Forest Ownership and Taxation in a Swedish Boreal Municipality Context

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Abstract

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Forest ownership and changes in the forestry sector have played an important role for development in northern inland Sweden - and remain vital for a sustainable development. Examining forest business activity and the Swedish tax system this thesis aims to assess differences between various kinds of forest ownership, in a typical boreal municipality - and to discuss whether the contribution to the local economy can be seen as generating incentives for development. The municipality of Storuman was studied, for one year, focusing on the categories Non-Industrial Private Forest (NIPF) ownership and large-scale forest ownership.

Based on agricultural property- and income tax return data, a method was devised to assess NIPF categories in relation to the boreal municipality. It enabled quantification of sales activity, operating costs, investment and direct tax revenues generated. Further, a comparative study was conducted of shareholders versus non-shareholders in the local forest common, based on their economic activities, forestry production and felling data. To contrast NIPF with large-scale forest ownership, large-scale operating costs and investments were examined. Felling statistics were used, combined with silvicultural costs obtained from an external survey.

Results showed that a large share of NIPF owners' forestry sales revenues were re-invested in their forest properties; 71 percent of sales as operating costs and 24 percent in the form of investments. Resident owners were more active and ploughed more money back into the properties in the form of investments. They also seemed less inclined to make use of disposable income from the property. Activities were also lower among shareholders. The same low harvesting activity was found on the forest commons land. This indicates that the common, from this perspective, not has worked as a force promoting local development. NIPF- and large-scale forest owners earn comparable felling revenues. However, NIPF owners ploughed more back into their properties. The inevitable conclusion is that with the present tax system and activities among ownership categories, non-shareholder resident NIPF owners are preferable for the boreal municipality. They seem to keep up an activity and still generate local tax revenues, even though small. Finally, only meagre tax revenues were created for the boreal municipality budget from forest ownership, roughly SEK 600,000 in the year 2000. The present tax system in Sweden cannot be seen as generating local incentives for development, based on forestry as an endogenous capital.

Keywords: forest ownership, forest business activity, taxation, boreal municipality, rural, northern Sweden

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Appendix

Papers I-IV

The present thesis is based on the following papers, which will be referred to by their Roman numerals:

I. Holmgren, L., Nyquist, S. and Lidestav, G. (2005). A method for assessment of sales, operating costs, investment, disposable income and direct tax revenues generated form NIPF. (Submitted manuscript).

II. Holmgren, L., Lidestav, G. and Nyquist, S. (2005). Taxation and Investment Implications of Non-industrial Private Forestry within a Boreal Swedish Municipality. *Small-scale Forest Economics, Management and Policy*, 4(1): 35-51, 2005 35.

III. Holmgren, E., Holmgren, L. and Lidestav, G. (2006). Comparison of harvesting and business activities of non-shareholders and shareholders in a forest common in Sweden. (Re-submitted manuscript).

IV. Holmgren, L. Large-Scale Forest Ownership in Comparison with Non-Industrial Private Forest Ownership in a Swedish Boreal Municipality Context. (Manuscript).

Introduction

The development of municipalities in the boreal inland part of Sweden, is closely related to the development of forestry. As a result of a national colonization policy, redistribution of land took place during the 19th and early 20th century. Vast areas of Crown land were transferred to local farmers. Liberal ideas suggested private owners would manage the land best, getting better yields, and the population would grow as would tax revenues (Stenman, 1983). Timber became profitable and that boosted the economy of the northern interior. Initially he demand from the forest industries was met by logs provided from Crown land. Then, from the beginning of the 19th century, the demand was mainly supplied by yearly log purchases; after which for some 50 years cutting rights were sold by farmers who had been allocated forestland (Stridsberg, 1964). Central government worried that by selling cutting rights farmers jeopardised their independence and the modernization of agriculture; selling cutting rights also jeopardised the yield of forest raw material. Therefore, the authorities introduced means to stop sawmill companies speculating on forestland and for improved forest management on private forest land. The sawmill companies themselves realized the need to control the primary production process and so, from around 1870, they started to buy forest properties. In 1906 an act prohibited companies purchasing forest land in Norrland and Dalarna (Stridsberg, 1964; Stenman, 1983). Forest commons were set up between 1861 – 1918. The policy sought to introduce orderly forest management with help from forestry experts, to create larger, more productive units to boost the economic prospects of individual farmers and the whole community (Carlsson, 1995, 1999; Pettersson, 2003). Since 1906, the ownership structure of forest land in northern Sweden has remained more or less stable (Törnquist, 1995).

As the wood processing industry grew, the inland forest districts were assigned the role as raw timber producers. Forestry became an economic backbone which had a major impact on local identity and culture (Lundberg, 1984; Lisberg-Jensen, 2002). Getting timber demanded a seasonal but stationary workforce, who could earn a living from small-scale farming during the summer season when no forestry operations were taking place. In this way small-scale farmers and industrial forestry became interdependent, and another aspect of this mutual dependence was that industrial forestry concerns purchased the timber from the farmers' forest land (Törnqvist, 1995). Half of the population in northern inland Sweden was to some extent dependent on forestry for their income until the beginning of the 1960s, when mechanized forestry replaced labour intensive techniques, decreasing the importance of forestry for the local economy as a result (*cf*. Persson, 1998). There have been more than just technical changes though. Today, there are fewer small farm businesses, more non-resident owners who work in other professions and these changes have led to decreasing volumes of timber being cut and delivered to wood-processing industries by self-employed forest owners (Dahlin and Eriksson, 1992; Lidestav and Nordfjell, 2005). The interdependency between small-scale farmers and large-scale-forestry can today be seen as reversed. The large majority of small-scale owners sell their timber standing to the large-scale forest industry which use its own workforce or hired local contractors to harvest.

So it is clear that forest ownership and changes in the forestry sector have played an important role in northern inland Sweden – and remain vital to this day. Land ownership influences infrastructure development and changes in production systems as well as identity, power and social relationships (Westholm, 1992). The national government has tried to optimize sustainable use of forest resources, by means of different policy instruments. However, what is seen as sustainable has changed over time. This has been reflected in land reforms and policies, forestry legislation and tax legislation (Stenman, 1983; Törnqvist, 1995; Enander, 2000; 2001). The impact of a continuous biodiversity discourse is today seen in the latest Forestry Act (skogsvårdslagen, 1993:553; Lisberg-Jenssen, 2002) and there are linked social issues in the sustainable development concept. Forestry land-use practices are still of great importance in rural areas and municipalities are seen as key actors in promoting sustainable social and ecological development (Government letter 2003/04:129).

Forest ownership[1] and forestry land-use represent an economic activity from which a causal chain goes to the local social and ecological environment (*cf*. Lundqvist 2000). This causal chain can be seen as influenced by property rights. The ownership is governed by formal and informal property rights, which defines a system of individually held rights regulating the relationship between the government and individuals, and between individuals (MacPherson, 1978). In terms of the local community, Lundberg and Karlsson (2002), argue that the accessibility rather than the abundance of forest resources matter. What is crucial making forests a resource and hence for whom - is not so much who owns what, but rather where who owns and how the owner uses his forest. This can be linked to Berge (2002), who highlights that the potential of property rights can be expressed from the perspective of how the bundle of property rights is held, for example how the decision-making powers are distributed, the aims and motives of ownership, and the procedures for selling property.

