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HOW DIFFERENTLY DO OUR NON-LARGE COMPANIES LISTED ON THE PORTUGUESE STOCK EXCHANGE PERFORM?

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ABSTRACT

Behind the glamour of the largest and more mature companies listed on Stock Exchanges all over the world there is a much larger segment of companies also listed that tend to perform differently from the most visible ones. This visibility is also magnified by the fact that those large companies are part of the sample indices computed for most markets in order to translate the entire listed market with a small but manageable sample of companies.

However, on many exchanges new indices have been created to place the different segments of the remaining listed market – micro, small and medium capitalization companies – under the spotlight of investors. This not only brings more visibility to these non-large firms, but also contributes to improving the liquidity of these companies and, more importantly, to uncovering the so-called Size Effect. Through the construction of a new MidCap share Index, this work aims to bring visibility to our companies that are not included in the PSI20 Index and check the existence of the above mentioned Size Effect in our market.

Keywords: Medium Capitalization Companies, Portuguese equity market, Stock Index, Size Effect.

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INDEX

1. INTRODUCTION

In Portugal, Stock Indices are recent indicators of average share behaviour, mainly because, before the suspension of Stock Exchange operations associated with the military coup of 1974, the existing indices were calculated and published by the Bank of Portugal – indices of quantities and of prices – but not designed according to the current modern models of calculation, and also because, after these operations resumed in 1977, it was only in 1988 that there were basic conditions of liquidity and diversity to launch a Stock Index made up of all the share issues listed on our main market - the BVL General Index.

The diversity of share indices connected to most of the mature foreign Stock Exchanges has no parallel in Portugal for a number of reasons, and this limitation is further reinforced by our local media that summaries daily the behaviour of our local Exchange with an Index that was not created for that purpose but only to function as the underlying asset for Futures and Options contracts – the frequently cited PSI 20 Index. Since this Index is only associated with the 20 most representative companies listed, it produces only a partial view of our domestic share market in a way similar to, for example, the CAC40 for France and the DAX30 for Germany.

However, in many foreign markets, it has been found that medium and small companies have offered a somewhat larger average return to their investors, a result that is either not measured by the type of sample indices of our PSI-20 or appears diluted among the more heavily sampled returns produced by those "most representative" companies included in the diversified general indices along with large to small issues. Therefore, some studies have focused on this medium and small segment of the share market in several countries to see if there is a Size Effect is present, and, if so, whether it remains significant even after being uncovered by those studies.

The Size Effect is defined as the *"historically observed tendency for small companies to have higher returns than large companies"* (Fernholz, 1998), and it seems to be present also in the Portuguese market, as mentioned by V. Brás (2009). However, this last study was made with a

gross estimation of the average return of our medium to small capitalization companies, due to the lack of a Portuguese Stock Exchange Index focused on such small companies.

This project aims to contribute to filling this gap, and the first idea was to create an Index that would include all listed companies on the Portuguese Stock Exchange excluded from the group of the 20 largest firms of the PSI 20 sample.

Unfortunately, the number of listed companies of Euronext Lisbon bellow the 20 largest is small and, worse still most of them show an extremely thin market, which does not allow the construction of a share Index with quotations for every trading day. Only the largest of those non-20 issues can be selected and this justifies the name chosen for this new Index, the BVL Mid Cap, as those that were particularly small had to be excluded due to a lack of data in a number of trading days.

Therefore, one of the main motivations for this project was the fact that the Portuguese market seems to have appealing features that would benefit from the existence of an Index with this kind of characteristics. For historical reasons, Portugal is characterized as having a weak financial culture and the Portuguese stock market is a relatively small market – and also illiquid – especially when considering the smaller companies. Additionally, throughout the world there has been a greater focus of the investor's attention on medium and small capitalisation companies which has led to a significant improvement of the stock market liquidity of those small issues.

To sum up, the main objective of this work project is to give support to future studies and analyse the behaviour of the Portuguese medium cap companies listed on the Euronext Lisbon, therefore contributing to improving the liquidity of these companies that are one of the main pillars of the Portuguese economy.

This report is structured as follows: Section 2 reviews the literature concerning the theme that is presented, the performance of Portuguese non-large companies listed on the Portuguese Stock Exchange and it is subdivided into four parts: i) the Portuguese case; ii) potential financial

products related to the Index; iii) other countries; and iv) the Small Size Effect and the Liquidity Constraint. Section 3 presents the main procedures for implementing the new Index with an explanation of the results and considerations and it is subdivided into two parts: i) evidences of a potential Size Effect in Portugal; and ii) constructing and analysing the Index, where the methodology, main underlying assumptions, results, and corresponding analysis are included. Finally, Section 4 deals with the conclusions of the project and some recommendations for further research are suggested in Section 5.

2. LITERATURE REVIEW

2.1 THE PORTUGUESE CASE

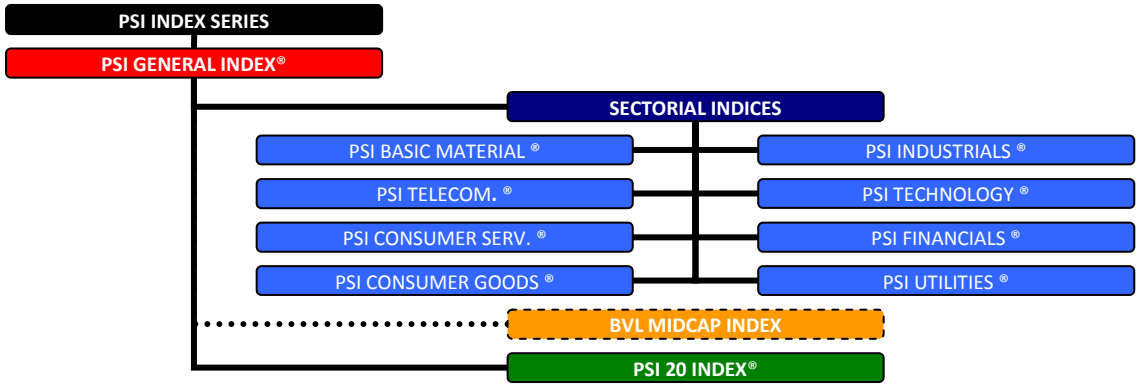
After the experiences with the Dow Jones Industrial Average Index – a price weighted average Index of the 30 most significant companies traded on the New York Stock Exchange – and with the Value Line Index – which used geometric average of returns produced by all the 1650 issues included – current Stock Index technology calculates index values using a capitalization weighted arithmetic average methodology that reflects the evolution of the total market value capitalization of all the component stocks in relation to a particular base value selected for an initial base period.

