MEAN-REVERSION OF MALAYSIAN COMPANIES' GROWTH OF EARNINGS

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Abstract

Corporate accounting-based variables tend to mean-revert in the long run. This is particularly visible in the case of growth variables, such as sales growth or earnings-per-share (EPS) growth. Mean-reversion of earnings growth means that companies which in a given period report above-average / below-average growth tend to show significantly slower / faster pace of this growth in the following periods. In this paper we explore the phenomenon of reversion toward the mean of earnings-per-share growth of companies listed on the Kuala Lumpur Stock Exchange in the period of 2001-2011. The research confirmed the strong tendency of EPS growth to revert toward the mean. The "super-fast" EPS growth tends to be both preceded and followed by below-average growth and the deep declines of earnings tend to be preceded and followed by above-average EPS growth.

Introduction

Many research studies found that corporate financial results (measured by e.g. sales growth, profitability, earnings growth, asset turnover, etc.) tend to strongly mean-revert in the long run. This mean-reversion means the convergence of those economic results toward the economy-wide average levels [1; 3; 4; 7; 8]. The reversion toward the mean is particularly strong in the case of growth variables, such as sales growth or earnings growth. According to the research, from 1960 through 1999 only 8 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 [5]. Another research 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 [12]. In a more comprehensive study the researchers found that over the 1951-1998 period only a small proportion of companies grew their earnings at the above-average pace for longer time, which means that the persistence of relatively fast earnings growth is very limited [2]. The presence of mean-reversion means that maintaining above-average pace of corporate earnings growth is extremely difficult in the long-run.

However, although mean-reversion of corporate financial results is well documented for developed economies, it is much less explored in the case of emerging markets. In our previous research we confirmed the presence of mean-reversion in the case of financial results of the Polish public companies [10; 11]. However, we are not aware of any other study related to mean-reversion of earnings among Malaysian companies. This paper explores the

phenomenon of reversion toward the mean in the case of earnings-per-share (EPS) growth of companies listed on the Kuala Lumpur Stock Exchange in 2001-2011 years.

The remainder of the paper is organized as follows. In the next section we describe the data and research method used in the study. Then the section that presents the empirical results follows. The paper closes with concluding comments.

1 Data and Research Method.

In the research the data concerning annual earnings-per-share (EPS) of companies listed on the Kuala Lumpur Stock Exchange were used. The historical financial results were obtained from "Malaysia Stock Performance Guide" publications. In the sample we included the companies for which all the necessary data were available, resulting in 5.498 firm-year observations. The analysis comprised the eleven-year period between the 2001 and 2011. The only analyzed variable was the corporate earnings-per-share growth defined as follows:

$$EPSG_t = \frac{EPS_t - EPS_{t-1}}{|EPS_{t-1}|},$$ (1)

where:

$EPSG_t$ - growth of earnings-per-share of a given company in year t,

EPS_t - earnings-per-share of a given company in year t.

The summary statistics of the data used are presented in the table below.

Tab. 1: *Summary statistics computed for earnings-per-share growth* in the analyzed samples.*

Year	Arithmetic mean	Median	Standard deviation
2001	-15.1%	-3.2%	567.9%
2002	202.9%	11.5%	2745.2%
2003	38.5%	21.6%	438.8%
2004	-30.5%	20.1%	1292.9%
2005	21.8%	7.7%	171.3%
2006	-50.1%	10.4%	1441.8%
2007	85.5%	25.4%	1647.1%
2008	-18.3%	2.3%	419.0%
2009	4.5%	-1.8%	1084.7%
2010	39.7%	14.5%	518.3%
2011	-7.5%	7.8%	327.3%

* earnings-per-share growth as defined by formula (1)
Source: "Malaysia Stock Performance Guide" (different editions); authors' calculations

The investigated sample is characterized by significant diversity of EPS growth, both in cross-sectional dimension (between individual companies within the individual years) as well as time-series dimension (between individual years). In only two years the median EPS growth rate was negative. This happened in recession years. For all the analyzed periods the arithmetic mean differed significantly from the median (with highly variable scope and direction of these differences). This suggests that the intercompany distribution of EPS growth is far from normal and heavily unstable. The standard deviations computed for all the years are three-digit or four-digit, which confirms that there exists huge intercompany diversity in terms of earnings growth.

