Why is Governance Change so Painful but only Limitedly Predictable?

Linking Restructuring in Transition to Self-Reinforcing Governance Structures[†]

by

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Abstract

This paper aims to contribute to our understanding of agricultural restructuring in transition countries by analyzing determinants of governance change. On basis of the urn-function model, the paper seeks to explain the stability of large-scale agriculture by linking history, policy, and the relative governance share in the agricultural sector. Network externalities and increasing transactional returns resulting from the governance structure 'socialist farming' may cause the stability of large-scale farming structures during transition, even though family farming was initially expected to be more efficient according the recent literature's transaction cost arguments on the organization of agricultural production. The model is empirically exposed to the emergence of socialist farms and their restructuring during transition in the Czech Republic.

Keyword: transaction, self-reinforcement, network externalities, Czech agriculture.

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1 Introduction

Interestingly, agricultural transition in many Central and Eastern European Countries (CEEC) did not result in family farming in which a self-employed farmer and his family members usually work on farm. Rather, corporations and cooperatives doing agricultural business characterize the agricultural picture even twelve years after the Big Bang. However, the importance of individual farming and their farm sizes have significantly increased in the past decade, too. Nevertheless, corporate and collective companies rather than individual farms cultivate a considerable share of agricultural resources in many CEEC, usually deploying more than a dozen of employees and several hundreds or even thousands of hectares of agricultural land (Table 1 in the Appendix for selected cases, see also Lerman, 2000a; Swinnen, 1997; OECD, 1999: 67).

These so-called large-scale farms generally have directly descended from the socialist state or collective farms. Even though individual property rights over assets of state and collective farms were re-established to a significant degree into private hands in early transition,[1] interestingly the agricultural structure and the farm entities did not directly follow this change of property rights structures.[2]

In the early stage of transition after the first reforms, many policy makers and experts often dreamt of a rapid restructuring into farm structures similar to Western non-transition countries. However, this did hardly happen. Looking at the transactional level of labor, land, and non-land asset input into agricultural firms, one can identify that contractual change has formally taken place while the virtual governance structures resulting in newly organized firms are still lagging behind that formal change (comp. Lerman 2000b). Therefore, apart from the emergence of agricultural production organized in new individual and corporate farms, passive organizational adjustments rather than active 'entrepreneurial' break-ups out of the socialist structure characterize restructuring in agricultural transition in CEEC.[3]

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1 In the Czech case, the respective laws concerning agricultural transition were the Land Law # 119/1990, # 403/1990, # 87/1991 ruling restitution, the Privatization Law # 427/1990 and # 229/1991 ruling privatizing state-owned assets, and the Transformation Law # 42/1992 ruling the re-establishing of property rights of collective farms to individuals.

2 Comp. Lerman 2000a for an overview of economic and policy indicators regarding agricultural transition.

3 See for the Russian case of farm restructuring, Sedik, Trueblood and Arnade 1998: 24 – 30.

This raises following question in this paper: why is there only a small portion of stakeholders who decide to leave the present farm in order to redeploy the assets in a different, possibly more efficient farm? In other words, why does an existing bundle of coordination mechanisms (the firm as a nexus of contracts) change slowly although the new institutional environment of privatization and decollectivization policies in transition countries would allow expeditious restructuring?

Based on this puzzle, understanding (agricultural) restructuring during transition needs a (re-) view at coordination mechanisms of transactions determining the boundaries and activities of the firm. In doing that, one comes to the problem of self-reinforcing governance structures caused by positive network externalities and transactional increasing returns. This paper explicitly intends to incorporate into its analysis the impact of the existing governance structure on firm restructuring in transition (Argyres and Liebeskind, 1999). Combining the formal model of Lazzarini (1999) with arguments of Arthur (1989), Balmann (1999), Katz and Shapiro (1985), and Beige (1999), the paper will present the accumulated history and the share of a governance structure in a given sector as key factors for understanding firm restructuring and disorganization in transition (Blanchard and Kremer 1997).

The remainder is as follows: chapter 2 addresses agricultural restructuring by means of selected empirical observations and the theoretical questions, the analytical framework and possible driving forces of governance change. Chapter 3 provides the model on governance change based on the 'urn' function. Chapter 4 links the theoretical model to the emergence of socialist agriculture and the governance change during transition in the Czech case by means of a qualitative analysis on the transactional level. Chapter 5 and 6 discuss further factors and conclude the paper.

2 Background: Firm Restructuring in Agricultural Transition

Recent contributions in literature argue that initial conditions affect the impact of reform policies and influence the choice of the reform (for instance, Sarris et al., 1999; Macours and Swinnen, 2000; Lerman, 2000; Brem, 2001). By assessing success and failure of transition with traditional performance measures, scholars attempt to elaborate driving forces behind transition. Complementary to those studies, this analysis also intends to link history, policy, and initial conditions to the restructuring outcome. How-

ever, the focus is on mechanisms of governance change in order to understand transition and firm restructuring. The rational behind is that the 'game' (here: coordination mechanisms) between actors involved takes place in so-called governance structures or institutional arrangements, which consist of contracts, commitments, and enforcement mechanisms. However, before theorizing on governance change in agriculture, let us first draw a picture on agricultural restructuring and derive selected questions.

2.1 Governance Change: Shift from Large-scale to Small-scale?

Agricultural restructuring in transition countries reveals as a complex process of revising the boundaries of an economic organization. Data show that if the policies on privatization and restructuring did not force the stakeholders of the firm to break up the existing economic organization,[4] the stakeholders of the successor organization like workers and managers, land owners and non-land owners adapted rather gradually to the new institutional environment. In other words: if the institutional framework in transition allows stakeholders to search themselves for the appropriate restructuring path of the firm, this economic organization tends to continue its business by restructuring gradually or even passively.

Figure 1 reproduces the dominance of joint farming or 'combined farming', as called in this paper, compared with individual farming for Bulgaria, Poland, and the Czech Republic. 'Combined farming' means that individual stakeholders contribute with their labor, land, and non-land assets to corporations or cooperatives.[5] As the figure shows for agricultural land, combined farming has decreased in its portion to total agricultural land during the transition period. Table 2 shows the result of restructuring more in detail for the Czech Republic based on latest available census data. In 1995, i.e. five years after the reforms started, still more than 80 percent of workforce and land were actively used in those farms larger than 12 employees and 100 hectares. This is even more interesting since the new policies did not prescribe any specific organizational or legal

[4] See Swinnen (1997, p. 382) for a classification of decollectivization policies.

