



PARAMETERS THAT PROVIDE HIGHER EXPLANATION ESTIMATING BETAS IN THE PORTUGUESE STOCK MARKET¹

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ABSTRACT

During decades, tests have been developed to verify whether the beta is the best tool to explain the returns of securities on the stock market. Moreover, the value of the beta and its coefficient of determination (R-squared) vary with different parameters used for estimating the beta. In this paper, we investigate for the parameters that provide a higher explanation when we estimate the beta on the Portuguese stock market. We use all nine economic groups listed on the Euronext Lisbon and, for each of those groups, determine which company has the highest market capitalization and highest turnover at the same time, measured in millions of Euros and thousands of Euros, respectively. The linear regression and correlation coefficient between each of the companies can be calculated by studying two national indexes (PSI20 and PSI General) to determine if they get better results with respect to a given period, frequency data or index.

We conclude that the explanatory power of R-squared in the Portuguese stock market is very low, independent of the parameters used. When analyzing the year 2008 using linear regression, it remains unclear whether it is preferable to use daily returns or weekly returns, since half of the surveyed companies report the highest yield using either method. The explanatory power of R-squared is higher when using extended time periods and monthly returns, and the results become more accurate when doing the regressions with the PSI20 Index.

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I. INTRODUCTION

There is not an agreement in the academic environment on which model is more reliable for the evaluation of companies in order to take the decision to choose one model over another. The feeling that exists when assessing companies is that different methods provide different values for the same organization. Nevertheless, Copeland et al (2002, p. 49) assert that company valuation is a fundamental tool that can be implemented in an organization to guide it in order to find a unique vital goal that is to create shareholder value.

Damodaran (1999) shows that any perception that the analyst brings to the evaluation process will eventually be incorporated into the value. Moreover, analyst proficiency resides in the ability to identify the value of the company and its shares on the market bearing in mind the future expectations of the company business performance. Fernández (1999), Copeland et al. (2002) and Neves (2002) consider that the most consistent valuation model is the Discount Cash Flow, pointing out that the company's value come from the company's ability to generate cash flows to shareholders. There have been many studies using this model. Among them, we may refer: Modigliani & Miller (1958; 1963), Miller & Modigliani (1961), Myers (1974), Arditti & Levy (1977), Kaplan & Ruback (1995), Luehrman (1997), Stewart (1999), Copeland et al. (2002), or Fernández (2008b).

Estimating the value of a company using the discounted cash flow method implies a set of essential variables that goes through cash flows, discount rate, residual value and time horizon. To achieve the discount rate we should be aware that it has to reflect the opportunity cost of not investing in another asset with the same risk level. Although there are studies that criticized the Capital Asset Pricing Model (CAPM), among which Banz (1981) or Bhandari (1988), it remains commonly used in determining the profitability of an asset from the shareholders' perspective because of its simple calculations. However, there is a need to check the risk free interest rate to use (R_f), the risk premium ($R_m - R_f$) and Beta (β), representing the systematic risk. Since the last one affects the business in general and commonly is hardly reduced.

The Beta of a particular firm shows different values depending on the used parameters (Damodaran, 1999). The index representing the market, the time period or the frequency used will result in different values for the Beta. Many have been the studies undertaken to demonstrate that the actual estimation of this parameter according to the CAPM is not the best solution, including Elsas et al. (2003) Fernández & Carabias (2007), Fernández (2008a; 2008b), Fernández (2009a; 2009b).

Based on Fernández (2008a) and Carvalho & Barajas (2010), we aim to identify if the Portuguese market is able to record a homogeneous behavior in the use of parameters common to all firms in the sample. To do so it will be considered the R squared and its correlation coefficient. There have been several studies to try to explain why R2 is different between markets and businesses, including: Morck et al. (2000), Durnev, et al. (2003), Piotroski & Roulstone (2004), Jin & Myers (2006) and Chan & Hameed (2006). However its consequences have not been properly investigated.

In this research, we intend to find the parameters used in calculating the beta which achieve a better fit (R^2) in the Portuguese market using a sample that includes one company of each economic sector represented in the Euronext Lisbon to further develop its impact on firm value. The analysis has been conducted through a period of five years - from 2004 to 2008. To test the Beta explanation degree (R^2) and the correlation coefficient, time periods of one to five years

through daily, weekly and monthly frequencies has been used. The data required for the construction of the resulting Beta were courtesy of Euronext Lisbon.