Swedish forest owners obey under a forest legislation according to which management, reforestation and fellings, of their forest should provide a valuable yield. At the same time, the forest owners have responsibility for achieving the goal for preservation of biodiversity. The production goals and conservation goals are given equal importance in the Forestry Act. To implement the forest policy, The National Board of Forestry and the Regional Forestry Boards are supervisory authority (skogsvårdslagen, 1993:553). Forest ownership can also obey under other management regimes depending on how associated. The forest commons formal organization and activities are regulated in a Forest Commons Act (lagen om allmänningsskogar i Norrland och Dalarna, 1952:167). Each forest common

[1] The distribution of forest land ownership in Sweden today is; 19 percent public forest ownership divided in ‘State’ and ‘Other public’ ownership including limited companies in public ownership, management companies and foundations managing public forests, and forest ownership within municipal and county council associations. 81 percent private ownership, whereof ‘Private Individuals’ represent 51%, ‘Forest Companies’ as large-scale private companies (24 percent) and ‘Other Private’, which includes forest commons and ecclesiastical forests (6 percent) (Statistical Yearbook of Forestry, 2004).

also has its own set of by-laws, authorized by the County Administration, which regulates the direct management of the common (Carlsson, 1995). Management is performed in common, via elected boards and executed by professional foresters. The shareholders' rights with respect to decision-making are, in general, proportional to the size of their share.

In this thesis, the categories 'large-scale' forest ownership and 'non-industrial private forest ownership' (NIPF) are treated. Usually, 'large-scale' is referred to as forestry operations as clear-felling of large areas, use of high levels of mechanisation and harvesting with the aim of maximising cost efficiency, operational control and profitability - by corporate bodies (Hagner, 1999). Here it was defined as ownership by legal persons, though not a contradiction. Defining legal persons' could read; 'any legal entity duly constituted or otherwise organized under applicable law, whether for profit or otherwise, whether privately-owned or governmentally-owned, including any corporation, trust, partnership, joint venture, sole proprietorship or association' (United Nations 2002). Large-scale forest ownership of relevance for the thesis is state-owned legal entities, and privately-owned legal entities mainly limited companies and forest land managed in common *i.e.*, a forest common.

A commonly accepted definition of NIPF could read: 'forestland that is privately owned by individuals or corporations other than forest industry and where management may include objectives other than timber production' (Helms, 1998, p.124). Defining the private firm could read; firms not recognized as legal entities but as a physical persons, which generally are small and often run on a part-time basis and where income often is difficult to distinguish from the owners other income *e.g.*, from employment (SKV, 2001a). Ownership of agricultural property is always defined as business activity as source of income (13 kap 1 § inkomstskattelagen *i.e*. the Income Tax Act). There are various legal forms to organize the business activity suiting different purposes. Beside the private firm, there are also *e.g.* unlimited partnership and limited companies that are small and owners-operated. These are legal entities, but in the Income Tax Act unlimited partnership is treated in similar ways as private firms as long as owned by a physical person (5 kap inkomstskattelagen). Salary paid to the owners of a limited company is as well levied by local income tax (56 kap; 60 kap § 12; 11 kap §1 inkomstskattelagen).

However, the private firm is the most common legal form in Sweden (SKV, 2001a; Rydin, 2003). Of agricultural properties with a value of forest land and growing stock, more than 92 percent are owned by individuals, *i.e.* a majority of the forest owners in Sweden declare their activity as a private firm (Rydin, 2003; Statistical Yearbook of Forestry, 2004). Therefore, the private firm was considered as of main relevance for the thesis and NIPF ownership was defined in this thesis solely as legal entities organised as private firms.

Aims and limits of the thesis

Addressing the importance of forestry in rural areas, the aim of this thesis was to examining (starting with the Swedish tax system) the outcome and differences between forest ownership categories in a typical boreal municipality. And further, to discuss the outcome in relation to whether the contribution to the local economy can generate incentives for development.

We studied one typical boreal municipality (Figure 1) for one year, focusing on the following ownership categories and questions;

- This first paper is descriptive, with the aim to describe a method devised for assessment of sales, operating costs, investment, disposable income, and direct tax revenues generated from Non-Industrial Private Forest (NIPF) ownership. The concept 'method' is in this paper delimited to include the procedure devised within the framework of forest ownership and taxation - using agricultural property data and income tax return data. The objective was also to discuss how the method suffices to provide an assessment of NIPF contribution to the local economy in a typical boreal municipality, given the present NIPF ownership structure and tax system (Paper I).

- Non-industrial private forest (NIPF) ownership: Given the present ownership structure and tax system, does NIPF contribute to the local economy and thereby to development and to maintenance of infrastructure in a typical boreal municipality? The empirical findings that stem from applying the method reported in paper I on the boreal municipality of Storuman, are used to discuss the question addressed (Paper II).

- Forest common shareholders and non-shareholders: Is there a difference between shareholders and non-shareholders in a forest common with respect to harvesting and business activities on their privately owned forest properties? This paper examines the hypothesis that the harvesting and business activities of shareholders on their privately-owned forest properties are greater than those of non-shareholders, and thus, that they make a greater contribution to the local economy. Features examined were sales, operating costs, investments, disposable income and direct tax revenue – combined with forestry production data *i.e.,* site indices, standing volumes and harvest volumes (Paper III). For this thesis, results from shareholders respectively non-shareholders were related to the forest common activities to discuss the influence of this kind of property, privately owned but managed in common.

- Large-scale forest ownership: Paper IV aims to quantify sales, operating costs and investments generated from large-scale forest ownership. Further, the objective was to contrast results with NIPF in order to

discuss the different ownership categories from a boreal municipality perspective. This paper seeks to complement the picture given in the paper on NIPF ownership in the municipality of Storuman. Sales revenue was calculated based on the felling volumes and prices, cost categorise were based on costs per m3 s ub.