The whole sample under investigation was divided into seven moving sub-samples. Each sub-sample comprised five years. The first sub-sample embraced the period between 2001 and 2005, the second one embraced 2002-2006 period, etc. The last sub-sample embraced the period between 2007 and 2011. In each of the sub-samples we visually analyzed the reversion toward the mean of the corporate EPS growth.

In the case of the first sub-sample all the companies under investigation were sorted in order of decreasing EPS growth in the middle year, which is in 2003 (from the company with the highest growth to the company with the lowest growth in 2003). The EPS growth data computed for the individual companies were then normalized with the following formula:

$$NEPSG_t^i = EPSG_t^i - MedianEPSG_t^n, \qquad (2)$$

where:

$NEPSG_t^i$ - normalized growth of earnings-per-share of i-th company in year t,

$EPSG_t^i$ - growth of earnings-per-share of i-th company in year t (as defined by formula 1),

$Median\ EPSG_t^n$ - median growth of earnings-per-share of all n companies in year t,

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

Then the sorted companies were divided into five quintiles so that the first quintile embraced 20% of companies with the fastest normalized EPS growth in 2003 and the last quintile embraced 20% of companies with the slowest normalized EPS growth in 2003. Because total number of observations usually cannot be divided equally into five quintiles we omitted from the computations the adequate number of observations with the slowest EPS growth. For each of the quintiles constructed in this way the median normalized EPS growth in 2003 was computed. The median normalized EPS growth rates for individual quintiles were calculated as the medians of all observations of individual normalized EPS growth rates of companies included within the given quintile.

Then, for the same quintiles, the median normalized EPS growth in the preceding two years (i.e. 2001 and 2002) as well as in the following two years (i.e. 2004 and 2005) was computed. Analogous computations were made for the remaining six sub-samples (comprising 2002-2006, 2003-2007, 2004-2008, 2005-2009, 2006-2010 and 2007-2011 periods). The results obtained from all seven sub-samples were averaged in order to obtain the findings which are more representative for long-term processes. The results from individual sub-samples may be distorted by some factors specific for a given five-year period. For example, the sub-sample for years 2003-2007 covers the period of fast economic growth, while the sub-sample for years 2007-2011 covers the period of world economic crisis. Although individual sub-samples may be biased by these specific factors, these biases tend to smooth out when the results are averaged. Thanks to this, the final results capture only the long-term patterns.

The research method described above enables visual inspection of the behavior of corporate EPS growth in five-year windows. It enables observation of the paths of the decrease / increase of the relative EPS growth in the quintiles with the highest / lowest EPS growth in a given year (period t), both in two years before the t year as well as in two years following the t year.

2   Results

Fig. 1 presents the phenomenon of reversion toward the mean in the case of earnings-per-share growth in the first sub-sample (comprising 2001-2005 period). The figure shows the

medians of normalized EPS growth in five quintiles formed on the basis of the data for 2003 year.

As can be seen, there was the strong tendency of reversion toward the mean of EPS growth in the period under investigation in the case of two extreme quintiles. Particularly, companies with the fastest EPS growth in 2003 (Quintile 1) were those with deep EPS declines in the preceding two years (2001-2002). They also tended to report slightly above-average EPS growth (but much slower than in 2003) in the following two years (2004-2005). In contrast, stocks with the deepest EPS decline in 2003 (Quintile 5) were those with the fastest EPS growth (much above the market-wide averages) in the following two years (2004-2005). However, they did not report any significant and consistent deviations from the market averages in the preceding two years (2001-2002).