Apart from the introduction, this article is divided as follows: the empirical model is presented in the next section, in the following point the universe and sample are presented, in order to show the results obtained in Section 4, to finish with the conclusions in Section 5.

II. EMPIRICAL MODEL OF OUR STUDY

The study is developed through the CAPM. Beta is estimated in order to quantify if its explanatory power given by the squared R is relevant. We also test if there are some parameters that ensure a greater degree of adjustment.

We consider the closing price of each title for each of the periods under review to quantify the dependent variables and the independent variable (proxy). We test which of the national index provide better explanation, whether the PSI 20 Index or the PSI General, and if we can standardize it to all companies. We chose to use the closing price of the data on a daily, weekly and monthly basis. With regard to quotations weekly basis it was considered the closing price each Friday. With regard to quotations per month, it was considered the last date value of the last price of each month.

Later through the bivariate analysis, Betas were calculated changing the parameters. We have obtained R-squared and correlation coefficient for each one of the nine companies studied. It has been carried out a sensitivity analysis for different frequencies and five time horizons (annual period of 2008, two-year period between 2007 and 2008, three years between 2006 and 2008, four years from 2006 to 2008 and five years from 2004 to 2008). With those elements, the achievement is to quantify and complete if there is a horizon and a higher frequency to produce systematically greater explanatory power and correlation, and if carried over the same index for all economic sectors under study.

III. UNIVERSE AND SAMPLE

Considering as true the hypothesis of market efficiency, at the semi-strong version, the market capitalization represents the value of the company from the perspective of shareholders and the price per share represents a proxy of the value of the action. As in Carvalho & Barajas (2010) the universe of application are listed companies on the official stock market of Euronext Lisbon at 31stDecember 2008, according to the official bulletin and list report annual data from Euronext Lisbon.

We choose companies listed on the Euronext Lisbon since it is the only national market. Thus, they are the companies with the greatest amount of information available, in accordance with the requirements of the *Comissão de Mercados de Valores Mobiliários (CMVM)*, the Portuguese organization equivalent to the US Securities and Exchange Commission. Consequently, it is assumed that the requirements are met by the CMVM and the information provided is credible. In December 2008, there were listed on Euronext Lisbon a total of 55 companies, of which 49 were Portuguese and 6 foreign. According to this information we chose to limit the analysis to Portuguese companies. The choice of the period to analyze includes five years from 1st January 2004 to 31stDecember 2008 for the reasons explained below.

Since 1st January 2005 and by Regulation (EC) 606/2002 1, from the European Parliament and Council of July 19, listed companies were obliged to present accounting information in accordance with International Accounting Standards (IAS) or International Accounting Standards (IAS), now known as International Financial Reporting Standards (IFRS). This was another step taken to remedy any gaps in relation to "real" book value. Thus, it was considered still feasible to use the year 2004, since that the annual report for 2005 contained information regarding 2004.

Carrying the selection of content and companies to investigate, it was considered Neves (2002). He admits that, according to financial theory, the index must have three characteristics: market portfolio should consist of the largest number of investments; the index should be adjusted from dividends; the index should not result from a simple average, but from a weighted average of the assets in the market. However, (Ehrhardt, 1994) concludes that empirical results are identical with or without dividend adjustment. So, we use the data without being adjusted from dividends.

Aggregating in a single index the average returns of all investments existing in the market is not an easy task, maybe impossible. Therefore, usually an index represents the market. Considering the Portuguese market, choice remains on the PSI20 Index or the PSI General. The last one encompasses a larger number of investments. However, it includes assets that are not traded daily. On the other hand, PSI 20 index has higher liquidity and trading volume. We chose to use both as a proxy from the market to validate whether any can register a similar behavior in all companies under analysis.

At the companies selection for the case study some criteria were considered:

- a) Being companies with Portuguese funds;
- b) Include a company by each economic group in the study. For this purpose it was necessary to identify the economic groups existing in the PSI 20 and PSI General to ascertain whether they were all included in the PSI 20. Noting that there are two groups in the PSI General who were not represented in the PSI 20 index was deemed advisable to incorporate them into the study;
- c) Select companies by sector with the highest market capitalization, higher weight in the General Index and higher trading volume;
- d) It was decided at the outset that if the companies had the same weight in the index, it would be selected the company with greater market stock capitalization.