Portugal only adopted such a modern index method with the creation of the BVL-General Index (later renamed PSI General) on 5th January 1988 with a base value of 1,000 points that translates the general average evolution of the companies listed on the Main Board of the Euronext Lisbon.

It must be borne in mind that any index is *"always purely instrumental"* and that, in the case of an official stock market index, like the PSI General, the objective "*is to measure the general mood of the Portuguese domestic market"* (Fonseca, Confraria, Pinheiro, 1990). The same authors also consider that the development of the PSI General reflects the will to make sure that this "*information is accessible to everyone"*, and to "*quantify it in line with what is common in the more developed markets"*. This objective of measuring the general mood of the share market over time

obviously requires the Index to accompany all the corporate events such as dividend payments, rights issues, etc.

"With the appropriate adaptations to the methodology used, development of other official indices can be made at a later date" (Fonseca, Confraria and Pinheiro, 1990), and in fact, this Index was subsequently completed by a collection of sectorial indices, with its base date on the 1st January 1991, for some of the industrial segments included on the BVL-General, each of them only displaying one value per day on the main Index. The 8 sectorial indices are the PSI Basic Material, the PSI Industrials, the PSI Telecom, the PSI Technology, the PSI Consumer Services, the PSI Financials, the PSI Consumer Goods and the PSI Utilities also all of them began with the arbitrary value of 1,000 points.



Only in 1996 was felt the need for an Index to act as the underlying asset for Futures and Options contracts on national assets, and this is the origin of the most frequently cited PSI 20 Index. This Index became the benchmark share Index for the 20 largest and most liquid companies listed on Euronext Lisbon. It follows a similar methodology to the above mentioned indices; however it is calculated in real time (actually every 15 seconds) during the daily session and does not correct for the negative impact of the cash dividends paid out by any of the 20 listed companies. This non-correction is intended to increase the uncertainty of its stochastic evolution, therefore boosting the need for derivatives either for hedging or speculative purposes. The base date of the PSI 20 is the closing of 31st of December of 1992 with an arbitrary base value of 3,000 Index points.

Due to this difference in accounting for the cash dividends, later on a new Index was created, the PSI 20 Total Return that corrects for all the gross dividend pay outs, reflecting the reinvestment of these dividends into the Index. This is relevant for their study because this correction for the impact of the dividends makes it possible to compare its periodic returns with the ones obtained from the PSI General.

The behavioral differences between companies of different sizes observed in various countries have meant that numerous Stock Exchanges now disclose a growing collection of indices, covering:

- the entire "main market" – broad-based indices that show the performance of a particular Stock Exchange;
- just a sample of 30 to 40 of the "most representative" market securities – the largest, more mature and more liquid group of companies;
- a sample of the smaller companies, or a group of micro companies.

2.2 POTENTIAL FINANCIAL PRODUCTS RELATED TO THE INDEX

There are several ways that would permit the creation of mechanisms that would expose investors to an Index made up of Portuguese medium capitalization companies. These companies are characterized by having superior potential growth to larger ones, due to their presence in generally new and faster growing segments. One of the instruments that could be created is a fund that would replicate this Index, like an Exchange-Traded Fund (ETF). This ETF would be an investment vehicle traded on the Stock Exchange and negotiated at approximately the same price as the net asset value of its underlying assets over the course of the day. Another financial mechanism that also could be launched is a future based on the BVL MidCap which would enable investors to better hedge their medium capitalization equity exposure and offer new trading opportunities. All these instruments would create a less expensive way for investors to participate in medium capitalization growth and search for value.

2.3 OTHER COUNTRIES

Stock indices "*represent the evolution of the securities market of a specific group of companies, representing the market or the group of companies whose evolution they measure"* (Coto and Majazagras, 2005), but they are also used to reduce investment risk through diversification, as they can be replicated with a portfolio of shares built as an exact replica of the composition of that Index; or as underlying assets for derivative products, Options and Futures, enabling a portfolio manager to control the risk in a much more effective way.

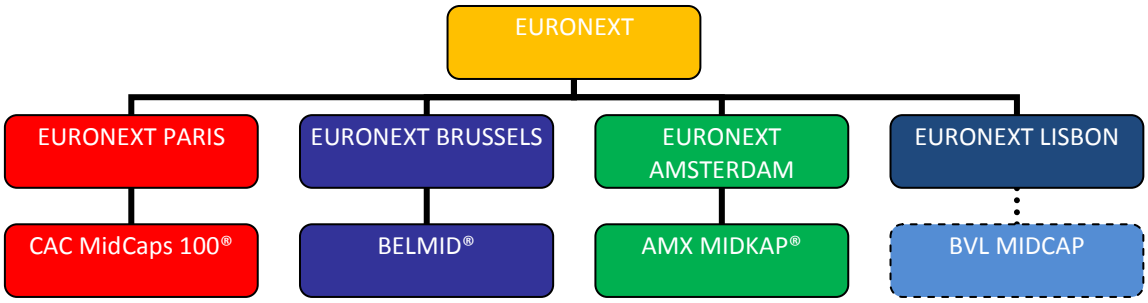
The evolution of an entire market is represented by global stock indices, but indices can also be developed to follow a collection of companies with some common characteristics, for example Indices that are made up of small and medium capitalization companies. By providing visibility to these small and medium firms, these indices contribute to give liquidity to those individual issues.

