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Forestry and wood sector and profitability development in the wood-processing industry of the Czech Republic

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ABSTRACT: Economic viability of sustainable forest management has been included in particular forestry strategic documents since 2003. In these documents, it is stated, among other things, that economic viability is a key pillar of sustainable forest management and is of conclusive significance in preserving forests and their multiple benefits for the society. At the same time – the economic viability of sustainable forest management depends essentially on wood-producing functions of forestry. The paper aims at an identification of this key concept and at a situation analysis of economic viability under current conditions of the forestry and wood sector in the Czech Republic with a special focus on the wood-processing industry as part of the forestry and wood sector using a financial analysis.

Keywords: economic viability of sustainable forest management; forestry-wood sector; sawmilling; profitability; profitability indicators

The significance of forestry is emphasized in many international strategic documents. Organically belonging to this group are particularly conclusions from the ministerial conferences concerning the protection of European forests. The Fourth Ministerial Conference on the Protection of European Forests in Vienna (2003) adopted the V2 Resolution on "Increasing the economic viability of sustainable forest management in Europe". In this Resolution, economic viability is declared a key pillar for sustainable forest management and of conclusive significance for the preservation of forests and their multiple benefits for the society (Research Forest Institute 2003).

From the perspective of national strategy of the Czech Republic (CR), we need to mention the CR National Forestry Programme for the period until the year 2013, formulated in 2008. In this document, economic viability and competitiveness of sustainable forestry are incorporated in the first – economic pillar (Forest Management Institute 2008).

Since the economic viability of sustainable forest management depends essentially on wood-producing functions of forestry, it is necessary to point out the role of manufacturing industries, namely of the wood-processing industry (Kupčák 2010).

The forestry and wood sector comprises three groups of entities. The first group includes forest owners, the second one consists of forest business entities, and entities operating in the wood-processing industry belong to the third group. Altogether, they form a complex in which direct relations of prosperity exist; this means that if one of the three chain links is affected, the other two are also influenced by a domino effect. (Kupčák, Šmída 2009).

The forestry and wood sector does not perform only within the national economy. For example, Matějíček et al. (2008) described the genesis and integration of the forestry and wood sector in the European Commission.

The aim of the paper is a situation analysis of economic viability in conditions of the Czech forestry and wood sector with a special focus on the last chain link – wood converters and deals with the hypothesis if foreign investments in the wood-processing industry fulfil the expectations of investors.

In that point of view, the inflow of forest investments into the Czech Republic was once one of the

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main priorities of the government's economic policy. Since 2000, for example, a law on investment incentives has been in force as a tool of government policy focused on the support of the increased inflow of forest investments and promotion of the growth and modernization of Czech firms. In conditions of the Czech wood industry, these objectives go even further by supporting the use of timber as a domestic renewable and ecological raw material, and by creating new jobs as a good solution for the development of rural areas (Kupčák 2006). The first principal entry of foreign capital into the sawmilling industry in the Czech Republic was that of Holzindustrie Schweighofer (now Stora Enso Timber) – into saw mills in Ždírec in 1997, and then in Planá near Mariánské Lázně in 1998. The third greatest foreign investment was that of Mayr-Melnhof Austria in Paskov in 2005.

MATERIAL AND METHODS

The wood industry falls under Ministry of Industry and Trade of the CR – Section of Manufacturing Industries. By the status ranking of industries it belongs to Subsections 16 – Wood processing, manufacture of wooden, cork, wicker and straw products except furniture, 17 – Manufacture of paper and paper products, 31 – Manufacture of furniture, and 32 – Other manufacturing industries.

Basic volume indicators in sawmilling are breakdown of logs and production of sawn timber (usually in thousand m^3). An interrelated intensity indicator is the percentage yield of sawn timber (T_p), according to the relation below

$$T_p = S/P \times 100 \quad (1)$$

where:

S – breakdown of logs (in thousand m^3) – raw material,

P – production of sawn timber (in thousand m^3) – product.

In conditions of corporate economics, indicators of profitability most frequently measure profit (or loss) towards a certain item of property or capital, thus providing an image about the appreciation of resources. Fundamental indicators of this kind include profitability of total investments and profitability of equity capital. In addition, there are also some other indicators that are evaluated in practice: profitability of returns – profit margin or cost efficiency.

