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Post-privatisation Corporate Performance in Poland. Evidence from Companies Privatized in 2008–2011

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Abstract

Our study concerns the effects of Polish privatisation program conducted in the years 2008–2011. After drawing a broad picture of this process we investigate the performance of 59 privatised companies, and finally focus on a deeper analysis of three companies, which is the core part of our study. We test the hypotheses that privatisation increases a company's profitability, labour productivity, capital investment spending, plow-back ratio and leverage. In case studies, we additionally explore the effect of privatization on each company's value. The outcomes concerning the larger group of companies are partly ambiguous (with four hypotheses confirmed and four rejected). Profitability has been not visibly improved, although a number of positive initiatives and improvements in performance occurred. By contrast, the three case studies showed a significant improvement of profitability and all other performance indicators observed, as well as a considerable increase of company value. Our results show that privatisation works, though its full effects need time to occur.

Introduction

The aim of our research is to investigate the results of the 2008–2011 privatisation programme through its effects on the performance of companies privatised then. In order to avoid the selection bias, we decided to check the performance of the same companies in the pre-and post- privatisation period. We verify our findings on two levels. First, available data from all companies privatised at that time were analysed. In the subsequent stage, three companies were investigated in detail and described in the form of case studies.

The first part of the paper, that provides background for the case studies, is quantitative and focuses on the analysis of outcomes of privatisation, specifically on microeconomic objectives that were to be achieved through privatisation. The purpose of this is to compare the pre- and post-privatisation performance of the firms. 59 Polish firms that started privatization under the programme and completed the process until then, were analysed. Their performance (before and after privatization) was measured via 8 ratios in 5 areas: profitability, operating performance, CAPEX investments, reinvestment, and leverage. We pose the hypothesis that privatised firms exhibit significant improvement in the profitability ratios relative to the period before privatisation. We hypothesize that other ratios are also improved: operating efficiency is higher (measured as revenues versus payroll),companies start investing into CAPEX, plow-back ratio is improved and capital structure is changed.

The second research part is more specific and qualitative. Three companies that were privatised in the period of 2008–2011 have been chosen and, apart from financial analysis and comparing ratios in 5 areas, the companies are valuated with the use of income-based method. The novelty is the method used for valuation. We use an i-DCF valuation approach that is based on iteration processes. One of the authors of this paper was involved in performing company valuations of these three companies in the pre-privatisation stage Then, after privatisation, the companies were approached again and another valuation was conducted. Thanks to this, we received a profound analysis of each company, including a comparative analysis of their values based on the two DCF valuations. The main hypothesis was that the value of a company is greater after its privatisation. The empirical chapters are preceded with a presentation of an i-DCF model that was employed for the company valuations.

The rest of the paper includes: in section one an overall description of the historical and political context for the investigated privatization programme and the background for our research, in section two – methodology of the first part of our research and its results, in section three – methods of the second part of research, in section four – the case studies analysis and its results, in section five – conclusions from the research and references.

1. Context and Background of the Study

1.1 Historical and Political Context

Decisions behind privatisation in Poland were justified both politically and economically. Together with the stabilisation and liberalisation of the economy, privatisation was one of the underpinning principles of the reform program launched by the first Polish government after the fall of communism at the end of 1989. This government made creating an economy characterized by an ownership, in which private firms predominate one of its top priorities. Thus, privatisation was seen as a tool for increasing the efficiency of enterprises and, at the same time, bringing the ownership structure of the economy into line with market economy norms. There was a strong conviction among reformers that state-owned enterprises (SOE) showed to be sustainably ineffective and that it is rather impossible to create an effective system of corporate governance over SOEs carried out by the government, especially in such a large state sector as existed then (Blaszczyk 1993, p. 11). Another broadly shared conviction was about the necessity to rapidly carry out privatisation in order not to allow a return to the old system.

In accordance with such considerations the privatisation goals were seen first of all as systemic (change of the political and economic order) and economic (improvement of the economic efficiency at all levels). Additionally, the difficult budgetary and financial situation of the country at that time made another goal of privatisation self-evident, i.e. the role of fiscal benefits[1] from privatisation for the state budget (Blaszczyk 1993). Other expectations toward privatisation that were spelled out at that time (like wide diffusion of private ownership among citizens or higher involvement of workers in the enterprise business) were treated rather as additional (Blaszczyk and Dabrowski 1993, p. 22) and after short timeshowed not to be realistic. It was not at once evident for Polish reformers and politicians that some of the privatisation goals were competing among each other and could not be achieved simultan-

1 These benefits were expected to consist of short time effects – revenues for the state budget, and long term effects – lack of government subsidies for inefficient state enterprises and rising taxes from efficient private sector.

eously[2] (Blaszczyk 1991). With few years' time the two prevailing (and sometimes competing among each other) goals for privatisation became dominant: economic improvement at the enterprise level and budgetary revenues. Thus, the assessment of privatisation effects relates in most cases to the level at which these two goals have been achieved. Our study focuses mainly on the microeconomic effects of privatisation at a chosen time stage.

Despite the dilemmas that appeared in the choice among different privatisation goals and objectives, especially between the economic and time preferences, during the whole transition period a common approach in Polish privatisation prevailed. It was characterised by the following principles: to apply a multi-track approach (concerning privatisation methods and 'paths'), to try to find and choose the best possible private owners for the different types of enterprises being privatised and to seek to achieve the acceptance of employees and managers for privatisation of their companies. Such an approach meant adopting individualised, market-oriented and time-consuming methods of privatisation rather than massive and quick privatisation schemes[3]. Although this course yielded positive outcomes for many enterprises privatised in this way, it had negative implications for others that remained longer in the public domain.

On the other hand, many features of the Polish privatisation experience have been undisputedly positive. The country has adopted appropriate legal regulations requiring relatively high quality disclosure standards for privatised companies; these made the country's capital market much more transparent than in other central European countries and have ensured a relatively healthy and largely privatised banking sector. Other benefits have stemmed from Poland's utilisation of mainly traditional methods of privatisation, based on proper institutional rules. While the process may have been somewhat slower and more difficult at the start, over time it accelerated and broadened with the growing experience of the participants.

Though, one has to remember that such a case-by-case tailored approach to privatisation consumes more time and is much more demanding versus the state apparatus and its capacities. It also offers to critics – eg. political parties in power and other interest groups that do not favour privatisation – more time and opportunity to block the process, as the winds of popular opinion shift (Blaszczyk 1999). This resulted in repeated legal exclusions for many years from the privatisation process of big parts of economy (such as the heavy industry, chemistry, infrastructure, and others) after which including them again into owner-

2 For instance it was impossible (in the economic environment of that time) to gain simultaneously high revenues from privatisation for the state budget and to maintain a rapid speed of ownership transformation. Also, it was not possible to satisfy the state budget with high revenues and the citizens through a wide, free diffusion of private ownership.

3 More on privatization approaches in different transition countries in: Blaszczyk B., R. Woodward (ed) (1996)

ship changes needed much effort, strong political will and proper majority in the parliament. The exclusion of many crucial industries from privatisation has produced high costs and significant losses for the whole economy, which was reported in research (Blaszczyk et al. 2005).

Conscious of these pitfalls, proponents of privatisation in Poland made repeated attempts to accelerate the privatisation process. First such initiative was the National Investment Fund Program (NIF), a coupon privatisation program, started in 1993, which was applied to around 10% of public assets. But the Polish experience (as well as that of our neighbours) showed that it was very difficult to reconcile such 'wholesale' privatisation with the intended outcome: good corporate governance. Therefore, implementation of such a program to a larger part of economy as it has been done in Poland could have been a failure[4].

The second attempt to accelerate the privatisation process and to include in it again the so called 'strategic sectors' took place in May 1998, after coming back to power the right-of- centre government. It introduced an ambitious privatisation timetable through the year 2001 that called for selling off all enterprises and sectors being still under state ownership (including infrastructure sectors). Parallel to this program, the government started preparations to privatise the country's telecom system and its largest banks. An additional opportunity for faster privatisation was the political decision of January 1999 to introduce the pension reform and to finance the needs arising from this reform by privatisation revenues. Some large privatisations occurred in the following two years and the budget revenues grew dramatically but then the governing coalition broke down and in the result the government failed to introduce the overall ambitious privatisation plan. A more and more slowing privatisation pace was observed in following years, achieving its bottom point in 2006–2007 with the strong anti-privatisation government when all ownership changes fade away.

A new impetus for privatisation came with the new government at the end of 2007, that called further de-statisation as one of its priorities. It was mentioned at the Prime Minister's expose: 'There is no better protection against politicians interfering in the management of companies than a real increase in the competitiveness of Polish companies and the Polish economy. This is achievable by wise, fast and dynamic privatisation' (Tusk 2007). In April 2008, a new, radical program of completing privatisation of the remaining state sector was launched by the State Treasury Minister Aleksander Grad for the years 2008–2011 (Ministerstwo Skarbu Państwa 2008).

The main criterion, when choosing the companies for privatisation, was reducing the ownership role of the state in all industries where exercising corporate governance by institutions of public administration was not more deemed for necessary, thus a political will

4 More detailed research outcomes on the NFI Program in Blaszczyk,B., I. Hoshi and R. Woodward (ed), 2003, p.123–171

was demonstrated to reduce the exclusions from privatisation to a necessary minimum. Soon the acceleration of privatisation process was clearly visible, not only in the fast growing number of enterprises put up for sale, but also in the new approach and comprehensive scope of privatisation. The new approach called for greatly simplified pre-privatisation procedures, especially for smaller firms, introduction of new, more time-effective privatisation tracks (first of all auctions that were previously blocked by the law) and high transparency of the process for all interested parties. A strong educational effort was also made by the Ministry to popularize privatisation goals among large groups of population and to encourage citizens to participate in large public offers. 802[5] fully state owned companies and 120 remaining minority packages of other companies have been included into the plan, and the privatisation track for each of them has been determined. Among companies covered by the plan, for the first time, largest energy companies, coal mines, heavy chemistry plants, railroads, the air carrier (LOT) and the Warsaw Stock Exchange have been included. Only a small group of 23 large companies has been now excluded from privatisation, such as electroenergy, gas and fuel network companies (without production and distribution or retail companies), public media (one TV channel and one press agency), one state bank, one armament company, the state lottery and minority packages of few major strategic state companies as so called 'golden shares' (Orlen and Lotos –the largest fuel producers, KGHM – Polish Copper, PGNiG – Gas Company).