[5] The empirical analysis of this paper is based on data generated by the KATO-survey, mainly conducted in 1999 in the Czech Republic, Poland, and Bulgaria. Here, it is narrowed to results from qualitative studies by interviewing different stakeholders. For a detailed introduction into the analytical framework of the whole project, see Brem 2001.

form for agricultural production.[6] This large-scale farming type is still dominant in the Czech Republic, although decreasing in its share (comp. Vuze, 2000).

[Figure 1 about here]

[Table 2 about here]

These data show that individual farming has increased in importance but combined farming is still prevailing in those regions where state and collective farming existed during socialism (Swinnen, 1997). This holds not only for the Czech Republic but also for many other transition countries where the state bureaucracy determined socialist large-scale farming.[7] In Poland, for example, the institutional framework did not prescribe any radical change into individual farms in those regions where farming was organized in state and collective farms during socialism (Milzcarek, 2000). As a result, structural changes in these Western Polish regions have so far occurred successively rather than in a radical way towards the framework provided by market institutions. In contrast to Poland, the so-called agro-industrial complexes of Bulgaria were abolished and decollectivized by the post-socialist government's set of privatization and decollectivization tools. As a consequence, there was a fundamental change in the Bulgarian structure of agriculture in the early transition. Large agro-industrial complexes, sometimes of 100,000 hectares in size, were privatized into small peasant plots. However, after several years of institutional entanglement in Bulgaria,[8] those small farms rediscovered larger farming units.

Although large-scale farming has been decreasing, it still contributes significantly to the agricultural structures in many CEEC, while individual farming has been continuously increasing both in number and scope over the transition period (comp. shown by the darts in Figure 1). However, the economic and social painfulness of the switch from large-scale into small-scale farming should be taken into account when reviewing restructuring policies for establishing individual farming. Usually, new individual farmers lacked technological and machinery equipment, livestock capital and comprehensive

[6] Comp. for the Czech case: Commercial Code (law # 513/1991) and Law on Individual Farming (law # 219/1991).

[7] A illustrative example is Albania.

[8] See for the institutional turmoil and the conceptless agricultural policy, Hanisch and Boevsky, 1999.

farming skills when they started their own business. Although it might be too early to assess failure and success of individual farming in transition countries, scholars usually commonly agree that the governance switch from large-scale to small-scale farming (western-styled farming) is a stressful challenge for both the stakeholders and the policy-makers.

Two selected statements given by people involved in farming shall reflect the reluctance of governance change. I interviewed in summer 2000 (comp. Footnote 5):

> A claimant of land now farmed by the successor corporate farm of a former state farm: "I was too old to re-start my own farm. Therefore, although I could get more lease payment from other farmers, I decided to lease out all my land to the direct successor farm which is now managed by M.. They eagerly seek to keep all land together. Taking out land from this farm is almost impossible because we would have to identify it and to make access to our small piece."

> The manager of a cooperative farm: "The political and social context in the our country does not yet allow new types of farming. People experienced 40 years of socialism but not the management of a market oriented individual farm business."

2.2 Governance Change: Possible Determinants in the Agricultural Case

In order to solve the puzzle on the reluctance of agricultural restructuring into new farm types, I will elaborate three factors determining the governance change: (a) the history of a given type of transactions, (b) the policy 'ruling' governance structures, and (c) the share a given governance type holds in the sector.

The basic idea for an answer is as follows: the governance of any new transaction in which the stakeholder – or the firm as a whole – seeks to engage may have become linked over time inseparably with the governance of other transactions in which the firm is already engaged. In other words, the past governance choices significantly influence the range and types of governance mechanisms that it can adopt in the future, as long as the policies do not forbid alternatives. Using qualitative analysis, we can see that each transaction governed in a large-scale firm (nexus of contracts) of the former socialist type was integrated in an economic and social system of other governance mechanisms of this socialist agriculture.

Therefore, each 'participant' of restructuring issues, who became a stakeholder when reforms started aiming at redeploying labor, land, and non-land assets in a transaction-cost efficient way, may have got an additional return from each new transaction when

conducted in the same institutional and organizational setting as he did before. In line with evolutionary economics in modern management theory, this return is the payoff generated by the stakeholders' learning, tacit knowledge and routines.

Specific to a given governance structure in which the transaction is organized, any new investment in both physical and human assets may cement the existing one. The explanation behind has to do with the emergence of an increasing irreversibility, inseparability, learning, trust, credible commitments, common knowledge and tacit knowledge in the firm.[9] This may cause increasing returns for the next transaction of the governance structure considered. If transactions recur over time, the benefits associated with the transaction positively influence and, thus, reinforce the governance structure. Moreover, based on informal institutions of the socialist economy, non-codified behavior, such as non-contracted maintenance services rendered from the firm to the individuals or the hierarchical decision-making specific to the socialist firm and inherited from transactional behavior in the past, may reinforce an existing governance structure (North, 1999; O'Brien et al., 1999).

Hence, following the arguments outlined above, the model aims to explain that next transactions will be governed similarly as they were before as long as two conditions hold:

- There have been increasing transactional returns in the past when the stakeholder decided for conducting transactions in the same governance structure.
- In transition, the alternative governance structure is an option of the institutional environment but not a 'must'.

The governance structure in agriculture during socialism in many transition countries was large-scale farming with a large number of hired employees (including management), specific fixed assets of an industrial-farming type (capital), giant fields with removed border stones of the pre-socialist property rights structure and field-specific investments in irrigation and/or infrastructure (land). Then, the reason for increasing returns is that benefits from the way of transacting in the past supports to continue this type of transaction, even if another governance structure seems more efficient. This

[9] See for more details concerning tacit knowledge, Noteboom 1993, p. 13 and p. 19.

holds as long as benefits of using the former governance structure are larger than foregone benefits of the more efficient one.

2.3 Governance Change: Understanding Firm Restructuring

New Institutional Economics and Transaction Cost Economics provide a fruitful framework for analyzing restructuring. From this economic view, a transaction is an exchange of a good or service. This exchange is costly for reason of searching and evaluating partners, contracting and conducting transactions, and safeguarding and enforcing the arrangements. Since usually a transaction is linked to another transaction (e.g. the worker's labor input into the firm and the remuneration to him from the firm), the transaction partners need efficient coordination mechanisms in form of governance structures (or institutional arrangements). Looking at the efficiency of governance structures, not only the attributes of a transaction (i.e. asset specificity, uncertainty, frequency, measurability) but also the institutional environment (laws, policies, values, norms) and the actors (bounded rationality, opportunism) constitute the transaction cost efficient governance structure.

