

The Russian Detour: Real Transition in a Virtual Economy?

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Why is the Russian Bear still asleep after ten years of transition?

RUSSIA HOLDS A TREMENDOUS AMOUNT OF RESOURCES—minerals, oil, forests etc. For example, its forests are dispersed over 11 time zones on a territory that contains more than 20% of the world's growing stock (Nilsson & Shvidenko, 1998). One has to multiply the Canadian forest resources about three to four times to reach the volumes encountered in Russia. An efficient but sensible exploitation of these resources could serve as a driving force in the transition towards a market economy that started with the dismantling of the Soviet state in 1991.¹

However, after almost 10 years of transition, timber production is smaller than ever. For example, in Arkhangelsk,² one of Russia's largest forest regions, harvesting reached a peak in 1987–88 with a total of around 25 million m³. Since then cutting has decreased significantly, and in 1996 the harvesting level was only about 29% of that in 1988. Between 1990 and 1996 the production of commercial wood dropped from 19.4 million m³ to 7.2 million m³ and in 1994 production fell below the 1940 level. The situation is virtually the same for the whole of Russia (Moiseyev *et al.*, 1998, pp. 21 ff.; Carlsson *et al.*, 2000).

By virtue of its former importance in the Russian economy and its future prospects for wealth creation the forest sector is a good illustration of the Russian dilemma. The nation seems to have it all: resources, people, endless needs to be fulfilled and, compared with many poor areas of the world, a production apparatus already exists, however underutilised. Yet, despite deliberate efforts to induce the 'blessings' of capitalism, the Russian Bear still seems to be asleep. How can this be explained?

Answering this question is the task of this article. Presumably the answer is relevant not only for the forest sector but for other sectors of the Russian economy as well. The article aims at increasing our understanding of the creation of a market economy by providing the fundamental insight that there are no easy top-down procedures that automatically lead to this goal.

Institutions and the development of markets

It has been argued that a general problem with many of the proposed measures for improving the situation in Russia is that they presuppose the existence of an already well-functioning institutional framework (North, 1997; Brezinski & Fritsch, 1997; Carlsson & Olsson, 1998a; Stiglitz, 1999; Carlsson, 2000). This objection is easy to understand if one appreciates that institutions should be understood as 'the rules of the game' in a society, not as organisational entities (North, 1990; Crawford & Ostrom, 1995). Thus an institutional framework consists of those formal and informal rules that de facto are used by a set of actors. More precisely, institutions can be defined 'as the legal, administrative and customary arrangements for repeated human interactions ... the prevailing institutional framework in a society consists of formal and informal rules' (Pejovich, 1998, p. 23). This implies that the institutional framework of a society is composed of a large number of institutions.

Ramazzotti (1998) discusses the idea of *dominant institutions* or a *dominant institutional setup*, i.e. 'one which is both persistent over time and extensive over economic space. It is the one most likely to affect a great deal of other institutions and related setups' (p. 7). Thus we can conjecture that the reason why vital markets, for example, in the forest sector, have failed to appear in Russia is because a dominant institutional setup still exists that negatively affects the new and more market-oriented institutions. If so, an overarching institutional umbrella might effectively nullify the restructuring efforts that have been pelting it for almost 10 years of transition. To summarise, the reason for the fact that economic development has failed to generate welfare for the Russian people is to be found in its institutional framework.

Institutions make the world predictable. In a market economy, institutions, such as the bank system, commercial law, conduct of trade, well-defined property rights systems etc., are essential. For example, a reliable credit system distributes economic risks among parties. Thus resources can be acquired on fixed terms, firms can confidently make investments and plan for the future, and so forth. A basic assumption behind any suggestion to deliberately change institutional arrangements is that institutions affect strategic choice and that the behaviour of each actor depends on his or her *expectation* of what others may do (cf. Coleman, 1988, 1990; Knight, 1994; Benham *et al.*, 1995; Gaddy & Ickes, 1998b).

North (1997, pp. 2ff.) has suggested four institutional features that are associated with low-cost transaction and creditable commitment, so essential for the functioning of any market economy:

- the cost of measuring,
- the size of the market,
- enforcement of rules,
- attitudes and perceptions.

The first, the cost of measuring, has to do with the fact that when no, or poor, standards exist with regard to the quality of goods and services, the behaviour of agents etc., every single transaction might be subject to endless deliberations. The same applies when property rights are ill-defined. For example, in the Russian forest

sector no branch organisations, such as, for example, the Scandinavian forest measuring societies, have yet been developed, and it is a well-known fact that property rights are poorly defined (Sheingauz *et al.*, 1995; Petrov, 1997; Fell, 1999).

The second feature is the size of the economy. When interpersonal exchange dominates, friends, relatives or clans are the main players. When markets grow exchange becomes more impersonal and more elaborate (and expensive) ways of constraining the parties might occur. However, market competition has demonstrated its capability to (cheaply) constrain the actors.

The third feature is the enforcement of rules. When parties dispute or break the rules they should have recourse to cheap ways of solving their differences. This is the logic behind the idea of third-party solutions. The legal system in a society performs this function. It should also be emphasised that the cheapest enforcement occurs when people have internalised certain kinds of behaviour as norms. When it comes to the Russian forest sector we have strong indications that the third prerequisite, that of effective enforcement, has still not been developed (Hendley *et al.*, 1997; Hendley, 1998; Fell, 1999; Hendley *et al.*, 1999; Pappila, 1999).

The fourth feature of importance for understanding institutions and the development of markets has to do with the mindset of the actors. Many authors have emphasised the cultural aspects of the Russian people as an important 'variable', and perhaps also an obstacle, for transforming Russian society to a democratic market economy (Kaminski, 1992; Kharkhordin & Gerber, 1994; Benham *et al.*, 1995; Obolonsky, 1996; Gareyev *et al.*, 1997; Jensen, 1997; Kennaway, 1997). Two main attitudes prevail, one emphasising the special experiences of almost 80 years of 'Soviet thinking' and the other stressing the inheritance from the period before this, from Tsarist times. In essence, however, both lines of argument are based on the same idea of a still existing collectivist attitude pulling in another direction than what is suitable for the current transformation of society. This attitude tends to foster and retain rules that are not suitable for a market-oriented forest sector. In this connection the problem of trust is central (Rose *et al.*, 1997; Huemer, 1998; Mishler & Rose, 1998; Fell, 1999). Clearly, beliefs and attitudes nourished during decades of communist rule still prevail and affect people's conduct.

While the subjective models individuals employ may be, and usually are, a hodgepodge of beliefs, dogmas, 'sound theories', and myths, there are usually elements of an organised structure to them that make them an economising device for receiving and interpreting information (North, 1997, p. 9).

Although formal rules may change overnight as the result of political or judicial decisions, informal constraints embodied in customs, traditions, and codes of conduct are much more impervious to deliberate policies (North, 1990, p. 6).

How do we identify movements towards markets?

It would be presumptuous to assess Russia's performance simply by comparing it with the situation in Western countries. The evaluation criteria that we use should therefore rather be seen as a set of 'baseline principles'. Thus we assume that a

specific institutional configuration is conducive to a sustainable Russian forest sector and useful for the whole economy if the following conditions are met:³

- constitutional rules are acknowledged and transparent,
- the structure of property rights is settled and well-defined, i.e. private actors can acquire property or get the right to utilise property for their own benefit,
- rules and regulations from official authorities are regarded as legitimate, and apply equally to similar actors,
- the market decides the price of property and goods,
- decision making regarding collective choice and operational rules is decentralised,
- private investors can realise the returns on their investments,
- rules are enacted aimed at preventing the devastation of natural resources,
- legitimate authorities take measures against violations of rules.

In the subsequent parts of this article we shall illustrate what has been demonstrated in our previous studies,⁴ namely, that these criteria are poorly met in the Russian forest sector. This article, like the whole investigation, is based on the fundamental assumption that efficient markets are built from below, albeit with the assistance of the political structure, and that the central actors in this 'construction project' are the managers of individual firms.

