THE IMPACT OF REAL ESTATE INVESTMENTS ON THE PERFORMANCE OF THE ENTITIES LISTED AT THE BVB

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Abstract: The current paper is part of a wider study which aims at identifying the determining factors of the performances of the entities in the real estate field and the setting up of a composite index of the companies' performances based on a sample of 29 companies listed at the BVB Bucharest (Bucharest Stock Exchange) in the year 2019 using one of the multidimensional data analysis techniques, the principal component analysis. The descriptive analysis, the principal component analysis for setting up the composite index of the companies performances were applied within the study in order to highlight the most important companies from the point of view of the financial performance. The descriptive analysis of the data set highlights the overview within the companies selected for analysis. The study aims at building a synthetic indicator that will show the financial performance of the companies selected based on 9 financial indicators using the principal component analysis PCA. The 9 indicators considered for the analysis were selected based on specialised articles and they are: ROA - return on assets, which reflect the company's capacity of using its assets productively, ROE - return on equity, which measures the efficiency of use of the stockholders' capitals, rotation of total assets, general liquidity ratio, general solvency ratio, general dent-to-equity level, net profit margin, gross return of portfolio.

Keywords: *Real estate investment, performance, financial indicators, BVB*

JEL classification: M40, C00

1. Introduction

Investments represent the most important factor in the development strategies of domestic economy and in all the fields and sectors of activity. Real estate investments represent an asset that offers the possibility to rationally value a realty in order to reach performance. In order to reach the objectives established by the entity, accounting approaches are necessary, as well as the use of investing strategies in the management activity through the application of scientific techniques and methods.

In the past decade and a half the real estate market underwent interesting evolutions. After a period of sustained growth, the year 2008 brings a major change. Compared to other categories of investment, real estate investments are heterogeneous, indivisible and have high management costs and they pose serious administration issues, such as: rent collection, repair works, re-renting, so that this type of placement becomes quite unattractive for small investors.

Also, another feature of decentralised and inefficient markets, such as the real estate one is that they tend to have higher transaction costs. Also, the transactions can have confidential character which, in many cases, leads to real difficulties in the formation of the price and the assessment. Unlike the stock markets that deal with financial instruments, in the case of a real estate market, there is no centralised market price, so that the price of the last transaction becomes a standard – if it is public – because very often it happens that the price is not known publicly. So, a natural consequence of these features is that the small investors cannot participate actively at the real estate market.

The plurality of financing forms and instruments that can mobilise capital resources make the financial decision a matter of option / choice. Thus, we begin with the identification of

their financing need and the entities must choose the optimal financing variant from the point of view of the risk and the cost.

The returns obtainable as a consequence of the real estate investment can sometimes be higher than other types of investments. The increase of the request on the real estate market brought an increased attractiveness for the real estate investments.

2. Literature Review

Tongknog (2012) analyzes the key factors influencing the decision and speed of capital structure adjustment for Thai listed real estate company and indicates that the factors influencing leverage is industry median leverage, profitability, company size and growth opportunities. The results support the theory that companies with higher profitability tend to have less debt and companies with greater opportunities tend to have higher leverage.

Costea (2012) analyzes the determinants of corporate financial performance and shows that the performance indicator (net profit) has a strong correlation with changes in turnover, company size, portfolio yield and a negative correlation with changes in fixed assets.

According to Nicolescu (2012), financial profitability is positively influenced by turnover and negatively influenced by interest and leverage. Economic profitability is instead positively influenced by turnover, while current asset turnover is negatively correlated with leverage.

Piciu (2012) analyses the correlation between risk and profitability in the construction industry in Romania. He points out that interest rate and leverage have a positive correlation with company performance. In contrast, Ghencea (2008) highlights that leverage and company capitalization rate significantly affect total shareholder return.

Dragota (2008) conducted an analysis into the dynamics of capital structure determinants for the Romanian capital market and finds a positive correlation between leverage and growth opportunities.

Garcia Jara et al. (2011) aim to identify this type of influence by grouping the influence factors to evaluate the quality of the accounting information and ease the financial analysis process carried out by various users. Lannto and Sahlström (2009) also limit themselves at a whole indicators series when analyzing the impact of the evolution of the Finnish norms to IFRS.

Triandafil et al. (2010) analyzes the macroeconomic impact on the Romanian listed companies' profitability, using data between 1997-2007. In order to evaluate the profitability, the indicators taken and used from the financial statements are the company liquidity, solvability and firm's dimension (together with macroeconomic variables). The conclusion of this study was that they discover a significant influence of liquidity, solvability and dimension of the firm on profitability.