In this model, derived from Williamson's transaction cost economics (e.g. 1990, 1996), the firm can be considered as a nexus of hierarchical governance structures (internal transactions, e.g. for labor, land, non-land assets). Its external transactions are governed by hybrid and market coordination mechanisms (external transaction, e.g. for contracting with service stations, processing companies, buying machines).[10] In a straightforward sense, gradual restructuring of the firm in transition can be described as re-contracting transactions where some stakeholders decide for new governance structures whereas the majority of stakeholders keep their transactions in the existing ones. Figure 2, following Williamson's Three Layer Schema (1996: 223), sets the framework of restructuring with respect to the dynamics of governance change in transition.

[Figure 2 Governance change in transition: modeling framework.]

Several attributes like asset specificity, uncertainty, frequency, and measurability determine what kind of governance structure is efficient for the transaction. Here, the specificity of assets from socialist agriculture and the measurability of residuals gener-

ated by using an asset are depicted in order to illustrate governance change in agriculture. For reason of reducing analytical complexity, frequency and uncertainty are not dealt with in this paper.

2.4 Governance Change: Driving Forces of Governance Stability

As described above, it is astonishing that the large-scale, factory-styled agricultural production in transition countries is still dominating the agricultural structure. This apparently contradicts many studies showing that farming is most efficiently organized in firms where, on the one hand, moral hazard problems are excluded and, on the other hand, the residual claimant can gain from economies of scale and specialization.[11] In this literature, family farms with individual and/or family residual claimants rather than factory-styled organizations of agricultural production are the result of this trade-off.[12] This trade-off in favor of family farms holds as long as the non-predictable nature plays the major role in determining the amount of yield and, therefore, income for the residual claimant. Therefore, identifying residuals drives agricultural production into governance structures of small-scale farming.

In contrast to this driving force for governance change towards individual farming, governance structures consist of investments in the past resulting in asset specificity what may retard governance change. Therefore, a given governance structure may cause positive network externalities for both the following transaction of the same actors involved and the transactions of 'neighbors' having a similar coordination problem (other actors in the sector). Positive network externalities emerge when the return of transacting in a given governance structure increases with the number of transactions conducted via this governance structure. For example, farmers associations are more powerful if they represent many farms. This, however, will only be the case after a certain time of existence.

We can thus constitute that there might be economic reasons for re-contracting in the same governance structure (self-reinforcing governance structures), although this governance structure itself has lost its economic superiority over others due to a shift in the institutional environment. Both new formal institutions (e.g. laws and policies) and in-

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[10] Comp. for the 'firm as a nexus of contract' Hansmann, 1996; Hart, 1995; Jensen and Meckling, 1976.

[11] For a discussion on the trade-off between gains of specialization and moral hazard problems, see Schmitt, 1993; Mathjis, 1999; Roumasset, 1995; Allen and Lueck, 1998, Brem and Allen, 2000.

formal institutions (values, norms) 'ruling' the governance structure will determine governance change. For example, a new policy in transition giving preferences to individual coordination of labor, land, and non-land assets may result in faster governance change towards individual farming. To make this more explicit, let us develop a formal model.

3 Modeling Governance Change

The urn model, usually used to describe economic processes with respect to path dependency, presents an intuitive increasing return process (Arthur, 1989, Lazzarini, 1999). Suppose there are balls of two colors – say red and black - in an urn. The probability that a red ball will be drawn from the urn is a function of the current proportion of red and black balls in the urn. An increasing proportion of red balls in the urn increases the probability of drawing a red ball in the next round. Therefore, the process of drawing balls over time can be self-reinforcing (Lazzarini, 1999).

3.1 Two Governance Structures for Agricultural Production

The stochastic process applied to structural change can provide interesting insights in dynamics.[13] Suppose the governance change in agriculture be a dichotomous decision of the firm's stakeholders on either redeploying assets in large-scale farming, denoted by L, or stopping this type of farming and starting small-scale individual farming, denoted by S. In the large-scale governance structure, an agricultural firm contracts labor on wage basis or co-ownership while small-scale farming indicates the farmer's self-employment.

Regarding the size, large-scale farming means that several employees work in the farm for which reason they have to identify and to assign the residuals on labor input either among them or to the owners of the farm, whereas in small-scale farms the farmer and/or his family is the residual claimant easily relating added value to effort. Regarding ownership, large-scale farming in transition countries indicates that several (inside and outside) owners contribute with land and non-land assets to the farm's capital stock. A large number of leasing and membership contracts on land and non-land assets char-

[12] The most exemplary exception is the Israel Kibbuz (e.g. Schimmerling 1992).
[13] For details concerning the applicability in agricultural economics, see Balmann 1995.

acterize large-scale farming. The scale and size of those factor input is smaller in small-scale farms.

3.2 'Urn' Function: Static

Stakeholder N can choose L or S for transacting labor, land and non-land assets. G_L and G_S represent the number of accumulated transactions t in the governance form of L and S, respectively, where $t = G_L + G_S$. Since transactions accumulate over time and, for our case, in the same frequency for L and S, a large t indicates many transactions. Define Y_L and Y_S as the share of G_L and, respectively, G_S of the total bunch of governance structures so that $Y_L + Y_S = 1$. Increasing returns occur over time since transactions, governed as L or S, are accumulated one by one. $\phi_L(Y_L)$ and $\phi_S(Y_S)$ are the continuous functions over the benefits for N to transact via L or S. Depending upon the share of Y_L and Y_S in the past and assuming a linear function for $\phi_{\cdot}(\,)$, $\phi_{\cdot}(\,)$ is increasing, zero, or decreasing, if there are increasing, constant, or decreasing returns to the transaction in the governance structure L or S.

For simplicity, let us concentrate only on benefits of the transaction setting aside costs. N obtains a total return P as follows:

$$P_L = \phi_L(Y_L) + \varepsilon_L = a\, Y_L + \varepsilon_L, \text{ if } N \text{ transacts as } L, \tag{1}$$

and

$$P_S = \phi_S(Y_s) + \varepsilon_S = b\, Y_S + \varepsilon_S, \text{ if } N \text{ transacts as } S, \tag{2}$$

where a and b are the slopes of the linear function and $a,b \in [0; 1]$, and ε_L and ε_S are random factors. Random factors, for example, induce further 'preferences' or attraction towards L and S, respectively. For our purpose, we can simplify ε_L and ε_S with independence, uniformity, and the distribution between 0 and 1 [14]. Although other functional types might be possible, linearity satisfies for the further discussion. The basic idea behind this model remains the same under linearity or any other continuously increasing function – at least in the endeavor of this paper. Moreover, this function saturates since Y_L and $Y_S = 1$. This, however, implies that this economy does not grow meaning that increasing returns emerge from transactions of a given resource pool.

Again, we can assume for our purpose that land and, more generally, the total number of transactions remain constant (e.g. the number of agricultural employees be constant independent on contracting in *L* or *S*). What changes in transition or is in-question is the governance structure for the transaction.

