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Performance of stocks ranked as top 10/20 daily winner and loser

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Summary

After choosing the subject of our master thesis; “the performance of stocks ranked as top 10/20 daily winner and loser”, we started by doing bibliographical research on the subject. We gained information in a logical order, starting at the definition of the Attention Effect, its framework, what it is and what are its specificities. Once we defined the concept, we gave more insight about its particularities which are the fact that the daily winners and losers have extreme returns and their inclusion in a ranking. Then, we have studied the subsequent effect on the performance due to the attention towards these specific stocks by investors.

Once we have implemented the theoretical framework, we have conducted our own experience in order to determine whether the Attention Effect effectively affects the performance of ranked stocks. In practice, we have extracted the closing price of each trading day between 1 January 2014 and the 31st of December 2018 and calculated the return of all the stocks which compose our sample.

For the next step, we have ranked each day the stocks by their daily performances and established a top and bottom ranking. Then, we have built three types of portfolios based on our main variable of interest: The Winners portfolios, the Losers portfolios and the Both portfolios. Finally, we have studied their performances through different point of view including their return and excess return.

In the last part, we have tested the different results obtained to make some recommendations based on it for the investors and without forgetting to take in account the limitations of our study.

Introduction

Some studies argue that the most salient information determining the future performance of a stock is probably its status as daily winners or losers. Indeed, the ranking is one of the most important and attention-grabbing information because it is spread out too many investors by many media channels. Its impact on the investor's behavior is so powerful that it can lead to overtrading. However, the Modern Finance Theory implies that each piece of information is correctly analyzed and therefore investors allocate adequate probabilities to each possible outcome. It assumes that investors behave rationally and process new information quickly and correctly. But if one is familiar with the world of finance, one has probably heard about the numerous bias that exist such as the "Attention Effect", "Disposition Effect" or "Mere-Exposure Effect". These effects are studied in Behavioral Finance which assumes that investors suffer from cognitive biases that may lead to irrational decision making by overreacting or underreacting to new information. These intellectual biases distort our beliefs and therefore our choices, making them not always rational or efficient. These biases correspond to mental shortcuts that we systematically use to process the information faster to take a quick and rational decision. Many of these intellectual shortcuts came from our forebears who had to analyze their surroundings with an increased speed in order to avoid being the meal of a carnivore. In many cases, these biases are useful, save time and lead to the good decision but sometimes they lead also to irrational decision.

Understanding the human behavior and the limitations of its intellect, instead of assuming that investors are rational homo-economicus, will benefit to the researcher because he can find out which are the pitfalls and take an advantage of it. In this research, we will study if these biases have a specific effect on our subject: The performance of daily winners and losers. Does the ranking influence the future performance? What is the underlying consequent pattern that stock's prices follow? These are the questions that we will try to answer throughout this thesis. We will try to formulate some previsions and scenarios on the future evolution of their stock prices.

The thesis is divided in four different parts; the first one is dedicated to the concepts linked to our research question, then we will explain the data and methodology used for the experimentation and finally we will test and resume our findings.

1 Research on the subject.

1.1 Research question.

To understand the performance of the top 10/20 daily winners and losers, we have initiated our work by asking ourselves the following questions; what are the most relevant features of the ranked stocks? And what are the consequences of being in a ranking regarding the subsequent performance?

The first feature of being on the top 10/20 winners or losers implies to be present on the ranking itself. This listing represents a very salient information for investors because most of newspapers, webpages, and TV business channels regularly rank and publish stocks by their daily performance. Hence, these stocks are more likely to capture the investor's attention because their daily performances are one of the most visible and frequent pieces of information, which is brought to them. Many studies have demonstrated that investor's attention is limited, and it is likely that an increase in the attention that can lead to overtrading. We will thus explain more in-depth the concept of investor's attention and why the fact of being on a ranking is a salient information, which can influence the investor's behavior, leading to predictable stock prices, moves.

The second feature of top 10/20 daily winners and losers is to have an extreme return compared to the rest of the market. These extreme returns can also be considered by investors like salient information and therefore misinterpret regarded to their potential future performance. Hence, we have studied if having an extreme return today affects the investor behavior and consequently the stock's performance in the future.

In the last part of the literary review, we have tried to understand and resume the different market anomalies which can be potentially explain the performance of the ranked stocks such as the short-term reversal and the market equilibrium.

1.2 Judgement and decision biases.

Everybody is subject to biases, by mental shortcutting for example or by assuming things without being sure. Furthermore, we are also subject to heuristics, which are judgmental shortcuts that try to get us where we need with the available information. They use effort reduction and simplification in decision-making and generally work well in certain circumstances, but it can happen that they do not work as intended and bring us on the wrong path.

Certain of these biases and heuristics can help us understand the behavior of investors when it comes to extreme performances. Firstly, the availability heuristic as presented by Tversky & Kahneman (1974) is a rule of thumb that an investor will follow to assess a probability of something happening by the ease of which the person can remember the similar scenarios. This means that if we are aware of a rare event that happened and had a certain impact, we will overweight the probability of this event happening again in the future simply due to the ease of remembering the situation. This is also true in the opposite direction, where if an event has a high probability to happen, but we are unaware of recent occurrences, we will tend to believe that this event is less likely to happen. This can be used in our research, indeed people who are exposed to the different rankings, and observe that a certain stock appears several times in any of these, will be convinced that this stock is more prone to extreme returns in the future.

Another bias resulting from judgement and decision that is useful for our research is the anchoring effect. This cognitive bias describes the human tendency to rely too heavily when deciding, on the first piece of available information that they get. This could lead to a situation where a stock is exposed in a ranking as best performer in terms of return, which would be brought to the attention of investors. If this is the first time, they hear about this stock, they could believe that this stock is promising without doing further research.

Additionally, if we observe another heuristics related to the effects of salience and availability, we find that the mere-exposure effect as demonstrated by Bornstein and D'Agostino (1992), is another heuristic that can play a role in the decision making related to the performance of stocks ranked as top winner and loser.

1.3 The “Attention Effect”.

Modern finance theory assumes that investors are rational and allocate enough time and attention to each piece information. But this is not always the case, human being has a limited lifetime and cannot devote enough time to each piece of financial information. Behavioral finance has understood this important difference in paradigm and has studies the nature and the quality of financial judgments made by individuals and investigates the consequences for the financial markets. Behavioral Finance has proved that investors are not always rational and have bounded rationality and availability of time.

The Attention effect is based on the fact that the central cognitive-processing capacity of the human brain is limited. This limited availability of time and cognitive resources imposes constraints on how fast investors can process information. Kahneman (1973) already indicates that attention is a scarce cognitive resource in his studies. Since investors have limited attention and processing power, stocks that catch their attention are more likely to be traded, while stocks that do not attract attention are often ignored. The traditional finance also stipulates that the markets are efficient; where each piece of information is instantaneously incorporated in the price, but Behavioral Finance has demonstrated the inefficiency of the market. Some recent studies provide theoretical and empirical evidence that investor’s attention could play an important role in determining stock prices. Indeed, we know that important news or information, which could have an immediate effect on the stock’s price, are not reflected in prices until investors pay attention to it, highlighting the importance of attention.

It is also important to understand the process behind the investor’s decision to acknowledge the Attention Effect. According to Janis and Mann (1979), the drivers of decision are the preferences of an investor which determine his choices, but after attention has influenced the choice set. Meaning that when investors consider purchasing a stock, they only buy stocks that have firstly caught their attention. Indeed, in deciding, we first consider the different options that we know they exist, so the one which are brought to our attention. After acknowledging them, we decide which one of these options we want to buy.

This buying behavior of individuals is a result of the difficulty raised by the huge choice of the stock exchange. Given that difficulty to assess all the different stocks that they can potentially buy, to which we add the limitation of time and intellectual resources,

investors will use mental shortcuts to make the search for stocks easier. They will have to restrain the number of alternatives; those who are chosen are the ones which have recently caught their attention either by being brought to their attention or by finding them themselves.

The Attention Effect could be used to describe how some stocks attract the investor attention and the resulting process in the trading activity. But which kind of stocks is attention-grabbing? And who are these investors impacted by the Attention Effect?

Barber and Odean (2007) have realized a study which analyzed the effects that the attention induces on the buying behavior of individual and institutional investors and the subsequent movement on the stock market. Their hypothesis is that the attention shocks are experienced by stocks which appear in the news, which have high abnormal trading volume, and stocks with extreme daily returns in both directions. Their study has also contributed to demonstrate that attention is only a major factor determining the buying behavior and not the selling.

There are 2 explanations for this assumption. The first reason they advance is that most retail investors can only sell the stocks they own because they mainly do not short sell. So, when a ranking is published, it can only affect the buying power of the investors because the vast majority cannot short sell these ranked stocks. The second reason is the lack of diversification of their individual portfolios. Indeed, most individuals hold relatively few common stocks in their portfolios. Thus, investors can easily consider the merits of each stocks they own when they want to sell them because they appear in the ranking. This implies, overall, that the Attention Effect due to the fact on being ranked is particularly more pronounced for the buying behavior than for the selling.

