U.PORTO

FEP FACULDADE DE ECONOMIA UNIVERSIDADE DO PORTO

Determinants of Stocks Splits: Evidence from the French market

Sara Carolina Parada Carneiro

Dissertation

Master In Finance

Supervised by

Professor Dr. Júlio Fernando Seara Sequeira da Mata Lobão

29 September 2020

Acknowledgments

As the most important chapter of my academic life comes to an end, I would like to thank the people that supported me and encouraged me to conclude it.

I would like to start off by paying my special regards to my supervisor, Professor Dr. Júlio Fernando Seara Sequeira Lobão, for his support and availability in this process, for his patience when I lost encouragement and for his guidance throughout the conclusion of this dissertation.

I would also like to thank to thank Paulina Preto and Paula Isabel Carvalho for their availability and support.

Not only for always having the right words of encouragement throughout this process, but for the unconditional support and love that I have known all my life, I would like to thank my parents, Jaime and Serafina. Thank you for all the sacrifices that you made and for always pushing me forward. Know that there are no words that could begin to describe how lucky I feel for being your daughter.

To my little sister Diana, my favorite person in the world, thank you for the person you are becoming and for pushing me to be worthy of being a role model to you. Right now, you are just starting your academic life, but one day is going to be my name on your acknowledgement notes and I cannot wait to see you live this part of your life.

Last but not least, I would like to thank the rest of my family and friends, specially to my dearest Raquel Espírito Santo, who, more than a friend, is family and who helped me endlessly in the conclusion of this chapter.

Abstract

This dissertation is aimed at understanding the motivation behind the decision to perform stock splits through the testing the Signaling Hypothesis and the Liquidity Hypothesis in the French market. The Signaling Hypothesis defends that stocks splits are performed by companies in an attempt to send a positive signal to the market with regards to the expected future revaluation. Assuming that the decision to stock involves costs to the company, this can be perceived by the market as a confirmation of positive prospects to the company and, consequently, attract investment. The Liquidity Hypothesis, on the other hand, even though it also agrees with the statement that stock splits are performed in an attempt to attract investors, it believes that the reasoning behind stock splits is the motivation to keep trading prices within an optimal level to increase shares Liquidity and attract investors. To understand if these theories help explain the decision made by managers in the French market it was gathered a samples of stock splits in the period between December 16th 2010 and November 30th 2018 and, comparing their behavior to the one of a set of similar firms that did not perform stock splits, allowed to conclude that, despite the initial prediction, the decision to perform stock splits in the French market does not seem to be significantly motivated by the Liquidity hypothesis or the Signaling Hypothesis.

Key words: Investment, Stocks Splits, French market.

JEL-Codes: G14, G4.

Table of Contents

1. Introduction 1
2. Literature Review 4
   2.1. The catering theory of nominal share prices 5
   2.2. The Signaling hypothesis 6
   2.3. The Liquidity hypothesis 7
   2.4. Managerial Entrenchment hypothesis 7
   2.5. The euro explanation 7
3. Data and Methodology 9
   3.1. Database and variables description 9
   3.2. Motivation for stock splits 11
4. Empirical Results 13
   4.1. Decision to execute stock splits 16
5. Conclusions 19
6. References 20
7. Webgraphy 22
8. Annex 23

Table Index

Table 3.1. Characteristics of Stock Splits 10

Table 4.1 Characteristics of Stock Splits and Control Sample 15

Table 4.2 Determinants of the decision to split stocks- Model 1 16

Table 4.3 Rank of correction- Model 1 16

Table 4.4 Determinants of the decision to split stocks w/ earnings and dividends increase of the following year. 17

Equation Index

Equation 3.1Model 1 12

1. Introduction

Stocks are a security that corresponds to a fraction of the company's ownership which grants the stock's owner a portion of the firm's profits and assets equivalent to the stock owned. These stocks are mainly traded on stock exchanges, although they can also be traded in private sales. The ownership of the investors depends on the number of shares relative to the total number of shares outstanding (Wulff, 2002).

In the other hand, stock splits are used by a company's board of directors to increase the number of the company's shares outstanding through the trade of shareholders' existing shares for a higher number of new shares with a lower price so that the total portion of the company owned by the investor remains the same (Weld, 2009). It is known that the management of a company's nominal share price and number of shares outstanding, through stock splits, cannot change the company's overall market value or its financial structure and is, under certain assumptions, a practically irrelevant decision (Baker, GreenWood and Wurgler, 2009).

However, it is quite a common practice for companies to manage their nominal share price and there are many theories that try to explain the reasoning behind the decision to split stock despite its associated costs and apparent lack of effects. Roger, Roger and Schatt (2018) showed, in their study, that there is a bias towards smaller priced firms, that is, investors view differently small stock prices and high stock prices. Moreover, investors seem to be relatively more optimistic regarding firms that perform stock splits, such phenomenon cannot be justified by alteration in the investors' sensitivity to factors of risk and such behavioral bias seems to be quite embedded in investors' decision process (Roger et al., 2018).

