

VALUE STRATEGIES IN AN UNDER RESEARCHED LATIN AMERICAN STOCK MARKET

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Abstract

The value premium has been a topic of great relevance in the finance literature, and recent findings on the subject have been puzzling value investors. Studies of renowned economists show the value premium has been shrinking since the 1990's. This piece of information can be of critical importance to value investors, but mainly for investors in the U.S. stock market and other developed markets. Further research on this subject is needed for under researched Latin-American markets, namely Argentina, about which there is not much information.

This study examines the performance of value investment strategies in Argentina's stock market, for the period between June 1998 and May 2019. For this purpose, it was used a sample of 72 Argentine stocks that make up the S&P MERVAL.

We found that, for the same level of risk, value portfolios have underperformed growth portfolios during the full period (1998-2019) and both half-periods (1998-2008; 2008-2019), which indicates that recent performance of value investment strategies does not differ from the historical pattern. Considering the history of Argentina's economy, it was only expected value stocks would not generate satisfactory monthly returns to investors, thus explaining weak average returns comparing to growth stocks.

A regression model using macroeconomic variables provides material for the fundamental theory on the value premium. Evidence suggests value stocks' monthly returns and premiums are driven by variables such as market return, size, and inflation, indicating market anomalies are present in this market. If market anomalies do exist, one could question the efficiency of Argentina's market. Hence, investors could take advantage of these anomalies. In other words, investors on the Argentina stock market may resort to fundamental analysis to predict future excess returns of stocks, and thereafter optimize their investment strategies.

Key-words: Equity premium; Value premium; Value investing; Inflation
JEL-codes: G11; G12

Resumo

O prémio de valor é um tópico de alta relevância na literatura financeira, e recentes descobertas têm intrigado os investidores. Estudos de economistas de renome mostram que o prémio de valor tem vindo a diminuir desde os anos 90. Esta informação pode ser de importância crítica para os investidores, sobretudo, para investidores no mercado de ações dos EUA e outros mercados desenvolvidos. No entanto, é necessária mais investigação acerca dos mercados latino-americanos, sobre os quais não existe muita informação.

Este estudo examina o desempenho das estratégias de investimento em valor no mercado de ações da Argentina, para o período de junho de 1998 a maio de 2019. Para este efeito, recorremos a uma amostra de 72 ações argentinas que compõem o índice S&P MERVAL.

Verificámos que, para o mesmo nível de risco, as carteiras de valor tiveram um desempenho inferior ao das carteiras de crescimento durante todo o período (1998-2019) e ambos os subperíodos (1998-2008; 2008-2019), indicando que o desempenho recente das estratégias de investimento em valor não difere do padrão histórico. Considerando a história da economia argentina, era expectável que as ações de valor não gerassem retornos mensais satisfatórios para os investidores, explicando assim os fracos retornos médios em comparação com as ações de crescimento.

Um modelo de regressão utilizando variáveis macroeconómicas fornece material de suporte à teoria fundamental. As evidências sugerem que os retornos mensais e prémios das ações de valor são impulsionados por variáveis como o retorno do mercado, o tamanho, e a inflação, indicando a existência de anomalias neste mercado. Se estas anomalias existirem, a eficiência do mercado argentino é posta em causa e investidores no mercado de ações argentino podem recorrer a análises fundamentais para prever futuros prémios gerados pelas ações e, posteriormente, otimizar as suas estratégias de investimento.

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1. Introduction

A great deal of academic research on value investing and the value premium has been published, and it can be traced back to Fama and French (1992) and Lakonishok *et al.* (1994). This topic has attracted the attention of numerous academics throughout the years, whom have argued that the market can be outperformed by identifying value stocks. There is a general agreement on the existence of a value premium across international markets and asset classes, which is responsible for the higher performance of value investment strategies (Basu, 1983; Fama & French, 1992, 1996, 1998, 2012; Lakonishok *et al.*, 1994; Kargin, 2002; Hanauer & Linhart, 2015).

Recently, the value premium has been a hot topic amongst value investors, who look at new evidence with concern. A study published by Fama and French (2021) shows evidence that the value premium has been shrinking since the 1990's. Although it may be surprising to many, previous studies came to the same conclusion in the early 2000's (Asness *et al.*, 2000; Chan *et al.*, 2000). This "new" piece of information can be crucial for value investors predicting future returns, and carefully plan the next steps of their investment strategies. This information by itself is not of much help. The motives behind the shrinking value premium is the real knowledge that investors need. However, there's still controversy as to the source of the value premium and why this market anomaly has been fading throughout the years.

Three possible explanations have been already presented: risk; mispricing; and technological waves. Some believe that value stocks are inherently riskier than growth stocks and, therefore, great events that have a profound impact on global macroeconomic conditions, increasing the risk of value stocks, seem to explain the value premium reversal (Lee *et* al., 2014; Yamani & Swanson, 2014). Financial crises are presented as plausible causes of the underperformance of value stocks.

Others believe the value premium derives from one or a combination of two factors: mispricing and technological waves (DeBondt & Thaler, 1985, 1987; Lakonishok *et* al., 1994). Behaviorists believe that investors tend to extrapolate past earnings too far into the future and overreact to recent information. Alternatively, technological waves are also appointed as plausible causes of the underperformance of value stocks (Asness *et* al., 2000; Chan *et* al., 2000). Studies show that firms in the forefront of innovation and technology development exhibit extraordinary growth. Thus, investors will continue to invest in stocks of these type of firms.

As the behavior of stock markets may vary greatly across countries, assumptions on the value premium cannot automatically be generalized. The bulk of finance literature on the value premium focuses on the study of the U.S. market. The more relevant studies on this field also use data from this market. Although there is some evidence suggesting that in other countries, the value premium has been following the same pattern as in the U.S. (Yamani & Swanson, 2014; Chung *et al.*, 2016; Hanauer & Linhart, 2015), there seems to be lacking evidence about Latin American markets. Argentina, particularly, is a very unstable market that faces many challenges, such as debt defaults, high inflation and the depreciation of the nation's currency, which would provide useful evidence to further study the drivers of the value premium in emerging markets.