Table 2 – Countries Main, Mid and Small Capitalization Indices

COUNTRY	MAIN INDEX	MID CAP INDEX	SMALL CAP INDEX
AUSTRALIA	S&P ASX 20	S&P ASX MIDCAP	S&P ASX Small Ordinaries
BELGIUM	BEL20	BEL Mid	BEL Small
BRASIL	BOVESPA	BM&FBOVESPA Mid Large Cap	BM&FBOVESPA Small Cap
CANADA	S&P TSX	S&P TSX Medium Cap	S&P TSX Small Cap
CHINA	Hang Seng	Hang Seng HK MidCap	Hang Seng HK SmallCap
DENMARK	OMX Copenhagen 20	OMX Copenhagen MidCap	OMX Copenhagen SmallCap
FINLAND	OMX Helsinki 25	OMX Helsinki MidCap	OMX Helsinki SmallCap
FRANCE	CAC 40	CAC Next 20/ CAC MID 100	CAC Small 90
GERMANY	DAX	MDAX	SDAX
GREECE	FTSE ATHEX 20	FTSE ATHEX Mid Cap 40	FTSE ATHEX Small Cap 80
INDIA	BSE	BSE Mid Cap	BSE Small Cap
IRELAND	ISEQ 20		ISEQ SmallCap
ITALY	MIB	FTSE Italia Mid Cap	FTSE Italia Small Cap
JAPAN	Nikkei 225 / TOPIX	TOPIX Mid400	TOPIX Smallcap
NETHERLANDS	AEX	AMX	AScX
POLAND	WIG	mWIG 40	sWIG 80
SINGAPORE	STI	ST MID CAP	ST SMALL CAP
SOUTH KOREA	KOSPI	KOSDAQ MidCap	KOSDAQ SmallCap
SPAIN	IBEX	IBEX MEDIUM CAP	IBEX SMALL CAP
SWEDEN	OMX Stockholm 30	OMX Stockholm MidCap	OMX Stockholm SmallCap
UNITED KINGDOM	FTSE 100	FTSE MID 250	FTSE 350
UNITED STATES	S&P 500	S&P MidCap 400	S&P SmallCap 600

The most outspoken specialized indices are: on the German Stock Exchange, the MDAX, on the London Stock Exchange, the FTSE MID 250, and on the Chicago Mercantile Exchange (CME), the S&P MidCap 400.

The Euronext Lisbon market lacks an Index that represents the companies with this kind of market capitalization within the Euronext family; but other Euronext Group markets offer such specialized indices like France, represented by the CAC Midcaps 100, Belgium, by the Belmid Index and the Netherlands by the AMX Midkap Index.



All the PSI Indices created until now derive from the original source: the PSI General Index, which represents the global stock universe listed in Portugal.

2.4 The Small Size Effect and the Liquidity Constraint

Dimson, Marsh & Staunton (2002), found evidence of a "*potential relation between firm size and return*" that received worldwide attention. They studied Size Effect during the entire 20th century in several countries, concluding that small companies tend to outperform larger ones during the period studied, yielding higher average returns even after accounting for their extra volatility.

V. Brás (2009) also focused on this area in Portugal and declared that this "*market anomaly – the size effect – exists on the Portuguese Stock Exchange, for the period between 1993 and 2008"* (V. Brás, 2009); although her results suggest that the "*effect persists after adjusting for risk for the entire period, it seems that after the Portuguese Market migrated to the common trading system of Euronext Group, evidence is not that strong"* (V. Brás, 2009).

The launch of share indices for medium to micro companies listed on Stock Exchanges is also related to the crucial aspect of their liquidity. In fact, by being listed, companies are able to enter into a "*virtuous cycle"* and this is visible when a *"listed company attains a certain level of liquidity, and subsequently its ability to issue new shares to the market increases"* (Sánchez and Reynoso,

2005). The "*growth of this movement raises liquidity"*, and as time goes by, "*the cycle continues to replicate itself"* with this cycle being "*completed and repeated more effectively with companies that have high market value than with companies with reduced market capitalization or with reduced free float"* (Sánchez and Reynoso, 2005). Sánchez *et al* also point that on the other hand, "*some companies feel at some point of their life, a decline in the liquidity of their shares".* Despite the multiple reasons underlying this kind of movement, it often begins with a lack of attention to that security, which consequently reduces liquidity and worsens even more that attention handicap. Suddenly, we are dealing with a different kind of circle, a vicious circle which begs questions from companies about Stock Exchanges Listings.

Some of the companies listed on Euronext Lisbon are essential to some sectors of the country's economy, however due to their small capitalization they are not included in the most heavily promoted PSI 20 Index, leaving them out of the spotlight and affecting negatively their liquidity in a negative fashion. Consequently, another objective of this project is to contribute to launching a new market indicator in the future that will be included in the PSI Index family, that we have called the BVL MID CAP.

