

urban economy is limited within a very narrow scope, say, LM. Thus the dual economic structure cannot be removed in spite of fast economic growth.

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Costs of Plans vs Costs of Markets : Reforms in China's State-owned Forest Management

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Despite China's overall achievements during the past two decades, the economy is encountering a series of problems. One of the biggest challenges is the unsatisfactory performance of the state-owned enterprises (SOEs): subsidies and uncovered loans to the SOEs have drained the government's fiscal resources and the signing off of employees creates many social problems. Compared with the SOEs in other sectors, state-owned forestry¹ faces more serious crises which not only jeopardise the social fabric, but also endanger the environment.

The most obvious problem in state-owned forestry is the 'resource crisis' resulting from insufficient investment in silviculture in the past and a decline in accessible mature forest, which has decreased from 12 million ha and 2 billion m³ in the 1950s to 5.6 m. ha and 0.5 bn m³ at present. The accessible mature forest had already been exhausted by 23 firms in the mid-1980s, an additional 14 firms in the late 1980s, and 29 more firms in the early 1990s. Another 33 firms were running down accessible resources. In total therefore, some 80% of forestry bureaux have used up their mature resources (MoF, 1987; Li, 1996). Quality is deteriorating as well. Stock per ha has decreased from 150 m³ in the 1950s to 90 m³ in the 1990s. At present, the remaining mature forests are mainly located in mountainous areas and other locations with poor accessibility. As a consequence, timber production is shrinking and the cost of harvesting it is increasing.

The immediate result of this state of affairs is the 'economic crisis' in the state-owned forestry bureaux (SOFBs). In 1994, about one-third of the SOFBs

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1. In this article, state-owned forests are limited to the forests currently managed by the 135 State Forestry Bureaux in the northeast, southwest and northwest. In addition, there are 30 m. ha of forests across the country that are mainly managed by about 4,000 state forest farms. These are not included in this study.

were losing money to the extent of 0.2 bn Yuan and a total debt of 4 bn Yuan (MoF, 1995). In 1997 half of them lost money, amounting to 0.4 bn Yuan and a total debt of 22 bn Yuan, accounting for 70% of the total assets of 32 bn Yuan (MoF, 1998). By any standard, many (probably most) SOFBs are already bankrupt. Many have been unable to pay their staff for a number of years, while the workers have had few other job opportunities; for example, the Daxinganling District (with 9 bureaux) of Heilongjiang Province alone owed its staff 0.4 bn Yuan (about 6 months total payroll or 75% of its staff) (Di and Zheng, 1998). The situation in most other bureaux seems no better. In 1996, the average monthly salary of an SOFB employee was also 30% lower than for the country as a whole.

Table 1
Redundant and signed-off staff in SOFBs, 1995 ('000 persons)

| Provinces | Total staff | Redundant ^a | Signed-off ^b | Annual new labour ^c |
|----------------|-------------|------------------------|-------------------------|--------------------------------|
| Heilongjiang | 1,060 | 230 | 60 | 20 |
| Jilin | 250 | 40 | 30 | 7 |
| Inner Mongolia | 290 | 9 | 12 | 16 |
| Total | 1,600 | 279 | 102 | 43 |

Notes: a) still on payroll, but with insufficient work; b) no longer on payroll; c) mostly young people just graduated from high school.

Source: CAFLU (1997)

A related problem is the growing redundant and signed-off labour force. The figures in Table 1 are clearly underestimates if we analyse the situation from the social point of view. Along with the continuing decline in mature forest resources that normally provide employment opportunities, the situation cannot be expected to improve in the near future.

The impacts of the reforms in state-owned forest management are still controversial, but there is little doubt that the economy of the state-owned forest sector seems to be no better-off, perhaps even having deteriorated after two decades of reforms (e.g., Li, 1996; Zhang, 1998). The current reforms, which are essentially institutional and organisational, are fundamentally motivated by past failures and the evolution of society. Why are the reforms of the state-owned forestry sector generally less successful than those in collective-owned forestry, and worse than in the SOEs in other sectors? Why is neoclassical economics insufficient to explain the current reforms?

The most appealing theories with regard to the problems of economic

transition concern the new institutional economics. North (1990) argued that the problem that neoclassical theory has ignored is that of the institutional variables involved in a real exchange process. Institutions are to some extent endogenous variables in the developed world, and the theory works well in analysing markets in developed countries even though there is some bias due to failure to consider these variables. The institutions in economies in transition are less endogenous. Economic transition to some extent means a change of the rules. The new institutional economics can work better in dealing with the role of rule governing economic co-ordination.

This article is an empirical study of the role of institutions in China's state owned forest management. It is organised as follows. The next section outlines some general concepts of transaction costs, followed by a description of the ongoing economic reforms and the problems confronted in state-owned forest management. The problems are then analysed, by comparing the transaction costs incurred in planned and market economies. Finally, some ideas about future reforms are discussed.

Transaction costs

Because of transaction costs, institutions matter. So we must first make a brief review of transaction costs. In a command economy the whole economy is organised like a vast factory, while the firms are like workshops in the factory in a capitalist economy the relations between firms are co-ordinated in competitive markets. The command economy wants to save the costs of market exchange, while the market economy wants to save the costs of organisation (the problems of agency). The striking differences between firms and markets (command and market economies) concern the same underlying theme: transaction costs.

