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Performance of SMEs stocks portfolios at Bucharest Stock Exchange

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Abstract

In this paper we aim to comparatively analyze the performance of SMEs stocks portfolios, large-cap portfolios and the overall Romanian stock market as proxied by a self-constructed composite index. To perform this investigation, we will firstly construct the three alternative portfolios (i.e. Large-Cap, SME and Market or RM) and subsequently compute different risk-adjusted performance measures for each of them. The two active portfolios will be constructed by equal weighting the component stocks; which are firstly ranked on both market capitalization or Size and P/BV ratio and split in three equal groups by using tertiles. From the intersection of these two groups of thirds emerge nine portfolios, among which we are interested in the two low P/BV portfolios with extreme market values, that is the Small Size-Low P/BV portfolio (called the SME portfolio) and the Big Size-Low P/BV portfolio (called Large-cap portfolio).

We report there is positive value to active portfolio management on the Romanian stock market, that the size-effect is present (smaller stocks have higher returns) and that investing in stocks of SMEs (or similar companies) achieves the best stock market performance as indicated by all computed risk-adjusted performance measures.

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1. Introduction

The starting point for the majority of the portfolio risk adjusted performance evaluation methods is the CAPM model of Sharpe-Lintner-Mossin. The model brought for the first time a valid benchmark, in the sense that it offers an expected return the realized return can be compared with and we can in this way characterize portfolio performance as being superior or inferior to this benchmark. Before the CAPM model became a reference, this function was accomplished by the so-called tracking portfolios, which are portfolios that follow some indices considered relevant for the investment strategy of a given investment fund. Nevertheless, the moment the CAPM model was born, the comparison of the portfolio performance with this benchmark was nothing but the next natural step as the expected return of the portfolio was a superior reference point. A cornerstone of portfolio theory is that the systematic risk is rewarded, which means that in the long term investors expect compensation for bearing the risk which they cannot

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diversify away and that the average yield of a diversified portfolio is directly related to its exposure to market or systematic risk.

The remainder of this paper is structured as follows: Section 2 briefly surveys the related literature. Section 3 describes the data used in the analysis and outlines the methodology used in measuring investment performance for the three Romanian equity portfolios. Section 4 provides a discussion of the empirical results while Section 5 concludes the paper.

2. Literature Review

2.1. Active Portfolio Management

Many studies in the financial literature investigate the performance of active portfolio management and the majority seems to agree that active management does not provide a net benefit to the investors (see for example Shukla and Trzcinka (1992) for a thorough review of previous studies or Tudor (2012) for a study on the Romanian capital market). Nonetheless, more and more mixed evidence on this issue has emerged in recent years (Keim, 1999; Chen, Jegadeesh, and Wermers, 2000 among others).

2.2. Size-effect

The so-called size-effect (i.e. average returns are negatively related to firm size) has also been extensively investigated in the academic literature, with mixed results. Among others, Banz (1981), Ziemba (1991) for Japan, Levis (1985) for UK and Brown et al (1983) for Australia document that stock of small-cap companies consistently outperform large-cap stocks. Banz (1981) reports that average returns on stocks with low market equity (ME) are too high relative to their systematic risk (beta) and returns on stock with high ME are too low relative to their beta coefficient. Fama and French (1992) show that size and BE/ME combine to capture the crosssectional variation in the average stock returns associated with market beta, size, leverage, BE/ME and E/P ratios. Tudor (2009) performs an investigation on the Romanian equity market and concludes that on the Bucharest Stock Exchange high returns are not associated to smaller companies (companies with low market value) and therefore the „size effect” is not present.

3. Methodology

3.1. Research Goal

In this paper we aim to comparatively analyze the performance of SMEs stocks portfolios, large-cap portfolios and the overall stock market as proxied by a self-constructed composite index RM. To perform this investigation, we will firstly construct the three alternative portfolios (i.e. Large-Cap, SME and RM) and subsequently compute different risk-adjusted performance measures for each of them. The two active portfolios will be constructed by equal weighting the component stocks. If indeed there is no value to active portfolio management on the Romanian stock market, this would mean that the RM portfolio has the highest values for all computed performance measures. On the other hand, the existence of the size-effect should indicate the SME portfolio as the best performing in terms of return, but this over-performance should be compensated by the higher risk usually associated with investing in small-cap companies.

3.2. Data

We have considered in this study all the 98 companies that have been listed at one point under the “BVB” section of the Bucharest Stock Exchange on the First and Second Categories during the analysis period, which extends from during July 2006 until December 2013.

The source of data is the StockGround database and also the Bucharest Stock Exchange’s website. All prices have been adjusted to incorporate dividend returns and/or changes in the number of shares outstanding.

As there are no companies with preferable shares listed on BSE there has been no need for a correction of stated book equity; we did not compute any allowances regarding deferred taxes or investment tax credit to be added up to book value. Common equity is simply the company’s capitalization (number of shares, multiplied by adjusted price

per share). In this way, BE/ME or Book to common equity is defined in this paper as the book value of equity at the end of year $t-1$ divided by market cap at 30 June, year t .