Equation (1) and (2) show that, if parameters *a* or *b* are low, they indicate small increasing returns for accumulated transactions. If they are large, the governance structures results in large increasing returns. To answer the question why possible downsizing of large-scale farms into family farms was not done abruptly but rather gradually, we need to understand the dynamic nature of self-reinforcement. The question, therefore, is addressed to factors determining self-reinforcement.

For instruction, I want to answer this question with the urn model of Arthur, and later I apply this model to 'real economics' of governance change in transition. The mathematical model may look as follows: since ε_L and ε_S are independent and uniformly distributed between *0* and *1*, the joint probability density function is $f(\varepsilon_L, \varepsilon_S) = 1$ for ε_L and $\varepsilon_S \in [0, 1]$ and *0* otherwise. In order to calculate the probability $w_L = w[N$ transacts in $L] = w[P_L > P_S] = w[\phi_L(Y_L) + \varepsilon_L >> \phi_S(Y_S) + \varepsilon_S]$, we denote $\lambda = \phi_L(Y_L) - \phi_S(Y_S)$ and assume for the moment that $\lambda \in [-1, 1]$. Then, λ can provide for cases of the probability w_L. If $\lambda \in [0, 1]$,

$$w_L = 1 - \int_{\lambda}^{1} \int_{0}^{e_S - \lambda} de_L de_B = \frac{1}{2} + \lambda - \frac{\lambda^2}{2}, \tag{3}$$

and if $\lambda \in [-1, 0]$,

$$w_L = 1 - \int_{-\lambda}^{1} \int_{0}^{e_S + \lambda} de_S de_L = \frac{1}{2} + \lambda + \frac{\lambda^2}{2} \quad . \tag{4}$$

Because we specified $\phi_i(\,.\,)$ as a linear function, we have $\lambda = (a + b)Y_L - b$, since $Y_L = 1 - Y_S$. If $a = b = 0$, w_L is trivially equal to ½.[15] If $a + b \neq 0$, the substitution into the equations above yields the static 'urn' function,

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[14] The limits between 0 and 1 are reasonable because parameters and shares also vary between 0 and 1.

[15] This is actually a spot market situation. There are no economies associated with past interaction; the selection of transaction partners is random. Obviously, this is not the case if there are increasing returns for at least one type of the hierarchical governance structure *L* and *S*.

$$w_L(Y_L) = \left(\frac{1}{2} - b + \frac{b^2}{2}\right) + (a+b)(1-b)Y_L + \frac{(a+b)^2}{2}Y_L^2, \quad \text{if } 0 \le Y_L \le \frac{b}{a+b}, \tag{5}$$

and

$$w_L(Y_L) = \left(\frac{1}{2} - b - \frac{b^2}{2}\right) + (a+b)(1+b)Y_L - \frac{(a+b)^2}{2}Y_L^2, \quad \text{if } \frac{b}{a+b} \le Y_L \le 1 \quad . \tag{6}$$

As equations (3) and (4) reveal, two factors determine w_L: the relative preference given by parameter *a* and *b*, and the share of the governance structure *L*. Let us assign the parameters *a* and *b* to the policies applied (e.g. decollectivization policies, prohibition of a certain company type, etc.). Moreover, as given above, Y_L and *t* represent the share of *L* in the sector and *L*'s 'history'. This leads us to the dynamics of governance change.

3.3 'Urn' Function: Dynamic

As *t* (number of transactions) elapses, the dynamics of the urn function (see Arthur, 1994) evolves as follows, considering *L*'s share Y_L:

$$E\left[Y_{L,t+1} \middle| Y_{L,t}\right] - Y_{L,t} = \frac{1}{t+1}\left[w_L(Y_{L,t}) - Y_{L,t}\right], \tag{7}$$

where $w_{L,t}$ is the dynamic urn function and *E* indicates the expected probability for Y_L of the *t+1* transaction. As equation (7) indicates, the expected share *Y* of *L* at *(t+1)* depends upon three characteristics: the previous share *L*, the previous probability w_L, and the total number of past transactions *t*. This is the basic idea of the dynamic urn function and of path dependency.

This generalized form of the 'urn' function shows that Y_L tends to the fixed point w_L where $w_L(Y_{L,t}) = w_{L,t}$. This is plausible since 'realistic' economic development reaches a saturation level where other driving forces limit further expansion into this governance structure.[16] This limiting share w_L* is the 'equilibrium'. As time (or the number of transaction *t*) elapses, *N*'s choice of selecting one of the two alternatives is biased towards *L*, if *L* provides transactional increasing returns whereas *S* yields only constant or

[16] Considering the totalitarian claim of socialism/communism over decades in CEEC and its failure in the end, one may find an answer in the limiting nature of 'realistic' economic development.

decreasing returns. As a consequence of $a > 0$ and $b = 0$ or $b < 0$,[17] the limiting share w_L^* is larger than ½ (see equation (A1)). If a was 1, all transactions would be governed in form L ($w_L^* = 1$). As the number of transactions increases, L becomes N's prevailing governance structure resulting in N's dependency upon governance structure L if N (limitedly) rationally intends to harvest positive returns. This is even the case if N's initial preferences were random or against L. The following application of this model will show how the parameter setting influences L and S, given their history and share.

4 Application: Czech Case of Agricultural Governance Change

The formal model of the urn function and the dynamic process can assist our understanding in the restructuring process in agricultural transition. For the empirical application, I shall divide the period under review into three phases, i.e. the phase when socialist agriculture emerged (hereinafter called Phase I), the early transition phase (the years between 1989/90 until 1993/94; hereinafter called Phase II) and the on-going transition (hereinafter called Phase III, approximately between 1994/95 until 2001). However, structuring agricultural transition into phases has pure illustrative purposes; institutional and organizational change in 'realistic' transition rather floats over time.

The following description focuses on the Czech case of governance change during agricultural transition. It shall reveal two insights. First, the institutional environment (here simply indicated by the level of parameter a or b) has evident but not the only impact on the choice of the governance structure in transition. Second, given the new policies on the level of the institutional environment, a time lag characterizes the governance switch from L to S. These two insights are in line with the main idea emerging from the theoretical model, i.e. governance change significantly depends upon the policy, the history and the dominance of this governance structure that was existent at time of new transaction. Limitedly, however, the model does neither allow deriving bargaining and rent seeking behavior of individuals nor does the model determine the policy choice.

[17] More generally, $a > b$ and $a > 0$.