The pace of privatisation increased very fast in 2008–2010 and we observed a strong determination of the government to complete privatisation, despite the world economic crisis and other negative factors (such as strong protests of the labour unions from the companies being privatised). After this we observed again some slowing down of the process and a changing approach among politicians to state sector conservation, which resulted in partial withdrawal from the program's objectives in 2012[6]. (Bałtowski and Kozarzewski 2014, p. 329–352). For example, stocks of most large state-owned companies that entered the Warsaw Stock Exchange during the first years of the Programme have been only partially sold and later the state decided to keep their shares for longer time, in order to maintain corporate control. In spite of this, the progress of privatisation was significant during the time encompassed by the program and the subsequent year[7]. Until the end of 2012 – 339 companies (from the planned 802) had been entirely privatised, other 442 were in the privatisation

5 In the first version of the plan from April 2008 the number of companies was 740, but in the changed version from February 2009 the number rose to 802.

6 Minister Grad was at the end of 2011 replaced by a new person, less dedicated to the broad idea of privatisation.

7 Many privatisation procedures started in the framework of the government Programme 2008–2011 have been completed only in the subsequent year. Therefore, we treat the year 2012 as delayed implementation of the Programme and include the numbers in our statistics.

process and 285 in liquidation (Ministerstwo Skarbu Państwa 2013). The sale of the residual minority stocks from former privatisations in more than 100 companies was another success. We witnessed largest public offers in our history – only in 2009–2010 – ten large public offers (amounting from 215 million to 4 billion Polish zloty[8]) in energy, mining and other sectors, including for instance the largest insurance company in Poland and remaining few state banks. Very large amounts of privatisation proceedings (45 billion Polish zloty during the four years of the programme) were received by the state budget (Figure 1). Even in the difficult coal mining sector the first successful privatisation (of Bogdanka Coal Company) has been launched in 2009 through public offer and completed in the next year, followed by another coal mining company(JSW)[9] entering the Stock Exchange two years later.

But the privatisation programme has not been fully completed. At the end of 2012 the number of companies fully or partially state-owned accounted still for 288; among them 162 companies were entirely or in majority owned by the state[10] (Ministerstwo Skarbu Państwa 2013, p.5). The latter number included the largest companies in the country. As of the end of 2012 the entire public sector in the Polish economy produced 20.5 % of GDP and employed 24.2% of the working force. Taking into consideration only the enterprise sector, the majority state-owned companies produced at that time 14.2 % of GDP and employed 13.1% of the entire working force of the country (Bałtowski and Kozarzewski 2014, p. 361–364). The public sector still dominates in some sub-sectors of the economy, such as infrastructure, coal mining and railroads. The latter two industries, that have been excluded from privatisation and competition for a long time in the past, are today the two sectors that produce the largest losses and have absorbed for many years the largest subsidies from the government budget (Błaszczyk et al. 2005). These sectors and others spared from privatisation in the past for political reasons include numerous enterprises that could have been successfully privatised earlier (especially in the good years 2004–2006) but today seem not to be able to survive in a competitive marketplace without massive restructuring. This is the cost of avoiding privatisation and true restructuring in these sectors[11].

Since privatisation decisions were politically justified, it is not surprising that the revenues from privatisation process strongly corresponded with politics. The revenues

8 One EURO accounts aprox. for 4 Polish Zloty.

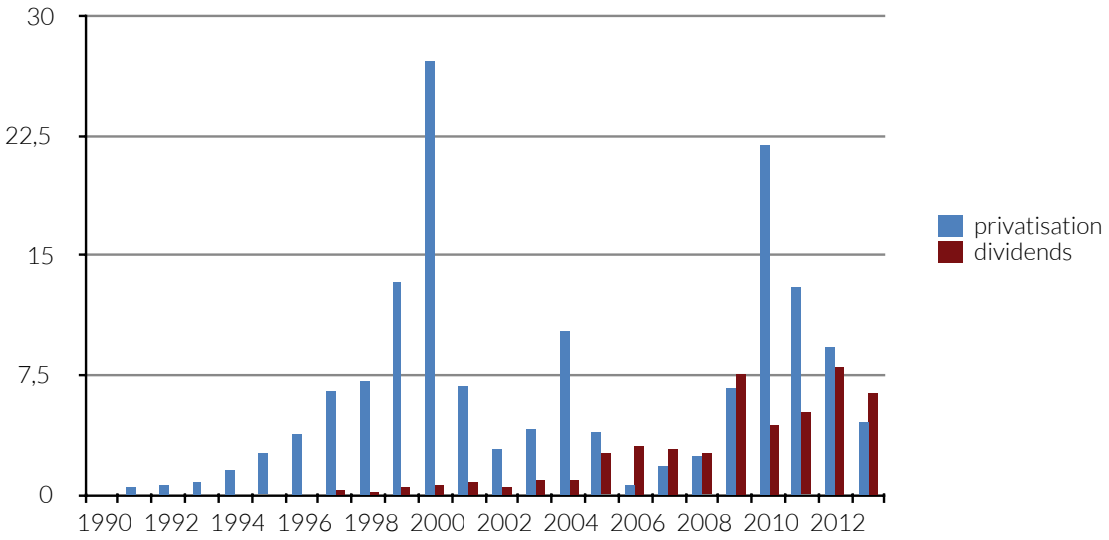
9 While Bogdanka proved the ability of coal mining sector to achieve success after privatisation, the divestment of the second large coal mining company (JSW), that was only partially privatised, showed to be a failure, has not allowed better corporate governance and finally resulted in massive strikes in 2014/2015.

10 The state was also holding minority stakes in 126 companies.

11 The massive restructuring needs were demonstrated recently (beginning of 2015) in growing losses of the largest state-owned coal mining companies that cannot be longer covered by any state aid, accompanied by powerful strikes of the coal workers.

were highly dependent on political parties that were in power at different points of time. One aspect of the analysis of revenues from privatisation is worth mentioning. One can praise some ministers, who fully used the economic opportunities (booming markets) for increasing revenues from privatisations, and blame others, who squandered the chance the market offered. For example, in the years 2003–2007 the stocks were extremely bullish, but there was no political will to generate revenues from privatisation. In the years 2007–2009 the markets were bearish (financial crises) which made it very difficult to accomplish the privatisation plan but the government tried to do its best in selling companies. Then the markets recovered and the privatisation revenues also sky-rocketed (Figure 1). We can add here that since 2012 the Ministry of Treasury is more and more dedicated to the control and management of remaining state companies than to their privatisation, which is visible in growing interest in replacing revenues from privatisation by dividends paid by the companies to the state owner.

Figure 1. Revenues from privatisation in 1990–2013 (PLN bn)



Source: own calculations based on the Ministry of Treasury reports.

1.2 Background of the Research

As mentioned above, the activities taken on by the Privatisation Programme 2008–2011 aimed to further increase the share of private ownership and reduce the role of the state in the economy (Ministerstwo Skarbu Państwa 2012). The main premise for doing this was the conviction, based on experience of many countries, that it is very difficult if not impossible to create a rational and effective system of government supervision over SOEs (Nellis 2002, Błaszczyk, Kozarzewski 2007). It was taken for granted that privatisation is to positively affect economic performance of privatised companies.

Since the very beginning of transformation of the post-communist countries there has been a discussion on whether and to what extent privatisation of former SOEs will improve their performance. There is a rich body of research in the area of privatisation and enterprise restructuring in Central and Eastern Europe (Carlin et al 1995, Carlin 1999, Havrylyshyn and McGettigan 1999, Djankov and Murrell 2002) linked to this topic. While some authors in the early stage of transition suggested that the regulatory framework (hard budget constraints, competitive market) had more influence on the restructuring and performance pattern of enterprises than ownership change (Carlin at al. 1995), others pointed out that even non- privatised enterprises in order to adjust to the changing economic environment tried to imitate the restructuring pattern of private businesses because of expectations to their own privatisation in near future (Pinto at al. 1993, Megginson and Netter 2001). Together with the progress of transition in more advanced transition countries, there was a growing evidence that 'privatisation matters' because of the different scope and deepness of restructuring efforts in privatised enterprises versus SOEs (Pohl et al 1997, Grosfeld and Roland 1996, Grosfeld and Nivet 1997, Blaszczyk et al. 1999). Similarly, because of the growing wave of privatisation in the developed and developing world at the end of the 20th century, researchers asked the same questions concerning the microeconomic results of privatisation in other parts of the world (UK, USA, Latin America, Asia and Africa). A comprehensive overview of empirical research on the effects of privatisation on the performance of privatised firms and the entire economy and society was prepared by Sergei Guriev and William Megginson and presented at the ABCDE World Bank Conference in January 2006 in St. Petersburg (Guriev and Megginson 2006). The authors analysed and compared numerous studies published between 1994 and 2003, separately for developed and developing countries, Latin America, and transition economies, and showed special interest for empirical studies comparing pre- versus-post-privatisation changes in privatized firms. An interesting conclusion from this study is that privatization is complementary to the institutional reforms that introduce rule-of- law, hard budget constraints, and investor protection (see also Zinnes, Eilat and Sachs 2001).

If these institutions are not in place, privatisation may fail to improve the performance at the firm level and for the economy as a whole. The study discusses also broadly other factors influencing more or less significant privatisation effects for the firms, such as type of investor, role of ownership concentration and methods of privatisation (La Porta et al. 1998, Grosfeld and Tressel 2001).

The hypothesis that privatisation improves the operational performance of companies was posed and empirically proven first by Megginson, Nash and van Randenborgh in 1994[12],

followed by D'Souza and Megginson (1999) and later on by the same and other authors (Boubakri and Cosset 1998, 2003, Megginson, Netter 2001, Torero 2002, Omran 2004, Mainoma, Tanko 2005, Huang, Wang 2010, Vo 2013 and others). However, this kind of empirical evidence is missing in Poland with regard to privatisation process in the 21st century.