Finally, the risk free rate used in this study (RF) is the midpoint between the one-month interbank bid and ask rates, available at the beginning of that specific month and published on the National Bank of Romania's website.

We work with monthly observations in this study corresponding to the July 2006-December 2013 period, or a total of 90 monthly observations for each series.

3.3. Portfolio construction

In June of year t (t from 2006 to 2013) we rank all stocks listed on Bucharest Stock Exchange (categories 1 and 2) on Size (ME – market equity), and we use the tertiles to split them in three equal groups, the Big, Medium, and Small stocks. Independently we also split all the stocks ranked on P/BV in three groups corresponding to the bottom 30% (Low), middle 40% (Medium) and top 30% (High). The low P/BV companies are “cheap” companies, undervalued in the stock market whereas High P/BV companies are “expensive” companies, whose stocks are overvalued in the stock market relative to their Book Value of equity.

From the intersection of these two groups of thirds emerge nine portfolios. We are interested in the two low P/BV portfolios with extreme market values, that is the Small Size-Low P/BV portfolio (called the SME portfolio) and the Big Size-Low P/BV portfolio (called Large-cap portfolio).

For each portfolio we calculate monthly value-weighted returns from July of year t to June of year $t+1$, when the groups are re-set. Therefore, portfolios change their constituents each year, according to the evolution of the two indicators used to form them.

The SME portfolio does not necessarily contain only SMEs as defined by the employees' criterion and the EU definition (i.e. SMEs are companies which employ fewer than 250 persons). Nevertheless, the similarities in terms of market value of equity and market valuation make these companies into a homogenous group in term of stock market information and investors' perception and therefore their inclusion in the same portfolio is justified. For example, in 2013 the SME portfolio contains the 13 companies included in Table 1, where column three indicates the meeting of the number of employee's criterion. Nonetheless, we keep the name “SME portfolio” throughout the paper even if it also contains companies that are not formally classified as SME by the official definition.

Table 1. Constituents of the SME portfolio at Bucharest Stock Exchange (June 2013) and SME official criterion

Company (market symbol)	No. of employees (last reported information on BSE's website)	Meets SME criterion (< 250 employees)
BCM	69	YES
STZ	94	YES
DAFR	740	NO
TBM	398	NO
SNO	422	NO
ENP	167	YES
SPCU	751	NO
VESY	299	NO
ROCE	661	NO
SRT	279	NO
AMO	18	YES
UZT	569	NO
IMP	24	YES

Finally, after the construction of the two active portfolios following the above methodology, we form the market portfolio as follows. For each month RM is the value-weighted return of all the stocks listed on the first or second categories of BSE with a history of at least two months, where negative BE companies are included.

3.4. Risk-adjusted portfolio performance evaluation

The following risk-adjusted performance measures are usually computed to investigate portfolios' risk-adjusted performance. As some of them convey the same information, we will confine ourselves to the most notorious, i.e. Sharpe's, Treynor's and Jensen's ratios, which will be computed for each of the three self-constructed portfolios.

Sharpe's ratio – SR measures the risk adjusted return, is also called the reward-to-variability ratio and is computed

with the following formula: $SR = \frac{\bar{R}_p - \bar{r}_f}{\sigma_p}$

Treynor's measure – TR also shows the excess return per unit of risk, but uses the systematic risk (beta coefficient)

instead of the standard deviation: $TR = \frac{\bar{R}_p - \bar{r}_f}{\beta_p}$

Jensen's measure (JR) employs the expected return computed with the CAPM as a benchmark and computes the

realized return, in addition to the level expected from the CAPM: $J_R = \bar{R}_p - [\bar{r}_f + \beta_p(\bar{R}_M - \bar{r}_f)] = \alpha_p$

$$A_R = \frac{\alpha_p}{\varepsilon_p}$$

Appraisal ratio (AR) is a measure of abnormal return per unit of unsystematic risk:

Similarly to Sharpe's ratio, the **M squared ratio** uses the standard deviation as a measure of risk, but the risk-adjusted

performance is a differential return from the benchmark index: $M^2 = R_p - R_M$

Portfolio managers will always try to maximize the value of these ratios.

4. Empirical results

First, Table 2 presents some descriptive statistics for the three portfolios constructed in this study. The SME stocks portfolio has the highest average return during the sample period (exceeding the other active portfolio and also the overall market) and surprisingly its risk (as represented by the standard deviation of monthly returns) is lower than the risk of the large-cap portfolio. The diversification benefits are nonetheless obvious, as the market portfolio is the least risky among the three (but also the least rewarding in terms of return).

At a first glance there seems to be value for the active strategy (the risk-adjusted performance measures will attest or not this conclusion) and also the size-effect seems to be present on the Romanian stock market (small stocks bring higher returns).

