelihoods of their citizens. Therefore, we aim at shedding light on the theoretical underpinning of the process of institutional change and its determinants. In this paper we will particularly focus on institutions that are connected to natural resources, as ecological problems in various countries are increasingly acute. Soil erosion, air pollution, water scarcity and declining water quality increase the need for understanding how to introduce or initialise the emergence of institutions which motivate resource saving behaviour. The rich experience of economic policy and institutional reforms in China over the last decades can provide useful examples for testing the applicability of theories of institutional change in concrete situations.

Given the variety of theoretical approaches of institutions and institutional change some structuring assumptions are necessary. Conceptually, one could think of different ways to classify institutional change. Whereas Roland (2004) focuses the speed of change, Brousseau, et al. (2011) put the agent's behavioural assumptions inherent in each theory centrally, and Vatn (2005) and Kingston and Caballero (2009) group theories, based on the nature of change, into the two categories spontaneous versus designed change. At first glance, the speed of change seems to be easily identifiable. Social norms and values, i.e. first-level institutions in the terminology of Williamson (2000), usually change smoothly and over decades or even decennia. Laws, policies or political systems change discretely and sometimes happen even overnight. However, some discrete changes still require a long phase of preparation, e.g. the WTO accession in the case of China. Assumptions with respect to an agent's preferences and cognitive capacities are usually classified into self-interested optimizers, either fully rational or subject to bounded rationality, and prosocial behaviour (Brousseau, Garrouste and Raynaud, 2011). Finally, the separation of theories conditional on the degree of coordination of the process of change has some appeal. Kingston and Caballero (2009) distinguish between institutions purposefully designed by a single individual or a group of individuals and rather 'spontaneous' emerging institutions surviving a decentralised and uncoordinated

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<sup>2</sup> Obviously, these figures give only a rough indication as the concentration on articles neglects other forms of publications (e.g. books) which might be more relevant in some social science's disciplines.

selection process. More specifically, the second mechanism assumes a periodically emergence of new institutions which compete with existing institutions. As a result, some new institutional forms survive the selection process and others will disappear. However, in purely hierarchical political systems almost all changes will fall in the category of designed institutional change as people might lack empowerment to introduce institutions from below.

This paper follows a different route. Motivated by the different definitions of institutions, theories of institutional change will necessarily reflect differences between schools/ theoretical strands. Starting from the "new" and "classical" institutional economics this paper aims at developing a systematic of the theories of institutional change. As there are some differences in definitions, theoretical and analytical tools (Rutherford, 2001), we will treat both strands separately. Among the questions we wish to consider are: What are determinants of institutional change? What is the relative importance of exogenous versus endogenous drivers? Which elements of the theories do already and which one could more pollinate the analysis of institutions in natural resource use? Our contribution lies in bridging the theory with potential applications in the analysis of natural (and in particular rural) resource use in China.

The paper proceeds by presenting a review of theories in Section 2 and the application to natural resource use in Section 3. Finally, the concluding section summarises the findings and provides an outlook for future research.

## **2. Literature review**

Given the different origins of theories it is useful to recapitulate the underlying definitions of institutions first. We then proceed by discussing the non-neo-classical literature, followed by the new institutional economics.

### **2.1 Definitions of institutions**

The most popular definition of institutions dates back to North which is usually associated with so-called new institutional economics (NIE). Here institutions are commonly defined as the written and unwritten 'rules of the game' or in other words humanly devised constraints which structure repeated human interactions (North, 1991). In the context of natural resource use, such rules are essential in forming expectations about the rights to use resources and about the division of resulting monetary and non-monetary benefits. As there are very different rules subsumed under the heading institutions, it might be useful to separate them one level further. Recently, Ostrom and Basurto (2011) distinguished between rules and norms. Rules, on the one hand, are defined as "shared understandings by actors about enforced prescriptions concerning what actions (or outcomes) are required, prohibited, or

permitted" (Ostrom and Basurto (2011), p. 3). Rules carry, additionally to norms, assigned sanctions if forbidden actions are taken and observed by a monitor. On the other hand, norms are defined as "prescriptions about actions or outcomes that are not focused primarily on short-term payoffs to self" (Ostrom and Basurto (2011), p. 6). The core assumption of NIE with respect to individual behaviour is the maximisation of utility by each individual (individualistic behavioural assumption) and the existence of costs related to measuring the attributes of goods and services involved in an exchange (North, 1986). Institutions have no role in forming the individual's preferences.