The sample is limited to nine companies, each being a representative of the various economic groups contained in the PSI General Index. Initially, only the ones present in the PSI20 index were considered but that meant to not identify and analyze the trends in consumer goods groups and technology. The nine companies selected were based on stock market capitalization, influence in the General Index and the volume traded, and the chosen company was which showed higher values than December 31st2008 by economic group.

The accepted criteria ensured that all economic groups represented in the Euronext Lisbon were under analysis. Euronext Lisbon was the main source of data through the sale prices of companies under scrutiny, the official stock newsletters and annual reports. The time period of five years allowed us to analyze the evolution of companies. This criterion is not verified in Galp

Energia because it has only been admitted to trading on October 23rd2006. Despite its few historic data it was considered relevant to observe its behavior, as it is the only company in terms of the economic group and being the second in terms of market capitalization as a representation in terms of weight in the index, and third in respect to market transactions.

Based on those criteria's, the general conclusion was that the companies targeted by this investigation were: EDP, Galp Energia, Portugal Telecom, Banco Comercial Português (BCP), Brisa, Jerónimo Martins, Portucel, Sumol + Compal and Novabase.

IV. RESULTS

The results for the R-squared and the correlation coefficient based on daily prices, weekly and monthly rates are presented respectively in Tables 1, 2 and 3. Table 4 presents in summary mode the maximum values obtained in terms of the indicators, identifying where is registered for each company of the nine economic groups represented in the Euronext Lisbon. It should be noted that Galp analysis has only been in two historical periods 2007 to 2008 and 2008, as it has been admitted to listing on 23 October 2006.

According to the following table, it appears that the explanatory power of the R-squared is reduced. However, it increases with decreasing the time horizon. We noted also that there is no homogeneity in the index so as to achieve greater explanatory power.

EDP is the company that presents the higher the R-squared according to daily basis. It verifies that some 71.7% of the company's return is justified by the PSI General Index behavior, i.e. the remaining 28.3% are explained as company specific risks. In contrast, it appears that the company with less explanatory power through the index is Sumolis, noting that this is almost nil throughout the different periods under review. Thus, it can be stated that Sumolis behavior is independent of market behavior, deriving 100% of the specific risk.

Through the correlation coefficient it may be noted that the company's move is the reverse for all periods under review except for the five-year period from 2004 to 2008.

According to the period of measurement using weekly prices, in one hand it is verified that EDP remains the company that simultaneously has higher explanatory power (67.2%) and highest correlation coefficient (82.0%) at the PSI General index and secondly, that Sumol+ Compal is the company that present lower R-squared since the company's returns are only explained at 3.2% by the market returns variation. It should also be noted that Sumolis presents inverse motions to indexes in all periods under review.

Checking the R-squared on a monthly basis, we observe that Portugal Telecom is the company with greater explanatory power and its returns will be explained by market (PSI20) variations at approximately 65.0% and a correlation of 80.7%.

TABLE 1 - EXPLANATORY POWER OF R-SQUARED AND THE CORRELATION COEFFICIENT THROUGH DAILY RETURNS

COMPANIES		2004-2008		2005-2008		2006-2008		2007-2008		2008	
		PSI 20	GERA L	PSI 20	GERAL	PSI 20	GERA L	PSI 20	GERA L	PSI 20	GERA L
Brisa	R ²	0.329	0.313	0.352	0.335	0.379	0.358	0.396	0.372	0.427	0.400
	Corr.	0.574	0.559	0.594	0.579	0.616	0.599	0.629	0.610	0.653	0.632
Portugal Telecom	R ²	0.443	0.408	0.443	0.401	0.445	0.399	0.473	0.427	0.575	0.523
	Corr.	0.666	0.639	0.666	0.633	0.667	0.632	0.688	0.653	0.758	0.723
EDP	R ²	0.570	0.541	0.598	0.580	0.616	0.603	0.647	0.640	0.714	0.717
	Corr.	0.755	0.735	0.773	0.762	0.785	0.776	0.804	0.800	0.845	0.847
BCP	R ²	0.444	0.404	0.437	0.407	0.439	0.414	0.459	0.435	0.461	0.432
	Corr.	0.666	0.635	0.661	0.638	0.663	0.643	0.678	0.660	0.679	0.657
Jeronimo Martins	R ²	0.082	0.088	0.088	0.094	0.092	0.097	0.089	0.094	0.305	0.316
	Corr.	0.286	0.297	0.297	0.307	0.303	0.312	0.299	0.307	0.553	0.563
Galp	R ²							0.432	0.484	0.515	0.583
	Corr.							0.629	0.483	0.553	0.582
Portucel	R ²	0.258	0.281	0.283	0.308	0.337	0.361	0.407	0.426	0.433	0.448
	Corr.	0.508	0.530	0.532	0.555	0.581	0.601	0.638	0.653	0.658	0.670
Sumol + Compal	R ²	0.000	0.000	0.000	0.001	0.001	0.001	0.001	0.001	0.001	0.002
	Corr.	0.008	0.003	-0.020	-0.024	-0.026	-0.030	-0.029	-0.034	-0.033	-0.039
Novabase	R ²	0.162	0.172	0.172	0.184	0.183	0.196	0.195	0.206	0.204	0.213
	Corr.	0.403	0.414	0.415	0.429	0.428	0.442	0.442	0.454	0.451	0.461