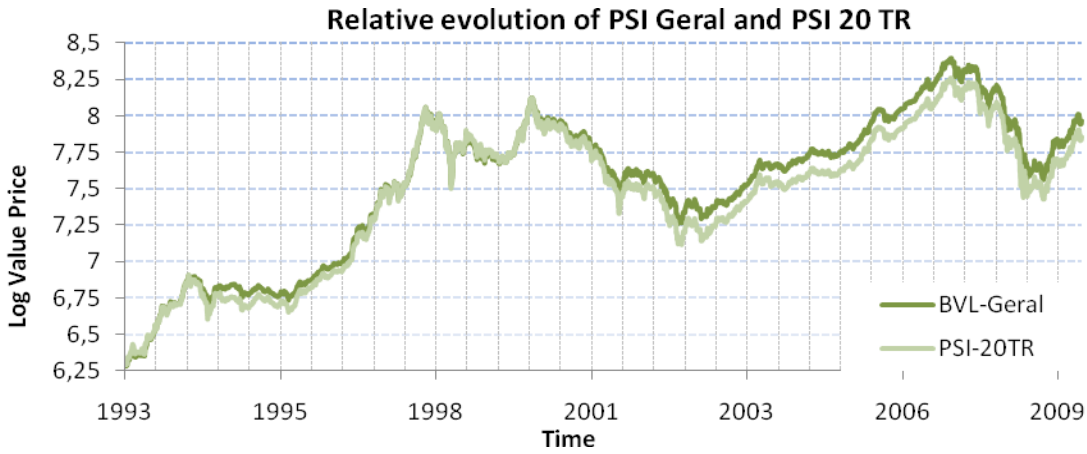
3. GOING THROUGH THE PROJECT – MAIN PROCEDURES, RESULTS AND CONSIDERATIONS

3.1 EVIDENCE OF A POTENTIAL SIZE EFFECT IN PORTUGAL

Since the PSI-General Index includes all the shares listed on the Euronext Lisbon Stock Exchange but the PSI-20 TR only samples the "most representative" 20 of those issues, any significant average difference in behaviour over time between those two indices suggests that the non-large companies included in the General Index are the ones responsible for those extra results. Since the PSI-20 TR time series only starts at the beginning of 1993, the comparison with the General Index can only be made along the 17-year time-frame long time window from 1993 to 2009.

The following chart compares the two time evolutions on a log scale and assuming an equal initial value[1] for both indices

Chart 1 – Relative Evolution of Log values of PSI General and of PSI 20 TR



The accumulated difference throughout the 17-year sample can be better gauged using the average annual returns estimated from the slopes of the two best fit straight lines adjusted to the two Index evolutions (in log prices).

Table 1 - Average Annualized Returns of the PSI General and of the PSI 20 TR Indices from 1993 until 2009

	Average Annualized Returns	Confidence Intervals	
	1993 - 2009	**Lower 95%**	**Upper 95%**
PSI General	8,04%	7,86%	8,23%
PSI 20 TR	7,24%	7,04%	7,44%

The fact that the average returns of the General Index is greater than for the PSI-20 TR is an indication that the included non-large companies are "producing" extra benefit to their shareholders. The small difference between the two average returns is due to the considerable weight of the 20-largest companies compared to the weight of all the other shares together.

[1] Note that the BVL General Index started in 1988 with a base value of 1,000 points and the PSI20 TR in 1993 with a base value of 3,000 points.

It should be noted that on 7th of November of 2007, the legal merger between the Lisbon Stock Exchange and the Euronext was translated into an operational merger. All the listed companies in Portugal, present in a smaller and more closed market, were transferred to the common trading platform of the Euronext Group, composed by the Stock Exchanges of Amsterdam, Paris, Brussels and Lisbon. The base of potential investors of the market broadened considerably and there could have been an influence on the market performance of the smaller securities, considering that the Size Effect has already been studied and verified in the markets with which the Portuguese one was merging, being also likely that investors in these markets would take advantage of this effect more easily.

3.2 CONSTRUCTING AND ANALYZING THE INDEX

The initial idea was to construct an Index with all the non-20 shares in the PSI General Index. However, this group of non-large companies has shown significantly different levels of liquidity during the sample period 2003 - 2009. In fact, the smallest of the non-large companies did not trade everyday and some of them did not last much time in the market. Therefore those companies were excluded from the study. It must also be remarked that the number of securities that composed the Index varied as time went by and that due to operational reasons. Therefore, the Index has been reviewed on a half-yearly basis.

Some of the higher market capitalization companies that were out of the PSI 20 TR Index were subject to certain important corporate actions, which caused some strange phenomena in the performance measure, such as the acquisition of certain companies which represented a great percentage of the Index value, like the case of Banco Totta & Açores.

This Index is made up of a significant number of companies that did not remain listed during the entire period studied. Also companies that are mainly listed abroad were excluded due to marginal market of their shares in Portugal (namely Espirito Santo Financial Group, which is

based in Luxembourg, Banco Santander, Sacyr Vallerhermoso and Europac Papeles y Cartones de Europa are based in Spain). All the Sportive Anonym Associations were also excluded for reasons of illiquidity.

3.2.1 DATA SET

The sources for this paper of share price and listing information were the DATHIS (the Euronext Lisbon data base) and BLOOMBERG, also information from CMVM (Comissão de Mercado de Valores Mobiliários), and the web pages of the companies studied were used.

3.2.2 CALCULATION OF THE INDEX VALUE

The calculation of the BVL MidCap Index is reflected in the following formula:

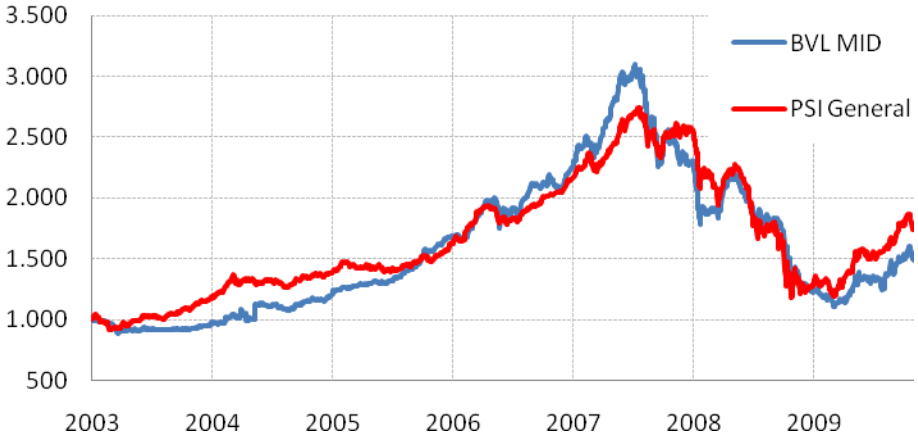
$$\frac{I_{t+1}}{I_t} = \frac{\sum_{i=1}^{n} C_i^{t+1}}{\sum_{i=1}^{n} C_i^{t}}$$