Barber and Odean (2007) have also proved that the buying behavior of retail investors is more heavily influenced by attention than is the buying behavior of professional investors. The reasons are that institutional investors can work in a team and have many more time and resources to analyze the market and all the related information. Hence the attention is not a scarce resource for them, they have the time and the tools to analyze the universe of stocks in detail in order to decide which stocks to buy according to their own expectations.

The proxies which measure the attention of investors trying to predict the movement of the stock market can be roughly classified into two categories, the indirect and the direct. As mentioned before, Barber and Odean (2007) have measured the extent to

which a stock grabs the attention of an investor by arguing that since they cannot measure it directly, they will focus on three observable measures which are likely to be related with attention-grabbing events: news, unusual trading volume, and extreme returns. They argue that an event which attracts the attention of a lot of investors is usually newsworthy. The trading volume on a firm's stock will be probably greater than usual when they experience a shift in attention. When there is a large price move, it is likely that whatever is the cause of the move, it will also attract investor attention. However, these proxies are not always linked to the investor's attention. The extreme returns and turnover could be driven by factors unrelated to investor attention such as liquidity need or information-based trades of a few large investors. Nevertheless, the fact of being on the news doesn't guarantee that it will increase the attention of investor because if they don't read the article, they will not pay attention to the information.

On the other hand, Da, Engelberg, and Gao (2011), proposed a new and direct measure using the number of adequate aggregate research frequency on Google via the Search Volume Index (SVI). The explanation is based on common sense, when you are researching a stock on Google, you are paying attention to this stock. They find that SVI is correlated with the attention but different from the existing proxies of investor attention. They argue that an increase in SVI predicts higher prices in the next 2 weeks and an eventual price reversal within the year. Their results are also related to the large first-day return of the IPO, and the long underperformance which follows. The traditional asset pricing model assumes that the information is instantaneously incorporated into the price when it arrives meaning that the investor allocates enough attention to the asset. But attention is a scarce cognitive resource. Moreover, limited attention will affect pricing now (static) and in the subsequent time period (dynamic).

The article argues that SVI is likely to be representative of the behavior of the general population because google accounted for 72,1% of all search queries which are performed in the US. To catch the attention paid towards stocks, they analyze the SVI which corresponds for example to the stock ticker symbols (for Apple Inc.1 the ticker is AAPL). The SVI captures the attention of retail investors but they suggest that it represents the attention of less sophisticated individual investors. They find out that stocks that experience an abnormal increase in SVI this week are associated with an outperformance larger than 30 basis points during the subsequent two weeks. This first positive price pressure is almost completely reversed by the end of the year. In

addition, they find that the price pressure, among stocks that are traded more by individual investors, tend to be stronger.

One of the natural ways to test the retail attention hypothesis is a stock's IPO2. Indeed, they usually experience a short-term high return followed by the long run decrease which correspond exactly to the pattern predicted by the attention induced price pressure.

When they compare the first group of IPOs that experiences important positive ASVI during the week before the IPO to the group of IPOs that experiences a lower level of ASVI, they find that the first group outperforms the second by 6% during the first day after the IPO and the outperformance is statistically significant. They also document a significant long-run return reversal among IPO stocks that experience important increases in search before their IPOs and large first-day returns after their IPOs. Da, Engelberg, and Gao (2011) are the first to use the aggregate internet search volume as an objective way to reveal and quantify the interest of the retail investor in financial economics.

To resume, the Attention Effect is likely to be particularly important for retail investors that cannot analyze the considerable world of stocks and are subject to limited attention. Due to their short-sell constraint, buy-sell imbalances should increase for these stocks which experienced attention-shocks and eventually leading to overpricing. Barber and Odean (2007) indeed have demonstrated that attention-grabbing stocks are mainly bought by retail investors. Their results are confirmed by Kumar, Ruenzi, and Ungeheuer (2017) who proved that retail buy-sell imbalances of daily winners and losers' increase, while institutional buy-sell imbalances decrease. This investor attention bias is explained by the fact that unsophisticated investors rely heavily on public media since they do not have access to the full range of information channels that professional investors do.

1.4 Market equilibrium.

In case of an efficient working market, after that stocks have an extreme performance in any direction, the new price may be too extreme and be influenced by the attention brought to the investors regarding its performance. This will result in an excess return which will quickly be reduced to attain a new price which reflects better the general

feeling towards this stock. We should be able to see the market equilibrating itself if it is efficient.

The market equilibrium would only be possible if all the investors shared the same beliefs regarding future performances of stocks that had an extreme performance before. That investors don't share all the same believe is showed by looking at the bid and demand curb, where we acknowledge that some investors hope that the stock's price increases, while for others they want this to decrease.

1.5 Extreme daily stock returns on investors' attention.

To be a daily winner or loser, a stock needs to have, in comparison to the return of other stocks, a relatively extreme daily return. These extreme daily returns attract the investor's attention because they suggest to investors that there is a chance of an important payoff with these stocks. If the investor pays attention to this kind of information, it can influence his choices because it shows that it is possible to achieve an important return. Even when there is a small chance of success, investors are ready to take the risk. Markowitz (1952) conjectures that some investors might prefer to take large chances of a small loss for a small chance of a large gain. Barberis and Huang (2008) posit that investors might overweight low probability events and exhibit a preference for stocks with positive skewness.

Kumar (2009) also documents a strong preference of investors for lottery-like assets among retail investor, i.e. assets with a relatively small probability of a large payoff. The results concerning the preferences for lottery-like payoffs are in line with the prospect theory of Tversky and Kahneman (1992), which predicts that errors in the probability weighting of investors will lead them to an overvaluation of stocks with a small probability of a large positive return. People choose to distort their beliefs about future probabilities in order to maximize their current utility.

These theories are also supported by empirical evidence and Bali, Cakici, and Whitelaw (2011) demonstrate that the maximum daily return in a month (a proxy for lottery-like payoffs) is negatively correlated to future raw and risk-adjusted stock returns. Implying that if the stock has an extreme return, it will be firstly overpriced and then underperform in the future.

These studies provide evidence that investor's attention is attracted by extreme return and they overweight the probabilities of a small chance of success. The demand increases for lottery-like assets induces them to pay a high price for these specific securities, leading to negative future abnormal returns as described by Bali, Cakici, and Whitelaw (2011).

1.6 The effect of ranking on the investor's attention.

As a matter of fact, stocks that have been listed in a daily winner or loser classification, have been brought to the attention of investors throughout their publication in many news. The ranking thus is a piece of important and very salient information brought to the retail investors. Hartzmark (2014) has highlighted the importance of top and bottom ranks. His study reveals that investors are most likely to sell the relatively most extreme winners and losers of their portfolio, putting the light on the importance of top and bottom-ranks for individual investor decisions. However, his analysis is related to the specific investor's behavior regarding its personal ranking while our work studies the reaction of the entire market.

A stock appearing in a ranking is for sure a piece of very salient information because rankings represent one of the most efficient ways to present information to an investor. In financial markets, Hirshleifer, Hou, Hong Teoh, and Zhang (2004) showed that the same information presented in a less salient manner (footnotes instead of the body) can affect investor perceptions and asset prices. His study is related to the conclusion of De Souza, Barbedo, and Araújo (2018) who claim that if the media spotlights a particular stock, for instance throughout the ranking, it is more likely to attract the investor's attention. These studies seek to emphasize the impact of the ranking itself on the investor's behavior and lead us to ask the following question; if the stocks have an extreme return but are not published in the ranking itself, do they still attract the investor's attention? Indeed, a certain number of newspapers or online news have generally some conventions concerning their classification related to a minimum stock price or minimum stock turnover which implies that some extreme returns are not published in the rankings. To document this question, we have studied the work of Ungeheuer (2016). He has analyzed the effect of stock returns on investor attention

and shows the evidence of ranking, stocks ranked as daily winners and losers experience large spikes in investor attention, while non-ranked stocks with extreme returns do not experience any change in attention. Using hourly Wikipedia firm page views to measure investor attention, he shows that this relation is not explained by reverse causality, contemporaneous or extreme news, or reporting of news specifically for ranked stocks. The effect of daily stock returns on investor attention seems to be driven by winner and loser rankings themselves. Attention directed to the small set of ranked stocks is followed by economically significant information dissemination and trading.

1.7 Overreaction in stock market.

In addition to previous studies covered, Thaler & De bondt (1985) observe and analyze the reaction of portfolios following an extreme performance in any direction in order to determine if the stock markets overreact. Based on their intuition, they predicted that in the case of a stock price that systematically overreacts, its opposite movement should be expected based on anterior return data of this stock.

To conduct their research they tested 2 separate hypotheses, the first one stating that an extreme movement in a stock's price, will be emanate in a subsequent movement in the opposite direction, while the second hypothesis tested by the duo implies that as the more extreme the initial price movement is, as more extreme its subsequent adjustment will also be. It is important to note that each of these hypotheses tend to show that there is a violation in the weak form of the market efficiency.