Market building and the virtual economy

The guiding hypothesis explaining why vital markets have failed to appear in the forest sector is that enterprise managers generally have weak incentives to restructure and thereby to reduce their firms' *distance* to the market. We conjecture that the behaviour in the forest sector is basically dictated by the logic of the 'virtual economy' as described by Gaddy & Ickes (1998a). In line with this theory, the main reason why the forest sector does not seem to move towards a market economy, i.e. why firms have not yet restructured in order to shorten their *distance* to the market, is that the virtual economy provides an incentive structure which, in fact, discourages managers from doing so. Consequently, the current failure in the forest sector cannot be explained by bad management, lack of money or absence of customers. Nevertheless, some argue that the 'lack of money' in the forest sector should mainly be blamed on bad management. This argument might have some merit, but it is more likely to confuse us regarding the institutional aspects of the problem. In order to understand some of these institutional hurdles one must start from the assumption that individuals act in a rational way, under given circumstances. Thus, with Gaddy & Ickes (1998b, p. 2), we assume 'that managers are rational and that the environment induces them to postpone (avoid) restructuring'.⁵

Being one of the cornerstones in the former socialist economy, the forest sector is an especially good 'case' for testing this hypothesis. It can also be assumed that the forest sector is a fairly good representative for the industrial sector in general and that our conclusions will be relevant for other sectors of the Russian economy as well. What are the characteristics of a virtual economy and what logical effects on business behaviour would such an economy have?

The new system can be called Russia's virtual economy because it is based on an illusion about almost every important parameter: prices, sales, wages, taxes, and budgets. At its heart is the pretence that the economy is much larger than it really is. This pretence allows for a larger government and larger expenditures than Russia can afford. It is the real cause behind the web of wage, supply, and tax arrears from which Russia cannot seem to extricate itself (Gaddy & Ickes, 1998a, p. 1).

This type of economy might continue to work only if it is insulated from market competition, e.g. through an extensive use of barter, which effectively breaks the market-based price signals and allows the use of fictitious prices of goods and services quite separated from their market values. This practice maintains the 'pretence' of value creation, while industry might in fact be a 'value destroyer' (Gaddy & Ickes, 1999a). Consequently, if this assumption is right, there are 'hoards' of would-be unemployed workers, engineers, bureaucrats etc. in Russia today.

Business behaviour in a virtual economy

The managers of Russian enterprises have strong incentives to continue to run their firms independently of their profitability. The social responsibilities associated with running firms are part of the explanation. Our investigations, as well as other studies, show that barter, tax offsets and other non-monetary solutions are common features in enterprises' activity. In addition, the lack of effective bankruptcy and arbitrage systems contributes to postponing 'creative destruction' of firms in the sense Schumpeter envisaged as a driving force of a market economy (Swaan, 1996, pp. 229 ff.). Thus firms can continue to produce although their outputs are paid for by other means than with cash. Such production is aimed at generating 'soft goods' that can only be traded in virtual 'quasi-markets' rather than in real commercial markets. Why then do managers avoid restructuring?

Most Russian forest firms have a substantial distance to travel before they can meet the demands of competitive wood markets. Their first option should be to invest in making production more effective but, as we have discussed above, this solution has its own problems. The other option, according to the Gaddy & Ickes (1998b) virtual economy theory, is to invest in 'relational capital', e.g. to perform services for the local authorities, to negotiate for privileges, etc. (Figure 1).

Thus the more fraternising with bureaucrats, the more tax offsets, privileges etc. one can obtain, the more investments are made in this kind of 'capital'. Moreover, and given the fact that in most cases the distance to competitiveness is significant, such 'investments' are cheaper and thus preferred. These circumstances have the nasty effect that we cannot, in fact, conclude that an enterprise that shows relatively high production volumes is more successful than a similar enterprise producing smaller volumes. Such an enterprise might as well be a 'value destroyer' and a producer of 'soft goods' still having a long distance to travel before it can survive in a competitive market.

Whether forest firms choose to invest in relational or physical capital depends, among other things, upon the initial (inherited) stock of such capital in their possession. The managers will simply prefer the type of investment that is most profitable and it is obvious that the Soviet type of integrated forest industrial system

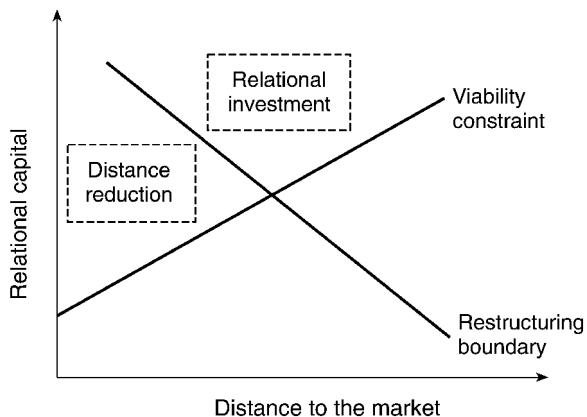


FIGURE 1. BUSINESS BEHAVIOUR IN A VIRTUAL ECONOMY (AFTER GADDY & ICKES, 1998b).

(that was inherited in 1991) provides a rich fund of relational capital from which to profit.

It should be emphasised that the slope of the viability line in Figure 1 basically reflects the institutional setup. The more firms have to invest in relational capital in order to stay viable the steeper the line would be. This also tells us that the intercept point to some extent could be regarded as the 'corruption level'. However, even in a society with very low corruption firms must invest in relational capital, such as networking or goodwill activities. The restructuring boundary in Figure 1 is the demarcation line separating firms that would engage in restructuring rather than make relational investments (Gaddy & Ickes, 1998b, p. 25). To summarise, whether a firm chooses one strategy before another depends on where it is located in the space in Figure 1, i.e. it depends upon the quality of the capital it already possesses, and the costs for moving in one direction or the other, as well as on how its investment decision will influence future profitability. Why should a director strive to generate cash if this money ends up in the hands of tax authorities or in the pockets of criminal groups? Moreover, it is risky to be the first to enter a world of uncertainty:

Enterprises that move too fast to the market economy bear a disproportionate share of the tax load. Thus the decision to invest in distance reduction depends on expectations about what other enterprises will do. This is why multiple equilibria arise.... If all other enterprises chose to keep $Akt = 0$ [i.e., no investments in tangible capital] then an enterprise that invests faces high taxes which make no-investment the dominant strategy for the enterprise. If all other enterprises are investing, however, informal activities may be very costly, and hence formal production may be the dominant strategy for the enterprise (Gaddy & Ickes, 1998b, p. 27).

Cooperation is an evolutionary product, but the Russian state is 'new' and the present situation in Russia might as well be characterised as a kind of Prisoner's Dilemma, i.e. a dominant, negative equilibrium exists. In such a world it is better to defect independently of what the other players do. In his seminal book, *The Evolution of Cooperation*, Robert Axelrod (1984) has demonstrated that an overall winning strategy is to cooperate when others do and to answer with defection when other

players do not cooperate. This requires, however, that the 'shadow of the future' is fairly long, i.e. we are rather certain that the game will continue for a while and that not everyone begins their interaction with the assumption that they will be cheated.⁶ A basic prerequisite for this is the existence of rules and norms—institutions—that compel people, e.g. enterprise managers, to take the first step and, thus, invite others to cooperate rather than defect or totally abstain from interaction.

Business behaviour in the Russian forest sector

Applied to the Russian forest sector, the discussion above gives rise to a number of methodological as well as substantive questions. What indicators do we have that firms are actually operating in a virtual economy as has been depicted above? How should the institutional framework of the Russian forest sector be characterised? For example, do we have any indications that 'cost of measuring' is too high, that 'enforcement of rules' is lacking, that inappropriate 'attitudes and perceptions' prevail? Is 'the size of the market' still too small for real competition to arise? And, more interesting, is all this reflected in the behaviour of the forest firms? For example, do they invest in tangible or relational capital? How extensive are their engagements in the production of soft goods? Do they have 'real' customers and can they acquire enough timber? How are payments made and do they have problems with broken agreements? And, if so, do they have access to reliable third party solutions? And so forth.