An analysis model proposal based on modern performance indicators is also given by Savin (2013), who limits himself to promoting the global result, also considering aspects regarding the social and environment performance.

The advantages of using principal component analysis are emphasized by Armeanu and Neagu (2011), who think that the main advantage of using this method is that it reduces the initial causal space to an equivalent space of less considerable dimensions. The authors rank the analyzed companies according to the registered scores of the principal two components.

The implementation of the principal component analysis is also found at Robu and Istrate (2013) who use the same indicators and the same grouping method, though aiming at emphasizing the impact of the financial crisis started in 2008 on the data reported by the Romanian listed companies.

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3. The analysis of the real estate investment impact on the performances of the companies

3.1. Material and method

For a long period of time, the financial performance was perceived as the ability to earn profits. A company can be seen as performing when it satisfies the interests of stockholders: The managers are interested in making a profit and their work will be paid as such; the owners want to maximise their wellbeing through the increase of the market value of the company, the stockholders perceive the performance as the ability of the company to distribute the dividends for capital investment, the creditors want to be sure that they would retrieve the loans in a timely manner from the company, the employees want a stable workplace, with material benefits, the state wants the company to pay its taxes, to create new workplaces and to be efficient. Briciu (2006) notes that „the result of the tax year does not depend only on the economic and financial performances of the company, but to a certain extent, on its methodological options in terms of assessment.''

The study aims at the identification of the determining factors of the performances of the entities in the real estate field and the setting up of a composite index of the companies' performances based on a sample made of 29 companies listed at the BVB Bucharest in the year 2019, by using one of the multidimensional data analysis techniques - the principal component analysis. The data regarding the companies in the sample were taken from the balance sheet and the profit and loss account. The source of the data is represented by the BVB Bucharest for the year 2019.

1.2. Setting up of the composite index of the companies' performances

The profitability of the assets is one of the main profitability indicators of a company and it measures the efficiency of assets use, from the point of view of the profit obtained. This indicator measures the profitability obtained by a company based on its assets. The higher the value of the indicator, the more profit generated by a certain level of assets.

One of the most important indicators is the profitability of the equities, also called ROE (return on equity). It is calculated as a ratio between the net profit and equities and it shows the efficiency with which the company invested the money of the stockholders.

This indicator measures the profitability obtained by a company based on its equity. A higher value of the indicator means that a small investment of the stockholders was transformed in a high profit.

A company is considered to have good performances if this profitability is significantly higher that the interest of a bank deposit. The investment in the stock of such a company has higher chances to bring good returns, provided it is not already overrated.

A company with a high level of debt-to-equity and a low level of financing from the money of the stockholders will generally have a higher profitability of equities than one which is financed more from the stockholders. The advantage is the obtaining of a higher profit on behalf of the same investment from the stockholders, but the disadvantage is a higher risk given by an increase dependence on debts.

Thus, the following activity (management) indicators were used – rotation of total assets, liquidity indicators, general liquidity ratio, solvency indicators – general solvency ratio and the general debt-to-equity ratio, as well as profitability indicators – net profit margin, ROA, ROE, gross return of portfolio. In addition, the weight of the real estate investments in the turnover as also introduced in the analysis.