The question of how to best observe and measure the changes in performance of privatised firms is complex. First of all, one should take into account many external factors (for example time period, privatisation sequencing, type of industry, economic cycle, institutional and political economy characteristics) and internal factors, independent from the ownership change, that may affect this performance. Secondly, the selection of companies sample for research may lead to wrong results (for instance where better performing companies were privatised first, their performance was better than of the remaining sample). In addition, the question arises how to establish benchmarks for measuring this performance – should privatised companies be compared with non-privatised, private greenfield companies, or enterprises of the entire economy? Finally, some authors question the correctness of comparing performance of privatised firms because of missing control of endogeneity bias. (Djankov and Murrel 2002, Estrin at al. 2009, Hagemajer, Tyrowicz and Svejnar 2014).

The aim of our research is to investigate the results of the 2008–2011 privatisation programme through its effects on the performance of companies privatised then. In order to avoid the selection bias, we decided to check the performance of the same companies in the pre- and post-privatisation period, both in the full sample and in the case study section.

This is a classical approach that was first introduced in the seminal works by D'Souza and Megginson (1994, 1999). The same research model was then successfully applied in many papers that attempted to analyse post-privatisation performance (e.g. Boubakri 1998, Omran 2004, Truong 2006, Huang 2010, Vo 2013). The most important characteristic of the approach is that the same set of companies is approached twice within a certain period of time. Between the two measurements one main change occurred – the ownership status of the company changed. Of course, some macroeconomic conditions may have changed

12 The method used in this research that compares 3 years pre-privatisation and 3 years post- privatisation financial and operating performance of companies is called after their names 'MNR approach'.

as well, but this is unavoidable and unpredictable. However, we believe that this procedure provides the most unbiased method of privatisation effects assessment. The principal benefit is that the procedure has become a standard and the effects can be easily compared to similar research.

There are attempts to measure the performance of privatised companies differently. Often the metrics of performance of privatised companies are contrasted with overall performance of the companies in the entire economy (Ministerstwo Skarbu Państwa 2012a). Due to the reasons exemplified above, attempts to compare entities that are incomparable and doing that at the wrong time may warp the effects of the research. We believe that the bias is avoided when pre-post approach is used. In our paper we not only report the "end effect" of privatisation on performance illustrated by profitability but also try to observe for other measures explaining various activities of the companies, such as changes in employment productivity, investment spending and leverage. In this way, we try to answer questions, how the investigated companies' behaviour and policies changed during the time of observation. Altogether, this makes up the full picture of privatised companies.

2. Methodology and Results of the First Part of Research

2.1 Methods of Sample Selection and Hypotheses

Ownership transformation in the period 2008–2011 covered 582 firms (Patena 2014, p. 61). However, the analysis was limited to those companies that were fully privatised (over 50% ownership in private hands) in the years 2008–2011. This group included 458 companies. Another threshold was data availability. Majority of the companies were neither public, nor listed on the stock exchange. The data were obtained directly from financial statements of privatised companies; in some cases they were solicited directly from the privatised firms, or received via secondary sources. This selection yielded a sample of 59 firms – 10% of the initial set and 13% of the fully privatised ones.

The purpose of the research was to compare the pre- and post-privatisation performance of these 59 privatised (and already commercialised) Polish firms. This was measured via 8 ratios in 5 areas: profitability, operating performance, CAPEX (capital expenditures) investments, reinvestment, and leverage. The year of privatisation (defined as completed) was defined as year 0. Data for the tests came from the years –3 to –1 (before privatisation), and +1 to +3 (after privatisation). The analysis thus covered 7 years but might go beyond the 2008–2011 period depending on the moment when the company was privatised. To test the predictions, first empirical proxies for every company for a seven year period were computed. Then, the median of each variable for each firm over the pre- and post- privatisation period was calculated. The year 0 was excluded from the analysis. The medians were the base for computing means (and medians) for each variable and the whole group of analysed companies. All the variables are ratios, hence they are fully comparable and there is no need for indexing, deflating or changing any nominal data into real ones. Having computed pre- and post-privatisation means and medians, the paired T-test is used to test for significant changes in the variables. The procedure tests whether there are significant differences between the means. The procedure was preceded by checking normality of the data (skewness and kurtosis). In most cases, the data was assumed normal. For others, the Kruskal-Wallis test was used. It is a non-parametric test, which does not assume that the data come from a distribution that can be completely described by two parameters: mean and standard deviation.

The following hypotheses were posed: privatisation increases: a firm's profitability, its employment productivity, its capital investment spending, plow-back ratio and leverage. Within the 5 areas, 8 variables to test the hypothesis were employed. Table 2.1 presents the testable predictions and the empirical variables.

Table 2.1. Summary of testable hypothesis
(The A and B index stand for 3-year period after and before privatisation respectively)

AREA	METRIC	HYPOTHESIS
Profitability	(ROS) net profit vs. revenues	ROS(A) > ROS(B)
	(ROE) net profit vs. equity	ROE(A) > ROE(B)
Employment efficiency	(SaPa) revenues vs. payroll	SaPa(A) > SaPa(B)
	(APa) total assets vs. payroll	APa(A) > APa(B)
Capital investment	(FAS) Capex vs. revenues	FAS(A) > FAS(B)
Plow back ratio	(PR) retained earnings vs. net profit	PR(A) > PR(B)
Financial leverage	(DA) long term debt vs. total assets	DA(A) > DA(B)
	(DEB) long term debt vs. EBITDA	DEB(A) > DEB(B)

Source: own elaboration.

In most of similar research it is anticipated that: profitability increases significantly after privatisation, there is large decline in employment level and leverage, cash dividends increase, and capital spending decreases (D'Souza 1999, Vo 2013). The hypotheses posed here were partially consistent with the results anticipated in the other research. However, the hypothesis concerning indebtedness was different (compare hypothesis in Table 2.1). It resulted from the observation that the SOE management was in the past very conservative when it comes to debt policy. Thus, it is hard to expect the indebtedness levels in the privatised companies to fall. Also, in other research it is typically assumed that cash dividends will increase. In the researched period, due to the fact that SOEs assets are highly amortised and depreciated, we would rather expect increase in the reinvestment levels. To sum up, increase in all eight metrics in the post-privatisation period was assumed. We tested the hypothesis that privatisation: increased a firm's profitability, its employment efficiency, its capital investment spending, plowback ratio and leverage.

2.2 Results

Table 2.1. Summary of results from tests of predictions for A and B periods (pTt stands for paired T test, and KWT for Kruskal-Wallistest)

METRIC	MEAN B (MEDIAN)	MEAN A (MEDIAN)	MEAN CHANGE	P-VALUE	METHOD	SIGNIFICANT RESULTS (AT 5%)
ROS	0.0274	0.0267	–0.0007	0.9449	pTt	No
	(0.0219)	(0.0222)				
ROE	0.0489	0.0355	–0.0134	0.6932	pTt	No
	(0.0559)	(0.0650)				
SaPa	4.9178	5.5823	0.6645	0.0127	pTt	Yes
	(4.1059)	(4.4457)				
Apa	3.9748	5.6242	1.6494	0.0039		Yes
	(3.0204)	(3.5263)				
FAS	0.03616	0.06509	0.0289	0.0034	pTt	Yes
	(0.0221)	(0.0391)				
PB	0.0318	0.0787	0.0469	0.0500	KWT	Yes
	(0.0000)	(0.5952)				
DA	0.0576	0.0726	0.0150	0.2320	KWT	No
	(0.0044)	(0.0355)				
DEB	0.4014	0.6427	0.2413	0.1401	pTt	No
	(0.0000)	(0.0468)				

Source: own elaboration.

Table 2.2 presents the results of the research. The outcomes were ambiguous: four hypotheses were confirmed but the other four were rejected. Therefore, one cannot without hesitation state that privatisation was worthwhile or repeat after J.D'Souza (1999, p. 23), that 'privatisation works, and it works in almost every institutional setting examined'. However, it must be emphasized that the tested hypotheses and the results of the research created a coherent narrative about privatisation in Poland. We also must keep in mind that the results were determined with the following circumstances:

1. The 2008–2011 period of research coincides with the so called financial crisis (Lehman Brothers bankruptcy in 2008), which affected Poland as well.
2. The 3-year period after privatisation was relatively short and some activities of the new owners and management teams have not been reflected in financial results and statements of the analysed companies yet. The same research repeated after another 3 years and based on the same sample may (and in our view, should) bring more meaningful results. The time needed for "full transition" from SOEs to private company lasts from 2 to 5 years, as some authors report (Bałtowski 2002, Baltowski and Kozarzewski 2014). This statement may explain that in the early years of privatisation the origin of enterprises (post-privatised or greenfield) is important, whereas after more time elapses, there are not more important differences between those two groups of private firms visible.

Partially due to the above factors, the analyses showed that, contrary to the hypothesis, relative to the period before privatisation privatised firms did not exhibit visible improvement in the performance with regard to profitability. However, it is noticeable that new owners started with implementing cost reduction processes. One can judge that after analysing SaPa and APa ratios which increased signalling employment reductions. In addition, other ratios were significantly improved: operating efficiency was higher (measured as revenues versus payroll), companies started investing into CAPEX (FAS grows), plow-back ratio was improved (PB increases in 74% of the companies). The investment dynamics was due to growing external financing: capital structure changed and debt ratios grew (although the changes were not significant statistically). This showed that privatisation might work, although the financial crisis that began in 2008 did not help the companies increase profitability yet and in these circumstances more time may be needed for more improvement. The actions initiated by privatised companies seem to go the right direction: employment reductions, increased investment, changed capital structure.

3. Methods of the Second Part of the Study

3.1 i -DCF valuation procedure

The main part of our paper is based on case studies of three companies, most importantly on valuations of the companies done for the pre- and post-privatisation stage. Since the valuations are performed with the use of a new variation of DCF model, the presentation of the i -DCF method will precede the main case study based chapters of the paper.

DCF valuation models have recently become complex. Modelling requires plenty of input data to be processed, the process is done in many stages, and the data obtained on each of them may be interrelated. The modern models work *via* sophisticated mechanisms of loops being triggered whenever a new piece of information is revealed and the whole model is constantly updated (Capiński 2008, Fernandez 2005). In the spreadsheets environment, this may only be done with the use of iterations.

The objective of this section is to demonstrate the complexity of contemporary DCF valuation models, to show the interrelations within the model and to present one of the solutions for maintaining the integrity of the model – iterations. First, the model for creating forecasts (interactive financial planning system), then the DCF model based on iterations (interactive valuation system) are presented.