Transaction costs, a phrase originally coined by Coase (1937), are extended into the internal costs of firms and not just the market costs by the property rights approach, significantly contributed by Cheung (1969, 1983). The property rights definition of transaction costs respects no boundaries between firms, markets, households, or any other theoretical constructs. When property rights are protected and maintained in any context transaction costs exist (Allen, 2000). In interpreting the transaction costs within a firm, it may be helpful to understand the 'exchanges' as 'contractual arrangements'. Cheung (1983) defined the firm as 'simply a shorthand description of a way to organise activities under contractual arrangements that differ from those of the ordinary product market'. Firms' transactions involve the contractual arrangement of factors of production, while markets involve the contractual arrangement of outputs. Fuller discussion of the concept of transaction costs can be found in Niehans (1987) and Allen (1991, 2000).

To understand transaction costs, we must first understand the 'content' of the exchanges, namely, 'economic rights' or the benefits of rights. These can be consumed by the owners themselves or through exchanges. Allen (1991) claimed that property rights and transaction costs are two sides of the same coin. Any right is divisible and contains a bundle of sub-rights. Therefore, from public to private ownership is a continuum; any delimitation is arbitrary. Alchian and Demsetz (1973) argued that 'there is some ambiguity in the notion of the state or private ownership of a resource, because the bundle of property rights associated with a resource is divisible'. As a consequence, the exchanges are never completed and their 'intensity' and 'extensity' vary greatly.

The factors affecting the magnitude of transaction costs are generally categorised into: (i) *What: the identity of the bundle of rights.* Rights (or commodities) have many attributes whose value, measurement, policing and enforcement vary from one specimen to another. How difficult it is to obtain full information in the face of this variability fundamentally determines how difficult it is to delineate rights (Barzel, 1997), and this affects the cost in exchange. (ii) *Who: the identity of the agents involved in the exchanges.* This is closest to the human factors raised in Williamson (1975): bounded rationality (involving physical limits on ability to receive, store, retrieve and process information, and language limits on conveying knowledge to others), opportunism, and information impacteness. (iii) *How: the institutions, technical and social, governing the exchanges and how to organise the exchanges.* The technical institutions (e.g. forest inventory and log measurement rules, etc.) are not addressed here, but we are concerned with the social institutions, such as the law, regulation, norms, conventions, etc. Markets are institutions that exist to facilitate exchange, i.e. they are needed in order to reduce the costs of exchange, while firms (or families) are also institutions that facilitate mutual exchange. If transaction costs through markets are zero, there would be no market; if the coordination costs within firms are zero, there will be no firms.

Institutional change

As mentioned above, the rules governing the exchange affect transaction costs. Current reforms in economies in transition to some extent amount to changes in institutions and organisations from firms to markets. The transaction costs of a planned or a market economy are usually referred to under given institutions. Clearly some costs are involved in setting up, maintaining, and changing institutions and organisations. These costs can also be viewed as transaction costs. However, the costs may not be borne by individual exchanges, but shared by the whole society. Furubotn and Richter (1997) define these costs as *political transaction costs* because 'they are, in a general sense, the costs of supplying public goods by collective action, and they can be understood as

analogous to managerial transaction costs'.

If there is only a small modification of the old institutional system, the cost of changes might not be significant, but if the new system is completely different, the costs will be significant. The difference is like that between modifying and completely renewing a traffic control system (including the rules). Modifying a system is much less costly than building a completely new one. However, it should be noted that renewing a system could be more costly than building a new one if the old system is completely useless and incurs some cost to dismantle. Transaction costs play an important role in the stability and continuity of less efficient institutions.

The potential gains from economic reforms must also take account of political transaction costs. If the institutional change in currently capitalist countries is defined as modification, then the reforms in formerly socialist countries are institutional revolutions. The institutions of the Western world, both economic and political, have been relatively flexible (North, 1997). The cost of institutional change may be seen in the transition of the former East Germany, where a substantial investment has been made in institutional rather than physical construction.

Institutional change is not instant, but a complicated process, although formal rules may change overnight as the result of political or judicial decisions. Change in the informal constraints embodied in customs, traditions, and codes of conduct is much more impervious to deliberate policies (North, 1990). Some trade-off may exist between the costs and the timing of institutional transformation. Some of the problems of the economic reforms in Russia may derive from the assumption of a timeless institutional transformation.

The reforms in China's state-owned forestry

China's SOEs have been carrying out reforms since the early 1980s. The SOFBs are no exception, even though they were slower in adopting the reforms as compared with other industrial sectors. In general, the forestry reform has been following more or less the same course as in other state-owned industrial enterprises, with decentralisation of decision-making, a change from a soft to a hard budget, and market liberalisation.

In order to better understand the reforms, we shall divide them into changes in relations between the state² and SOFBs, and in internal relations within the

2. The state in this article generally refers to government agencies. The Ministry of Forestry (currently called the National Forest Bureau) is in charge of state forest management on behalf of the central government. Since the decentralisation of the early 1990s, most government controls on state forest management have been transferred to the provincial governments.

SOFBs. The former reform increased economic autonomy by means of a manager responsibility system, separating management authority from the ownership, and business enterprises from the functions of a government agent. The latter reform introduced various internal responsibility systems to overcome labour shirking by linking contributions and rewards. According to ideas presented in Cheung (1983), the reforms amount to changes in the contractual arrangements.

