MEAN-REVERSION OF NET PROFITABILITY AMONG POLISH PUBLIC COMPANIES

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ABSTRACT

Abundant research shows that the feature of corporate financial results is the long-term reversion toward the levels average for the whole economy. In the case of earnings this means that companies which in a given year show above-average profitability in the following periods express the tendency to show decreasing profitability and companies which in a given year show below-average profitability in the following periods express the tendency to show increasing profitability. However, the research related to the existence of this phenomenon in the case of emerging economies is scarce so far. Therefore, we explore the reversion toward the mean of the net profitability of companies listed on the Warsaw Stock Exchange in the period of 2000-2009 years. We tested the hypothesis that the companies with above-average / below-average net profitability in any year tend to experience the significant decrease / increase of this relative profitability in the following years. The research confirmed the strong tendency of net profitability to revert toward the economy-wide mean. However, according to our estimates, the process of total reversion to the mean takes about 8-9 years in the case of Polish public companies' net-profitability.

JEL: M41, G30

KEYWORDS: mean-reversion of earnings, corporate profitability, forecasting earnings

INTRODUCTION

This paper addresses the issue of mean-reversion in the case of corporate net profitability. The mean-reversion of corporate financial results implies long-term convergence of those results. The phenomenon means that "outstanding companies" (i.e. reporting distinctive features like fast sales growth, above-average profitability, etc.) tend to lose this distinction over time and the "market laggards" (i.e. companies with losses, declines in market shares, etc.) tend to improve over time. The presence of this mean-reversion is very important from the analytical point of view. This is so because in credit-risk analysis or equity valuation (but also in performance analysis, planning capital expenditures or making strategic decisions within organizations) one should be skeptical about long-term earnings projections based on assumption of maintaining above-average growth or above-average profitability far into the future. Moreover, when forming investment strategies it can be worth considering including in the portfolio some number of "laggards" (e.g. companies with currently negative earnings) because the odds are that they will positively surprise in the future.

The empirical research generally confirms that corporate financial results (measured e.g. by sales growth, profitability, earnings growth, indebtedness, etc.) are characterized by the long-term reversion toward the levels average for the whole economy (we provide the literature review of the issue in the next section). In the case of earnings this means that companies which in a given year show above-average profitability in the following periods express the tendency to show decreasing profitability and companies which in a given year show below-average profitability in the following periods express the tendency to show increasing profitability. However, the equity analysts seem to be completely unaware of this phenomenon and they are stubborn in repeatedly overvaluing so-called "growth stocks". Montier (2009) states that in the USA in 1985-2007 period "growth stocks" were expected (by analysts) to grow its future earnings by around 17% per annum on average (compared to the average growth rate of 16% in the prior five years) but the actual delivered future growth of those companies' earnings was only 7% per annum on average.

Similarly in Europe, in 1985-2007 growth stocks were expected to increase earnings by 16% per annum on average (compared to the historical average growth of 17%) but the actual future growth delivered was only about 5% per annum.

Knowledge about mean-reversion of corporate financial results is very important and can be very helpful in making valuations and credit-risk analyses. Although there is plenty of research regarding this issue on developed markets, the phenomenon is generally unexplored in the case of emerging markets. Given many structural and institutional differences that exist between developed and emerging economies (e.g. in terms of the scope of market regulations or presence of monopolistic behaviors) there can be significant dissimilarities in the extent to which corporate earnings in these economies are reverting toward the mean. Due to the scarcity of the research examining mean-reversion in emerging markets this paper explores this phenomenon in the case of net profitability of companies listed on the Warsaw Stock Exchange in 2000-2009 years.

The remainder of the paper is organized as follows. In the next section we discuss the relevant literature. Next the data and methodology used in the study are described. Then the section that presents the empirical results follows. The paper closes with concluding comments.