Many authors, try to look further into reasons why the decision to split stocks is made, some of the most plausible explanations say that trading costs are dependent of the nominal price (Dolley, 1933) there are also those that defend that this phenomenon happens due to a market norm for prices to be inside a certain range (Benartzi, 2007), this effect might also be called the Liquidity hypothesis which claims that stock splits are executed by firms with the intent to keep prices within a certain normal trading range, it is one of the theories that has gathered more attention (Baker and Powell, 1993). Another theory that has been explored the Signaling hypothesis, which defends that companies use the announcement of

split stocks to project private information to the market (Asquith, 1989). Another theory that has received some attention is the catering theory of nominal share prices which perceives the manager's decision to split stocks and reduce stock prices as an attempt to get the attention of potential investors at a moment where they place more value on low-price firms (Baker et al., 2009). This theory was tested in the US market by Weld (2009), which concluded that the main motivation behind stock splits is tradition which leads companies actively trying to keep prices within a particular norm price range. Other studies tried to understand managers' motivation in European markets, such as the German market (Wulff, 2002). This research tried to understand the stock splits' effects in the German market and the theories that explain managers' reasoning behind stock price management; it concluded that the theory that best explains the effects on the market is the neglected firm effect, which was initially proposed by Arbel and Swanson (1993) and defends that managers decide to perform stock splits in an attempt to attract attention and recognition towards a firms that was previously being neglected, the study also found that the effects in the share price is much larger in the U.S. market than in the German market (Wulff, 2002). Regarding investment attraction, Birrua and Wang (2016) showed proof that investors create an illusion of higher return potential regarding firms with low-priced stocks, the authors defend that there is a link created by investors between stock price and return skewness which seem to be, in a systematic fashion, overestimated when it comes to low priced firms.

Menéndez and Anson (2003) tried to explain, not only the motivations behind the split of stocks through the test of specific theories, namely the Liquidity hypothesis, the managerial entrenchment hypothesis and, finally, the euro explanation, but also its effect on the Spanish market. The main goal of this dissertation is to test which theory better explains the stock splitting decision made by managers in the French market following a previous research done in the Spanish market (Menéndez and Anson, 2003), focusing on the Signaling hypothesis and Liquidity hypothesis. The hope is to extend the research on stock splits in a country that has particularities that may bring different results from the ones found in the American and Spanish markets.

In this dissertation it was be followed the rationale of Menéndez and Anson (2003) regarding the testing of the Liquidity hypothesis and the Signaling hypothesis. However, in this case it will be applied to the French market. The sample used focused on the period between December 16th 2010 and November 30th 2018 and it were gathered 35 stock split announcements. After collecting said sample, it was also created a sample with data related

to control firms which allowed the comparison between stock splitting firms and non-splitting firms. After defining the hypothesis that would be tested (Hypothesis 1 that focused in the Signaling Hypothesis and Hypothesis 2 which focused on the Liquidity hypothesis), it was created a model that, once again, followed the guidelines created by Menéndez and Anson (2003) to understand the impact of both the liquidity hypothesis and the signaling hypothesis, which allowed the conclusion that neither of them seems to significantly affect the managers' decision process when it comes to the choice of splitting or not splitting stocks.

This dissertation will be organized in the following way: firstly, in chapter 2, an analysis of existing literature to shed light on the theories and hypothesis that seem to better explain the reasoning behind stock splits; Then, in chapter 3, it will be detailed the data that will be used in this dissertation followed by the description of its statistical characteristics; moreover, it will be applied a model based on the one developed by Menéndez and Anson (2003) in chapter 4 and its results will be discussed as well as the conclusions behind them in chapter 5.

2. Literature Review

Like previously mentioned, the decision to stocks split is made by the managers in an attempt to increase the number of shares outstanding by trading existing shares for new and lower-priced ones. Even though, apparently, this decision does not affect the market value or financial structure of the firm and has no real effects for the firm or market, taking a further look into this decision it is clear that is not as irrelevant as it may seem and there is a valid reasoning behind such decision (Weld, 2009).

In an efficient stock market without friction, there is no optimal share price. The decision to manage their firms nominal share price may seem, therefore, an innocuous decision. In a research conducted by Baker and Gallagher (1980) through a questionnaire, answered by chief financial officers, to find information about split stock decisions, it was found that a big majority of the decisions regarding split stocks were motivated by the need to decrease stock price to keep the price at an optimal range and to attract investors, which allows an enlargement of the base of the ownership. It was also concluded that, even though the reasons behind the issuing stocks and issuing dividends tend to be very different, both are perceived to create a positive number of shareholders. According to Baker et al. (2009) "*One question that the results raise, and that we leave to future work, is why nominal share prices matter to investors(...)Perhaps some investors suffer from a nominal illusion in which they perceive that a stock is cheaper after a split, has more 'room to grow'(…), or has 'less to lose'(…).*"(p.5). A study on split stocks in 1920's performed by Dolley (1933) shows that a majority of the firms in study have had a split share done with the main goal of raising the marketability of its common shares. In another study, Chan, Li, Lin and Lin (2017) have concluded that the improvement of informed trading seems to be one of the reasons that leads firms to perform stock splits. Moreover Chan et al. (2017) also pointed out that, despite the positive aspect of the decision, firms are careful with how low their allow their stock prices to become as to avoid giving the market the idea it is a low-credit firm.