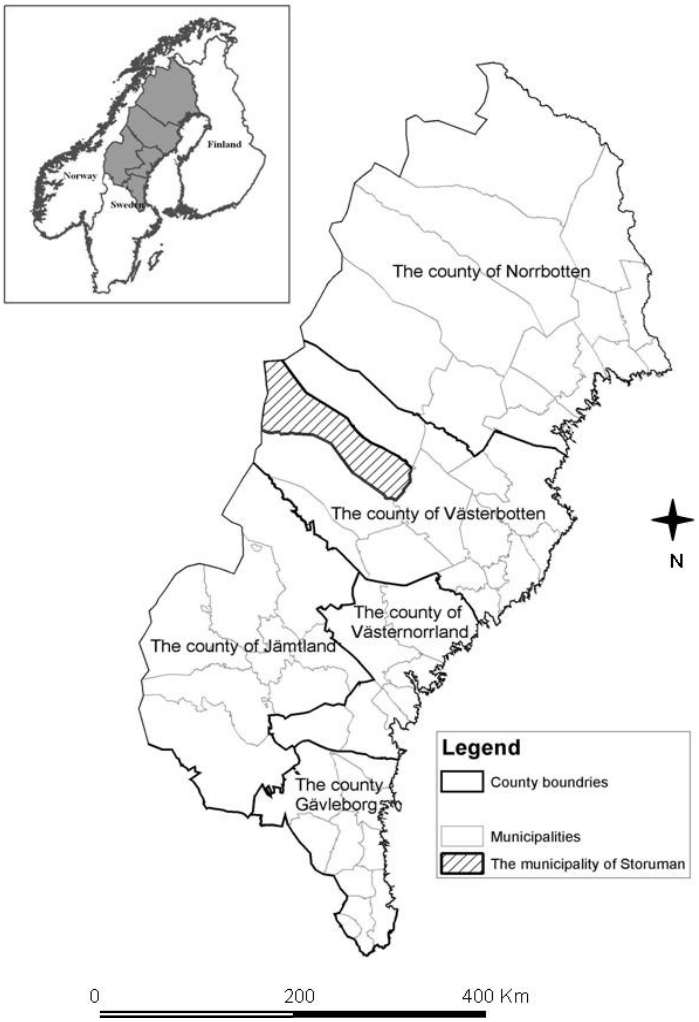

Figure 1. The geographic location of the case-study municipality of Storuman

The next section offers a theoretical framework. The second part of the thesis contains the full versions of Papers I - IV.

Theoretical framework and perspective

How does the academic community help understand the role of forestry in local or rural economies? There is no single answer, although the role of forestry often is accompanied by the recognition of its importance for development[2] in rural areas. Theories of rural development are connected to general development theories; Solberg (1996) argues that various approaches have similarities and summarises the different theories for rural development as;

- "Sociology-based theories emphasising the social network/interactions.
- Geography-based theories emphasising the spatial dimensions.
- Political science emphasising the power structure/relationships.
- Economic theories emphasising capital accumulations, market transactions, technological change, and income distribution" (Solberg 1996 p.19).

Tykkyläinen *et al.* (1997) highlight the need for a multicasual approach. They argue that many specific elements from different theoretical constructions may explain development and restructuring. The authors seek an explanatory framework which covers matters often omitted in usual explanations of development (Tykkyläinen *et al.*, 1997). Five types of factors are seen as essential in explaining community development; general, sectoral, political, local and human factors. Each of these represent a bundle of causal sets, changes in one or all and interactions between these factors, influence local development (*cf.* Tykkyläinen *et al.*, 1997;Tykkyläinen 1998,a).

Van der Ploeg *et al.* (2000) also stress this complexity and sees rural development as a multi-level, multi-actor and multi-facetted process, itself the result of earlier history. Wiersum *et al.* (2005) argue that this approach represents a change in thinking about the content of rural development. Such novel thinking also affects ideas about the role of forestry; from a rural modernisation strategy - which predominantly focus on primary production processes and how they are modernised, and better integrated with business chains – towards a strategy of rural restructuring. Concepts considered in the latter include synergy and cohesion between primary production and other rural activities, areas and life (Wiersum *et al.*, 2005). That is, to find ways to make use of rural characteristics or the nature of rural areas as a form of 'endogenous capital' (Elands and Wiersum, 2001).

The development process was not within the scope of this thesis. Rather the thesis considers the contribution of forestry to the rural, considering particular

[2] A concept like development is not easily defined, and it will have different content for different actors. However, in accordance with Tykkyläinen, development can be summed up as "the mobilization and management of resources in order to create wealth in a community. It is linked to economic policy measures adopted by the authorities in a community or region." (Tykkyläinen, 1998c, p.6). Further, "restructuring refers to the fundamental changes in the organization of a community: for example, changes in the mode of production, major changes in the economic basis of a community (such as the closure of a mine), or changes in the interplay of market mechanisms and local actors. The restructuring concept thus contains a wider theoretical and more fundamental perspective than the policy-oriented concept of local development"(Tykkyläinen, 1998c, p.7).

forms of forest ownership and the tax-system. To use the terminology of Tykkyläinen (1998,a), different forest ownership categories can be considered as forestry sectoral factors and the tax system can be seen as a political factor. Both influences the contribution of forestry to the boreal municipality and are likely to influence the cohesion between forestry and the municipality and the ability of the municipality to develop based on forestry as endogenous capital.

Slee (2003) states that forestry can contribute to the rural economy in various ways, that can be summarized as follows;

> "directly as a user of land and resources to transform biological and other inputs into a range of output; indirectly through its linkage with upstream suppliers and downstream processing sectors; through the respending in rural areas of parts of income derived from forestry and its related industries; through the provision of non-market benefits which may acquire market values; and in more opaque through nonetheless important ways, in providing a desirable location for non-forestry related business activity and in a living environment which many people find desirable" (Slee, 2003, p.1).

Various methods for the socio-economic valuation of forestry (and other activity) have emerged and they help meet the different contributions and also to capture the full scope of socio-economic benefits forestry provides (Slee, 2005).

Talking about the contribution of forestry to the rural or local, in this thesis 'Boreal[3] municipalities' are understood as municipalities in northern inland Sweden, where forestry has been a determining factor for development. They consist of small villages, scattered settlements and a municipal centre. The pattern is typical of the Swedish countryside and, even though the municipalities can be considered as rural settings, there is an economic base with varying degrees of diversity (*cf.* Persson, 1998).

Following Halfacree's (1993) description of rurality, this thesis accepts his descriptive definition of the rural. The approach can be seen as towards a combination of two of the definitions depicted by the author as geared towards various planning and academic purposes *i.e.* 'statistical measures geared towards socio-economic studies` and ´administrative definitions towards political studies` (Halfacree, 1993). The first of these agrees *e.g.* with the Swedish National Rural Development Agency's definition based on geographic distances. The great distances between populated areas in Sweden, makes accessibility of services and employment very important in describing rural and sparsely populated areas. Accordingly, large areas of the boreal municipalities are defined as rural (SNRDA, 2005,a). Secondly, "local" is in this thesis defined by the administrative[4] reality

[3] Boreal here refers to the northern coniferous forest area, which make up part of the circumpolar boreal forest, the second most extensive terrestrial biome on earth that represents a wood resource of global significance that is an important part of the cultural end economic wealth of northern countries (IBFRA 1997).

[4] Swedish public administration is organised at two levels, the national and the municipal, the latter being organised into county council districts, within which are local municipalities

that the municipality is the most decentralised level of government – with responsibilities to fulfil within its geographic boarders.

The Swedish constitution declares that local self-government is a condition of Swedish democracy (1 kap 2 § regeringsformen, (1974:152), *i.e.*, the Instrument of Government). It further states that the municipalities have the right to levy taxes to fulfil their responsibilities and that the basis for the municipal taxation should be announced by law (1 kap 7 §; 8 kap 5 § regeringsformen). However, neither the Swedish constitution nor its related works explicitly state what local self-government actually is or controls. Rather, the notion seems to express the principle of local independence and local decision-making limited by the national legislative power (Holmberg and Stjernquist, 2000; Wetterberg, 2004).