Contrasting the NIE assumption of stable preferences, the classical institutionalist perspective explicitly allows institutions to impact individual's preferences. To avoid the pejorative connotation of "old" and to group the different strands of literature into one we prefer to call the group of scholars in the following "non-neo-classical institutionalists" (NNCI). Here, dating back to Veblen and Scott, institutions fall under a broader definition. Besides constraints of human behaviour, institutions embody generally accepted ways of thinking and behaving (Vatn, 2005). The notion has been extended to incorporate 'organisational routines' as orchestrated habits of a group of people. In short, institutions in the perspective of Scott consist of internalised conventions as well as external rules. Such interactions of "higher-level" and "lower-level" institutions result in a comparatively high stability (Brousseau, Garrouste and Raynaud, 2011). Finally, a definition by Commons (cited in Bromley and Yao (2006); p. 77) explicitly separates the aspects of rights and exclusion from rights: "Individuals must or must not do (duty), what they may do without interference from other individuals (privilege), what they can do with the aid of the collective power (right), and what they cannot expect the collective power to do in their behalf (no right)." One interesting element of the last definition is the perspective that institutions might also enable individuals to perform actions instead of constraining only.

## **2.2 Emergence of institutions and determinants of its change in non-neo-classical institutional economics<sup>3</sup>**

The perspective taken by non-neo-classical scholars constrains determinants of institutional change to be endogenous. As habits and thinking is naturally linked to humans, change comes always from within the system. Furthermore, some scholars do not distinguish between positive and normative statements.

One of the earliest endogenous theories of institutions dates back to writings of Karl Marx (Bardhan, 1989). In Marxist thinking the central driving force of institutional change are the forces of production. However,

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<sup>3</sup> Other names are American institutionalists and classical institutionalism. We associate this strand of literature with scientific associations like the Association for Evolutionary Economics (AFEE), the European Association for Evolutionary Political Economy (EAEPE) or the Association for Institutional Thought (AFIT).

the theory offers few possibilities to explain institutional change at a smaller unit of analysis like villages or a community of resource users. Nevertheless, the more political analysis of markets as social institutions has its value in recognizing their complexity and diversity (White, 1993).<sup>4</sup>

Bardhan (1989) summarises a game theoretic approach, dating back originally to Sugden (1986), who explains institutional change as the outcome of iterated games. One game might be especially relevant for the use of natural resources. Games which are played repeatedly by actors competing for a good which they all want but cannot get might explain the emergence of institutions of property. The resulting institutions are seen as a stable equilibrium of the game. The approach is quite flexible with respect to assumptions concerning agent's cognitive capacities as have been summarised by (Brousseau, Garrouste and Raynaud, 2011). However, the 'institution-as-equilibria' perspective has been criticised that it fails in explaining the emergence of institutions in cases of conflict as it excludes the existence of a third actor like the state.

### **2.3 Emergence of institutions and determinants of its change in New Institutional Economics**

One way of further structuring institutional change is to separate exogenously-given from endogenously-appearing self-enforcing institutions. The exogenously-given institutions require the existence of a third party. Analysis of exogenously-given institutional change will need to focus to a large extent on the motives of the third-party to develop new institutions.

As our analysis is primarily focused on rural resource use, we identify the group of actors which directly use or benefit from a resource as one system. Examples are farmers cultivating fields within one village or farmers tapping water from the same river in a watershed. The system is formed by the users of the natural resources may it be a village, a watershed or other local communities which engage in interactions/ are interlinked in their resource's use. We define as endogenous any change/ driver which comes from the group of users and exogenous any change which has been imposed from outside (e.g. higher level administration, macroeconomic or political context).

