CORPORATE VALUE PRODUCTIVITY BASED ON INTERNATIONAL AND NATIONAL ACCOUNTING STANDARDS

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Abstract

This paper focuses on the level and development of enterprise value productivity. The value productivity reflects the level and changes in the technical economic efficiency of production factors. It is an important factor in achieving the corporate goals, performance and competitiveness. The paper works with the value productivity in the contemporary concept which works not only with the efficiency of inputs consumption but also with the efficiency of capital employed (inputs binding). The value productivity results of the corporate development can be used as basis for decision making process and for further strategy creation. The value of productivity measures is influenced by data used for a calculation. Mostly the data come from the financial accounting which can be based on different accounting standards – for the Czech enterprises the Czech accounting standards or International Financial Reporting Standards (IFRS). Used standards would have an impact on the value productivity measures. The aim of this paper is to show a significance of this impact. For this purpose the paper uses case studies of companies whose financial data are available in the both standards. It could lead to a recommendation which accounting standards are more appropriate for the calculation of the value productivity measures.

Key words: economic efficiency, value productivity, decision making data, Czech accounting standards, IFRS

JEL Code: D24, M2, M41

Introduction

The value productivity is a key issue in achieving corporate goals, performance and competitiveness. The paper discusses the total productivity as well as partial productivities, including popular labour productivity. Labour productivity is influenced by many factors. On one hand by employees themselves – their education, knowledge and effort etc. The task how

to measure effects of investing in employees' education is not easy and still not clearly solved (Scholleová, 2012). On the other hand value labour productivity is also influenced by the macroeconomic environment and government policies, namely minimal wage (Pavelka et al., 2014) or labour market flexibility (Pavelka and Löster, 2013) which is very low in the Czech Republic.

The aim of the paper is not to show and evaluate the level and development of corporate productivities but to show differences according to used original data. Values of productivity indicators depend heavily on the used original data which come mainly from financial or managerial accounting. Data are influenced by the accounting standards. This paper uses two possible accounting standards in the Czech Republic - International Financial Reporting Standards (IFRS) and Czech accounting standards. Details about characteristics of both standards can be found in many relevant literature sources. For our purposes there are the best sources which compare both standards and show differences as Strouhal (2009) and Strouhal (2012). The paper's aim is not to discuss the differences between these two accounting standards and rules but to realize if the values of productivity indicators are significantly influenced by the used standard. The following chapter describes chosen productivity indicators and their definition used in this paper.

1 Productivity indicators

Productivity is generally defined as the efficiency of using production factors in a production process which can have results tangible as well as intangible (Craig and Harris, 1973). The productivity is expressed as a ratio whose nominator equals to output and denominator equals to input how it is showed by formula 1.

$$\text{productivity} = \frac{\text{output}}{\text{input}} \qquad (1)$$

Productivity can be expressed as value productivity or only technical productivity. Two basic types of productivities can be distinguish – total and partial productivity when total productivity includes all inputs. Differences also stem from the different defined output and input. It depends on an analytic's decision and on a data availability. Papers by Klečka (2013) or Klečka (2014) focuse detail on exact definitions of the productivity indicators and on limitations connected with the data availability.

1.1 The total productivity indicator

The total productivity calculates with all types of outputs and inputs. The contemporary concept of productivity takes into account not only the costs of consumption (and depreciation, amortization) but also costs of binding (of capital employed). In the other words it works with the concept of economic costs and this ratio is an alternative to the modern indicator economic value added (EVA). The total productivity is displayed by formula 2.

$$\text{Total productivity} = \frac{\text{Operating revenues}}{\text{Costs of consumption and binding of inputs}} \tag{2}$$

1.2 The partial productivity indicators

The partial productivity indicators are dedicated only to the selected production inputs which can come from the side of consumption or side of capital employed. This paper works with the following indicators expressed by formulas 3-8.

