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COMPARISON OF THE EUROPEAN AND THE U.S. UNREGULATED STOCK MARKETS DESIGNED FOR SMES

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ABSTRACT

This paper examines the state of small and medium enterprises (SMEs) in European and U.S. unregulated stock markets. The analysis compares the performance of both markets, using the weekly adjusted closing index prices of Euronext all share index, NYSE AMEX Composite Index, and the OTCM ADR Index for the 2013-2017 period. ADF, EGARCH, and ARCH tests were performed on the collected time series data, to measure and forecast index price volatility, risk and return. The results show a high level of price volatility in some periods; but a permanent effect of shocks was not observed in the long term for all the analyzed indexes. Negative shocks cause more volatility than positive shocks. However, an overall result shows that, the Euronext all share index, despite slight declines, displays an upward trend and relatively higher returns with less risk, than the NYSE AMEX Composite Index, and the OTCM ADR Index. This results reflects the better performance of the European unregulated market, compare to its U.S. counterparts.

JEL: M130, G1, C120, C220

KEYWORDS: Small and Medium Enterprises, Stock Markets, Initial Public Offering, Index Prices, Financial Risk and Return

INTRODUCTION

Although a significant amount of reports and studies have been conducted regarding SMEs in the American, the Asian, the European unregulated stock markets and elsewhere (Hall, 2007; OICV IOSCO 2015; Bremus, 2015; Kiškis, Limba and Gulevičiūtė, 2016; Kentaro, 2016 and others); studies comparing SMEs' unregulated stock markets performance to each other, locally or internationally are scarce. This study bridges the gap, by identifying the stock markets specially designed for SMEs, by highlighting the conditions under which they are listed in term of IPO (Initial Public Offering) requirements in the European and the U.S unregulated stock markets. Then, based on index prices, accesses their performances through the measurement of volatility, risk and return. EGARCH-M and ARCH LM models were also applied to evaluate the asymmetrical impacts of positive and negative shocks on volatility.

For our analysis, weekly adjusted closing stock prices of the major pan-European unregulated stock market (Euronext All Share index) and the weekly adjusted closing prices of the two main American unregulated markets (NYSE AMEX Composite index and the OTC ADR index) were examined. In addition to the main research questions we also asked, what are the respective definitions of SMEs in Europe and the U.S.? and What are the stock markets specially designed for SMEs in the two blocks?

Even if neither of the two markets should be regarded as superior to the other, this research gives insight to investors looking for investment opportunities, and SMEs mangers seeking financing sources. The remainder of the paper is organized as follows. The first section highlights the theoretical framework of the

study. The second section presents the data and methodology used in our analysis. The last two sections discuss the results and provide a conclusion.

LITERATURE REVIEW

In this section we present an overview of SMEs in the two sides of the Atlantic. We begin with SMEs financing difficulties, then discussed the pros and cons of an IPO, and finally investigate the impacts of SMEs on both economies. SMEs financing difficulties appear to be one of the most recurrent economic debates. That fact has been aggravated by the outbreak of the 2008 financial crisis that affected the world economy. This event made banks intensify regulations on credit granting and investors becoming tougher on their required guarantees and conditions to finance projects (Wehinger, 2013; Udell, 2015; Akala, 2017). Loan rejections increased 2.5 times since 2008, compared to 2004 from 6.1% to 16.3% (Sannajust, 2014). According to the International Finance Corporation (IFC), to satisfy SMEs formal demands around the world, credit had to increase between U.S $900 to $1,100 billion in 2011 (Alves de la Camapa, 2013). In brief, financial institutions revised their credit requirements upward. Thus, unlike large businesses, SMEs find themselves in an increasingly complex and arduous situation, regarding financing from external sources, due to the credit crunch caused by the economic downturns.

With regard the financing difficulties encountered by SMEs, one of the other alternatives available is stock market (Gupta & Saini, 2016). Besides being an alternative, most enterprises start as small private business and at some point, in their growth strategy. They decide to go public, to allow the enterprises shares to become more liquid (Chemmanur & Fulghieri, 1999). Going public confers to the shares, several advantages, compared to those of an unlisted company, Unlisted firms source of financing is more often guaranteed by auto-financing, bank credit lines, leasing, bank loans or one large investor (institutional investor, venture capitalist, crowdfunding, or angel) reported the European Central Bank (ECB) in 2017. Periodic dissemination of information related to the evolution and the prospects of a listed company, guarantees the interests of minority shareholders and facilitate the mergers and acquisition (M&A) process (Chod and Lyandres, 2008). It increases the company's visibility, improves information availability to external agents, and as a result, increases public awareness of the company and its products (Stoughton, Wong, et al., 2001).

An IPO makes it possible to call external investors to carry out projects that companies can't undertake on their own, due to the lack of financial means, or the will to finance alone because of risk factors. Therefore, an IPO allows spreading the risk, and significantly minimizing its effects. A listed company's evolution is followed and analyzed by financial analysts and investors. That market surveillance puts pressure on managers and encourages them to manage the company in the best way to avoid sanctions or decline in shares prices (Bharat and Dittmar 2010). An IPO is therefore a powerful tool for companies seeking funding for development. Notwithstanding these numerous IPO advantages, the European Commission (EC) survey on the access to finance of enterprises in 2014, and the European Saving and Retail Banking Group (ESRB) report in 2016, shows that banks remain the main source of financing for SMEs at 69% in the U.S. and 60% in the EU. This may be due to the fact that an IPO may cause a loss of managerial autonomy (Boot, Gopalan, et al.,2006) and reduction or loss of private benefits, related to capital ownership (Zingales, 1995). The public disclosure of financial information by a listed company, can damage its competitiveness in the market, in favor of its competitors (Farre-Mensa, 2010). Companies are advised not to disclose all strategic information to limit competition. However, the retention of valuable information can also be interpreted by the investor as a bad news signal (Pozniak and Guillemette, 2013). The listing of companies shares entails significant and different costs, such as admission fees, underwriting fees, annual fees, recurrent costs of production, and the cost of information disclosure to the market (financial reports in accordance with the regulatory standards, time spent by the manager to make those information available, financial communication… etc.) (Pagano, 1993).

However, the root factor of interest and devotion of economists toward SMEs, is essentially due to their large contribution to economic growth. In 2015, the European Bank for Reconstruction and Development (EBRD), reported that "SMEs make up over 99% of the total number of businesses…They are responsible for large contribution to value added and employment in the countries where they operate"; according to EC, "SMEs represent 99,8% off all enterprises in the non-financial business sector accounting for 67% of total in the European Union (EU)." In 2016, the U.S. Small Business Administration (SBA), indicated that SMEs represent 99,7% of all U.S. businesses, and offer 48% of employment. Similarly, from the database of companies subject to VAT (Delporte, 2017), in 2015 there were 869,662 businesses in Belgium, of which 863,165 (99.25%) SMEs, generated nearly 70% of jobs, and 62.3% of value added in the private sector.