#### *Exogenously-given institutional change*

One illustration is the lengthy (and very mixed in terms of outcome) experience of the Structural Adjustment Programs of the 1980s and 1990s

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<sup>4</sup> Gordon White, who was an expert on China, asked himself: "But does the political analysis of markets have any practical value for the world of development in which analysis exists for the purposes of action? In relation to successful policy intervention, it should caution against operating with too starveling or utopian a conception of the 'market' or the 'free market' and sensitise policy-makers to the structural and institutional diversity of real markets and the complex political processes which shape and underpin them" (White (1993), p. 11).

(see Summers and Pritchett (1993) for a summary of the main critiques). Governments have been strongly advised to implement specific policies (e.g. cuts in public expenditures, privatisation of state enterprises, liberalisation of trade and exchange rates) in order to reduce external debts and to receive assistance from the Washington based organisations International Monetary Fund and World Bank. The most recent and prominent example of exogenously driven institutional change is the promotion of specific institutional environments and policies by international organisations, e.g. Washington Consensus and post-Washington Consensus as promoted by influential advisors from international lending organisations (Rodrik, 2006). Similarly, countries joining the European Union have only a limited degree of power in influencing the institutional framework at EU level. Basically countries have to implement the *acquis communautaire*. Such a mechanism of institutional change has been also called 'transplanting institutions' by Roland (2004).

### *Intermediate forms*

A very prominent strand of the literature within the NIE sees institutional change as a result of a sort of market mechanisms (Hayami and Ruttan (1985); Ruttan and Hayami (1984)). There exists some 'demand' for institutional innovations and a 'supply' of innovations. Drivers of demand might be changes in relative factor endowments and technology. Most prominently, demographic change is described as a main driver in history as it altered the relative price of labour to land. As land became the more expensive factor of agricultural production demand for a redefinition of property rights increased. Ruttan and Hayami (1984) provide a number of examples from European and Asian history. Similarly, in the so-called Grand Transition view increasing production requires more division of labour and fosters trade which increases the need for new institutions to secure more effective exchanges (Paldam and Gundlach, 2008). What constitutes the supply of institutional change remains rather unclear. Ruttan and Hayami (1984) assume the existence of some political entrepreneurs which undertake the necessary collective action and develop new institutions. However, they completely abstract from any self-interests of those 'suppliers'.

More recently, the market perspective has been picked up and developed further with applications to political markets. The demand side consists of actors, like elites, landlords, beneficiaries of economic rents, who lobby for new policies that maximise their welfare subject to the costs of generating political support. On the supply side policy makers implement policies that maximise their welfare subject to budgetary and constitutional constraints (Cramon-Taubadel, 1992); (Bowles and Naidu, 2006). Obviously, different bargaining power of the actors involved will affect the resulting institution. For example, actors with a greater bargaining power will strive for institutions which might serve their

interest better. Disadvantaged groups might force institutional change by 'withdrawing their consent' from existing institutional arrangements.

The market view appears artificial as it abstracts from the larger macro-context and the power struggles in society. It reduces society (in this case markets) to sets of individuals who only through their numbers and therefore less or more bargaining power have a certain influence through their actions (Harriss-White, 2003; Mackintosh, 1990). Furthermore, the claim that institutions change due to changes of relative prices does not help in explaining the characteristics of new institutions. For example, declining prices of agricultural products triggered by the expansion of international trade led to a liberalisation of slavery in mid-nineteenth-century Thailand but to a relapse into serfdom in seventeenth-century Poland (see Bardhan (1989) and the literature cited therein).

### *Endogenously-appearing institutional change*

The key assumption of the following theories is the absence of any third party which might introduce or enforce rules. Rather the actor who is responsible for enforcing rules is itself a player of the same game (to express in game-theoretic terminology). That is, conditional on the information regarding possible states available all actors are assumed to respond with the best action choice. Among these theories Bardhan (1989), in his seminal work on the economic theory of agrarian institutions, identifies two different strands of thinking. The first one puts the minimisation of transaction costs central and the origins of this strand of thinking can be traced back to the paper by (Coase, 1960). Thus, Bardhan lumps the related authors together as the Coase-Demsetz-Alchian-Williamson-North (CDAWN) School. The second strand concentrates on institutions as substitutes for missing markets given an environment of pervasive risks, incomplete markets, information asymmetry, and moral hazard. In the following we use Bardhan's (1989) term of the 'imperfect information school'.