4.1 Phase I: Emergence of Socialist Governance Structure

During the time of socialist ideology (Phase I), it was hardly possible for individual stakeholders and their family members to farm in small-scale farms.[18] As we know from the socialist history, individual farming was first defied, later banned, and then practically impossible, though many countries did not legally forbid individual farming. As a result, farming was predominantly organized in large-scale collective and state farms. Effective property rights over land and non-land assets belonged to the regime. Individuals who decided to work in agriculture had no alternative to the employment on a wage-basis in collective and state farms.[19] Therefore, once he decided to work in agriculture, the individual could only gain from his labor input if he worked in the socialist farm established on basis of political force. The following paragraphs describe selected factors.

Specific investments: Developed over four decades of socialism, investments both in physical assets and human assets have become specific to large-scale farming.[20] For example, cattle sheds keeping several thousand animals, milking technology for herd sizes of several hundred cows, specialized farms for forage production organizationally and physically separated from animal keeping farms, large forage storage facilities on farm, etc. were specific investments in the governance structure 'large-scale farming'. The field structure of land plots and the infrastructure in the countryside were in accordance with the factory-styled crop production.

Teamwork: The large-scale animal keeping facilities allowed organizing shift-work conducted by teams. The separation between crop production and animal husbandry resulted in teams of workers specific in their tasks. Since crop production was often organized in special farms separated from livestock husbandry farms, the information flow between those farms and the exchange of intermediate products (e.g. forage,

[18] In this paper, the terms 'small-scale farming' and 'family farming' should not indicate farming only for self-sufficiency but for income generation. The term just indicates an organizational type of farming where the entrepreneur and/or his family provide the majority of labor input and owns the entity.

[19] Farming on household plots served additional food supply for the family but was not a promising alternative governance form for deploying assets in agriculture. Even though the household plots contributed much to enrich self-sufficiency of rural families, the regime did not support household farming as autonomous governance mode of farming. It was rather a kind of garden farming with a few animals in the backyard.

slurry) occurred either between the management of different farms or, if one farm had both types of production lines, via the management within the same farm. The socialist model of agriculture interrupted the horizontally and vertically integration of crop farming and husbandry.

Task-based labor organization: Employees were trained and experienced in specific tasks such as driving tractors and harvesters, engineering in maintenance or breeding, constructing, administrating, managing, servicing, etc. Regarding entrepreneurship, the state farm and the collective farm were organized hierarchically where managers decided upon the party's planning and preferably in accordance with it. Since the manager's authority and managerial skills led the internal fate of the farm, he determined the set up and operation of the daily work and the farm's future development. This was not the duty of the simple worker.

Vertical integration: Farms distributed their products to the wholesale company on the district level. This state-owned firm, located in each district, had to take up all agricultural products from the farms. Farms were supposed not to process primary products themselves (except the proportion for self-supply of members and employees). Therefore, the regime ascertained in advance and by law the technologically separable interface between production and processing in the vertical agro-food chain.

Information flow and social life: Basically, there were no direct informational links of teams or individuals working between crop production and animal husbandry. This does not mean that individuals did not meet each other and did not socialize. In contrast, social life on farms, particularly on collective farms, was usually well developed, especially on the village level (Beywl and Flieger 1993). By managing parties and festivals in the village, the farms contributed to strengthen social life. In this respect, social life on socialist farms and social events behind the daily work were embedded in the governance form of socialist farms. However, information flow concerning the production (intra-firm exchange of information) went along the hierarchical lines from the farm's bottom to the top.

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[20] Comp. Schaub (1997) for asset specificity and sunk cost problems.

To summarize, transactions in socialist farming were coordinated in governance structures described as large-scale type with labor division (specific tasks per employee) and information flow. The individual was part of a bureaucratic organization in which the state or collective farm can be characterized as a 'branch' of the state bureaucracy's agriculture. Within agriculture, both human and physical assets were specific to large-scale farming. All people involved were trained and experienced in that system.

Until its formal end in late 1989 the socialist system provided increasing returns for each additional transaction, e.g. hiring labor, deciding for investments, production in animal keeping and crop production, distribution of production, local social life, etc. The parameter *a*, therefore, can be considered as very high or even *1*, while that parameter *b* was close to *0* for that time. For any new transaction *t*, *L* was the only solution and P_L was the attainable return while P_S, if existent at all, was very small depending primarily upon ε_S. Therefore, the probability *w*, that *N* chose *L*, was very high, what can be written as $w_L = w[\text{transacting in governance form } L] = w[P_L >> P_S] = w[\phi_L(Y_L) + \varepsilon_L >> \phi_S(Y_S) + \varepsilon_S]$.

Figure 3 shows a possible dynamic process with parameter $a = 0.7$ and $b = 0.3$ for the socialist period of governance emergence. The parameters seem plausible for the second half of socialism in the Czech Republic because the socialist policies stipulated transactional increasing returns for *L*. In the end of socialism, when the limiting share Y_L^* was certainly reached many years before 1989, the farm structure was characterized by Y_L close to *1* (in the computer simulation, the value equals to 98 percent corresponding with the share of state and collective farming in the agricultural sector in 1989). Then, by the end of 1989 or even some years before – when the communist regime attempted to introduce market-like reforms – the institutional change of transition converted parameter *a* and *b*.

[Figure 3: Governance Choice in Socialism and Transition Simulated by the 'Urn' Process.]

4.2 Phase II: Socialist Legacy

When studying the literature on policy recommendations in early transition, utopia characterizes the [neo-classical] forecasts in early transition. Both policy-makers and experts often dreamed of a rapid structural change of agriculture following the western

family-farming model. Looking at initial conditions, i.e. history, policy change, and share of governance structures including the inherent asset specificity and informal institutions, the model may help to explain the stability of 'combined' farming and the limited share of family farming in the early period of transition (Phase II). In the Czech case, the emergence of farm structures similar to Western Europe can be characterized as illusion, although the new institutional setting did not penalize family farming[21] (nor did it disfavor the continuation of large-scale socialist-like farming). I shall explain by means of a description.

Share of Governance Structures: As Figure 1 presents, large-scale farming was dominant in the end of socialism. Additionally to the fact that only state and collective farms contributed to agricultural production, the whole agricultural system as described in the previous section was set-up and experienced in this collective and state farming (agricultural education, universities, investment industries, etc.).

Policy Change: In the Czech case, *N* has benefited from transacting via *L* during transition because the policy design, such as the laws on privatization and decollectivization as well as the new Commercial Code and the Law on Physical Entities, kept $a > 0$.[22] The reason for the benefits is that *N*'s preference for *L* was caused by Y_L representing accumulated specific assets while *S* needed new investments before having accumulated Y_S. However, the policy change has only converted the relation between a and b, whereas the exquisiteness of large-scale farming, determined by irreversible investments in specific assets accumulated over the socialist time, was still the same at the start of restructuring.