LITERATURE REVIEW

Forecasting corporate earnings constitutes an essential element of most models of corporate financial analysis and valuation (Moyer, McGuigan, Kretlow, 1995; Penman, 2007; DePamphilis, 2008). Analysts, when making forecasts, usually exploit a wide range of available information concerning the company under investigation (e.g. planned marketing activities, sales breakdown, employment, fixed-assets investment, etc.) as well as its economic environment (e.g. business climate, competitors' behavior, customer' preferences, exchange rates, etc.). The second approach to forecasting earnings exploits solely corporate historical financial results and creates predictions using mechanical methods (e.g. autoregressions) and/or with the use of the knowledge of general time-series properties of corporate financial results. Despite the use of wide range of information, the quality of analysts' forecasts is controversial and the research on analysts' forecasts relative accuracy is mixed. Some research, conducted for the companies listed on American stock exchanges, points to the superiority (as regards accuracy) of analysts' forecasts over mechanical predictions (White, Sondhi, Fried, 2003; Brown, Lawrence, 1996; Chatfield, Moyer, Sisneros, 1989), but other research indicates a higher accuracy of simple (in some cases even naïve) forecasting methods in comparison with analysts' predictions (Dreman, 1998; Malkiel, 2007). Other research points to the analysts' superiority in forecasting with one- to two-quarter horizon, comparable accuracy in three-quarter horizon and the superiority of mechanical methods in the longer horizons (O'Brien, 1988; Rothovius, 2008).

Given the fact that in the case of long-term earnings predictions the analysts and their detailed forecasting approaches seem to be no significantly better than simple mechanical methods, knowing long-term properties of corporate financial results can be extremely helpful in forecasting these results. Abundant research shows that the characteristic feature of corporate financial results (measured by e.g. sales growth, profitability, etc.) is a long-term reversion of those results toward the economy-wide average levels (Fama, French, 1999; Hwang, Keil, Smith, 2004; Bajaj, Denis, Sarin, 2003; Murstein, 2003). One research found that from 1960 through 1999 only eight of the largest 150 companies on the "Fortune 500" list managed to increase their earnings by an annual average of at least 15% for two decades (Loomis, 2001). The other research, based on five decades of data, showed that only 10% of large U.S. companies had increased their earnings by 20% for at least five consecutive years, only 3% had grown by 20% for at least 10 years straight, and not a single one had done it for 15 years in a row (Zweig, 2001). This means that maintaining above-average pace of corporate earnings growth is extremely difficult in the long term. The partial cause of this mean-reversion of earnings is the mean-reversion of corporate profitability (i.e.

ratio of net earnings to revenues or to total assets or to shareholder's equity). This means that the companies that in a given period show above-average (below-average) profitability in the following periods express the tendency to experience decrease (increase) of this relative (i.e. compared to the wide-economy average) profitability. Palepu, Healy and Bernard confirm this on the ground of the American data, stating that "firms with abnormally high (low) ROE (i.e. return on equity) tend to experience earnings declines (increases)" (Palepu, Healy, Bernard, 2004). Nissim and Penman also state that firms with high current core return on assets tend to have declining profitability in the future and firms with low return on assets tend to have increasing profitability in the future (Nissim, Penman, 2001).

However, despite its high importance for earnings forecasting, reversion toward the mean seems to be neglected or even unknown by most financial analysts. One research found that the consequence of this neglect is the fact that the most optimistic and most pessimistic earnings forecasts are usually too optimistic and too pessimistic and the forecasts' accuracy can be improved by shrinking them toward the mean (Hwang, Keil, Smith, 2004). This is strongly confirmed by other research, made on the basis of data covering 1985-2007 years, according to which analysts expect U.S. growth companies to increase earnings in the future by about 17% per annum on average (against 16% per annum on average in the past), while the actual delivered growth averages only about 7% per annum (Montier, 2009). Similar findings were obtained for European public companies, in which case analysts expect the growth stocks to deliver around 16% p.a. (close to the historical performance of 17% p.a.), while the actual delivered earnings growth averages around 5% p.a. over the long term.

In the previous research, we examined the presence of mean-reversion in the case of the sales growth of Polish public companies (Welc, 2010). That research strongly confirmed the tendency of corporate sales growth to revert toward the mean (within 3 to 4 years). However, the hypothesis of mean-reversion of Polish companies' profitability has not been tested so far. Therefore in this paper we explore the long-term properties of net profitability (measured as the ratio of net earnings to revenues) of the companies listed on the Warsaw Stock Exchange.

DATA AND METHODOLOGY

In the research, we used the data concerning yearly net profitability of companies listed on the Warsaw Stock Exchange. We obtained the historical financial results from *Notoria Serwis* database. In the sample, we included the companies for which all the necessary data were available. Due to significant accounting differences, we omitted all the financial companies (mostly banking and insurance corporations) as well as The National Investment Funds. The analysis comprised the period between the 2000 and 2009 (we omitted the earlier periods due to quite a small number of then listed companies). The only analyzed variable was the corporate net profitability defined as follows:

$$NP_t = \frac{E_t}{NS_t}, \tag{1}$$

where:

NP_t - net profitability of a given company in year t,

E_t - net earnings of a given company in year t,

NS_t - net sales of a given company in year t.