Let's turn to the CDAWN view first. Here, it is assumed that the most efficient institutional form, minimising transaction costs, will emerge. Similarly, competitive pressure is assumed to weed out inefficient forms of institutions (Kingston and Caballero, 2009). In this vain technological progress involving an increasing specialisation will necessarily lead to more complex institutional structures in order to keep transaction costs low. One of the most popular examples of endogenous emergence of institutions centres around the origins of trade networks in medieval time (Shirley, 2005). Starting from trade among members of the same community like villages, clans or ethnicities enlarged trade networks required new forms of institutions. Greif (1993) describes the use of social ties, common language and a common religion as identifying factors among Mahgribi traders in the 11<sup>th</sup> century. Later the development of complex institutional structures, involving written contracts, codes of conduct, standardised weights and measures, and third party

enforcement, goes hand in hand with increasingly impersonal exchange. In all these developments traders' interest in reducing transaction costs and uncertainty is recognised as the main driver. Therefore, Milgrom, et al. (1990) call them self-organising institutions to secure property rights before the existence of states. Similarly, Alston, et al. (2009) illustrate using examples of land settlements in Australia, Brazil and the USA how de facto property rights might turn into de jure rights if governments legalise practices with hindsight.<sup>5</sup> However, this simplistic assumption is criticised as not being able to study interaction in imperfectly competitive markets (Kingston and Caballero, 2009). The transaction cost view has been frequently criticised as too simplistic. Although the TCE approach is able to predict the emergence of local optima but it has difficulty in explaining the persistence of inefficient or dysfunctional institutions.

The 'imperfect information school' emphasises the emergence of institutions as a substitute for missing markets for credit, insurance and other goods. We might even include Ostrom's writing into this strand of literature. Ostrom (1992) explicitly allows the possibility that resource users and policymakers craft institutions with the aim to reduce 'social overhead costs' of cooperation in resource management. This process of endogenous institutional change is likely to be continuous and constrained by higher-level institutions as cultural norms and social structure. Cleaver (2002) challenges the idea of purposeful institutional change and claims change as multipurpose. Therefore, the author coins the term 'institutional bricolage'.

Less formalised and in the context of economic growth, Kremer, et al. (2001) argue that governments search over a policy space in order to find appropriate institutions to implement. In their framework, a government aims at increasing a country's economic wealth. With an increasing economic wealth the government's willingness to experiment declines and a country's institutional setting becomes more stable.

Another strand of the literature models institutional change, albeit limited to policies, as an outcome of the behaviour of policy makers. The theory dates back to Theil's (1964) work on government decision making. Following this theory, policies are in place because they serve the interest of those with relatively more political power and influence. One building block is the support from different social groups which policy makers try to maximise by their policy choice. The policy maker's decision making process can be formalised by a policy preference function (PPF). The policy maker is assumed to maximise the PPF over some measures of producer, consumer and taxpayer utilities. Typically, producer and consumer surplus as well as budget expenditures are used as proxies for those measures. Example of costs might be complaints/ judicial cases by opponents of new land contract laws (e.g. legalisation or formalisation of already practised behaviour). IMF (2005) favours a similar approach

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<sup>5</sup> The legalisation of practices among groups of resource users forms one example of a path dependent process.

applied to the example of monarchies in the early 19<sup>th</sup>-century Europe. The authors claim that the constraints put on monarchies in Europe and establishing constitutions before the onset of the industrial revolution set the path of the development of institutions. However, in countries where the industrial revolution arrived before the establishment of constitutions, existing political elites abused their influence to appropriate economic rents. Finally, elites in resource-rich countries relatively closed to foreign trade are accused to slow-down the establishment of constitutions more than in resource-poor countries.<sup>6</sup> This last case already highlights that often specific institutional changes are not independent of earlier changes which is well-known as path-dependency. Existing institutions might create benefits to certain actors or groups in a society which are capable to either block or constraint further institutional changes to prevent losses.