History: Four decades of socialism resulted in physical structure, human knowledge and experience, and social networks specific to large-scale farming. The economic explanation is the stability of a governance structure is not only determined by its share of contracts for labor, land, and non-land assets in a sector. Additionally to that, Y_L condenses indivisibility and comparability of assets over a period of four decades, too. Both physical and human attributes of contracts are interrelated. Credible commit-

[21] In contrast, one could argue, that the investment program of the Czech government supporting farms smaller may disfavor large-scale farming.

[22] Even though a < b is possible.

ments, trust, tacit knowledge, routines, and perception are inseparably linked to the governance structures inherited from socialism. Human and physical assets are coherently kept in Y_L for which reason stakeholders decide to a large degree to transact in early transition via L. As equation (7) shows, the expected probability to act in L depends upon the number of transactions in the past and the previous probability to act in Y_L.

4.3 Phase III: Gradual Instead of Radical Restructuring

The independent variables in the model are history, policy, and the relative share of governance structures. However, analyzing the transition as a process reveals the problem of interdependent causal relationships between those variables. Moreover, the model does not reflect aspects of bargaining conflicts among stakeholders in the firm for the restructuring outcome. Despite these shortcomings, the model allows discussing empirical evidence for the late transition period in the Czech Republic (Phase III).

Governance Share: The Czech case of agricultural restructuring shows a declining importance of large-scale farming for the benefit of individual farms. However, this process significantly depends upon the decollectivization/privatization policy and the initial condition: the redeployment of state farm resources occurred into corporate farms and individual farms (Figure 4). This restructuring path was selected mainly during the time of privatizing and restitution of land and non-land assets. In stark contrast, stakeholders of the former collective farm redeployed their resources mainly in the direct successor farm, which simply converted the legal form 'Cooperative'. Here, stakeholders are more reluctant to re-contract labor, land, and non-land assets in governance structures of other farm types.

[Figure 4: Development of Governance Structures for Labor, Land, Capital, and Livestock Input by Ownership Categories]

Besides other factors (e.g. intra-firm characteristics among the stakeholders, comp. Brem 2001), the governance change is significantly determined by privatization and decollectivization policies in early transition. In the event of transforming collective farms, almost each member of the farm has received a piece of land and non-land capi-

tal (decollectivization). Moreover, he was also compensated for labor contributed over socialism to the farm. As a consequence, the individualized assets of the farm were very small in size and, therefore, any physical separation became prohibitively costly. Contrarily in the case of state farms, applicants (privatization) and claimants (restitution) got viable units of the whole farm. They could individualize this farming unit by means of starting their own farming business. Taken together this argument, the Czech privatization and restitution policies of state farms resulted in higher parameter value b (individual farming), while those for collective farms disfavored S (therefore, larger a).

History: It is difficult to measure the impact of history on the importance of current governance structures a decade after starting reforms. However, in line with the arguments in this paper, history looses its importance for the governance choice at present. The economic explanation is that the investments of the past have to be re-invested. There is much evidence from the interviews that the decisions on new investments (both in technology and human capital) are increasingly determined by the situation at time of the investment decision. However, this leads also to the problem of complementarities discussed in the following section on perspectives.

5 Governance Change: Discussion and Perspectives

The problem of asset specificities raises the question of the complementarities of investments what can lead to path dependent processes in transition, too. Even if one single asset is completely depreciated and in-question to be reinvested or not, there are still other assets in use. If there is complementary among the deployed assets, *N* is supposed to invest in large-scale farming assets if he also wants to exploit other deployed assets.

For example, *N* decided in early transition to continue farming in governance form *L* that was not breaking up into many small farms. The explanation might be that the stakeholder intended to continue the transaction via this governance structure until the deployed assets are exploited in terms of their depreciation. In the first years of operating in the new institutional set, this strategy was easily possible. Moreover, it was rational because the foregone benefits caused by the overwhelming moral hazard problems were smaller than the loss of assets and income if the farm had decided to change radically.

However, machines or buildings (assets deployed from the socialist farm) have to be replaced by new ones since they have been used up and/or become obsolete over time. *N* has to decide whether to reinvest this asset that fits to the rest of the deployed assets or not to invest. The latter solution has the consequence that *N* has either to use services from the market (e.g. leasing the tractor from a leasing company) or to stop farming. The former solution 'reinvesting' yields in reinforcing the governance form *L* since the reinvested asset fits into the same magnitude of other assets deployed in the farm (e.g. milking machine for 1000 cows). As a result, the agricultural structure does not change rapidly to the small-scale farm.

I call this process 'self-reinforcing' governance under complementarities. While the analysis on early transition focuses more on the governance structure's environment (policy design), the question on complementarities concentrates on the firm's internal reinforcing problem due to the reinvestments. However, empirically we are not yet able to draw any statements about this reinforcing process in the future. The governance change is limitedly predictable because of its stochastic nature. What we can constitute, however, is that the switch of a given coordination mechanism into another one, which is supposed to be more efficient, is costly. Because of the trade-off between switching costs and foregone benefits of the alternative not used, the existing governance structure can be reinforced.

6 Final remarks

Why is governance change so painful? The answer could be that the stability and inseparability of existing contractual arrangements including their informal context leads to self-reinforcing governance structures (institutional arrangements between stakeholders). As firms can be characterized as nexus of contracts, large-scale agricultural firms emerged from socialism undergo gradual restructuring during transition if the firm's stakeholders amend labor, land, and non-land input into the farm by a 'contract-by-contract' strategy over time. This dichotomous decision on the transactional level may result in gradual restructuring on the firm and even sector level. As long as assets are specific and still deployable, self-reinforcing processes can result in less structural change than we would expect in a world without these dynamic processes behind the existing coordination mechanisms.

A common tool describing these processes is the dynamic 'urn' function. Applied to the problem of restructuring large-scale agriculture of post-socialist countries, the urn function provides reasonable arguments to theorize on reinforcing mechanisms of governance structures. The basic idea is that as long as the institutional environment allows different ways of transacting including that corresponding to the former one, the structural change will occur slowly. The reason is that socialist countries forced agriculture into one unique time of farming, namely large-scale farming (except, for instance, Poland, Yugoslavia, China), where transactional increasing returns existed. At time of restructuring, transactional increasing returns were reduced or disappeared but governance-specific assets in form of irreversible investments were still there.

Why is governance change only limitedly predictable? This answer lies in the nature of governance choices stochastic to us as external observes. Moreover, we do not have a sophisticated model on the impact of informal institutions underlying a given governance structure. And as we know from many scholars in economics of history and transition, informal institutions matter significantly (comp. North, 2000).