The answers to these questions are based on a study conducted among 221 Russian forest firms in eight Russian regions. In order to provide a possibility to compare the Russian results with more 'normal' market circumstances a mirror study has also been conducted. In addition to the Russian firms the database contains information about 24 Swedish forest firms. The findings are summarised in Table 1.

The first issue to be discussed is investment. While investing is a major prerequisite for the renewal of the outdated production apparatus it can be noticed that, at the time our investigation was made, only 36% of the Russian firms that we studied had made any investments (Table 1). It should also be mentioned that joint ventures invest significantly more (56% of them) than other types of firms. Export-oriented firms are likely to invest more, the same is generally true for newer enterprises as well as for firms that are *not* owned by the state. Most of the firms that do invest utilise their own financial resources without any involvement from the banks. This is reflected in the poor contacts that forest firms generally have with the banking system. Only 17% of the firms report that they have such relations.

One would expect that a lack of timber would not be a problem in a country that has among the world's biggest forest resources. However, as Table 1 indicates, 44% of the firms perceive a shortage of wood. Typically these are larger processing industries that require huge amounts of wood. They are the firms that in the Soviet era constituted the backbone of a centralised forest management and delivery system.⁷ It can also be noted that almost two-thirds of the Russian forest firms in our survey do not export any of their products. Given that the local market for wood is underdeveloped, this is striking. Another indication of the malfunctioning of the supply system is that there are greater shortages of timber in regions with large

TABLE 1
 ATTRIBUTES OF FOREST FIRMS IN RUSSIA AND SWEDEN (%)

	<i>Russia (n = 221)</i>	<i>Sweden (n = 24)</i>
Mean number of employees in firms surveyed	431	58
Activity of firms		
Forest management	8	8
Harvesting	24	4
Sawmill/harvesting	25	33
Sawmill	31	33
Pulp/paper	4	4
Trading/consultant	8	17
Background of firms/ownership		
Public	24	29
Privatised	42	0
New private	34	71
Investing in company		
Yes	36	85
No	64	15
Social responsibilities		
Yes	54	83
No	46	17
Export of production		
> 40% of the volume	24	21
< 40% of the volume	10	4
No export	66	75
Bank relations		
Yes	17	82
No	83	18
Amount of timber supply		
Enough	56	78
Shortage	44	22
Method of payment for sales		
Cash	56	100
Barter and cash	44	0
Arrangement of payment for sales		
On delivery	37	0
Before delivery	48	4
After delivery	4	96
Mixed	11	0
Violation of buying agreements		
Big problem	44	0
Small problem	30	4
No problem	26	96
Violation of selling agreements		
Big problem	59	0
Small problem	23	12
No problem	36	88
Obstacle for operation of firm		
Taxes	49	8
Forest legislation	17	25
Business/export legislation	16	25
No big problems	18	42
Important change in forest sector		
Taxation system	23	20
Forest legislation	18	30
Business legislation	13	25
Ethics/politics	11	25
Investment/technology	19	0
State coordination	17	0

exports, thus indicating a general inability to respond to increasing demand (cf. Piiipponen, 1999).⁸

Buying and selling wood not only require suppliers and customers. It is also a matter of payment and contracting. In essence, these problems are institutional, i.e. they are linked to the existing 'rules of the game'. First, it should be noticed that, like many Russian firms, forest enterprises are also heavily engaged in barter trade, while this behaviour is totally absent among the Swedish firms.⁹ What is more striking, though, are the sales arrangements. While only 4% of the Russian firms accept payment after delivery this is the most common procedure among Swedish forest firms. It is easy to imagine how this expression of lack of trust affects economic activity. As can be seen in Table 1, Russian enterprises encounter significant problems when they sell and buy their products. Violation of agreements is the rule rather than the exception. In comparison, none of the firms in the Swedish group regards violation of agreements as a big problem.

Russian firms have extensive social responsibilities, such as provision of housing and transport for their labour, health care, child care and provision of fuel wood. A majority of the Russian forest firms have such responsibilities. It should be noted, however, that Swedish enterprises also engage in social activities, but here the engagements are different. Typically, Swedish firms are engaged in different kinds of sponsorship, for example, support of local clubs or individual athletes. One firm even buys textbooks for a local school. Some of the larger Swedish companies provide housing for some of their employees, but never for the entire work force as the Russian firms might do.

The representatives of the forest firms were asked what they regarded as the most binding restriction for running their enterprise. The answers are summarised in Table 1. It should be noted that finding a market is not mentioned as a major problem, while the tax system is said to be the biggest hurdle. This result certainly reflects a number of well-documented odd features of the Russian tax system, such as the multitude of taxes and tariffs, the lack of transparency of the system, and the draconian sanctioning practice.¹⁰ Other obstacles mentioned by both Russian and Swedish firms can be attributed to forest and business legislation. When asked to suggest changes that might possibly improve the situation both Russian and Swedish managers suggest lower taxes and changes in legislation. It should be noted, however, that the existing forest legislation is regarded as a bigger problem among Swedish than among Russian enterprise leaders. From the comments it becomes clear that it is the perceived strictness of the environmental legislation that is the problem. It should be noted, however, that this attitude most probably illustrates the fact that the Swedish institutional framework is transparent and well-defined, meaning that both monitoring and sanctioning work quite well. Accordingly, rule compliance is also high. Therefore, in the eyes of individual Swedish business leaders the environmental clauses are regarded as a restriction on the profitability for the individual firm.

Finally, one major difference between Russian and Swedish firms should be mentioned. Around 20% of the Russian firms call for a general renewal of technology and about the same amount suggest that the state should coordinate the forest sector. Nothing similar can be observed among the Swedish firms. In fact, there are a number of Russian firms that openly wish to 'become state-owned again'. This can be

interpreted as an indication of the fact that the disintegration of the Soviet management system has not been replaced by alternative and well functioning ways of organising the sector based on market economic principles. If the situation is chaotic and market mechanisms do not work, the calls for formal coordination are understandable.

Production, productivity and employment

How can the current situation in the Russian forest sector be explained? Answering this question is the task for the subsequent sections of this article. First, the relation between productivity, production and employment will be discussed. Second, the Gaddy & Ickes hypothesis will be tested; do the firms in our sample behave in accordance with what is anticipated by their theory of the virtual economy? Finally, we demonstrate what type of attributes, such as size and ownership, explain different types of enterprise behaviour.

In this section we concentrate on the first issue, productivity. It should be noted that while production in the firms interviewed has dropped by around 40% during the last five years, employment has decreased by only about 25%, which indicates inadequate restructuring efforts. The same pattern was found in a study by Nilsson & Shvidenko (1998).

In Figures 2 and 3 changes in employment and production for 123 firms interviewed are related to an estimate of productivity change (production volume in tons

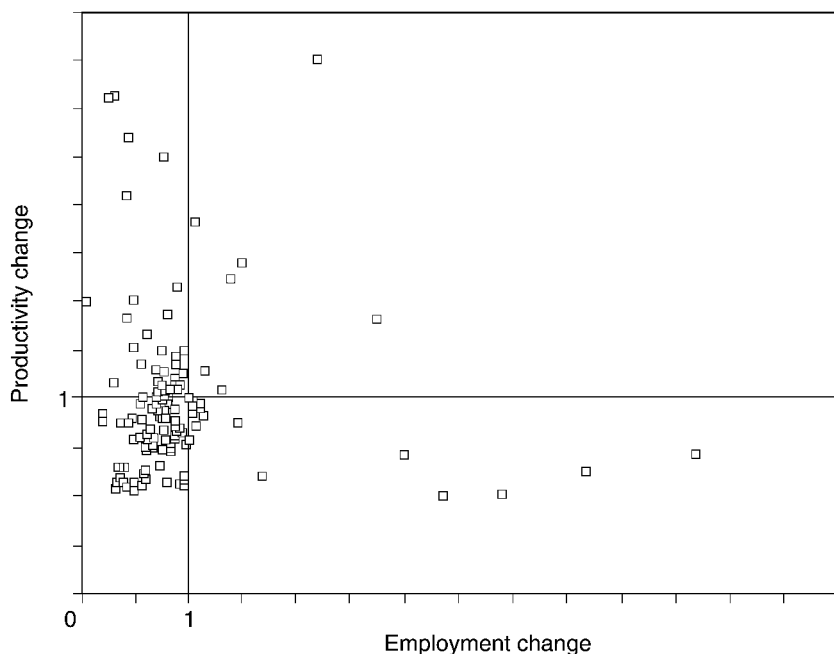


FIGURE 2. EMPLOYMENT CHANGE RELATED TO PRODUCTIVITY CHANGE IN 123 RUSSIAN FOREST ENTERPRISES 1993–1998.