Table 1: *Description of the indicators used*

Used indicator	Calculation formula
DEBT-TO-EQUITY RATIO (FINANCIAL LEVER) (FL) Also known as "lever ratio", it expresses the total debt-to-equity (on short, average and long term) of the enterprise in relation to its equity. The result must be proper value, an improper value meaning an increased debt-to-equity level. A value that exceeds 2,33 expresses a very high debt-to-equity level; the company can be even in the state of imminent bankruptcy if the result exceeds the threshold of 2,33 by a few times.	FL = TD / E TD = total debt E = equity
NET PROFIT MARGIN (NPM) The ratio between the net profit of the year and the net turnover. It expresses the profitability of the entire activity, the profit taken into consideration being influenced by the profit tax, it represents one of the most common and important ratios calculated in the financial analysis. The ratio must not be used in the multi-period and multi-company comparative analysis because it is influenced by taxation.	NPM = NP / TO NP = net profit TO = turnover
PROFITABILITY RATE OF TOTAL ASSETS (ROA) It measures the net performance of the company's assets after the calculation of the profit tax. Since it is burdened by the taxation of the profit it must be analysed carefully in the multi-annual analyses. It can be compared with the ratio obtained by other companies. It must be under continuous growth.	ROA = (NP / TA) x 100 NP = net profit TA = total asset
FINANCIAL PROFITABILITY (OF EQUITIES) (ROE) It measures the net performance of the company's equities, those brought by investors, current profit and uncollected profit (as reserves and undistributed profit). It must cover the current interest rate. A too increased value of the indicator could also mean a low joint stock, an issue which must mobilise the stockholders to adjust the joint stock to the size of the business. The current interest for one-year bank deposits is used as reference threshold. The first and most simple financial investment is to keep your money in the bank and the following in an investment fund. But an investment in another business should exceed the earnings obtained by placing the money in a bank.	ROE = (NP / E) x 100 NP = net profit E = equity
ROTATION OF TOTAL ASSET (RTA) It expresses the number of (theoretical) replacements of the total asset with the turnover. A rotation lower than 2 raises question marks. The ratio must be compared with the average of the industry.	RAT = TO / TA TO = turnover TA = total asset
GLOBAL SOLVENCY (GS) It indicates the possibility of covering the total debt with assets. The ratio is also called "General solvency". In terms of value it is equal to the net accounting asset, respectively equities. The indicator must be improper and as close as possible to 2.	GS = (TA / TD) x 100 TA = total asset TD = total debt
Current liquidity (Current ratio) This ratio expresses circulating assets (assets estimated to be transformed in cash in less than a year) in relation to current debt (debt with a due date shorted than a year). A higher ratio indicates a higher level of liquidity, namely a higher capacity to fulfil short term obligations.	Circulating assets / Current debt (< 1 year)
The yield on gross loan portfolio It indicates the capacity of the gross loan portfolio to create financial incomes from interests, taxes and commissions.	The financial incomes in cash from the loan portfolio / average gross loan portfolio.

The weight of the real estate investments in the TO	Real estate investment / TO * 100

The activity indicators measure the efficiency of a company in performing daily tasks such as the collection of the debt and management of the inventory. These indicators reflect the long term efficiency of the capital and assets management.

The liquidity indicators focus on cash flows and have the purpose to measure the capacity of a company to fulfil its short term obligations. The liquidity measures how fast the assets of a company can be transformed in cash.

The solvency indicators measure the capacity of a company to fulfil its long term obligations.

The profitability indicators offer the analyst an image related to the capacity of the company to create profits from the invested capital and the values of the titles it releases.   It also shows how competitive a company is on the market and the quality of its management.

The descriptive analysis, the principal component analysis will be applied within the study for setting up the composite index of the companies performances and the cluster analysis will be applied in order to highlight the most important companies from the point of view of the financial performance.

The first step of the analysis is represented by the standardization of data through the fact that the various variables have different measurement units. The standardization operation of the values of a variable consists in the substitution of the values of each operation with a new value and it represents the ratio between the centred value of that operation and the standard deviation of that variable.

PCA is a useful technique for the transformation of a high number of variables from a data set in a smaller and more coherent set of uncorrelated (orthogonal) factors, the principal components. The principal components retrieve a great part from the variation of the original variable set. Hence, it is important to select the first principal components (factors), which keep a "greater" amount from the cumulated variation of the original data.

Each component is a linear combination of the initial variables. The components are ordered to that the first component retrieves the greatest amount possible of variation from the original variables.   The second component is completely uncorrelated with the first component and it retrieves a maximum of variation that was not retrieved by the first component.

Thus, the principal component analysis is a multi-varied statistics technique which has a purpose the extraction of a small number of latent factors responsible for the correlations between the original variables that retrieve as much as possible from the total information contained in the original data.

In order to select the component, Kaiser's criterion was used, implying the selection only of the principal improper components, because only the principal components with a higher variation than the one of the standardised original variables (null average and variation equal to 1) should be extracted, according to Kaiser's criterion (Armeanu et al., 2008).

In order to interpret the principal components in the terms of original indicators the Varimax technique was applied; it implies that the principal component be strongly correlated with some of the original variables and poorly correlated with the other ones.

The composite index will be determined by using the weights retrieved by each principal component in the total of the variation of all components and later on this index was scaled to take values between 0 and 100 in order to facilitate the interpretation of the results through the use of the option „rank cases" from SPSS.

Based on the values of this index, the financial performance of the companies during the year 2014 could be assessed. The value of 50 represents as average performance.