We present the summary statistics of the data used in the table below.

Table 1: Summary Statistics Computed for Net Profitability* in the Analyzed Samples

Year	Number of observations	Arithmetic average	Median	Standard deviation**
2000	151	-3.2%	1.9%	33.0
2001	163	-4.8%	0.5%	28.9
2002	215	-3.7%	1.1%	35.8
2003	241	-1.2%	2.1%	29.8
2004	339	4.2%	4.0%	14.9
2005	348	5.5%	4.6%	30.2
2006	345	-0.2%	5.1%	128.2
2007	354	6.2%	5.9%	46.7
2008	342	-6.3%	3.0%	115.4
2009	334	-11.4%	1.9%	70.5

*This table shows the summary statistics computed for net profitability of companies listed on the Warsaw Stock Exchange. * net profitability as defined by equation (1) ** in percentage points. Source: Notoria Serwis; author's calculations.*

We divided the whole sample under investigation into five moving sub-samples (each sub-sample comprised six years). The first sub-sample embraced the period between 2000 and 2005, the second one embraced 2001-2006 period, etc. The last sub-sample embraced the period between 2004 and 2009. In each of the sub-samples, we visually analyzed the reversion toward the mean of the corporate net profitability.

In the case of the first sub-sample, we sorted all the companies under investigation in order of decreasing profitability in the 2000. Then we normalized the net profitability data computed for the individual companies with the following formula:

$$NNP_t^i = NP_t^i - MedianNP_t^n, \qquad (2)$$

where:

NNP_t^i - normalized net profitability of *i*-th company in year *t*,

NP_t^i - net profitability of *i*-th company in year *t* (as defined by formula 1),

$Median\, NP_t^n$ - median net profitability of all *n* companies in year *t*,

n – number of companies included in the sample in year *t*.

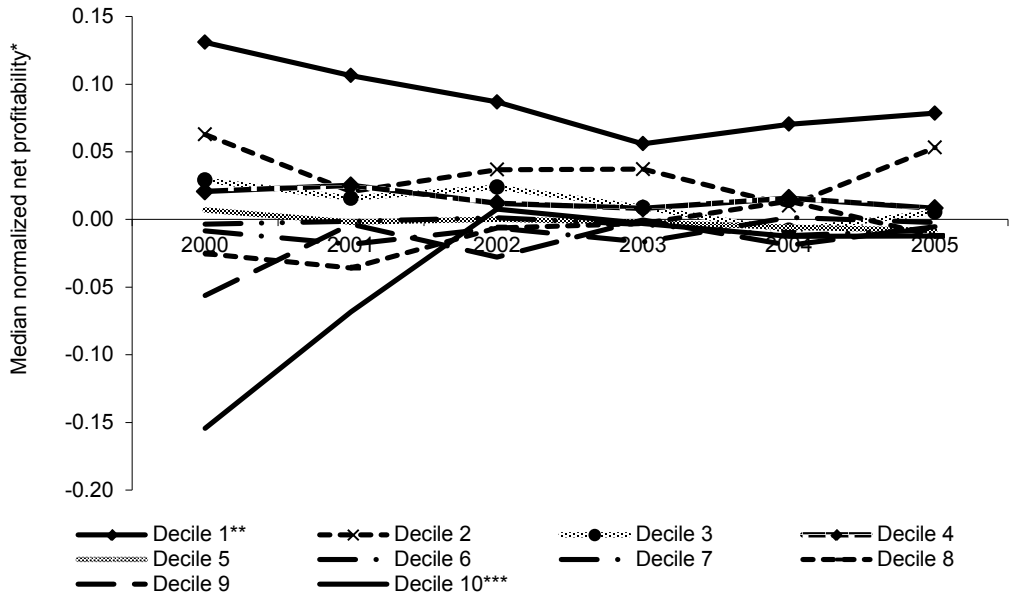
Then we divided the sorted companies into ten deciles so that the first decile embraced 10% of companies with the highest net profitability in 2000 and the last decile embraced 10% of companies with the lowest net profitability in 2000. Because it is not always possible to divide total number of observations equally into ten deciles, we omitted from the computations the proper number of the observations with the lowest profitability. For each of the deciles constructed in this way we computed the median normalized net profitability in 2000. Then we computed the median normalized net profitability in the following five years for the same deciles. We made analogous computations for the remaining four sub-samples (comprising 2001-2006, 2002-2007, 2003-2008 and 2004-2009 sub-periods). Then we averaged the results obtained in all the sub-samples.