$$\text{Productivity of consumption (depreciation) of inputs} = \frac{\text{Operating revenues}}{\text{Costs of consumption of inputs}} \tag{3}$$

$$\text{Productivity of inputs binding} = \frac{\text{Operating revenues}}{\text{Costs of inputs binding}} \tag{4}$$

$$\text{Productivity of consumption of material and energy} = \frac{\text{Operating revenues}}{\text{Costs of material and energy}} \tag{5}$$

$$\text{Labour productivity} = \frac{\text{Operating revenues}}{\text{Costs of employees}} \tag{6}$$

$$\text{Productivity of depreciation and binding of fixed assets} = \frac{\text{Operating revenues}}{\text{Costs of depreciation and binding of fixed assets}} \tag{7}$$

$$\text{Productivity of binding of current assets} = \frac{\text{Operating revenues}}{\text{Costs of binding of current assets}} \tag{8}$$

2 Comparison of the productivity indicators based on the different data

The indicators mentioned in the previous chapter will be computed for several case studies. The productivity ratios are computed with the financial accounting data based firstly on International Financial Reporting Standards (IFRS) and secondly on the Czech accounting standards (CZAS).

2.1 Data sample

The used data sample covers only the year 2012. A crucial factor is an evaluated business unit has to have available financial statements reported according to both standards. There are generally not many companies fulfilling this condition in the Czech Republic. Data were gained from the corporate database Albertina and completed by annual reports available at justice.cz and data about industry costs of capital WACC (Ministerstvo průmyslu a obchodu, 2013). Data of some companies were not consistent and they were excluded from the final data sample. At the end this paper works with 7 case studies (specific companies). These companies do not have comparable characteristics as size, type of ownership, legal form, place of residence and field of economic activity. Results of this survey are not statistically significant because it is not possible according to already mentioned reasons.

2.2 Results

The first step is a computation of the productivity indicators expressed by formula 2-8. Each indicator is computed twice because of two accounting standards. The second step is a comparison of these two values. The comparison is done as a relative difference defined as formula 9.

$$\text{Relative difference} = \frac{\text{IFRS value - CZAS value}}{\text{CZAS value}} \tag{9}$$

Simplification or modifications of indicators are adopted due to limited data availability and in order to improve comparability of data by various accounting methodologies. Total output and total input are slightly narrowed compared to the broader concept, applied for example in Klečka (2013). The broader concept would correspond to the use of data as total revenues and total costs of the company. Another such simplification of the above reasons is the use of WACC here uncorrected about the possible presence of unchargeable capital.

Results for each indicator are displayed in one isolated table. Table 1 is dedicated to total productivity. In the case of total productivity relative differences are positive most of the

time. It means IFRS have higher values of total productivity. Business unit 5 is an exception because the difference is extremely.

Tab. 1: Total productivity

Business unit	IFRS	Czech standards	Relative difference
Business unit 1	0.618	0.533	15.90%
Business unit 2	0.813	0.79	2.90%
Business unit 3	0.622	0.833	-24.40%
Business unit 4	0.68	0.821	5.69%
Business unit 5	0.348	0.031	1014.38%
Business unit 6	0.870	0.899	-3.20%
Business unit 7	1.778	1.149	54.71%

Source: own computation based on corporate financial accounting data

Table 2 is dedicated to productivity of consumption (depreciation) of inputs. Differences cannot be generalized as before because half is positive and nearly half is negative. Results of total productivity are in some cases amplified and in another attenuated.

Tab. 2: Productivity of consumption (depreciation) of inputs

Business unit	IFRS	Czech standards	Relative difference
Business unit 1	0.881	0.946	-6.96%
Business unit 2	0.949	0.891	6.51%
Business unit 3	0.769	1.087	-29.27%
Business unit 4	1.045	0.998	4.72%
Business unit 5	0.984	0.088	1013.46%
Business unit 6	1.003	1.038	-3.43%
Business unit 7	4.170	1.320	215.98%

Source: own computation based on corporate financial accounting data

Table 3 is dedicated to productivity of inputs binding. Table 4 is dedicated to productivity of consumption of material and energy. Table 5 is dedicated to labour productivity. Table 6 is dedicated to productivity of depreciation and binding of fixed assets. Table 7 is dedicated to productivity of binding of current assets. It is not possible to generalize

results, even not in groups of only consumption or only binding costs. Some differences are extremely, especially business units 5 and 7. This conclusion can be seen in the following tables.

