

COMMENTARY

Economics of transaction costs saving forestry

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**Abstract**

Following the arguments concerning the problems of traditional forest economics in Putz (2000), this article shows that transaction cost economics can overcome some of the shortcomings of the main stream forest economics. The public forestry, subsistence forestry, non-industrial private forestry, China's share-holding forestry, and their revolutions are analyzed by the relative transaction costs of labor, capital, land and forest products. Potential implications of transaction cost economics in forest policy, including regulated access to commons, sustainable forestry criteria, ecological certificates and land tenure decentralization, have also been discussed. © 2001 Elsevier Science B.V. All rights reserved.

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**1. Introduction**

“Economics of home grown forestry” by Francis Putz (2000) in this journal challenges main stream forest economists. I intend to advance discussions using transaction cost economics. The concept of transaction costs originated from Coase (1937) where he investigated why firms exist and found that firms emerge to organize whenever their costs were less than the costs of carrying out transactions through the market. This theory has been subsequently developed by Coase (1960), Alchian and Demsetz (1972), Che-

ung (1969, 1983), Williamson (1975, 1985), among others. Transaction costs can be distinguished from production costs, which is the cost category with which neo-classical analysis has been preoccupied. North (1990) divided the total costs of production into *transformation costs*, the costs of inputs of land, labor, and capital involved in transforming the physical attributes of a good, and *transaction costs*, the cost in defining, protecting, and enforcing the property rights to goods.

Transaction cost economics provides a very useful tool to understand several seemingly unrelated and non-economic issues: the law, ethics, organization, governments, family, state. Unfortunately, it has been applied only in a very limited number of forestry studies (e.g. Leffer and

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Rucker, 1991; Geodecke and Ortman, 1993; Wang and van Kooten, 1999; Zhang, 2000a). The Putz article collectively identified that various opportunity costs should be used in evaluation at various management regimes, but he did not use the concept of transaction costs. ‘Home grown forestry’ has its basis both in institutional economics as has been discussed in many important works (e.g. Commons, 1934; Knights, 1965; Williamson, 1985), and in the specific nature of silviculture as will be briefly discussed in the following section. Then, I will use public-owned forestry, subsistence forestry, non-industrial private forestry, and the currently popular shareholding forestry in China to show that transaction cost economics help to explain that many problems exist in the traditional economic analysis.

## 2. The nature of silviculture

Traditionally, comparative advantage is examined by means of the relative cost of the inputs and technology. Clague (1991) presents an interesting model of comparative advantage using the institutional approach. He separates commodities and services into two groupings as ‘self-contained’ and ‘non-self-contained’. ‘Self-contained’ production does not benefit much from an elaborate division of labor that would require coordination within large organizations or across firms. The operations of restaurants, taxicabs, low-class hotels, barber shops, repairing services, and even agricultural production may be classified as ‘self-contained’. He argued that less developed countries (LDCs) have a comparative advantage in the production of primary products because many of these production processes are ‘self-contained’.

It is quite clear that silviculture is in the category of a primary industry. However, unlike many other primary industries, it is not “self-contained” as can be seen from the following points:

1. Trees and forestland are both immobile and slow-maturing. Brokensha and Castro (1984) and Bruce (1986) argue that planting trees more closely resembles the digging of a well or the construction of a fence than the planting of annual crops because the value of the investment is regained quite slowly. There is a strong positive relationship between the security of tenure and the willingness to invest in tree-planting. The security of tenure relates not only to political stability and the tenure applied, but also to the status of theft and protection against theft (more about on property rights and theft, see Barzel (1997)).
2. Since many forest products are environmental goods and services, it is sometimes costly to delineate and transfer the property rights. They may be more easily exposed to the public domain. Free rider problems come from the costly transaction costs. Many environmental goods are public goods (or at least mixed public and private goods) — with characteristics of non-rivalry in consumption and difficulty in exclusion. The transaction costs involved in trading environmental products may be high compared with the production costs.
3. Difficulties arise in evaluating and monitoring the silviculture activities because they are less standardized than factory work, or even the work in the agriculture. The quality as well as quantity of the silviculture can only be accurately evaluated after a long period of time. Difficulty in evaluation is also caused by the difficulty in measuring elements of the natural environments, such as soil, water, temperature, etc. So we may not be able to correctly identify the contributions from the labor or from the natural factors. Consequently, moral hazard (alternatively, monitoring cost) could be serious by the use of hired labor or by team work, particularly when the work is conducted manually.<sup>1</sup>

The nature of silviculture causes the transaction costs of hiring, monitoring labor, getting capital and marketing the products to be relatively high. Therefore, silviculture is not “self-contained”, and suffers some disadvantages from market exchange. The socio-economic history before industrialization to a large extent is a history of the

<sup>1</sup> The moral hazard basically comes from information problems and an inflexible labor market (see, for example, Holmstrom, 1982; Dong and Dow, 1993).

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