The methodology described above enabled visual inspection of the mean-reversion of the corporate net profitability. It enabled observation of the path and the pace of the decrease / increase of the median profitability in the deciles with the highest / lowest initial net profitability.

THE RESULTS

Figure 1 presents the phenomenon of reversion toward the mean in the case of normalized net profitability in the first sub-sample (comprising 2000-2005 years). The figure shows the medians of normalized net profitability in ten deciles formed on the ground of the data for 2000 year. As can be seen, there was the tendency of reversion toward the mean of normalized net profitability in the period under investigation (especially in the case of the two extreme deciles).

Figure 1: Medians of Normalized Net Profitability* in Ten Deciles in 2000-2005 Sub-Sample



*This figure presents the relative net profitability in ten deciles of companies listed on the Warsaw Stock Exchange in 2000-2005 years. * normalized net profitability was computed as the difference (in percentage points) between net profitability of a given company and the median net profitability among all the listed companies in the same period ** 10% of companies with the highest net profitability in 2000 *** 10% of companies with the lowest net profitability in 2000 The year for which the initial sort of all the companies is made is 2000. Source: Notoria Serwis; author's calculations.*

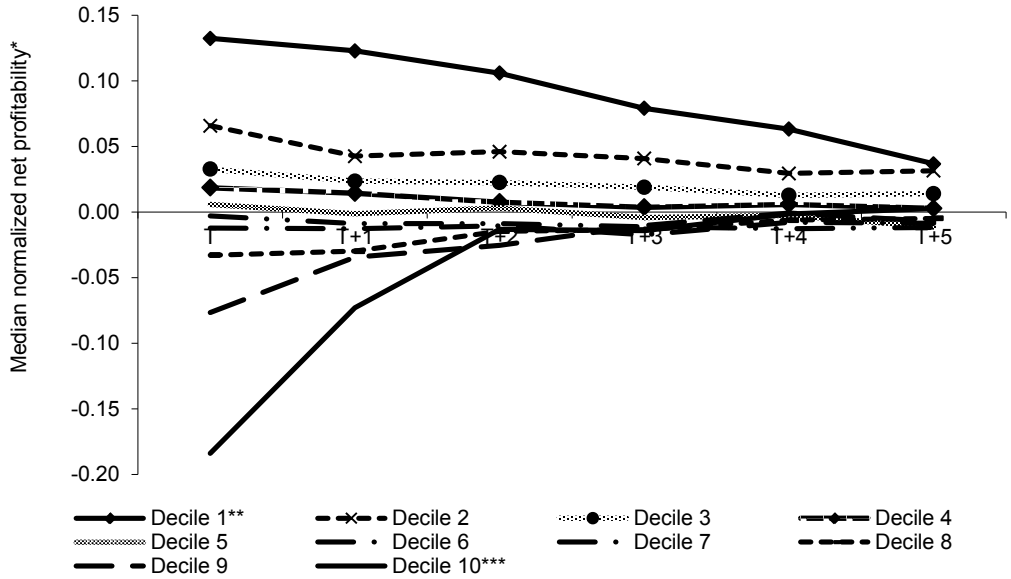
We conducted analogous computations for the remaining sub-samples, but due to the space limitations, we do not present the detailed results for the individual sub-samples here. However, in the Table 2 as well as on the Figure 2 we present the averages obtained for all five sub-samples.