Reforms between the state and SOFBs and other economic agents

In the command economy, the state was both owner and manager, with the management method being one of plan and command. Some pricing mechanisms were used for exchange in the economy, but the command exchange was still dominant, particularly prior to the 1980s. The trees, land, capital and other material inputs were supplied free through budgetary channels, but all 'profits' were required to be submitted to the state as government revenue.

The assessment of performance in such a planned economy was mostly by comparing physical goods among the SOFBs, such as the output of logs (in cubic meters). There were some cost and profit calculations, but they were not treated as important indicators. The forest sector was one of those most seriously dominated by this planned economy. As key materials, the allocation of timber and wood products was tightly controlled by the government. Incentives for the heads of the SOFBs were limited to job promotion or other honours. The salary system followed nation-wide standards among all SOFBs, and was more or less the same as in other sectors. There were no bonuses. In fact, according to socialist theory, the behaviour of human beings was not regarded as selfish and the firm was not profit-seeking.

Since 1984, a totally *profit-remittance system* has been changed into a *profit-sharing or tax-for-profit* relationship. The state collects a certain share of profits or taxes from enterprises for their use of state capital and resources, while the enterprises claim the residual after handing over the required share and tax. A bonus salary was introduced at the same time. Meanwhile, most of the investment had to be budgeted for within the bureau or borrowed from the banks. This was designed to create an entirely new financial system that would serve as the basis for commercialisation of the state enterprises (MoF, 1989).

Since 1987, a hard budget system has been adopted. *Profit sharing or tax for profit* was replaced with a total residual claim for profit (or fixed subsidies for loss) after a contracted-profit remittance, i.e. *profit contracting*, the amount of revenue (profit) to be contracted with the state based on the status of the resources and the economic situation. The contract is usually made every 1-3 years and the target is often based on previous years (MoF, 1989). In order to complete these targets, the managers of the SOFBs are often required to hand

over certain risk deposits, which, in case of failure, will not be returned. According to Li et al. (1993), these deposits accounted for 30% of the annual salary of the director and 25% for the deputy directors.

Along with decentralisation, there has also been market liberalisation. The quota of timber required to be delivered to the state at a fixed price (below the market price) has been steadily reduced from 100% at the beginning of the reforms to less than 10% at present. Production above this quota is allowed to trade on the free market. Meanwhile, the fixed price at which the state purchases from the SOFBs has been increased several times, from 96 Yuan/m³ in 1986 to 282 Yuan/m³ in 1993.

Since the early 1990s, the 84 SOFBs in Jilin, Heilongjiang and Inner Mongolia have been incorporated into four large state-owned forestry corporations, which replaced the corresponding General Bureaux of Provincial Forestry Industry. This change has transformed the SOFBs at least nominally from a mixture of government and economic agents into pure economic agents. This approach, probably learned from South Korean models, was designed to enhance their advantage in raising capital, their vertical integration and their final market competitiveness. A contractual relationship is established between each corporation and its provincial government. The relationship between the corporation and its subsidiary companies (SOFBs) also incorporates various contractual responsibilities. The SOFBs have a considerable degree of autonomy, but key issues, such as the appointment of senior managers, are still controlled by the corporations.

Reforms within the SOFBs

The internal reforms have been carried out by subdivision and adopting various contractual responsibility systems. Essentially they amount to decentralisation and privatisation. The approaches vary greatly from bureau to bureau. In principle, the state does not issue clear guidelines. The reforms are comprehensive and it is certainly difficult to classify them, but some major reforms might be summarised based on the intensity of the 'privatisation'.

a) Decentralisation. Here we refer to decentralisation mainly from the management point of view. Forestry is usually identified as consisting of three sections: the silviculture section, which relates to tree planting and forest resource management; the logging section, which relates to logging operations, transportation, log storage and road construction; and the wood-processing section, which relates to wood processing, such as sawmills and pulp and paper mills. Traditionally, they were vertically integrated into one firm and one accounting system.

The first decentralisation phase concerned the separation of the three sections, beginning in the mid-1980s in some SOFBs. Following the reform, the

three sections were often named as three independent companies with their own accounting systems, responsible for their own losses and profits and with contractual responsibility to their upper level (the SOFB). Relations between them were conducted via an internal semi-market exchange, using established internal stumpage and log prices, mainly based on the current market, but the integrated bureau of the three sections is the only legal agent able to deal with the state over taxation and profit-contracting, and with external economic relations.

The earliest and most successful SOFB is the Shanchazi Forestry Bureau in Jilin Province. This bureau administers 220,000 ha of land, with 20,000 staff out of a population of 50,000. The informal practice of the 'three-section' management was initiated in the early 1980s, based on an idea originating from a previous separation of silviculture and logging in 1962-6. After a few years of experiment, this management method was formally advocated by the Ministry of Forestry and the Provincial Government and encouraged to extend to other bureaux (MoF, 1989). According to Li et al. (1993), it has already been widely applied and has played some positive role in improving silvicultural quality in Jilin and Heilongjiang Provinces. The logging section 'purchases' the stumpage, the products of the silviculture section. In most cases, a silviculture unit, established on behalf of the bureau, is in charge of all farms. Relations between the unit and the forest farms follow a contracting pattern: the farms undertake operations and management and the unit is responsible for inspecting, checking, monitoring and supervision.