I_t = Index Value at the moment t
I_{t+1} = Index Value at the moment t+1
n = Number of securities in the Index
C_i^t = Capitalization of the security i at the moment t
C_i^{t+1} = Capitalization of the security i at the moment t+1

It is important to note that the BVL MidCap Index takes all corporate actions of the sampled companies into account, such as stock splits, share issuance, mergers and spinoffs, and adjusts for the gross dividend payouts of the Index constituents, reflecting the reinvestment of the dividend into the Index. To maintain the representativeness of the Index of medium capitalisation companies of the domestic market, the companies included in it must be changed over the time. Consequently, the list of the index was adjusted and modified every six months, on the first day of January and on the first day of July every year (composition of the Index is exemplified in Annex A.1).

3.2.3 Comparison between Indices

Chart 2 – Relative Evolution of PSI General, PSI20 TR and BVL MidCap



The chart shows the comparison between the performances of the PSI General and of the BVL MID. The chart shows meaningful deviations between the two indices as:

- larger variability of the MidCap Index over time
- in particular, smaller companies seem to suffer more during recession periods (2003, 2007/8) and develop more during boom times.

3.2.4 Statistics of Daily Log Returns

Table 3 - Average Daily Return and 95% Confidence Interval

	BVL MidCap	PSI General
Average Daily Return	**0,0235%**	**0,033%**
Standard Deviation	1,0762%	1,0410%
Error Average	0,0257%	0,025%
A+	0,0739%	0,0818%
A-	-0,0269%	-0,0157%
Observations	1755	1755

In Table 3, it is possible to observe that the average daily log returns of the PSI General are higher than those of the BVL MidCap, although there is no evidence with a confidence level of 95%[2].

[2] Because the value of the average daily log return is only measured by the two extremes of the sample, its value is not considered representative. It also must be noted that these two figures are from 2003 and 2009, in unusual crisis periods.

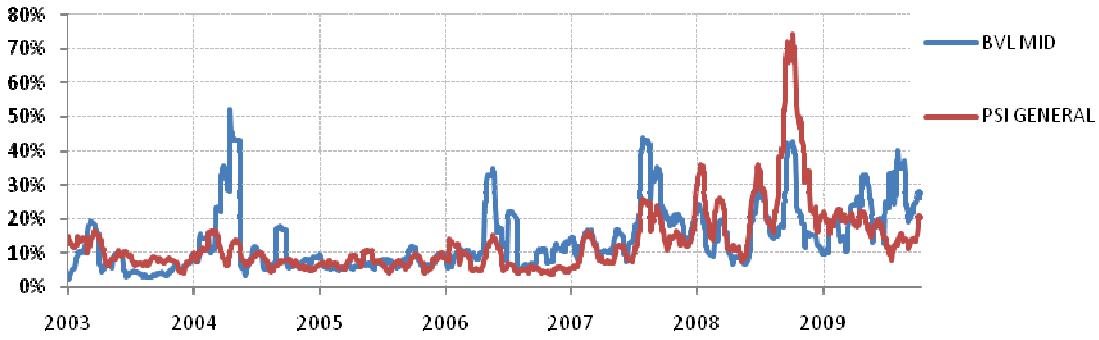
Table 4 - Volatility (per day) and 95% Confidence Interval

	BVL MidCap	PSI General
Variance	**0,0116%**	**0,0108%**
V+	0,0124%	0,0116%
V-	0,0109%	0,0102%
Standart Deviation	**1,0762%**	**1,0410%**
S+	1,1137%	1,0773%
S-	1,0423%	1,0082%

The variances of the BVL MidCap and the PSI General are not significantly different at 95% confidence level. When analysing these values, we have to take into account that the BVL MidCap is an Index made up of not particularly diverse companies with smaller capitalization and that the sample used few companies and a reduced timeframe. As such, there are corporate events, such as the purchase of companies which could have a major impact on its volatility.

To measure the degree of variability of the daily returns obtained from the 2 indices, the standard deviation estimate was used, based on a moving window that samples 20 days. The following chart shows the evolution of such 20-day volatility for the 2 indices.

Chart 3 – Evolution of 20-day Volatility of PSI General and BVL MidCap



We can see that the volatility of the BVL MidCap Index is much more irregular over the entire period analyzed than the PSI General. In addition, the maximum volatility value reached by the BVL MidCap Index was 51.98% on 13th of May, 2004 and that of the PSI General was 74.28%, during the financial crises of 2008 (31st October, 2008). The maximum value reached by the BVL Mid at this time was of only 42.72%. This can be related to the fact that the internationalization of

our market has made that the larger companies have draw the attention of big investors in panic moments, while the smaller ones are not present in their portfolios due to their lack of liquidity.

Table 5 – Correlation between Daily Log Returns of the PSI General and of the BVL MidCap

Correlation	BVL Midcap	PSI General
BVL Midcap	1	0,5520
PSI General	0,5520	1

The correlation between daily log Returns of the BVL MidCap Index and PSI General is 0.5520.