For both types of change it is obvious that higher level institutions in the terminology of Williamson (2000) frame the process. A similar structure has been suggested by Davis (2010). He calls all institutions which directly impact economic behaviour and outcomes as 'economic institutions' and those with an indirect impact, only, 'meta-institutions'. Whereas in this context institutional quality describes the transaction costs caused by economic institutions, the ability of the meta-institutions to adapt to new technologies or demands is called institutional flexibility. Using the example by North (2005), in an economy where the highest rate of return comes from piracy drivers of change, or meta-institutions will result in economic institutions which enable actors to be better pirates. Translated to the case of natural resource use, in ideal-type autocratic systems institutions with democratic elements like water user associations will be more difficult or even impossible to emerge. Similarly, cultural background and history will impact the characteristics of emerging institutions. One common strategy is the assumption of fixed higher level institutions (Ostrom, 2005).

The NEI has been frequently criticised, namely that it often abstracts from power struggles (amongst others in markets) and is a-historical. As, for instance, Harriss-White says: "...economic markets are one of the arenas for struggles between political interests. Markets do not perform 'subject to' institutions; they are bundles of institutions and are nested in others." (Harriss-White (2003), p. 481). Similarly, NIE is suspected to understate the tenacity of vested interests, the enormity of the collective action problem in bringing about institutional change, and the differential capacity of different social groups in mobilisation and coordination (Bardhan, 2005). This perspective is extremely relevant for looking at markets (and rural institutions in general) in China, taken that there are enormous power struggles which determine the outcome, rather than (only) the minimization of transaction costs.

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<sup>6</sup> Acemoglu (2006) provides more formal support to this hypothesis.

### **3. Application to the natural resource use in rural China**

In what follows we look at four different institutional changes in China within the last four decades: a) the introduction of the household responsibility system, b) the introduction of the 2003 Rural Land Contracting Law, c) the introduction of Water User Associations, and d) institutional changes in governing groundwater use in Northwest China. Based on the theories discussed in Section 2 we aim at identifying major determinants of the specific institutional change. Selecting all examples from within one country and a rather short period of time minimises the risk of neglecting substantial influences of changes in individual preferences, especially those that are closely determined by cultural factors.

#### *Institutions of agricultural land use*

Verdery (2004) formalises the privatisation process as an act of creating boundaries. Following this view, we might ask here which boundaries were introduced and by whom. Rather than providing a full account of institutional change, we focus here on very few selected changes and try to link them with the analytical framework outlined above, based on our literature review. A more recent full survey of agricultural policy reforms in China is provided among others by Heerink, et al. (2006).

The starting point of China's liberalisation path has been the transfer of use rights of agricultural land from collectives to households linked to the introduction of the Household Responsibility System in the late 1970s-early 1980s. Initially, the lease period was limited to 5 years (and in some cases even shorter). The state, more precisely the production collective, remained the owner of agricultural land (Ho, 2001).<sup>7</sup> From the perspective of the local village community, this institutional change is clearly exogenously driven. The central government opted for the implemented mode of dismantling production cooperatives, and local production collectives had no voice in the formulation of the policy. Preserving social peace in rural areas might have been one of the more important motives of this choice (Ho and Spoor, 2006). However, the reform has not been introduced in all places at the same time. First experiments and secret grassroots initiatives resulting in the new form of land use governance have been started in various places already in 1978 (Ash, 1988). The strategy of stepwise implementation of reforms is closely linked with the idiom "crossing the river by feeling the stones" attributed to Deng Xiaoping.

Over the more than three decades of economic reforms in China, several provincial and local governments started policy initiatives under the umbrella of the Communist Party. Ho (2001), for instance, mentions

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<sup>7</sup> The ownership of natural resources has been formalised in the 1982 Constitution (see Ho (2001)). Rural land is owned by the collective and other natural resources like urban land, waters, streams, forest and grassland is state-owned.

experiments with alternative land tenure reforms in Zhejiang. Most recently, the so-called Chengdu experiment aimed at increasing land-use efficiency and to balance rural-urban development. Another influential role has been played by the 2008 earthquake and subsequent need for fast reconstruction (Li, 2012). The Chengdu experiment involves, among other policies, the issuing of land titles to rural households for agricultural land and housing land. Those land titles enable households to transfer land use rights even beyond the village and to use it as collateral.