Financial forecasts (including all the *pro forma* documents: balance sheets, income statements, cash flow reports, ratio analysis) are typically built on the basis of interactive financial planning systems. The core components of the system are the formulae that refer to input data and, based on predefined assumptions, generate all the single entries of *pro forma* financial documents for a given period of time (typically 5–9 years). The starting point for building forecasts is to analyse macroeconomic data, a company's standing, plans designed by the company, and eventually to estimate possible dynamics of sales, and then costs. Most of the entries in the balance sheet would depend on the sales dynamics. The key issue in financial modelling is to balance assets and liabilities. This is usually done with a debt-as-a- plug approach, meaning that any imbalance between assets and liabilities resulting from previously made and implemented assumptions finds its destination in the short-term debt entry. Similarly, cash is a plug in the assets – the amount of cash is kept at least on the level that is

operationally justified, but it changes whenever liabilities exceed assets. The model creates a coherent system of financial planning. A change of a single parameter is observable; one can easily create hypothetical scenarios and simulations with changed input data. What is most important, however, is that this stage of company valuation is linked with the other stages. For example, the cost of debt that is used to calculate the interest payments affects the net income of the company. At the same time the very same cost of debt is a part of WACC formula that is used to calculate the value of the company and equity. Thus, each change in the interest rate will, in sequence, change the value of net income, WACC, capital structure and the value of equity (Capiński 2008, p.45).

When using a DCF model for company valuation one has to agree that estimating its value without looking into the future is impossible. The value of a company depends on cash flows that the company may generate in the future. The problem we are facing is then to estimate future cash flows and determine a discount factor – cost of capital. The basic notion of the DCF method can be introduced with the following valuation formula.

1)

$$V_0 = \frac{CF_1}{(1+k)^1} + \frac{CF_2}{(1+k)^2} + ...,$$

This is how the company's value is determined: certain cash flows are discounted with the cost of capital. There are three components involved: cash flows, cost of capital and the model (or the engine, technically speaking) explaining how the first two are related and eventually put together into a coherent system.

Once we have financial documents *pro forma*, we can calculate the free cash flows. There are two basic valuation methods, corresponding to two kinds of cash flows: ECF (equity cash flow – cash flow available for shareholders only) and FCF (firm cash flow – cash flow available for both shareholders and debt holders). The methods are called FTE (flow to equity) and FTF (flow to firm) respectively (Capinski 2008). Whichever of the two methods is used, even if the company model is simplified to being a perpetuity, certain technical problems are bound to appear (the points below exemplify the FTF approach).

1. One has to know the cost of capital WACC (and both its components: cost of debt and cost of equity) in order to calculate the value of a company.
2. One has to know the capital structure, that is the value of debt and equity, in order to calculate the cost of capital (cost of equity or WACC). One has to know the value of interest payments, which is the value of debt, in order to calculate cash flows.

3. The problems create a logical loop: step 1 needs step 2, but step 2 requires step 1 and 3. The issue seems technical, but as a matter of fact it is a profound shift in the way the value can be found. An analytical solution to the problem is fairly straightforward (in case of perpetuities): we are facing the following system of equations, where *V* is the value of a company and *WACC* the cost of capital.

2)

$$\begin{cases} V = \dfrac{FCF}{WACC} \\ WACC = k_D \times (1-T) \times \dfrac{D}{V} + k_E \times \dfrac{V - D^{\cdot}}{V} \end{cases}$$

In a real life case, however, when one has to deal with numerous parameters and time periods, a numerical solution seems to be the only feasible approach. For example, in order to find the value *V* (for a given year *t*), one needs to know the values of *WACC*, next *E*, and then k_E. It is impossible to calculate *WACC* without *V* (the one we look for), and *E* without k_E. There appears a chain of logical loops and formulae that become so integrated that the information between cash flows and cost of capital moves freely. The cost of capital "tracks" the capital structure and changes accordingly, while *ECF* is a reflection of future profits and also the level of debt in the company. The valuation is recursive, going backwards in time. In general, the recursive method of company valuation that has been shown overcomes a fundamental problem that is often ignored by many other methods: the fact that the cost of capital depends on the financial structure. What is more, iterations enable us to create a coherent valuation system. Finally, sensitivity analysis is a *sine qua non* component of any DCF valuation. It allows us to identify the assumptions that are critical in terms of the valuation model and avoid subjectivity and manipulation by verifying the validity of the key assumptions. In other words, this is the part of the valuation in which one tests the model's reliability and objectivity. The critical moment in DCF valuation is building pro forma financial documents that are based on a set of assumptions. This has much to do with understanding the nature of the business and then identifying the crucial variables that are value drivers of the company (Koller 2010). At the end of the valuation process one needs to verify how sensitive the model is to changes in the set of assumptions. The set is typically composed with dozens of variables, some of which refer to the valuation theory or macroeconomic situation and are not included in the sensitivity analysis (e.g. risk free rate, risk premium). The sensitivity analysis is definitely recommended as a summary of any DCF valuation.

We emphasize three parts of the valuation process that are indispensible for the integrity of DCF valuation. First, the model for creating forecasts needs to be interactive and the generated *pro forma* financial documents must be properly linked with external (macroeconomic) and internal (historical) data. Second, the modern DCF models work *via* sophisticated mechanisms of loops being triggered whenever a new piece of information is revealed and the whole model needs updating. In the spreadsheets environment, this may be done with the use of iterations. The method of company valuation based on iterations overcomes a fundamental problem that is often ignored by many other methods: the fact that the cost of capital should depend on the financial structure. Finally, the valuation model should be subjected to the sensitivity analysis, which is able to quantify the impact of every single assumption made on the final company value.

3.2 Case Studies – Sample Selection

As was shown in section 2.1., the ownership transformation in the period 2008–2011 covered 582 firms. The research was limited to those companies that were fully privatised (over 50% ownership) in the years 2008–2011. Because of data availability, a sample of 59 firms –10% of the initial set was eventually included in the quantitative research. The sample was analysed in order to show the background for the case study analysis and the research outcomes were described in section 2.2.

In the section below, only three companies are the subject of the analysis. The plan of the research was to pick from the privatised companies list – 25 companies that were valued before they were privatised[13], then approach the same companies after privatisation and compare the results. However, the plan was difficult to implement: first of all many of the companies were not privatised before 2011 (11 companies), soliciting data from privatised companies was often unsuccessful (6 companies), and another obstacle was the lack of access to restricted data (due to contracts with the Ministry of Treasury). In particular, foreign companies that became owners of privatised companies were extremely unwilling to cooperate. Eventually three companies from this sample allowed access to data and were successfully valuated:

- MCB (Małopolskie Centrum Biotechniki Sp. z o. o. z siedzibą w Krasnem)
- Budrol (Budrol – Projekt Sp. z o. o. w Katowicach)
- CN (Kieleckie Przedsiębiorstwo Nasienne "Centrala Nasienna" w Kielcach Sp. z o.o.)

The companies are located in 3 different regions – Subcarpathian, Silesian and Lesser Poland Voivodships in the south of Poland, and come from different sectors: biotechnology, real estate management, and agriculture. The case study is based only on DCF valuations. In each case, the company and the privatisation process will be presented and then the comparison of pre- and post privatisation valuations will follow. The valuations are preceded by comparing the overall pre- and post-privatisation performance of the companies. This is measured with the same metrics that were applied in section 2. The metrics come from 5 areas: profitability, operating performance, CAPEX investments, reinvestment, leverage.

13 One of the authors of the paper acted as a privatisation advisor to the Ministry of Treasury in the years 2008–2011, and during that time conducted valuations of 25 firms.

4. Case Studies – Analysis

4.1 Case study – MCB

MCB is one of four animal insemination centres in Poland (company size proxied by its revenues – 8 USD mn). They have been operating on the Polish market for over 50 years providing services of inseminating the cattle, sows and bees in the regions of Southern and Eastern Poland. Apart from the headquarters in Krasne, they also have 9 branches. Their activity includes:

- estimation and selection of the bulls,
- bull semen production
- insemination of cows,
- boar semen production,
- insemination of sows,
- preservative breeding of domestic bees of a few lines,
- producing and inseminating the bee queens,
- embryo-transfer (ET) services,
- training on insemination, professional training of the breeders,
- implementing programs of selection of bulls and boars.

In 2009–10 100% shares of the company were owned by the State Treasury. Then, on 28.10.2011 (see: http://www.msp.gov.pl/pl/media/aktualnosci/18388,Prywatyzacja-czterech-spolek-inseminacyjnych.html) the privatisation process was initiated and at the end of 2013 over 63% of the shares were in the hands of Cooperative of Pigs Producers. The company was sold on the basis of special regulations that limited access to the sales process to only a few groups of buyers: employees, inseminators and farmers' cooperatives dealing with breeding cattle and pigs – domestic entities cooperating previously (for at least two years) with the MCB (Ministerstwo Skarbu Państwa 2010).

We are comparing valuations of the company done at the end of 2009 and 2013. This is preceded by comparing the overall pre- and post-privatisation performance of MCB. The performance is measured via 8 ratios in 5 areas: profitability, operating performance, CAPEX

investments, reinvestment, leverage (the same as in chapter 2). Scheme 4.1.1 presents the testable predictions and the empirical variables. We find convincing evidence that the levels of profitability, operating efficiency and capital investment increase significantly. We measure profitability using two ratios: return on sales (ROS) and return on equity (ROE). Both ratios experience growth, but because operationally-wise ROS is more important, this is the ratio we focus on. The ROS increase after the ownership transformation is 3.86 percentage points. To measure efficiency we employ sales per payroll (SaPa) and assets per payroll (APa). Both ratios are almost doubled. They clearly represent dramatic post-privatisation efficiency gains.

There is only one proxy used to identify investment intensity – FAS, computed as capital expenditures divided by sales. The change is noticeable but modest. FAS increases by 1.04 percentage points. This can be attributed to the fact that the company had already possessed extensive infrastructure and making new investments was not that important. In 2013 the company reinvested only 20% of the net profit (50% in 2009). MCB did not have any long term debt in either year.