Indicators chosen and used for the analysis of selected sawmilling companies were as follows: (*i*) profitability of total capital, (*ii*) basic production power, (*iii*) profitability of equity capital.

Financial statements (Balance sheet – R, Profit and loss statement – V) together with annual reports and/or various statistic surveys represented the basic source of data for the financial analysis. The obligation to publish selected data on companies – both legal and natural persons, and their accessibility are stipulated by law (the obligation to publicize accounting data follows out from Accounting Act No. 563/1991 with its latest amendments. Legal persons had this obligation for the first time in 1992). At present, the data are mostly acquired from the Register of Companies (OR) [From 1 January 2014 – see Act No. 89/2012, Civil Code, Act No. 304/2013 on public registers of legal and natural persons, and Act No. 90/2012 on business companies and cooperatives (law on business corporations)].

For the financial analysis or the analysis of profitability, we made use of publicly available data for the five-year period from 2008 to 2012, which were taken from the OR Collection of Documents – publicized annual reports and attached financial statements.

Profitability of total capital (*RCK*) (Equation 2):

$$RCK = HVb/P \quad (2)$$

where:

HVb – Profit (loss) over the current period – after taxation (Balance sheet: A.V, row 083),

P – production of sawn timber (in thousand m^3) – product.

This indicator is often interpreted in literature as Return on Assets (ROA) indicator. Profit (loss) substituted in the numerator may have diverse modifications. Most authors, e.g. Černá et al. (1997) use net profit, i.e. profit after taxation.

Basic production power (*ZPS*) (Equation 3):

$$ZPS = HVp/ P \quad (3)$$

where:

HVp – Operating profit (loss) (Profit and loss statement: row 30),

P – Total liabilities (Balance sheet: row 066).

ZPS indicator emphasizes the role of operating profit (loss) in conditions of processing and manufacturing enterprises. However, any proceeds from the sale of assets are a pitfall of this indicator.

Profitability of equity capital (*RVK*) (Equation 4):

$$RVK = HVb/VK \quad (4)$$

where:

HVb – Profit (loss) over the current period – after taxation (Balance sheet: A.V, row 083),

VK – Equity capital (Balance sheet: A., row 067).

Table 1. Timber supplies – assortments from operations (without imports, in thousand m^3) (MZe 2014)

Indicator	2008	2009	2010	2011	2012
Total timber supplies	16,187	15,502	16,736	15,381	15,061
– of these coniferous	14,877	14,047	15,066	13,340	13,056
– of these softwood logs	8,503	8,332	8,982	8,014	7,911

In the Anglo-Saxon literature (Grűnwald, Holečková 2001), this indicator is often referred to as Return on Equity (ROE). The indicators are usually expressed in % (values × 100). The data were processed by using the MS Excel 2010.

Characteristics of the analyzed objects. Enterprises chosen for the analyses were: Stora Enso Wood Products Ždírec Ltd.., Stora Enso Wood Products Planá Ltd. and Mayr-Melnhof Holz Paskov Ltd. These enterprises exhibit the total annual consumption of saw timber ca 2.5 mil. m^3; this corresponds to about 30% of the annual production (supply) of coniferous round timber in the country (Ministry of Agriculture 2008–2012). Table 1 presents relations documenting the significance and weight of these enterprises within the forestry and wood sector in the Czech Republic.

The company Stora Enso Wood Products Ždírec Ltd. (hereinafter Stora Enso Ždírec) with headquarters in Ždírec nad Doubravou came to existence in 1997 as Holzindustrie Schweighofer GmbH (Hallein, Austria). In 1999, it was registered as Holzindustrie Schweighofer AG, in 2002 as Stora Enso Timber AG, and in 2010 as Stora Enso Wood Products GmbH, Brand, Austria. The installed manufacturing capacity of the firm in 2012 was 1,200 thousand m^3.

Stora Enso Wood Products Planá Ltd. residing in Planá (hereinafter Stora Enso Planá) emerged from the company FS advice, Ltd. in 1995. In 1998 it was registered as Holzindustrie Schweighofer Planá, and in 2001 as Stora Enso Timber Planá Ltd. Since 2010, it has existed as Stora Enso Wood Products Planá Ltd. The only current partner is Stora Enso Wood Products GmbH, Brand, the Republic of Austria. The installed manufacturing capacity of the firm in 2012 was 730 thousand m^3.