THEORETICAL FRAMEWORK

To conduct our analysis, it is necessary to precisely define the meaning of SMEs and display their IPO conditions respectively, in the European and the U.S. stock markets. SMEs definitions: The factors determining whether an enterprise is an SME or not in Europe are based on: Staff headcount and Either turnover or balance sheet total as shown in Table 1.

Table 1: SME Defined as in EU Recommendation

Enterprises Category	Staff Headcount	Turnover	Balance Sheet Total
Medium-sized	< 250	≤ € 50 million	≤ € 43 million
Small	< 50	≤ € 10 million	≤ € 10 million
Micro	< 10	≤ € 2 million	≤ € 2 million

Table 1 presents enterprises categories with their classification criteria under the EU recommendations. This table shows that, a business with headcount of fewer than 250, a turnover fewer than € 50 million and a total balance sheet fewer than € 43 million is classified as a medium-sized enterprise. A business with a headcount of fewer than 50, a turnover fewer than € 10 million and a total balance sheet fewer than € 10 million is classified as a small enterprises. And, a business with a headcount of fewer than 10, a turnover fewer than € 2 million and a total balance sheet fewer than € 2 million is considered as a micro-business. Source: EC (2005:5)

The EC (2005:5) categorized SMEs as enterprises with fewer than 250 employees, annual turnover not exceeding € 50 million, and an annual balance sheet not exceeding € 43 million. However, in the U.S. the definition varies by sector based on the North American Industry Classification System (NAICS: https://www.sba.gov/sites/default/files/files/Size_Standards_Table.pdf). The U.S. SBA provides a list of business size standards, matched to the NAICS codes. In manufacturing, for instance, an SME is defined as a business having 500 employees or less, but in a wholesale trade business it is 100 employees or less, and up to 250 employees for businesses involved in mining or silver.

To facilitate a consistent general classification of SMEs, the U.S. International Trade Commission (USITC, 2010) defined SMEs as "firms that employ fewer than 500 employees." It follows that, the European definition of SMEs is not universal. The definition widely varies according to countries policies, companies' revenues, number of employees, capital, turnover, market position, etc. In China, for instance, SMEs are defined as "different form of enterprises under different ownership that are established within the People's Republic of China that meet the social needs and create more job opportunities and comply with the industrial policy of the state" (World Trade organisation, 2014).

The European and the U.S. Stock Markets Specially Designed for SMEs and Their IPO Requirements

Capital raising or credit granting are often SMEs daunting challenge, especially in the start-up phase. In Europe SMEs access to finance went from 16% in 2009 to 7% in 2017, with the three most important sources of financing being: credit line (suitable for 53% of SMEs), leasing (for 48% of SMEs) and Stock

Market (for only 12 % of SMEs) (ECB, 2017). Stock markets aim to provide SMEs with a platform to raise funds. Research has stressed the existence of separate markets especially designed for SMEs (Canada, Denmark, Germany, Italy, Poland, Spain… etc.) with less stringent requirements than the main stock market. A few other studies reported no separate markets for SMEs and large firms in countries like Greece, Hungary, Romania, Slovenia …etc (OICU-IOSCO final report 2015).

Generally, enterprises go public through two types of stock markets. Either on a regulated market where securities are traded in a safe, standardized, faster and publicly transparent manner (large companies use those market to raise fund and trade their securities); or unregulated market where enterprises do not need to comply with the stringent listing requirement imposed in regulated markets, or when companies do not want to pay the high cost of being listed in those markets. Unregulated marked basically allow SMEs and Start-ups to trade their securities with less cost and less obligation to allow them to focus on their main business activities. However, fewer regulations also mean less public transparency, and therefore additional risk.

Unregulated Stock Markets in Europe

The Alternative Investment Market (AIM) was launched on 19th June 1995, in the UK, by the most reputed stock market in Europe, the London Stock Exchange. The goals was to help SMEs grow and raise the capital they need for expansion. AIM complies with the national law as well as some EC regulations, and issue specific notes for each listed company (AIM rules for companies 2018). It has financed over 3,600 companies across the world since 1995. Starting with a market volume of £82.2 million and a turnover of £270.2 million in 2017, its market volume has reached £104,763 million, with a turnover volume of £672,370.5 million. It has risen up to £105,443.37 million since 1995 (AIM Statistics - November 2017). AIM has become in recent decades, a reference and a model of stock markets, dedicated to SMEs and start-ups seeking for financial resources. There are three indexes maintained by the FTSE Group to measure AIM Group performances: the FTSE AIM UK 50 index, the FTSE AIM 100 index and the FTSE AIM All-Share index. With the same objectives of supporting SMEs, AIM Italia was created in 2010, after the merger between Borsa Italiana S.P. A (base in Milan it is the only Italian stock market) and LSE in 2007. Table 2 shows AIM and LSE listing requirements.

As an ongoing principle of financial disclosure, AIM enterprises must provide a half-yearly report and accounting. Any delay or default is subjected to suspension. Depending on the market capitalization, the admission fee for AIM may vary from £7,057 to £79,601, and the annual fee for each company is £5,899. Table 4 shows detailed ongoing listing requirements.

Created in 2000, Euronext NV is the European regulated stock exchange market, which is the largest in continental Europe with 1,300 issuers, representing €3.6 trillion market capitalization. Euronext NV daily cash average transaction volume peaked at €7.783 million with a yearly volume record of €18.524 million (Euronext, Dec. 2017). Euronext NV is located in headquartered in Amsterdam with offices in, Brussels, London, Lisbon, and Paris. It is the main trading center of the Euro-zone and its main listing indexes are CAC 40, PSI 20, AEX 20, BEL 20, etc. Euronext NV accounts unregulated markets: Table 3 shows Eronext listing requirements.