Empirical research conducted in the United States (Weld, 2009) shows that the American share price has remained quite constant since the Great Depression, even though the general price level has increased greatly. This phenomenon can be explained by the active effort of managers to keep the stock prices at a level of around $35, which is puzzling. According to the authors, the need to keep prices constant throughout time despite so many economic and social changes has to do with the need for firms to follow a norm and more traditionalist

views that they use to establish an "optimal" price range instead of an economic rationale. This study also defends that, like it was previously suggested, even though companies try to attract investors through price managing actions, the benefits that come from these actions are quite brief and tend to be reversed after some time (Baker et al., 2009).

A study conducted in the Spanish market by Menéndez and Anson (2003) studied the reasoning behind stock splits and its repercussions in terms of valuation of the companies in the Spanish market. This study tested the following theories: the Signaling hypothesis; the Liquidity hypothesis, both hypothesis seem to be most accepted ones in literature; the managerial entrenchment hypothesis, that tests whether or not stock splits are performed in a bid to alter the firm's ownership structure, which, even though it did not reveal itself as a reason for stock splits in the Spanish market, it is an explanation for the US market according to Shultz (2000); and, finally, the euro explanation that points out the firm's need to institute a price equivalent to the one that had been established before the implementation of the euro in the country. It came to the conclusion that the Liquidity hypothesis is, between those that were analyzed, the one that better explains the motivation behind the decision to split stocks (Menéndez and Anson, 2003).

Pecchioli (2012) analyzed the French market in the period between 2003 and 2007 to understand the effect caused by stock split and reverse splits by developing a "model of stock price optimization" (Pecchioli, 2012). It concluded that the Signaling theory did not generate significant effects to justify the stock split decision. Furthermore, it found strong evidence that agrees with the price adjustment hypothesis even though the increase in Liquidity seems to be very short lived (Pecchioli, 2012).

Through the next subchapters it be discussed the main theories that have been already mentioned in greater detail and the studies that sustain it:

2.1. The catering theory of nominal share prices

This theory predicts that stock splits are performed by managers to lower the price level of a company in an attempt to attract investors that place a higher value in low-priced firms over higher priced firms. Fundamentally, managers use this method in an attempt to place the firm in a more favorable price category, that is, in a category of low-priced firms.

Several elements of empirical support for the catering theory of nominal share prices found in the US by Baker, Ruback and Wurgler (2007), show that, indeed, splits stocks tend to happen more frequently and towards lower prices when investors are evaluating smaller and lower priced firms relatively more than larger and higher priced firms. Proxies based on valuation ratio of catering incentives help explain a big amount of the variation of prices chosen by firms that became recently public. Lastly, firms that practice an active price management as a way to benefit from relative overvaluations of firms with small prices, have relatively low returns over the following few years (Baker et al., 2007).

2.2. The Signaling hypothesis

The suggestion behind the Signaling hypothesis, according to Menéndez and Anson (2003), is that managers use the method of splitting stocks to send the market a favorably promising signal regarding its expected future revaluation, assuming that there is asymmetric information between investors and managers. This premise is only believable if the process of splitting stocks is costly for the company (Ikenberry, Rankine and Stice, 1996). There are indeed costs related to the process of splitting stocks, as explained by Menéndez and Anson (2003), the processes related to administrative, registration, advertising and transactions matters are the justification behind such costs. So, these expenses can reveal themselves particularly harming for a company that does not have great expectations regarding future results and would, therefore, use stock splits to send a false signal. This will discourage the propensity for companies to use this method as a way to send misleading signals.

After the research conducted by Fama, Fisher, Jensen and Roll (1969), the Signaling hypothesis was established in the literature as one of the main justifications for stock splits. In conformity with this hypothesis, it is believed that managers see in stock splits a sign of favorable private information about the company's value. The Signaling hypothesis suggests that potential investors will see stock splits as a sign from the managers of positive future expected earnings for the company. Consonantly with this rationale, according to Lakonishok and Lev (1987), firms that split their stocks exhibit an incremental increase in their earnings prior and subsequent to the split.

Moreover, certain studies take a different angle when analyzing the signals that can be sent by stock splits. These studies focus on the effect on the company's dividends, for instance, Fama et al. (1969) reported that 70% of the firms that split stocks manifested an increase in dividends in the year following the split. GrinBlatt, Masulis and Titman (1984)

backed up this theory and reported in their research that companies that do not pay their dividends in cash witness abnormal positive returns. However, many studies do not reinforce this theory, such as the case of Asquith (1989), that reported no response from the market regarding the stock split announcement despite the initial anticipation of an increase of the company's dividends.

2.3. The Liquidity hypothesis

The Liquidity hypothesis tells us that stock splits are performed with the goal of keeping the share prices within an optimal trading price range so that the liquidity of the company's shares increases. This will make the company more attractive to potential investors who value lower share prices. In a study conducted Baker and Gallagher (1980), this hypothesis was cited as one of the main reasons behind stock splits. This conclusion is supported by other authors (Menéndez and Anson, 2003; Lamoureux and Poon, 1987).