Source: Author's calculation

According to Table 4, it is shown that on a daily basis the companies obtain a greater explanatory power when used a shorter and most recent time period, 2008 and one year respectively. It is achieved a greater explanatory power through the PSI General index at most companies. The exceptions are: Brisa, Portugal Telecom and BCP.

TABLE 2- EXPLANATORY POWER OF R-SQUARED AND THE CORRELATION COEFFICIENT THROUGH WEEKLY RETURNS

COMPANIES		2004-2008		2005-2008		2006-2008		2007-2008		2008	
		PSI 20	GERAL	PSI 20	GERAL	PSI 20	GERAL	PSI 20	GERAL	PSI 20	GERAL
Brisa	R ²	0.339	0.307	0.358	0.327	0.393	0.356	0.391	0.353	0.414	0.367
	Corr.	0.582	0.554	0.598	0.572	0.627	0.597	0.625	0.594	0.644	0.605
Portugal Telecom	R ²	0.456	0.439	0.358	0.443	0.466	0.443	0.480	0.455	0.566	0.541
	Corr.	0.675	0.663	0.681	0.665	0.683	0.666	0.693	0.675	0.753	0.736
EDP	R ²	0.559	0.530	0.587	0.443	0.599	0.586	0.622	0.616	0.664	0.672
	Corr.	0.748	0.728	0.766	0.754	0.774	0.765	0.789	0.785	0.815	0.820
BCP	R ²	0.483	0.439	0.485	0.568	0.484	0.453	0.470	0.440	0.451	0.407
	Corr.	0.695	0.663	0.697	0.670	0.696	0.673	0.685	0.663	0.671	0.638
Jeronimo Martins	R ²	0.079	0.086	0.082	0.090	0.085	0.092	0.078	0.085	0.328	0.338
	Corr.	0.281	0.293	0.287	0.300	0.291	0.303	0.279	0.291	0.573	0.582
Galp	R ²							0.361	0.397	0.408	0.472
	Corr.							0.601	0.630	0.639	0.687
Portucel	R ²	0.206	0.224	0.223	0.245	0.242	0.266	0.252	0.276	0.237	0.258
	Corr.	0.453	0.473	0.472	0.495	0.492	0.516	0.502	0.526	0.487	0.508
Sumol + Compal	R ²	0.002	0.002	0.007	0.008	0.009	0.010	0.018	0.018	0.030	0.032
	Corr.	-0.041	-0.049	-0.084	-0.087	-0.096	-0.098	-0.135	-0.135	-0.173	-0.179
Novabase	R ²	0.208	0.214	0.021	0.218	0.217	0.223	0.225	0.234	0.272	0.274
	Corr.	0.456	0.463	0.459	0.467	0.465	0.472	0.475	0.483	0.522	0.524

Source: Author's calculation

If analyzed data on a weekly basis, it has to be noted that BCP also gets greater explanatory power in the PSI General index, however, the time horizon is 3 years.

It also notes variation in terms of time horizon in Portucel gaining greater explanatory power when used two years returns. Also on a weekly basis it can be said that there is not a clear tendency from R² since companies do not behave the same way, even with 1 year time horizon.

If companies are analyzed on a monthly basis, it appears, on global terms, that the index with greater explanatory power is the PSI 20, with Galp and Novabase being the exceptions. We noted also that in terms of time horizons there is great dispersion depending on the company analyzed.