Most interestingly, the Chengdu government delegated the decision to redistribute land to the brigades (natural villages). Referring back to the theories above, the experimental perspective (Kremer, Onatski and Stock, 2001) as well as a more market-oriented approach might provide a frame for analysis. It has to be highlighted that the term policy experiments in this context describes one different policy in one place instead of different implementations of the same policy as might be intended by other scholars related to impact assessment of projects using randomised experiments.

Land use rights threatened by reallocations to reflect demographic changes in the village, changes of contracting periods at will or changes of contract fees. Obviously, farmers are not able to fully exclude other's use claims.<sup>8</sup> Over the course of dismantling agricultural collectives, villages step in as local actors. However, issues like land ownership carried potential for conflict. For instance, continuous urban expansion led to an increasing value of land and created potentials for corruption. Legal constraints of acquisition of agricultural land for non-agricultural purposes raised benefits of land taking through local and regional officials (Deininger and Jin, 2009).

The introduction of the 2003 Rural Land Contracting Law (RLCL), our second example, aimed at better protecting farmers' legal rights and at promoting the development of the land transfer market (Heerink, Spoor and Qu, 2006). In the light of the theories discussed above this policy change might be partly caused the demand of farmers for a better protection of their use rights. At the same time the change reflects an increased bargaining power of the rural population. For instance, the new law enables farmers to claim compensation when their farmland is confiscated. Land transfer rights are more formalised. Rights of lower-level governments to take back land or adjust land during the contract period have been abolished with this new law. The 2003 RLCL establishes procedures of land taking combined with compensatory payments and foresees ways for farmers to appeal against violations. Thus, the costs of illegal land taking increase. As a result, property rights on land become more stable in the neo-classical perspective. Opponents of a more

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<sup>8</sup> K. Verdery assigns the term 'fuzzy property' to property without routinized rules and crystallized practices of exclusion and inclusion (Verdery, 1999; 2004). Putting it in different terms, fuzzy property lacks the following three characteristics: clear boundaries, definition of owners and possibility of exclusion.

transparent regulation of land markets and further formalisation of property rights are rural communes whose revenues heavily depend on land sales. Thus, giving land users more rights implies limiting power of rural communes and local officials.

However, Ho (2009) indicates that peasants found the fuzziness of land "ownership" and even the regular land re-allocation was seen as protective for them, rather than indicating any form of "insecure" property rights. Underlying causes of this new law could be fears of social unrest and restricting speculative behaviour of officials. Among other indicators of growing unrest, half a million cases of land related corruption has been filed to courts between 1999 and 2002 (Zhu, 2005); see even more references in Deininger and Jin (2009). Another reason of the drafting of a new law can be seen in the increasing number of land transactions and the inappropriateness of institutions in place. Deininger and Jin (2009) argue that central planner were more and more unable to administer potential land transactions which gave rise to decentralised approaches. Land allocation mechanisms moved from leader-based to market-based since the introduction of the household responsibility system. For these arguments the transaction cost focused theory as well as the PPF provides a useful basis.

Whereas the transaction cost perspective centres around the establishment of land markets and prohibitively high costs of transactions, the PPF approach puts the interest of policy makers in social peace and support by citizens central. Furthermore, limiting power of rural communes and local officials might also be in the interest of provincial and national authorities to keep hierarchies intact. The few local elites which might have benefited from land takings are not strong enough to block institutional change completely. Regarding the latter processes it is clear that a political economy approach towards markets (as social and political institutions) is a useful tool of analysis as well as warning against abstracting from politics which economists often tend to do (Harriss-White, 2003; Mackintosh, 1990; White, 1993).