The weak form of market efficiency, as stated by Fama (1970), is one of the three possible levels of efficiency to which the market is behaving. The efficient market hypothesis states that it is not possible to outperform the market, for one reason, that all the available information is already reflected in the current prices of the stocks. In particular, the weak form of a market, would be a market in which the current asset prices are already reflecting all past publicly available information.

Finally, De Bondt & Thaler come to several findings, such as the fact that loser portfolios have a better monthly performance than the market, while on the other hand winner portfolios underperform compared to the market. Additionally, the overreaction effect is asymmetric meaning that it is much larger for losers than for winners,

moreover, most of the excess returns are realized in January, which is explainable by the January effect, found by Rozeff & Kinney, who showed that 1/3 of the annual returns occur in January.

1.8 The performance of ranked stocks.

In order to understand the drivers of the performance of top 10/20 daily winner and losers, we have studied the concept of the Attention Effect, the impact of extremes returns in investor's perception and the fact of being on a published ranking. All these concepts make it possible to issue a hypothesis about the pattern that a stock price should follow once it has been ranked. In this section, we will first explain the mechanisms influencing the stock's performance and then we will go more in detail and try to figure out which are the most relevant specific features impacting daily winners and losers future performance.

In their work, Kumar, Ruenzi and Ungeheuer (2017) argue that the most salient return-based information which can predict the performance of stocks is its status as a daily winner or daily loser. They based their thesis on the impact that such kind of information have on investor attention and behavior. Indeed, many media rank the stocks related to their daily return and show the winners and the losers of the day. This important frequent spread of information implies that stocks which are published grab the attention of the investors.

After being brought to the attention of investors, they are significantly overpriced due to an increase in buying behavior. After being overpriced, these stocks eventually strongly underperform stocks that didn't make the ranking and thus didn't grab the investor's attention as stated by Kumar, Ruenzi and Ungeheuer (2017), after a certain amount of time.

The overpricing of ranked stocks is due to the high level of attention toward these stocks. As said before, attention is a scarce resource and Attention Effect is particularly pronounced for retail investors that cannot assess the huge universe of stocks. As these investors are mainly short-sale constrained, it implies that buy-sell imbalances should increase and lead to overpricing according to Barber and Odean (2007). Therefore, to resume, the reasons for the overpricing and the following abnormal

return are due to the high level of attention towards these particular stocks and the limited attention of retail investors. Attention-grabbing stocks are bought mainly by the retail investors in the month in which they are ranked, as supported by Barber and Odean (2007). Institutional investors and short sellers tend to sell ranked stocks and provide liquidity and trade in the opposite direction, suggesting that the liquidity provision provided by institutional investors is insufficient to offset the spike in retail demand for the ranked stocks.

A potential reason for this could be the limit to arbitrage which seems to play an important role in the persistent underperformance. Kumar, Ruenzi and Ungeheuer (2017) provide some evidence that stocks with a strong limit to arbitrage show a particularly strong underperformance after being listed. The limit of arbitrage in the form of short-sale constraint and higher valuation uncertainty for small companies might prevent arbitrageurs from pushing down the price for the listed stocks. However, the underperformance of stocks with a low limit to arbitrage is still apparent and strong in their study.

The underperformance level is also impacted by the saliency of information, Kumar, Ruenzi and Ungeheuer (2017) argue that when the underlying daily return of listed stocks is particularly high or low compare to other stocks, the more salient is the information for the investors and the more they grab the investor's attention. They find out that the overpricing is especially high when the salience of information is pronounced compared to other stocks.

These studies provide evidence that investor attention induces them to pay high prices for securities that grab their attention, leading to negative future abnormal returns. The effect of attention will be thus more important when there are limits to arbitrage and when the salience of information is more extreme compared to the average

Once we have understood which could be the different sources driving the performance of ranked stocks, we can focus on the different theoretical concepts and tools that can help us to analyze and understand the results of some researches and will make it possible to realize our own personal study. We will firstly explain which are the variables impacting the return and which are the models explaining at best the returns. After having defined these concepts, we will analyze the results of Kumar, Ruenzi and Ungeheuer (2017) study.

1.9: Result's analysis of Kumar, Ruenzi and Ungeheuer (2017) study.

They analyzed all the common shares traded on the NYSE, the AMEX and NASDAQ. Their study spans from July 1963 through December 2015.

Their main variable of interest is a stock's status as daily winner or daily loser. Each day, they define a day's top 80 stocks as the daily winner and day's bottom 80 stocks as daily losers.

Consistent with the bulk of the empirical asset pricing literature, they conduct their asset pricing tests every month. At the beginning of each month, they construct 4 four portfolios based on whether they appeared in their daily top-bottom ranking in the previous month. The "never" portfolio contains all the stock that never make the ranking. The "Loser" portfolio contains all stocks that appeared once in the bottom daily ranking, but never in the top ranking during the previous month. The "Both" portfolio contains all stocks that appeared at least one in the top daily ranking and a least once in the bottom ranking. Every month, they calculate their average monthly returns. The "never" portfolio delivers the most important average monthly return. And in the opposite hand, the stocks in the "both" portfolio delivers on average the worst returns.

According to the results they obtain, they implement 3 trading strategies which will consist in going long in the stocks that never made the ranking and short either the stocks that made the two ranking in the previous month or just one. So, each month, they calculate the monthly return of each strategy and make an average of their results.

The performance of going long on the "never" portfolio and short the "both" is the best compared to the two others. The average Sharpe ratio of this strategy is 0.77 in the value weighted and 1.32 in equally weighted. To put this numbers in context, over the same period, the momentum strategy amounts to 0.56. Therefore, stocks that were both daily winners and losers last month significantly underperform stocks that never make the ranking.

The stocks that were on the top daily return ranking, but not the bottom, in the last month also underperform the never stocks. This underperformance is in line with what was suggested in the salience theory by Bordalo, Gennaioli, and Shleifer (2013) related to the fact that investors put too much weight on very salient information.

Salient information is defined as outcomes that are very different from the average and which is generally considered as positive by investors.
Being ranked on the top 10/20 daily winners can be considered as a salient information because investors will put too much weight on this positive information leading to an overvaluation and the subsequent underperformance.
Nevertheless, stocks that were in the bottom daily return ranking, which can be considered as negative information, last month also clearly underperform the never portfolio on the next month.
This average general underperformance is the opposite of what Bordalo, Gennaiolo, and Shleifer (2013) have predicted saying that the daily losers will be undervalued and eventually outperform. These results obtained by Kumar, Ruenzi and Ungeheuer (2017) suggest that the underperformance of losers stocks are not driven by Bali, Cakici and Whitelaw (2011) who suggest that stocks with high maximum daily returns last month underperform.

1.10 Capital Asset Pricing Model and its extensions.

The Capital Asset Pricing Model (CAPM) is one of the most important and central models in Modern Finance Theory which has been generated on the basis of the Portfolio Theory, the Efficient Frontier of Markowitz (1952) and the Expected Utility of Von Neumann and Morgenstern (1947). Sharpe has developed the CAPM in 1964; the model is aimed for pricing individual securities or portfolios. It defines the relationship between the market risk and the expected return. It assumes that if we know the risk of our portfolio, therefore, we can estimate its expected return.
The CAPM is central in finance and many applications can be derived from it. For example, the estimations of expected return if we have an asset of a certain risk. We can also judge the performance by analyzing the difference between the expected return and the effective return. CAPM is also used in order to select the asset in which we will invest (Stock Picking), indeed the CAPM will make it possible to identify the theoretical return and compare its real return, highlighting the assets that are over- and undervalued. CAPM says that beta is the only asset-specific factor that you need to know to estimate expected return. Other factors should add no value in estimating

expected return. Thanks to historical data we can estimate our expected return just by estimating the parameters of the model and the expected market return.
The CAPM assumes that investors are risk-averse, utility-maximizing and rational individuals, but nonetheless it is not always the case as it has been proved that sometimes investors are risk lover and they do not always use utility function for investing. The second hypothesis is that markets are frictionless, including no transaction costs or taxes. This is a highly theoretical assumption because there are effective transaction costs and taxes. One of the most important assumptions is that investors have homogeneous expectations or beliefs but, investors do not have the same expectations about the future. The two last assumptions assume that all investments are infinitely divisible, and investors are price takers. Buying a piece of asset is not always possible and the last hypothesis is also disputable.

To better forecast the expected return of a securities, Fama and French (1992) argue that we can have other factors behind just the systematic risk. The Fama and French Three-Factor Model is also an asset pricing model which expands on the capital asset pricing model by adding size risk and value risk factors in the CAPM. This model considers the fact that value and small-cap stocks outperform markets on a regular basis. By including these two additional factors, the model adjusts for this outperforming tendency, which is thought to make it a better tool for evaluating the performance.

2. Data and Methodology

After doing theoretical researches about the subject in the previous part of our work, we have implemented an experimentation on our own data in order to determine if the future performance of a ranked stock is suitable with the theoretical framework as explained before. After the realization of our experimentation, we have investigated the outputs of our data set and find if there is any correlation between the attention brought to stocks by ranking them as daily winner or loser and their future performance.