Argentina is a country with a very interesting dynamic, which puzzles many academics in economics and finance. According to the World Bank, Argentina is the fourth biggest economy in Latin America and, not long ago, in the early 1940s, was considered to be an advanced economy. At the time, the country's socio-economic background was at the same level as developed markets like the U.S. and European countries. Also, the Argentinian stock market is the oldest in the Latin-American region, with its first stock exchange established in 1854. However, after the World War II no other country has dropped so dramatically from the group of developed countries as Argentina did.

Since 1816, Argentina has defaulted on its debt obligations nine times, the most significant being the 2001 default on more than $80bn, and the latest in March 2020. Despite historically facing troubling times in global markets, Argentina has recently witnessed a strong positive performance of the country's main index, the S&P MERVAL index.

An interesting question to make is, therefore, how a value investment strategy has been performing on such unpredictable market as Argentina. Do the harsh macroeconomic conditions negatively affect the returns? Or have the market-friendly reforms implemented by the Government preserved or even augmented the returns of value investment strategies?

A study by Medeiros and Bressan (2015) confirms the existence of a value premium in three of the four Latin American markets analyzed: Argentina, Brazil, and Chile. The authors explored the theory that country risk and the value premium were significant factors in explaining conditional returns in these countries. The results do not support this theory, with the exception of Brazil. Furthermore, the book-to-market equity ratio (B/M) is considered to be a dimension of risk in Brazil, Chile, and Mexico, apart from Argentina. This study, however, leaves a window of opportunity to study other factors that may explain value stocks returns, such as economic conditions, stocks' attributes, investor behavior and

Government's actions, such as the implementation of market-friendly reforms. These factors may help explain the strong performance of the S&P MERVAL index in certain periods of time, as explained previously.

The aim of this dissertation is, therefore, understand if the Argentine equity market is behaving the same way as the equity market of developed countries, where recent studies have shown that the value premium is shrinking (Fama & French, 2021; Asness *et al.*, 2000; Chan *et al.*, 2000). It is intended to answer the following questions: (1) Do value investment strategies generate higher returns? (2) Does the recent performance of value investment strategies differ from the historical pattern? (3) Do changes in macroeconomic conditions impact the performance of value investing? (4) Are there changes on investors behavior that can explain the recent performance of this type of strategies?

The answers to these questions are significant to both academics and investors. If there is a value premium which can be explained by the higher risk of value stocks, this would provide material for the rational explanation, very associated with the efficient market hypothesis. At the contrary, if this approach fails to explain the value premium, investor behavior must be the main driver of the value premium. The contribution of this dissertation is threefold. Firstly, it fills the gap of the contemporary literature about the existence of the Argentinian value premium. Secondly, it illustrates changes in historical performance of Argentinian value stocks relative to growth stocks. Lastly, it contributes to the growing literature on the debate on the causes of the value premium by extending the existing evidence on a specific market and on the most popular theories – fundamental and behavioral.

The remainder of this thesis is organized as follows. Chapter 2 will present the literature review. Chapter 3 will outline the data collection for this study, the construction of the value and growth portfolios and the methodology used for analyzing the value premium. Chapter 4 provides the results accompanied with an analysis and final discussion. The final chapter provides the major conclusions, and the limitations of the study.

2. Literature Review

2.1. Value Premium

The value premium is a phenomenon in the stock market where value stocks tend to earn higher average returns relative to growth stocks with the same level of risk. Since the discovery of the value premium, there is a general consensus amongst academics that the market can be outperformed by identifying value stocks and investing in them.

There are several different approaches to identify value stocks. Basu (1983) shows that earnings-price ratios, E/P, help explain the cross-section of average returns. Fama and French (1992, 1998) find that high book-to-market equity, B/M, earnings-per-price, E/P, and dividend-to-price, D/P, ratios are associated with value stocks; on the contrary, low B/M, E/P and D/P ratios are associated with growth stocks, supporting the already existing evidence in finance literature (Rosenberg *et al.*, 1985; Chan *et al.*, 1991; Lakonishok *et al.*, 1994) show that there is a strong value premium in average returns for firms with high book-to-market equity, B/M, and earnings-per-price, E/P, or cash-to-price, C/P. The stocks of high B/M, E/P and C/P ratios outperform stocks of firms with low respective ratios.

Historically speaking, it is clear that value stocks outperform growth stocks. Fama and French (1992, 1996) and Lakonishok *et al.* (1994) show that for U.S. stocks there is a strong value premium in average returns. Fama and French (1998) present extended evidence on the existence of value premium around the world. For the period 1975 through 1995, they studied returns on market, value, and growth portfolios for the United States, Japan, Great Britain, France, Germany, Italy, the Netherlands, Belgium, Switzerland, Sweden, Australia, Hong Kong and Singapore. Value stocks outperform growth stocks in all of the major markets, except for Japan. Fama and French (2012) studied the four regions of North America, Europe, Japan, and Asia Pacific relative to the presence of a value premium, between November 1989 to March 2011. Results show there is a value premium in average stock returns in all four regions that, except for Japan, decrease with size. Kargin (2002) identifies a subset of thirty emerging markets that have higher than average expected returns and tests for the existence of a value premium. It is found that, from January 1976 to October 2000, the value portfolio generates superior returns with the same level of risk. Hanauer and Linhart (2015) examined size, value, and momentum patterns in the stock returns in the regions of Latin America, EMEA, Asia and BRIC. They conclude that there is a strong and significant value effect. Medeiros and Bressan (2015) confirm the existence of a value premium in three of the four markets studied for the period between 1994 and 2012, namely Argentina, Brazil and Chile.

2.2. Explaining the Value Premium

Although there is consensual agreement on the existence of a value premium across international markets, the driver behind the persistence of this market anomaly is still unclear.

