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Challenges in accounting the forests - a Latvian case study

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Abstract. Forest has a long production cycle. Therefore forest bookkeeping has specific characteristics. However accounting for forest activities has received little attention from accounting researchers. The release of International Accounting Standard 41 "Agriculture" (IAS 41) established a single accounting system for forest assets. The paper analyzes application of IAS 41 which regulates forest accounting. Practice of international forestry companies is examined, and current forest accounting situation in Latvia is investigated. The main factors affecting valuation of a forest in its fair value are discussed and major problems in forest accounting are illuminated. The research indicates that land value and standing timber value should be recorded separately and standing timber should be estimated at its fair value. Despite the attempt of the International Accounting Standard Board to improve the accounting with IAS 41 for biological assets, much enhancement in forest accounting is still needed.
Keywords: biological assets, forest accounting, forest fair value.

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Introduction

When investing or putting capital in the forest properties, it is recorded in the balance sheet assets. It should be understood what from the forest property is recorded at the long-term investments, i.e. in the fixed assets position, and what is recorded at the current assets, i.e. in the inventories position.

Iesalnieks (2005) states that the fixed assets are means of production which make the process of production possible, but they are not included in the output. According to Rurane (2007), fixed assets are: the objects of long-term use (longer than 1 year); the property which is owned by the company and is planned to be used for goods production and is not intended for sale, for example, land, buildings, machinery, and motor vehicles. Fixed assets are recorded at their costs (purchase price). The main feature of fixed assets is that they are lastingly involved in the production process and they gradually wear out. Therefore they are written off against profits over their anticipated life by charging depreciation expense. The value of the land and consequently the value of the forest are not subject to depreciation because their value increase is regular, persistent and significant, as a result they may be revalued at their fair value.

Whereas the current assets are the resources available at the company, and they are directly involved in the production process in order to

ensure the continuity of production, from the standpoint of accounting theory, current assets are assets that can be converted into cash during one business cycle, usually within one year (Rurane 2007).

Iesalnieks (2005) recommends that forest land should be recorded as fixed assets but forest stand - as current assets. If the entire forest stand is recorded at the current assets (inventories), they have low liquidity and they can not be quickly converted into cash and the length of production cycle significantly exceeds one year, which is contrary to the nature of the current assets. Therefore such classification would not be correct from the point of view of accounting. Whereas Bright (2001) indicates that the harvested wood which will be used or sold within one year or the growing timber which is waiting for processing in a sawmill within one year can be recorded at the inventories. Also Penttinen et al. (2004) says that value of the whole growing stock has been divided into fixed assets and inventory in the balance sheet and inventory value of the stand is based on an allowable cut calculations.

Latvian researcher Dubrovskis (2007) has studied the balance methods of forest management planning in order to follow up the financial flow of forest resources utilization. Though Dubrovskis does not examine forest recording in the balance sheet in greater detail, he emphasizes that reflecting the fair forest value in balance sheet accounts is a topical issue.

In order to establish a single accounting system, in December 2000 the International Accounting Standards Board developed and approved the 41st International Accounting Standard "Agriculture" (IAS 41) which determines the accounting treatment and disclosures related to agricultural activity. For the first time the IAS 41 had to be applied for the financial statements started after 1 January 2003. International Accounting Standards are voluntary applicable guidelines issued by an independent international organization; their application provides harmonization of financial reporting for different companies around the world.

In order to contribute to a better functioning of the European Community internal market and increase the competitiveness of the European companies in the internationally regulated markets, the regulation (EC) No. 1606/2002 of the European Parliament and Council (of 19 July 2002) was adopted on the application of international accounting standards. In accordance with this regulation, for each financial year starting on or after 1 January 2005, all publicly traded Community companies prepare their consolidated accounts in conformity with the international accounting standards which have been adopted in accordance with this regulation, but financial statements - in accordance with the laws of a particular member state. Since the Latvian accounting standard "Agriculture" is in the project stage already for several years, the forestry companies that are registered in Latvia primarily should observe the laws of the Republic of Latvia (in accordance with the "Administrative Procedure Act" of the Republic of Latvia). As to IAS 41, it can be applied as far as its rules are consistent with the Latvian legislation.