The second decentralisation phase was to divide the old forest farms (or units) into smaller silvicultural units, which are either a small group of households or separate households. Good and poor quality (in soil, topography and location) land was sometimes evenly distributed among the smaller farms or households. Based on previous experience, the whole costs of forest management are calculated and used as standards in contracting, with the periods of the contracts varying from place to place. According to Tan and Zhao (1996), the contracting period is ten years in the Mulin Forestry Bureau in Heilongjiang Province, but the cost is adjusted every year. The experiment in Mulin covers eight forest farms, involving 428 households. Each farm and household is responsible for itself, but technically they must still follow the design drawn up by the SOFBs.

b) Cost component contracting-out. This refers to the management method in which the contractors take over a certain amount of work or service according to its hard-budget cost, but do not share the final profits and risks.

The simplest item is the piece-work wage, i. e. payment based on how much work is done rather than on the time taken to do it. This is in fact a kind of privatisation of labour, but the general design, materials and machinery are still provided by the forest farms. This method is more often used in wood-

processing units than in silviculture. A similar system is to fix a certain amount of work for a small team or individuals, with the contractors being responsible for the saved and uncovered time. Zhang et al. (1994) came to the conclusion that the contracting-out of the forest protection service was very successful.

A further step forward is the contracting-out of the gross cost component. This is in fact a kind of privatisation of inputs, both labour and materials. The contractors are responsible for organising labour and materials, e.g. the nursery work, and the payment is based on the internal set price (based on the previous average cost) and the number of healthy seedlings produced. In planting, the species, time, location, payment standard and final checking procedure are redesigned by the bureau, and the contractors are responsible for the whole package of work, including cleaning, site-preparation, planting and the early years of tending. In Weihe Forestry Bureau, total cost contracting is applied to some reforestation in remote mountain areas. The deficit is borne by the contractor, while the surplus is shared between the silviculture unit and the forest farm. This total contracting-out of costs has been widely extended to cover administrative spending, e.g. public security, procuratorial, judicial and legislative units. (It should be borne in mind that the SOFBs are still also local governments to some degree.)

c) Share-holding system. This system is designed partly to transfer state-owned property rights to employees, and is often called an *employee buy-out*. The individual employees and the SOFBs share the potential profits and risks. This means that both inputs and outputs are partly privatised. The system has already been extensively carried out in SOEs outside the forestry sector. In the SOFBs, it is still limited to some small sawmills and wood-processing units, where it has proved very successful in most cases (Guo et al., 1995).

The system is now becoming popular in the silvicultural section following some successful examples. For instance, Qingshan Forest Farm (in Weihe Forestry Bureau), a share-holding farm, was established with the mobilisation of a total share fund of 140,000 Yuan, more than half of which is owned by the farm staff. This system may help internal monitoring and reduce monitoring costs and staff shortages. It was reported that, after two years operation, the output value of the farm amounted to 350,000 Yuan, with a profit of 50,000 Yuan (Xu and Guo, 1996). Gao et al. (1993) reported that an experiment with a share-holding system at another farm, Jiaokunli Stock Share Farm, also proved quite successful. According to Wang (1998), more than 300 share-holding firms (farms) had been established in Heilongjiang Province by 1997.

d) Property rights contracting-out. This system is carried out by either renting or selling the property rights, and amounts to a privatisation of the most important cost component — land and assets. However, the sale of land is usually limited to inside employees, while the forest resources, the product of

silviculture, are still limited to inside buyers, and the prices are not fully determined by the market. The privatisation is therefore less than complete. The difference between renting and selling, in principle, is only the length and degree of the 'bundles of rights' in exchange. This kind of reform resembles that in agriculture. It has proved successful for small factories, such as small sawmill and wood-processing firms, machinery repair and some service units (Guo et al., 1995). The new owners are responsible for their own profit and loss.

In silviculture, this system, after having been practised in the early period, seems not to be very successful, and fresh experiments are still continuing. However, the system is still limited to wasteland reforestation. The most common approach is by auction to groups of households or individuals. The SOFBs only collect the land rent and the contractors are responsible for everything else, but under certain constraints. Usually some deposit for the land rent is required, so, if the contractors are unable to complete the agreement, the land use right is taken back and the deposit is not returned. According to Xu and Guo (1996), 137 plots of wasteland amounting to 422 ha, and accounting for 30% of the wasteland in Weibe, have been auctioned out to 106 households at a total cost of 7 m. Yuan.

In recent years, since a growing number of SOFBs are unable to run their payrolls, arable land is often allocated as a kind of payment for salary due, pension for retired staff and compensation for those signed-off, being called 'salary land', 'pension land' and 'employment land' respectively. In Heilongjiang the three kinds of land amounted to 4,500 ha, 2,100 ha and 1,850 ha, respectively (CAFLU, 1997).

A comparison: costs of plans vs. costs of markets

It is difficult to measure the level of transaction costs. Most of the empirical studies are comparative approaches. Some problems of transaction costs are mitigated, however, by the fact that transaction costs are assessed comparatively (Williamson, 1985). This study will also compare the transaction costs involved in pre- and ongoing reform situations in order to assess performance.

Following the concepts of transaction costs as 'the costs of establishing and maintaining property rights', as defined by Allen (1991), or as 'transaction costs as associated with the transfer, capture and protection of rights' as defined by Barzel (1997), and in view of the characteristics of the SOFBs, we might consider the transaction costs as emerging from the exchange of rights: (i) between the state and the SOFBs, (ii) between the SOFBs and other economic agents, and (iii) within the SOFBs. It should be noted that this classification of 'exchanges' is used only for the purpose of analysis.