A popular explanation for the existence of a value premium, the rational explanation, is very much associated with the efficient markets' theory. The underlying assumptions are that investors make rational and informed decisions and stock prices reflect all the available information. In this view, stocks cannot systematically outperform the market without being riskier. Thus, value strategies might produce superior returns because they are fundamentally riskier.

Fama and French (1992) conclude that, if investors behave rationally, value stocks have higher returns because they are attached to a firm with relative higher risk. The value premium is a compensation to investors for bearing the higher fundamental risk. Evidence is presented on the multidimensional risk of stocks, where one dimension of risk is proxied by size, and the other by the ratio of the book-to-market equity. In other words, not only value stocks outperform growth stocks, small-cap stocks should have higher returns than big-cap stocks. Small-cap value stocks should be top performers. The authors also show that the book-to-market equity factor, in particular, is associated with the earnings prospects of the firm. A firm that is considered to have poor prospects is signaled in the market with low stock prices and, therefore, high ratio of book-to-market equity. The variable of market risk, β, alone does not seem to explain the cross-section of average stock returns. These suppositions then sparked the debate about the "death of beta".

Fama and French (1995) present further evidence to support the risk explanation of the value premium, stating that the value premium is associated with relative distress of firms. High book-to-market equity, B/M, earnings-to-price, E/P, and cash-to-price, C/P, firms tend to have persistently low earnings. In this view, value firms seem to be more affected by business cycles and economic downturns than firms with growth prospects, hence their higher risk. Zhang (2005) demonstrates that the lack of flexibility in cutting assets in place by value firms causes them to be riskier than growth firms, especially during economic recessions when investors demand a higher premium for having their money invested instead of saving it. Costly reversibility and the countercyclical price of risk limit firms on cutting assets in place. Hence, value firms are burdened with unproductive assets, causing them to be riskier than growth firms. Carlson *et al.* (2004) attribute the risk differential to differences in operating leverage. Theoretically, value firms have higher operating leverage relative to

growth firms. Cooper (2006), however, attributes the higher risk of value firms to investment irreversibility. If an investment is largely irreversible, the book-to-market equity of a distressed firm is high because it has unproductive assets. The firm's excess asset capacity installed enables it to fully benefit from positive aggregate shocks (i.e., strong economic growth) without undertaking more costs. On the other hand, it can become a burden during negative aggregate shocks (i.e., economic downturns). Thus, value stock returns are sensitive to aggregate conditions and their risk is high. Investors are compensated by the value premium.

Hahn and Lee (2006) investigated whether the size and book-to-market factors proxy for the risks associated with fluctuations of the business cycle. They conclude that the value premium is a compensation for higher exposure to the risks related to variation of credit market conditions and interest rates. The risk variable, β, does not seem to capture specific risks that affect stocks' returns. Chui *et al.* (2013) examined the predictions of the risk-based explanation versus the mispricing hypothesis on the relation between value premium and subsequent stock returns in several markets around the world. For this study it was used data from forty countries. The authors find that the value premium appears to be more consistent with the risk-based explanation. Angelidis *et al.* (2015) also give support to the theory that the value premium is a compensation for the higher risk of value stocks, specifically, risk associated with bad economic conditions. By studying the G7 countries, the authors show that return dispersion serves as an economic state variable, and it can be used to predict the value premium. A relatively high return dispersion signals the deterioration of economic conditions and an increased probability that the economy enters a recession. Value firms are, therefore, more exposed to default risk and the value premium should be higher.

Contrary to fundamentalists, behaviorists believe that risk cannot be the driver of the value premium, because investors do not behave rationally all the time. Rational explanations of the value premium have become more and more unsustainable, as the value premium persists through time. If investors did behave rationally and stock prices reflect all information available - trading always at their fair value -, the value premium should've had disappeared. However, this did not happen.

DeBondt and Thaler (1985) found evidence that portfolios of loser stocks experience exceptionally large January returns as late as five years after portfolio formation. Their findings support the idea that investors tend to overreact to recent information. As investors act based on this new information, stock prices temporarily depart from their fundamental value. Consequently, prior losers are more attractive investments than prior

winners. DeBondt and Thaler (1987) provides additional evidence that supports the overreaction hypothesis. According to Lakonishok *et al.* (1994) investors have a bounded rational behavior also because they extrapolate past earnings too far into the future, or by associating a good investment with a well-run firm. Daniel *et al.* (1998) present more evidence on investor's boundedly rational behavior. The authors came to the conclusion that rational asset pricing models do not explain the systematic patterns of stock markets. Instead, they propose a theory of investor under- or overreaction to explain these market patterns based on two psychological biases: investor's overconfidence and biased self-attribution. In other words, investors tend to attribute more weight to private information in their investment decisions because of overconfidence about its precision, and disregard public information that could be more accurate about the reality of the investment. Because of investors' underreaction to public information signals and overreaction to private information signals stocks prices deviate from their fundamental value. The value premium arises during stock price reversals subsequent to overreaction.

More academic research on the behavioral explanation of the value premium has been made along the years. In the most recent studies on the topic academics resorted to Internet tools, in particular, a tool created by Google to perform analysis of search volume. The aim was to study the relation between changes in Internet-search behavior of the general population and stock market returns. Klemola (2016) found evidence that investor sentiments are associated with future stock market returns. In his study the author also finds evidence of a relation between the Internet search-based investor sentiments and the size of the value premium. Klemola (2020) further studies the effect of Internet search-based investor sentiment on stock returns, supporting the findings of the previous studies. Changes in investor sentiment do affect stock markets returns and the value premium. Based on Google search volumes, it is expected that an unexpected increase in optimism returns a positive subsequent value premium. On the contrary, an unexpected increase in pessimism returns a negative subsequent value premium.

2.3. The Diminishing Value Premium

The accumulated research on the value premium confirms the persistence of a value premium across markets and equity classes over the years. Value stocks have historically outperformed growth stocks; and small-cap value stocks seem to be top performers. Nonetheless, a recent study published by Fama and French (2021) seems to have shocked investors by showing evidence that the value premium has been shrinking since the 1990's.