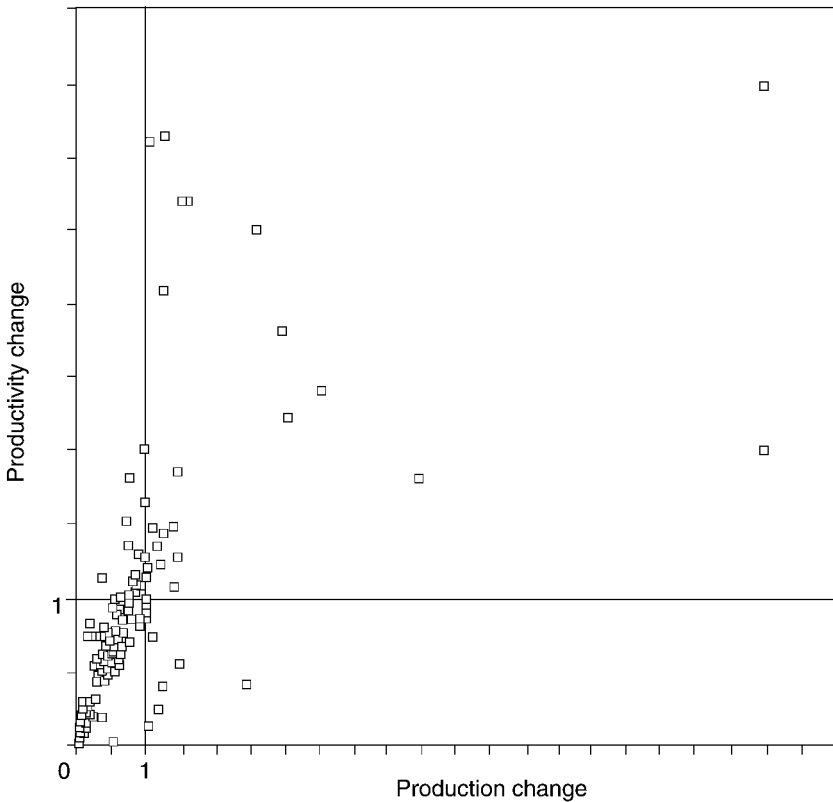


FIGURE 3. PRODUCTION CHANGE RELATED TO PRODUCTIVITY CHANGE IN 123 RUSSIAN FOREST ENTERPRISES 1993–1998.

or cubic metres related to the number of employees in 1998 and 1993).¹¹ In this way the figures indicate restructuring efforts manifested in changes in the competitive position of the firms during the last five-year period.

As shown in Figure 2, a number of firms have been able to maintain or increase their productivity since 1993 (those above 1.0 on the vertical axis). However, only seven have simultaneously increased their employment. Around 30 firms exhibit a market behaviour similar to that of a typical Western forest enterprise, i.e. they decrease employment and increase productivity. From Figure 2 it could also be concluded that the vast majority of the companies find themselves in a very difficult position with stagnating or decreasing productivity and decreasing employment. Fourteen firms have even increased their employment despite decreasing productivity. These observations are consistent with the virtual economy thesis.

In Figure 3 productivity changes are related to the changes in production volumes. Productivity decreases are obviously heavily dependent on the large reductions in production that have taken place during recent years in most Russian forest enterprises. The simple linear regression applied fits well to observed changes ($R^2 = 0.67$) among the firms with decreasing production (i.e. those below 1.0 on the horizontal

axis in Figure 3). Thus the possibility to reduce employment at the same rate as production decreases seems to have been limited in most companies. Only a few firms have been able to increase productivity along with a decreasing production volume. In fact, our calculations show that among all firms a decrease in production is accompanied by an equal proportional reduction in productivity (elasticity, $\beta = 0.69$, $t = 10.51$, $n = 118$).

Figures 3 and 4 show that the forest sector decline might be even more severe than previous analyses have indicated (cf. Backman, 1998). Only few companies in our data set seem to have started any restructuring and transition process in a market-oriented direction. This conclusion is further supported by Figure 4. As can be seen, state/publicly owned firms behave differently compared with other types of enterprises. For example, when production decreases in state-owned firms productivity decreases in almost the same proportion ($\beta = 0.98$, $t = 11.67$, $n = 27$). This can be compared with new private firms where the productivity change is much lower ($\beta = 0.53$, $t = 4.67$, $n = 19$). Thus, it can be concluded that state-owned firms are much less adaptive than new private firms. Old publicly owned but privatised enterprises seem to have the same types of problem. Even if the production volume

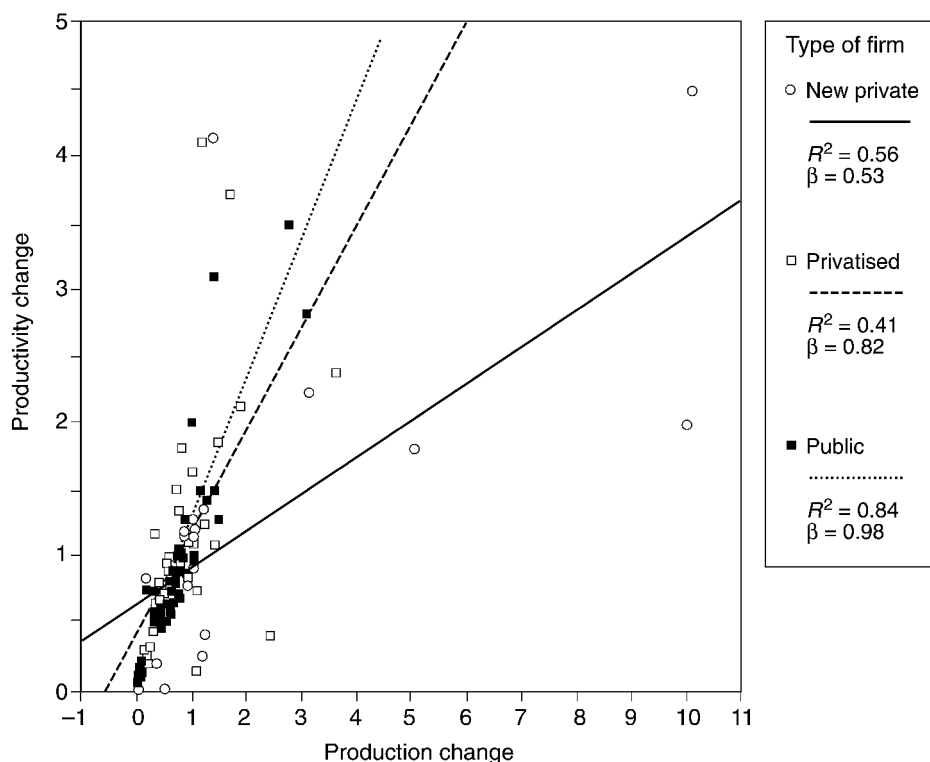


FIGURE 4. PRODUCTION CHANGE RELATED TO PRODUCTIVITY CHANGE AMONG DIFFERENT TYPES OF RUSSIAN FOREST ENTERPRISES 1993–1998 ($N = 123$).

shrinks they do not adjust their workforce accordingly, something that inevitably affects productivity.