Our methodological basis to conduct this research is related to the experimentation carried out by Kumar, Ruenzi and Ungeheuer (2017), but we will examine the daily winners and losers in a slightly different way. Indeed, our study was realized on another stock exchange than them and the time period during which the performance of the portfolios is measured is different.

We have first thought that the Belgian stock market could be an interesting option because it is our domestic market and the Attention Effect on ranked stocks concerning this market hasn't been studied yet. Nevertheless, it could be more interesting to study the French stock market due to its more important size in term of market capitalization.

Therefore, we have selected the stocks of the Paris Euronext market for our research. The Euronext stock market is the biggest in Europe and seats in several cities such as Brussels, Amsterdam, and Paris. The market capitalization of the Euronext market lays at 4.3€ trillion. As we use data of a European market, we decided to express every price in euros.

We extracted out of Bloomberg the daily closing price of the stocks present on the Euronext market of Paris as well as for the benchmark index, the CAC 40 in our case. We include all the common shares which are traded on the Euronext. This induces that these stocks have non-excluding criteria for rankings such as enough liquidity, market capitalization, and minimum price. Our sample spans over a period of 5 years from January 2014 until April 2019 and we collect every day's closing price. We have thus the daily price over 1,384 days for 1,168 different stocks, giving us a total of 1,616,512 observations.

The stock's status as a daily winner or daily loser will be our main variable of interest. Thus, every day, we will rank the stocks related to their returns and define a daily top 20 of best-performing stocks and another bottom ranking to classify the 20 daily losers which had the worst return. When we choose the number of stocks that we define as daily winners and losers, typically we face a trade-off: On the first hand, picking a very low number will lead to a misclassification of stocks which are considered like top winners or losers by the media. On the other hand, picking a very high number will make it less likely that the representative stocks are really mentioned as top winners or losers by the media followed by investors. The fact is that, in general, newspaper and financial web pages publish ranking with the top and bottom 10 stocks. These ranking are sometimes different in their composition and this is due to different conventions related to the time of the day when return is measured, to minimum price and volume requirements. Consequently, choosing 20 stocks to define as daily losers and winners on our sample of stocks is explained by these different conventions. The disadvantage is that it will regularly lead to some stocks being classified as daily winners or losers in our own classification system although they did not appear in any rankings. This can typically work against our ranking-induced effect. Moreover, by choosing to select 20 stocks every day, we also increase the chance that the stocks we picked up to appear in other rankings. Furthermore, this cut-off number of 20 has the advantage that the portfolios we will later analyse contain enough stocks when we will study their individual future performances and expected return based on historical data. To resume, we classify the daily returns of each stocks as winners or losers for 2 years and the experimentation has started in January 2017 and ended in December 2018.

Once we determined each day which the best and worst performing stocks were, we construct at the end of the week, when the market closes, 3 different portfolios containing the stocks that appeared in the rankings during the previous week. The first type of portfolio we built, was a portfolio containing the stocks that appeared in the rankings last week exclusively as a daily winner, this could be several times or not, but each stock contained in this portfolio has appeared at least once in a daily winner ranking. Similarly, we construct the Losers portfolio containing the stocks that appeared at least once in the bottom rankings. Finally, we build the Both portfolio which contain the stocks that made the two rankings during the previous week. In order

to study the performance of the stocks that did not make any rankings, we have used the return of the CAC40.

These portfolios were built every week, ranging from the first week of 2017 until the last week of 2018, which will give us 104 different observations. Consequently, we will rebalance the respective portfolios each week in order to exclusively hold the stocks that appeared in the rankings during the previous week. Moreover, these portfolios are equally weighted, each stock contained in the portfolio has the same weight, no matter it's trading volume or number of appearances in the rankings.

After having constructed the different portfolios, we have calculated their performances over the following week. We will thus have the weekly return of the 3 different portfolios, which gave us a first insight of the possible performance of ranked stocks. We will then study the weekly return of each portfolio by calculating its distribution's characteristics. and testing if the average weekly performance is statistically different from 0 and, depending on the case, if it is strictly positive or negative. In the last step of the return analysis, we will test if the performance of each portfolio is different from the market by testing the result of their difference in performances.

To go one step further, we decided to study the excess performance of each kind of portfolio. By doing this, we compared the effective weekly performance to the expected weekly performance. The expected return of the portfolio is calculated based on the parameters of the Market model. For each stock, we calculated its beta and alpha thanks to its weekly returns during the 3 past years before the week that the stock appears in any ranking. Once we computed the excess returns for each portfolio, we have studied their distribution and tested the average weekly excess return obtained to know if the portfolio's performance is statistically different from 0 and depending on the case, positive or negative. In the last part of the experimentation, we test our different average weekly excess return between them to know if their difference is statistically different from o and strictly positive or negative.

3. Results analysis

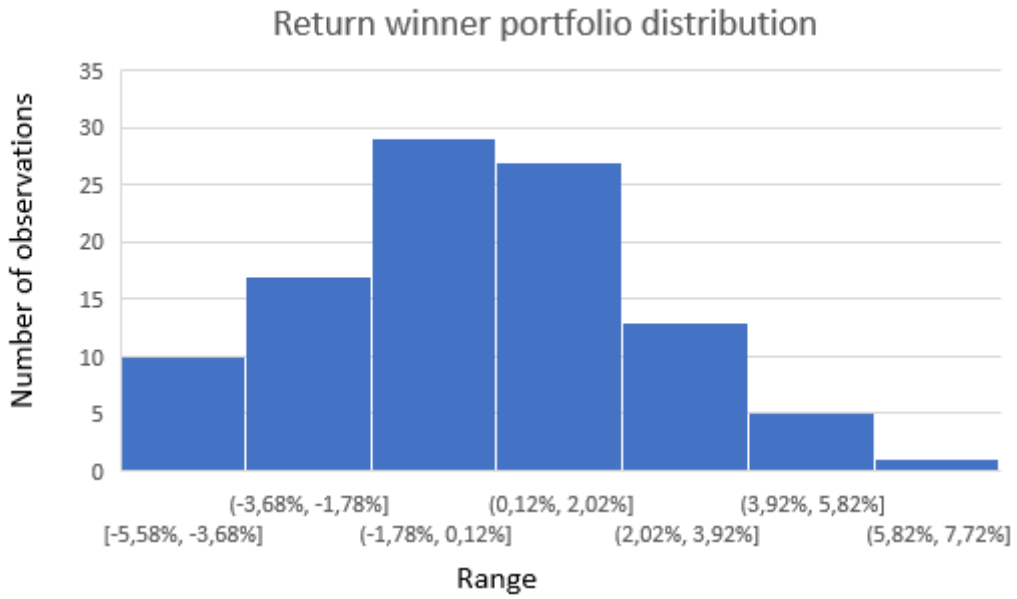
At the beginning of each week, we sort stocks into portfolios based on whether they were daily winners or losers in the previous week. We construct three different portfolios. The ’Loser’ (’Winner’) portfolio contains all stocks that appeared at least once in the bottom (top) daily return ranking during the previous week, but never in the top (bottom) daily return ranking. Finally, the ’Both’ portfolio contains all stocks that at least once appeared in the top daily return ranking and at least once appeared in the bottom daily return ranking during the previous week. In order to study the performance of the stocks that did not make the ranking, we will use the performance of the French market through the CAC40 weekly performance. We computed that the market had an average weekly performance of 0,01020% over our observed timespan. Firstly, we will examine the portfolio’s performance and the characteristics of its distribution through different metrics such as the average, the standard deviation, the highest observed weekly return and the lowest weekly observed return. For the next step, we will test if the average weekly performance obtained is statistically significant at all the conventional tests levels and then construct some confidence intervals in order to have an overview concerning the possible values. Finally, we will test if the average weekly performance of our portfolio is statistically different from the performance of the market portfolio by testing their difference.
The second part will be aimed to the analyze of the excess returns for each portfolio. The expected return is calculated based on the market model and the parameters of the model were obtained over an historical period of 3 years before the selection in the portfolio. Once we have the parameter of the model, we can calculate the excess return of each portfolio and their distribution characteristics. Then, we will test is the average weekly excess return is statistically different from 0 and, depending on the case, if it is strictly positive or negative. After having investigated all the different excess returns, we will test if they are different from each other by testing the difference between the average weekly excess returns and building the three conventional confidence intervals.

3.1 Winners portfolio.

The Winners portfolio is composed by the daily winners of the previous week and its performance is measured over the following week. We have thus rebalanced our portfolio each week with each asset having the same weight and calculated its weekly performance. In the second part, we have studied its weekly excess return

3.1.1 Performance analysis.

Portfolio	*Av. Return*	*Standard deviation*	*Est. Stand. Dev.*	*Min*	*Max*
Winners	-0,2021%	2,5904%	0,2565%	-5,58%	6,55%



For the performance of the Winners portfolio, we obtain an average return of -0,2021%, which is slightly negative suggesting that the Winners portfolio is underperforming the market. We have then calculated the estimation of the standard deviation with the aim to statistically test our result and to know if this performance is different from 0 and strictly negative.