Although it may be surprising to many the possible disappearance of the value premium, previous studies have already been made on this topic.

Using data from January 1982 through October 1999, Asness *et al.* (2000) found that: (1) expected earnings of growth stocks increased steadily over the sample period; (2) value stocks outperformed growth, however, there was three major bear markets for value: 1989-1990; 1995-1996; and 1998-1999. According to them, the value premium can vary through time as a result of rational and irrational forces. Rational forces can be either a variation in the risk of value and growth stocks or a variation in the amount of value investors. Irrational forces can be the overreaction of investors, which is responsible for the mispricing of value and growth stocks. The authors came to the conclusion that value investment strategies can have poor performance for long periods of time.

It is important to highlight that the data used to conduct this study refers to the Dot-com bubble period. Excessive speculation of Internet-related firms caused a rapid rise in U.S. technology stock price valuations from 1995 to 2004. During this time, stocks associated with technology firms, which at the time (and even today) were firms with strong growth prospects, outperformed the stocks of well-established value firms. This seems to be a reasonable explanation for the underperformance of value stocks during the 1990's. In fact, Asness *et al.* (2000) mention that factors such as new technology, globalization and newly established franchises allow some firms to grow earnings far in excess and for longer periods of time. Nevertheless, "value is very far from dead" according to them.

Chan *et al.* (2000) came to the same conclusions as the previous studies. However, they believe they are witnessing a shift in the stock market, where the value premium is disappearing, and investors now prefer to invest in large-cap and growth stocks relative to small-cap and value stocks. The authors even affirm that "Large-cap growth stocks have apparently taken the place of small-capitalization and value stocks in investors' hearts" (Chan *et al.*, 2000, p.23). The methodology used to conduct the study was based on two classification methods of stocks. The authors classified all U.S. stocks on the NYSE, Amex, and Nasdaq into "large", "medium" and "small". Within each size category of stocks, they then separated the stocks into value and growth portfolios. The study of the performance of the six equity portfolios was conducted from 1970 through 1998. Results show that all portfolios commanded high performance indicators (net sales revenue, operating income before depreciation, income and cash dividends to common stock) at the beginning of 1999. The three highest returns on the large-cap growth portfolio occurred within the last four years of the sample, picking in 1999. This strong price performance of large-cap growth stocks,

according to the authors, defies historical stock returns patterns, which favored small-cap and value stocks. Three possible explanations were put forward to justify the disruption in stock returns patterns: the "rational" explanation; the "new paradigm" explanation; and the "behavioral" explanation. However, they provide the most support for the behavioral explanation.

It is, however, important to highlight this "new paradigm" hypothesis, that few have come up with. According to Chan *et al.* (2000) the "new wave" of technological advances, which occurred in the 1990's and early 2000's, have changed the way investors approach new investments. Firms that are in the forefront of innovation and exhibit extraordinary growth rates – mostly, firms in the computer, Internet, and networking sectors – are expected to continue to perform well in the future, despite historical low average returns. The authors argument that stocks market prices have not fully incorporated all the future benefits from technological innovation, thus, investors will continue to invest in stocks of these groundbreaking firms. It is expected that, because of the market's slow response to information, growth stocks will continue to outperform value stocks for some time in the future.

Lee *et al.* (2014) analyzed U.S. stock returns performance for the periods before and during the subprime credit crisis, questioning if the value premium "survived" the crisis. The period from January 1963 to March 2007 was defined as the pre-crisis period and April 2007 through December 2008 as the crisis period. The results support the hypothesis that the value premium ceased to exist during the subprime crisis. Despite having a positive value premium before the subprime credit crisis, value stocks significantly underperformed growth stocks in the period during the crisis. The reversal in value premium might be due to the impact of the crisis in the financially constrained firms, mainly small and value firms, where many investors stopped investing in. Conclusions of this study support the rational explanation of the fading value premium.

Yamani and Swanson (2014) revisited the Fama–French two factor model and proposed a new model to study the stock returns performance within crisis periods, extending the study published by Lee *et al.* (2014). Based on data from January 1975 to December 2007 for thirteen countries and covering four crisis periods (the Latin American Debt Crisis, the Asian Financial Crisis, the U.S. Subprime Crisis and the European Exchange Rate Mechanism). Results show that value stocks consistently underperform growth stocks during the four financial crises, supporting the rational explanation.

Anderson and Zastawniak (2015), acknowledging the fact that growth stocks still outperform value stocks, investigate the reason why growth stocks remain popular between investors. Using data for US stocks since 1983, they find that growth stocks have a much greater tendency to change earning-to-price (E/P) decile than value stocks, however, this does not seem to change investors prospects for growth stocks. Resorting to a decision tree software, they show that growth investors do not behave rationally. They tend to anchor on the initial high earning-to-price of growth firms under-estimating the variability of the real E/P of stocks. For example, investors believe that the earnings of a firm with high E/P (which during the sample period would be growth stocks) will continue to grow fast in the future, even though fundamental indicators indicate otherwise. This effect is particularly noticeable in small growth stocks. Results are in line with the behavioral explanation of the diminishing value premium.

This surely motivates further studies about the drivers of the value premium.

3. Data and Methodology

Given the lack of research on the Argentine equity market, we want to, first, study the performance of value investment strategies through time; and from here examine the historical pattern. The methodology adopted for the development of the tests is the same adopted by Fama and French (2021), for the formation of the six portfolios, division of the period of analysis and assessment of performances.

In a second series of tests, it is intended to study the drivers behind the value premium. For this purpose, it will be followed a methodology that combines the findings of Fama and French (1993) and Cahart (1997). However, certain adjustments will be made to adapt the methodology to the objectives of this study.