Despite the overall support found in literature regarding this hypothesis, there are, however, authors that do not subscribe this theory such as Copeland (1979) who even concluded that there is a negative effect regarding firms' liquidity and, furthermore, found that said effect is permanent rather than temporary. Moreover, Conroy, Harris and Benet (1990) who analyzed the US market also report a negative effect in the firms' liquidity.

2.4. Managerial Entrenchment hypothesis

As suggested by Menéndez and Anson (2003) there is a theory that claims that stocks splits are performed by firm's managers in an attempt to decrease institutional ownership and change the firm's ownership structure; such theory is in line with the results found by Amini, Buchner, Cai and Mohamed (2020). Mukherji, Kim and Walker (1997) showed through their study that the decision to perform stock split, not only increases the number of shareholders, whether there are individual or institutional, but also it does not change the equity that is held by institutional investors, in terms of proportions.

2.5. The euro explanation

This explanation given by Menéndez and Anson (2003) interprets stock splits as a "purely cosmetic" method used due to the manager's need to keep nominal prices at a level equivalent to the one that was established before the adoption of the euro (Menendez, 2003).

Regarding Spain, specifically, Menéndez and Anson (2003) noticed that a considerable percentage of companies that performed stock splits in 1998 and 1999, kept their new nominal price as a multiple of the equivalent to a euro in pesetas.

According to the European Commission (2020) the euro as a currency was implemented in France on 1st January 2002, after 3 years of transition. However, initially, there was still a dual circulation period, where both the euro and the French franc had a legal status, which only ended on the 17th of February 2002.

3. Data and Methodology

In this chapter it will be described the data used to proceed with this dissertation, as well as the hypothesis that will be tested. Furthermore, the results of the present dissertation will be discussed after the description of the model.

3.1. Database and variables description

The data used in this dissertation consists of stocks splits that are not associated with variations of capital, this type of stocks splits is denominated pure stock splits. For the data it was only considered stocks from companies listed in the Euronext Paris, the stock exchange market in France gathered from the Thomson Reuters's databases Eikon and Datastream. The time frame considered was between 2010 and 2018. The sample gathered is focused on stock splits made by companies focused in one particular industry, the financial services industry, which includes banking and investment services, insurance, real estate, collective investments and investment holding companies, this industry was chosen as it is one of the industries that offered the largest samples and these reasoning is in line with the one followed by Menéndez and Anson (2003). The total samples amounted to 64 stock splits between December 16th2010 and November 30th2018.

In order to prevent contamination of information it was important to establish some conditions. Menéndez and Anson (2003) came up with some filters in order to avoid misleading results: firstly, it is important to make sure the announcement date is identified and that the stock prices were available for a minimum of 200 trading days prior to the date of the announcement (Menéndez and Anson, 2003). It is also important to exclude stock split announcements that were made along with other announcements related to certain events such as mergers, tender offers, IPOs or variations of capital. After the application of such condition the final sample has 35 stock splits announcements that occurred in the period between December 16th2010 and November 30th2018. Menéndez and Anson (2003) gathered a final sample of 55 stock split announcements for the Spanish market, between the years of 1996 and 1999, which is, considerably, a larger than the one found in the French market.

Besides the main sample related to split stocks it is important to gather information regarding a set of companies that did not perform split stocks in order to create a control sample of companies listed in the Euronext Paris within the same industry, the creation of

this sample is in line with the Menéndez and Anson's (2003) study. Said control sample was creating comparing each firm that performed split stock with a compatible one in terms of profitability ratios (net profit margins) and liquidity ratios (working capital) as well and debt-to-equity ratio and EPS (earnings per share), such information was gathered through Thomson Reuters's Eikon. The goal of this sample is to identify potential effects on stock prices caused by other events in the industry which may lead to misinterpretation of the results, following the rationale of Menéndez and Anson (2003).

In the following table it can be found the characteristics of the sample of 35 pure stock splits gathered. These values are represented in euros:

Table 3.1. Characteristics of Stock Splits

	Mean	*Median*	*Maximum*	*Minimum*	*Std. Dev.*
Split Factor	6.828	4.000	39.000	1.000	7.505
Split Ration	7.829	5.000	40.000	2.000	7.505
Pre-announcement Stock Price	82.646	11.730	321.210	0.009	100.839
Post-split Stock Price	83.685	10.240	291.210	0.007	104.672

The split ratio (SR) is the ratio between the number of shares after and before the split and split factor (SF) stands for the size of distribution of the split, that is, SF=SR-1. The pre-announcement stock price concerns the stock price of the splitting firm one month before the announcement of the split. Whereas, the post-split stock price regards the stock price one month after the effective date, that is, after the execution of the split. The values mentioned are all designated in euros.