3.2.5 BEST FIT LINES ADJUSTED TO SHARE INDICES

Presented below are the trend lines that describe the behaviour of each log series. The average daily log return is represented by the slope of the trend lines during the period of 31st December, 2002 until 6th November, 2009.

Chart 4 – Best Fit Lines adjusted to PSI General and to BVL MidCap Index

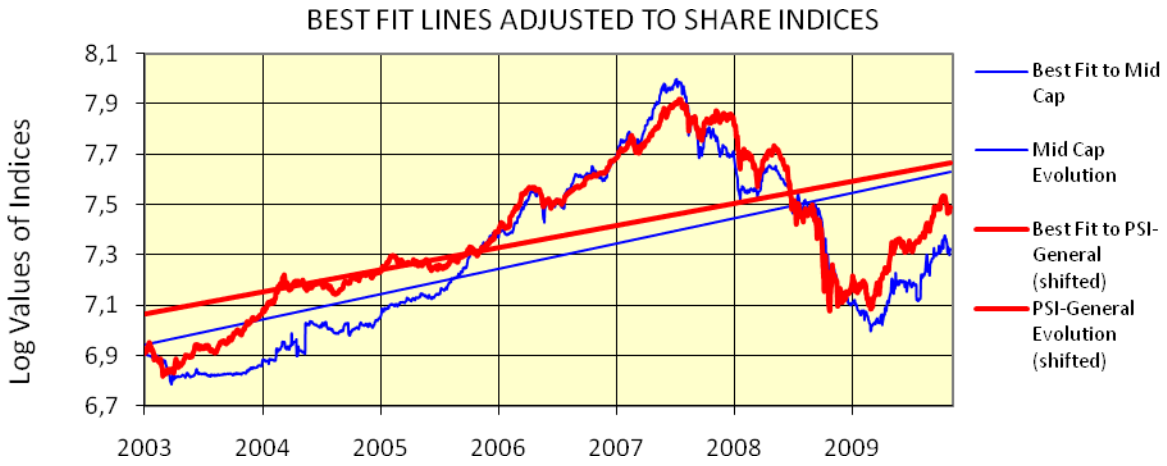


Table 6 – Average Slope of the share indices per day

	BVL MidCap	PSI General
Average Slope (per day)	0,02746%	0,02397%
Upper Limit (per day)	0,02919%	0,02542%
Lower Limit (per day)	0,02573%	0,02253%

By observing the Chart 4 and the Table 6 we are able to conclude that the average slope per day for the BVL MidCap is higher than for PSI General, with a confidence level of 95%.

Table 7 – Average Slope of the share indices per year

	BVL MidCap	PSI General
Average Slope p.a.	10,02%	8,75%
Upper Limit p.a.	10,65%	9,28%
Lower Limit p.a.	9,39%	8,22%

The average slope presented on Table 8 was annualized to facilitate the observation of the performance of each Index, assuming 365 days per year. There is evidence for the existence of a better performance of the average yearly slope of the BVL MidCap in relation to the PSI General with a confidence level of 95%.

Chart 5 – Best Fit Lines adjusted to PSI General and to BVL MidCap Index

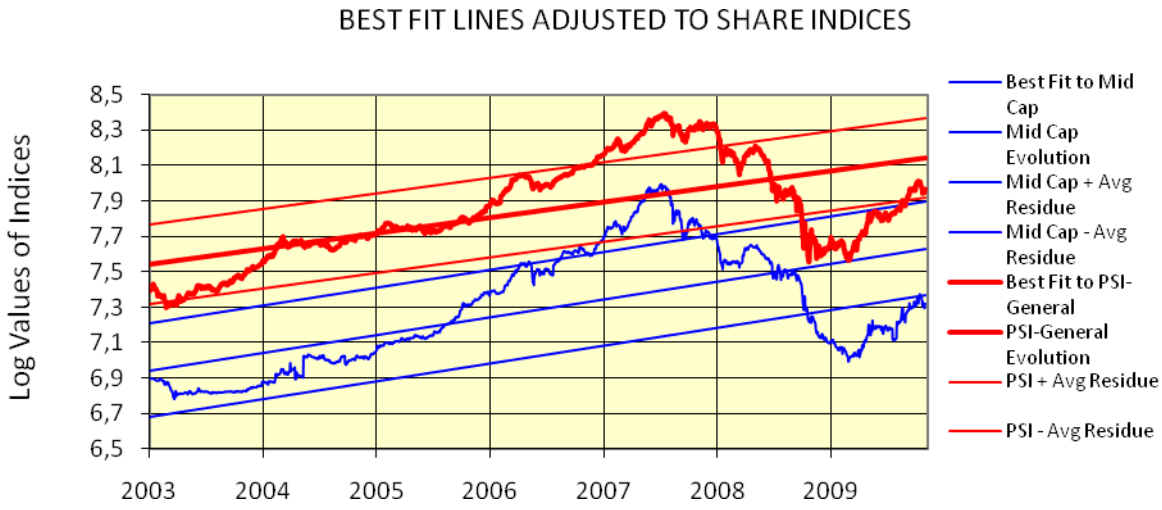


Table 8 – Residues of the share indices

	BVL MidCap	PSI General
Average Residue	0,26653	0,22333
R2 (non-adjusted)	0,35660	0,37568

The BVL MidCap is more volatile than the PSI General due to the fact that its residue is also higher. This is observable in Chart 5 via the wider gap between the lines of Best Fit and the lines of average residue of the BVL MidCap Index in comparison with those of the PSI General. Therefore, although the PSI General has a smaller growth tendency than the BVL MidCap, it is less volatile.

4. CONCLUSION

One of the main conclusions of this project is that it is possible to calculate an Index only composed by companies that do not belong to the PSI20 Index, in order to characterize the Portuguese small and medium companies despite their limited diversification and liquidity.