Interesting results were also obtained for the in-between quintiles, particularly Quintile 4, in which case relatively deep normalized EPS growth in 2003 followed two years of above-average growth (2001-2002) and was followed by two years of sub-par growth (2004-2005). It means that both portfolios with below-average growth in 2003 (Quintile 4 and Quintile 5) were characterized by completely different pictures in the following two years. Quintile 5 showed above-average growth and Quintile 4 reported sub-par growth in 2004-2005. Probably this stems from the fact that accounting earnings of companies forming Quintile 5 were much more burdened by one-off factors, such as provisions or restructuring charges. Such factors bring about the so-called low-basis effect and result in jumps of earnings in the following years. In contrast, companies forming Quintile 4 experienced in 2003 EPS declines which perhaps to a larger extent resulted from normal and recurring (e.g. cyclical) earnings-drivers.
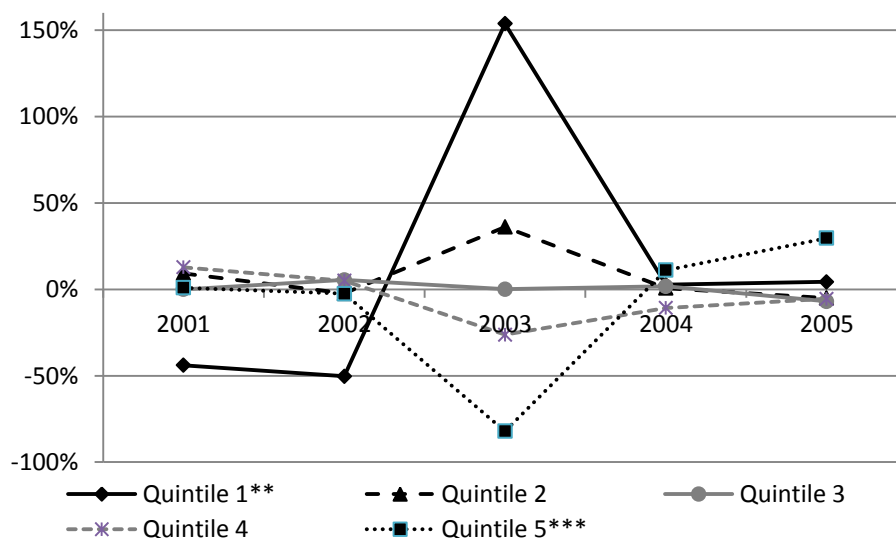
* normalized earnings-per-share (EPS) growth as computed in accordance to formulas (1) and (2)
** 20% of companies with the fastest EPS growth in 2003
*** 20% of companies with the slowest EPS growth in 2003
2003 is the year for which the initial sort of all the companies is made.
Source: "Malaysia Stock Performance Guide" (different editions); authors' calculations
Fig. 1: *Medians of normalized EPS growth* in five quintiles of companies in 2001-2005 sub-sample*

Analogous computations were conducted for the remaining six sub-samples. However, due to the space limitations the detailed results for the individual sub-samples are not presented here.

Instead, in the Tab. 2 as well as on the Fig. 2 the averages obtained for all seven sub-samples are presented.

Tab. 2: *Averaged* medians of normalized EPS growth in five quintiles of companies in all seven sub-samples.*

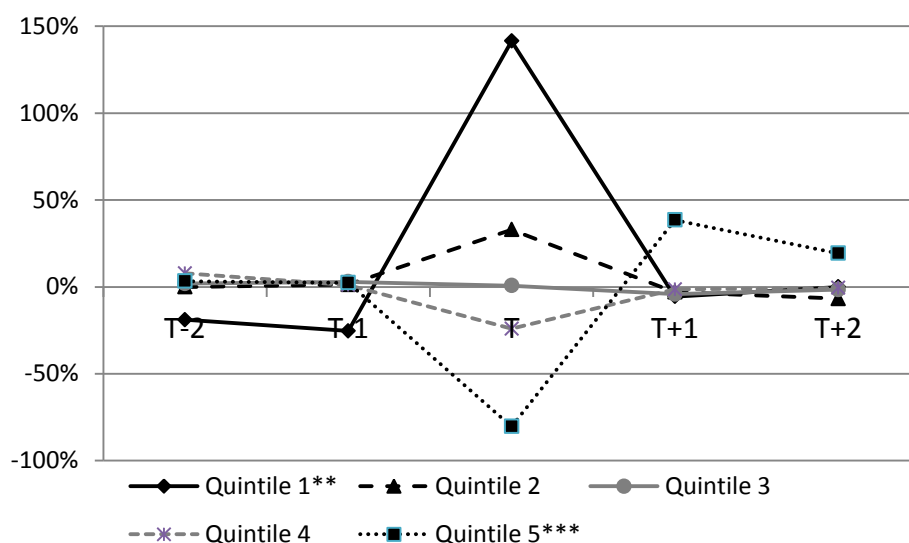| Quintiles of companies	Period				
	T-2	**T-1**	**T**	**T+1**	**T+2**
Quintile 1***	-18.9%	-25.4%	141.5%	-5.6%	0.0%
Quintile 2	0.0%	1.4%	32.9%	-3.0%	-6.8%
Quintile 3	1.9%	3.0%	0.7%	-4.1%	-1.6%
Quintile 4	7.8%	1.1%	-24.0%	-1.4%	-0.6%
Quintile 5****	3.3%	2.3%	-80.4%	38.5%	19.3%