In Table 3.1 it is possible to see the general characteristics of the stock splits found in the sample. For instance, it is possible to see the details on split ratio, the stock prices at the pre-announcement date and at the post-split date. Regarding the split ratio, its median value is 5, which can be considered a somewhat high value when compared to the values found in studies for the American market, for instance, GrinBlatt et al. (1984) , whose median was merely 0.62, or even for the Spanish market (Menéndez and Anson, 2003), whose median value was 3. This high value regarding the median of the split ratio will obviously lead to a high value when it comes to the split factor, which has a median of 4. The stock prices before the split announcement have a median of 11.73 euros, whereas the median of the stock price after the stock split is performed is 10.24 euros, which is higher than expected. This leads to

a ratio between the pre-announcement and the post announcement of 1.14 which is not close to the high split ratio found in the table 3.1 that might be explained by the differences when it comes to institutional characteristics between France and other countries where these theories have been studied, such as the US. For instance, the fact that the costs associated to signaling through stock splits that can be found in the US market do not translate into the French market, as it has a different a legal system and lower transaction costs that cannot prevent false signals as effectively and may encourage more splits at higher ration since costs are not conditioned by stock prices.

3.2. Motivation for stock splits

Like mentioned previously, this dissertation follows the hypothesis proposed for the Spanish market (Menéndez and Anson, 2003) however, for this case in particular, directed towards the French market. The goal is to identify which factors affect the decision to split stocks, and for that to be achieved, it is important to differentiate the characteristics of the splitting firms and the non-splitting firms, found in the control sample. In order to compare the significance of both the mean and the median of the independent variables, it was used a t-test as well as a Mann Whitney Wilcoxon test. Through a binary logit model, where the dependent variable is a dummy variable for which 1 means that the firm decided to split and 0 means that the firm decided not to split its stocks, which is the decision made by the companies in the control sample. The explanatory variables' goal, on the other hand, is to identify the effect of the Signaling hypothesis and Liquidity hypothesis when it comes to the decision to proceed with the stock split.

In this dissertation, two hypotheses will be tested: firstly, the Signaling hypothesis, which predicts that positive future expectation for firms that make the decision to split their stock; secondly, the Liquidity hypothesis, which claims that the reasoning behind the stock split decision is the aim to keep prices within a certain range.

Hypothesis 1: Firms that split their stocks will face an increase of the post-split earnings and dividends higher than their industry peers.

Hypothesis 2: The post-split stock price will fall within a normal trading range, considering that, previous to the stock split announcement, the firm's stock price was above average (the average of the control sample).

The model to test the relevance of these hypotheses will have three independent variables following the same logic followed by Menéndez and Anson (2003). Firstly, to address the Signaling hypothesis and like mentioned previously, the firm's earnings and dividends increase in the year of the announcement of the stock split will be considered a proxy of the firm's future expectation, hence the variables EAR, which corresponds to earnings in the year of the stock split and DIV, which stand for dividends in the year of the stock split. As suggested by the study of the Spanish market (Menéndez and Anson, 2003), it was also considered the earnings and dividends increase in the year subsequent to the execution of the stock split as a proxy of future expectation of the companies and the results found did not vary from the ones found initially.

Regarding the Liquidity hypothesis, the variable PB is defined as the stock price of the firm one month before the announcement of the stock split and the variable PA refers to the stock price of the firm 1 month after the stock split's effective date. In the model, the variable used will actually be the logarithm of both PB and PA.

Following the first look into the explanatory hypothesis regarding stock splits, it was developed a binary logit model that analyses all the independent variables at the same time. In this model, the dependent variable is YSPLIT, which is a dummy variable that assumes the value 1 for firms that perform a stock split and 0 for firms from the control sample that did not split. The independent variables to test the Signaling hypothesis are the earnings increase in the year of the split announcement (ΔEAR) and the increase in dividends in the year of the split announcement (ΔDIV). The Liquidity hypothesis will be tested by including as independent variables the logarithm of the stock price 1 month before the announcement of the stock split (LPB). After defining the variable, the model will be computed as such:

Equation 3.1Model 1

$$\mathrm{YSPLIT_i} = \mathrm{a} + \mathrm{b1} * \Delta\mathrm{EAR_i} + \mathrm{b2} * \Delta\mathrm{DIV_i} + \mathrm{b3} * \mathrm{LPI_i} + \mathrm{e_i}$$

4. Empirical Results

In the following table show the characteristics of the sample of firms that performed a stock split and of the control sample. We can see in the table 4.1 the mean and medians of the following variables: Dividends increase in the year of the stock split and in the following year, the earnings increase for both the year where the stock split was performed as well as the following year, the pre-announcement stock price and post-split stock price, for both the split firms and the control firms. The dividends increase in the year of the split announcement (ΔDIV) for firms that performed a stock split, in terms of median, presents a similar situation to the firms that did not perform stock splits, they both present a median equal to zero which tells us that zero is the value that separates the upper half of the sample from the lower half. This result remains unchanged when it comes to the dividend increase in the following year. Indeed, for both periods considered there is no statistical significance regarding the difference between splitting and non-splitting firms when it comes to variations of dividends. Observing the earnings increase, when it comes to the period of the split announcement, the median value for firms that executed splits is -32.1% and -2.6% for the control firms. However, this difference is not statistically significant and the same can be said regarding the earnings increase in the year after the stock split, for which the results were -48.8% for firms that executed the split and -19.5% for the firms that did not. Considering these values, it is possible to see that they do not sustain the Signaling hypothesis (H1) since firms that split their stocks do not seem to surpass their counterparts' performance and, therefore, stock splits do not send the signal to market positive future expectation for the splitting firm.