The public function to secure a sustainable use of the abundant productive forest resources in the boreal municipalities rests on the regional forestry boards (skogsvårdslagen, 1993:553). Though, the municipalities have related responsibilities. The Local Government Act sets down the rules for general municipal competence and responsibilities (kommunallagen, 1991:900). A number of special acts also prescribe municipal responsibilities. For example, the Plan and Building Act (plan och bygglagen, 1992:1769) gives the municipalities planning monopoly for land use. It also gives important responsibilities for different environmental aspects that have to be considered in the planning process. These include legal habitat protection, Natura-2000 and nature reserve regulations. Also, there are the national interests, that demand workloads in boreal municipalities, and take great areas in pretentious in the forest and mountainous areas. Further, the municipalities are supervisory authority according to the Environmental Code (Svensson, 2005). These responsibilities can be defined as ecological public functions, and herewith the municipalities are important actors to secure ecological services[5] and thus for their provision (*cf.* Ring 2002).

However, it is not merely a green issue. Most municipalities are also involved in recreational and culture activities, housing and energy (Wetterberg, 2004). They can support local trade, industry and innovation as long as there is local feedback (2 kap 8 § kommunallagen). Different municipalities have different track records in respect to experiences of enterprising which can influence the prerequisites of today (SNRDA, 2005,b). Tykkyläinen argued that when "the level of local participation by inventors and entrepreneurs in development varies greatly, local authorities often serve as catalysts for greater local actor participation and innovative behaviour" (Tykkyläinen 1998,b p.330). However, incentives are needed.

(1 kap § 7 regeringsformen). The county councils are foremost responsible for health and medical service.

[5] Daily (2000) suggests a framework for the classification of ecosystem services under the headings; production of goods, regeneration processes, stabilisation processes, life-fulfilling functions, and preservation of options.

Moreover, the Swedish local public sector has mandatory responsibility for, and a major role in, the provision of welfare services (Rattsø, 2005; Wetterstrand, 2004). The modern origin of the local provision of welfare services can be seen as a result of the reform about compulsory school and poor relief during the early 1840th, which became tasks for the local jurisdiction units (Eberstein 1932). The most important responsibilities today are for social services for care and schooling stated in the School Act (skollagen, 1997:1212) and the Social Service Act (socialtjänstlagen, 1980:620). These services account for close to 80 percent of the local tax expenditures (Statistics Sweden, 2004). Local tax revenues are crucial for municipality finances, on average 70 percent of municipal costs are covered by local tax revenues (Berggren and Tingvall, 2005). Of the 20 municipalities with the lowest taxable incomes, 16 are in the forest counties (Statistic Sweden, 2002). This implies that in these municipalities there is less chance of gathering tax revenues and thereby possibilities for a high share of tax expenditures.

With the major role for provision of public welfare services, municipalities differ in their conditions to meet their responsibilities. Taxable income and employment levels vary amongst the municipalities. So does costs as a result of *e.g.*, differences in need for eldercare and schooling. There are also differences in costs as a result of varied geographical prerequisites or economic geography. Such structural costs are compensated with allowances. A system of local government financial equalisation, which redistributes resources between municipalities[6], is used in order to achieve a goal of the same costs for locally provided services wherever provided Municipalities with low tax power or high expenditures are compensated and a municipality with lower structural costs has to pay in a corresponding way. Rural areas in general, get subsidies from the income-equalising part as well as from the cost-equalising part (*cf.* Svenska Kommunförbundet, 2000; SOU 2003:88).

The local tax right has not always been restricted to an income tax levied on individuals living in the municipality. The municipal tax act between 1929-1986 considered each municipality as a closed taxation area, following a principle expressed as early as on the Appropriation Regulation of 1861 stating that each municipality should be guaranteed its own foundation for taxation (*cf.* Eberstein 1937; Gunnarsson 1995). This principle was at first rejected when the municipalities lost the right to levy taxes on legal persons (Gunnarsson, 1995). According to the author, the reduction of the local tax base took place without any profound analysis about why municipalities should no longer be regarded as closed taxation areas. The decisions were motivated *e.g.* by regional policy and tax neutrality considering business activities' choice of localization, and the belief that the municipalities' need for stable income sources had decreased as the national tax equalization system developed (Gunnarsson, 1995).

[6] A new system of equalisation introduced in 2005, imply that income equalisation now mainly is financed by the State (Berggren and Tingvall 2005)

Alternatives or new income sources for the municipalities are continuously discussed. The aim is usually to strengthen local self sufficiency and decrease dependency on the government subsidy. There are also arguments for a need of stable local finance, to find a tax base that is not sensitive to globalization, cyclical economic trends or at the mercy of tax avoidance schemes. Some argue for less tax to be paid on income generated by work. A disputed argument for an alternative tax base or fee on municipal level – is that there is a need for strengthens municipal incentives to increase occupation and to promote economic growth, and that this could be accomplished by means of less extensive equalization. However, today there is not necessarily a direct link between the numbers of employees in the municipality and the tax base. One alternative would be to establish a tax base that is connected to the economic activity within the municipality (Johansson, 2000).

Municipality tax right of today is restricted to a proportional income tax on work as a source of income; income from employment and income from private business activity levied on individuals nationally registered in the municipality (1 kap 4 § inkomsskattelagen). The municipalities have the right to set their own tax rates which in principle is stated in the constitution (1 kap 7 § regeringsformen). Beside the constitutional foundation that legitimates the tax legislation there are theoretical principles for taxation, which legitimate its design. According to such principles the tax burden should be distributed, and they should hence regulate the relationship between individuals in agreement with prevailing political currents (Gunnarsson, 1995).

This thesis however, concerns the application of the law on forest owners and the outcome in relation to the boreal municipality. To reconnect to contribution of forestry to the now defined rural economy; taxation of forest ownership, legal and physical entities are outlined in Table 1. Further, the Income Tax Act and associated legislation formalizes different legal forms of business activity, influencing not only how tax revenues are dispersed between municipalities and the state, but also how the income from forest ownership are dispersed on *e.g.* operating costs, investments, disposable income and capital. In this way, forest ownership and taxation could play a role in addressing the importance of the desirable land-use practices (*cf.* the Forestry Act) in the boreal rural municipalities - and ideally contribute to the ecological and social sustainable development course.

Table 1. Outline of direct[1] taxes levied on limited companies and private firms, income year 2000 (*cf.* Rabe 2002).

Type of tax/revenue	Limited companies	Private firms
Municipality income tax	- *cf.* column to the right for salaries earned by sole proprietors organised as legal entities.	-Income tax on ≈ 30% over a base deduction of SEK 10.000
Central government income tax	-28% rate on income from business activity.	- A permanent sum of SEK 200 - 20% levied on incomes exceeding SEK 232.600 - Additional 5% on incomes exceeding SEK 374.000 - Profits allocated to the expansion fund are levied on a 28% rate. The amount is deductible from business activity income.
Central government capital taxation	- Normally 30% rate on all kinds of capital gains.	- A considered normal capital yield is transferred from business activity to capital as source of income, and hence taxed with a lower rate, 30%. The capital yield becomes deductible from business activity income.