The findings from the data on productivity can be summarised as follows:

1. Most enterprises have decreased their productivity between 1993 and 1998. This suggests they have not successfully restructured.
2. An even greater share of enterprises have decreased their output.
3. For public firms the relationship between decrease in output and decrease in productivity shows unit elasticity. This, too, is consistent with no restructuring. It suggests totally passive behaviour, since this is the result one would get if one just kept the same number of employees while output dropped. For example, if output is cut in half while the enterprise retains the original labour force, productivity drops by half.
4. Even the best sub-group, the new private firms, has not been that good at dealing with the output drop, since when output declines, productivity also declines (although not as much as for state enterprises). This also suggests that these enterprises may not be adjusting by curtailing employment so much as by increasing output.

However, employment change behaviour differs among the three sub-groups. While, on the average, public and privatised companies are still characterised by decreasing production and employment, the new private firms have been able to increase production as well as employment.

One consequence of the Gaddy & Ickes theory of the virtual economy is that we cannot, in fact, be sure that a firm showing a positive production rate is in any market sense successful. Higher production rates might also reflect an increase in production of 'soft goods' exclusively traded in the virtual quasi-market. This also means that the productivity measure is ambiguous as well. Consider the possibility that a firm keeps the same number of employees while increasing its output of soft goods. As a consequence it will show an apparent rise in productivity. Thus, we need other ways to analyse the behaviour of the firms that capture investments in both 'relational' and 'tangible' capital. This is the topic for the next section.

Forest firms in the virtual economy

In order to capture the Russian forest firms' location in the 'restructuring space' depicted in Figure 1, we have to find indicators that capture whether a firm operates in the relational sphere or is oriented towards reducing its distance to the market. To capture this, an empirical specification of the Gaddy & Ickes concepts 'social relation' and 'involvement in the virtual economy' versus 'transition firms', i.e. firms that are trying to reduce, or that are actually reducing, their distance to the market, was made in the following way. The degree of 'relational capital orientation' versus 'distance to market reduction' was estimated by two indices that theoretically might vary from one to 10. In the social-relational capital dimension we find firms that obviously do not make efforts to transform to the market or try to act on monetary and market terms.

Such a company will get one 'point' every time its behaviour fits the following criteria:

- use of barter in buying arrangements,
- use of barter in selling arrangements,
- negotiates but does nothing more to enforce broken buying agreements,
- negotiates but does nothing more to enforce broken selling agreements,
- has multiple social responsibilities,
- says that lack of privileges is the most binding restriction for operating the firm,
- calls for privileges for the company in question concerning important forest policy changes,
- wants to become public again after being privatised or calls for 'state coordination', i.e. a state command economy to be reintroduced in the forest sector,
- increasing employment while decreasing productivity,
- increasing production while decreasing productivity.

As a contrast, a company is regarded as a 'market distance reducer' if it:

- invests in equipment, buildings or education of the workforce,
- has bank relations on the buying side,
- has bank relations on the selling side,
- is not involved in barter on the buying side,
- is not involved in barter on the selling side,
- uses arbitration courts to enforce broken buying and/or selling contracts,
- regards workforce discipline and lack of entrepreneurial tradition and/or business ethics as important obstacles for operating the firm,
- identifies poor workforce skill as an important binding restriction for the firm,
- calls for efficient business legislation enforcement as a necessary change in policy in the forest sector,
- operates with increasing productivity.

It should be noted that these indices are deliberately constructed by variables that reflect both actual behaviour and attitudes. We believe that this is necessary in order to be able to capture the character of the problem. The outcome of this calculation is illustrated in Figure 5.

It should be evident that the Russian forest firms line up fairly well along the two dimensions that are believed to capture market behaviour (distance) and some kind of aptitude for avoiding restructuring and transition to the market (relational intensity). Only 6%, or 12 enterprises, clearly display a kind of market behaviour, i.e. they have a low value on the distance index, meaning a relatively short distance to travel towards becoming competitive on the market while, simultaneously, their investment in relational capital is fairly low.¹² It can also be seen that more than 60% of the firms have a long distance to travel towards the market while 4% seem to compensate for the long distance with higher relational intensity. We regard the firms located in the lower right square in Figure 5 (32%) as unviable and those in the upper right group as typical relational capital-oriented enterprises. For the middle group the situation is unclear.

When analysing these groups (indicated by the four blocks in Figure 5) it should

		Distance to the market		
		Short	Medium	Long
Relational intensity	High	0 (0)	0.5 (1)	4 (8)
	Medium	1.5 (3)	16 (32)	27 (55)
	Low	6 (12)	13 (26)	32 (66)

FIGURE 5. DISTRIBUTION OF RUSSIAN FOREST FIRMS ACCORDING TO THEIR DISTANCE TO THE MARKET AND THEIR INVESTMENT IN RELATIONAL CAPITAL (% and *n*).

be noted that there are some, but rather few, attributes that *significantly* affect the likelihood of market-oriented behaviour.¹³ Thus we find that the overall likelihood of a forest company acting as a transition firm is fairly low, 7.4% (note that this says nothing about the success or profitability of the firms). However, if the enterprise is an exporter the likelihood increases to 20.5%. The most problematic situation for a forest firm is probably when it has not succeeded in traversing towards the market and when its relational capital is poor; 32.5% of the firms have this problem. However, the likelihood that we find very big companies in this predicament of having poor relations is fairly low, 21.4%, while this situation is more common among the smallest firms. Similarly, the likelihood of finding larger enterprises in the relational capital-oriented group is significantly higher, 40.6%, than for smaller ones (21.4%). The explanation is, of course, that larger enterprises have better access to non-market solutions.

One might suspect that the firms in a weak position along the relational capital dimension and with a long distance to market competitiveness, i.e. in the 'low-long square' of Figure 5, in general represent firms in a catastrophic situation. This would, for example, be indicated by an exceptionally large and rapid production decline and, as a matter of fact, there are some indications of this. A statistical check reveals that during the last 5-year period about 45% of the 179 firms located in the four squares forming the lower right corner in the matrix have experienced a larger reduction in volume produced than the average. Among firms with a short distance to the market seven out of 15 (45%) have maintained or increased their production, while only two have reduced their production more than the average firm.

Depending on where firms are located in the matrix (Figure 5), it can be expected that their managers have different perceptions of problems and that they suggest different remedies for their solution. This is discussed in the next section.

Voices from the margin

As we have seen, transition firms constitute a marginal group which shows attributes and acts more in line with our image of firms in developed market economies. Given

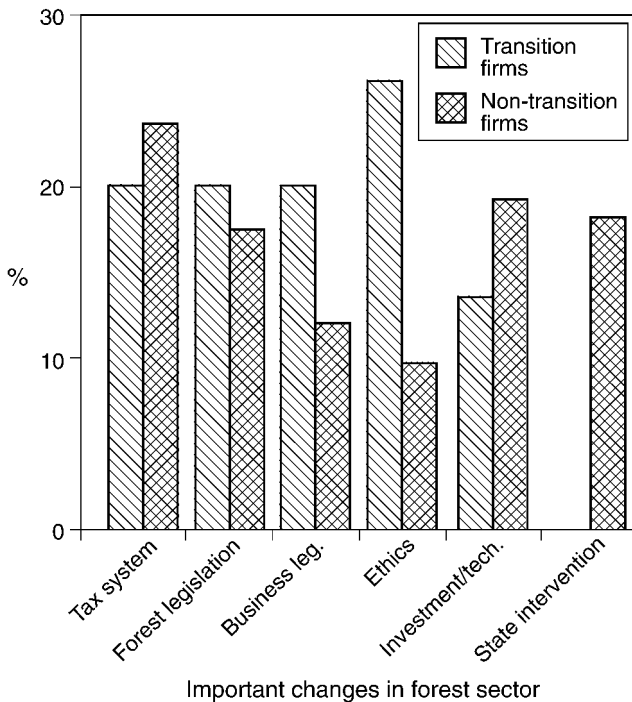


FIGURE 6. 'IF IT WERE POSSIBLE TO CHANGE ANYTHING RELATED TO THE RUSSIAN FOREST SECTOR, WHAT WOULD YOU CHANGE?'

that this is the most strategic group for developing a market economy, it is particularly important to find out how the leaders of these enterprises comprehend the current situation.