Transaction costs between the state and the SOFBs

The transaction between the state and the SOFBs is similar to managerial transactions, namely, a relationship between a legal and economic superior and a legal and economic inferior (Commons, 1932). In the command economy, the transaction costs between the state and the SOFBs were the costs associated with their various meetings and communications, including reporting from the SOFBs to the state and commanding, monitoring and checking by the state. Since such an arrangement integrated the state and the SOFBs into a single economic body, agency problems, such as the incentives for looting, cheating and intentional hiding of information, were not very serious, and transaction costs for negotiating, implementing, and monitoring were relatively low. However, other problems such as welfare loss from shirking and wastage were very serious because the externalities of the SOFBs were not internalised.³ This loss can be interpreted either as transaction or some other costs. Other similar approaches from agency problems, property rights problems, and contract problems seem more applicable than the transaction cost approach alone. However, they should come under the same heading of transaction costs.

The economic reforms aim to internalise the externalities, i.e. to define, implement and police the rights exchanged between the state and the SOFBs. On the one hand, the state hands over some but clearly not all rights (there were some specific constraints), in exchange for some revenue from the SOFBs. The 'tax for profit' or 'profit-sharing' between 1984 and 1987 and 'profit contracting' since 1987 are various exchanges between the state and the SOFBs, the former designed to share the costs, profits and risks and the latter to treat the firm more as a commodity, as discussed in Puterman (1988).

Theoretically, the reforms should work according to mainstream economics. Unfortunately, neither the 'profit sharing' and 'tax for profit' nor the 'profit contracting' totally resolves the problem of externalities, and does not occur without cost. Because of prohibitive transaction costs, the definition is often incomplete, subjective and unfair; implementing and monitoring are often not effective. As a consequence, this ambiguous delineation provides many openings for opportunism. So what we see in reality is the winners enjoying the legal rewards resulting from autonomy, but claiming that they are due to their good management, while the losers never question their own problems in management and always blame the unfair contracting, asking for compensation

3. More can be understood about the loss from shirking due to the different social and private marginal outputs. The equilibrium of private effort is the point at which private marginal output equals marginal input. Shirking problems come from information and an inflexible labour market.

for the resulting losses (often called policy losses) and forcing the hard budget to return to a soft budget again. A real hard budget is seldom finally practised.

The achievement of a higher profit (usually for those with more accessible forest resources) in any year means that a higher target will be set for the following year — a policy with some 'ratchet effect' and resembling 'lashing the fastest oxen'. SOEs have a general tendency to under-report or hide some of their profitability, often reporting that they are just breaking even in order to have a better negotiating position for the future target (Zhou, 1993; Jing, 1997). It therefore makes the state unable to judge real performance and discourages honesty to some extent (Jing, 1997). Autonomy makes hiding the information easier. As a consequence, the target often becomes more subjective. It is common for SOEs to have two sets of accounts, one for internal use and one for state auditing.

Problems arising from the autonomy that make the situation even worse are the widespread looting and the short-term horizons of managers. It is estimated that an annual 100 bn Yuan of state assets have been looted (Jing, 1997), and the state can do very little about it because of the autonomy and the high cost of monitoring. The monitors have little incentive and are even involved in the looting because state assets belong to the citizens. Lee (1992) emphasises that the performance of SOEs continues to be compromised by two types of problems: collusion with the state and the local authorities, which tends to weaken budget constraints, and collusion between managers and workers, which weakens the link between performance and rewards. When looting becomes a common fact, as is true also for corruption, there is no solution available. Real effects of the unfair delineation of rights and the resultant looting may well bring not only distribution but also efficiency problems. The poor returns from new investment in the SOEs are a good example of the efficiency problems resulting directly from 'looting'. Jefferson (1998) argued that China's state enterprises are more than a common good because of their soft budgets: the cumulative exactions that translate into losses are replenished by fiscal or financial subsidies.

These problems are common to all SOEs, but may be more serious in the SOFBs because of the more costly information and the greater difficulty in using summary indicators to make judgements.⁴ There are no common uncertainties for SOFBs. Forest resources, as inputs as well as outputs, are critical for the assessment of their management, but vary greatly from place to place. Needless to say, setting a market value, the physical measure, has proved difficult as well. Land value, greatly influenced by natural conditions such as soil quality, topography and location, varies from site to site and is difficult to

4. Holmstrom (1982) argued that if the market is competitive and the number of competitors is relatively large and they face only common uncertainties, it is not difficult to judge the management from some summary indicators such as profits and labour productivity.

measure. The social burden of retired staff pensions and the real value of the capital and other economic factors in the SOFBs vary from bureau to bureau. Another big difference from SOEs in other economic sectors is that forest management has multiple products and services. There is more market distortion in timber products arising from the centralised command economy of the past, and other markets concerned with environmental services are entirely missing. The social costs and benefits (or total welfare) of the SOFBs show a much bigger gap in co-ordination with private costs and benefits.