[1]Indirect taxes, as value-added tax and social security contributions are exclusively levied by the national government.

Summary of the papers

A method for assessment of sales, operating costs, investment, disposable income and direct tax revenues generated from NIPF (Paper I)

Introduction

With societal development the role of forestry is changing. In spite of structural changes in forestry and a decreased importance in rural areas a result – statements from authorities imply that forestry is still regarded as very important for rural areas. A number of factors influence the contribution of forestry to rural areas and hence to development. Hereby, it is important to emphasize forestry contribution from various perspectives.

Forest ownership (and related property rights) influences relations, such as the distribution of revenues generated from property, between individuals and societal levels and is a key basis for development. The aim of this paper was to describe a method devised for assessment of sales, operating costs, investment, disposable income, and direct tax revenues generated from Non-Industrial Private Forest (NIPF) ownership. The concept 'method' is in this paper delimited to include the procedure devised within the framework of forest ownership and taxation. The objective was also to discuss how the method suffices to provide an assessment of NIPF contribution to the local economy in a typical boreal municipality, given the present NIPF ownership structure and tax system.

Material and Methods

With assistance from Statistics Sweden (SCB), the Total Population Register and the Register of Real Estate Assessment were combined to allow us identify each owner and their share of productive forest land in a typical boreal municipality, and residents with ownership of forest land in other municipalities, for the income year 2000. Selected items from income-tax return forms intended for individuals with private firms and standardized accounting excerpts from SCB's business statistics were matched with ownership data to quantify sales, operating costs, investments and direct tax revenues for each forest owner (Paper I, Tables 1 and 2).

Definition of NIPF

NIPF owners were stepwise defined as agricultural property owners who had completed an income tax return form for private firms. From these owners, those who owned productive forest land were identified. Finally, we identified owners of private firms which were classed as forestry enterprises (Paper I, Figure 1). Whether an individual was nationally registered within the municipality or not,

was the basis on which we classified that individual as a resident or non-resident owner.

Sales operating costs and investments

Income tax return data were used to quantify sales, operating costs and investments at an individual NIPF owner level. NIPF owners can agree to jointly own and manage their firms, but in practice joint declaration does not always comply with the instructions for how to declare. To avoid double counting and to allow variables of interest to be related to each owner's area of forestland, individuals with joint ownership and declaration were identified in a number of steps. Intended items in the income tax form and result items were used to identify individuals reporting the same activity. In cases where several owners declared the same amount of costs and revenues and cases where only the owner responsible declared all costs and revenues, the sums were separated using result items where outgoing share and the owners' share of the results are declared. Sales and operating costs were categorized in accordance with items in the income tax return form intended for firms that do not have to return annual accounts. Outlays on buildings, machineries and inventories were defined as investments for the current year (Paper 1, Table 2).

Municipality and national government tax revenues

Taxable income from business activity is declared as a positive result in the income tax return form. Municipality and central government income tax revenues were quantified based on this result, together with current income tax rates. Taxable profits allocated to the expansion fund and calculated capital yield are deductible from business activity income. The sums deductible for the current year are declared in the income tax return forms. These figures, together with current tax rates for profits and capital were used to quantify tax revenues paid to the national government (Paper 1, Table 2).

Disposable income

To get closer to an assessment of disposable income, social security contributions for self employed people and special taxes on certain types of earned income were taken into consideration as well as direct taxes. Declared taxable results were increased by a standardized sum corresponding to the deduction of the social security contribution for the current year, and disposable income was assessed by increasing declared results by this sum, minus direct and indirect taxes. As well as considering the disposable income from business activities, capital income was quantified using declared sums allocated to capital as sources of income and the current tax rate.

Discussion

We suggest that this application of this method can add knowledge on whether NIPF contributes to the local economy, and thereby to development and maintenance of infrastructure in the municipality, given the present ownership structure and tax system. The method can be applied to quantify tax revenues generated to the case study municipality, to the municipalities where non-residents reside, and to the national state – and the question addressed can herewith be discussed. The method could additionally generate insight about flow of forestry tax revenues between municipalities, by means of including individuals residing in the case study municipality in possession of forestland only in other municipalities.

Further, the accountancy based income tax return data allow quantification of sales, operating costs and investments for the current year. Operating costs and investments ploughed back into the firms, together with disposable income and tax revenues, represent money that directly and indirectly can stimulate both the public sector and private enterprises within the municipality. Consequently, we suggest that this method could be applied with the perspective of returns of sale proceeds back into the property.

Based on a changing NIPF ownership structure, we suggest that the method could be applied in order to compare resident and non-resident NIPF owners. Relating sales revenue, operating costs, and investments, to the area of productive forestland and expenses as share of sales revenue, NIPF owner's mode of action as well as differences between ownership categories can be reflected. Possible differences can be of importance in a long term municipality perspective. The same approach can be used for the fund for expansion, which literally was designed to correspond to part of the income set aside in order to work within the firm. In resemblance with investment, means allocated to the expansion fund can be related to hectare of productive forestland, in order to compare the proportion that different owners return back into the firm. In contrast, the opportunity to calculate a yield for capital taxation was introduced to evade high tax rates on capital yields from forestry and other activities within private firms. Income defined as capital yield, as well as disposable income from work and capital as sources of income, can like funds allocated to the expansion fund, also indicate the owners view on the possibility to retain capital in the property, versus using it for private consumption.

Taxation and Investment Implications of Non-industrial Private Forestry within a Boreal Swedish Municipality (Paper II)

Introduction

In this paper, the boreal municipality perspective was emphasised. Accordingly, the crucial question was whether NIPF contributes to the local economy and thereby to development and maintenance of infrastructure within the municipality, given the current ownership structure and tax system. Specifically, the objective was to investigate the outcome of the tax system considering sales, operating costs, investment and disposable income among resident and non-resident owners, and further direct tax revenues generated to the municipality and national government. The method described in paper I above, was applied.

The case-study boreal municipality of Storuman

Storuman, a typical boreal municipality, is located in the county of Västerbotten in the sparsely populated inland Sweden. The municipality covers an area of 7378 km2 and has a population of about 6 900, one third living in the municipal centre and the remainder in small villages and scattered settlements. Possession of agricultural property in this area primarily implies possession of a forest property. There are no grain producers and few producers of milk and meat. Employment in the forestry sector in the municipality has decreased from approximately 276 full-time jobs in the 1980s, to approximately 76 in year 2000.

In Storuman there are 272,387 ha of productive forest land of which about 37% is owned by small-scale owners primarily organised as private firms. Additionally, there is a privately owned but jointly managed forest common of 40,234 ha within the municipality Generally speaking, NIPF owners in the north-west of the municipality are joint owners of the forest common and receive an annual dividend in relation to their share. Almost 40% of the productive forest land within the municipality is owned by the state, and 6% is owned by forest companies.

Summary of results

Results presented here are improved compared to the figures presented in Paper II. As a result of a revision of the method for its application in Paper III, NIPF owners were further examined in order to assess whether their main sales revenue really could be associated with forestland ownership within the municipality. This implied a reduction of the number of NIPF owners.