The two companies belong to the group of Stora Enso Wood Products (SEWP), the second largest wood concern in the world. The SEWP Group is owned at 100% by Stora Enso Oyj, Helsinki, Finland.

The only partner in the company Mayr-Melnhof Holz Paskov Ltd. residing in Staříč (hereinafter Mayr-Melnhof Paskov) is Mayr-Melnhof Holz Leoben GmbH, Leoben, the Republic of Austria. The company was established by the deed of foundation in 2002. The installed manufacturing capacity of the firm in 2012 was 1,100 thousand m^3.

Table 2. Production indicators of the selected enterprises (in thousand m^3)

Indicator/Operation		2008	2009	2010	2011	2012
Breakdown of logs						
Stora Enso	Ždírec	1,071	941	939	916	936
	Planá	731	619	625	593	642
Mayr-Melnhof Paskov		879	1,022	992	1,033	1,015
Sawn wood production						
Stora Enso	Ždírec	607	525	527	521	529
	Planá	389	322	318	314	331
Mayr-Melnhof Paskov		–	579	561	592	575

RESULTS

As mentioned above, the significance and weight of enterprises selected from the Czech forestry and wood sector are documented by relations presented in Table 1. The main sphere of business in all three firms is sawmilling – conversion of coniferous saw logs into construction timber. Basic production indicators for the period from 2008 to 2012 are presented in Table 2. Yields of converted timber (according to Eq. 1) for the same period are presented in Table 3.

Resulting values of profitability indicators (according to Eqs 2–4) for the reference period are presented in Table 4 with values in time series being presented also graphically (Fig. 1).

In the reference period, profitability of total capital (*RCK*) according to Eq. (2) exhibited similar values in all three enterprises – from the minus values in 2008 up to minus values in 2012 (apart from Stora Enso Planá in 2012). Note: minus profitability is logically induced by loss. In the evaluated period, the indicator of total capital profitability shows an evident dynamic increase in 2009–2010.

According to Eq. (3), the indicator of Basic production power (*ZPS*) reaches plus values. From

Table 3. Sawn wood yield (in %)

Indicator		2008	2009	2010	2011	2012
Stora Enso	Ždírec	56.7	55.8	56.1	56.9	56.5
	Planá	53.2	52.0	50.9	53.0	51.6
Mayr-Melnhof Paskov		–	56.7	56.6	57.3	56.7

Table 4. Profitability indicators (in %)

Indicator		2008	2009	2010	2011	2012
RCK						
Stora Enso	Ždírec	–0.4	10.6	5.5	8.3	–0.5
	Planá	–0.8	7.4	14.3	10.2	6.7
Mayr-Melnhof Paskov		–2.6	8.6	10.7	2.0	–2.1
ZPS						
Stora Enso	Ždírec	0.4	13.7	4.7	10.9	0.4
	Planá	0.4	7.1	17.7	13.4	8.8
Mayr-Melnhof Paskov		0.5	8.6	10.0	3.5	1.5
RVK						
Stora Enso	Ždírec	–0.6	15.9	10.1	15.8	–0.9
	Planá	–0.9	9.6	21.0	13.8	9.8
Mayr-Melnhof Paskov		–4.7	15.1	18.8	4.0	–4.7

RCK – profitability of total capital, *ZPS* – basic production power, *RVK* – profitability of equity capital

the perspective of development, however, the trajectory is similar to that of the *RCK* indicator.

According to Eq. (4) the indicator of equity capital profitability (*RVK*) exhibits again similar values in all three enterprises in the reference period (including minus values in 2008 and 2012). The indicator gives essential information about the rate of return of the capital invested by owners as well as about the return on equity capital and payback time. *RVK* should be in principle higher than *RCK*, which holds true in the given case.

It can be stated that in general, the analyzed profitability indicators of all three enterprises showed a very problematic development recently (2011–2012). A question is whether the owners consider the return on investments as adequate – e.g. in relation to possible alternative investments.