The cluster analysis is another tool in the development of the composite indicators in order to group information regarding the companies based on their resemblance in terms of various individual indicators. The analysis of the classification or the "cluster" analysis has as a purpose the grouping of the companies so that the entities that belong to the same class be as similar as possible to one another through the values of their variables (that is to be similar) while the classes built be as different as possible.

4. Empiric results

In order to treat the issue of the different measurement units of individual variables, the data have been standardised. The descriptive statistics of the financial performance indicators are shown in the following table:

Table 2: *Descriptive statistics of the used indicators*

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
rotatia_activului_total	29	.0234	1.5704	.579957	.4209271
rata_lichiditate_generala	29	.0314	17.9695	4.252757	4.6632985
rata_solvabilitate_generala	29	.0129	4.1011	.353538	.7395048
grad_indatorare_generala	29	-131.2547	133.3263	31.656332	47.5383075
Marja_profitului_net	29	-1.2624	.5251	.015612	.3323304
ROE	29	-.7580	.2880	.033869	.1752772
ROA	29	-.5059	.2248	.022269	.1196548
DIVY	28	.000	22.610	4.10429	5.094559
invest_imob_CA	29	.0019	28.6808	1.499727	5.5347631
Valid N (listwise)	28				

Source: Own projection

Table 2 presents descriptive statistics regarding the financial performance variables.
The proper value of the „lever rate" (0.3165) which expresses the total debt-to-equity level (on short, average and long term) of the entity in relation with the equity suggests a debt-to-equity level that is not so high. The net profit margin which expresses the profitability of the entire activity shows a quite low average profitability of the companies. The average value of ROA and ROE shows a quite reduced performance of the asset of the company.
The rate of general solvency shows a quite reduced average solvency. In terms of general liquidity, a higher ratio indicates a higher level of liquidity, namely a higher capacity to fulfil short term obligations.
Table 3 shows the dispersion explained by the initial solution, the components extracted and the rotated components. The „% of variance" column presents the amount of information retrieved by each principal component. In the „Initial Eigenvales" column we identify the four own improper values in descending order, precisely: λ_1 =2.81, λ_2 =1.86, λ_3 = 1.34, λ_4=1.18.

Thus, we can state that if we consider the existence of a single synthetic indicator (it explains 31,30% from the total of variation of the data and accept the existence of two synthetic indicators) we retrieve another 22,75% from the total variant and we obtain a total of 52,07% from the total variation of the variables. If we consider the existence of three principal components, they retrieve 67% from the variation of the original variables and the last principal component brings an extra 13,20% contribution from the variation of the original variables.
In order to interpret the principal components in terms of original variables, we will analyse the correlation coefficients calculated between the two principal components and the indicators. A principal component can be „explained" through that initial variable for which

the correlation coefficient is maximum but, at the same time the initial variable has small correlation coefficients with the other principal component. This way we recommend an „axis rotation" with the purpose of obtaining correlation coefficients as low as possible on one or two principal components. One of the most used rotations is known as the "Varimax technique".

Table 3 : *Own values on components and their weight*

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.819	31.326	31.326	2.819	31.326	31.326	2.155	23.947	23.947
2	1.868	20.750	52.077	1.868	20.750	52.077	1.820	20.219	44.167
3	1.343	14.921	66.998	1.343	14.921	66.998	1.653	18.367	62.534
4	1.188	13.204	80.202	1.188	13.204	80.202	1.590	17.668	80.202
5	.752	8.355	88.557						
6	.539	5.985	94.542						
7	.328	3.640	98.181						
8	.124	1.375	99.556						
9	.040	.444	100.000						

Extraction Method: Principal Component Analysis.

Source: Own projection

Table 4 presents the principal components that are strongly correlated with the original variables.

Table 4: *Empiric results of the rotated matrix of principal components*

Rotated Component Matrix[a]

	Component			
	1	2	3	4
Zscore(rotation_of_total_asset)	.067	.003	.424	.691
Zscore(general_liquidity_rate)	.238	-.137	-.928	.094
Zscore(general_solvency_ratio)	-.538	-.715	.317	.105
Zscore(general_debt-to-equity_level)	.048	.933	.149	.154
Zscore(Net_profit_margin)	.897	.071	-.018	.048
Zscore(ROA)	.774	.542	-.076	.085
Zscore(ROE)	.535	-.332	.681	.148
Zscore(DIVY)	.290	.103	-.070	.616
Zscore(invest_imob_CA)	.167	-.017	.124	-.811

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 17 iterations.