Figure 6 shows the answers to one of the questions in our survey from the 7% of transition firms compared with all the rest. The question was: 'If it were possible to change anything related to the Russian forest sector, what would you change?'. Transition firms clearly emphasise policy changes related to business legislation, better business ethics, work discipline, etc., while firms that do not belong to this group call for state intervention and coordination and give higher priority to problems associated with technology, finance and investments.

The 15 enterprises that we have classified as transition firms, i.e. those trying to or actually reducing market distance, emphasise the unpredictable and often contradictory business legislation as a basic problem. An efficient mechanism for enforcing decisions made by arbitration courts is also demanded as an important policy change needed to improve business in the forest sector. These enterprises also identify high transaction costs, due to inefficiency of the banking and communication systems, as big problems that must be solved. The poorly skilled workforce and the traditions still remaining from socialism among public officials in the forest sector are also recognised as severe problems.

Transition firms more often call for privatisation of forest lands as well as more open systems for leasing parcels of the forest fund. Different suggestions aiming at facilitating long-term agreements and long-term planning in different areas, such as taxation policy and especially rules related to value added tax, problems related to inflation, fire protection and improvement of the forest resource in the long-term perspective, are also demanded.

The regional dimension

In order to investigate whether there exists an obvious regional dimension of the persistence of a 'virtual economy', the two indices (dimensions) used above, 'relational intensity' and 'distance to market', have been compared. Figure 7 illustrates how the companies in each region are distributed according to these two dimensions. Each observation in the figure represents the average value among the firms in each region.

From Figure 7 we can conclude that Moscow, Khabarovsk and Murmansk are more market-oriented than the other regions. Efforts to reduce distance to the market are slightly more prevalent in these regions and the relational capital orientation is lower. The opposite seems to be the case for companies in the other regions, particularly Krasnoyarsk and Irkutsk. However, all in all, regional differences are small or almost non-existent, while the differences between the companies within each region are considerable. In summary, our investigation gives weak support for the existence of significant regional differences. When it comes to the forest sector, the sweeping

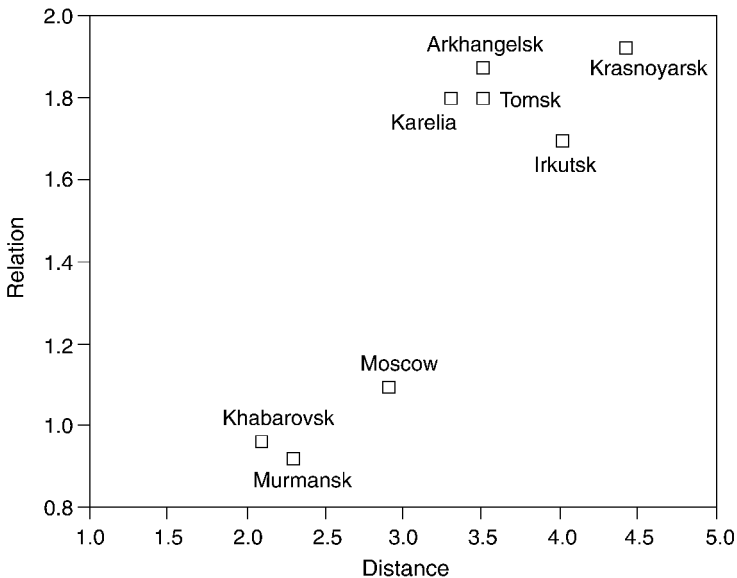


FIGURE 7. DISTRIBUTION OF RUSSIAN FOREST FIRMS BY REGION AND BY THEIR RELATIVE INVOLVEMENT IN THE VIRTUAL ECONOMY.

changes in the Russian economy or, if one prefers, the inheritance from Soviet times have not separated out any successful region that has clearly managed to move closer to efficient market behaviour. This also might give support for the thesis that the logic of the virtual economy has become a general feature of the Russian economy.

Making an aquarium of the fish soup?

The result of our investigation among Russian forest firms clearly gives support for North's statement about the persistence of 'informal constraints embodied in customs, traditions, and codes of conduct' (North, 1990, p.6). Despite deliberate efforts to change the rules of the game, such as allowing free pricing, privatisation of firms etc., the logic of the old Soviet system still decides much of enterprises' behaviour. Thus the old logic still serves as a *dominant institutional setup* deciding the degrees of freedom for the players. For example, the extensive barter trade would not be possible without relatively well-established patterns of contacts involving actors from the highest political and administrative hierarchies, banks, etc., down to the single manager of a forest firm.

Our study also supports Gaddy's & Ickes's theory of the virtual economy. First, it has, in fact, been possible to arrange the firms along the two major dimensions stipulated by the theory, 'distance to the market' and 'relational capital'. It should be emphasised, however, that our indices capture how firms actually behave as well as managers' comprehension of, and opinions about, the current situation. We believe that using such a combination of quantitative and qualitative indicators is essential for understanding Russia's inability to develop a market economy. Second, it has also been demonstrated that firms in our sample largely behave in accordance with what is assumed by the theory. For example, large publicly owned companies are more deeply rooted in the virtual economy than smaller ones and newly established firms, larger firms call for state coordination, and so forth.

Thirdly, the application and test of the virtual economy thesis have also made it possible to sort out what a transition firm typically looks like. Thus, a typical transition firm is an enterprise that is *heavily exporting and has leaders who call for better business manners, ethics, competence and skills*. It might be surprising that no other variable than exporting seems to have any significant explanatory power. For example, we find no significant differences between regions, it does not matter whether the firm is engaged in harvesting, processing or sawmilling, nor does it seem to play any decisive role whether enterprises are joint ventures or not. A typical virtual economy firm, on the other hand, can be characterised in the following way: it is *large, low-exporting and has managers who call for state coordination*.

As the answers regarding modes of payments, violation of rules etc. show, our investigation gives further support for our notion that an 'institutional deadlock' is a general characteristic for all the regions studied. In the terminology of game theory, Russia seems to have reached some sort of *negative equilibrium*. As Gaddy & Ickes (1999b) have indicated, the virtual economy may not be an unlucky detour on the road towards an efficient market economy. It may be an entirely new system that is now being entrenched in Russian society. It should not be forgotten that the virtual economy is quite beneficial for a number of people who might unfortunately

be exactly the ones who are expected to change the system—managers of firms, politicians, bureaucrats and other decision makers. Thus the way out of this system may well be very problematic (Gaddy *et al.*, 2000). It requires a number of things:

- that the payoff is better for producing tangible goods than for engaging in the ‘soft goods’ trade,
- that those who take the first step towards market behaviour will not be disproportionately punished,
- that law and order is established,
- that the current pattern of performing ‘business’ is not further entrenched, something that will have the effect that newer generations of business people will ‘imitate’ current behaviour (Gaddy & Ickes, 1999b),
- that changes towards market behaviour are supported by the people, and thus that people believe that changes will make life better.

Can the current situation in the Russian forest sector be deliberately changed and, if so, how can such a change be achieved? It should be emphasised that there are no easy remedies available to be prescribed as a general solution to the current problems. If, as we have discussed earlier, public authorities constitute an integrated part of the virtual economy, we cannot expect these people to stick their necks out and take independent decisions that would pull the rug from under their feet. Obviously, there is little support to be expected from those actors who benefit from the operation of the virtual economy. Thus, to move towards achieving the goals listed above, one must seek the support of those people in society who might have an incentive to pull and push in the direction indicated above, people who would benefit if these features were actually in operation. Who are those people? They are likely to be found among ordinary consumers and citizens as well as among small business managers and owners. One way of stimulating the establishment of such pressure from below would be to target international donor programmes and other types of financial support towards small businesses, joint ventures and entrepreneurs. Another solution is to deliberately support NGOs and other independent forces as well as the efficient working of political organisations.

One should not forget that there are a number of enterprises in Russia that work well, both Russian owned and among those partly owned by Western firms. Russian authorities should clearly show that they support such enterprises, for example, by giving them favourable conditions, while at the same time making conditions more difficult for enterprises staying in the virtual economy. All activities and decisions that lead to a better separation between the political-administrative sphere and the civil society are beneficial for the development of a democratic society and a market economy. Some more specific ideas on how the situation might be changed are discussed in the concluding section.