IAS 41 can be considered an important standart, because it represents the starting point of a consistent transition from the purchase cost principle towards a fair value accounting (Lefter et al. 2007). However IAS 41 has been criticized for being too academic and for introducing inappropriate measurement methods for biological assets (Herbohn & Herbohn 2006).

Still a lot of questions have not been answered concerning forest accounting; therefore, the aim of this paper was to analyze IAS 41 and domestic laws and documents which regulate forest accounting as well as accounting practice of international forestry companies to illuminate the main advantages and disadvantages, taking Latvia as a case.

Materials and methods

The research is based on the information obtained from the Ministry of Finance of the Republic of Latvia, the State Land Service, JSC "Latvijas Valsts Meļi" ("Latvian State Forests") and other public institutions and organizations, as well as from their public

reviews. The development and present version, including the latest changes, of the International Accounting Standard 41 "Agriculture" (IAS 41), the application of IAS 41 in international forest owning companies, and the situation in Latvian forest accounting are analyzed. The monographic descriptive method and the methods of analysis and synthesis are used to study the problem elements. Within the framework of the abstract logic method, inductive and deductive methods are used. The theoretical period of the research covers the beginning of the year 2000 till nowadays.

Results

International Accounting Standard 41 "Agriculture"

IAS 41 indicates the method of accounting, financial statements presentation and disclosures related to agricultural activity - the management by an entity of the biological transformation of living animals or plants (biological assets) for sale, into agricultural produce. In accordance with this standard conception, agriculture is also forestry, and in forestry trees in a plantation forest are considered as biological assets, but logs - as agricultural produce. Further, IAS 41 is viewed in relation to forestry.

The IAS 41 is applied to agricultural produce which is the harvested product of the entity's biological assets, only at the point of harvest. Thereafter, IAS 2 "Inventories" or another applicable Standard is applied. Regarding forestry, this standard does not deal with the processing of agricultural produce after harvesting, for example, processing of logs into sawnwood. Wherewith only the logs, which are harvested, are possible to record at the current assets under position "Inventories".

This standard requires that the biological assets (trees in a forest) shall be measured on initial recognition and at each balance sheet date at its faire value less estimated point-of-sale costs. Point-of-sale costs include commissions to brokers and dealers, levies by regulatory agencies and commodity exchanges, and transfer taxes and duties, but exclude transport and other costs necessary to get assets to a market. So, if the forestry company harvests logs, the transportation costs to the saw-mill (the market) should be excluded. Determination of the fair value of standing timber facilitates the grouping by significant characteristics such as age or quality. An entity selects the features corresponding to the features used in the market as a basis for pricing, for example, sorting logs by species and assortment (pulpwood, firewood, sawlogs, veneer logs, etc.).

The Standard displays three methods of valuation: (i) comparable sales; (ii) expectation approach; (iii) cost-based approach. It recommends to value biological assets at a current market price or on transaction-based valuation method, if the following conditions exist: the items traded within the market are homogenous; willing buyers and sellers can normally be found at any time; prices are available to the public. If market-determined prices for the biological assets in their present condition may not be available in the market, the entity uses the present value of expected net cash flows from the assets in determining the fair value. As markets for standing timber are limited in comparison with the total volume of standing forest in the world and it is practically impossible to find two same forest properties, then the expected cash flow method should be applied for assessment of standing timber. The objective of a calculation of the present value of expected net cash flows is to determine the fair value of the biological assets in its present location and condition. An entity considers this in determining an appropriate discount rate to be used and in estimating the expected net cash flow. The IAS 41 sets the guidelines for preparation of the expected net cash flows: (i) when assessing the biological assets at their present condition, any increases in the value from additional biological transformation and future activities of the entity, such as those related to enhancing the future biological transformation, harvesting and selling, should be excluded; (ii) the cash flow should be discounted at a current market-determined pre-tax rate; (iii) an entity can not include any cash flows for financing the assets, taxation, or re-establishing biological assets after harvest, for example, regeneration costs in the forest after harvest; (iv) an

entity is encouraged to provide a quantified description of biological assets distinguishing between mature and immature biological assets, which facilitates the preparation of future cash flows. At certain situations, the Standard allows the use of cost-based method, when costs may approximate the fair value, for example, the impact of the biological transformation on price is not essential, particularly when the tree crops are young.