3.1. Data description

To obtain a proper sample of companies for this study, and to ensure the quality and availability of the data, it was decided to use data referring to companies included in the S&P MERVAL index. For this, it was necessary to, first, extract a list of Leavers and Joiners on the S&P MERVAL index from 1998 until 2019. These lists were extracted from the Thomson Reuters Eikon database. On a yearly basis, it was verified the companies that would enter the index and the ones who left. This way it was possible to make a list of the S&P MERVAL index's constituents by year. When the companies had more than one class of shares, only common stocks were accepted in the composition of the sample. Nonetheless, it was necessary to exclude from the sample stocks that did not present the following: (1) monthly consecutive price quotations for a period of 6 months before and/or after the formation of the portfolios; (2) available data on market capitalization, book-value-per-share and total common shares outstanding at the time of the construction of the portfolio. Due to limited number of stocks in the sample, it was decided to keep financial stocks in the sample.

The sample contains 72 firms listed on the Buenos Aires Stock Exchange, which stocks are constituents of the S&P MERVAL index. The list of stocks is summarized in Table A1, in Appendix.

All prices are in Argentine Peso (ARS), so that variances in the FOREX market do not influence the results and conclusions of this study.

Data on the 72 constituents of the S&P MERVAL included in the sample was retrieved from Thomson Reuters Refinitiv Eikon database, on a monthly basis. Inflation and risk-free monthly rates proxies were retrieved from the official page of Argentina's Central

Bank (Banco Central de la República Argentina, http://www.bcra.gov.ar/PublicacionesEstadisticas/Principales_variables_datos.asp). For the risk-free rate was considered the Interest Rate for Loans between Local Financial Institutions (Tasa de Interes por Prestamos entre Entidades Financieras Locales), commonly denominated as the interbank interest rate. Inflation rate and interest rate for loans between local financial institutions are available in Table A2, in Appendix.

The sample period defined and considered to be most suited for this study is between June 1998 and May 2019, with the reasons being threefold. Firstly, the data quality on stock prices, market capitalization and book value per share before the period of 1998 is lacking. Secondly, after the year 2019, the impact of the Covid-19 pandemic would lead to a noisy estimation of the expected value premium, and cloud inferences on the drivers of the value premium. Thirdly, and final, most of the companies publishes their financials at the end of March. For that reason, the best time to form the portfolios should be at the beginning of June for the stock price to assimilate the information.

For the purpose of the study, and because the methodology in based on Fama and French (2021), the sample period was divided in half into two subperiods: June 1998 – November 2008; and December 2008 – May 2019.

3.2. Construction of Value and Growth Portfolios

As previously mentioned, we first want to study the performance of value investment strategies between 1998 and 2019. The methodology adopted for the formation of portfolios and assessment of the portfolios excess returns is originated from the methodology developed by Fama and French (2021). Accordingly, all stocks of the sample were classified into one of two groups, small capitalization, and big capitalization, on the basis of the S&P MERVAL market capitalization median for year *t*. Small cap stocks are the those with market capitalization below the median, and big cap stocks are those with market capitalization above the median. The market capitalization of a stock in year *t* (MC_t) corresponds to the price close at the end of May of year *t* ($PC_{May\,t}$) multiplied by the total common shares outstanding for the fiscal year ending in *t-1* ($TCSO_{t-1}$).

$$(3.1)\ MC_t = PC_{May\,t} \times TCSO_{t-1}$$

Within each size category the stocks were then separated into value and growth groups based on the book-to-market equity ratio (B/M) at the end of May of year *t*. Value

stocks are the sample stocks with B/M at or above the 70th percentile of B/M for S&P MERVAL index, and growth stocks are those with B/M below the 30th percentile. Because the B/M ratio was not directly available on the Thomson Reuters Refinitiv Eikon database, the ratio was obtained by multiplying the Book Value per Share of fiscal year *t-1* (BVS_{t-1}) by the Price Close at the end of May of year *t* ($PC_{May\,t-1}$).

$$(3.2)\ B/M\ Ratio_t = \frac{BVS_{t-1}}{PC_{May\,t}}$$

This method of classification resulted in three equally weighted value portfolios – Small Value (SV), Big Value (BV), and their combination Market Value (MV) – and three equally weighted growth portfolios – Small Growth (SG), Big Growth (BG), and their combination Market Growth (MG). The Market portfolio corresponds to the S&P MERVAL index.

From here, it was possible to determine the portfolios monthly returns (R_t), which corresponds to the sum of stocks weighted returns.

$$(3.3)\ R_{pm} = \sum_t^N (W_{im} \times PC_{im})$$

Where:

R_{pm} – Return of portfolio *p* for month *m*

W_{im} – Weight of the stock *i* on the portfolio for month *m*

PC_{im} – Price close of stock *i* for month *m*

As returns on stocks were not immediately available, all the returns were calculated on a monthly basis and continuously, using the natural logarithm of the ratio between the stock price close in month *m* and the price close in month *m-1*.

$$(3.4)\ SR_{im} = \log(PC_{im}/PC_{im-1})$$

Where:

SR_{im} – Stock *i* return for month *m*

PC_{im} – Price close of stock *i* for month *m*

PC_{im-1} – Price close of stock *i* for month *m-1*.

For the purpose of assessing and comparing monthly performances of each portfolio, it was estimated portfolios' excess return. The excess return of a portfolio in month *m* (ER_m) corresponds to the total return in month *m* (R_m) minus the return of the Market portfolio in the same period (RM_m). The Market portfolio corresponds to the S&P MERVAL. Monthly returns on the S&P MERVAL are displayed in table A3, in Appendix.

$$(3.5)\ ER_m = R_m - RM_m$$

3.3. Regression Models

To identify the drivers of the Argentine value premium it was implemented a methodology similar to Fama and French Three-Factor Model (Fama & French, 1993) and Cahart (1997), as will be presented.