With regards to the pre-announcement stock prices (PB), the split firms have a lower price level when compared with the firms in the control sample, the median values being 10.24 euros and 20 euros, respectively. This difference, however, is not statistically significant as its p-value is 0.52. Moreover, this difference can also be seen regarding the post-split stock price (PA). For the split firms, the median value is 11.73 euros, and, for the control firms, the median is 20,10 euros, but once again it seems that there is no statistical significance regarding these values. The data shown in table 4.1 goes against what would be expected, that is, that firms that decided to split their stocks showed a pre-announcement price higher than the stock price of the control sample firms and that the stock split should lead these price to a normal price range. The lack of evidence that firms perform stock splits with the

goal of reaching an optimal price range lower than the one they previously found themselves in leads to the rejection of the Liquidity hypothesis (H2).

In the following table 4.1 it is possible to see the difference regarding the characteristics between the stock splitting firms and the control firms:

Table 4.1 Characteristics of Stock Splits and Control Sample

	Stock Split Firms				*Control Firms*				*Significance tests*	
Characteristics	**Mean**	**Median**	**Standard deviation**	**%positive**	**Mean**	**Median**	**Standard deviation**	**%positive**	**T-test**	**Wilcoxon**
Dividends increase for the year of the split announcement - ΔDIV	0.111	0.000	1.011	22.860%	0.061	0.000	0.397	37.930%	0.803	0.562
Dividends increase for the year after the split announcement	0.008	0.000	0.461	25.710%	0.002	0.000	0.380	37.930%	0.954	0.741
Earnings increase for the year of the split announcement - ΔEAR	0.848	-0.321	9.175	22.860%	0.598	-0.026	5.158	44.830%	0.897	0.052
Earnings increase for the year after the split announcement	-0.531	-0.488	1.622	45.710%	-0.031	-0.195	8.707	34.480%	0.740	0.666
Pre-announcement stock price (in euros) - PB	83.685	10.240	104.672	-	276.690	20.000	1293.753	-	0.382	0.526
Post-split stock price (in euros) - PA	82.646	11.730	100.839	-	273.140	20.100	1268.477	-	0.379	0.590

4.1. Decision to execute stock splits

It was tested the previously mentioned binary logit model that analyses all the independent variables related to both hypothesis at once (equation 3.1). Said model includes the dummy variable YSPLIT, which is the dependent one and takes the value 1 if the decision to split stocks is positive and 0 in case said decision is negative. The earnings increase in the year of the stock split announcement (ΔEAR) and the increase in dividends in the year of the split announcement (ΔDIV) are the independent variables of the model related to the Signaling hypothesis. Moreover, the logarithm of the stock price 1 month before the announcement of the stock split (LPB) will allow the testing of the Liquidity hypothesis.

In equation 3.1, i stands for the splitting firm and its control sample. The results of the model 1 can be found in the table 4.2 above:

Table 4.2 Determinants of the decision to split stocks- Model 1

Variable	*Coefficient*	*Std. Error*	*Significance*
Constant	0.228	0.261	0.382
Earnings increase for the year of the split announcement - ΔEAR	0.004	0.034	0.913
Dividends increase for the year of the split announcement - ΔDIV	0.068	0.331	0.838
Pre-announcement stock price (in euros) - PB	-0.0003	0.0005	0.474
Sum squared resid	-	15.680	-
Log likelihood		-43.619	
Total obs	-	64.000	-

In the table 4.3 above it is possible to see the rank of correction of the model, that is, the percentage of split stocks decisions that the model 1 predicts correctly:

Table 4.3 Rank of correction- Model 1

	Estimated Equation		
Observed	**0**	**1**	***Total***
Correct	1.000	35.000	*36.000*
% Correct	3.450	100.000	*56.250*

This logit model has a 56.25% correct model ranking, as can be seen in the table 4.3. Contrary to what would be expected, considering the Liquidity hypothesis, the relationship between share price level and the decision to perform stock splits is negative (table 4.2), which would mean that the lower the price level the more likely the company would split their shares, this refutes H2. However, this influence on the split decision is not statistically significant as the p-value is 0.474.

Once again, we can see now, through table 4.2, that the increase in dividends or earnings is not a statistically significant factor when it comes to deciding whether to split or not. Alternatively, when considering the increase of earnings and dividends in the year prior to the stock split, there was no significant change in the results found. As it can be found in the following table 4.4, which shows the statistical results of the model previously presented but now using the variables related to the year following the stock split instead of the year it was performed in, there was no statistical significance to the effect that these variables have on the decision to split:

Table 4.4 Determinants of the decision to split stocks w/ earnings and dividends increase of the following year.

Variable	*Coefficient*	*Std. Error*	*Significance*
Constant	0.253	0.264	0.337
Earnings increase for the year after the split announcement	0.016	0.055	0.774
Dividends increase for the year after the split announcement	0.066	0.602	0.913
Pre-announcement stock price (in euros) - PB	-0.0004	0.001	0.432
Sum squared resid	-	15.326	-
Log likelihood		-42.755	
Total obs	-	64.000	-

Summarizing now what has been discussed, the Signaling hypothesis should be rejected as the decision to perform stock splits does not seem to signal increases on dividends neither on earnings. Concerning the Liquidity hypothesis, it seems that the motivation behind stock splits is not the concern in lowering the price level to a range closer to the optimal level and, therefore, it should also be rejected.