The Standard clearly states that it does not apply to the land related to agricultural activity, which is set by the IAS 16 "Property" requiring land to be measured either at its costs less any accumulated impairment losses, or at a revalued amount. Biological assets that are physically attached to land (e.g. trees in a forest) are measured at their fair value separately from the land. This clearly shows the position that standing timber and forest land should be valuated and recorded separately.

The IAS 41 also foresees that for the trees planted in the forest and which are physically attached to land can not be a separate market, but there may exist a market for the combined assets, that is, for the trees in the forest, raw land, and land improvements, as a package. The company may use information regarding the combined assets to determine fair value for standing timber, for example, to distinguish the value of land from the total forest property thus obtaining the true value of the standing timber which were planted in the forest. It should be pointed out that this method will not reflect the fair value of the standing timber because of the above-mentioned problem to find two identical properties, that is, with the same timber stock, infrastructure, location, etc.

The fair value of a biological asset (trees in a forest) can change due to both physical changes and price changes in the market. Forestry is exposed to climatic, disease and other natural risks. If such event occurs, it must be disclosed in financial statements, for example, an outbreak of a virulent disease, insect damage, storm, etc.

IAS 41 also provides possibility for an entity to measure its biological assets at their cost less any accumulated depreciation and any accumulated impairment losses at the end of the period, if the fair value can not be reliably measured. The author considers that this measure is not suitable for forest resources which have a long life cycle. As the standard also covers the plants, shrubs, fruit trees and vines, depreciation calculation for these biological assets could be justified by the fact that they produce their products just for a certain time thereafter they must be replaced with new biological assets, for example, with the new fruit trees.

A gain or loss arising on initial recognition of the standing timber at its fair value less estimated point of sale costs shall be included in profit or loss for the period in which it arises. Here should be added that changes in forest assets value make the balance sheet larger because the property which was acquired several years ago today exceeds its purchase price, mainly because of the biological growth of trees. In other words, as standing timber shall be measured at its fair value, main benefits could be observed - the improvement of the balance sheet, and reflecting the real value of forest assets.

Since approvement of the IAS 41, there have been made a number of changes to improve its quality. In February 2007, the International Accounting Standards Board (IASB) meeting approved recommendations to amend the assessment of biological assets at their current condition taking into account the increases in value from additional biological transformation, but just in March 2008 it was officialy done. In June 2007, the IASB Board proposed to replace the "pre-tax discount rate" by the "rate applicable by the market participant" leaving it to the entity to determine which discount rate to be used and decided to change the terminology used in IAS 41 by replacing "logs" by "felled trees" as agricultural produce of "trees in a plantation forest". In March 2008, the IASB remove the term "point of sale costs" with the notion "costs to sell". Despite the improvements made by the IASB, the Standard still needs to be enhanced as there are many shortcomings.

Accounting practice of international forestry companies

In 2009, international auditor firm "PricewaterhouseCoopers" published a study based on an analysis of the published financial statements (mainly of the year 2007 or later) of companies applying IAS 41 in the reporting of their forest assets. The study covers 19 international companies. The main objective of the study was to determine what methods and assumptions the forest owning companies use to determine the fair value of their standing timber. The most common method of determining the fair value is discounted cash flow method, but some companies use market value methods and multiple methods. This study shows that market value method is applied for plantations with a short rotation period, typically 5-20 years. Whereas historical cost method is used to determine the value of newly planted trees. Four companies from those which were analyzed applied "the standing value method" where present volume of standing timber was estimated and then the current market price was adjusted.

The interpretation of the classification of companies' forests is also different; usually timber is classified according to species and age, but one company classified its stand as mature if the trees were older than five years for hardwood and older than eight years for softwood. As IAS 41 does not include guidance on this issue, such sort of interpretations can be accepted. The most important assumptions used in the discounted cash flow method include harvesting plans, timber prices, forestry costs, growth rates, and the discount rate. Here are found large variations in determination of timber prices and discount rates. Timber prices are estimated using current or average market prices for logs, inflation is considered in some cases, but not in all, and sometimes predictions of independent forestry experts are used. The trend is that companies from the Nordic region use adjusted current log price assumptions. This is mostly explained by the fact that the growth cycles of the trees are longer there. In this study, only nine companies disclosed their discount rates, which varied within 5.5-17.5%. All companies from the Nordic region indicated the discount rate of 7.5% as a pre-tax rate and 5.5-6.25% as an after-tax rate. In many countries the landowner is required by law to reforest the area after clear felling despite the fact that the standard requires not to include reforesting costs in the cash flow calculations. However, companies from the Nordic region are known for including replanting costs in their calculations.