Table 2: The LSE and the AIM Listing Criteria

Conditions for Admission	AIM	LSE Main List
Floating capital	No minimum	Require a minimum of 25% shares owned by the public
Financial information	No history required	3years history
% of entity activities supported by income	No	75%
Control over the majority of assets of the entity (3 years)	No	Yes
Sufficient working capital	Yes	Yes
Market capitalization	No minimum	required £700,000
Profitability	No	No
Role of the advisors	Nomad required during the IPO and after	A sponsor
Admission documents	Admission documents under the responsibility of the Nomad	Admission documents reviewed by the UKLA

Table 2 summarizes enterprises listing criteria in the LSE and the AIM. This table shows that there is no prescriptive eligibility criteria to join AIM, however a company must appoint a nominated adviser(nomad), prepare an admission document in compliance with the AIM rules. However to join LSE main list, there are some prescriptive eligibility criteria such as a £700,000 minimum market capitalization, a 75% of entity activities supported by income, a 3 years financial information disclosure, a required minimum of 25% shares owned by the public. Source: London Stock Exchange https://www.nibusinessinfo.co.uk/content/requirements-joining-aim

Inspired by AIM, a new stock market, dedicated to SMEs at the European level, was created in 2005. Alternext, which became Euronext Growth in June 2017, was created by Euronext Paris and latterly joined by Euronext Brussels in 2006, Euronext Amsterdam and Euronext Lisbon in 2011. The goal was to help SMEs of the Euro-zone raise funds as as it became more expensive and harder for enterprises to access the Euronext NV. Euronext Growth all share Index (ALASI or ALASN) illustrates the performances of all the companies listed on Euronext growth. Enternext, created in 2013 as a branch of Alternext, is a pan-European program launched to boost SMEs equities, and to particularly give the Tech sector impetus.

The Free Market (Brussels, Lisbon, and Paris), which also become Euronext Access in June 2017, is a market particularly suitable for SMEs, wishing to increase their visibility and reputation through stock market, with less listing requirement compared to Alternext. With the same goals, a new compartment of Euronext Access called Euronext Access+ has also been designed to finance start-ups and fast-growing SMEs.

There is also a Capital Market Union (CMU), which is a plan launch by the European Union commission to unlock, mobilize and diversify the funding channels available to SMEs in Europe, strengthen the capacity of EU capital markets, and facilitate cross-border investment by 2019.

Table 3: Euronext Listing Requirements

Main Eligibility Criteria			
	Euronext European Regulated Markets	Alternext (Euronext Growth)	Free Markets (Euronext Access)
Free float	Minimum of 25% of share capital or 5% if this represents at least EUR 5 million	EUR 2.5 million (public offer)	Not Applicable (N/A)
Track record	Three years financial statements	EUR2.5 million (private placement within one year with a minimum of three investors) EUR 2.5 million (on another market) At least two years financial statements	Two years of financial statements recommended
Accounting standards	IFRS or equivalent accounting standards (including US, Canada, China and Japan)	EEA Company: IFRS or national GAAP	Optional IFRS or national accounting standards
Prospectus / Information Document	Prospectus approved by Competent Authority	Non-EEA Company: IFRS or equivalent accounting standards (in case of public offer) and IFRS, equivalent accounting standards (including US, Canada, China and Japan) or national accounting standards with reconciliation table (in case of private placement or direct listing)	Prospectus approved by the Regulator in case of a public offer

Table 3 summarizes enterprises listing criteria in the Euronext regulated and unregulated markets. This table shows that Euronext growth and Euronext access which are unregulated markets have lightened criteria compared to the main Euronext. While a free float of the Euronext requires a minimum of 25% of share capital or 5% if this represents at least € 5 million, the Euronext growth requires a € 2.5 million public offer, but the free float is not applicable to the Euronext Access; while the main Euronext requires at least a 3 years financial disclosure, it is at least 2 years with both Euronext growth and Euronext access; the main Euronext and Euronext Growth, require a compliance with the IFRS accounting standards, however, with the Euronext Access that condition is optional; and, the main Euronext, the Euronext growth and Euronext Access admission document are respectively under the responsibility of a competent authority, IFRS and the regulator. Source: Euronext https://www.euronext.com/fr/node/18959

Table 4: Ongoing Requirements

	Euronext European Regulated Markets	Alternext Euronext Growth	Free Markets (Euronext Access)
Financial Reporting	Audited annual and semi-annual financial statements Price sensitive information	Audited annual and semi-annual financial statements Price sensitive information	No reporting of periodic obligations Price sensitive information
Declaration of breaches of threshold	Multiple threshold declarations: Multiples of 5% of voting rights	Limited number of threshold declarations: 25, 30, 50, 75 and 95% of voting rights	No reporting of major holdings
Insider List	Yes	Yes	Yes
Declaration of Manager Transactions	Yes	Yes	Yes

Table 4 summarises enterprises ongoing listing requirements in the Euronext regulated and unregulated market. This table shows that an annual and semi-annual financial reporting is required with the main Euronext and the Euronext growth while it is not an obligation with the Euronext Access; while a reporting of major holdings is not required with the Euronext Access, multiples of 5% of voting rights is required by the main Euronext, and 25, 30, 50, 75 and 95% of voting rights is required by the Euronext Growth; meanwhile, an insider list and a declaration of manager transaction is required by the 3 markets. Source: Euronext listing/www.ban.be/Data/Documents/qlj3p286/28/Presentatie_VVDessel_2016.pdf

Beside the pan-European stock markets, there are national stock markets design for the promotion of SMEs, such as Deutsche Börse Group of Germany, MAB stock market (the Spanish AIM) of Spain, Alternative Market in Greece, the Irish Enterprise Exchange (launched by the ISE: the Irish Stock Exchange) of Ireland; Bern eXchange (BX) of Switzerland, OPEX stock exchange of Portugal and First North (Stockholm, Iceland and Helsinki).

Unregulated Stock Markets in the U.S.

Two-renowned national regulated stock markets in the U.S. are the NYSE and NASDAQ. With 10% of all securities trade in the U.S., NYSE America is the third largest stock market by trading volume, after the NYSE & NASDAQ. It is a branch of the NYSE. NYSE America is known to have flexible listing rules for U.S. small-cap companies, including foreign companies, mostly Canadian companies. The NYSE America's main indexes are XFI (NYSE American composite for financial subsector), XHL (NYSE American composite healthcare subsector), XID (NYSE American composite industrial subsector), XNA (NYSE American composite natural resources subsector), and XIT (NYSE American composite technology subsector). However, for a quick overall indicator of the NYSE American market, the XAX index is used (see Tabla 5 and Table 6)

Table 5: NYSE America IPO Listing Standards

	Standard 1	Standard 2	Standard 3	Standard 4a	Standard 4b
Pre-Tax Income	$750,000	n/a	n/a	n/a	n/a
Market Cap	n/a	n/a	$50 MM	$75 MM	n/a
Total Assets And Total Revenue	n/a	n/a	n/a	n/a	$75 MM
Market Value Of Public Float	$3 MM	$15 MM	$15 MM	20 MM	$20 MM
Stockholders' Equity	$4 MM	$4 MM	$4 MM	n/a	n/a
Minimum Price	$3	$3	$2	$3	$3
Operating History			2 YEARS		