Table 2: Averaged* Medians of Normalized Net Profitability in Ten Deciles of Companies in All Five Sub-Samples

Deciles	Period** T	T+1	T+2	T+3	T+4	T+5
Decile 1***	0.13	0.12	0.11	0.08	0.06	0.04
Decile 2	0.07	0.04	0.05	0.04	0.03	0.03
Decile 3	0.03	0.02	0.02	0.02	0.01	0.01
Decile 4	0.02	0.01	0.01	0.00	0.01	0.00
Decile 5	0.01	0.00	0.00	0.00	0.00	-0.01
Decile 6	0.00	-0.01	-0.01	-0.01	-0.01	-0.01
Decile 7	-0.01	-0.01	-0.01	-0.02	-0.01	-0.01
Decile 8	-0.03	-0.03	-0.01	-0.01	-0.01	0.00
Decile 9	-0.08	-0.03	-0.03	-0.01	0.00	-0.01
Decile 10****	-0.18	-0.07	-0.01	-0.01	0.00	0.00

This table shows the averaged relative net profitability in ten deciles of companies listed on the Warsaw Stock Exchange in 2000-2009 years. each number in the table is the arithmetic average from the five values taken from the five sub-samples for a respective decile and for the respective period** T means initial period (year in which we sorted the companies and divided into ten deciles); periods from T+1 to T+5 are the following years*** 10% of companies with the highest net profitability in initial period (i.e. in year T) **** 10% of companies with the lowest net profitability in initial period (i.e. in year T) Source: Notoria Serwis; author's calculations.*

Figure 2: Averaged* Medians of Normalized Net Profitability in Ten Deciles of Companies in All Five Sub-Samples



*This figure shows the averaged relative net profitability in ten deciles of companies listed on the Warsa.w Stock Exchange in 2000-2009 years. * each number on the figure is the arithmetic average from the five values taken from the five sub-samples for a respective decile and for the respective period. ** 10% of companies with the highest net profitability in initial period (i.e. in year T). *** 10% of companies with the lowest net profitability in initial period (i.e. in year T).Source: Notoria Serwis; author's calculations.*

The data shown in Table 2 and on Figure 2 present the averaged numbers for all five sub-samples. For example, the value for the first decile in year T (equaling 0.13), where T is the year for which the initial sort of all the companies is made, constitutes the arithmetic average of the five values of medians of normalized net profitability obtained for the first decile in the first year of all five sub-samples. This number (equaling 0.13) means that the median net profitability in the group of 10% of companies with the highest profitability in any given year is on average about 13 percentage points higher than the median net profitability in the group of all the companies listed on the Warsaw Stock Exchange in the same year. Analogously, the value for the first decile in period T+1 (equaling 0.12), where T+1 is the year following the year for which the initial sort of all the companies is made, constitutes the arithmetic average of the five values of medians of normalized net profitability obtained for the first decile in the second years of all five sub-samples. This number (equaling 0.12) means that the median net profitability in the group of 10% of companies with the highest profitability in period T, in the following year (i.e. T+1) is on average about 12 percentage points higher than the median net profitability in the group of all the companies.

As the Figure 2 shows, in 2000-2009 years there was significant reversion toward the mean of net profitability of companies listed on the Warsaw Stock Exchange. In the periods under investigation, the median normalized net profitability in the first decile in period T averaged 0.13. That means that the median profitability in the first decile exceeded the median profitability among all the companies by about 13 percentage points on average. The analogous value for the tenth decile averaged -0.18. That means that the median net profitability in the tenth decile in period T was lower than the median net profitability among all the companies by about 18 percentage points on average. However, this difference starts to diminish as soon as in the following year. The distance between the highest and the lowest median normalized profitability (i.e. between the first and the last decile), that in year T averages 32 percentage points, in the following year declines to 20 percentage points. The same distance in years T+2, T+3, T+4 and T+5 declines further to 12, 9, 6 and 3 percentage points, respectively.

The observation of the median normalized net profitability in the remaining deciles brings similar findings. The distance between the second highest and the second lowest median normalized net profitability (i.e. between the second and the ninth decile), that in year T averages 14 percentage points, in the following year declines to 8 percentage points. The same distance in years T+2, T+3, T+4 and T+5 declines further to 7, 5, 3 and 4 percentage points, respectively. However, it is worth noting that despite the discernible reversion toward the mean, in all the periods between T+1 and T+5 the relative net profitability in the first two deciles remains on the above-average levels. Despite the evident mean-reversion, the distance between the median profitability in the first two and the last two deciles doesn't converge to zero within the analyzed five-year timeframe (regrettably we don't have time-series of data long enough to enable conducting the research within the longer timeframes).