Hypothesis tests		*H1 ≠0*	*H1< 0*
t statistic	-0,7881		
RHO	90%	X	X
	95%	X	X
	99%	X	X

For the null hypothesis, we get a t statistic with a value of -0,7881 which lets us conclude that we won't reject the null hypothesis in favour of the alternative hypothesis for every significance threshold, implying that the performance is not statistically different from 0. The interpretation of the results is the same for the left unilateral test, implying that the weekly average performance of the winner's stocks, during the next week, will not be strictly negative. Then, we have constructed three different confidence intervals to have a better view of the average weekly performance that we can obtain if we invest in the Winners portfolios.

Confidence intervals	*Lower limit*	*Upper limit*
90%	-0,6228%	0,2185%
95%	-0,7049%	0,3006%
99%	-0,8023%	0,3981%

We can observe that many of the returns are part of the negative zone, which suggests that we have more probabilities to have a negative weekly performance than a positive. In order to have a comparison with the market, which is represented by the CAC 40, we have tested if the difference between the average weekly return of the Winners portfolios and the average weekly market return is statistically different from 0 or strictly negative.

Hypothesis tests		*H1 ≠0*	*H1< 0*
t statistic	-1,0114		
RHO	90%	X	X
	95%	X	X
	99%	X	X

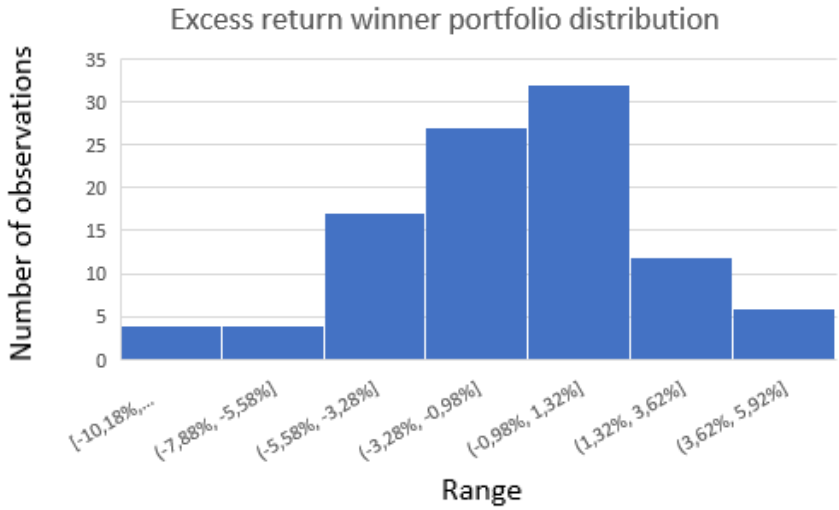
For every significance threshold, we cannot exclude the null hypothesis due to the low value of the t statistic. It indicates that the performances that we obtain with the Winners portfolios and the market portfolio are not statistically different from each other and that the performance of the market is not statistically more important than the Winners portfolios. Nevertheless, for the last step, we have calculated three confidence intervals to still have an approximation of the average difference between the winners performance and the market.

Confidence intervals	Lower limit	Upper limit
90%	-0,7972%	0,1890%
95%	-0,8935%	0,2852%
99%	-1,0077%	0,3995%

We observe that the most important part of the confidence intervals is composed by negative results, which suggest that the performance of the winners is lower than the market, but this difference is not statistically different from 0 or negative. All these observations are concerning the performance of the portfolio without taking in account the market risk of the portfolio. We will go one step further by analyzing the excess return of the portfolio related to the Market Asset Pricing Model. The excess return corresponds to the difference between the real performance and the expected performance as forecast by the model.

3.1.2 Excess return analysis.

Portfolio	Av. Return	Standard deviation	Est. Stand. Dev.	Min	Max
Winners	-1,3693%	3,0325%	0,3003%	-10,18%	5,84%



The Winners portfolios have an average excess return of -1,3693% with a standard deviation of 3,0325%. When we look at the distribution of the excess return, we observe that 74.5% of the observed excess returns lay in between -5.58% and 1.32%. The excess returns are moderately negatively skewed with a value of -0.33, which is shown by the higher range of observations lower than -4% compared to the observations higher than 3%. The kurtosis however is slightly positive, with a value of 0.35, but remains lower than 3, meaning that these observations are platykurtic.

We have estimated the standard deviation of the excess return in order to know if the average excess return is statistically significant. The results are shown in the table below:

Hypothesis tests		*H1 ≠0*	*H1< 0*
t statistic	-4,5603		
RHO	90%	V	V
	95%	V	V
	99%	V	V

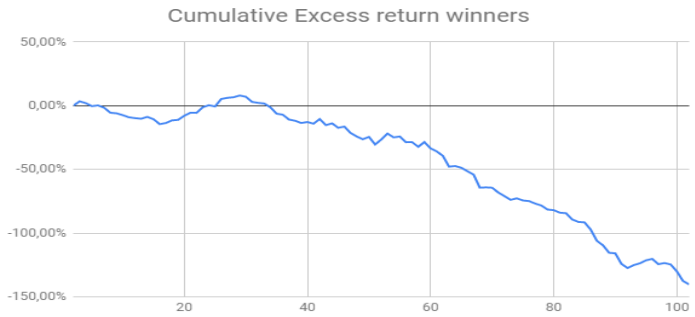
We found a t statistic of -4,5603 which allows us to exclude the null hypothesis at each conventional test even at the strongest test of 99%. We can thus say that the underperformance of the winner's stocks is statistically different from 0 and strictly negative.

To have a better idea of the range of value possible for the average negative excess return of the winner's portfolio, we have computed the 3 different confidence intervals:

Confidence intervals	*Lower limit*	*Upper limit*
90%	-1,8617%	-0,8769%
95%	-1,9578%	-0,7808%
99%	-2,0719%	-0,6667%

We can observe that the excess returns are all comprise in the negative value which varies from -2,0719% to -0,6667% in the less constrained interval. Implying that the excess returns will be in more than 99% cases, strictly negative.

If we observe the cumulative excess return of the Winners portfolio, we notice that it keeps decreasing over time. This shows us that the actual performance of the portfolio is worse than expected and the negative excess return is consistent during the timespan.



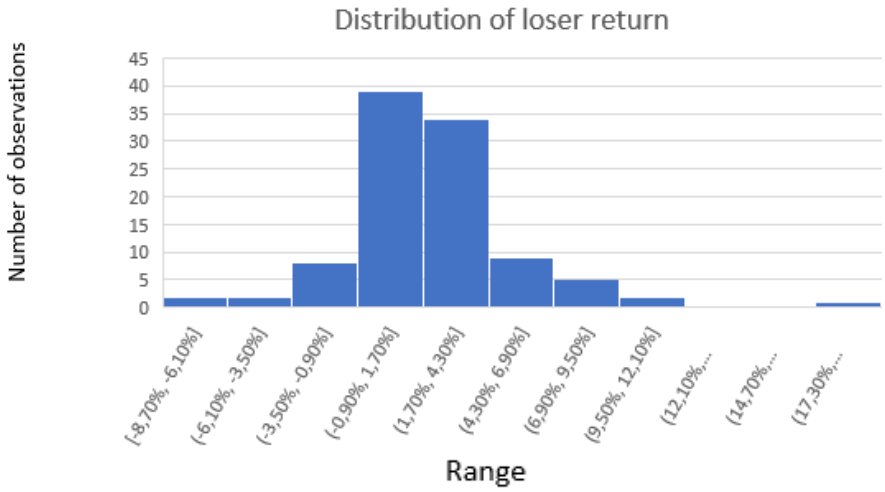
3.2 Losers portfolio.

The Losers portfolio is composed by the daily losers of the previous week and its performance and excess return is measured over the following week. We have also rebalanced our portfolio each week with each asset having the same weight.

3.2.1 Performance analysis

We have begun by analysing the performance of the Losers portfolio which allows us to have a first look of what we could expect if we invest in this kind of portfolio:

Portfolio	*Av. Return*	*Standard deviation*	*Est. Stand. Dev.*	*Min*	*Max*
Losers	2,1333%	3,4591%	0,3442%	-8,70%	17,48%



Here we obtained an average weekly return of 2,1333% which is highly positive compared to the Winners portfolio or the market portfolio, suggesting that the Losers portfolio is over performing the market. If we observe the distribution of the returns of the loser portfolios, we observe 71.56% of the weekly returns situated between -0.90% and 4.30%, which is a comparable number of observations to the winner portfolios, in a lower range. If we observe the skewness, we observe a slightly negative skew at -0.01, which indicates that there is a slightly longer left tail. the kurtosis is -1.21, which indicates that the distribution is platykurtic. To check if this average weekly return is statistically different from 0 or strictly positive, we have made two different statistical tests at each usual level

:

Hypothesis tests		*H1 ≠0*	*H1> 0*
t statistic	6,1980		
RHO	90%	V	V
	95%	V	V
	99%	V	V

We obtain a t statistic of 6,1980 for the null hypothesis which is more important, in absolute value, than the t statistic of the Winners portfolio suggesting that we can eliminate the null hypothesis in favour of the alternative one in each case. We can thus affirm that the weekly average performance of the Losers portfolios is statistically different from 0 and positive at each usual level.