Table 5 summarizes enterprises listing criteria in the NYSE America. For a firm to be listed on the NYSE America it is required to meet one of the above-mentioned standards and a minimum operating history of 2 years. Source: New York Stock Exchange

Table 6: NYSE America IPO Options

	Option 1	Option 2	Option 3
Public Share Holders	800	400	400
Public Float	500,000	1,000,000	500,000
Daily Trading Volume	n/a	n/a	200 Shares

Table 6 summarizes enterprises ongoing listing requirements in the NYSE America. And as an ongoing listing conditions, one of the above-mentioned option0s should be followed (option1, option 2 or option 3). Source: New York Stock Exchange

The U.S. unregulated stock markets or OTC (Over-The-Counter) Markets Group, which has its headquarters in New York City, is where securities are traded between two parties, without the supervision of an organized exchange market. Table 7 shows eligibility requirements for these markets. In this market, the security price is not necessarily published for the public. With a total securities of $US 15.2 billion, 10,347 of shares and a market volume of $ US 2.2 billion, OTCQX, OTCQB, and Pink companies represent 95% of the trade volume of the OTC market group. Apart from OTCQX which has rules including financial requirement, OTCQB and Pink Markets can include distressed, speculative as well as high-quality companies.

In the OTC market group the OTCQX listing criteria is divided into 2 groups (the U.S. local companies, and international companies). It has two tiers for U.S. companies' quotations: OTCQX U.S. & OTCQX U.S Premier, and two international tiers: OTCQX International & OTCQX International Premier. To be traded on these markets, companies must be registered with the U.S. security exchange commission (SEC), follow best practice of corporate governance, demonstrate compliance with U.S. security law, undergo an

audit and qualitative review by the OTC market group, and disclose financial information. SMEs can upgrade from OTCQB to OTCQX if they meet the above-mentioned requirements.

Table 7: OTCQX, OTCQB, and OTC Pink Markets Eligibility & Requirements

	OTCQX	OTCQB	PINK
ELIGIBILITY REQUIREMENT	Be listed on a Qualified Foreign Exchange or be an SEC Reporting Company	U.S. companies must have audited annual financials by a PCAOB auditor. (Regulation A Companies are exempt from the initial requirement)	N/A
	Not be a Shell Company or Blank-Check Company	Minimum bid price of $0.01	
	Not be subject to any Bankruptcy or reorganization proceedings	Not be in bankruptcy	
	Submit a Letter of Introduction from an OTCQX Sponsor	International companies must be listed on a Qualified Foreign Exchange (or SEC Reporting) and submit a Letter of Introduction from an approved OTCQB Sponsor	
REPORTING REQUIREMENT	SEC Reporting Standard	SEC Reporting Standard	based on the level of disclosure and public information made available by the company either through the SEC or posted on OTC market
	Regulation A Reporting Standard	Regulation A Reporting Standard	
	Alternative Reporting Standard	U.S. Bank Reporting Standard	
	Audited annual financials by PCAOB	International Reporting Standard	
	Timely disclosure of material news releases	Alternative Reporting Standard	
		Timely disclosure of material news	
CORPORATE REQUIREMENT	Have a board of directors that includes at least 2 Independent Directors	Have a board of directors that includes at least two Independent Directors	N/A
	Have an Audit Committee, a majority of the members of which are Independent Directors, and	Have an Audit Committee, a majority of the members of which are Independent Directors	
	Conduct annual shareholders' meetings and make annual financial reports available to its shareholders		
	at least 15 calendar days prior to such meetings.		
FEE	Application Fee: Non-refundable fee of $1,000 U.S.	Application Fee: $2,500	Application Fee: $500 U.S.
	Annual Fee: $1,000	Annual Fee: $10,000 per year ($12,000 effective January 1, 2018)	Annual Fee: $4200 U.S.
FINANCIAL STANDARD	refer to table 5	Non-SEC Reporting Companies: Disclosure must be posted for the prior two years	N/A
		SEC-Reporting Companies: Must be current in all periodic reporting requirements on EDGAR	

Table 7 summarizes enterprises listing criteria in the OTC markets Group (OTCQX, OTCQB, and PINK). This table shows that Pink has the least eligibility requirements followed by the OTCQB and the OTCQX gradually. Sources: OTC Markets.

OTCQB is a market for SMEs that are not yet qualified for the OTCQX market due to the fact that they are in the early stages of development. To be traded on the OTCQB market, companies must not be bankrupt, undergo an annual audit by the U.S. Public Company Accounting Oversight Board (PCAOB) auditor, comply with the $0.01 (one penny) bid price requirement, pay a one-time application fee of $2,500, and an annual fee of $10 000 per year. Pink companies that comply with the OTCQB requirements are allowed to upgrade from Pink to OTCQB.

The Pink OTC Market: has fewer or no financial requirements, no reporting standards and its quoted enterprises are not required to register with the SEC. Therefore, it is difficult for investors to find current and reliable information about those enterprises, which implies that Pink market firms are among the riskiest investment. The Pink OTC market is a member of the Financial Industry Regulation Authority (FINRA) and is registered with the SEC as a broker-dealer as an alternative trading system.

Despite some slight differences, unregulated markets have a number of characteristics in common including conditions of introduction and listing are less restrictive than regulated markets, especially in terms of eligibility (capital size, profitability, floating, etc.) listing fees, and financial disclosure. In the U.S. IPOs have helped several SMEs become giants (Amazon, E-bay, Yahoo, etc.). However, since the subprime crisis, listed companies in stock exchange markets have decreased (81%), and the SMEs IPO book runners' number has decreased from 162 in 1994 to 31 in 2014. However, at the same time it has seen a substantial growth in Europe and Asia (Weild and Kim, 2015).

DATA AND METHODOLOGY

For the empirical analysis, weekly adjusted closing historical index prices data of Euronext Growth All share index (ALASN) were collected. This is the biggest international unregulated stock market on European continent designed for SMEs. In addition, NYSE AMEX Composite Index (XAX) and OTCM ADR Index (OTCDR) were examined. Data runs from January 1st, 2013 to December 31st, 2017 including 261 observations. Weekly index prices were retrieved from www.investing.com. After calculating the average weekly return, the variance and the standard deviation of each index, these following tests were applied:

Augmented Dickey Fuller Test or Unit Root Test

A systematic change in the mean and variance of a time series causes models to give misleading results. In non-stationary series, the effect on indexes is observed to be permanent. This invalidates the efficient market hypothesis. For that reason, we tested the stationarity of the time series. The Augmented Dickey Fuller Test (ADF Test) is one of the most commonly used tests for the stationarity of a time series. The test is derived from the DF test developed by Dickey and Fuller in 1979 as follows:

$$\Delta y_t = (\rho - 1) y_{t-1} + u_t = \delta y_{t-1} + u_t \qquad (1)$$

Δy_t is the First difference of dependent variable (yt-yt-1). The Null hypothesis is that: $\delta = 0$

The error involved in the DF test may impair the co-variance hypothesis and may indicate heteroscedasticity or autocorrelation. To solve that problem, the DF model is modified by adding delayed values to the dependent variable, what led to the ADF model (Dickey and Fuller, 1981) as follows:

$$\Delta y_t = \delta y_{t-1} + \sum_{i=1}^{\rho} \delta y_{t-1} + u_t \qquad (2)$$

Two more models are created by adding intercept constant and trend variables to the model above. The time series used in ARCH and derivative analyses should not contain unit roots. Although the unit root entity is included in advanced stage models, it is useful to perform the unit root test first.