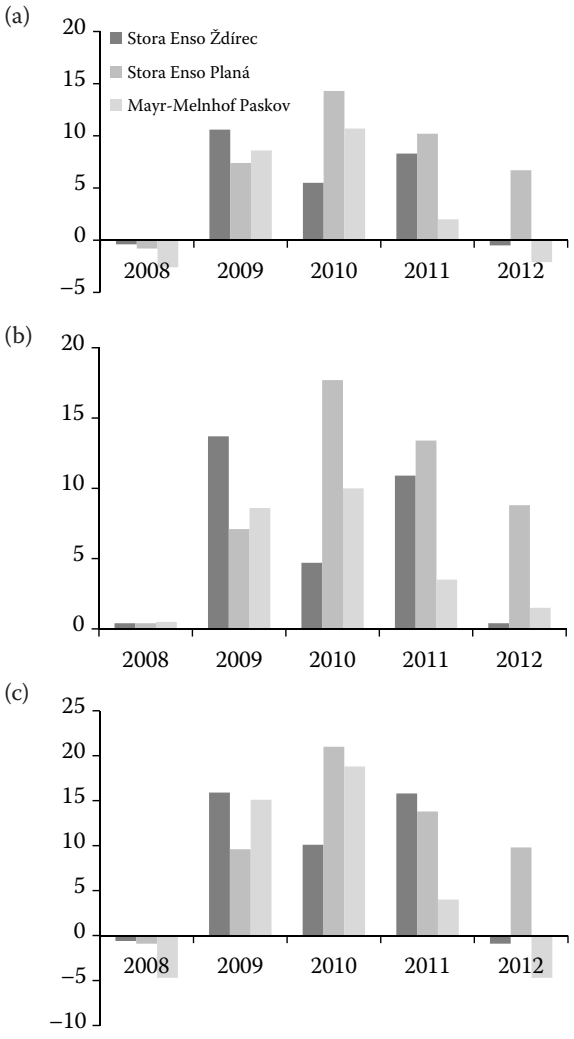

Fig. 1. Development of total capital profitability (a), of basic production power (b), and of equity capital profitability (c)

DISCUSSION

Although the wood-processing industry in the Czech Republic enjoys the traditional and sufficing permanently renewable domestic base of raw materials, the industry has experienced an essential concentration when a few firms play a dominant role in the marketing of domestic raw timber, which – thanks to a strong participation of foreign capital – have advanced operations and technologies at their disposal. However, their activities have been focused so far mainly on half-finished products with a high proportion of raw material and a low proportion of added value (sawn timber, wood pulp) that are exported to the investor's country at a greater part. This situation particularly applies to the producers of sawn timber. The method used in this paper reflects the main focus of interest of investor's capital; the profitability ratios show the results of the chosen companies. Unfortunately, there are no "recommended values" which were mentioned by Kovanicová (1997) as the need of comparing indicator values with industry averages and who warned about the drawback of evaluating the results of the financial analysis.

From previous work and experiences of the authors it is clear that profit as an accounting value can be affected by many factors, which are known very well (depreciation, revenues from the sale of assets in the case of ROE, etc.). The question is if the results would be completely different in the case of input data adjustment for these effects.

Another question is what the results would be like in the case of the inclusion of small wood-processing capacities. They were not included due to the lack of data and because they were not entered by foreign capital. Pražan (2007) informed that according to a qualified estimate, ca 6.5–7.0 mil. m^3 of coniferous timber are converted by sawmilling in the Czech

Republic; of this amount, nearly 50% is converted by medium-sized and small sawmills, which are thus still the principal converters of this raw material. However, many times the main problem of these enterprises consists in obsolete technologies and equipment, which do not allow enhancing profitability and competitiveness.

A potential restriction for comparison of the profitability perspective of wood-processing companies is a technological relationship and variance. This topic connected with estimation of technical efficiency in the production technologies for Czech sawmill enterprises was analysed by Šedivka (2009). For a more detailed analysis it is necessary to take into account even these technological aspects.

The efficiency of lumber industry was analysed by Upadhyay et al. (2012). In their work not only economic data are evaluated, but also the authors divide the 10-year time series data of 24 lumber mills into four inputs (material, labour, two types of energy) and one output (lumber volume). It would be interesting to use their methodology on the analysed companies in the Czech Republic for a complex understanding of the trends of efficiency and profitability connected e.g. with employment. These results would provide information for policy makers and industry stakeholders in connection with the economic viability of sustainable forest management.