If the market is competitive, it means that there are many buyers (contractors) and sellers. However, the number of SOFBs is relatively small, and other ownership (for instance private) with a similar background is completely lacking. All these characteristics make it more difficult for the state to judge and monitor forest management by comparing summary indicators. Due to the lack of information and 'unequal bargaining power', the state in its relations with the SOFBs has a tendency to put more pressure on reaching the targets, with which the SOFBs do not usually agree (Qu, 1995), while the SOFBs easily act opportunistically in hiding information, looting state assets and even complaining about the agreements as unfair when they fail to reach the targets. Li (1996) reported that since the economic reforms it is becoming more common for the SOFBs to try to under-report their harvesting level of forest resources.

Interpreted into the property rights approach, the characteristics of forest management complicate the delineation of property rights and leave the agreement between the state and the SOFBs incomplete. The poor delineation makes the real effects of the reforms more limited in the SOFBs than in other SOEs.

Transaction costs between the SOFBs and other economic agents

In the planned economy, exchange was organised by government decision-makers based on the information available. The transaction costs via markets could be relatively small because of the simplicity, but the costs of planning and welfare loss from inefficient allocation could be tremendous because the information was really too slight and imprecise in a complex society. The departure from efficient allocation could therefore be very large. Reforms in the relations between SOFBs and other economic agents are designed to change from a command to a market exchange.

As is well known, the costs associated with market exchange depend to a great extent on the state of the market and the attributes of the rights and the agents of exchange. Transaction costs via the market seem not to favour the SOFBs. Comparatively, the market for logs and other wood products is poor, because the SOFBs remained longer in the more centralised economy. The attributes of both standing forests and logs make the transaction costs higher

because of difficulties in measuring both the quantity and quality, and also in implementation because of unfavourable storage and transportation. The Chinese statistics reveal that the figures refer only to 'timber' and do not even distinguish 'timber' for pulp or paper and for other purposes, let alone specific standards, trademarks or labelling. On-site negotiating, checking and delivery are absolutely necessary.

From our survey in Daxinganling District, and according to Di and Zheng (1998), transactions via market exchange were found to be very costly. In Daxinganling, the normal delayed payment from other state-owned pulp and paper mills amounted to 50 m. Yuan in 1997, but the abnormal amounted to 0.4 bn Yuan, or about a third of annual total sales (a significant part of which might never be recovered). In addition, a large amount of the exchange was by barter.⁵ The physical long-term storage costs and their associated capital costs were also greatly increased in the transition from a planned to a market economy. In the autumn of 1997, the total stock of logs amounted to 2 million m³, accounting for more than half the annual timber produced. The long-term storage caused the wood quality to deteriorate, thus adding indirectly to the transaction costs.

The transaction costs can be partly reflected in the difference (between a third and a half) between the local producer price and the consumer price. The transportation cost, which is not a transaction cost, accounts for only 10% of the selling price. Due to poor marketing strategy, the benefits of the open market were partly lost and partly gained by the trading firms (mostly individuals who were from outside the SOFBs) whose trade accounted for 80% of total sales in some SOFBs. Cao et al. (1997) estimated that total timber sales directly from the SOFBs to customers had dramatically declined in recent years. The SOFBs were not capable of facing this new challenge. On the one hand, the importance of marketing was not recognised (those in charge of marketing amounted to only 0.15-0.2% of the total staff and had no knowledge or experience of marketing). On the other hand, the strategy of marketing in SOFBs (for instance, using bribes) was less flexible and less competitive than that of individual owners. When delivering logs to traders, a large amount of loss again occurred. It was commonplace for deliverers to under-report and downgrade their deliveries and accept bribes from the individual traders. It was estimated that this loss amounted to 30 m. Yuan in Daxinganling District alone.

It should not be thought that trading is excessively profitable and that competition will finally reduce the profits. In fact, the business is already quite competitive. However, the competition is unfortunately not fair. It was estimated that a quarter to a third of timber sales in the Beijing region came

5. Some costs were required for sales, since many of the goods were not wanted by the SOFBs themselves. In general, the loss was about a third to a half of the prices in exchange and it was estimated that the loss amounted to more than 30 m. Yuan because of this.

from individuals (not even registered firms). This illegal market and the widespread corruption make it quite costly for the middlemen, who have to pay a lot in bribes and share great risks in bridging the transfer of goods from producers to consumers. For instance, one of the important means of product delivery is by rail. In competing for transport permits, individuals have more advantages because they can easily bribe the railway department since they have the advantage of flexibility in accounting. All of these are transaction costs from the trader's point of view.

From the previous analysis, it is obvious that a well-functioning timber market (with relatively small transaction costs through market exchange) is still a long way off and depends to a great extent on implementation of the law and the general socio-economic environment.

Transaction costs within the SOFBs

Exchanges within the SOFBs are particularly difficult to define, because each SOFB is not just a firm but a society consisting of many sub-units and many types of exchanges, whether command allocations or market mechanisms. Transaction costs within the SOFBs may be more easily understood as management or agency costs. But in principle, they are really a kind of transaction cost, if we note that the cost is associated with the exchange (or contractual arrangement) of rights. First, there are several sub-units within each SOFB and the exchanges between them are carried out partly by command and partly by the market. Secondly, in each sub-unit, the most important exchange is the contractual relation between the manager and the employee.