Exponential Generalized Autoregressive Conditional Heteroscedastic Model in Mean (EGARCH-M)

High returns mean high risk for financial investments. The Capital Asset Pricing Model explains the risk and returns relationship (Teynor, 1961-1962; Linter, 1965; Mossin, 1966; and Sharp, 1972). The standard GARCH model does not include the relationship between risk and return. Engle, Lilien and Robins Engle (1987) added this parameter. The models are called ARCH-M and GARCH-M. In ARCH-M and GARCH-M models, conditional variance is added to standard ARCH and GARCH models. Conditional variance is a measure of volatility in the series. The following equations specify an ARCH-M model.

$$r_t = \sum_{k=1}^{m} \lambda_k X_k + \varphi \sigma_t^2 + u_t$$

$$\sigma_t^2 = \alpha_0 + \sum_{i=1}^{p} \alpha_i u_{t-1}^2$$

$$u_1 \sim N(0, \sigma_t^2)$$

$$u_{j,t} | F_{t-1} \sim N(0, \sigma_t^2) \tag{3}$$

rt: Risk premium in time t
xk: Exogenous variables
ut: Error term
δ2: Conditional variance

$$r_t = \sum_{k=1}^{m} \lambda_k X_k + \varphi \sigma_t^2 + u_t$$

$$\sigma_t^2 = \alpha_0 + \sum_{i=1}^{p} \alpha_i u_{t-1}^2 + \sum_{i-1}^{q} \beta_i \sigma_{t-i}^2$$

$$u_1 \sim N(0, \sigma_t^2) \tag{4}$$

rt: Risk premium in time t
xk: Exogenous variables
ut: Error term
δ2: Conditional variance

The φ parameter refers to the response to changes in volatility. It is the part that adds the risk-return relation to the model. There is a usual belief that the bad news effect on a stock price is higher than the good news effect. In many markets, there is the presence of a negative correlation between the return at time t and volatility at t+n. From that point of view, the volatility decreases when the stock return increases and the volatility increase when the stock return decreases. This asymmetrical movement is called "leverage effect" (Black, 1976).

The standard GARCH model does not include the leverage effect. In his 1991 work, Nelson developed the EGARCH model by adding it. The EGARCH model is:

$$r_t = \mu + \sum_{i=1}^{p1} \alpha_i r_{t-i} + \sum_{i=1}^{p2} \beta_i u_{t-i} + u_t$$

$$\ln\left(\sigma_t^2\right) = \alpha_0 + \sum_{i=1}^{p} \beta_i \ln\left(\sigma_{t-i}^2\right) + \sum_{i=1}^{q} \alpha_i \left|\frac{u_{t-i}}{\sigma_{t-i}}\right| + \sum_{i=1}^{p} \gamma_i \frac{u_{t-i}}{\sigma_{t-i}}$$

(5)

rt: Risk premium in time t
ut: Error term
δ2: Conditional variance

The parameter γ in the equation is an indication of the asymmetric effect of the shocks. If the parameter is statistically significant and negative, it indicates that the effect of bad shocks is higher than good shocks. The EGARCH-M model appears when the first part of this model is added to the conditional variance term, with the φ parameter in the same section of the GARCH-M model. In this way, both the asymmetric effect of shocks and the risk-return relationship can be observed as long memory.

RESULTS

Table 8 shows summery statistics results from the collected data including the average returns, the standard deviation and the correlation. From the average returns, standard deviations and correlations, ALASN displays a higher return with less risk, compared to NYSE Amex and OTC ADR. A very weak uphill (positive) linear relationship is observed between the indexes.

Table 8: ALASN, NYSE Amex and OTC ADR Summery Statistics

Average return ALASN	0.262%
Average return XAC	0.063%
Average return OTCDR	0.129%
Correlation	r
Correl. ALASN,XAC	0.2416
Correl. ALASN,OTCDR	0.3605
Std dev ALASN	0.0159
Std dev XAC	0.0194
Std dev OTCDR	0.0175

This table presents the summery statistics results from the analysis of the collected data including the average returns, the standard deviation and the correlation.
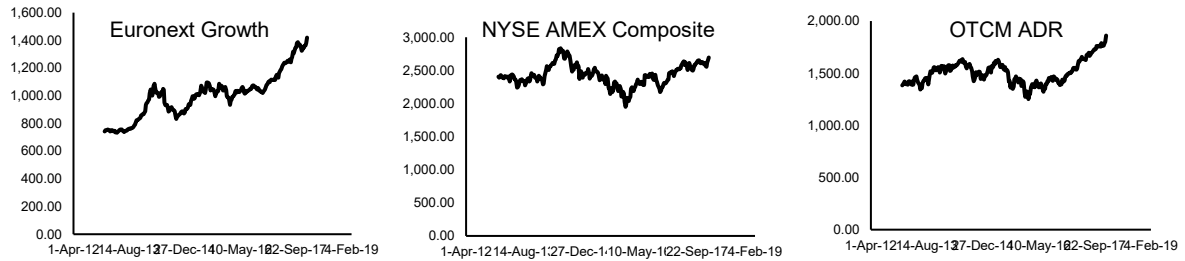
Return values of the series in the graphs appearing here a are calculated using the following formula:

$$r_t = \left(\frac{P_t}{P_{t-1}}\right)$$

(6)

rt: Return in time t
Pt: Stock market value at time t
Pt-1: Stock market value at time t-1