Source: Own projection

The first principal component has positive coefficients (loads) with the profit margin (0,89) and can be defined in terms of profitability indicator. The second principal component can be defined in terms of general debt-to-equity indicator (lever). The third principal component can be defined in terms of general liquidity indicator (0,928). The last principal component is mainly dominated by the weight of real estate investment in the turnover (-0.811).
Therefore we can state that the weight of the real estate investment represents an important factor in the financial performance of the companies.

Following the realization of the graphic representation, after the two principal components we observe a quite compact group of companies which seems to have a similar behaviour in relation to the new indicators, but also 5 companies separating from the group.
As a consequence of the analysis of the main groups of companies after the first two principal components – net profit margin and general debt-to-equity level – which retrieve more than 50% of the variation of the original variables (52.07%) we can distinguish the following groups of entities:

Figure 1: *Distribution of entities in the space of the two principal components*
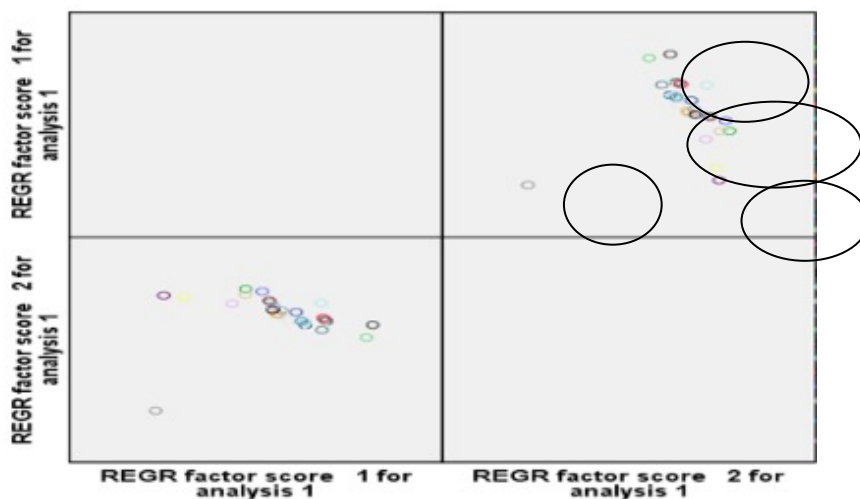
Source: Own projection

Class 1: Includes one company with poor scores on both principal components, the margin of the net profit and the general debt-to-equity level.
Class 2: Includes two companies which have a good score on the second component „general debt-to-equity level" and poor scores on the first component „net profit margin"
Class 3: Includes two companies which have good scores on the first component „net profit margin" and poor scores on the second component „general debt-to-equity level".
Class 4: Includes the companies that have an average score on both components.
The value of the Kaiser-Meyer-Olkin (KMO) statistics which measures the adequacy of the sample of financial performance indicators in the construction of a synthetic indicator and the results of the Bartlett test shows us the fact that the setting up of the composite index makes sense.

Table 5*: The results of the KMO and Bartelett tests*

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.449
Bartlett's Test of Sphericity	Approx. Chi-Square	120.484
	df	36
	Sig.	.000

Source: Own projection

2. Conclusions and limits

The main objective of the study was the identification of the determining factors of the performances of the companies from the real estate field and the setting up of a composite index of the performances of the companies based on a sample made of 29 companies listed at the BVB Bucharest in the year 2019.

For this, we applied multidimensional data analysis method – the principal components analysis and the cluster analysis, with the purpose of identifying the main latent variables with significant impact on the performances of the selected companies.

The results of the study showed that the net profit margin, the level of general debt-to-equity, general liquidity indicator and weight of the real estate investment in the turnover explains the financial performances of the companies listed at the BVB in the year 2019.

As a consequence of grouping the companies according to the first two components which retrieve approximately 52% from the variation of the original variable, two companies stood up with a better score on the component "general debt-to-equity level" two companies showed with good scores on the component "net profit margin".

As limitations of the research we mention that the information was analysed for only one year, namely 2019. As a restriction, we also remark the size of the sample consisting of 29 companies listed at the BVB.

As recommendations for future research we wish to set up a composite index of company performance for the assessment of the performances, but on a 4-year period, through the multi-varied principal component analysis specific to the panel type data and identification of the company groups according to their performances. Later on, we will follow the analysis of the impact of real estate investment on the performance of the companies based on the aggregate index obtained previously though the regression analysis specific to the panel type of data.

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