There is an old saying stating that ‘it is possible to make fish soup out of an aquarium, but it is not possible to make an aquarium from fish soup’. The reason is simple: creating living systems—aquariums as well as market economies—requires vital units that can serve as basic building blocks. However, such vital units are to a large extent lacking in contemporary Russia. For example, there is no tradition of

privately owned commodity-producing companies, a powerful middle class is still basically missing, and political preferences among people still reflect and support attitudes associated with the old Soviet regime. If people believe, or in fact experience, that a major prerequisite for a large manufacturing firm to stay in operation is that it continues to receive privileges, it is likely that they will also support such policies. Currently, we seem to have a situation where the most mobilised parts of the population are those who are the most supportive of state intervention, typically those to the left on the political scale, i.e. mainly supporters of various communist parties.¹⁴

The other side of the coin is the apparent lack of *trust* in Russian society, something that is also indicated in our investigation.¹⁵ If, as some of our respondents say, most actors assume that the others will cheat, we have a classical case of Prisoner's Dilemma, and the collective outcome is inferior to that which would have been achieved through cooperation. This attitude also has the peculiar consequence that, even though people (workers, engineers etc.) are aware of the fact that decision makers (managers, politicians and bureaucrats) might acquire resources in an inappropriate way, they have poor incentives to change the situation. 'Those who presently are in charge have already milked the cow, new bosses will only start all over again, so why change?'

Axelrod (1984) has demonstrated that small 'worlds' of cooperation might spread even in a world of 'cheaters'. 'Never start by defecting, cooperate when your partner cooperates, defect when he does!' This is the most successful strategy for the evolution of cooperation. Thus, the movement towards a market economy in Russia will benefit from the creation of groups of firms that 'cooperate' in the market sense of the word, groups of firms that have learned that their partners do not start their interaction by cheating, that good manners will be rewarded accordingly. Consequently, the policy advice is to support the establishment of such groups of firms.¹⁶

Building institutions takes time and market institutions are not built from above. However, political authorities might provide an institutional framework that enables a market economy to be developed (Eliasson *et al.*, 1994; Silk & Silk, 1996; Stiglitz, 1999). The authorities should ensure that those who are among the first to act in 'proper' ways do not have to pay a disproportionate share of the burden by being, for example, extensively taxed. Consequently, the most important task is to reduce the payoff from investing in relational capital. A thorough taxation reform could significantly contribute to this. Since Gazprom and a few other large state monopolies act like some kind of engines for providing resources that are consumed in the metabolism of the Russian virtual economy, stopping this infusion would have decisive effects. As Gaddy & Ickes (1998b) have emphasised, only making credit restrictions harder will not solve the problem; such policies might even drive firms deeper into the virtual economy and will probably affect those firms that should not be affected. Hence, more efforts should be made to support the creation of new private firms and joint ventures. But, given that undemocratic solutions are ruled out, all sweeping changes of the political system, including reform of bureaucracies, the legal system and so forth, can only be made with the support of the people (Rose *et al.*, 1998).

What should be done?

The question of what should be done to change the current situation, as described above, is intricate. As indicated, people do not act in a vacuum, i.e. their actions are embedded in an institutional context. Kiser & Ostrom (1982) have elaborated the idea of three worlds of action. Every institutional arrangement, they argue, is shaped by three layers of rules, *constitutional rules*, *collective choice rules* and *operational rules*.¹⁷ With reference to the Russian forest sector, constitutional rules specify what kind of ownership forests may have and, indirectly, who is eligible to share the benefit of their use. Constitutional rules also specify the division of labour between federal and regional authorities. Collective choice rules regulate how decisions are made concerning the forests in order, for instance, to decide leasing terms, levels of harvesting or the technological input. Operational rules, finally, regulate the daily activities, i.e. the intensity of harvesting, methods of regeneration, modes of transport etc.

The three layers of rules form a hierarchy, indicating that rules on a higher level decide the degrees of freedom for those on a lower level. 'Constitutional decisions establish institutional arrangements and their enforcement for collective choice. Collective decisions, in turn, establish institutional arrangements and their enforcement for individual action.... Constitutional choices precede and constrain collective choices' (Kiser & Ostrom, 1982, pp. 209–210).

In this perspective a constitution can be defined as a system of rules specifying the terms and conditions of governance, while governance itself 'includes the setting of rules, the application of rules, and the enforcement and adjudication of rules' (Feeny, 1988, p. 172; Carlsson, 2001). Thus the forest firms in our investigation are subjected to the logic of this hierarchy. Consequently, different problems must be solved at different levels.

The constitutional level

On this level constitutional rules can be enacted and changed. In Russia, the first thing that has to be done is to define what issues and domains the federal level is supposed to handle. Thus the division of labour between federal agencies and the subjects of the federation, *oblasti* etc., should be clarified and settled. For example, the dual subordination that is inherited from the Soviet era should be abolished—today the regional forest committees are subordinated both to the successor of the Federal Forest Service (Rosleskhoz, abolished in May 2000), as the central authority, and to the executive authority of the *oblasti* etc. Generally, all ambiguities and contradictions in the federal constitution, which have been identified by many experts, should be sorted out. When it comes to the forest sector, this applies to property rights as well as collisions between the wording in the constitution, the Federal Forest Code and a number of other legal acts, e.g. those concerning environmental protection. One obvious decision is to permit private ownership of forest land, something that is allowed in the constitution but not in the Forest Code. Another alternative would be to transfer forest ownership to the *oblasti* etc. Whatever decisions might be taken, all

constitutional issues that are unsettled create problems on lower levels of government and society.

It should be emphasised that this focus on constitutional issues does not neglect the fact that a number of political problems, e.g. the role of the parliament versus the president, as well as many macroeconomic questions, must be solved in order to establish a solid foundation for a vital forest sector. But, once again, if constitutional issues are undefined, or in a flux, there is nothing to build on.

Collective choice level

The notion of collective choice rules refers to the fact that all collective decisions are dependent on rules that stipulate how such decisions should be made, i.e. a framework for collective action. Economic history tells us that once a constitutional order is established, subsequent levels and their players can develop their own rules. This has proved to be a basic prerequisite for the evolution of markets. Thus the collective actors in the forest sector must define their mutual relations. For example, this means that tax authorities should act independently and that tax revenue, or more typically tax arrears, should not be used as 'trading goods' in local virtual economies. Another example is the regional units of the former Federal Forest Service, the decisions of which should be dictated by professional concerns rather than by regional political matters.

One feature that has confused this necessary division of labour is the creation of quasi non-governmental organisations, such as the regional Unions of Forest Industrialists. These unions are deliberately composed of local politicians, bureaucrats, industrial leaders, trade union representatives etc., with the official aim of providing political and administrative coordination of the regional forest sector.

In other studies we have characterised the Russian forest sector as trapped in an institutional deadlock (Carlsson & Olsson, 1998b, pp. 52 ff.). Another way of describing the situation is to say that the virtual economy in fact provides a coherent political and administrative system with its own logic. In such a system tax authorities and other public agencies do not act independently, nor do industries, trading organisations, central actors in the transport sector etc. The following list—which could indeed be made longer—indicates what must be done on the collective choice level in order to open up the institutional deadlock and thus make the forest sector work better.

- Federal and regional policy programmes that are in line with the principles of a market economy should be worked out. For example, this means that they should not rely on the idea of political and administrative coordination of business activities.
- A thorough taxation reform should be enacted. In general, and not only when it comes to the number of taxation rules, the whole system of fees etc. should be diminished, should be more transparent and, as a consequence, easier to enforce.
- Politicians and bureaucrats should withdraw from direct involvement in individual enterprises. For example, regional bureaucrats should not as a rule take over and run firms that are found to be unviable.