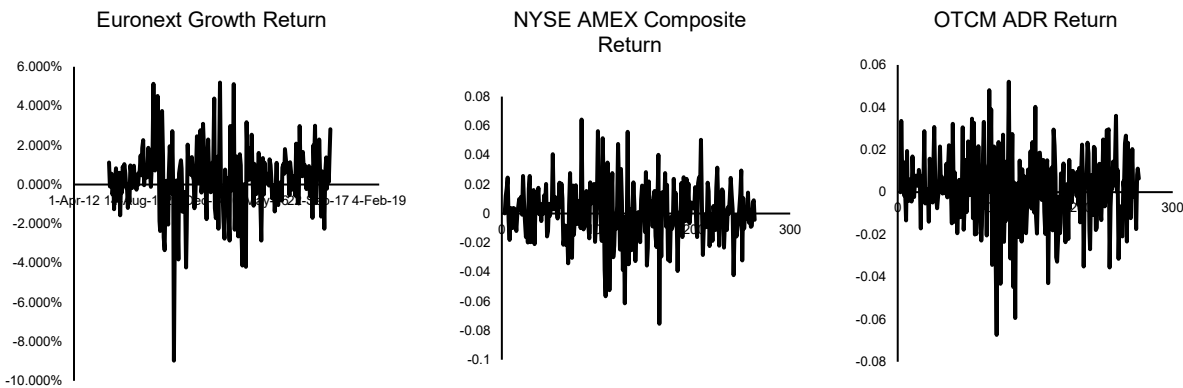Figure 1 shows the return trends of ALASN, NYSE AMEX, and OTC ADR from 2013 to 2017.

Figure 1: ALASN, NYSE AMEX, and OTCM ADR Index Prices

This figure shows the return trends of ALASN, NYSE AMEX, and OTC ADR from 2013 to 2017

Figure 2 shows the return trends of ALASN, NYSE AMEX, and OTC ADR from 2013 to 2017. The logarithmic chart of the Euronext All Share, despite a slight decline, shows an upward trend compared to its counterpart NYSE Amex and OTC ADR, which despite showing some upward trend in recent years, suffers from serious fluctuations. This indeed shows better results for the Euronext All Share, compared to NYSE Amex and OTC ADR. However, we see a slight decline in all three index prices around 2014, which may be caused by the unprecedented drop in oil prices (Mead & Stiger, 2015).
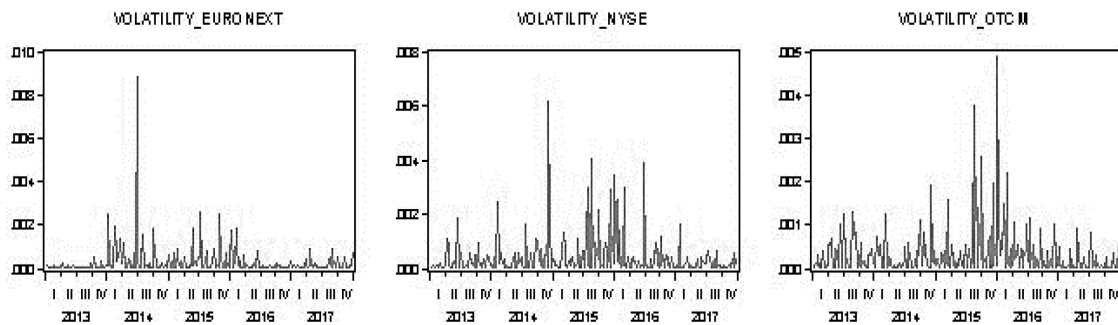
Figure 2: ALASN, NYSE AMEX, and OTCM ADR Indexes Returns

This figure shows the return trends of ALASN, NYSE AMEX, and OTC ADR from 2013 to 2017

Figure 3 shows the volatility trends of ALASN, NYSE AMEX, and OTC ADR from 2013 to 2017.

Figure 3: ALASN, NYSE AMEX, and OTCM ADR Indexes Volatilities

This figure shows the volatility trends of ALASN, NYSE AMEX, and OTC ADR from 2013 to 2017.

Econometrically, the upward trend indicates the time series is not stationary in expectancy. The persistent fluctuations show that it is not a stationary invariance. To test the stationarity of the return, the ADF test was applied. The results are presented in Table 9.

ADF results show that all series are stationary at level as all critical values are negative and the p values are less than 0.05. Thus, subsequent processes will include the Autoregressive Moving Average (ARMA) modelling rather than the Autoregressive Integrated Moving Average (ARIMA) modelling.

Table 9: ADF Test

Critical Value of EURONEXT	-6.742
Selected lag length2	3
Prob3	0.0000***
Critical Value of NYSE AMEX	-4.712
Selected lag length	13
Prob.	0.0001***
Critical Value of OTCM ADR	-6.571
Selected lag length	6
Prob.	0.0000***
H0: Series has a unit root Significance: ***0.01 **0.05 *0.1	
1: Intercept model 2: (Automatic - based on t-statistic, lagpval=0.1, maxlag=15) 3: MacKinnon (1996) one-sided p-values.	

Table 9 presents the ADF test results of the ALASN, NYSE AMEX, and OTCM ADR indexes. Lag Length: Selected lag length; H0: Series has a unit root; Prob. (p. value). 1: Intercept model 2: (Automatic - based on t-statistic, lag p. val=0.1, max lag =15) 3: MacKinnon (1996) one-sided p-values., **, and *** indicate the statistical significance at the 1 0, 5, and 1 percent level of significance, respectively. All critical values are negative with prob. Values <0.05*

EGARCH-M model and ARCH LM test results of the series are shown in Table 10. When the model was constructed, GARCH (1,1) model was used with reference to Hansen and Lunde's 2001 study.

From the EGARCH-M modelling results, no ARCH effect was observed. However, high volatility was observed in some periods, but the existence of permanent effects has not been observed in the long term. All γ coefficients in the models are significant and negative indicating the effects of positive and negative shocks on volatility are asymmetric, and there is the leverage effect. Negative shocks cause more volatility than positive shocks.