Table 4.1.1. MCB – metrics

METRIC	BEFORE (2009)	AFTER (2013)
ROS	0.0952	0.1338
ROE	0.0724	0.0851
SaPa	3.7465	5.6549
APa	5.7194	9.7364
FAS	0.1017	0.1121
PB	0.5000	0.2000
DA	0.0000	0.0000
DEB	0.0000	0.0000

Source: own calculations based on MCB financial statements.

Table 4.1.2 shows the main economic parameters of the company. It is noticeable that in 2013 the company became much more profitable than in 2009 (net profit increased in spite of the drop in revenue). The level of fixed assets is lower, which is due to the process of disposing of nonoperational assets by the company. Profitability of the company is still far

from perfection. It grows (ROE changes from 7.24% to 8.21%), but in either case it does not exceed the cost of capital (see scheme 4.1.3.), hence EVA is negative in both cases. The trend, however, is promising.

Table 4.1.2. MCB – main economic parameters (PLN)

	2009	2013
Assets	37 806 748	38 909 557
Fixed assets	24 342 995	23 487 368
Current assets	13 421 757	15 422 188
Net profit	2 556 386	3 024 088
Revenues	24 765 195	22 598 659

Source: own calculations based on MCB financial statements.

Table 4.1.3. MCB – cost of capital and EVA

COST OF CAPITAL AND EVA	2009	2013
WACC	10.86%	9.29%
EVA (%)	–4.03%	–2.56%

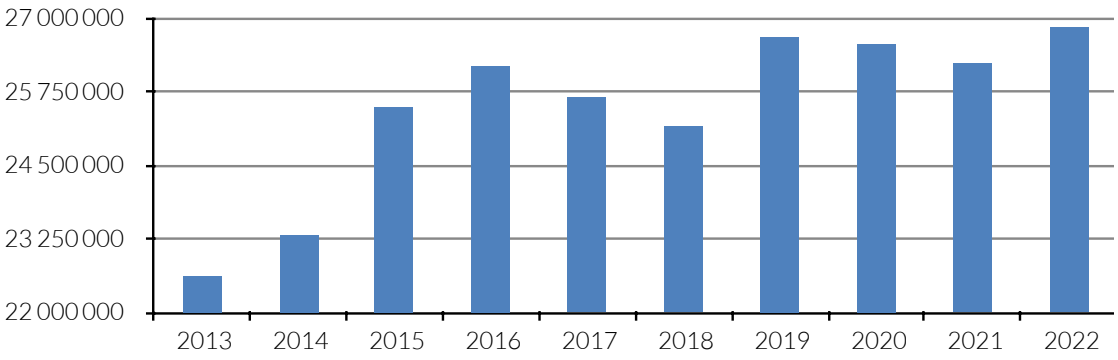
Source: own calculations based on MCB financial statements.

The main part of the case study is the comparison of DCF valuations of the company. The valuation process was presented in one of the previous chapters. Here, mainly the data and valuation results at key stages of the process will be presented (forecasts assumptions, free cash flow calculations, cost of capital estimation and engines with results).

The starting point for valuations and creating forecast were financial statements from the previous year. Then, the first year forecast was done with the use of strategic plans of the company. Then it was decided that the main value driver of the company's revenues is cattle and pigs stocks, as the company's products are directly related to the number of cows and sows to be served. The forecasted numbers were then translated to revenues dynamics. Another important factor was subsidies to land and bull selection programs. The 20% plow back ratio was assumed due to high liquidity experienced by the company. Eventually,

historical cycles were taken into account and built into the forecasts (so called pigs' ups and downs). The revenue forecasts done in 2013 are shown on figure 4.1.1.

Figure 4.1.1. MCB – revenue forecast for 2014–22



Source: own calculations.

In both cases the cost of capital estimation was based on CAPM model. The risk free rate was 6.17% in 2009 and 4.54% in 2013 (YTM of 10Y T-bonds). The risk premiums (5.9% and 6.28% respectively) were taken after *Global Investment Returns Yearbook* by E. Dimson E., P. Marsh and M. Staunton (Dimson 2009). For betas A. Damodaran's estimations were followed – weighted average of deleveraged betas for biotechnology (0.96 and 1.02) and farming/agriculture (0.60 and 0.58) sectors (http://people.stern.nyu.edu/adamodar). The weighted average (justified by the size of revenues from the two different sources) was 0.7944 in 2009 and 0.756 in 2013. There was no need to deleverage the beta since the company did not use any long term debt. Finally the cost of capital was 10.86% and 9.29% respectively.

Once we have pro forma financial statements of the company, then free cash flows can be calculated. The valuation was done with the use of two techniques: FTE (flow to equity) using equity cash flows (ECF) and FTF (flow to firm) using firm cash flows (FCF). Here are the brief definitions of both.

FCF is cash that is generated by a company's operational activity without taking interest payments into account. We hypothetically assume a situation where a company is equity financed only. The formula below is used in this case:

3)

$$FCF = EBIT \times (1 - T) + \text{correction}$$

Alternatively, we calculate cash flows ECF available for shareholders:

4)

$$ECF = (EBIT - k_D \times D) \times (1 - T) + \text{correction} + \Delta D$$

The correction involves adding back depreciation and the value of actual investments made by a company in working capital and fixed assets. Using the formula means that the tax shield is not taken into account. This however is not true. The tax shield is not ignored but included in the calculations of cost of capital (WACC- weighted average cost of capital).

Finally the engine was fed with the date (free cash flows) and cost of capital. The triggered iteration processes generate the final value of the company. Both engines are shown on tables 4.1.4–5.

Table 4.1.4. MCB i -DCF engine (2009)

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
ECF		1 302 251	2 998 607	3 669 101	4 039 753	2 194 361	2 072 791	3 204 712	4 196 321	3 433 115
D	0	0	0	0	0	0	0	0	0	0
E	36774389	39465837	40753220	41509919	41978143	44342609	47085425	48656117	49394499	50382389
kD	7,95%	8,47%	8,47%	9,24%	9,24%	9,24%	9,60%	9,60%	9,60%	
kE	10,86%	10,86%	10,86%	10,86%	10,86%	10,86%	10,14%	10,14%	8,95%	
ku	10,86%	10,86%	10,86%	10,86%	10,86%	10,86%	10,14%	10,14%	8,95%	
Tax	0%									
g	2,0%									
V(FTE)	36774389									
FCF		1 303 146	2 945 047	3 614 445	3 979 457	2 214 949	2 060 696	3 180 083	4 150 370	3 409 177
E	36471968	39129677	40434113	41210813	41706850	44021264	46741277	48301695	49050083	50031085
kE	10,86%	10,86%	10,86%	10,86%	10,86%	10,86%	10,14%	10,14%	8,95%	
ku	10,86%	10,86%	10,86%	10,86%	10,86%	10,86%	10,14%	10,14%	8,95%	
WACC	10,86%	10,86%	10,86%	10,86%	10,86%	10,86%	10,14%	10,14%	8,95%	
V(FTF)	36471968	39129677	40434113	41210813	41706850	44021264	46741277	48301695	49050083	50031085

Table 4.1.5. MCB i -DCF engine (2013)

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
ECF		1 950 418	1 936 814	2 406 380	4 007 824	4 073 335	1 417 611	3 680 509	4 033 497	2 838 289
D	0	0	0	0	0	0	0	0	0	0
E	39 903 551	41659646	43592464	45235249	45429182	45575618	48391380	48737519	48759471	49978458
kD	6,28%	6,28%	8,25%	7,32%	8,02%	8,02%	7,38%	7,38%	7,38%	
kE	9,29%	9,29%	9,29%	9,29%	9,29%	9,29%	8,32%	8,32%	8,32%	
ku	9,29%	9,29%	9,29%	9,29%	9,29%	9,29%	8,32%	8,32%	8,32%	
Tax	0%									
g	2,5%									
V(FTE)	39903551									
FCF		2 043 552	1 904 517	2 423 582	3 989 403	4 053 602	1 460 362	3 673 448	4 019 004	2 852 394
E	40 084 553	41764327	43739165	45378374	45604023	45786433	48579026	48947838	49001784	50226829
kE	9,29%	9,29%	9,29%	9,29%	9,29%	9,29%	8,32%	8,32%	8,32%	
ku	9,29%	9,29%	9,29%	9,29%	9,29%	9,29%	8,32%	8,32%	8,32%	
WACC	9,29%	9,29%	9,29%	9,29%	9,29%	9,29%	8,32%	8,32%	8,32%	
V(FTF)	40084553	41764327	43739165	45378374	45604023	45786433	48579026	48947838	49001784	50226829

Source: own calculations based on MCB valuation.

In both cases the final DCF values of equity (36.77 and 40.08 mn.) were adjusted (nonoperational assets were added) and were finally 44.12 at the end of 2009 and 46.07 mn at the end of 2013. However, in real terms (taking into account inflation rates in 2010–2013, the latter value is actually 41.42 mn. It is important to state that the company was sold at PLN 75–80 per share which placed its value in the PLN 32.7–34.6 mn range. The difference is due to lack of liquidity, lack of control discounts and the selection of methods used for the valuation.

Privatisation of MCB and the other 3 insemination companies in Poland first attracted fierce criticism. The insemination services were regarded as closely related to the food quality. Some critics raised worries about the companies being taken over by foreign competitors, introducing foreign breeds, and losing their genetic resources or even identity through changing the food Poles would be eating. Podstawka (2004) analysed financial standing of the four companies and a few privatisation scenarios. They stated that the companies were in good condition, doubted whether privatisation is necessary (the companies pay regular dividends), and if so, they insisted the companies should be sold to domestic agricultural organisations. In reaction to the criticism, the government limited the number

and kind of entities that could take part in the privatisation process to employees (max. 45% ownership), inseminators and farmers cooperatives dealing with breeding cattle and pigs – domestic entities cooperating previously (for at least two years) with the four companies, (Ministerstwo Skarbu Państwa 2010). The shares cannot be resold for another 10 years. The same rules applied to MCB.

The analysis shows steady growth of the company, noticed in the 2009–2013 period. The company became more profitable, reduced employment and started investments which are still financed with reinvested profit. The progress is not spectacular for two main reasons:

1. Podstawka (2014) noticed that the four insemination companies were in good condition already in 2004 with average ROS and ROE being 7.66% and 2.58% respectively. This would not leave much space for the improvement.
2. The privatisation process took some time (2011–2013) and the results of decisions by new owners are not immediate.