### *Institutions of agricultural water use*

As one example of institutions of agricultural water use we discuss the introduction of Water User Associations. Starting in 1990 Chinese government aimed at rehabilitating the irrigation sector which has been formally still under collective management. One element of the package of policies has been the introduction of Water User Associations starting in 1995 Qu, et al. (2011); Wang, et al. (2010); World Bank (2003). The establishment of WUAs represent an institutional change as responsibilities of managing surface water for irrigation purposes shifted from village authorities to farmers' organisations, ideally organised 'hydraulically' and not according to administrative boundaries. Similar to land reforms, the introduction of water user associations started in the

form of experiments in some pilot areas. As reported by Wang, Huang, Zhang, Huang and Rozelle (2010) some WUAs have been established with the support of the World Bank. The World Bank's involvement, including a governance style called the Five Principles, is clearly an example of exogenously driven institutional change. In the non-neoclassical institutional economics perspective such a development represents asymmetric power relations between administration and farm households. Farm households are too weak to bring alternative institutional forms into life. However, World Bank (2003) reports the existence of participatory incentives which were already in place before it got involved (e.g. in Hubei). Rules applied by "experimental water user groups" with responsibility for the local irrigation network provide an illustrating example of endogenously emerged institutions, which had foundations in common pool resource management and exchanging labour. Unfortunately, the publications provide only limited information on the detailed content of such institutions. Survey evidence from Northern China shows that one-fifth of the villages implemented some reforms of surface water management between 1995 and 2004. Although all of these 38 villages started out of the same management type, the new management forms differ (even within provinces). At the same time the Wang, Huang, Zhang, Huang and Rozelle (2010) found even (very few) villages which reformed surface water management from a WUA approach back to collective (village-centred) management. Thus, institutional change in this example provides a mixture of an exogenously as well as endogenously driven process.

As a last example we look at the governance of groundwater use in Northern China. In spite of several regulations, Wang, et al. (2007) claim that groundwater use is not consistently governed by public rules. Efforts of rules' implementation seem to vary across regions. Based on the national 1988 Water Law property rights of all underground water belong to the state. The right to drill tube wells and the spacing of wells is regulated by lower level administrative units, i.e. prefectures and counties. Aquifers that span jurisdictional boundaries face no unified governance. Based on survey evidence in more than 400 villages in 6 provinces of Northern China, Wang, Huang, Blanke, Huang and Rozelle (2007) report that only a minority of villages obtained permission before drilling wells and respected spacing requirements. Physical limits of groundwater extraction for well owners have been non-existent. The authors conclude that groundwater use in the villages they surveyed was almost completely unregulated, in spite of the existence of public rules and regulations. At the individual level, the separation of villages into households who drilled and operate wells by own financial resources and households -who do not operate own wells but need water for agricultural production- is seen as driving the emergence of groundwater markets. Here, the institution 'groundwater market' clearly emerges endogenously from a shift of drilling and operating activities from collectives to

individuals. Whether non-operating households reach this status by own choice or by lack of resources to drill own wells cannot be assessed from the literature and requires further analysis.

## **Conclusion**

In this paper we have attempted to provide an overview of institutional theories that shed light on institutional change, in particular focusing on those institutions that relate to natural resource use in rural areas. This has provided a broad perspective on “institutionalism” which we argue is useful to apply to a number of case studies, in this case the management of land and water resources in China, during a long process of more than three decades of economic and institutional reforms. As every theory might have limitations and institutional change in real world is heterogeneous too, the proposed multiple-theoretical approach offers new insights. The present study illustrates this statement with four examples of institutions governing natural resource use from rural China, namely the development and change in common and private property right regimes of agricultural land, and the development of water users associations and the governance of irrigation water (surface and groundwater-based). We have seen that there are often complex combinations of endogenous and exogenous change, experiments from below and top-down policies that are implemented across the country.

The existence of rents accruing to a group of agents might be one crucial prerequisite to turn neoclassical theories relevant. A Chinese rural household at the end of the 1990s will be more likely to demand institutional changes than in a Mao-type production collective twenty years earlier. These complexities also reveal the necessities to analyse institutional change with a multi-focused lens, which means that also power relations, and a more political analysis of markets is warranted for understanding institutional change in China.

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