* each number in the table is the arithmetic mean from the seven values taken from the seven sub-samples for a given quintile and for the given period
** T means sorting period (year in which the companies are sorted and divided into five quintiles); periods from T+1 to T+2 and T-1 to T-2 are the following and preceding years, respectively
*** 20% of companies with the fastest EPS growth in sorting period (i.e. in year T)
**** 20% of companies with the slowest EPS growth in sorting period (i.e. in year T)
Source: "Malaysia Stock Performance Guide" (different editions); authors' calculations

Each number on the chart is the arithmetic mean from the seven values taken from the seven sub-samples for a given quintile and for the given period
** 20% of companies with the fastest EPS growth in sorting period (i.e. in year T)
*** 20% of companies with the slowest EPS growth in sorting period (i.e. in year T)
Source: "Malaysia Stock Performance Guide" (different editions); authors' calculations

Fig. 2: *Medians of normalized EPS growth in five quintiles of companies in 2001-2005 sub-sample*

The data shown in Tab. 2 and on Fig. 2 present the averaged numbers for all seven sub-samples. For example, the value for the first quintile in year T (equaling 141.5%), where T is the year for which the sort of all the companies is made, constitutes the arithmetic mean of the seven medians of normalized EPS growth obtained for the first quintile in the third year of all seven sub-samples. This number (equaling 141.5%) means that the median EPS growth in the group of 20% of companies with the fastest EPS growth in any given year is on average about

141.5 percentage points higher than the median EPS growth in the group of all the companies listed on the Kuala Lumpur Stock Exchange in the same year. Analogously, the value for the first quintile in period T+1 (equaling -5.6%), where T+1 is the year following the year for which the sort of all the companies is made, constitutes the arithmetic mean of the seven medians of normalized EPS growth obtained for the first quintile in the fourth years of all seven sub-samples. This number (equaling -5.6%) means that the median EPS growth in the group of 20% of companies with the fastest EPS growth in period T, which in period T is on average about 141.5 percentage points higher than the median EPS growth in the group of all the companies, in the following year (i.e. T+1) is on average 5.6 percentage points lower than the median EPS growth in the group of all the companies.

As can be seen, the 2001-2011 period was characterized by a significant reversion toward the mean of EPS growth of companies listed on the Kuala Lumpur Stock Exchange, particularly in the case of companies with above-average pace of EPS growth in period T. In the years under investigation the median normalized EPS growth in the first quintile in period T averaged 141,5%. That means that the median EPS growth in the first quintile exceeded the median EPS growth among all the companies by about 141.5 percentage points, on average. However, in the following two years (T+1 and T+2) these companies tended to report below-average (or close to average) growth of earnings. Consistent results were obtained for Quintile 2 and Quintile 3 (which also cover stocks with above-average EPS growth in period T and sub-par growth in the following two years). Somewhat surprisingly, below-average earnings growth in periods T+1 and T+2 is also reported by companies included in Quintile 4 (which covers stocks with below-average growth in period T). However, even here the mean-reversion is evident (given the rising, although negative, values of normalized EPS growth from period T to T+2). In this light, the only portfolio providing above-average growth in periods T+1 and T+2, is Quintile 5, which includes stocks with deep declines of earnings in period T.