- All democratic means to create law and order should be utilised.
- By virtue of their credit practices, banks and other credit institutions should encourage entrepreneurship, exports and joint ventures with foreign companies.
- Forest enterprises should create their own independent branch organisations, the aims of which would be to draft and settle binding agreements concerning rules of conduct, standards etc.
- Infusion of ‘soft money’ to the forest sector from ‘prosperous’ state monopolies should be stopped. This also requires that the worst ‘economic zombies’, i.e. value destroyers, are shut down.
- The bankruptcy system as well as the arbitration courts must be made more efficient.
- Education and training of people for new tasks and technologies must be developed, and democratic citizenship should be encouraged.

Operational choice level

The operational choice level is the arena of the individual actor, typically the firm and its staff. However, decisions on this level are enabled or hindered by higher levels of rules. A typical operational decision is how to utilise the internal resources of the firm. From our analysis it is obvious that the Russian forest companies face a number of intertwined problems, which are all connected to the lack of, or the embryonically developed, market institutions. This is manifested in a concentrated way in the widespread and deeply rooted lack of trust that characterises the relations between business partners (cf. Fell, 1999).

The forest industry is composed of a chain of actors, from the forests to the end users, who have to interact and transact with one another. If, as in Russia, transaction costs, owing to weaknesses in business legislation, enforcement and unclear definition of property rights, are extremely high, sometimes prohibitive, there are good arguments for ‘backward’ vertical integration of the firms. ‘In-house monitoring’ might be able to compensate for the lack of efficient market institutions. Coordination in an organised form within the firms is sometimes more efficient, i.e. cost-saving, than a market solution (Coase, 1937). For example, in the Nordic countries a high degree of integration, both backwards toward the forest resource and forwards towards the end users, has characterised the industry since the late 19th century. Subcontracting also exists. The extent of subcontracting has varied from time to time depending on technological and institutional changes in the industry. For example, today almost all harvesting is arranged by subcontracting with the involvement of both very large *and* very small firms. The same goes for a large part of the transport work.

In Russia, the present situation of unclear property rights, ad hoc rules and irrational transport pricing—in short the high transaction costs—has resulted in a sharp production decline in the forest sector. Integration backwards along the chain from the end-users to the forest might therefore be a rational decision. In this way, for example, the managers of processing plants may gain better control over transactions and, as a consequence, reduce the total costs. It must be emphasised, however, that this ‘solution’ is triggered by an absence of viable markets in different segments of the forest sector. Under other economic circumstances such integration may even increase both transaction and production costs.

It is, however, important to emphasise that such a coordination and integration process, introducing a 'visible hand' (Chandler, 1977) in the sector, must be the result of different companies' own decisions concerning mergers etc. Such solutions are not possible to arrange efficiently by intervention from the old political structure within the forest sector (Joskow & Schmalensee, 1997).

Finally, it should be emphasised that the three worlds of action as described above constitute a totality within which both the 'visible hand' of the state—and other public authorities—and the 'invisible hand' of the market operate. These two hands might, and sometimes must, be coordinated, but, in principle, they should be able to move independently, all for the purpose of making Russian democracy and capitalism work.

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² The authors of this article are working on the Forest Project at the International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria. The Arkhangelsk study is one among a number of case studies dealing with institutional aspects of the Russian forest sector that have been published by the project. A brief account of the project design is given in the Appendix.

³ These are the evaluation criteria used in our IIASA case studies.

⁴ See the Appendix.

⁵ Hendley (1999) provides a number of examples of how enterprises might develop strategies to survive in the virtual economy.

⁶ For an analysis of how this concept might apply to the management of common-pool resources see Barkin & Shamaugh, 1999. See also Axelrod, 1997.

⁷ For example, in Tomsk we noticed how one of Russia's biggest plants for particleboard was depending on a system of raw material supply that was tailored for deliveries of full-length trees by train directly to the factory premises. Since the logistics of this system no longer worked the plant had to rely on other types of wood and other methods of delivery. As a result the plant did not get sufficient amounts of timber.

⁸ Moscow *oblast'*, with its concentration on furniture production, is an interesting example of the inability to utilise local resources. See Kleinhof *et al.*, 1999.

⁹ For an illustration of how this trade might be organised in the forest sector see Ivanova & Nygaard, 1999, pp. 64 ff.

¹⁰ Between 1991 and 1996 the Russian taxation code was changed 256 times. This has given the system a quality of unpredictability. Taxation experts have characterised the tax penalty regime as 'draconian', with fines of 100% for the first violation, 200% for the second etc. (Rogfalk, 1996, pp. 7 ff.). According to a survey conducted within the framework of the New Russian Barometer, 56% of the population are of the opinion that there is no need to pay taxes if you do not want to do so. If caught, 27% think paying bribes could solve the problem (Rose, 1998, pp. 16 ff.).

¹¹ All *leskhozy* as well as all firms younger than five years are omitted in this comparison. A *leskhoz* should be considered as a public authority rather than an enterprise operating in the emerging Russian market economy.

¹² As predicted, the vast majority of the Swedish firms (75%) is to be found in this square of the matrix. We regard this as a rough validity test of the indices.

¹³ The following calculations are done with ANOTA (Analysis of Tables), a statistical technique to explore possibly existing relationships between categorical variables (Bethlehem, 1990). A full presentation of statistical calculations is available from the authors.

¹⁴ By comparing the turnout in the 1995 State Duma election and support for communist/left-wing parties we have done a rough estimate of this relation. Such a calculation indicates that a higher participation rate is positively correlated with more support for the communists and other left-wing parties (0.45). For Our Home is Russia, former president El'tsin's party, the corresponding figure was -0.19 and for the ultra right-wing Liberal Democratic Party of Russia it was -0.03. This tendency

is further strengthened by the relative success of the communist parties in the 1999 State Duma election. (Data on the turnout and results of the Duma elections in 1995 and 1999 were obtained from the web site of the Centre for Russian Studies at the Norwegian Institute of International Affairs at URL: <http://www.nupi.no/ForskNor/forsk-set-no.htm>.)

¹⁵ In this context some authors want to emphasise the anti-legalistic heritage from the Eastern Roman Empire compared with the early establishment of law and order through the Catholic Church in Western Europe (cf. Berman, 1983).

¹⁶ Hendley (1999) gives interesting examples of the different ways of operating in the Russian economy. She also provides evidence of the existence of firms functioning in accordance with market principles, e.g. firms that are not entangled in barter trade etc.

¹⁷ For an illustration see Tang (1992) and Ostrom (1992).

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Appendix

A note on the project design and research results

The research reported in this article was performed in a study called 'Institutions and the Emergence of Markets—Transition in the Russian Forest Sector'. This study has been an ongoing activity since April 1997 within the Forest project at the International Institute for Applied Systems Analysis (IIASA), Laxenburg, Austria.

The conceptual basis for the study is largely built on the ideas of Douglas C. North, Elinor Ostrom and others concerning the nature of social change and the importance of institutions in society. The project has conducted a series of case studies of the institutional embedding of the forest sector in eight Russian regions (the Murmansk, Arkhangelsk, Moscow, Tomsk and Irkutsk *oblasti*, Krasnoyarsk and Khabarovsk *kraya* and the Republic of Karelia).

With the collaboration of Russian scholars in the study regions, data have been collected on the structure and functioning of the regional forest sector, including the state of the forests, the social organisation of the respective regions, and the rules governing transactions among actors in the regional forest sector. Data were compiled from publicly available sources (Western and Russian scientific books and reports and official statistical data) but also through a series of interviews with representatives of some 25–35 forest enterprises in each of the study regions. To allow some comparison and illustration interviews were also conducted with 25 Swedish forest companies.

Results of the study have been published in journals and the IIASA series of Interim Reports. Reports in this series can be obtained free of charge via the institute's web site at URL: <http://www.iiasa.ac.at>.

The International Institute for Applied Systems Analysis (IIASA), located in Laxenburg, Austria, is an independent, non-governmental, interdisciplinary research institution that specialises in natural and social scientific research methods and models for use by policy makers, the scientific community and the public worldwide. IIASA is an international institution, with sponsoring member organisations in 15 countries. For further information see the IIASA homepage at URL: <http://www.iiasa.ac.at/>