A total number of 1,583 individuals in possession of 89,480 hectares of productive forest land were defined as NIPF owners within Storuman. These were included in the quantification of sales, operating costs and investment. Residents accounted for the majority (55%) of owners, and for 67% of the productive forest land. The quantification of direct tax revenues from NIPF ownership within the municipality of Storuman was based on 1,537 owners.

Direct tax revenues and disposable income

The total direct tax revenues amounted to SEK 3.3 M. Tax revenues to municipalities and county councils together comprised approximately 42% of the total direct tax revenues (SEK 1.4 M), compared to national government revenues which constituted 58% (SEK 1.9 M) (Table 2).

Tax revenues to municipalities where the non-resident owners resided amounted to SEK 0.37 M, or 11% of the total direct tax revenues of SEK 3.3 M. The municipality of Storuman obtained SEK 0.60 M in local government tax revenue from resident owners. This represents approximately 18% of the total direct tax revenues generated from NIPF, *i.e.* to municipalities, county councils and national government. Through tax revenue paid to the county council and then partly re-allocated to the municipality, Storuman obtained SEK 0.86 M or about 25% of the total direct tax revenues generated (Table 2). NIPF owners in possession of forestland in other municipalities', but with residences in Storuman, generated about SEK 0.07 M in tax revenues for the municipality budget of Storuman (not presented in tables).

Disposable income from capital and work as sources of income within the firms, amounted to SEK 7 M in total; SEK 4.2 M for resident owners and SEK 2.8 M for non-residents (not presented in tables).

Table 2. Direct tax revenues generated from NIPF in Storuman for resident and non-resident municipalities and the national government[a]

Tax revenue category	Resident owners	Non-resident Owners	Total
Primary municipal revenues from taxation of income from NIPF			
Sum (kSEK)	599 (62)	369 (38)	968 (100)
Percent of total direct tax revenues	18	11	29
County council revenues from taxation of income from NIPF			
Sum (k SEK)	260 (61)	167 (39)	427 (100)
Percent of total direct tax revenues	8	5	13
Total national government revenues from taxation of NIPF capital yield and income retained in fund for expansion			
Sum (k SEK)	1,202 (62)	728 (38)	1,930 (100)
Percent of total direct tax revenues	34	21	55
Total direct tax revenues			
Sum (kSEK)	2,061	1,264	3,324
Fraction of total direct tax revenues	62	38	100

(%)

a. Numbers in parentheses represent percentages of row totals.

Sales, operating costs and investment

Total value of sales amounted to SEK 34.4 M. Operating costs and investment amounted to SEK 24.5 M and SEK 8.2 M, respectively. Residents accounted for 78 % of the total sales value and operating costs, and for 83% of investments (not presented in tables).

Results related to sales and forest land

Combining investment and operating costs, 95 % of sales were ploughed back into the forest properties within the municipality (Table 3). However, considering only NIPF owners with sales activity in the current year, about 77% of sales proceeds were re-invested in the forest properties, *e.g.*, forest owners also invest in years when they have no sales activity (not presented in tables). In terms of operating costs, both residents and non-residents spent about 70% of the income generated by sales. However, for expenditures on goods and materials, resident owners re-invested 24% of sales revenue while non-residents re-invested 14% (not presented in tables). Investment for the income year 2000 represented 25% and 18% of sales revenue for residents and non-residents respectively (Table 3). Residents also added more to their inventories, as a separate item included in the investment category, putting back nearly 23% of sales proceeds, while non-residents invested 13% in inventories (not presented in tables). Non-residents seem to be more interested in spending money outside the property since they used higher proportions of their sales as disposable income or for non-forest expenditure (Table 3).

Table 3. Operating costs, investment and disposable income as proportions of sales revenues, resident and non-resident NIPF owners, municipality of Storuman, income year 2000

Cost or revenue category	Resident owners	Non-resident owners	Total
Sales[a]	100	100	100
Operating costs (% of sales revenue)	71	73	71
Investment (% of sales revenue)	25	18	24
Disposable income from work and capital (% of sales revenue)	17	37	22

[a] Note that it is not possible to sum up percentages to a sales revenue of 100, since for instance, untaxed reserves or equalization of income not included in this study influence the results as well as the possibility of accumulating a deficit over the years.

There was a difference in sales value of SEK 193 per hectare of productive forest land between residents and non-residents (Table 4). The pattern of higher activity is also reflected in operating costs and investments, where residents re-invested SEK 132 and SEK 69 more per hectare of productive forest land compared to non-

residents. Compared to residents, non-residents consume more per unit land area outside the forest property, SEK 22 per hectare, of their disposable income. The difference is partly due to the fact that non-residents transferred relatively more money to capital as a source of income - SEK 73 per hectare compared to SEK 52 for residents. Meanwhile residents re-invested SEK 13 per hectare to the fund for expansion compared to SEK 19 for non-residents.

Table 4. Sales, operating costs, investments and disposable income per productive hectare; resident and non-resident NIPF owners, municipality of Storuman, income year 2000

Cost or revenue category	Resident owners	Non-resident owners	Total
Sales revenue (SEK/ha)	449	256	384
Operating costs (SEK/ha)	318	186	274
Investment (SEK/ha)	114	45	91
Disposable income from work and capital (SEK/ha)	73	95	80

Storuman received SEK 10 in tax revenues per hectare of productive forestland. Non-resident municipalities received SEK 13 per hectare and the national state received SEK 22 per hectare (not presented in tables). These figures, as well disposable income should be increased somewhat for methodological reasons, since fewer owners were included when calculating tax revenues and disposable income. However, the divergence is insignificant in this context.

Discussion

Considering sales revenue, the difference per hectare between residents and non-residents indicates that resident owners were more active, and probably earned a larger proportion of other income than from current year selling of standing timber, than the non-residents.

Residents and non-residents re-invest equal proportions of their sale proceeds as operating costs (just over 70 percent). In the current year, residents invested 25 percent, and non-residents 18 percent of sales. Per hectare, residents had a disposable income of SEK 73/ha and non-residents SEK 95/ha. This indicates a slight difference between residents and non-residents. In terms of maximizing disposable income, non-residents appear to be more rational, but residents may behave according to a different rationale, which can be assumed to contribute more to the local economy. The low average disposable incomes show that few forest owners can depend on forestry for a living, which suggests they must enjoy and benefit from other values of the forest property. Re-investment may well add to such values, perhaps especially for resident forest owners.

Analysis of operating costs revealed that resident owners re-invested 24 percent of sales revenues on goods and materials, presumably for use in forest operations, while non-residents re-invested only 14 percent. Items in inventories can include *e.g.* machinery used in forestry. Inventories represented nearly 23 percent of sales proceeds for residents, while non-residents invested 13 percent in inventories. Differences between residents and non-residents here may indicate a difference in self-employment activities. More equipment is needed if the forest owner is active in the management of the property. On the whole, it is possible to argue that, generally residents use their properties more than non-residents. Residents re-invest more and spend less outside the property. This may well be due to a closer association with the property, living closer to it. Our results, concerning the amount of money retained in the fund for expansion and calculated capital yield for capital taxation purposes, also support such a hypothesis.