The visual inspection conducted so far showed that the reversion toward the mean was evidently present in net profitability of the companies listed on the Warsaw Stock Exchange in 2000-2009 years. It means that if in any year any company experiences above-average (below-average) net profitability, this relative profitability usually declines (rises) in the following years toward level average for all the companies. Given the fact that the total reversion toward the mean seems to take more than 5-6 years (at least in the case of the extreme deciles), we quantified of the average pace of this reversion. In order to evaluate the average pace of reversion toward the mean we computed, for all the deciles, the difference between the average median normalized net profitability in the year T+1 and the average median normalized net profitability in the year T. We show these computations in the Table 3.

Table 3: Average Medians of Normalized Net Profitability in Years T and T+1 and Changes of Those Medians

	Period		Change from T
	T	**T+1**	**to T+1***
Decile 1	0.13	0.12	-0.010
Decile 2	0.07	0.04	-0.023
Decile 3	0.03	0.02	-0.009
Decile 4	0.02	0.01	-0.004
Decile 5	0.01	0.00	-0.007
Decile 6	0.00	-0.01	-0.006
Decile 7	-0.01	-0.01	-0.001
Decile 8	-0.03	-0.03	0.003
Decile 9	-0.08	-0.03	0.042
Decile 10	-0.18	-0.07	0.111

*This table shows the changes (between T and T+1) of relative net profitability in ten deciles of companies listed on the Warsaw Stock Exchange in 2000-2009 years. * median normalized net profitability in a given decile in year T+1 subtracted from median normalized net profitability in the same decile in year. Source: Notoria Serwis; author's calculations.*

In the analyzed 2000-2009 years, the median net profitability of companies making the first decile exceeded the median net profitability of all the companies in the period T by about 13 percentage points. However, after one year the median normalized profitability in this decile decreased by the average of 1 percentage point. Similar situation occurred in the case of second, third, fourth and fifth decile (i.e. the deciles composed of companies with the above-average net profitability in year T) and a bit surprisingly in the case of sixth and seventh decile. The opposite situation occurs in the case of 8^{th}, 9^{th} and 10^{th} deciles (i.e. the deciles composed of companies with the below-average net profitability in year T).

The median normalized net profitability of companies making the 10^{th} decile was lower than the median net profitability of all the companies in year T by 18 percentage points on average. However, in the

following year the significant reversion toward the mean occurs (median normalized profitability in the last decile rises by an average of 11.1 percentage points). However, despite the evident reversion toward the mean, the changes of the median normalized net profitability in the deciles (shown in the last column of Table 3) do not rise monotonically with the movement from the highest deciles to the lowest deciles.

The data from the second and the last column of Table 3 enabled the quantification of the pace of reversion toward the mean. We estimated the non-linear regression of the following form:

$$MNNP_{T+1} / MNNP_T = \alpha MNNP_T^{\beta} \tag{3}$$

where:
$MNNP_T$ - median normalized net profitability in a given decile in period T,
$MNNP_{T+1} / MNNP_T$ - change of the median normalized net profitability in a given decile in period $T+1$ (relative to period T),
α, β - coefficients of regression.

Because we approximated this relationship with the assumption of non-linearity (which requires all the observations to have non-negative values when estimating regression coefficients), we modified all the observations (regarding both variables under investigation), so that the lowest original observation of both variables (equaling -0.18 in this case) now has the value of unity and all the other observations equal:

$$MV_k^i = OV_k^i - OVMIN + 1, \tag{4}$$

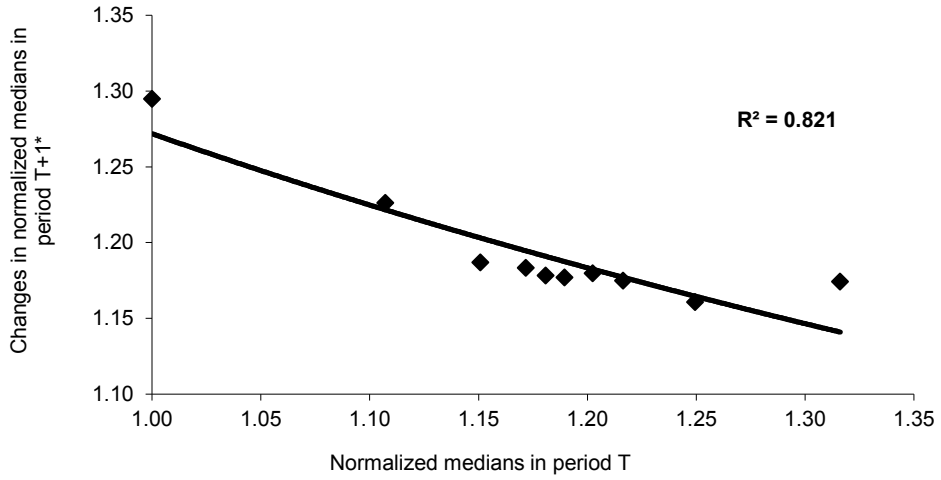
where:
MV_k^i - modified value of i-th observation of k-th variable,
OV_k^i - original value of i-th observation of k-th variable,
$OVMIN$ - minimal value of the original observations of both variables (equaling -0.18).