Still, the progress is evident, the 2013 valuation of the company is 4.4% higher, and the 6 metrics used to measure profitability, operating performance, CAPEX investments, reinvestment, leverage grow on average by 21,58%. MCB is a financially and operationally stable company. It is owned by an owner from the same industry, which guarantees further stability and sustainability of the strategy.

4.2 Case study Budrol Projekt

Budrol (company size proxied by its revenues – 0.4 USD mn) has operated under different names since 1967 (it was renamed to Budrol Projekt in 2007). It was basically a design office which could not cope with the competition that switched into using IT based software for designing. Having a valuable asset in the form of an office building located in the centre of Katowice it redefined its operational activity into renting office space.

In 2009–10 100% shares of the company were owned by the State Treasury. Then in 2011 (see: http://prywatyzacja.msp.gov.pl/pr/form/r748,BUDROL-PROJEKT-Katowice-sp-z-oo.html) the privatisation process ended – the company was sold to Marek Błaszczyk. This was the case of indirect (capital) privatisation. The auction took place on 13.01.2011.

We are comparing valuations of the company performed on 30.06.2010 and at the end of 2013. This is preceded by comparing the overall performance of MCB at the advent of privatisation and afterwards. Scheme 4.2.1 presents the testable predictions and the empirical variables. As it can be seen, ROS, ROE, SaPa, APa and FAS significantly grew over the 4 years. The other metrics did not change – mostly due to the fact that all the profit was

reinvested and the company did not report any long term debt. It is worth noticing that employment in the company grew from 7 employees in 2010 to 20 in 2013 and yet SaPa did increase.

Table 4.2.1. Budrol – metrics

Metric	Before (2010)	After (2013)
ROS	–0.16	0.02
ROE	–0.14	1.56
SaPa	2.53	4.41
Apa	1.88	22.20
FAS	0.04	0.10
PB	1.00	1.00
DA	0.00	0.00
DEB	0.00	0.00

Source: own calculations based on Budrol financial statements.

Table 4.2.2 shows the main economic parameters of the company. Positive changes start with revenues and reversing the trend in net profit, but the most spectacular progress can be noticed with regard to the level of fixed assets. Taking into account the company's profile, it must be admitted that the high standard of the offices is one of the key value drivers for the company. The new owners realise that and use the resources they have (they also own a construction company) to renovate the building, its surroundings and the offices themselves in order to be positioned in the group of providers of high quality office space and generate higher revenues in the future. It is a long term strategy which is not fully visible in the financial results of the company yet, but the difference in valuations is already striking. The plan for another 10 years involves demolishing garages and building there another office block.

Profitability of the company has grown enormously. ROE changes from minus 14% to 156% in 2013, and in the latter case it is much higher than the cost of capital (see scheme 4.2.3.), hence EVA becomes positive. However, the dramatic change of ROE is mostly due to the change in the book value of equity (diminished significantly over 2010–2013 period because of covered losses) so its face value does not reflect the whole truth about the profitability of the company.

Table 4.2.2. Budrol – main economic parameters (PLN)

	2009	2013
Assets	634 579	5 098 719
Fixed assets	558 330	4 599 643
Current assets	76 249	499 076
Net profit	–239 609	24 553
Revenues	852 408	1 012 337

Source: own calculations based on Budrol financial statements.

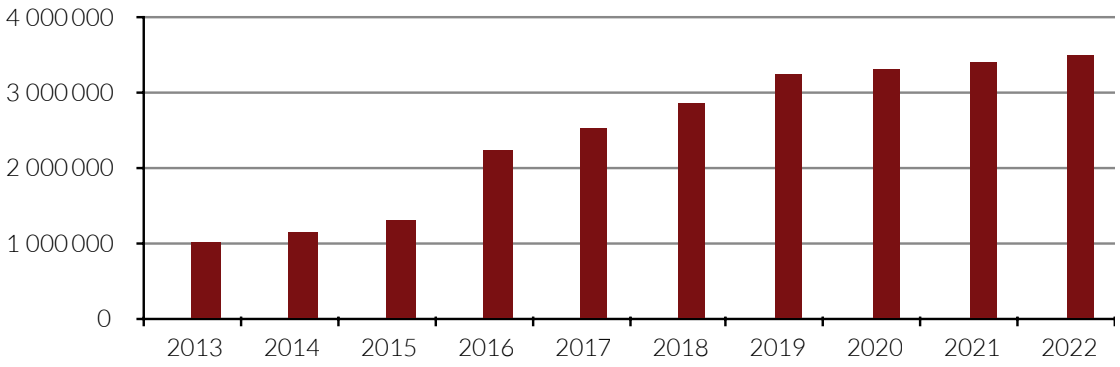
Table 4.2.3. Budrol – cost of capital and EVA

Cost of capital and EVA	2009	2013
WACC	10.95%	10.26%
EVA (%)	-65.68%	116.15%

Source: own calculations based on Budrol financial statements.

The main part of the case study is the comparison of DCF valuations of the company. The starting point for valuations and creating forecast were financial statements from the previous year. Then, the rest of the forecast depends on how many offices and of what standard the company will be able to rent. The company offers office space of 3360 m^2, storage space of 172 m^2, 13 garages and 97 parking places. Since 2011 the company has been modernizing the office block and its adjacent area. This resulted in temporarily lower revenues (in 2012); however it may trigger higher sales at higher prices once the work is finished. The forecast (figure 4.2.1.) predicts such a jump in revenues in 2016. This is also justified by the fact that in 2010 only 50% of the office space was let. The company will also generate additional revenue from modernised parking space and garages.

Figure 4.2.1. Budrol revenues in 2014–22 (forecast)



Source: own calculations.

The cost of capital estimation was based on CAPM model. The risk free rate was 6.17% in 2009 and 4.54% in 2013 (YTM of 10Y T-bonds). The risk premiums (5.9% and 6.28% respectively) were taken after Global *Investment Returns Yearbook* by E. Dimson, P. Marsh and M. Staunton. For betas A.Damodaran's estimations were followed. The betas for

real estate (operations and services) industry were 0.81 in 2010 and 0.91 in 2013. There was no need to deleverage the beta since the company did not use any long term debt. Finally the cost of capital was 10.95% and 10.26% respectively.

Once we have pro forma financial statements of the company, then free cash flows can be calculated. The valuation was done with the use of two techniques: FTE (flow to equity) using equity cash flows (ECF) and FTF (flow to firm) using firm cash flow (FCF). Finally the engine was fed with the date (free cash flows) and cost of capital. The triggered iteration processes generate the final value of the company. Both engines are shown on Tables 4.2.4–5.

Table 4.2.4. Budrol i -DCF engine (2010)

YEAR	30.06.2010	2010	2011	2012	2013	2014	2015	2016	2017	2018
ECF		5 868	168 272	179 777	137 372	140 651	145 824	152 697	171 091	193 669
D	0	0	0	0	0	0	0	0	0	0
E	2222532	2335187	2422619	2508118	2645385	2794404	2954567	3081077	3201148	3233159
kD	7,74%	7,74%	8,61%	9,26%	9,26%	9,26%	9,67%	9,67%	9,67%	
kE	10,95%	10,95%	10,95%	10,95%	10,95%	10,95%	9,45%	9,45%	7,05%	
ku	10,95%	10,95%	10,95%	10,95%	10,95%	10,95%	9,45%	9,45%	7,05%	
Tax	19%									

g	1,0%									
V(FTE)	2222532									
FCF		5 209	164 770	173 240	130 227	132 938	137 504	143 706	161 176	182 514
E	2103143	2210090	2287325	2364547	2493238	2633310	2784153	2903549	3016759	3046926
kE	10,95%	10,95%	10,95%	10,95%	10,95%	10,95%	9,45%	9,45%	7,05%	
ku	10,95%	10,95%	10,95%	10,95%	10,95%	10,95%	9,45%	9,45%	7,05%	
WACC	10,95%	10,95%	10,95%	10,95%	10,95%	10,95%	9,45%	9,45%	7,05%	
V(FTF)	2103143	2210090	2287325	2364547	2493238	2633310	2784153	2903549	3016759	3046926

Table 4.2.5. Budrol i -DCF engine

YEAR	31.12.2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
ECF		11 609	31 277	177 319	214 411	304 410	411 625	403 935	385 926	395 996
D	0	0	0	0	0	0	0	0	0	0
E	4593759	5053470	5540679	5931834	6326029	6670670	6943456	7147768	7387986	7461866
kD	6,28%	7,74%	8,25%	7,32%	8,02%	8,02%	7,38%	7,38%	7,38%	
kE	10,26%	10,26%	10,26%	10,26%	10,26%	10,26%	8,76%	8,76%	6,36%	
ku	10,26%	10,26%	10,26%	10,26%	10,26%	10,26%	8,76%	8,76%	6,36%	
Tax	19%									
g	1,0%									
V(FTE)	4593759									
FCF		5 276	17 577	140 632	165 318	236 626	323 381	375 587	384 977	394 601
E	4618380	4844243	5323686	5729264	6151769	6546314	6894585	7122964	7361959	7435578
kE	10,26%	10,26%	10,26%	10,26%	10,26%	10,26%	8,76%	8,76%	6,36%	
ku	10,26%	10,26%	10,26%	10,26%	10,26%	10,26%	8,76%	8,76%	6,36%	
WACC	10,26%	10,26%	10,26%	10,26%	10,26%	10,26%	8,76%	8,76%	6,36%	
V(FTF)	4618380	4844243	5323686	5729264	6151769	6546314	6894585	7122964	7361959	7435578

Source: own calculations based on Budrol valuation.

The final DCF values of equity were 2.22 mn in the middle of 2010 and 4.61 mn at the end of 2013. However, in real terms (taking into account inflation rates in 2010–2013 (3.1% in 2010, 4.6% in 2011, 2.4% in 2012 and 0.7% in 2013); the latter value is actually 4.21 mn. However, it is important to note that the company was sold at 5.25 mn PLN. The difference is due to the selection of methods used for the valuation (asset based method weighted much more). Still, the result of 2013 valuation proves that also income-wise the selling price was justified.

The analysis shows significant growth of the company's value. The company became more profitable. It increased employment, but the relation of revenues to payroll (SaPa) was also increased. The company started investments financed fully by the new owner. The progress is evident; the 2013 valuation of the company is 107.6% higher, and the 5 metrics used to measure profitability, operating performance, and CAPEX investments experienced significant growth. The company has potential to grow. It is perfectly located, has been modernized to offer high standard offices, and have a dedicated owner and staff.