Therefore, further research on (self-) reinforcing mechanisms shall concentrate on the human nature and its relation to the physical structure behind governance change. Mind maps and perception, trust and routines are likely to determine the fate of economic organizations in times of institutional change even more than our 'hard-core' economic measures appealing to employ. Since socialization and learning constrain the individual's behavior, we can learn from transition that institutions and the physical environment reinforce the individual's behavior. Moreover, not discussed in this paper, collective action and collective learning can be decisive for (path-dependent) outcomes of restructuring.

Transferred to transition issues and rapid social and economic change, we should rethink our models on individual and collective behavior reinforced by previous experience and socialization of stakeholders involved in decision-making. I strongly believe that the economic puzzle depends upon the experience, knowledge, perception and socialization of individuals. This, however, requires a revision of our basic assumptions and methodology in economics (e.g. methodological individualism, empirical design for analyzing institutional change). Transition processes serve as a laboratory of rapid institutional change in which governance change takes often part slowly. This may teach

us that there is more ‘rational’ behind economic decision-making than simply rational individuals seeking for utility maximization.

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Appendix

Basically, there are three special cases concerning a and b: (1) a > 0 and b = 0, (2) a = b > 0, and (3) a > 0, b > 0, a ≠ b. The equations of these cases look as follows (see Lazzarini 1999):

Case (1) (a > 0 and b = 0) yields in:

$$w_L(Y_L) = \frac{1}{2} + aY_L - \frac{a^2}{2} Y_L^2 \,, \tag{A1}$$

Case (2) (a = b > 0) is as follows:

$$w_L(Y_L) = \left(\frac{1}{2} - a + \frac{a^2}{2} \right) + 2a(1-a)Y_L + 2a^2 Y_L^2, \quad \text{if } 0 \le Y_L \le \frac{1}{2}, \tag{A2}$$

and

$$w_L(Y_L) = \left(\frac{1}{2} - a - \frac{a^2}{2} \right) + 2a(1+a)Y_L - 2a^2 Y_L^2, \quad \text{if } \frac{1}{2} \le Y_L \le 1 \,. \tag{A3}$$

Case (3) (a > 0, b > 0, a ≠ b) follows the general urn function (see main body).

Table 1: Main characteristics of two selected cases of farm restructuring

Characteristics	Case 1 From collective into cooperative type	Case 2 From state into corporation
Legal form in 2000:	• cooperative entity (coop)	• limited liability company (Ltd.)
Characterization of restructuring:	• direct continuation of the farm; only change of the legal form	• organizational split up from the main body of the former state farm
# employees btw. 1989 and 2000:	• 375 → 110	• 450 → 63 • (100 → 63 in the main branch of the state farm)
Type of labor contracts:	• contracts with formal ownership but without special job security and time limits	• contracts without special job security and time limits
Land size from 1989 to 2000:	• 3,300 → 2,900	• 5,500 → 2,050
Type of land contracts:	• simple leasing contracts, membership does not influence the contract structure.	• simple leasing contracts.

Source: own presentation based on case studies of the KATO-Survey (see Footnote 5).

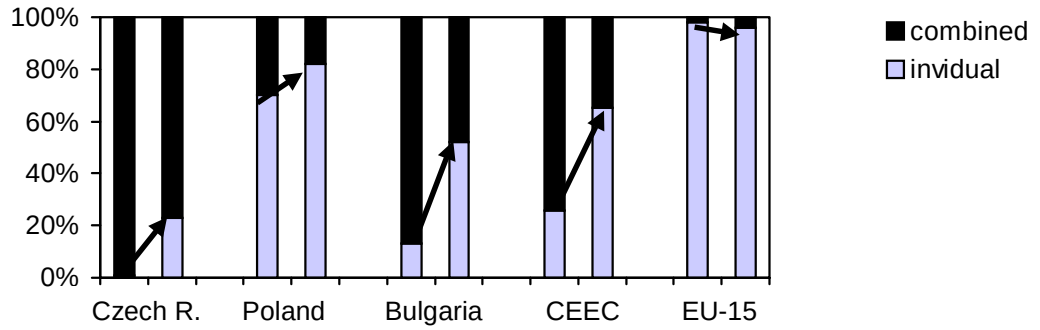

Figure 1: Share of agricultural land farmed by combined and individual farm types in selected transition countries in 1989 (left column) and 1998 (right column)

Source: OECD (1999: 67), Agrarbericht [mehrere Jgg.].

Table 2: Agricultural Structure by Farm Size Categories in the Czech Republic in 1995

Size category in ha	No of farms by 30 Sept. 1995	Share of total agricultural land (%)	Share of total employment in agriculture (%)	Employees per farm
0 < 10	13,075	1.6	10.1	1.9
10 < 50	8,795	5.2	6.5	1.8
50 < 100	1,461	2.8	2.5	4.2
100 < 500	1,565	10.1	8.0	12.4
500 < 1000	806	16.6	12.8	38.4
>= 1000	1,202	63.7	60.1	120.9
Total	26,904	100.0	100.0	9.0

Source: ČSU (1996: Tab.022, Strana 1, část III).

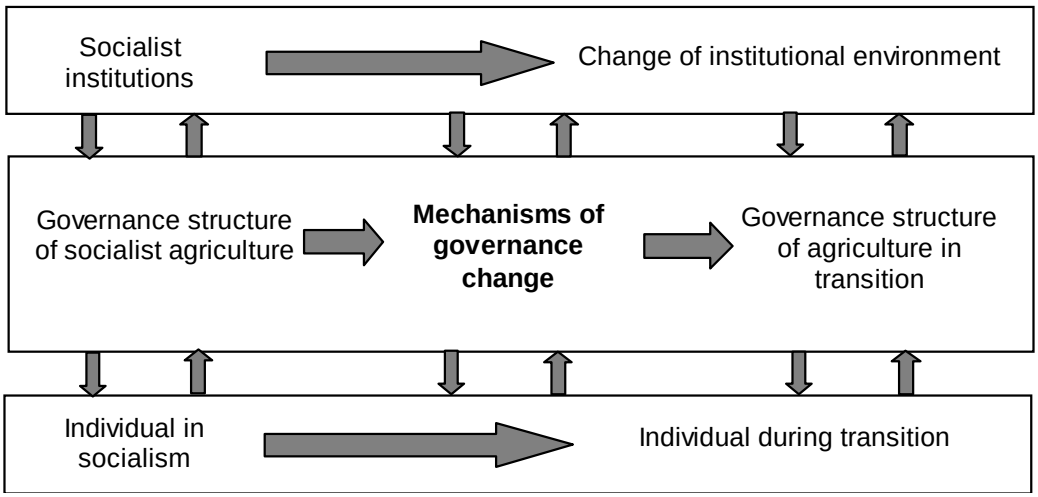

Figure 2 Governance change in transition: modeling framework.