The results revealed that little local tax revenue is generated from NIPF for the boreal municipality budget. The sum was about SEK 600,000; approximately 18 percent of the total direct tax revenues generated by the NIPF owners' forestry activities, or less than 1 percent of the tax revenues in the municipality budget. When one includes tax revenues paid to the county council, the figures represent 26 percent of the total. Close to SEK 2 M or 58 percent goes to the national government and 11 percent, SEK 367,000, to non-resident municipalities. Further, tax revenues paid to non-residential municipalities from the forest resource in Storuman exceeded tax revenues paid to Storuman from forest resources elsewhere. So there was a net outflow of NIPF tax revenues from the municipality of Storuman.

Conclusively this papers offer two answers to the question addressed. From a fiscal function perspective, due both to low levels of taxable income from employment and to the proportion of non-resident ownership, only a small amount of local tax revenues is generated for the boreal municipality. So NIPF can scarcely be considered a contributor to the local economy, and provides likely only small incentives for the municipality to consider it helpful for sustainable land use- and infrastructural development.

On the other hand, a large proportion of sale proceeds are re-invested in the forest properties. Within Storuman, part of this is likely to stimulate local enterprises as well as the public sector. From this perspective NIPF ownership, and forestry, can be seen as contributing to the local economy. There is a kind of feedback, which can contribute to the development and maintenance of infrastructure in accordance with local priorities.

Further, it seems that resident and non-resident owners differ in their activities. Resident NIPF owners re-invest more and spend less. Therefore, local ownership and management should be preferable from the boreal municipality perspective.

Comparison of Harvesting and Business Activities of Non-shareholders and Shareholders in a Forest Common in Västerbotten, Sweden (Paper III)

Introduction

In 1918 about half of the farmers' forestland in the western part of Storuman was allocated for a forest common to be called the Tärna-Stensele forest common (TSA), while the other half was to be individually managed. At that time, the farmers in the eastern part of Storuman had already received their forestland, all of which was to be individually managed. NIPF ownership, including the Tärna-Stensele forest common (TSA), accounts for 54 % of the forest area in Storuman. The area that the shareholders manage individually amounts to 41,600 ha, and the area jointly managed (the TSA forest common) to 38,400 ha. The area of non-shareholders' forest is of the same magnitude; about 65,000 ha (District Forestry Board of Storuman 2005a).

Swedish forest commons are collectively owned and managed by shareholders who also own their own forest properties. Forest commons are intended to promote local agriculture and forestry and to serve as a model for forestry activities (*cf.* Table 2, paper III). The aim of this study was to assess differences between non-shareholders and shareholders, with respect to harvesting intensity on their individually managed forest properties, and related business activities. The hypothesis was that the shareholders' harvesting and business activities, as well as their contributions to the local economy, should be more extensive than those of non-shareholders.

Material and Methods

A comparative study was conducted of NIPF shareholders vs. non-shareholders in the municipality of Storuman. Storuman has one of the largest forest commons and has a fairly balanced distribution of forestland between shareholders and non-shareholders, which is highly relevant in the context of this study. Furthermore, only NIPF owners (private individuals) own shares in the forest common, while significant proportions of most other forest commons are held by other legal forms of shareholders.

The materials and methods used and developed in the study described in Paper I were also used for this paper, combined with forestry production data in the form of site indices, standing volumes and harvest volumes supplied by the District Forestry Board of Storuman (2005a-c) and the Regional Forestry Board of Västerbotten (2000). The data provided an indication of the type of management performed and allowed comparisons between owner categories. Declaration data

were used to reflect differences between shareholders' and non-shareholders' management activities.

Results and Discussion

Shareholders and non-shareholders should have similar potential to manage their forests, based on the criteria under study. Nevertheless, the shareholders felled less wood over the year (m^3sk/ha/yr); it is striking that the levels of felling on shareholders' individually managed land were less than a third of those on non-shareholders' land, and less than could be reasonably expected from land classified as productive forestland, *i.e.* forestland which can produce more than 1 m^3 per hectare per year. This was unexpected, since only minor differences in average mean site productivities (0.2 m^3sk/ha/yr: Table 5), to the disadvantage of the shareholders, were found. Reported sales revenues confirmed the differences in timber extraction between shareholders and non-shareholders. Shareholders declared an income from '*selling and work performed*' (table 5) of SEK 214/ha (including dividends) and non-shareholders SEK 484/ha.

Table 5. Standing and harvested volumes on non-industrial private forest (NIPF) owners' land, including shareholders and non-shareholders, in the municipality of Storuman in 2000

Forest category	Mean site productivity (m^3sk/ha/yr)	Average standing volume (m^3sk/ha)	Productive forestland (ha)	Harvested volume total (m^3sk)	Harvested volume per hectare (m^3sk/ha)
NIPF non-shareholders	2.7	66	65,000	118,603	1.83
NIPF shareholders	2.5	67	41,600	22,088	0.53
TSA forest common	2.5	58	38,400	21,000	0.55

In total, sales revenue amounted to SEK 37.6 million. The dividend from the TSA forest common, SEK 795,200 for the year 2000, was distributed to the shareholders, so it was declared within the shareholders' sales figures. Linking the timber sales revenue to the area of individually managed forestland, shareholders had sales values of 191 SEK/ha[7] after the dividend from TSA had been deducted. The non-shareholders' revenues amounted to 484 SEK/ha. Thus, the felling statistics (Table 4) and the declaration data are consistent, since both indicate lower activity among shareholders for the year studied.

Differences were found also in harvesting behaviour. The shareholders' individually managed lands, as well as the TSA, revealed one pattern and the non-

[7] The TSA forestland contributed, through the dividend, to the shareholders revenues of 21 SEK for each hectare of forest common land.

shareholders another (Table 5). Thus, it seems that the forest commons have served as role models for the shareholders. It also appears that the shareholders' less intensively managed forestlands generate inferior economic returns to those of the non-shareholders'. In addition, the impact of the TSA (including the dividend) on shareholders' individual results does not seem to help the shareholders achieve comparable levels of economic return to those of the non-shareholders.

The greater activity among non-shareholders generated one and a half times greater local municipal tax revenue than that of the shareholders (not presented in tables). As well as generating local tax revenue, the tax system can be seen as an essential part of the institutional framework that the NIPF owner works within. Non-shareholders who are more active and have lower operational and investment costs, would seem to have other incentives for their forest ownership. From the point of view of the local municipality, high costs for operation and investments may be a boon, since if the money is mainly spent within the municipality, it will boost local private enterprise and the public sector.

Large-Scale Forest Ownership in Comparison with Non-Industrial Private Forest Ownership in a Swedish Boreal Municipality Context (Paper IV)

Introduction

The objective of this paper was to quantify sales, operating costs and investments generated by large-scale forest ownership in the municipality of Storuman. The paper also contrasts results with those for NIPF to assess the different ownership categories in a boreal municipality. In this way the paper can complement the picture presented in the papers on NIPF ownership (Holmgren *et al.*, 2005b; Holmgren *et al.*, 2006), with information on large-scale forest ownership.