Menéndez and Anson (2003) looked further into the Liquidity hypothesis as they found statistical significance in the variables related to this hypothesis. They did so by inspecting how managers' goal to bring stock prices to a certain lower trading range might regulate not only the split factor but also the variations on the stocks' liquidity after the execution of the stock split. In this dissertation, because the Liquidity hypothesis has already been rejected and deemed statistically insignificant, such analysis would not bring further enlightenment on the subject.

5. Conclusions

In this dissertation it is analyzed the possibility of positive future expectation and the aim to keep stock price levels within a certain range being motivations behind managers decision to perform stock splits, through the test of the Signaling hypothesis and the Liquidity hypothesis in the French exchange market in the 9 years period between 2010 and 2018.

The results found the Signaling hypothesis to be uncapable of creating an effect that could explain the decision-making process behind stock splits. It seems that the split decision does not create better future expectations for the firm which is in line with results found in previous studies such as Pecchioli, B. (2012), Menéndez and Anson (2003) and Asquith (1989). It also makes sense when considering the relative low costs associated to stock splits when compared to markets such as the American one and how that limits the barriers to companies that may try to send a false signal, which will, consequently, create a sense of distrust when it comes to the signal that a firm sends to the market through the use of stock splits.

Now contemplating the results found regarding the Liquidity hypothesis, the results go against what was initially expected; the desire to keep prices inside an optimal trading price range revealed no statistical significance. Not only this goes against previous studies, for instance, Menéndez and Anson (2003) and Lamoureux and Poon (1987), but it also goes against what would be expected for the French market in particular, where investors seem to be particularly attracted to low-priced firms.

To understand why these results were reached it is important to raise some questions regarding this analysis and see its potential shortcomings. One of these limitations could be that we have a very small sample of firms that performed stock splits which may condition the significance of the results found. The fact that the firms that split their stocks in the Euronext Paris were not all actually French companies, but also foreign ones that performed their splits in the French exchange market created some difficulties when it came to find appropriate and reliable non-splitting counterparts within the same industry. Future studies it would be interesting to go further into this subject with a larger and more reliable sample and see its effects on the results.

6. References

Amini, S., Buchner, A., Cai, C. X., & Mohamed, A. (2020). Why do firms manage their stock price levels?. *Journal of International Financial Markets, Institutions and Money*, 67, 101220.

Arbel, A. and G. Swanson, 1993, The role of information in stock split announcement effects, *Quaterly Journal of Business and Economics 32*, No. 2, 14-25.

Asquith, P. H. (1989). Earnings and Stocks Splits. *Accounting Review*, 387-403.

Baker, H. K., & Gallagher, P. L. (1980). Management's view of stock splits. *Financial Management*, 73-77.

Baker, H. K., & Powell, G. E. (1993). Further evidence on managerial motives for stock splits. *Quarterly Journal of Business and Economics*, 20-31.

Baker, M., Greenwood, R., & Wurgler, J. (2009). Catering through nominal share prices. *The Journal of Finance*, 64(6), 2559-2590.

Baker, M., Ruback, R. S., & Wurgler, J. (2007). Behavioral corporate finance. *In Handbook of empirical corporate finance* (pp. 145-186). Elsevier.

Benartzi, S., Michaely, R., Thaler, R. H., & Weld, W. C. (2007). The nominal price puzzle. UCLA working paper.

Birru, J., & Wang, B. (2016). Nominal price illusion. *Journal of Financial Economics*, 119(3), 578-598.

Chan, K., Li, F., Lin, J. C., & Lin, T. C. (2017). What do stock price levels tell us about the firms?. *Journal of corporate finance*, 46, 34-50.

Conroy, R.M., R.S. Harris and B.A. Benet (1990): "The effect of stock splits on bid-ask spreads", *Journal of Finance* 45, pp. 1285-1295.

Copeland, T.E. (1979): "Liquidity changes following stocks splits", *Journal of Finance* 34, pp. 115-141.

Dolley, J. C. (1933). Common stock split-ups—Motives and effects. *Harvard Business Review*, 12(1), 70-81.

Fama, E. F., Fisher, L., Jensen, M. C., & Roll, R. (1969). The adjustment of stock prices to new information. *International economic review*, 10(1), 1-21.

Grinblatt, M. S., Masulis, R. W., & Titman, S. (1984). The valuation effects of stock splits and stock dividends. *Journal of financial economics*, 13(4), 461-490.

Ikenberry, D. L., Rankine, G., & Stice, E. K. (1996). What do stock splits really signal?. *Journal of Financial and Quantitative analysis*, 357-375.

Lakonishok, J., & Lev, B. (1987). Stock splits and stock dividends: Why, who, and when. *The Journal of Finance*, 42(4), 913-932.

Lamoureux, C. G., & Poon, P. (1987). The market reaction to stock splits. *The journal of finance*, 42(5), 1347-1370.

Menendez, S., & Anson, S. G. (2003). Stock splits: motivation and valuation effects in the Spanish market. *investigaciones económicas*, 27(3), 459-490.