TABLE 3- EXPLANATORY POWER OF R-SQUARED AND THE CORRELATION COEFFICIENT THROUGH MONTHLY RETURNS

COMPANIES		2004-2008		2005-2008		2006-2008		2007-2008		2008	
		PSI 20	GERAL	PSI 20	GERAL	PSI 20	GERAL	PSI 20	GERAL	PSI 20	GERAL
Brisa	R ²	0.426	0.388	0.431	0.386	0.425	0.386	0.361	0.319	0.320	0.284
	Corr.	0.653	0.623	0.656	0.621	0.652	0.622	0.601	0.565	0.565	0.533
Portugal Telecom	R ²	0.469	0.447	0.430	0.415	0.440	0.428	0.376	0.370	0.650	0.628
	Corr.	0.685	0.669	0.656	0.644	0.663	0.654	0.613	0.608	0.807	0.792
EDP	R ²	0.543	0.486	0.551	0.492	0.551	0.493	0.466	0.430	0.430	0.409
	Corr.	0.737	0.697	0.742	0.702	0.742	0.702	0.683	0.655	0.656	0.640
BCP	R ²	0.611	0.604	0.591	0.588	0.580	0.580	0.544	0.545	0.266	0.234
	Corr.	0.782	0.777	0.769	0.767	0.762	0.762	0.737	0.738	0.515	0.484
Jeronimo Martins	R ²	0.013	0.009	0.012	0.008	0.010	0.007	0.000	0.000	0.342	0.314
	Corr.	0.112	0.097	0.107	0.088	0.102	0.083	0.007	-0.011	0.585	0.560
Galp	R ²							0.481	0.512	0.513	0.611
	Corr.							0.693	0.716	0.716	0.782
Portucel	R ²	0.344	0.356	0.368	0.393	0.410	0.443	0.377	0.413	0.333	0.355
	Corr.	0.586	0.596	0.606	0.627	0.640	0.666	0.614	0.643	0.577	0.596
Sumol + Compal	R ²	0.009	0.005	0.003	0.001	0.004	0.001	0.003	0.001	0.003	0.000
	Corr.	0.094	0.067	0.054	0.030	0.064	0.037	0.051	0.023	0.052	-0.002
Novabase	R ²	0.152	0.157	0.142	0.153	0.137	0.148	0.124	0.141	0.292	0.297
	Corr.	0.390	0.396	0.376	0.391	0.370	0.385	0.353	0.375	0.541	0.545

Source: Author's calculation

TABLE 4- SUMMARY OF THE BEST R-SQUARED AND THE CORRELATION COEFFICIENT FOR DIFFERENT PARAMETERS

COMPANIES	Period:	DAILY			WEEKLY			MONTHLY		
		Max.	Index	Year	Max.	Index	Year	Max.	Index	Year
Brisa	R ²	0.427	PSI 20	2008	0.414	PSI 20	2008	0.431	PSI 20	05-08
	Correlation	0.653	PSI 20	2008	0.644	PSI 20	2008	0.656	PSI 20	05-08
Portugal Telecom	R ²	0.575	PSI 20	2008	0.566	PSI 20	2008	0.650	PSI 20	2008
	Correlation	0.758	PSI 20	2008	0.753	PSI 20	2008	0.807	PSI 20	2008
EDP	R ²	0.717	GERAL	2008	0.672	GERAL	2008	0.551	PSI 20	06-08
	Correlation	0.847	GERAL	2008	0.820	GERAL	2008	0.742	PSI 20	06-08
BCP	R ²	0.461	PSI 20	2008	0.568	GERAL	05-08	0.611	PSI 20	04-08
	Correlation	0.679	PSI 20	2008	0.697	PSI 20	05-08	0.782	PSI 20	04-08
Jeronimo Martins	R ²	0.316	GERAL	2008	0.338	GERAL	2008	0.342	PSI 20	2008
	Correlation	0.563	GERAL	2008	0.582	GERAL	2008	0.585	PSI 20	2008
Galp	R ²	0.583	GERAL	2008	0.472	GERAL	2008	0.611	GERAL	2008
	Correlation	0.629	PSI 20	07-08	0.687	GERAL	2008	0.782	GERAL	2008
Portucel	R ²	0.448	GERAL	2008	0.276	GERAL	07-08	0.443	PSI 20	2008
	Correlation	0.670	GERAL	2008	0.526	GERAL	07-08	0.666	GERAL	06-08
Sumol + Compal	R ²	0.002	GERAL	2008	0.032	GERAL	2008	0.009	PSI 20	04-08
	Correlation	0.008	PSI 20	04-08	-0.041	PSI 20	04-08	0.094	PSI 20	04-08
Novabase	R ²	0.213	GERAL	2008	0.274	GERAL	2008	0.297	GERAL	2008
	Correlation	0.461	GERAL	2008	0.524	GERAL	2008	0.545	GERAL	2008