Table 10: EGARCH-M and ARCH LM Tests

EURONEXT

	Parameters	Critical values	Prob.
$\alpha 0$	-8.763	-3.332	0.0009***
$\alpha 1$	0.3607	2.293	0.0218**
γ	-0.3200	-2.490	0.0128**
$\beta 1$	-0.0241	-0.0078	0.9381
Significance: ***0.01 ** 0.05 *0.1			
ARCH-LM(1)			
F- statistic	0.0608	Prob. F(1,257)	0.8054
Obs*R-SQUARE	0.0613	Prob. Chi.Square(1)	0.8045
H0: Model does not have ARCH effect			

NYSE AMEX

	Parameters	Critical values	Prob.
$\alpha 0$	-1.035	-2.195	0.0282**
$\alpha 1$	0.0105	0.1297	0.8969
γ	-0.1993	-2.841	0.0450***
$\beta 1$	0.8715	14.990	0.0000***
Significance: ***0.01 ** 0.05 *0.1			
ARCH-LM(1)			
F- statistic	1.114	Prob. F(1,248)	0.2922
Obs*R-SQUARE	1.118	Prob. Chi.Square(1)	0.2903
H0: Model does not have ARCH effect			

OTCM ADR

	Parameters	Critical values	Prob.
$\alpha 0$	-0.6463	-2.052	0.0402**
$\alpha 1$	-0.0819	-2.144	0.032**
γ	-0.2630	-3.999	0.0001***
$\beta 1$	0.9148	23.128	0.0000***
Significance: ***0.01 ** 0.05 *0.1			
ARCH-LM(1)			
F-statistic	1.835	Prob. F(1,248)	0.1768
Obs*R-SQUARE	1.836	Prob. Chi.Square(1)	0.1754
HO: Model does not have ARCH effect			

HO: Model does not have ARCH effect. Table 10 presents the EGARCH-M and ARCH LM test results of the ALASN, NYSE AMEX, and OTCM ADR indexes. α parameter represents a magnitude effect or the symmetric effect of the model, the "GARCH" effect; β measures the persistence in conditional volatility irrespective of anything happening in the market. The γ parameter measures the asymmetry or the leverage effect, the parameter of importance so that the EGARCH model allows for testing of asymmetries. If γ = 0 , then the model is symmetric. When γ < 0 , then positive shocks (good news) generate less volatility than negative shocks (bad news). When γ > 0 , it implies that positive innovations are more destabilizing than negative innovations. The F-statistic is an omitted variable test for the joint significance of all lagged squared residuals. The Obs*R-squared statistic is Engle's LM test statistic, computed as the number of observations times the from the test regression. Prob. Chi.Square(1)or "goodness of fit" statistic tests how likely it is that an observed distribution is due to chance. *, **, and *** indicate the statistical significance at the 1 0, 5, and 1 percent level of

CONCLUSION

We investigated the state of SMEs using data from the U.S. and Europe. The goal was to compare the performances of both European unregulated markets, using the Euronext all share index, and U.S. unregulated markets, using the NYSE AMEX Composite Index and OTCM ADR Index.

Our theoretical study displayed the existence of various unregulated stock market for SMEs in Europe and the U.S. with diversified listing conditions that are less restrictive than principal regulated stock markets. The decision to go public is the result of a cost-benefit comparison.

SMEs' keen interest in the stock market based financing in recent years, results from the combination of factors, including IPO conditions, specificity and types of stock markets. SMEs' access to finance could be

improved, if decision makers in SMEs could separate management from ownership, lock off family succession and control, and hire professional staff to lead enterprises (Al. Barrak A. M., 2005). SMEs IPO's could improve, if policymakers paid more attention to SMEs, in establishing policies and accompanying measures. The empirical results revealed that, the Euronext all share index reflects better results for the European unregulated market, compared to its U.S. counterparts.

The non-inclusion of all the unregulated stock markets indexes prices of the two areas, coupled with limited duration of time, is a fundamental limitation for this study. However, this study opted for 2013 as a starting point, due to our desire to eliminate the 2008 global financial crisis' effects. The result could have been driven by poor performance of the U.S. unregulated market index prices, after the subprime crisis. For an overall comparison of the two markets, this study can be extended to the main listing stock markets.

REFERENCES

Akala, I. (2017). "The Euro-zone Financial Crisis: Causes, Consequences and Policy Responses" *International Journal of Youth Economy* Vol. 1, No. 2 (Nov. 2017), PP:121-134. doi:10.18576/ijye/010202.

AL.Barrak, A.M. (2005) "Initial public offering in Saudi arabia: motivation, barriers and effects" Newcastle library, 205 0617 8, thesis L7848.

Alvarez de la Campa, A. (2013) "Secured Transactions and Collateral Registries Program" Presentation at International Finance Corporation (IFC) conference, September 18, San Jose, Costa Rica.

Artzner, P., Delbaen, F., Eber, J.M., And Health, D. (1999) "Coherent Measures of Risk" *Blackwell Publishers, Mathematical Finance*, Vol. 9, No. 3. PP. 203–228. doi: 10.1111/1467-9965.00068.

Bharat Sreedhar, T. and Dittmar Amy, K. (2010) "Why Do Firms Use Private Equity to Opt Out Public Market?" *Review of Financial Studies*, vol. 23, no5, PP.1771-1818. doi:10.1093/rfs/hhq016

Boot, W.A., Gopalan, R.et Thakor, A. v. (2006) "The Entrepreneur Choice between Private and Public Ownership" *The journal of Finance*, vol. 61, no 2, Avril. doi: 10.1111/j.1540-6261.2006.00855.x.

Bremus Franziska, M. (2015) "*The Debate about Financing Constraints of SMEs in Europe*" DIW *Roundup: Politik im Fokus*, No. 66. doi: 10419/111851.

Chemmanur Thomas, J., and Fulghieri, P. (1999) "A Theory of Going Public Decision" *The Review of Financial Studies,* vol. 12 No. 2 (summer 1999) PP. 249-279.

Chod, J. and Lyandres, E. (2010) "Strategic IPOs and Product Market Competition" *Journal of Financial Economics.* doi:10.1016/j.jfineco.2010.10.010.

Dickey, D. A., & Fuller, W. A. (1979) "Distribution of the estimators for autoregressive time series with a unit root" Journal of the American Statistical Association. doi:10.1080/01621459.1979.10482531.

Dickey, D. A., & Fuller, W. A. (1981) "Likelihood ratio statistics for autoregressive time series with a unit root" *Econometrica*: *Journal of the Econometric Society* vol. 49, No. 4..

Posner, E. (2009) "The Origins of Europe's New Stock Markets" *Harvard University Press.*

Engle, R. F., Lilien, D. M., & Robins R. P. (1987) "Estimating time varying risk premia in the term structure: The ARCH-M model" *Econometrica: Journal of the Econometric Society*, PP. 391-407. doi: 10.2307/1913242.

Episcopos, A., & Davis, J. (1996) "*Predicting returns on Canadian exchange rates with artificial neural networks and EGARCH-M models*" *Neural Computing & Applications*, 4(3), PP. 168-174. doi:10.1007/BF01414877.

Farre-Mensa, J. (2010) "Why are Most Firms privately held?" *Job Market Paper*.

Ghalanos, A. (2013) "*Does anything NOT beat the GARCH(1,1)*" Retrieved from http://www.unstarched.net/2013/01/07/does-anything-not-beat-the-garch11/

Glosten, L. R., Jagannathan, R., & Runkle, D. E. (1993) "On the relation between the expected value and the volatility of the nominal excess return on stocks*" The journal of finance*, 48(5), PP. 1779-1801.