Thanks to this modification of the observations' original values the distances between the individual observations are the same (as between the original observations) but now all the observations have positive values. This enables estimation of the non-linear regression expressed by formula (3). Figure 3 and Table 4 present the relationship between the averaged values of median normalized net profitability in individual deciles and the changes of those medians ensuing in the following year.

In the analyzed periods, there was the statistically significant negative relationship between the companies' relative net profitability in period T and later (in period T+1) changes of this relative profitability. This negative relationship is statistically significant with F statistic equaling 36.79 (indicating statistical significance on 1% significance level) and quite strong (given the coefficient of determination equaling 0.821). This confirms that companies with the above-average (below-average) net profitability in any given year tend to experience the decrease (increase) of this relative profitability toward all-the-companies average levels in the following year.

The log-linear regression shown on Figure 3 enabled the simulation of the path of relative net profitability of companies from different deciles in a ten-year timeframe. The estimated regression enables the calculation of the expected scope of next-year (i.e. T+1) reversion toward the mean for any initial (i.e. in year T) value of normalized net profitability. Recalculation (with the same regression coefficients) made for the further years (after year T+1) permits obtaining a long-term reversion-curves (on the assumption that in all those years the regression coefficients are constant).

Figure 3: The Relationship between the Medians of Normalized Net Profitability in Ten Deciles of Companies in Year T and the Changes of These Medians in the Same Deciles in Year T+1



*This figure presents the relationship between the relative net profitability in period T and the changes of this relative profitability in the following year. Source: Notoria Serwis; author's calculations. * median normalized net profitability in a given decile in year T+1 subtracted from median normalized net profitability in the same decile in year T.*

Table 4: Relationship between Medians of Normalized Net Profitability in Ten Deciles in Year T and The Changes of These Medians in Year T+1

Regression coefficients	**Value of the parameter**	***t*-Statistic**
α (Intercept)	1.272	20.92*
β	-0.396	-6.07*

Additional regression' information:
- method of estimation: ordinary least squares
- number of observations: 10
- F statistic: 36.79
- statistical significance of S statistic: 0.0003
- R-squared (coefficient of determination): 0.82
- Adjusted R-squared: 0.80

*This table presents the non-linear regression (expressed by the formula 3) between the relative net profitability in period T and the changes of this relative profitability in the following year. * both variables are statistically significant at the significance level below 1%. Source: Notoria Serwis; author's calculations.*

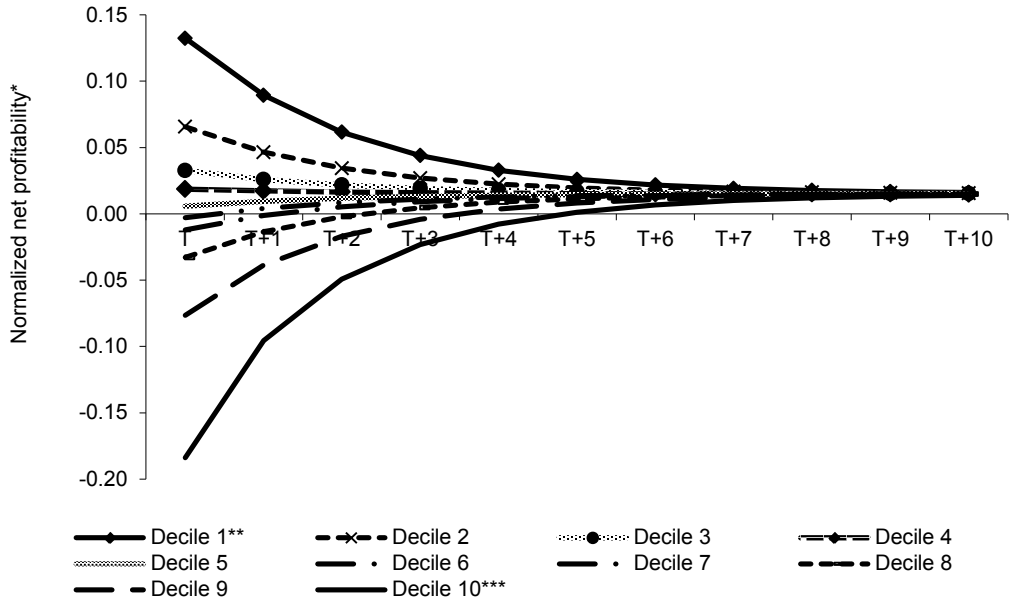
Figure 4 presents the paths of the reversion of corporate relative net profitability simulated for the ten initial values (these were the actual values of the medians for the ten deciles shown in the second column of Table 3). The figure shows that according to the estimated regression (describing reversion of corporate net profitability toward the mean) this reversion takes on average 8-9 years in the case of companies listed on the Warsaw Stock Exchange (on the assumption, that the regression coefficients are stable). Companies with above-average (below-average) net profitability in any given year tend to show lower (higher) relative net profitability in the following years. The initial above-average (below-average) net profitability in the following years systematically approaches all-the-companies average levels. However, according to the estimated log-linear regression, this process takes on average about 8-9 years.