The Three-Factor Model is an asset pricing model that expands on the Capital Asset Pricing Model (CAPM) by adding two types of risk factors, size and value, to the market risk factor. This model considers the fact that value and small-capitalization stocks outperform markets on a regular basis, as in the following equation:

$$(3.5)\ RA_t - RF_t = \beta_1 + \beta_2(RM_t - RF_t) + \beta_2 SMB_t + \beta_3 HML_t + e_t$$

With $(RA_t - RF_t)$ representing the difference between the return on the asset and the return of the risk-free asset at period *t*. The explanatory variables are the excess return on the market at period t $(RM_t - RF_t)$, the difference in returns of small and big portfolios (SMB_t) and the difference in returns of value and growth portfolios (HML_t) based on the B/M ratio.

When using the Three-Factor Model it is possible to test whether the returns of value stocks are captured by these types of risk. Hence, the value portfolio's monthly return variable (R_{pt}) takes the place of the variable return on the asset $(RA_t - RF_t)$. As it would be insensible to regress the value factor (HML_t) on the excess return of value portfolios, this factor is omitted. The model takes on the following form:

$$(3.6)\ R_{pt} = \beta_1 + \beta_2(RM_t - RF_t) + \beta_2 SMB_t + e_t$$

Where:

R_{pt} – Monthly returns of portfolio *p* for period *t*

$(RM_t - RF_t)$ – Return on the market for period *t*

SMB_t – Size factor for period *t*

The two independent variables of the model ($RM_t - RF_t$, SMB_t), however, are not sufficient to explain the value premium, as many studies have already shown (Patelis, 1997; Chan *et al.*, 2000; Angelidis *et al.*, 2015; Medeiros & Bressan, 2015; Elgammal *et al.*, 2016), and achieve the main goals of this study. This model fails to account for other factors of risk, such as inflation, and momentum, that can be fundamental to explain the changes in performance of value investment strategies in Argentina relative to other markets.

Inflation is an important factor of risk because it impacts cash-flows of stocks. According to Patelis (1997) interest rates have a direct impact on dividend yields. In monetary policy, interest rates are a means to control for country inflation. Interest rates are increased in times of high inflation and reduced in times of low inflation. The outcome of this type of policy positively affects stocks dividends when inflation is high, and negatively affects dividends when inflation is low. Boudoukh and Richardson (1993) results suggests a positive relationship between inflation and stock returns over long horizons for the U.S. and U.K. markets. Anari and Kolari (2001) report negative correlations between stock prices and inflation in the short run, followed by positive correlations in the long run. Taking into account previous studies, there is enough evidence in favor of a positive correlation between inflation and cash-flows of stocks. Because emerging markets traditionally have relatively high inflation when compared to developed markets, this can be a factor of risk with high explanatory power of the average returns of value stocks.

The momentum factor of risk was firstly applied by the renowned economist Carhart (1997). The Carhart's four factor model is an extension of the Fama and French Three-Factor model, adding momentum as an additional factor. This variable reflects the theory behind winner and loser stocks. That is, the theory that past winners tend to perform well in the future, and past losers continue to perform poorly. This variable is important to explain the strong performance of value stocks through time.

Adding these two new variables, the model takes on the following form:

$$(3.7)\ R_{pt} = \beta_1 + \beta_2(RM_t - RF_t) + \beta_2 SMB_t + \beta_4 INF_t + \beta_5 MOM_t + e_t$$

Where:

R_{pt} – Monthly returns of the portfolio *p* for period *t*

$(RM_t - RF_t)$ – Return on the market for period *t*

SMB_t – Size factor for period *t*

INF_t – Inflation rate for period *t*

MOM_t – Momentum factor for period *t*.

A t-Student test statistic was performed to test the individual significance of each dependent variable.

The model (3.7) was applied to each of the six portfolios monthly returns (Small Value, Market Value, Big Value, Small Growth, Market Growth, and Big Growth), and the tests were conducted individually for each of the portfolios.

The same model (3.7) was also applied to monthly excess returns of value portfolios (Small Value, Market Value, and Big Value). In this case, the variable ER_{pt} (monthly excess returns of the portfolio *p* for period *t*) will take the place of the variable R_{pt} in the model.

3.3.1. Construction of the Risk Factors

The risk factors used in the model were constructed using six portfolios weighted by size and book-to-market equity ratio, and the momentum factor of the assets, as suggested by Fama and French (1993) and Carhart (1997), respectively. For this purpose, it was considered the same sample of stocks as in the previous methodology, for the period between June 1998 and May 2019.

The market risk factor $(RM_t - RF_t)$ was estimated by the difference between the risk premium paid by the market, S&P MERVAL, and the return on the risk-free asset (the local interbank loan rate).

The size factor (SMB_t) was calculated based on the average monthly return of the three value-weighted portfolios of small size stocks (Small Low, Small Medium and Small High) minus the average monthly return of the three value-weighted portfolios of big stocks (Big Low, Big Medium and Big High). It was applied a similar method of classification of stocks as previously. Small stocks have market capitalization below the S&P MERVAL median, and big stocks have market cap above the median. Low and High are stocks with book-market equity ratio (B/M) of stocks below the 30th or at or above the 70th S&P MERVAL percentile, respectively. Medium stocks have B/M between 30th and 70th S&P MERVAL percentiles.

The momentum factor (MOM_t) was obtained by the difference between the weighted average return of the Winner portfolio and weighted return of the Loser portfolio. The Winner portfolio of year *t* is composed of stocks with the biggest cummulated average return in the previous 12 months at the time of portfolio formation; typically, the top half best performers of the previous year. Inversely, the Loser portfolio is composed of the worst performers in the previous 12 months. The Winner and Loser portfolios were formed every year in May.