In the last step of performance analysis, we have made some different statistical test over the difference between the average weekly performance of the Losers portfolios and the weekly average return of the market to determine whether the positive performance of the losers is statistically different from the market or strictly positive. The results are shown in the table below:

Hypothesis tests		*H1 ≠0*	*H1> 0*
t statistic	5,3700		
RHO	90%	V	V
	95%	V	V
	99%	V	V

We obtain a t statistic of 5,37 which makes us reject the null hypothesis in profit of the alternative hypothesis. Therefore, we can stipule that the difference between the losers' return and the market return are statistically different from each other at each level. The second interpretation stipulates that the returns of the loser portfolios are statistically more important than the market return for each usual test level.

To go further in the analysis, we have studied the excess return of the loser's portfolios to take in account the market risk of the portfolio.

3.2.2 Excess return analysis.

Because we observe a positive performance, we can easily stipule that we will have an abnormal positive excess return for the Losers portfolio. The results obtained for the excess return analysis are effectively correlated to the ones obtained for the performance:

Portfolio	Av. Return	Standard deviation	Est. Stand. Dev.	Min	Max
Losers	0,9136%	3,6637%	0,3646%	-9,00%	16,78%

We have a positive average weekly excess return of 0,9136%, which can be considered like a valuable excess return for one week. The result suggests that the Losers portfolio over perform during the next week. Furthermore, if we observe the distribution of the observed excess returns, we notice that 82.35% of the observations lay between -3.40% and 5%. If we look at the skewness of these observations, we notice that it is relatively highly positively skewed with a value laying at 0.62. If we observe the kurtosis of these observations, we notice that the observations are leptokurtic, meaning it has a fatter tail to the right, more positive values, with a value of 3.46. This is the only observation which is leptokurtic.

After this, we tested our results to determine whether the positive abnormal excess return is statistically significant:

Hypothesis tests		H1 ≠0	H1< 0
t statistic	2,5061		
RHO	90%	V	V
	95%	V	V
	99%	V	V

For the null hypothesis, we computed a t statistic with a value of 2,5061 which allows us to reject it for the alternative hypothesis. It implies that the average weekly excess return is statistically different from 0 and positive for each level of test and for each

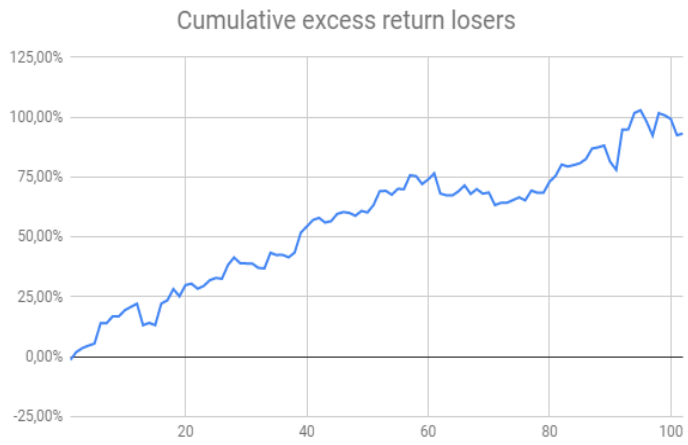
case. We can thus conclude that the losers stocks will on average over perform during the following week of their ranking.

To have a better understanding of the positive excess return, we have constructed the three different conventional confidence intervals:

Confidence intervals	*Lower limit*	*Upper limit*
90%	0,3157%	1,5114%
95%	0,1991%	1,6281%
99%	0,0605%	1,7666%

We can observe that all the possible values are strictly positive even in the less strictly interval of 99%.

If we observe the cumulative graph of the excess returns of the loser portfolio, we notice that it keeps increasing over time, this trend will seemingly continue over time. This trend seems continuous and the portfolio will continue to perform better than expected



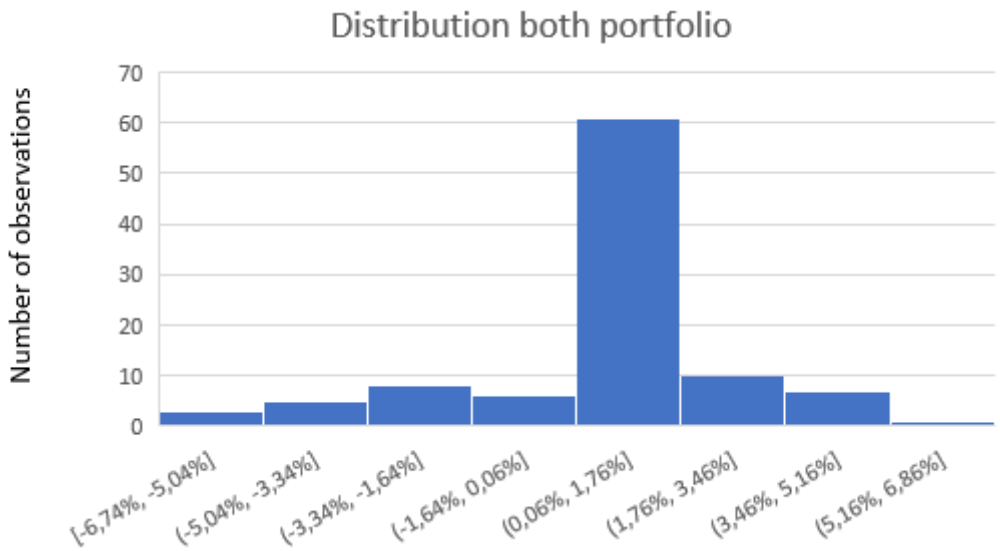
3.3 Both portfolio

In this section, we have analysed the portfolio composed by the stocks which have been at least once in the daily winners rankings and at least once in the losers rankings.

3.3.1 Performance analysis

In this section, we have analyzed the portfolio composed by the stocks which have been at least once in the daily winners ranking and at least once in the losers ranking

Portfolio	Av. Return	Standard deviation	Est. Stand. Dev.	Min	Max
Both	0,4513%	2,2558%	0,2256%	-6,74%	6,02%



The average weekly return seems to be p(with a value of 0,4513% which is not far from 0 but more important than the average weekly return of the market which is 0,1020%.

If we observe the distribution of the returns of the portfolio of stocks that appeared in both rankings over the last week, we observe that 59.8% of the observations lay in a range between 0.06% and 1.76%. These observations are slightly negatively skewed, with a value of -0.19, while they also are platykurtic, with a value of 0.89.

Firstly, we have tested if the average weekly return of the “Both” portfolios is different from 0 and if it is strictly positive.

Hypothesis tests		H1 ≠ 0	H1>0
t statistic	2,0005		
RHO	90%	V	V
	95%	V	V
	99%	X	X

We obtain a t statistic with a value of 2,0005 which is enough to exclude the null hypothesis for the 2 first test levels of 90% and 95% but insufficient to reject with a risk of error of 1%. We can thus say that the performance is statistically different from 0 and strictly positive with a probability of error of 5%. Thereafter, we have constructed the 3 different conventional confidence intervals to have a better understanding of the possible return values.

Confidence intervals	*Lower limit*	*Upper limit*
90%	0,0813%	0,6543%
95%	0,0091%	0,6656%
99%	-0,0766%	0,6746%

We observe that most of the possible values for the weekly return are located in the positive value but as the tests have demonstrated the value is not far from 0 and can even been negative if we construct an interval of 99%.

In a second step, we have studied if the average weekly performance of Both portfolio is different from the average historical return of the market during the same period of time:

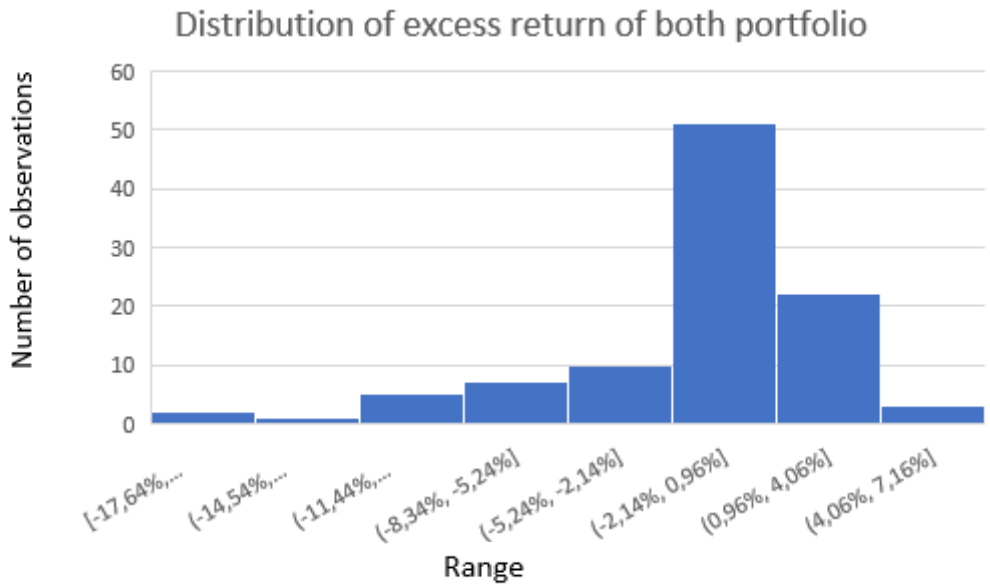
Hypothesis tests		*H1 ≠0*	H1<0
t statistic	1,2754		
RHO	90%	X	X
	95%	X	X
	99%	X	X

With a t statistic of 1,2754, we can assert that the difference between the performances of the 'Both' portfolio and the market is statistically not different from 0 or strictly positive. Implying that the average weekly performance of the Both portfolio is not different or superior to the market weekly average return.