The transaction costs discussed in the exchanges between the state and the SOFBs and between the SOFBs and other economic agents, are all reflected within the SOFBs. To understand this, we need to know the identity of China's SOEs, in particular the SOFBs. The managers of the SOFBs indeed have triple roles: as district administrators responsible to the whole society of the region; as state officials responsible for the state's assets, because they are appointed by the state; and as firm managers responsible for profit-making and other objectives set by the government. These special characteristics are mostly derived from the past history of the SOFBs. Prior to the establishment of the SOFBs, there was practically no population, and therefore no government presence. The SOFBs brought in logging workers and their families and the population was later increased by their offspring. The SOFBs have thus been functioning as the local government. Just as there was a general failure of the central command economy, this kind of centralised economy within the SOFBs necessarily leads to inefficiency as their size becomes bigger, because of undefined property rights and externalities among the economic sub-units.

Before we go on to discuss the transaction costs that emerge from the economic reforms, we must first evaluate the transaction costs in the old system,

one of the most important of which was the cost of administration. Table 2 gives the staff structure in the SOFBs. It shows that the average ratio of 'administration' staff to 'workers' is 1:5. In fact, most of the engineers and technicians are doing administrative rather than technical jobs. In addition, a certain proportion of 'workers', staff in 'services' and 'others', were carrying out services associated with organisation, such as drivers of cars used by various administrators, and secretaries in administrative offices.

It should be noted that the salaries of administrators, particularly the actual (including black) income, are much higher than those of 'workers'. Thus, about a quarter to a third of labour costs, and a similar share of the costs of other inputs, could fall into the category of transaction costs.

Table 2
Structure of the SOFB labour force
by various categories, 1991 ('000 persons)

| Provinces | by length of contract | | by nature of the work | | | | |
|---------------------------|-----------------------|-----------|-----------------------|-------------|----------------|----------|--------|
| | permanent | temporary | workers | technicians | administration | services | others |
| Daxinganling ^a | 89.0 | 51.0 | 78.0 | 6.0 | 20.0 | 34.0 | 6.0 |
| Jilin | 57.0 | 13.0 | 99.0 | 13.0 | 15.0 | 40.0 | 7.0 |
| Heilongjiang | 332.0 | 67.0 | 247.0 | 18.0 | 50.0 | 118.2 | 32.0 |
| Sichuan | 31.0 | 4.0 | 22.0 | 1.0 | 5.0 | 7.0 | 2.0 |
| Yunnan | 15.0 | 3.0 | 11.0 | 1.0 | 3.0 | 4.0 | 1.0 |
| Saanxi | 7.0 | 3.0 | 7.6 | 0.5 | 1.6 | 1.6 | 1.4 |
| Gansu | 6.0 | 2.0 | 1.4 | 6.8 | 0.6 | 1.2 | 2.0 |
| Qinghai | 0.2 | 0.1 | 0.2 | 0.0 | 0.0 | 0.0 | 0.0 |
| Xijiang | 4.0 | 0.3 | 3.0 | 0.4 | 0.8 | 0.7 | 0.3 |
| Total | 541.2 | 143.4 | 469.2 | 46.7 | 96.0 | 206.7 | 51.7 |

Note: a) Geologically, Daxinganling is partly located in both Inner Mongolia and Heilongjiang Provinces. But administration of the forestry bureaux is directly under the Ministry of Forestry, independent of the provinces.

Source: MoF (1992)

It is not hard to imagine the level of efficiency of such huge administrative costs in a relatively primitive industry that does not normally need too much administration. It seems clear that most of the administration is redundant. If the change from a command to a market economy can greatly reduce the administrative work, then at least some transaction costs can be cut.

Unfortunately, political and social constraints make the reduction very difficult. The most likely to be laid off are the temporary staff, who are 'workers' and work hard, but get the least pay in terms of both salary and other welfare; the next most likely to be signed off are the permanent 'workers'; the administrators are always the least likely to be laid off.⁶

Of the three kinds of exchanges, the most difficult reforms lie within the SOFBs. Owing to their isolation, the market economy 'culture' is extremely poor; for example, there were only 25 private firms employing 309 persons in Daxinganling in 1991 in a district of 9 m. ha of land and 0.5 million population (Tan, 1994). With regard to the separation of silviculture and logging, current stumpage pricing, which was still based on cost components rather than market determination, was introduced only in the early 1990s. The high transaction costs, mostly reflected in the costs of enforcing and monitoring the desired harvest levels and presale measurement costs, make them difficult to separate to some extent. Transaction costs were believed to be the most important factor in determining the exchanges, by lump sum or per unit contracts, between forest owners and logging resources owners in the US (Leffler and Rucker, 1991). They were also seen as reasons for forest companies' decisions to contract out silvicultural activities or to perform them within companies in Canada (Wang and van Kooten, 1999). We may also find forest industry, such as pulp and paper mills, more likely to have some forest resource bases for providing raw materials than in other sectors.

As already noted, work contracted-out is a kind of privatisation of labour, i.e. as one factor of production. It is a strong incentive and can overcome the problem of labour shirking, but is not an incentive to saving of materials. Gross cost contracting-out is a more intensive form of privatisation, including the two input factors of labour and materials. However, both create problems in setting standards, and in quality control and final checking. For instance, in contracting-out labour for planting trees, if the contract is too short it may happen that the trees have been planted and the labour paid for, but some trees do not survive because of the poor quality of planting. A better scenario is that the trees survive but do not thrive later on. If the contract is too long, the contracting work becomes more difficult and may not be particularly motivating because of either the poor credit market and the low credibility of the bureau or the high risk aversion of the farmers.