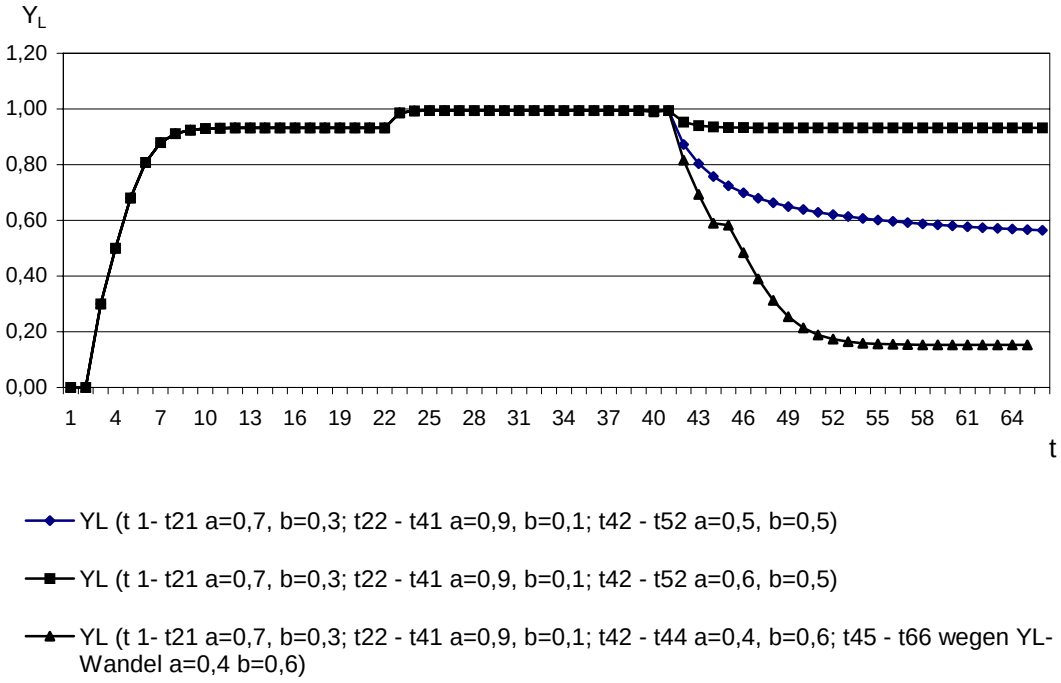

Figure 3: Governance Choice in Socialism and Transition Simulated by the 'Urn' Process.

Source: own computation.

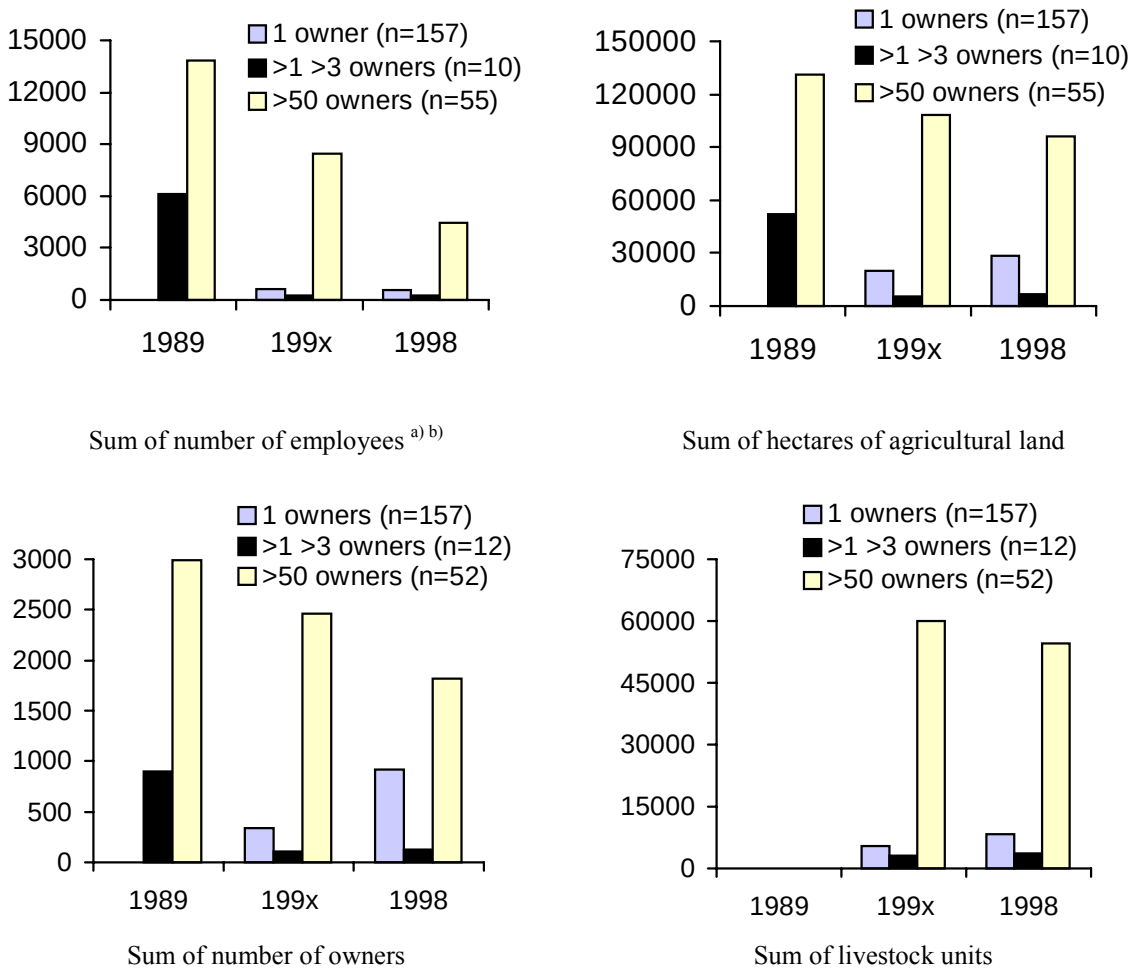

Figure 4: Development of Governance Structures for Labor, Land, Capital, and Livestock Input by Ownership Categories

a) The missing ownership categories are not shown for better lucidity: we observe an increase over time in the category ">10 >50 owners", which can be explained by the move in of individuals from the category ">50 owners"; the category ">3 >10 owners" shows a decline. For the year 1989, the category "1 owner" is missing data.

b) 'Sum' indicates the summarized number of the items in each category shown. The respondents were asked in 1999 to give the respective number for the last year of socialism (1989), the year of registering the farm after the release of the Commercial Code and Law on Physical Entities (199x; it varies among the respondents), and the year 1998 (comp. Brem 2001, for detailed description of the Kato-Survey and data).

Source: own presentation.