3.3.2 Excess return analysis

After testing the average weekly performance, we will now incorporate in our comparison the factor related to market risk in order to analyze the excess return of the portfolio.

Portfolio	*Av. Return*	*Standard deviation*	*Est. Stand. Dev.*	*Min*	*Max*
Both	-0,9319%	4,0548%	0,4055%	-17,64%	4,74%



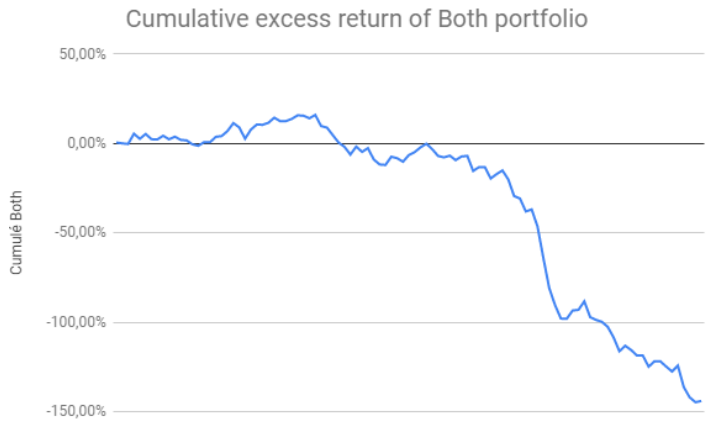
For the excess return, we obtain a weekly average excess return of 0,9319% which is in contrast with the result obtained for the performance. If we observe the distribution of the excess returns of the portfolios that were composed of stocks that appeared in both rankings over the last week, we notice that 81.37% of the observations lay between -5.24% and 4.06%, which is fewer compared to the excess returns of the loser portfolios. If we observe the skewness, we remark that this portfolio strongly negatively skewed, with a value of -1.17. Furthermore, we find that this distribution is platykurtic and has a value of 2.071. This value is slightly lower than 3.

We have tested our results in order to determine whether the underperformance of the Both portfolios are statistically significant.

Hypothesis tests		***H1 ≠0***	H1<0
t statistic	-2,2982		
RHO	90%	V	V
	95%	V	V
	99%	X	X

With a t statistic of -2,2982, for each case, at the two first levels, we can exclude the null hypothesis in profit of the alternative, but it is not the case for the last test. Below are the three confidence intervals for the negative weekly excess return of the 'Both' portfolios.

Confidence intervals	***Lower limit***	***Upper limit***
90%	-1,8617%	-0,8769%
95%	-1,9578%	-0,7808%
99%	-2,0719%	0,0169%



If we observe the cumulative excess return of the both portfolio we notice that it clearly drops over time, meaning that this portfolio in reality performed worse than expected. This is in line with our previous findings, where we observed the excess return globally.

3.4 The difference between the average weekly excess returns.

In the third step, we have analyzed if the difference between the excess returns of the different portfolios are statistically different from 0 or strictly positive, or negative, depending of the case.

Winners - Losers

For the first situation, we have tested if the difference in average between the excess return of the winner's portfolio and the losers is statistically different from 0 and strictly negative.

Excess return	*W-L*	*Est. Stand. Dev.*
Winners - Losers	-2,2829%	0,4723%

We obtain a difference of -2,2829% which can be considered like a valuable difference for a weekly average excess return. Then, we have tested if our difference in excess return and have obtained the following results:

Hypothesis tests		H1 ≠0	H1<0
t statistic	-4,8337		
RHO	90%	V	V
	95%	V	V
	99%	V	V

The t statistic of the test has a negative value of -4,8337 which make us reject the null hypothesis in each case and for every test level. We can consequently affirm that the difference in weekly excesses returns between the winners and the losers is statistically different from 0 and strictly negative. Finally, we have constructed the 3 different confidence intervals to have a better view of the distribution of the difference:

Confidence intervals	Lower limit	Upper limit
90%	-2,8921%	-1,6736%
95%	-3,0574%	-1,5083%
99%	-3,3786%	-1,1872%

The range varies from -3,9786% to -1,1872% implying that in 99% of the case, the winner portfolio will have an excess return which is lower than the excess return of losers contained in this range of value.

Winners - Both

In our second test, we have checked if the difference between the Winners and the Both portfolios average weekly excess return is different from 0 and strictly negative:

Excess return	W-B	Est. Stand. Dev.
Winners - Both	-0,4374%	0,5030%

The difference is of -0,4374% which cannot be considered like a valuable difference for a weekly average excess return. Thus, we have tested if this difference is statistically different from 0 or strictly negative and have obtained the following results:

Hypothesis tests		H1 ≠0	H1<0
t statistic	-0,8697		
RHO	90%	X	X
	95%	X	X
	99%	X	X

We have a t statistic of -0,8697 which ensure the non-rejection of the null hypothesis in each case for every level of tests. We can thus easily sustain that the difference between the excess returns of the 'winners' portfolio and the 'never' portfolio is not statistically different from 0 and strictly negative. It consequently implies that the underperformance of the winner's portfolio is not different or stronger compare to the performance of the Both portfolios.

Losers – Both

The last test that we lead concerns the difference between the average weekly excess return of the 'loser's' portfolio and the 'both' portfolio:

Excess return	*L-B*	*Est. Stand. Dev.*
losers-both	1,85%	0,5030%

The difference between the average weekly excess return is about 1,85% which can be considered like a valuable difference for a weekly excess return, but if we compare the difference between the losers and both with the difference between the losers and the winners, we observe that the difference is more important in terms of absolute value for the losers-winners. We have test if this result is statistically different from 0 and if it is strictly positive, we have obtained these following results:

Hypothesis tests		*H1 ≠0*	H1<0
t statistic	3,3845		
RHO	90%	V	V
	95%	V	V
	99%	V	V

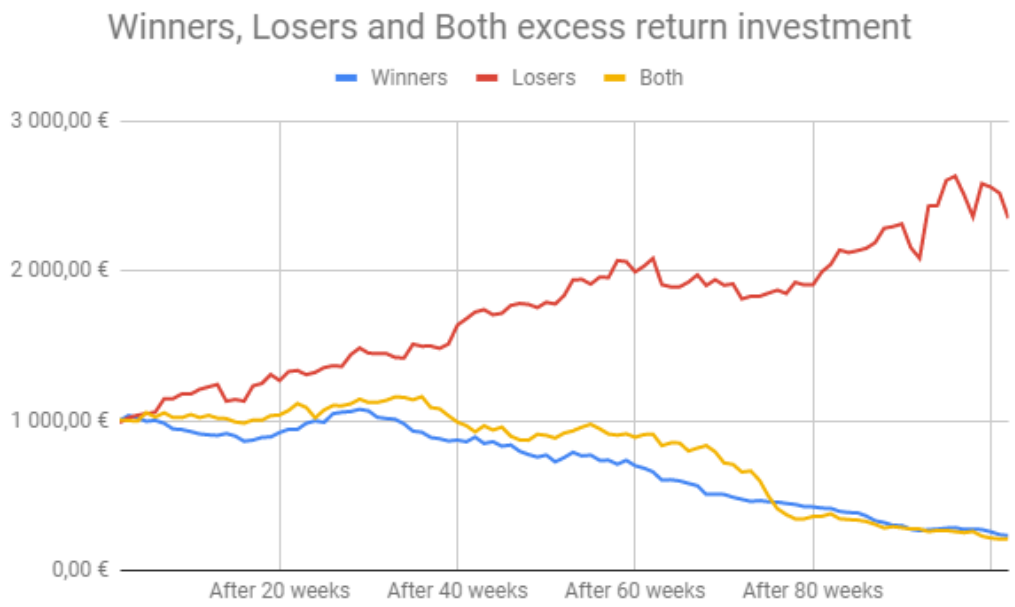
With an t statistic of 3,3845, we can easily reject the null hypothesis for each case and for every test level in profit of the alternative one. Consequently, we can assert that the average excess return of the loser's portfolio is different from the average excess return of the Both portfolios. We can also stipule that the weekly excess return of the loser's portfolio will be more important than the Both portfolios.