4.3. Case study CN Kielce

CN (Kieleckie Przedsiębiorstwo Nasienne "Centrala Nasienna" w Kielcach Sp. z o.o.) has operated under different legal forms since 1955 (it was SOE that was commercialised in 2001 and privatised in 2011). The company (company size proxied by its revenues – 13 USD mn still focuses on the wholesale and retail sale of seed and propagating material of agricultural species. In 2009–10 100% shares of the company were owned by the State Treasury. In 2011 the privatisation process ended – the company was sold to Skłodowski Spółka Jawna, Zaręby Kościelne. This was the case of indirect (capital) privatisation. The auction took place on 18.08.2011.

We are comparing valuations of the company performed on 30.06.2010 and at the end of 2013. This is preceded by comparing the overall pre- and post-privatisation performance of CN Kielce. Table 4.3.1.presents the testable predictions and the empirical variables. As it can be seen, ROS, ROE, SaPa, APa significantly grew over the 4 years. PB, DA and DEB did not change – due to the fact that all the profit was reinvested and the company did not report any long term debt.

Table 4.3.1. CN – metrics

Metric	Before (2009)	After (2013)
ROS	–0.0045	0.0005
ROE	–0.0160	0.0042
SaPa	11.4705	31.2387
Apa	4.0296	9.6172
FAS	0.0063	0.0035
PB	1.0000	1.0000
DA	0.0000	0.0000
DEB	0.0000	0.0000

Source: own calculations based on CN financial statements.

Table 4.3.2 shows the main economic parameters of the company. The most spectacular progress can be noticed with regard to revenues – over 150% growth. It can be clearly seen that new owners discovered huge potential hidden in underutilised local branches of the company. Once renovated, they started generating revenues that doubled the ones obtained in 2009 and 2010. Current assets growth is simply a consequence. Net profit remains very modest, although the trend has been reversed. Profitability of the company has grown slightly, but both ROE and ROS remain at very low levels, well below the cost of capital, hence EVA remains negative.

Table 4.3.2. CN – main economic parameters (PLN)

	2009	2013
Assets	5 544 053	12 239 585
Fixed assets	895 553	953 068
Current assets	4 648 500	11 286 516
Net profit	–70 786	20 770
Revenues	15 781 613	39 756 815

Source: own calculations based on CN financial statements.

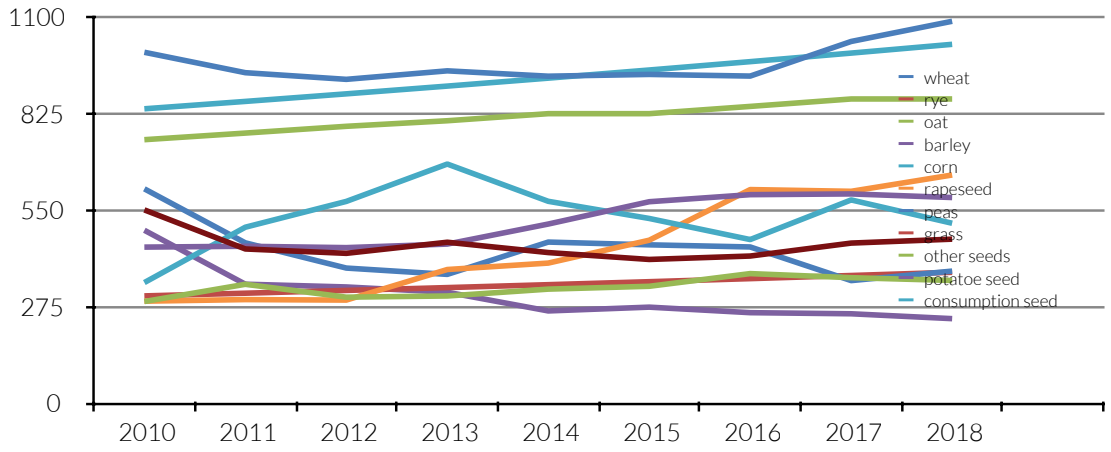
Table 4.3.3. CN – cost of capital and EVA

Cost of capital and EVA	2009	2013
WACC	9.11%	10.11%
EVA (%)	–11.18%	–11.15%

Source: own calculations based on CN financial statements.

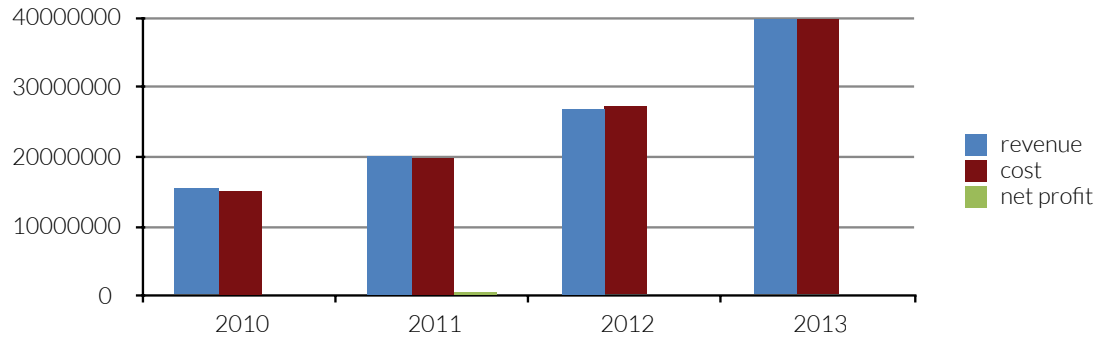
The main part of the case study is the comparison of DCF valuations of the company. The starting point for valuations and creating forecast were financial statements from the previous year. The revenue structure of CN Kielce is relatively stable. It is presented on figure 4.3.1. The company plans to focus on revenue growth via further development of local branches (Busko, Pińczów, Klemencice, Książ Wielki, Słupia Pacanowska) and shops (Busko, Działoszyce, Pińczów, Pacanów). The company operates in the sector that is supported by Common Agricultural Policy and specific activities by the Ministry of Agriculture focused on subsidizing good quality seeds. The main clients are farmers possessing 15–30 ha land. The company is planning to activate new sales channels – shopping malls specializing in gardening, agriculture and related areas. The revenue forecasts were based on the cropped areas for specific seeds and are shown on scheme 4.3.4. (see: http://epp.eurostat.ec.europa.eu/portal/page/portal/agriculture/data/database). The total revenue was to grow from PLN 17.5 mn. However, after privatisation the company experienced almost exponential increase in revenue (see. scheme 4.3.2.). The forecasts were based on the same premises as before. Further growth was assumed but its dynamic is much more stable than in the 2010–2013.

Figure 4.3.1. CN – revenue forecasts in 2010



Source: own calculations based on Eurostat data.

Figure 4.3.2. CN – revenues vs. costs in 2010–2013



Source: own calculations based on CN financial statements.

Table 4.3.4. CN – revenue structure in 2013

		VALUE (THOUSANDS PLN)	REVENUE STRUCTURE (%)
I	certified seed	14583	36.82%
II	seed potatoes	882	2.23%
III	grain	624	1.58%
IV	other goods	1653	4.17%
V	pesticides	1350	3.41%
VI	coal	2397	6.05%
VII	fertilisers	18996	47.97%
	total	39602	100.00%

Source: own calculations based on CN reports.

Table 4.3.5. CN i -DCF engine 2010

YEAR	30.06.2010	2010	2011	2012	2013	2014	2015	2016	2017	2018
ECF		-898 024	304 174	267 708	302 946	295 382	421 910	418 520	442 096	433 322
D	0	0	0	0	0	0	0	0	0	0
E	6856048	8079223	8158210	8646199	9218036	9810162	10467347	10904806	11381571	11600744
kD	7,74%	8,61%	8,61%	9,26%	9,26%	9,26%	9,67%	9,67%	9,67%	
kE	9,71%	9,71%	9,71%	9,71%	9,71%	9,71%	8,21%	8,21%	5,81%	
ku	9,71%	9,71%	9,71%	9,71%	9,71%	9,71%	8,21%	8,21%	5,81%	
g	2,0%									
V(FTE)	6856048									
FCF		-903 758	303 776	272 370	307 979	301 911	426 266	426 166	450 430	443 232
E	6730720	7953685	8422212	8967639	9530418	10153910	10713589	11167009	11633390	11866058
kE	9,71%	9,71%	9,71%	9,71%	9,71%	9,71%	8,21%	8,21%	5,81%	
ku	9,71%	9,71%	9,71%	9,71%	9,71%	9,71%	8,21%	8,21%	5,81%	
WACC	9,71%	9,71%	9,71%	9,71%	9,71%	9,71%	8,21%	8,21%	5,81%	
V(FTF)	6730720	7953685	8422212	8967639	9530418	10153910	10713589	11167009	11633390	11866058

Table 4.3.6. CN i -DCF engine 2013

Year	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
ECF		4 520 310	-415 375	-354 881	-295 201	-162 022	153 360	698 584	702 321	718 367
D	1748313	3042389	2554404	1864578	1079251	340957	0	0	0	0
E	12 028 281	13244292	10060673	11493894	12991135	14572507	16173035	17371742	18125435	18503390
kD	7,74%	8,61%	8,61%	9,26%	9,26%	9,26%	9,67%	9,67%	9,67%	
kE	10,11%	10,09%	10,12%	9,94%	9,90%	9,87%	8,36%	8,36%	5,96%	
ku	9,86%	9,86%	9,86%	9,86%	9,86%	9,86%	8,36%	8,36%	5,96%	
g	2,0%									
V(FTE)	13776594									
FCF		3 338 179	259 807	465 240	571 373	602 160	488 327	691 503	698 779	716 248
E	13 144 255	9214357	10595805	12071048	13626162	15194205	16574535	17271149	18018829	18379205
kE	10,11%	10,21%	10,12%	9,95%	9,91%	9,89%	8,38%	8,38%	5,98%	
ku	9,88%	9,88%	9,88%	9,88%	9,88%	9,88%	8,38%	8,38%	5,98%	
WACC	9,65%	9,41%	9,51%	9,62%	9,74%	9,83%	8,38%	8,38%	5,98%	
V(FTF)	14892568	12256746	13150210	13935626	14705412	15535162	16574535	17271149	18018829	18379205

The cost of capital estimation was based on CAPM model. The cost of equity was 9.71% and 10.11% in 2010 and 2013 respectively. Once we have pro forma financial

statements of the company, then free cash flows can be calculated. The valuation was conducted with the use of two techniques: FTE (flow to equity) using equity cash flows (ECF) and FTF (flow to firm) using firm cash flow (FCF). Finally the engine was fed with the date (free cash flows) and cost of capital. The triggered iteration processes generate the final value of the company. Both engines are shown on schemes 4.3.7–8. The final DCF values of equity were 6.86 mn in the middle of 2010 and 12.03 mn at the end of 2013. It is important to note that the company was sold (after a series of unsuccessful auctions) at PLN 3.61 mn.