4.1. Descriptive statistics

Table 2. Descriptive statistics

<i>SME portfolio</i>		<i>Large-cap portfolio</i>		<i>Market (RM) portfolio</i>	
Mean	0,021015	Mean	0,01355	Mean	0,005577
Standard Error	0,012159	Standard Error	0,014478	Standard Error	0,010376

Median	0,009894	Median	0,017205	Median	0,014566
Standard Deviation	0,115348	Standard Deviation	0,12787	Standard Deviation	0,098437
Sample Variance	0,013305	Sample Variance	0,016351	Sample Variance	0,00969
Kurtosis	6,874671	Kurtosis	1,979769	Kurtosis	4,063728
Skewness	1,90076	Skewness	-0,1246	Skewness	-0,62099
Range	0,800643	Range	0,822646	Range	0,71819
Minimum	-0,21489	Minimum	-0,43986	Minimum	-0,39618
Maximum	0,585752	Maximum	0,382789	Maximum	0,322014
Sum	1,891363	Sum	1,056872	Sum	0,501971

Figure 1 reflects the evolution of the three portfolios during the analysis period. The small stocks portfolio has an important positive outlier, while the large-cap portfolio contains the largest negative return.

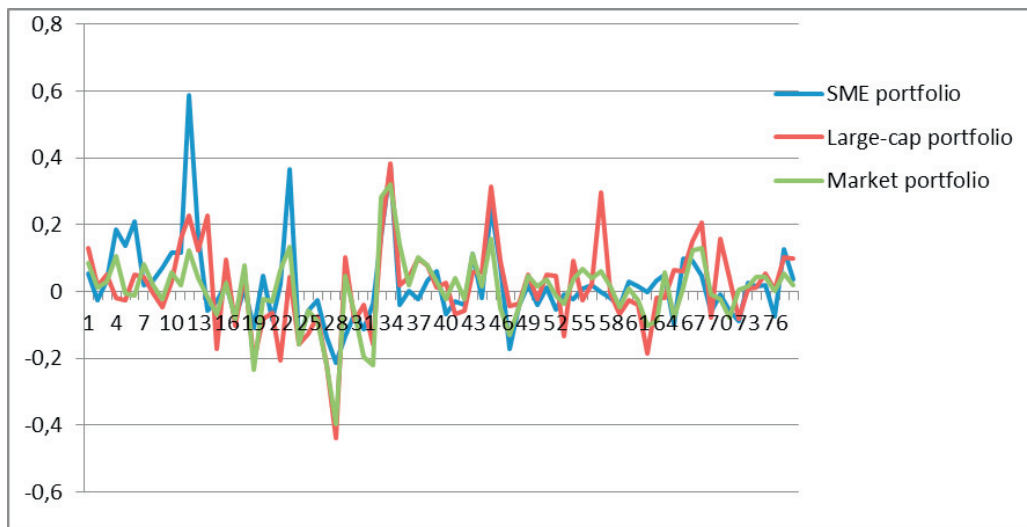


Fig. 1. Return evolution for the three portfolios: 2006-2013

4.2. Risk-adjusted performance measures

The average monthly risk-free rate (computed as explained in Section 3) during the research period was 0,591%, while the average monthly return for the market portfolio was 0,557% (see Table 2), which indicates that the market risk premium was negative for the Romanian capital market. This also translates into a negative Sharpe ratio for the passive portfolio, while among the two active strategies the SME investing had a significant higher risk-adjusted performance (Table 3).

Table 3. Sharpe’s ratio

	SME portfolio	Large-cap portfolio	Market portfolio
Sharpe’s ratio	0,130987	0,059777	-0,00334

When considering only the systematic risk (or beta), the small-cap portfolio (with a market beta of 0,75 that is lower than the market beta of the large-stocks portfolio) maintains its performance rank, reporting also a higher Treynor's ratio as compared to the Large-cap portfolio (Table 4).

Table 4: Treynor's ratio

	SME portfolio	Large-cap portfolio
Beta (systematic risk)	0,756999	0,907895
Treynor's ratio	0,019959	0,008419

Finally, for the computation of Jensen's alfa, we first estimated the expected returns of the two active portfolios with the help of the Capital Asset Pricing Model. The estimation reports similar results, with 0,5657% for the SME portfolio and 0,5608% for the large stocks portfolio, which translates into an active return (or alfa) of approximately 1,53% per month for SME investing and 0,79% for large-stocks investing.

Table 5. Computation of Jensen's alfa

	SME portfolio	Large-cap portfolio
Market risk premium (2006-2013)	-0,000328533	
Expected return (CAPM)	0,005657	0,005608
Jensen alfa	0,015358	0,007942

In conclusion, we are able to report not only that there is positive value to active portfolio management on the Romanian stock market, but also that the size-effect is present on BSE and investing in stocks of SMEs (or similar companies) is not only rewarding in terms of return, but also in terms of risk-adjusted return, as the SME portfolio is designated the best performing by all risk-adjusted performance measures.

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