4. Results

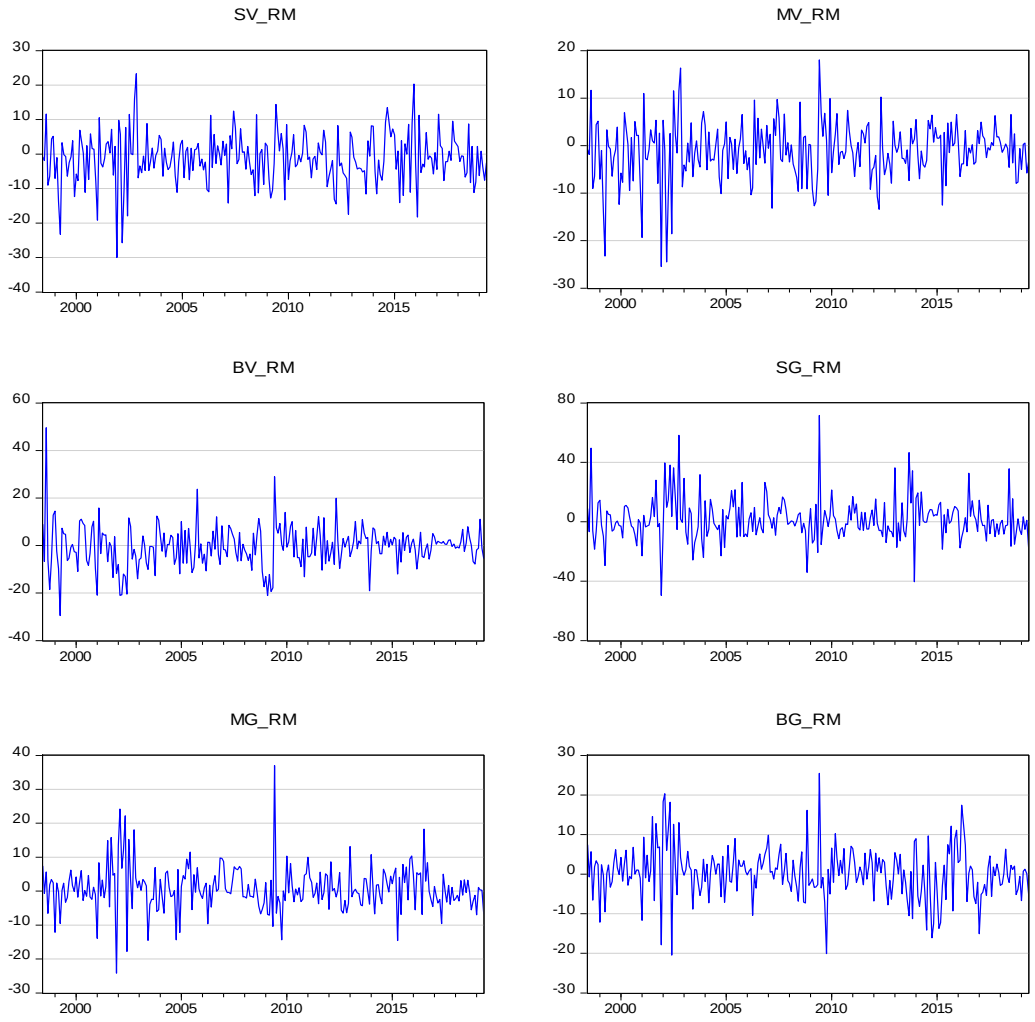
4.1. Value Premium in Argentina: Portfolio Analysis

From hereafter growth and value portfolios will be denoted as SV (for Small Value portfolio), MV (Market Value), BV (Big Value), SG (Small Growth), MG (Market Growth) and BG (Big Growth).

Figure 1 displays the graphs for the excess returns of the six portfolios described above for the period between June 1998 and May 2019. The results of monthly excess returns are displayed in the appendix, Table A4.

Figure 1 - Evolution of SV, MV, BV, SG, MG, and BG portfolios' excess returns between June 1998 - May 2019 (in %)

Four value-weighted portfolios - Small Value (SV), Big Value (BV), Small Growth (SG), and Big Growth (BG) - were formed using a two-step method of classification based on the market capitalization (MC) and book-market equity ratio (B/M) of stocks. *Small* stocks have MC below the S&P MERVAL median, and Big stocks have MC above the median. *Growth* and *Value* are stocks with B/M below the 30th or at or above the 70th S&P MERVAL percentile, respectively. *Market Value* and *Growth* (*MV* and *MG*) are value-weighted portfolios of all *Value* or all *Growth* stocks. A portfolio's excess return is its monthly return *R* minus the return on the market portfolio *RM*.



At first glance, it is possible to observe that for the six portfolios there are excess return peaks and dips for the periods 1998-2000 and 2007-2010, coinciding with periods of high volatility in global financial markets, and for 2001-2002 and 2014-2016, periods associated with macroeconomic events specific to Argentina. Strong oscillations in portfolio premiums seem to coincide with the same four macroeconomic events: Dotcom Bubble (1995 to 2005); 2001 Argentina's Default; Subprime Credit Crisis in the US and the European Financial Crises in 2008-2009; Argentina's Default in 2014.

The Dotcom bubble was a phenomenon that caused a rapid rise in U.S. technology stock prices fueled by investments in Internet-based companies in the late 1990s, to which followed a crash of the entire stock market in the early 2000s. The incredible rise and later crash of the U.S. stock market agitated the Argentine market. It should be pointed out that between 1991 and 2002 the Argentine Currency Board pegged the Argentine peso to the U.S. dollar in an attempt to eliminate hyperinflation and stimulate economic growth. This decision would increase the correlation between markets. Higher correlation between the U.S. and Argentina markets would later enhance the effect of stock market co-movement (Coleman *et al.*, 2019).

Argentina's default in 2001 happened after a devaluation of the credit indicator, and the withdrawal of IMF aid package. In response investors stopped investing in the market, causing the prices of stocks to fall. It was only when Argentina broke down the 1:1 parity, uncoupled and depreciated the currency from the U.S. Dollar that the country could recover. After the default Argentina became the fastest growing economy in the Americas, and entered in a debt restructuring negotiation in 2002, 2005 and 2010. During this time the stock market experienced sustainable growth.