CONCLUSIONS

The purpose of this paper was to examine the presence and the pace of mean-reversion of net profitability reported by companies listed on the Warsaw Stock Exchange. In the research, we used the data related to

annual financial results of Polish public companies in 2000-2009 years. The only analyzed variable was the corporate net profitability defined as the ratio of annual net earnings to annual net sales. The whole sample under investigation was divided into five moving sub-samples (each sub-sample comprised six years of data) and within each sub-sample all the companies under investigation were sorted in order of decreasing profitability in the first year of the sub-sample (from the company with the highest profitability to the company with the lowest profitability in the first year). Then in each sub-sample we divided the sorted companies into ten deciles so that the first decile embraced 10% of companies with the highest net profitability in the first year and the last decile embraced 10% of companies with the lowest net profitability in the first year. This methodology enabled observation of the path and the pace of the decrease / increase of the median profitability in the deciles with the highest / lowest initial net profitability. We also estimated the log-linear the relationship between the averaged values of median normalized net profitability in individual deciles and the changes of those medians ensuing in the following year.

Figure 4: Ten-Year Reversion Curves of Normalized Net Profitability* of the Companies Listed on the Warsaw Stock Exchange Simulated with the Use Estimated Log-Linear Regression



*This figure shows the simulated paths of ten-year mean-reversion of relative net profitability of companies listed on the Warsaw Stock Exchange. * the difference between net profitability of a given company and median net profitability among all the companies listed on the Warsaw Stock Exchange. ** 10% of companies with the highest net profitability in year T. *** 10% of companies with the lowest net profitability in year T. Source: Notoria Serwis; author's calculations.*

The research presented in this paper (based on the data concerning net profitability of the companies listed on the Warsaw Stock Exchange in 2000-2009 years) found that the relative corporate net profitability tends to revert toward the mean. In the analyzed sample of public companies the statistically significant negative relationship between the relative (i.e. in relation to the average for all the companies) net profitability in a given year and the changes of this relative profitability in the following years was detected. It means that companies characterized by above-average (below-average) net profitability in any year usually experience significant decrease (increase) of this relative profitability toward the economy-wide levels in the following years. However, according to the obtained estimates, the process of total reversion to the mean takes about 8-9 years.

The potentially significant limitation of the methodology applied in this research is our total focus on only one measure of profitability, i.e. net profitability. This makes the obtained results potentially vulnerable to the impact of one-off events with dramatic but short-term impact on net earnings (such as non-recurring restructuring charges, revaluation of assets or sale of financial assets). In our further research we will focus on those measures of corporate profitability that are immune to those one-off events (e.g. gross margin or operating profit adjusted for non-recurring items). One of the limitations of this study is also our focus on mean-reversion toward economy-wide (instead of industry-specific) average profitability. Finally, in our future research we are going to explore the extent to which the mean-reversion of net earnings confirmed in this study (together with mean-reversion of sales growth that we corroborated in our previous work) is reflected in the stock recommendations produced by equity analysts for companies listed on the Warsaw Stock Exchange.

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