Source: Author's calculation

V. CONCLUSIONS

The explanatory power of R² in the Portuguese market is very low regardless the used parameters. If last year is used to develop the linear regression, it is unclear how often - daily or weekly - is better, half of the companies have better fit in each case.

The explanatory power improves with extended time periods and monthly returns. In that case, even better results were obtained when using the PSI 20 Index.

It can be stated that the R-squared in the Portuguese market is not relevant, given that very low values are recorded in the vast majority of companies on one hand, and secondly, there is not clear trend in terms of time horizon. Thus, one cannot identify an R² which permit to homogeneously apply a time period, an index and a frequency for each one company representing the nine economic groups listed on Euronext Lisbon.

Finally, the results could reinforce the position of those, like Fernández (2009a), who affirm that calculated betas do not work better than beta = 1. In fact, in most of the cases (62.5%) in the sample the beta = 1 provides a better correlation than calculated betas.

TABLE 5 - BETAS VS. BETA =1. CORRELATION (RT, RM), CORRELATION (RT,RM) AND ITS DIFFERENCE USING CALCULATED BETA FROM DAILY DATA OF ONE YEAR, AT THE END OF THE YEAR VS PSI20.

	<i>corr(Rt, Rm)</i>	<i>corr(Rt,Rm)</i>	<i>Dif.</i>
BRISA	0,947	0,946	0,001
PORTUGAL TELECOM	0,890	0,858	0,032
EDP	0,964	0,955	0,009
BCP	0,959	0,971	-0,012
JERÓNIMO MARTINS	0,320	0,323	-0,003
PORTUCEL	0,616	0,833	-0,218
SUMOLIS	-0,132	0,439	-0,572
NOVABASE	-0,877	-0,813	-0,064
Average	0,461	0,564	-0,103
MAX	0,964	0,971	
Min	-0,877	-0,813	
<0			5

Source: Author's calculation

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PARAMETRI KOJI DAJU BOLJE OBJAŠNENJE PRI PROCJENI BETA NA PORTUGALSKOM TRŽIŠTU DIONICA²

SAŽETAK

Desetljećima su razvijani testovi koji bi provjerili je li beta najbolji alat za objašnjavanje zarade na vrijednosnicama na tržištu dionica. Osim toga, vrijednost bete i njen koeficijent determinacije (R-kvadriran) variraju s različitim parametrima korištenim za procjenu bete. U ovom radu istražujemo parametre koji daju više objašnjenje prilikom procjene bete na portugalskom tržištu dionica. Koristili smo svih devet ekonomskih grupa kotiranih na Euronext Lisbon te smo za svaku od tih grupa odredili koja kompanija ima najvišu tržišnu kapitalizaciju i najviši promet u isto vrijeme, mjereno u milijunima i tisućama eura, odnosno. Koeficijent linearne regresije i korelacije između pojedinih kompanija može se izračunati proučavanjem dva nacionalna indeksa (PSI20 i PSI General) kako bi se ustanovilo dobivaju li se bolji rezultati u odnosu na dani period, frekvenciju podataka ili indeks.

Zaključujemo da je moć objašnjenja R-kvadriranog koeficijenta na portugalskom tržištu dionica vrlo niska, bez obzira na korištene parametre. Analizirajući godinu 2008. uz pomoć linearne regresije, ostaje nejasno je li bolje koristiti dnevnu ili tjednu zaradu s obzirom da polovica anketiranih poduzeća prijavljuje najveću dobit koristeći obje ove metode. Moć objašnjenja R-kvadriranog koeficijenta je veća kad se koriste duži vremenski periodi i mjesečne zarade a rezultati su točniji kada se regresije rade s PSI20 indeksom

Ključne riječi: Beta, koeficijent determinacije, rizik, portugalsko tržište dionica, procjena

² Ranija verzija ovog rada je predstavljena na 6. godišnjem međunarodnom simpoziju o ekonomskoj teoriji, politici i primjenama