González-Rivera, G., Lee, T. H., & Mishra, S. (2004) "Forecasting volatility: A reality check based on option pricing, utility function, value-at-risk, and predictive likelihood" *International Journal of Forecasting*, 20(4), PP. 629-645. doi:10.1016/j.ijforecast.2003.10.003.

Gupta, V., Saini, J.S. (2016) "IPO Financing: An alternative source of financing for SMEs in current era" *Journal of Business and Management*. Volume 18, Issue 7 .Ver. IV (July 2016), PP. 119-125. doi: 10.9790/487X-180704119125.

Hansen, P. R., & Lunde A. (2001) "A comparison of volatility models: Does anything beat a GARCH (1, 1*)" Centre for Analytical Finance, University of Aarhus*, Working Paper Series, 84.

Hansen, P. R. (2010) "A winner's curse for econometric models: on the joint distribution of in-sample fit and out-of-sample fit and its implications for model selection*" Research Paper*, 1-39.

Hansen, P. R., Lunde, A., & Nason, J. M., (2011) "The model confidence set" *Econometrica*, 79(2), PP. 453-497. Doi: 10.3982/ECTA5771.

Hall, C. (2007) "When the dragon awakes: Internationalisation of SMEs in China and implications for Europe" *CESifo Forum*, Vol. 08, Iss. 2, PP. 29-34.

Jeet, P. & Vats, P. (2016) "Learning quantitative finance with R. PACKT Books" *Packt Publishing, Birmingham*, UK.

Kentaro, I. (2016) "A panel study of zombie SMEs in Japan: Identification, borrowing and investment*" Journal of the Japanese and International Economies* Volume 39, PP. 91-107. doi: 10.1016/j.jjie.2015.12.001.

Kiškis, M., Limba, T., & Gulevičiūtė, G. (2016) "Business value of intellectual property in biotech SMEs: case studies of Lithuanian and Arizona's (US) firms" *Entrepreneurship and sustainability issues*, 4(2), PP. 221-234. doi: 10.9770/jesi.2016.4.2(11).

Mead, D. and Stiger, P. (2015) "The 2014 plunge in import petroleum prices: What happened?" *U.S. Bureau Of Labor Statistics* May 2015. Vol. 4 / No. 9.

Mossin, J. (1966) "Equilibrium in a capital asset market" *Econometrica: Journal of the Econometric Society*, 768-783.

Nelson, D. B., (1991) "*Conditional heteroskedasticity in asset returns: A new approach.* Econometrica" *Journal of the Econometric Society*, PP. 347-370.

Olugbode, M., El-Masry, A., & Pointon, J., (2014) "Exchange rate and interest rate exposure of UK industries using first-order autoregressive Exponential GARCH-in-mean (EGARCH-M) approach*" The Manchester School*, 82(4), PP. 409-464. doi:10.1111/manc.12029.

Pagano M., (1993) "The Flotation of Companies on The Stock Market: A Coordination Failure*" European Economic Review*, vol. 37, no 5, PP. 1101-1125. doi:10.1016/0014-2921(93)90111-M.

Pierre, E. F. S. (1998) "Estimating EGARCH-M models: Science or art*" The Quarterly Review of Economics and Finance*, 38(2), PP. 167-180. doi:10.1016/S1062-9769(99)80110-0.

Pozniak, L. and Guillemette, F. (2013) "Les Dirigeants De PME Et La Communication Financière Sur l'Internet*" Revue international P.M.E: Economie et Gestion de la Petite et Moyenne Entreprise*, vol.26, no 3-4, PP.139-167. doi: 10.7202/1024522.

Rayhorn, C., Hassan, M. K., YU, J. S., & Janson K. R. (2007) "Emerging market efficiencies: New Zealand's maturation experience in the presence of Non-Linearity, thin trading and asymmetric information*" International Review of Finance*, 7(1-2), PP. 21-34. doi: 10.1111/j.1468-2443.2007.00066.x.

Reschenhofer, E. (2013) "Does Anyone Need a GARCH(1,1)" *Journal of Finance and Accounting*, 1(2), PP. 48-53. doi: 10.12691/jfa-1-2-2.

Revest, V. and Sapio, A. (2014) "L'alternative Investment Market: Un Modèle Pour Le Financement des Petites Et Moyennes Capitalisations? " *Revue D'économie Financière*. Doi : 10.3917/ecofi.114.0167.

Sannajust, A. (2014) "Impact of the World Financial Crisis to SMEs: The determinants of bank loan rejection in Europe and USA*" working paper PP. 2014- 324 IPAG Business School.

Sharpe, W. F. (1964) "Capital asset prices: A theory of market equilibrium under conditions of risk*" The Journal of Finance*, 19(3), 425-442. doi: 10.1111/j.1540-6261.1964.tb02865.x.

Shmueli, G., & Lichtendahl, K. C. (2016) "Practical Time Series Forecasting with R: A Hands-On Guide" *Axelrod Schnall Publishers*.

Shumway, H. & Stoffer, D. S. (2011) "*Tim*e series analysis and its applications: With R examples*" Springer,* Doi: 10.1007/978-1-4419-7865-3.

Delporte J.M., SPF Economie, P.M.E. (2017) "*Classes moyennes et Energie, Tableau de bord des PME et des entrepreneurs indépendants*" [PDF] Retrieved from https://economie.fgov.be/fr/publications/tableau-de-bord-des-pme-et-des-0

Sthoughton, Neal M.,Wong, Kit P., and Zechner, J.,(2001) "IPOs and Product Quality*" Journal of Business.* vol. 74, no 3, pp. 352-388. Doi: 10.1086/321931.

Udell Gregory F. (2015) "Issues in SME Access to Finance Issues in SME Access to Finance" Retrieved from http://european-economy.eu/leading-articles/issues-in-sme-access-to-finance-by-gregory-f-udell/

Wagenvoort, R. (2003) "Are finance constraints hindering the growth of SMEs in Europe?" *European Investment Bank (EIB)* . Volume: 8 Issue PP. 23-50. doi: 10419/44823.

Wehinger, G. (2013) "SMEs and the credit crunch: Current financing difficulties, policy measures and a review of literature OECD*" Journal: Financial Market Trends* Volume 2013/2

Weild, D. and Kim, E. (2015) "Why Are IPOs in the ICU*?" Grant Thornton LLP*. [PDF] Retrieved from http://cmapartners.com/wp-content/uploads/2011/04/Why-are-IPOs-in-the-ICU_11_19.pdf

Zingales, L., (1995) "Insider Ownership and the Decision of Going Public" *Review of Economic studies*, vol. 62, PP. 425-448.

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