Material and Methods

Large-scale forest ownership in this paper is defined as ownership organised as legal persons. The ownership may be public or, private. About 166,000 hectares or 60 percent of the total area of productive forest land in Storuman is owned by large-scale forestry as defined here companies. In order to assess sales revenues, felling statistics compiled on a yearly basis by the Regional Forestry Board of Västerbotten were used (Regional board of Forestry, Västerbotten, 2006). The year 2000 was the year under study. Felling statistics were divided into final fellings, thinnings and 'other fellings'. Other fellings include inter alia felling of seed trees, felling of standards, fellings related to rights of way and selective cuttings. The fellings were also divided by tree species and by assortment. Sales revenues were quantified solely on the felling volume within the municipality and prices (SEK per cubic metre solid volume excluding bark, m3f ub) obtained from the joint annual survey conducted by Skogforsk and the National Board of forestry (SkogForsk, 2006). Operating costs and investments were defined here using the categorizations of costs in the survey *e.g.*, logging costs and costs of silvicultural activities, administration and other costs. Costs were further quantified based on costs (SEK/m^3 f ub) presented in the joint annual survey.

Results and Discussion

Net-sales revenues of large-scale forestry amounted to SEK M 42 year 2000. Returns in the form of silvicultural costs to the forest properties, represented 11 percent of net-sales revenue, and administration costs represented 6 percent. Other costs amounted to SEK M 0.6 or 1 percent of sales revenue. In total, operating costs amounted to SEK M 9, representing 19 percent of net-sales revenue. Meanwhile, investments (here defined as costs for road construction) amounted to SEK M 1.7, representing 4 percent of net-sales revenue (Paper IV, Table 3). Relating net-sales revenue to the area of productive forestland, large-scale forestry

generated a per hectare revenue of SEK 294 year 2000, and SEK 56 in operating costs, respectively, and SEK 10 in the form of investment per hectare productive forest land (Table 6). In addition, about 74 jobs were generated for the year 2000, which would yield local tax revenues of approximately SEK M 3.6.

Table 6. Sales, operating costs, investments given in SEK per productive hectare for large-scale forest owners; municipality of Storuman, income year 2000, average values for 2000-2004

Cost or revenue category Large-scale forest owners/year	Current value 2000	Average 2000-2004
Sales revenue (SEK/ha)	393	305
Net-sales revenue(SEK/ha)	294	232
Operating costs (SEK/ha)	56	4
Investments (SEK/ha)	10	8

NIPF owners re-invested 65 percent of sales revenue (including all taxable sales revenues) back into their property in the form of operating costs, and 22 percent in the form of investments (*cf.* Holmgren *et al.* 2006 and Holmgren *et al.* 2005a). Operating costs among NIPF amounted to close to SEK M 25 and investment SEK M 8. Per hectare productive forestland, NIPF returned SEK 274 in operating costs and SEK 91 in the form of investment.

In conclusion, large-scale forestry makes less contribution to the local economy than NIPF, so it should be seen as less important in municipal activities for sustainable ecological and social development. The results suggest important options for multiple land-use strategies. They also indicate the importance of local ownership and management. However, large-scale forestry encourages occupation and thereby local tax revenues within forest municipalities. Furthermore, large-scale forest ownership is important for NIPF owners since it represents a sales market for their timber.

Final discussion and conclusions

Examining forest business activity and the Swedish tax system, this thesis addresses the differences between forest ownership categories in a boreal municipality. The key question was whether the contribution can be seen as generating local incentives for development. The results from the four papers show that ownership categories are important from the boreal municipality perspective.

Results indicated that resident and non-resident owners differ in their activities. Higher investment and lower disposable income seem to be associated with

resident NIPF owners, which party can be explained by their larger properties. Therefore, and with the current tax system, resident ownership and management should be preferable in a boreal municipality because they likely will boost the economy within the municipality more than non-resident owners and thereby be preferable for the economy and activities within the municipality.

Shareholders and non-shareholders should be equally able to manage their forests. However, both fellings and declared economic activity were lower among shareholders. Local tax revenues from forest ownership require a business activity on the property, generating sales revenue and consequently a taxable income. The harvested volume per hectare on non-shareholders' land was more than three times greater than that on shareholders' individually managed forestland. In consequence non-shareholders generated local municipal tax revenues that were one and a half times greater. Further, the same low harvesting activity was found on the Tärna-Stensele forest commons (TSA) land and the shareholders' individually managed land. Thus, the forest common has not, from this perspective together with the proportion of resident shareholders, worked as a force promoting local development.

The TSA as a local based management regime was not assessed *per se* in this thesis. However, TSA was included in the category of large-scale forestry, as this kind of land managed in common is a legal person. Compared to other large-scale forestry enterprises TSA probably re-invested similar sums back into their forests. However, when it comes to the business activity and its operations, as funds retained in the company, and other activities in accordance with the special legislation, TSA should be as local as resident NIPF owners. Legally, TSA as a business activity should be taxed by the state. However, the surplus is divided amongst the shareholders and if they are private individuals and still pay local income tax, this property regime should create more revenue for the boreal municipality compared to the other legal entities included in the thesis.

Tax from business activities organized as limited companies is only levied by the state. However, large-scale forest ownership accounts for a large proportion of the forestland in the boreal municipalities and since land ownership is considered a key institution for development it is important to compare different ownership regimes. NIPF owners (all categories), and large-scale forest owners had comparable revenues from fellings. However, differences in re-investment were striking, though not surprising. Apart from the matter of producing timber, limited companies can be seen as relatively dissociated from their forest properties. Large-scale forest ownership becomes the first link in a chain in the ownership, and any surplus can be used for internal transactions in the concern and finally it may become part of a consolidated income. On the other hand much of the surplus from NIPF owners' business activities is ploughed back into the forest properties *per se*. In this sense NIPF ownership can be considered as more multifaceted. Large-scale forestry, however, is an important actor creating local jobs and thereby tax revenues. Further, large-scale forestry is an important factor for the NIPF owners since it provides a market for their standing timber.

In conclusion, given the present tax system and studying the activities among the different ownership categories, it seems that resident non-shareholder NIPF ownership is preferable for the boreal municipality. They were relatively active and still generate some local tax revenues.

This thesis further revealed that little local tax revenue was generated from forest ownership to the boreal municipality budget. Beside income from occupation in forestry, only NIPF ownership can generate local tax revenues, which amounted to about SEK 600,000 in the case studied. This represented approximately 18 percent of the total direct tax revenues generated by the NIPF owners' forestry activities or less than 1 percent of the tax revenues in the municipality budget for the current year. However, the small tax revenues generated from forest ownership is best explained as a result of the nature of the Swedish local public sector and finance system. Employment is at the heart of the local tax base, and the aim of achieving equity between different localities has a major impact.

On the other hand, applying the boreal municipality perspective and its significance for sustainable development, the specific local characteristics of forestry do not seem to affect local tax revenues to any great extent. There is further little that can be considered as a positive connection between local resources and specific measures in the equalizing system, the aim of which is to support *e.g.* rural communities. The present tax system cannot be considered as generating local incentives for development, based forestry as an endogenous capital.

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