Share-holding is a further step towards privatisation. It partly privatises both the input (including land) and output factors. This system is not new but it has proved useful in recent reforms. Contractual relations in which two distinct factors of production are each paid a proportion of the output have existed for millennia (Higgs, 1984). From the experience of economic reforms in the collective forest area, it seems that this form is the most suitable, at least for the

6. It was not possible to obtain updated data on the structure since 1991.

time being.

Contracting-out land tenure is the most intensive form of privatisation. The degree of intensity depends on the length of time involved and how big is the share of the 'bundles of land rights' that are transferred. In general, it is a feasible approach, either by auction or negotiation, for small industrial firms. However, this approach is often used as a legal means of transferring public property to either collective or private ownership, due to the lack of transparency and democratic procedure (Li, 1996).

In silviculture, land tenure privatisation proved most unsuccessful initially. For instance, during the early 1980s, a certain area of forestry land was allocated from the state to the collectives, which further distributed the land to individual households. In Heilongjiang Province alone, a total of 760,000 ha of state forestry land was re-allocated to the collectives and individuals. According to a survey by Heilongjiang Forest Resources Investigation Institute, only 12% of the land had been forested in the 15 years since being transferred. Privatisation also proved unsuccessful in Taoshan Forestry Bureau. Since 1983, some land was re-allocated to individual household management, but because of the poor labour market, households have to rely on their own internal labour and find it difficult to carry out reforestation activities. In addition, privatisation adds to the difficulties of the general administration, such as in the case of forest fires.

The major problems are the unclear boundaries, i.e. the poorly defined property rights and vague legal systems (Teng and Xie, 1991). But recently privatisation has been deemed more successful in some places according to Xu and Guo (1996) and Tan and Zhao (1996). The biggest problems may lie in the high 'exclusion cost' of forest protection. Legal holding of land rights does not mean that 'exclusion' can be realised without cost. The costs of real ownership include not only the cost of obtaining titled or recognised rights, but also the cost of protecting them. If exercising the rights proves too costly, the ownership goes by default — having the legal but not the economic rights.⁷

Conclusion

It seems too early for a final assessment regarding the time and costs involved in institutional transformation. All the emerging issues have been virtually different from those policy-makers seem to have anticipated (Suteia, 1998). The current problems with state forestry have probably resulted from past mistakes, such as neglect of forest resource development, poorly designed labour contracting and unsustainable development policy. The types of 'contracting' or 'exchange' should be co-ordinated with institutional changes. The market

7. For more on the difference between legal and economic rights, see Barzel (1997).

economy requires its corresponding institutions to reduce transaction costs via market exchanges. Before the market-oriented institutions have been established, it is not surprising that market exchange might prove more costly than exchange by planned allocation.

The economic reforms China is undergoing have provided lessons in both success and failure that thus create a fundamental basis, i.e. the 'concepts', for institutional change. With regard to the characteristics of forests, particularly in the Northeast and Southwest where the forests are critical for the whole nation's environmental and socio-economic security, stability and continuity could be extremely important. Reforms on the margins towards a market economy might be recommended. Some degree of inefficiency from shortage of good management will have to be tolerated in order to overcome looting and short-sighted management.

It is not self-evident that a more market-oriented forest management is superior to the centralised management, or vice versa. They could be complementary. Regarding the wide range of areas and situations in both forestry and society, it seems that there are many different kinds of reforms that can be experimented with. We should not be limited to the two extremes; restable implications may be found somewhere in between along the continuum. It seems we should not limit our vision to the land, which is only one factor of production. The privatisation of labour, capital, input materials and outputs (timber and environmental goods) is equally important. All factors are interrelated. Practices such as share-holding and contracting-out cost components have proved more successful in many cases.

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Public Investment in the Middle East and North Africa: Towards Fiscal Efficiency

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During the 1970s and the early 1980s, the public sector played an increasingly dominant role in Middle Eastern and North African (MENA) economies. The favourable external environment, in particular the sharp increases in oil prices, not only provided oil-exporting countries with greater export revenues but also benefited non-oil-exporting countries indirectly through official (grants) and private transfers (remittances). However, although this substantial public investment resulted in average annual growth of 3.5% per capita between 1965 and 1980, it clearly did not result in sustained growth. In the 1980s and the early 1990s, the ratio of investment to GDP fell considerably, and although remaining higher than in some other regions, led to a decline in growth, as measured by GDP per capita, to an average of -1.7% between 1981 and 1995. Although the lack of growth is partly attributable to the rapid population expansion in the region and the sudden drop in oil prices, productivity figures within the public sector explain much of this poor performance. Nonetheless, even today the public sector continues to play a major role in most MENA economies, with extensive government involvement in investment, public enterprises, finance, and social and infrastructure provision.

This article will attempt to address this issue by examining recent efforts on the part of different groups of countries, namely oil-exporting and non-oil-exporting, within the MENA region to improve the positive effects of their public spending programmes on private investment. It will also test whether these efforts have proved to be 'over-invested' so that public investment now competes with rather than simply encouraging private investment. The first part of the article reviews the macroeconomic performance of MENA countries by describing significant trends in the region as a whole. The following section defines the different types of public investment and goes on to question the efficiency of each type by testing its effects on private investment, using a simple model to test for this crowding-out hypothesis. The final section discusses some of the policy implications arising from the analysis.

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