Confidence intervals	*Lower limit*	*Upper limit*
90%	0,9512%	2,7397%
95%	0,7767%	2,9142%
99%	0,5695%	3,1214%

The difference varies from 0,5695% to 3,1214%, implying that in 99% of the cases, the excess return of the loser's portfolio will overperform the Both portfolio by an amount comprised between these values.

4. Investment

After having observed the performances of the different portfolios, we decided to apply our findings in a more practical way. As a matter of fact, we simulated how an initial investment of 1000€ in the initial portfolio in week 1 would perform, using the excess returns we found each week. This was carried out on the three portfolios, allowing us to see which portfolio would have been the best in terms of return for this investment. It is important to notice that we computed these performances without transaction costs, which would have been relatively high, mostly because we carried out several transactions each Friday when we rebalanced the portfolio in order to exclusively contain the stocks that should be in the portfolio.



4.1 Winner portfolio investment.

The first type of portfolio we simulated was the portfolio composed exclusively of the stocks that appeared in daily rankings over the last week as best performers at least once. We observed that the average weekly excess return of this portfolio is -1.37% over our timespan, and this negative return is clearly observed when we simulate an investment of 1000€ in this portfolio. We clearly observe that this excess return is negative on average, meaning that our investment underperforms compared to the expected return.

Indeed, we observe that after the 2 years, where each week the portfolio was rebalanced, the initial investment of 1000€, was only worth 233.53€. This is a significant decrease over only 2 years, without taking into consideration the transactions costs. We can easily imagine that if had taken the transaction costs into account, the decrease in value of the initial investments would have been even more important.

If we take a more in depth look into these figures, we notice that the portfolio was worth the most after 28 weeks, where it peaked at 1075.21€, which is observable if we look at the graph of the evolution of our investment. After this peak, the investment decreases sharply, which is in line with our previous findings. On the other hand, the lowest value the portfolio had, was 231.95€ after 101 weeks. Furthermore, we notice on the graph that this downwards trend won't stop, causing the value of this portfolio to expectedly further drop over time and finally be worth nothing anymore.

4.2 Loser portfolio investment.

Secondly, we observed the evolution of an initial investment of 1000€ in a portfolio composed exclusively of stocks that appeared as losers over the course of the last week. We previously found that the average weekly excess return of this kind of portfolio is 0.91%, we should hereby find that our investment is worth more than the initial investment after 104 weeks.

As a matter of fact, when we simulated this portfolio over the course of 2 years, we observed that the initial value steadily increases over time, our portfolio reaches the highest value after 95 weeks, where it reaches 2632.72€. This is an important increase in just 2 years' time, but when we observed the average weekly return, which was 2.13%, we could expect to have some really positive excess returns on our investment. This portfolio performs significantly better than expected on average. Furthermore, we computed the simulation without taking into consideration the obligatory transaction costs, but our performance is so relatively good, that we can expect that even by considering the transaction costs, we still would have found a positive return after 2 years.

On the other hand, we noticed that this portfolio was worth the least after 1 week, with a value of 986.44€. This is the only time that this portfolio becomes negative, after which it only increases. This result is obtained due to the fact that the first week's return is negative, lower than the expected return, while it vastly stays positive after. This trend is confirmed by looking at the graph of the evolution of this investment, the investment continues to grow over time.

4.3 Both portfolio investment.

The last portfolio we simulated over 2 years with an initial investment of 1000€ was the portfolio composed of stocks that appeared in both rankings, winner and loser ranking, over the course of the last week. This portfolio had an average weekly return of 0.45%, which is worse than the loser portfolio, but better than the winner portfolio. However, the excess weekly return of this portfolio was on average -0.93%, meaning that this portfolio performed worse than expected.

The first thing we notice when we look at the graph is that the initial investment decreases over time after having been stable in the beginning. The portfolio reaches the highest value after 35 weeks, with a value of 1160.23€.

On the other side, we notice that this portfolio steadily decreases and that it reaches it's lowest value after 100 weeks, with a value of 378.42€. We can say that this portfolio performed worse than expected.

Overall, the portfolio which had the biggest increase in value over time was the portfolio composed of the stocks that appeared as daily loser in the week before the building of the portfolio. The initial investment after 104 weeks in this portfolio was worth 2365.85€.

5. Recommandations.

Portfolio	Av. Return	St.Dev. Return	t statistic	Excess	St.Dev. Excess	t statistic
Winners	-0,2021%	2,5904%	- 0,79	-1,3693%	3,0325%	- 4,56
Losers	2,1333%	3,4591%	6,20	0,9136%	3,6637%	2,51
Both	0,4513%	2,2558%	2,00	-0,9319%	4,0548%	- 2,30
CAC 40	0,1020%	2,0354%	0,74			
T (week)	102					

The Winners portfolio delivers the lowest average equal-weighted weekly return of -0.2021% and underperforms the market by 0,3040%, nevertheless, the difference is not statistically significant. However, if we examine the excess return, we can clearly see the underperformance which is statistically significant at all the levels due to its t-statistic of -4,56. The underperformance is consistent with the assumptions of the Salience theory as recently suggested by Bordalo, Gennaioli and Shleifer[1] (2013) according to which investors put too much weight on very salient information, where a salient information is understood as outcomes that are very different from the average. Thus, being ranked as a winner is a salient information in this sense and investors might put too much weight on this positive information which can lead to an overvaluation and the subsequent underperformance which is already visible after one week.

However, stocks that were daily losers, but not winners, during the previous week have a positive performance of 2,1333% and clearly over perform the market by 1,6817 %. The difference in performance with the market and the average performance itself are statistically significant. The over-performance is also correlated by the analysis of the excess returns which are positive and statistically significant. The price pattern followed by the loser's stocks is consistent with the Salience theory of Bordalo, Gennaioli and Shleifer (2013), that would predict that daily losers will be undervalued and eventually outperform. However, it is not in line with the price pattern forecast by the Attention effect. The over performance of 'Loser' stocks also suggests that our results are effectively in line with the short-term reversal effects and the return reversal, but they are not as predicted by Kumar, Ruenzi and Ungeheuer (2017) who showed an underperformance of losers stocks. However, their findings where realized with an asset test made on monthly basis while ours is on a weekly basis. This difference in

result suggests that the loser's stocks may firstly or mostly be impacted by the short-term reversal during the first week and eventually underperform during the subsequent weeks according to the Attention effect.

The Both portfolio delivers an positive weekly average return of 0.4513% and thus overperforms the market. However, the over-performance is not statistically significant. The analyze of the performance suggests an over performance but if we study the excess return, we can clearly see a negative excess return which is statistically significant but not at the most rigorous level. These results support the theory of attention and the underperformance which follows the overvaluation of ranked stocks.

In the view of these results, we can express some recommendations in order to take an advantage of these market anomalies for the investors. However, it is essential to bear in mind that our results are obtained from an experience which has been made on a weekly basis which is a short period of time for an investment. The portfolio has also been rebalanced each week implying that the resulting transactions costs can potentially cancel all the excess return of the strategy. The loser's portfolio has both the best performance and excess return, thus, consequently the resulting trading strategy would be to go long on this kind of stocks. The winner's portfolios have either the lowest performance or excess return. Moreover, the difference between the winner's excess returns and losers is more important than with the Both portfolio suggesting that the appropriate trading strategy would be to short the winner's stocks than the both stocks.

Conclusion

We find that stocks that make it into daily winners rankings on at least one day in the previous week have a negative performance the following week. The Winners portfolios significantly underperformed stocks that did not make the ranking, the Losers portfolios and the Both portfolios. It suggests that the Attention effect is driving our results for the winners and it is already visible after one week.

The Both portfolios also underperform, but in a less important way than the Losers. The underperformance over the following week can be considered in line with the price pattern described by the Attention effect, but its intensity is not like expected by the theory. We have stipule that if the Attention effect is stronger for the stocks that experience more attention spikes due to being ranked on the two rankings, they will also experience a stronger underperformance, which is exactly the opposite of what we found.

In contrast, the Losers portfolios have a severe over-performance, which is statistically significant. However, the over-performance is the exact contrary of what the Attention Effect stipule and the results obtained by Ungeheuer (2017). Short-Term Reversal Effect can explain this price pattern.

Consequently, we stipulate that the Attention effect is less important than the short-term reversal effect over the following week for the Losers portfolios in the French stock market. Hence, we can recommend like trading strategy to have a long position on the loser's stocks for the next week that follow their ranking and to have a short position on the stocks that did make the winners ranking during the previous week. However, these recommendations do not take into account the transactions costs. In order to limit these costs, it is essential to determine whether the Attention effect for the Winners and the Both portfolios is not a short term effect but is consistent during a sufficient period of time. And for the losers, it is essential to examine if the over performance is persistent and not offset during the next weeks due to the Attention Effect. To answer these questions, further studies have to be made on the performance during the following weeks and months that did make the ranking.

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