Interesting findings are also suggested by data for periods from T-2 to T. We can see here that Quintile 1, covering stocks with "super-fast" earnings growth in period T, is the only portfolio with below-average EPS growth in both periods T-2 and T-1. This suggests that the earnings "take-off" in period T (with three-digit normalized growth) reflects in this case some kind of "catching-up effect". This suggests that fast growing earnings in period T are just making up for the preceding significant EPS drops. However, this "take-off" is rather extraordinary and one-off, because in the following year (i.e. T+1) these stocks' earnings again tend to lag behind the market average. In contrast, Quintile 2 and Quintile 3, both covering stocks with above-average EPS growth in period T, tend to experience above-average growth also in the preceding two years. However, as we already noted, this relatively fast medium-run growth (lasting at least three years from T-2 to T), is rather temporary. This growth is broken in the following two years, when companies making up these two quintiles tend to consistently lag behind the market average growth.

Mean-reversion is also experienced by stocks included in Quintile 4 and Quintile 5. Both these portfolios include companies reporting above-average EPS growth in periods T-2 and T-1, followed by sub-par growth in period T. However, the similarities of these two quintiles in periods from T-2 to T are clearly broken in the following two years. The fall of earnings in period T in Quintile 4 (which is relatively modest as compared to Quintile 5) is continued in periods T+1 and T+2. In contrast, the collapse of earnings in period T in Quintile 5 is reversed as soon as in the period T+1 and continued in period T+2. As was noted before, this suggests that accounting earnings of companies forming Quintile 5 are much more (than in case of Quintile 4) burdened by one-off accounting charges, such as assets write-downs and write-offs. Perhaps these charges are too deep and reflect some kind of "cookie-jar reserves". They

may be reversed to some extent in the following years, resulting in vivid recovery of earnings. In contrast, the sub-par earnings growth of companies forming Quintile 4, seem to result more from normal and recurring earnings-drivers (such as cyclical sales drops) than from subjective one-off accounting charges.

Finally, both extreme portfolios seem to relay consistent (although mirrored) findings. In period T the "super-fast" earnings growth of Quintile 1 and "super-deep" earnings collapse of Quintile 5 result probably from factors of highly temporary nature. The "super-fast" normalized EPS growth of Quintile 1 in period T is both preceded (in periods T-2 and T-1) as well as followed (in periods T+1 and T+2) by below-average EPS growth. In contrast, the "super-deep" decline of normalized EPS growth of Quintile 5 in period T is both preceded (in periods T-2 and T-1) as well as followed (in periods T+1 and T+2) by above-average earnings growth.

Conclusion

The research presented in this paper was based on the data concerning earnings-per-share growth of companies listed on the Kuala Lumpur Stock Exchange in 2001-2011 years. Our findings corroborated that relative corporate earnings growth tends to revert toward the mean. This mean-reversion is particularly strong in the case of extremely fast growing earnings as well as extremely deeply falling earnings. It means that companies characterized by "super-fast" EPS growth / "super-deep" EPS decline in any year, usually experience below-average / above-average relative growth in the following years.

The mean-reversion of EPS growth is less consistent in the remaining quintiles of stocks. However, it seems to be still discernible here. Stocks forming Quintile 2 and Quintile 3 are featured by above-average growth in period T (although not as "super-fast" as in the case of Quintile 1) and also in two preceding years (T-2 and T-1). In contrast, they tend to report significantly sub-par growth in the following two years (T+1 and T+2). Companies making up Quintile 4 are in turn featured by below-average growth in period T (although not collapsing as deeply as in the case of Quintile 5) and also in two following years (T+1 and T+2). However, they tend to report above-average growth in the preceding two years (T-1 and T-2).

According to the findings of other research studies [6; 9], investors tend to over-extrapolate the past growth rates of corporate earnings too far into the future. As a result, the actual future earnings of currently fast-growing companies are usually lower than expected (resulting in negative earnings surprises). In contrast, the actual future earnings of currently slow-growing companies tend to be higher than expected (resulting in positive earnings surprises). Given that stock prices tend to react to earnings changes, the investors' over-extrapolation of past earnings brings above-average stock-returns of companies with below-average past earnings growth and below-average stock-returns of companies with above-average past earnings growth. Our results, confirming the strong mean-reversion of EPS growth rates, constitute evidence that extrapolating corporate past financial results into the future is not justified.