The analysis shows significant growth of the company's value. The company's revenue skyrocketed, CN increased employment, the relation of revenues to payroll (SaPa) and assets to payroll increased and the company became profitable, although still well below the cost of capital. The progress is evident; the 2013 valuation of the company is 75% higher, and the 2 metrics used to measure operating performance experienced outstanding growth. The others did not change or the change was insignificant.

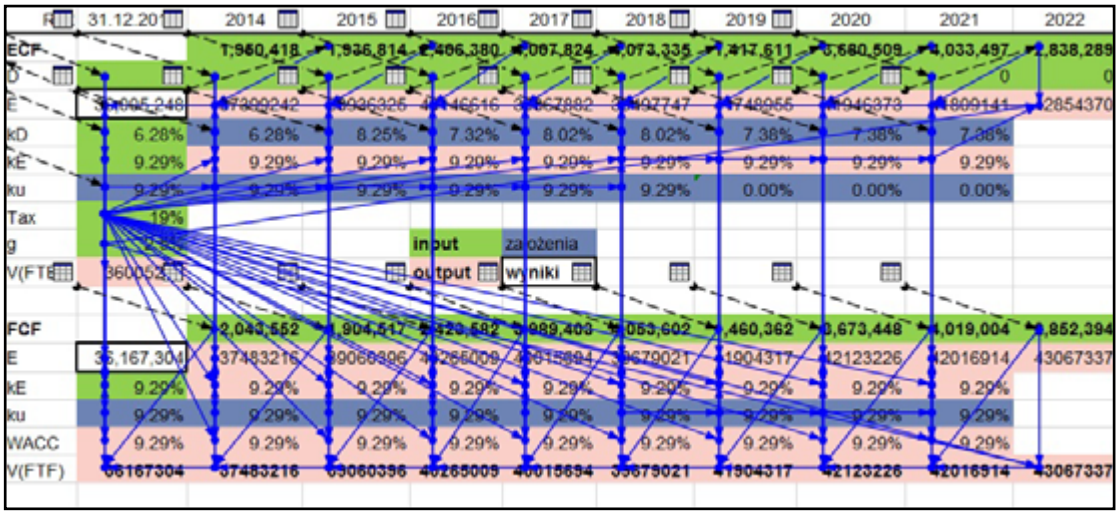
4.4. Case study summaries

Technical Summary

Valuations of the three companies were done with the use of i -DCF model. The model was successfully implemented and generated credible valuations. However, here is a handful of technical comments that may help understand some obstacles that were faced and teach lessons from applying the model in the context of the companies.

The modeling was done in the spreadsheet environment. It was also supported with programming tools – a few macro codes written with Visual Basic Analysis programme. The model consisted of 4 parts: pro forma financial statements, free cash flows, cost of capital, engine. All the parts were closely linked. The most iterations worked in the engine section. It is shown in the figure below. The engine comes from MCB 2013 valuation. One can see plenty of loops that run between formulas and enable creating a coherent valuation model. The model is most effective when a company uses debt, since this creates a changing capital structure, which influences the company's cost of capital. Then, thanks to iterations, the cost of capital tracks the capital structure and adjusts accordingly, which eventually is reflected in the final valuation.

Figure 4.4.1. Loops in the engine



Forecasting is essential and the most subjective part of each income-based valuation method. Creating assumptions for the forecasts needs to be done cautiously. We referred to the company's official documents (strategic plans), historical data and industry experts' to make sure the financial projections are realistic. The critical assumption variables were verified via sensitivity analysis in order to confirm credibility of the assumptions.

The cost of capital estimations are the part of the valuation that could also be prone to manipulation. To avoid that we consistently used the same sources for beta and country risk premiums estimations (http://pages.stern.nyu.edu/~adamodar/) and adhered to using 10Y T- bonds when looking for risk free rates.

The modeling was then highly integrated. The advantage of such approach is that at each stage of the valuation one can fully control the process. The process is not linear, ending one stage never means that this stage is terminated. Hence, at each stage the mistakes are easy to spot.

Non Technical Summary

The analysis was performed with the use of the same metrics as explained in chapter 2, but then it followed with the comparison of pre- and post privatisation valuations. The scheme 4.4.1 presents the valuation results. In each case the A valuation (A stand for after privatisation valuation) exceeds the B valuation, which is a proof of successful transformation of the companies. The transformation had its origin in ownership changes. The analysis performed with the use of 8 metrics also confirms the main hypothesis.

The three case studies yield remarkably consistent findings regarding the impact of privatisation on firm profitability, efficiency and capital investment. Profitability, defined as net income divided by sales increased from an average value of 9.51 percent before privatisation to 13.38 percent afterwards (the values for Budrol and CN were ignored due to initial negative values of ROS). Efficiency, defined as sales per payroll (SaPa) and assets per payroll (APa), increases from an average level of 5.92 during the pre-privatisation period to 13.76 during the post-privatisation period and from 3.87 to 13.85 accordingly. This underlines a huge 132% (SaPa) and 257% (APa) productivity leap for all the analysed companies. On average, capital spending (measured as capital investment to sales) rose from 4.93% to 7.19%. However, there is a slight decline in plow-back ratio (from 0.83 to 0.73) and no change in terms of the two remaining metrics: DA and DEB. This is consistent with the outcomes of the research done on the sample of 59 companies. The case studies findings are also consistent with the analysis of 59 companies in terms of SaPa, APa and FAS. The results diverge in the case of profitability. The three analysed companies experienced radical profitability improvement, whereas ROS and ROE of the sample of 59 companies did not improve.

All the three companies have higher values after the privatisation and also perform better in the 3 areas out of 5 that were analysed. The valuations done in the post-privatisation period are on average 64% higher from those performed before privatisation.

Table 4.4.1. Valuation results

Company / location	Valuation B (mn PLN)	Valuation A (mn PLN)	Change (%)
MCB Rzeszów	36.77	40.08	9%
Budrol Projekt Katowice	2.22	4.61	108%
CN Kielce	6.86	12.03	75%

Source: summary based on previous schemes.

5. Conclusions

The assessment of 2008–2011 privatisation programme is relatively positive. On March 31, 2008 the Ministry of Treasury controlled 1237 enterprises from various industries. The number included 350 companies in liquidation, close to bankruptcy or inactive enterprises and 887 active firms. The 2008–2011 privatisation plan assumed that 740 enterprises would be privatised[14]. The outcome of the plan implementation was 582 privatised companies[15], which is 78.64% of the initial plan. The Polish government assumed privatisation' revenue at the level of 54 billion PLN. Global financial situation and some privatisation problems allowed reaching 44.02 billion PLN level, which was 81% of the planned value (Ministerstwo Skarbu Państwa 2012a). As mentioned before, privatisation was not entirely completed during the programme implementation, especially concerning large state owned companies that were privatised through IPO, in which the state still holds majority or minority stocks and exercises corporate control. This is an effect of slowing down the process in its last stage and in consecutive years and partial withdrawal by the governing party from ambitious objectives of the programme, under different political pressures. Essentially, plenty of work has been done but a significant effort is still needed to complete this work, if such decision would be taken. Hence, the question whether 'privatisation matters' is crucial for the future policies.

Following such considerations, the primary objective of this research was to determine whether companies that were subject of privatisation in 2008–2011 and were successfully privatised, improved their operating performance after privatisation. This was conducted in two steps:

The outcomes of the first part of the research (concerning the sample of 59 companies) are ambiguous: four hypotheses were confirmed but the other four were rejected. The analyses show that, contrary to the hypothesis, privatised firms do not exhibit improvement

14 The data come from an internal document of the Ministry of Treasury entitled: *Lista planowanych projektów prywatyzacyjnych na lata 2008–2011* (*List of planned privatisation projects for 2008–2011*). In 2009, the number of enterprises dedicated for privatization has been increased to 802)

15 339 from them have been entirely privatized until the end of 2012, the remaining group was in the process of privatisation (Ministerstwo Skarbu 2013).

in the performance with regard to profitability relative to the period before privatisation. However, the actions initiated by privatised companies seem to go the right direction: employment adjustments increased investment, changed capital structure. Besides, it is worth mentioning that the analyses were performed roughly in 3 years after the privatisation, which may seem slightly premature and calls for another round of research after another 3 years. It is worth noting that, as Bałtowski (2003) and Bałtowski, Kozarzewski (2014) write, in case of public companies the period in which the companies adjust to new market environment or reject the burden of the past ownership lasts at least 3 years. It should be also noted that the process of their adjustment coincided with the presence of the world economic crisis that had some impact on the Polish economy.

The above results called for a further and deeper analysis. This was done in the last part of the research *via* case study of three privatised companies. The analysis was performed with the use of the same metrics as explained in chapter 2, but then it followed with the comparison of pre- and post privatisation valuations. The three case studies yield remarkably consistent findings regarding the impact of privatisation on firm profitability, efficiency and capital investment. The case studies findings are also consistent with the analysis of 59 companies, except for profitability, where, in contrast with the 59 companies, the three analysed companies experienced radical improvement. All the three companies have higher values after the privatisation.

It is worth emphasising that, in terms of methodology, we have proven that companies in the post-privatisation period perform better and have higher valuations than before (pre- privatisation period), which is important from the point of view of their competitiveness and the performance of the entire economy The research conveys the fundamental message to policy makers that privatisation not only generates revenues for the state budget but 'privatisation works' in microeconomic sense – most of the companies perform better than before,, hence the process is worth continuing.

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