V. Brás (2009) supports the existence of a Size Effect on the Portuguese market in the period 1993 - 2008, and the BVL MidCap Index, constructed in this project corroborates this assumption for the period 2003 - 2009, even after the integration of Euronext Lisbon as part of the Euronext Group common negotiation platform on 7th November, 2007. Portuguese small and medium capitalization companies offer slightly higher returns than the larger ones with some additional volatility. In particular, the BVL MidCap Index shows a quicker and sharper rise during bull markets and the opposite effect in bear markets.

It is natural to expect that the construction of an Index, like the BVL MidCap would make medium capitalization companies more visible and familiar to new investors, and subsequently create a more liquid market for them. Those companies, by being part of a representative Index, would gain foreign exposure and, consequently, visibility to influential investors, such as hedge funds and pension funds. All these factors would facilitate capital market growth and visibility for these companies, once the Index is known. This Index would even allow Euronext Lisbon to become more attractive and to enhance its competitiveness, in terms of attracting new firm listings.

There is evidence gathered throughout this project that seems to support the need for a Mid Capitalization Index in Portugal, similar to those that already exist in the major countries of the European Union and the rest of the world. This appears to be a subject that requires further study in a longer period of time and a depth analyzes in order to establish the implementation of an official index for Euronext Lisbon with these kinds of characteristics.

5. SUGGESTIONS FOR FUTURE RESEARCH

After completing this project, we can reach to the conclusion that there is room for further studies and analyses in relation to the small and medium capitalization securities on the Portuguese Stock Exchange. Although the impact of this work is limited, I hope that it constitutes a first step towards the construction and acceptance of an Index with these kinds of characteristics for Euronext Lisbon, the Portuguese Stock Exchange.

Furthermore, it would be interesting to add some more years to the studied Index, in order to widen the historical data and to analyze the Portuguese small and medium company's behavior.

It would also be appealing to study the impact of the integration of the Euronext Lisbon on the common negotiation platform of the Euronext Group in depth, in order to verify and analyze if the size effect has diminished or not.

Most of all, it would also be interesting to study what are the consequences after the publication of this study and to analyze if the size effect has modified its behavior on the Portuguese market.

REFERENCES

I. Books

DIMSON, Elroy, Paul R. Marsh and Mike Stauton. 2002. *Triumph of the Optimists: 101 years of global investment returns.* Princeton University Press, 1st edition, pp 3-10, 124-138, 220-224.

MARTÍN, Carmen Adamina; Garcia Coto, Domingo; Garrido Domingo, Javier; Alonso Mazagranjas, Beatriz. 2000. *Indices Bursátiles Nacionales e Indices Europeos. El Indice General de la Bolsa de Madrid.*

AUGEN, Jeff, 2008. *The Volatility Edge in Option Trading*, pp. 47-76.

WOOLDRIDGE, Jeffrey M. 2006. *Introductory Econometrics – A Modern Approach.* Thomson South-Western, 3rd edition.

II. Articles

ANDRIKOPOULOS, Panagiotis *et al.* 2008. *Size Effect, Methodological Issues and 'Risk-to-Default': Evidence from the UK Stock Market.* The European Journal of Finance, 14(4): 299-314

AMIHUD, Y. and Mendelson, H. 1987. *Trading Mechanisms and Stock Returns: An Empirical Investigation".* The Journal of Finance, 42 (3): 533-553.

BRÁS, Vanessa. 2009. *Studying the Existence of a Size Effect in Portugal.*

CHAN, K.C. and N, F. Chen, 1991. *Structural and Return Characteristics of Small and Large Firms*. The Journal of Finance 46(4): 1467-1484.

COTO, Domingo J. García and Majagranzas, Beatriz Alonso. 2005. *Los Nuevos índices de Empresas cotizadas de Mediana y Pequeña Capitalización en la Bolsa Española.* Cuadernos de Información Económica, 187: pp. 107-114.

SÁNCHEZ, María José and Reynoso, Karla. 2005. *Mejorar la liquidez, ¿una tarea permanente de las bolsas?* Revista Bolsa de Madrid. 139: pp.11-15.

DIMSON, Elroy, 1979. *Risk Measurement when shares are subject to infrequent trading.*

FERNHOLZ, Robert, 1998. *Crossovers, Dividends and the Size Effect.* Financial Analysts Journal, Vol 54, No 3 (May-Jun., 1998), pp. 73-78.

FONSECA, Fernando; Confraria, João; Pinheiro, Joaquim, 1990. *Metodologia dos Índices Oficiais de Valores Mobiliários de Rendimento Variável*.

NIELSSON, Ulf. *Stock Exchange Merger and Liquidity: The Case of Euronext.*

CAPORALE, Gugliemo Maria; Howells, Peter; Soliman, Alaa, 2004. *Stock Market Development and Economic Growth: The Causal Linkage*. Journal of Economic Development, 29 (1).

III. Websites

Portuguese Sec (CMVM): www.cmvm.pt

Euronext: www.euronext.com

Spanish Stock Echange (BME Online guide to Medium and Small Caps in the Spanish Exchange): www.medcapbolsa.com

ANNEXES - A.1 - The composition of the BVL MidCap Index over the analysed years is reflected in A.1:

	1st Semester 2003	2nd Semester 2003	1st Semester 2004	2nd Semester 2004	1st Semester 2005	2nd Semester 2005	1st Semester 2006
1	Totta	Totta	Totta	Totta	Modelo Continente	Modelo Continente	Modelo Continente
2	Modelo Continente	Modelo Continente	Modelo Continente	Modelo Continente	Sonae Indústria	PTI	PTI
3	Sonae Indústria	Mota Engil	Mota Engil	Teixeira Duarte	Mota Engil	Sonae Indústria	Banif
4	Mota Engil	Somague	Somague	Sonae Indústria	Banif	Mota Engil	Teixeira Duarte
5	Somague	Sonae Indústria	Sonae Indústria	Mota Engil	Somague	Teixeira Duarte	SAG
6	Banif	Banif	Banif	Media Capital	SAG	Banif	Gescartão
7	CIN	Caima	Gescartão	Somague	Novabase	SAG	Finibanco
8	Barbosa & Almeida	CIN	CIN	Banif	CIN	Salvador Caetano	Novabase
9	Inapa	Barbosa & Almeida	Corticeira Amorim	CIN	Caima	CIN	Salvador Caetano
10	Estoril Sol	Estoril Sol	Caima	Salvador Caetano	Salvador Caetano	Finibanco	Efacec
11	Corticeira Amorim	Inapa	Estoril Sol	Caima	Finibanco	Ibersol	Ibersol
12	Salvador Caetano	Salvador Caetano	Salvador Caetano	Estoril Sol	Estoril Sol	Estoril Sol	CIN
13	Finibanco	Corticeira Amorim	Finibanco	Soares da Costa	Ibersol	Efacec	Estoril Sol
14	Caima	Soares da Costa	Inapa	Inapa	Efacec	Inapa	Inapa
15	Ibersol	Finibanco	Soares da Costa	Finibanco	Inapa	Sumol + Compal	Sumol + Compal
16	Soares da Costa	Sumol + Compal	Sumol + Compal	Ibersol	Sumol + Compal	Altri	Soares da Costa
17	Sumol + Compal	Vista Alegre	Efacec	Efacec	Soares da Costa	Soares da Costa	Fisipe
18	Vista Alegre	Efacec	Vista Alegre	Sumol + Compal	Vista Alegre	Orey	Orey
19	Efacec	CIR	CIR	Vista Alegre	CIR	CIR	CIR
20	CIR	CNIN	TIR	TIR	Reditus	Vista Alegre	TIR
21	CNIN	Orey	Papelaria Fernandes	Reditus	Orey	TIR	Vista Alegre
22	Orey	Papelaria Fernandes	Orey	Orey	TIR	Grão Pará	Grão Pará
23	TIR	TIR	Fisipe	Lisgráfica	Grão Pará	Papelaria Fernandes	Lisgráfica
24	Papelaria Fernandes	Fisipe	Reditus	Papelaria Fernandes	Papelaria Fernandes	Lisgráfica	Papelaria Fernandes
25	Compta	Grão Pará	Lisgráfica	Fisipe	Lisgráfica	Fisipe	Compta
26	Fisipe	Reditus	Grão Pará	Grão Pará	Fisipe	Compta	
27	Grão Pará	Lisgráfica	Compta	Compta	Compta		
28	Reditus	Compta					
29	Lisgráfica						

	2nd Semester 2006	1st Semester 2007	2nd Semester 2007	1st Semester 2008	2nd Semester 2008	1st Semester 2009	2nd Semester 2009
1	Modelo Continente	PTI	Banif	Banif	Martifer	Banif	Banif
2	PTI	Banif	Teixeira Duarte	Martifer	Banif	Martifer	Martifer
3	Banif	Teixeira Duarte	Media Capital	Media Capital	Teixeira Duarte	Media Capital	Media Capital
4	Sonae Indústria	Media Capital	Finibanco	Finibanco	Media Capital	Finibanco	Finibanco
5	Teixeira Duarte	Gescartão	SAG	SAG	Finibanco	Salvador Caetano	SAG
6	SAG	Finibanco	Corticeira Amorim	Impresa	SAG	SAG	Sonae Capital
7	Gescartão	SAG	Salvador Caetano	Salvador Caetano	Salvador Caetano	Novabase	Salvador Caetano
8	Corticeira Amorim	Corticeira Amorim	Soares da Costa	Corticeira Amorim	Corticeira Amorim	Sonae Capital	Ibersol
9	Finibanco	Salvador Caetano	Ibersol	Ibersol	Cofina	Impresa	Soares da Costa
10	Salvador Caetano	Ibersol	Estoril Sol	Cofina	Ibersol	Ibersol	Novabase
11	Ibersol	CIN	Sumol + Compal	Inapa	Novabase	Corticeira Amorim	Sumol + Compal
12	CIN	Soares da Costa	Glintt	Estoril Sol	Inapa	Estoril Sol	Impresa
13	Inapa	Estoril Sol	Inapa	Novabase	Estoril Sol	Soares da Costa	Corticeira Amorim
14	Estoril Sol	Sumol + Compal	TIR	Sumol + Compal	Sumol + Compal	Reditus	Estoril Sol
15	Sumol + Compal	Inapa	Lisgráfica	Glintt	Glintt	Sumol + Compal	Cofina
16	Soares da Costa	TIR	Fisipe	Reditus	Reditus	Glintt	Glintt
17	TIR	Fisipe	Orey	CIR	Orey	Inapa	Reditus
18	Fisipe	Orey	Reditus	Orey	Lisgráfica	Cofina	Inapa
19	CIR	CIR	Vista Alegre	Fisipe	CIR	Orey	Orey
20	Vista Alegre	Reditus	CIR	Vista Alegre	Vista Alegre	CIR	CIR
21	Grão Pará	Vista Alegre	Grão Pará	Lisgráfica	Fisipe	Ramada	Ramada
22	Lisgráfica	Grão Pará	Papelaria Fernandes	Grão Pará	Papelaria Fernandes	Fisipe	Lisgráfica
23	Papelaria Fernandes	Papelaria Fernandes	Compta	Papelaria Fernandes	Grão Pará	Lisgráfica	Fisipe
24	Compta	Lisgráfica		Compta	Compta	Vista Alegre	Vista Alegre
25		Compta				Compta	Compta
26						Grão Pará	Papelaria Fernandes
27						Papelaria Fernandes	Grão Pará