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RŮST ZISKŮ A JEHO ZPĚTNÝ NÁVRAT K PRŮMĚRU NA PŘÍKLADU MALAJSKÝCH SPOLEČNOSTÍ

Vykazované účetní proměnné se v dlouhodobém horizontu vracejí směrem k průměru. Tato skutečnost se projevuje zejména u proměnných růstu jako např. tempa růstu tržeb nebo růstu ukazatele zisku na akcii (EPS). Jestliže účetní jednotka v daném období vykázala nadprůměrné/podprůměrné tempo růstu zisku, lze v dalších obdobích očekávat významně pomalejší/rychlejší tempo růstu. Tento článek zkoumá fenomén návratu k průměru u ukazatele růstu zisku na akcii u společností obchodovaných na burze cenných papírů v Kuala Lumpur za období 2001-2011. Výzkum potvrzuje, že ukazatel růstu EPS Se významně navrací k průměru. Extrémně rychlému růstu ukazatele EPS předchází podprůměrný růst a podprůměrný růst současně následuje i v dalších obdobích. Obdobně prudký propad ukazatele je doprovázen předchozím i následným nadprůměrným růstem.

KONVERGENZ ZUM DURCHSCHNITTSNIVEAU IM FALLE VON GEWINNDYNAMIK DER MALTESISCHEN UNTERNEHMEN

Die finanziellen Jahresergebnisse der Unternehmen haben eine Tendenz zur langfristigen Konvergenz zum Durchschnittsniveau. Diese Erscheinung ist besonders für die Kennziffern der Dynamik wie Einkommensdynamik oder Gewinndynamik pro Aktie (EPS) charakteristisch. Die Konvergenz der Gewinndynamik bedeutet, dass die Gesellschaften, die in einer bestimmten Periode eine überdurchschnittlich hohe/niedrige Wachstumsrate zeigen, in den folgenden Perioden bedeutend langsamere/ schnellere Dynamik erzielen. Im Rahmen dieses Artikels wurde die Konvergenz zum Durchschnittniveau im Falle von Gewinndynamik der auf der Börse Kuala Lumpur in den Jahren 2001-2011 notierten Unternehmen, untersucht. Die starke Tendenz der Gewinndynamik zum Durchschnittkonvergenz wurde im Rahmen dieser Studie bestätigt. Die „super-schnelle" Gewinndynamik pro Aktie ist gewöhnlich durch die überdurchschnittlich niedrige Wachstumsrate in den früheren oder späteren Perioden begleitet. Die bedeutenden Gewinnverluste pro Aktie sind dagegen durch die überdurchschnittlich hohe Wachstumsrate vorangegangen, oder sie die hohe Wachstumsrate vorangehen.

REWERSJA DO ŚREDNIEJ W PRZYPADKU DYNAMIKI ZYSKÓW MALEZYJSKICH SPÓŁEK

Wyniki finansowe firm wykazują tendencję do długoterminowej rewersji do średniej. Zjawisko to jest szczególnie wyraźne w przypadku wskaźników dynamiki, takich jak dynamika przychodów czy dynamika zysku na akcję (EPS). Rewersja dynamiki zysków oznacza, iż spółki, które w danym okresie raportują ponadprzeciętnie wysokie / niskie tempo wzrostu, w kolejnych okresach wykazują zwykle znacznie wolniejszą / szybszą dynamikę. W niniejszym artykule zbadano zjawisko rewersji do średniej w przypadku dynamiki zysków spółek notowanych na giełdzie w Kuala Lumpur w latach 2001-2011. Badanie potwierdziło silną tendencję dynamiki zysków do rewersji do średniej. „Super-szybkiej" dynamice zysku na akcję w danym okresie towarzyszy zwykle ponadprzeciętnie niskie tempo wzrostu w okresach wcześniejszych i późniejszych, natomiast głębokie spadki zysków na akcję poprzedzają zwykle oraz są poprzedzone ponadprzeciętnie wysokim tempem wzrostu.