The Standard should be improved, because there still many questions remain, for example, what kind of timber prices would be advisable to use, from which age the trees could be considered as a mature plantation. It also requires a lot of information disclosures, which takes much effort. Burnside (2005) notes that the IAS 41 states that in standing timber valuation other values associated with forestry activities, such as hunting licenses and lease options, which increases the value of forest, must be excluded. Also the "fair value" concept makes unrealized gains or losses from forest assets in income and comparability between companies could not be gained because of the judgments necessary to estimate fair value of timber assets (Herbohn & Herbohn 2006, Penttinen et al. 2004). Summarizing the various literary sources, the advantages and disadvantages observed in the IAS 41 are presented in Table 1. It is seen that there are many disadvantages in the IAS 41 that regulates forest accounting. Besides, the Standard does not envisage the future possibility to appraise the standing timber by a whole tree, but not just according to the log price, as the world's demand for wood biomass with processed tree branches and roots, which increases the present value of the tree a number of times, is growing.

Forest accounting in the Republic of Latvia

In accordance with international accounting standards, also the laws of the Republic of Latvia which refer to the biological asset records are updated. On 19 October 2006, the "Annual Accounts Law" of the Republic of Latvia was complemented by a new section 202 which states that "investment properties, biological assets and long-term investments held for sales companies shall indicate sepa-

Table 1 Advantages and disatvanges of the IAS 41

Advantages	Disadvantages
standing timber can be evaluated closer to its real value	additional costs may occur when paying for valuation services
shows the enormous value of the forest	calculations are based on assumptions
reveals the valuation methodol ogy	a lot of extra work
improves the balance sheet, because forest assets are recorded at their fair value and not at their purchase value	it is complicated to compare assets of two forest companies because different assumptions and calculation methods ar e used
harmonization of financial reports	it is impossible to estimate an exact value of the growing forest
more transparency	some requirements should be more clearly set out
more comparability	the slightest error in the calculations may significantly affect the result

rately from other asset items, including in the balance sheet assets new relevantly named items".

In conformity with the explanations mentioned in the accounting handbook, if the company's management has decided to sell the biological asset, for example, standing timber, within a year, then it should be moved from the long-term investments position "biological assets" to current assets position "long-term investments held for sale" (Rutkovska, Blumberga 2005). For example, if the forestry company which does not deal with the standing timber harvesting but sells it on stump, at the beginning of the year takes out the cutting rights which are planned to be sold within a year, then these vendible assets should be separated from the total biological assets and recorded at current assets. If the company's main business is not forestry, the forest properties owned by the company should be recorded at long term-investment position "Investment Properties"; but if the company's main business is forestry, its forests are considered as biological assets because they are used in production.

Currently, the laws of the Republic of Latvia allow choosing where to record the biological assets: (i) at fixed assets, including them in the fixed assets category "Land, buildings and structures, and long-term plantings" at their purchase costs, without taking into account their revaluation at their fair value; (ii) if the biological assets are measured at their fair value, from which sales costs have been deducted, they should be excluded from the fixed assets category and be recorded at "Biological assets" in the balance sheet assets. It should be noted that the IAS 41 considers as priority the measurement of biological assets at their fair value. The Standard separates out the standing timber at "Biological assets", but at the same time the value of the land is determined leaving it at "Land, buildings and structures, and long-term plantings".

The "Annual Accounts Law" states that investment properties, biological assets or long-term investments held for sale shall not be subject to depreciation, which the company shall value on the basis of the fair value. Changes in the value of such assets shall be included in the profit or loss account, but determining the taxable income does not take into account the results of the revaluation of assets.