Tab. 3: Productivity of inputs binding

Business unit	IFRS	Czech standards	Relative difference
Business unit 1	2.073	1.221	69.70%
Business unit 2	5.697	7.014	-18.79%
Business unit 3	3.273	3.397	-3.65%
Business unit 4	5.105	4.623	10.42%
Business unit 5	0.539	0.048	1014,88%
Business unit 6	6.575	6.691	-1.73%
Business unit 7	3.100	8.896	-65.16%

Source: own computation based on corporate financial accounting data

Tab. 4: Productivity of consumption of material and energy

Business unit	IFRS	Czech standards	Relative difference
Business unit 1	1.384	1.952	-29.13%
Business unit 2	1.726	1.612	7.13%
Business unit 3	0.811	1.170	-30.64%
Business unit 4	1.450	1.375	5.51%
Business unit 5	1.680	0.143	1078.18%
Business unit 6	1.186	1.205	-1.55%
Business unit 7	8.098	1.507	437.48%

Source: own computation based on corporate financial accounting data

Tab. 5: Value labour productivity

Business unit	IFRS	Czech standards	Relative difference
Business unit 1	9.045	15.973	-43.37%
Business unit 2	3.005	3.154	-4.72%
Business unit 3	19.916	19.327	3.05%
Business unit 4	5.456	5.475	-0.36%

Business unit 5	2.760	0.252	993.30%
Business unit 6	7.672	8.941	-14.19%
Business unit 7	12.633	32.345	-60.94%

Source: own computation based on corporate financial accounting data

Tab. 6: Productivity of consumption and binding of fixed assets

Business unit	IFRS	Czech standards	Relative difference
Business unit 1	2.276	1.475	54.28%
Business unit 2	3.401	3.309	2.78%
Business unit 3	5.582	6.806	-18.78%
Business unit 4	3.996	3.579	11.65%
Business unit 5	0.585	0.054	984.15%
Business unit 6	15.218	18.440	-17.47%
Business unit 7	3.385	6.862	-50.66%

Source: own computation based on corporate financial accounting data

Tab. 7: Productivity of binding of current assets

Business unit	IFRS	Czech standards	Relative difference
Business unit 1	13.196	3.362	292.51%
Business unit 2	42.245	46.201	-8.56%
Business unit 3	6.995	6.234	12.21%
Business unit 4	33.862	36.388	-6.94%
Business unit 5	4.854	0.406	1094.47%
Business unit 6	9.069	8.738	3.79%
Business unit 7	15.532	37.825	-58.94%

Source: own computation based on corporate financial accounting data

2.3 Discussion

The structure of the financial statements reported according to IFRS is not standardized and therefore there were obstacles how to work with individually defined items. It was necessary to come with some simplifications and modifications of the standard used indicators otherwise the gained results would differ a business unit to a business unit. Other issue is that

there are only several case studies (specific companies) in this paper because there are not many units whose financial statements are reported (also available) according to both accounting standards in the Czech Republic (national as well as international). Results of this survey are not statistically significant but they show one very important conclusion that the productivity indicators heavily depend on the used data.

Conclusion

This paper measured value productivity based on two accounting methodologies - the Czech accounting standards (CZAS) or International Financial Reporting Standards (IFRS). The aim was not to compare the differences in accounting rules or to evaluate primarily values of corporate productivity. The paper shows the significance of the used data for calculating the productivity ratios. Several case studies were a source of the serious differences between values of each productivity indicator. The work with the data based on the Czech accounting standards was more appropriate because the structure of financial accounting statements is standardised and therefore results of case studies are comparable. This conclusion cannot be said for International Financial Reporting Standards (IFRS) whose items of the financial statements can be defined individually.

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