One of the questions is the impact of the inflow of forest investments into the Czech Republic as one of the main priorities of the government's economic policy, which is not evaluated in this paper in a broader context. Linden and Leppänen (2003) showed on Finish regional panel data from Forestry Board Districts that government cost sharing (loans and grants) had positive effects and that the costs of investments increased wood supply.

With the topic of the paper aimed at the wood-processing industry it would be required to analyse the forestry contractors' situation, because the majority of the analysed companies outsource roundwood harvesting to harvesting contractors. Penttinen et al. (2010) analysed the profitability, liquidity and solvency of wood-harvesting contractors in Finland. This would bring additional information for the analysis of economic viability of forestry by covering the whole chain of the forestry and wood sector.

In this paper some representative companies from the Czech Republic were analysed which are considered as big companies. Schneider (1993) evaluated the relationship between efficiency and profitability with respect to the size of firms when he evaluated the hypothesis – the smaller the firm, the lower the labour cost per employee. The comparison focused on employees is a future question for the authors of this paper.

Although the selected companies have modern woodworking capacities, the results showed negative profitability in two of the five years. Factors influencing economic results and profitability of sawmilling companies can be identified in three areas: microenvironment, meso-environment and logistics.

In the microenvironment, these factors usually include production capacities (incl. shift working and production flexibility), technical and technological standards and possibilities of their further development (incl. depreciation fund disposition planning), calculation of costs and returns and their relation to production management methods (controlling), human resources – their quality and management principles, production and business strategies, and the firm's financial situation.

Factors of the firm's meso-environment include market (its size, disposition, quality, segmentation, firm's position on the market), competition and competitiveness of the firm, development of timber price, quality and possibilities of observing technical parameters required by the market, phenomena of the upcoming internationalization and globalization (role of foreign investments and competitors' links and contacts).

Factors in the field of logistic solutions are as follows:

- strategy of the choice and assurance of raw material supplier; contractual assurance of supplies (their specifications),
- logistics of the mass flow of raw material supplies complying with the requirements of regularity and continuity; possibilities of eliminating the impact of seasonal felling and unexpected price fluctuations in the field of raw material sources and manufactured products,
- technical and material aspects of taking over the wood raw material,
- production and storage capacities and their possible optimization,
- monitoring of transport network, transportation costs, and requirements for transport quality and speed,
- monitoring and evaluation of new trends in macroeconomics of the state, in the state's business policy and in conventions and principles of relations between business partners.

To analyze all these factors is the long-term work for economists and managers. This article partly contributes to the topic of profitability development in the wood-processing industry in the Czech Republic.

CONCLUSIONS

Actual economics of each industry (and country) is composed of actual entities developing economic (business) activity. One of fundamental conditions for the competitiveness of enterprises in the market environment is permanent and exact monitoring and evaluation of their own economic situation, financial situation in particular. Financial analysis is one of the most frequently applied methods and was used as a method in this paper, specifically ratio indicators such as profitability of total capital, basic production power, profitability of equity capital.

The subject of the paper is in particular the application of profitability indicators as a method of financial analysis to the selected wood-processing companies for the five-year period from 2008 to 2012 to provide the analysis of economic viability of the forestry and wood sector with the focus on chosen wood-processing companies. The hypothesis if foreign investments in the wood-processing industry fulfil the expectations of investors is verified. The paper aims at a quantification of chosen profitability indicators as a contribution to the branch economics analysis and evaluation of the position of enterprises in the Czech wood-processing industry. Only published data were used as inputs in the analyses which were taken from the Register of Companies and Reports on the state of forests and forestry in the Czech Republic.

Results of the analyses provided the information that in the five-year period in two years (2008 and 2012) two of the companies reported negative results in chosen profitability indicators, although they have the latest processing technologies and in the long term this situation could not satisfy investors' expectations. As mentioned above, a decisive role is played by the price of the purchased raw material – timber or by the development of saw timber prices from the year 2011 until now. On the other hand, it should be noted that the analysed enterprises are mentioned as basic price-setting timber operators in the Czech Republic and affect the whole chain in the forestry and wood sector.

It could be concluded from the results that the success of foreign capital in the Czech wood-processing industry is not without problems although it is supported by incentives as a tool of government policy, and that it depends on the performance of the entire forestry and wood sector.

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