The law "On Corporate Income Tax" of the Republic of Latvia was adjusted on 20 October 2006, introducing a new terminology such as "biological assets", "investment properties", etc. It states that in the taxation period when the biological assets are expropriated, the taxpayer determines the taxable income from the

assets expropriation as difference from expropriation income and initial accounting value. For example, if from the forest property (10 hectares large), which was purchased for 5000 EUR, 1 hectare is harvested and 200 m^3 are obtained, and later sold for 10 EUR/m^3, then 2000 EUR are earned. How to calculate the initial accounting value for the 200 m^3 is not specified in any standard and remains the responsibility of an account. The accountant should confirm the used methodology with the company's management and reflect it in the annual report.

It would be preferable to determine the standing timber price in the total sales price at purchase, for example, the land is valued at 1000 EUR, but the standing timber - at 4000 EUR. Wherewith, in the future, when harvesting part of the standing timber, it could be calculated proportionally from its initial accounting value. Latvian forestry accounting practice in some companies shows that the forest land and standing timber value is calculated in proportion to the forest land and standing timber cadastral value, which can be obtained as paid information from the State Land Service of the Republic of Latvia (SLS).

The standing timber cadastral value can be calculated by subtracting the land cadastral value from the total property cadastral value. For example, if the property is acquired for 5000 EUR and its forest land value according to the SLS data is 500 EUR (71% of the total value of 700 EUR), but standing timber value is 200 EUR (29% of the total value of 700 EUR), then proportionally the acquired forest land value is calculated to be 3550 EUR and standing timber value - 1450 EUR. Whereas the JSC "Latvijas Valsts Mezi", which manages 1.15 million hectares of state-owned forests and 3000 hectares of their own forest, according to its annual report (2008), when purchasing forest land, records it in its cadastral value but the rest of the purchase amount is considered as a standing timber value. These examples demonstrate that there is no unified forest accounting methodology in Latvia. Forestry accounting is complicated because it is not possible to harvest all standing timber in the purchased forest property at once, but by stages in different years. Therefore it is necessary to develop guidelines or at least recommendable methodology at the state level for determining the income gained from timber sales.

It is not specified currently who should evaluate standing timber and forest land in Latvia. Therefore a forestry company can choose to valuate its forests either by delegating this to an employee with appropriate knowledge or an accountant, or involve professional property appraisers. The fair value of biological assets should be appraised once a year, but as it involves high costs, the world forestry companies do not appraise their forests every year but after a certain number of years, e.g. 3-5, justifying it with the long cycle of forestry.

There is a problem to find qualified forest appraisers in Latvia. Only few companies provide certified appraisal services for agricultural and woodland. Many of these appraisers even do not have education related to forestry. No unified valuation methodology for forest properties as well as no unified requirements for forest appraisers, have been created. Therefore the quality of work performance is low. This is the reason why a specific forest valuation standard which would determine in detail both forest valuation and accountancy is needed in Latvia.

Discussion and conclusion

Wood and its products have a worldwide importance; however, forest accounting and valuation guidelines are still lacking. The IAS 41 is an attempt to improve the situation and harmonize financial reports but as it can be observed from the practice of international forestry companies, a lot of improvement is still needed.

After analyzing the available information about forest accountancy it can be concluded that the forest should be accounted at long-term investments, but standing timber and forest land should be recorded separately. Harvested logs should be recorded at current assets position "Inventories", but standing timber which is not planned to sell during a year should be recorded at current assets position "Long-term investments held for sale". According to IAS 41, the standing timber should be estimated at its fair value, but at the

same time, estimation of the fair value reveals many deficiencies. Forestry companies around the world interpret the IAS 41 differently. The most common method of determining the fair value, according to IAS 41, is discounted cash flow method for the forest companies. Despite the introduction of several improvements, the IAS 41 still has many gaps such as what kind of timber prices would be advisable to use in the calculations; from which age the trees could be considered as a mature plantation; what to do with the additional forest usage options which increase its value, etc. The International Accounting Standards Board should continue improving the Standard. As valuation of forest properties is much demanded, a completely independent, international and specific valuation of forest properties should be developed.

The changes in Latvian accounting laws relating to biological assets were introduced starting from the end of 2005, and the IAS 41 has currently only permissive nature. The laws of the Republic of Latvia allow the biological assets to be left at their purchase value without revaluating them. There is no common methodology how determining the income which is gained from timber sales for forestry companies in Latvia. Also the evaluation of standing timber is complex problem because there are the lack of qualified forest appraisers in Latvia. It reveals the need for fixed forest valuation standards or at least guidlines.

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