Mukherji, S., Kim, Y. H., & Walker, M. C. (1997). The effect of stock splits on the ownership structure of firms. *Journal of Corporate Finance*, 3(2), 167-188.

Pecchioli, B. (2012). Stock Splits on Paris Bourse: A Way to'Divide and Conquer'-Managers' Incentives and Investors' Preferences. Paper presented at the 29th International Conference of the French Finance Association (AFFI).

Roger, T., Roger, P., & Schatt, A. (2018). Behavioral bias in number processing: Evidence from analysts' expectations. *Journal of Economic Behavior & Organization*, 149, 315-331.

Schultz, P. (2000). Stock splits, tick size, and sponsorship. *The Journal of Finance*, 55(1), 429-450.

Weld, W. M. (2009). The nominal share price puzzel. *Journal of Economics Prespectives*, 121-142.

Wulf, C. (2002). The Market reaction to Stock Splits- Evidence from Germany. *Schmalenbach Business Review*, 270-297.

7. Webgraphy

European Commission. (2020) *France and the euro.* Retrieved from https://ec.europa.eu/info/business-economy-euro/euro-area/euro/eu-countries-and-euro/france-and-euro_en

8. Annex

I. Annex

Table 4.1 Description of stock splits' sample

Company Name	*Split Ratio*	*stock price before*	*stock price after*
Atlantis Japan Growth Fund Ltd	*10.000*	*72.650*	*88.630*
Scottish Mortgage Investment Trust PLC	*5.000*	*3.352*	*3.183*
FastPartner AB	*3.000*	*4.620*	*4.600*
Jupiter UK Growth Investment Trust PLC	*5.000*	*291.210*	*321.210*
JPMorgan European Smaller Companies Trust PLC	*5.000*	*259.830*	*220.200*
Jpmorgan Global Growth & Income PLC	*5.000*	*219.320*	*198.180*
Grenke AG	*3.000*	*53.920*	*75.560*
Mid Wynd International Investment Trust PLC	*5.000*	*276.900*	*251.030*
Svolder AB	*2.000*	*107.000*	*105.100*
Aberdeen New Dawn Investment Trust PLC	*5.000*	*213.810*	*193.770*
Corem Property Group AB	*2.000*	*0.730*	*0.730*
Montanaro UK Smaller Companies Investment Trust PLC	*5.000*	*127.710*	*134.520*
Wihlborgs Fastigheter AB	*2.000*	*4.700*	*4.270*
Voss Veksel og Landmandsbank ASA	*20.000*	*10.090*	*11.730*
JPmorgan Smaller Companies Investment Trust PLC	*5.000*	*264.240*	*214.690*
Fidelity European Values PLC	*10.000*	*165.260*	*173.410*
Olav Thon Eiendomsselskap ASA	*10.000*	*10.240*	*10.850*
Mercantile Investment Trust PLC	*10.000*	*236.710*	*240.130*
Plaza Centres PLC	*3.000*	*0.600*	*0.600*
Mennica Polska SA	*10.000*	*2.790*	*2.590*
Fidelity Special Values PLC	*5.000*	*201.480*	*226.250*
European Assets Trust PLC	*10.000*	*139.830*	*128.380*
Baillie Gifford Shin Nippon PLC	*5.000*	*211.430*	*218.990*

Bloxolid AG	*10.000*	*0.007*	*0.057*
Blue Vision A/S	*10.000*	*0.012*	*0.009*
CFI Holding SA	*25.000*	*0.011*	*0.009*
CFI Holding SA	*40.000*	*0.020*	*0.021*
Fynske Bank A/S	*10.000*	*7.650*	*11.420*
Himsnab Bulgaria AD	*3.000*	*0.430*	*5.120*
Investment Friends Capital Se	*2.000*	*0.270*	*0.160*
Investment Friends Se	*5.000*	*1.310*	*2.360*
Investment Oresund AB	*2.000*	*9.060*	*10.470*
JPmorgan US Smaller Companies Investment Trust PLC	*10.000*	*13.330*	*13.330*
Sparebank 1 BV	*2.000*	*2.040*	*1.880*
Topdanmark A/S	*10.000*	*16.420*	*19.170*

II. Annex

Table 4.1 Day of the week distribution of announcement and effective stock split dates

Day of the week	***Announcement Date (% of firms)***	***Effective date (% of firms)***
Monday	*11.430%*	*28.570%*
Tuesday	*22.860%*	*14.290%*
Wednesday	*20.000%*	*17.140%*
Thursday	*28.570%*	*20.000%*
Friday	*17.140%*	*20.000%*

III. Annex

Table 4.1 Month distribution of announcement and effective stock split dates

Month	**Announcement Date (% of firms)**	**Effective date (% of firms)**
January	*5.710%*	*2.860%*
February	*20.000%*	*5.710%*

March	*14.290%*	*5.710%*
April	*17.000%*	*2.860%*
May	*5.710%*	*28.570%*
June	*5.710%*	*17.140%*
July	*2.860%*	*11.430%*
August	*5.710%*	*2.860%*
September	*2.860%*	*2.860%*
October	*14.290%*	*2.860%*
November	*5.710%*	*8.570%*
December	*0.000%*	*8.570%*