Later, between 2007 and 2008, occurred the Subprime Credit Crisis and the European Financial Crisis. These two events not only had severe, long-lasting consequences to the U.S. and the E.U., but also negatively affected other economies around the world, including Argentina. Again, Argentine stock prices experienced great volatility between 2007 and 2010.

In 2014, Argentina defaulted on its debt for the eighth time, causing the prices of stocks to fall. Two years later, in 2016, Argentina returned to the international capital markets in April 2016. This return was marked by the historic issuance of $16.5bn worth of bonds, along with the Government's efforts to reach an agreement with its holdout creditors and implement a number of market-friendly reforms. The measures implemented improved investor confidence in the market and created a more positive sentiment relative to its future.

This same year, Argentina's main index had an astonishing performance, rinsing 44%. The year 2017 followed the same trend, rising 77%, closing the year at historic levels.

Table 1 - First and second maximums and minimums of portfolios excess returns (R-RM), June 1998-May 2019 (in %)

MV, BV, and SV are the value portfolios, and MG, BG, and SG are the growth portfolios of Figure 1. Monthly excess returns of the six portfolios were determined by subtracting the monthly market return RM, which corresponds to the S&P MERVAL return, to the total return of each portfolio R.

	First Max.	First Min.	Second Max.	Second Min.
SV-RM	0.23 (in 2003)	-0.30 (in 2001)	0.20 (in 2015)	-0.26 (in 2002)
MV-RM	0.18 (in 2009)	-0.25 (in 2001)	0.16 (in 2002)	-0.24 (in 2002)
BV-RM	0.50 (in 1998)	0.29 (in 1999)	0.29 (in 2009)	-0.21 (in 2009)
SG-RM	0.72 (in 2009)	-0.50 (in 2001)	0.58 (in 2002)	-0.40 (in 2013)
MG-RM	0.37 (in 2009)	-0.24 (in 2001)	0.24 (in 2002)	-0.18 (in 2002)
BG-RM	0.25 (in 2009)	-0.20 (in 2009)	0.20 (in 2002)	-0.20 (in 2002)

Looking at the graph for SV excess returns in Figure 1, it is visible the excess returns tend to culminate with events specific to the country, namely the 2001 default. The default in 2001 happened after a devaluation of the credit indicator. In 2002, Argentina slid further into financial crisis when the government ordered the indefinite closure of the country's banks in an attempt to prevent the wholesale collapse of the economy. This would explain why SV excess returns reached lows of around -30% in 2001 (see Table 1), during the financial crisis and the closure of the banks, peaking at over 20% in 2003 (after the debt restructuring). Between 2015-2016, after the 2014 default and the return of Argentina to the markets, the SV premiums recorded a high of 20% and a low almost reaching -20%. It is also possible to see a negative excess return between -20% and -25% for the year 1999 (during the Dotcom bubble).

In contrast, BV excess returns did not fluctuate as much between 2000 and 2019. High fluctuations in BV excess returns for 1998-2000 period should be disregard. The reason being all stocks on the S&P MERVAL, used on this study, between 1998 and 2000 classified as small cap value stocks and big cap growth stocks. Under the methodology employed no stock classified as big cap value. The same applies to SG excess returns. None of the stocks on the sample classified as small cap growth. Thus, BV and SG investment strategies were not feasible during this time.

Premiums for growth portfolios exhibit a similar behavior as value premiums. A larger oscillation in excess returns is observed during Argentina's defaults in 2001 and 2014, and during Subprime Credit Crisis and the European Financial Crises in 2008-2009. It is worth noting that SG excess returns showed higher oscillations, between +72%, maximum

reached in 2009, and -50%, minimum reached in 2001 (see Table 1). BG excess returns oscillated between +25% and -20%.

Table 2 - Summary statistics for monthly excess return of the six portfolios, June 1998-May 2019

Four value-weighted portfolios (SV, BV, SG, and BG) were formed using a two-step method of classification based on the market capitalization (MC) and book-market equity ratio (B/M) of stocks. *Small* stocks have MC below the S&P MERVAL median, and Big stocks have MC above the median. *Growth* and *Value* are stocks with B/M below the 30th or at or above the 70th S&P MERVAL percentile, respectively. *Market Value* and *Growth* (*MV* and *MG*) are value-weighted portfolios of all *Value* or all *Growth* stocks. A portfolio's excess return is its monthly return *R* minus the return on the market portfolio *RM,* which corresponds to the S&P MERVAL. The period 1998-2019 corresponds to the full sample period between June 1998 and May 2019; 1998-2008 corresponds to the first-half of the sample period between June 1998 and November 2008, and 2008-2019 to the second-half between December 2008 and May 2019.

	SV-RM	**MV-RM**	**BV-RM**	**SG-RM**	**MG-RM**	**BG-RM**
1998-2019 Period						
Mean (in %)	-1.20	-1.17	-0.55	1.61	0.91	0.41
Standard Deviation	7.32	6.16	8.65	14.47	6.64	6.51
Standard Error from Mean Zero	-2.60	-3.01	-1.01	1.77	2.17	1.01
1998-2008 Period						
Mean (in %)	-1.36	-1.59	-1.06	1.78	1.29	1.30
Standard Deviation	7.76	7.11	9.82	15.20	7.06	6.35
Standard Error from Mean Zero	-1.97	-2.50	-1.21	1.31	2.04	2.30
2008-2019 Period						
Mean (in %)	-1.03	-0.75	-0.04	1.44	0. 53	0.48
Standard Deviation	6.88	5.02	7.31	13.75	6.19	6.58
Standard Error from Mean Zero	-1.68	-1.67	-0.07	1.18	0.96	-0.81
Difference between 1998-2008 and 2008-2019 average monthly premiums						
Mean (in %)	-0.33	-0.84	-1.01	0.33	0.76	1.78
Standard Deviation	10.64	8.78	12.21	20.21	8.95	8.89
Standard Error from Mean Zero	-0.35	-1.07	-0.93	0.19	0.95	2.25

Average monthly excess returns for the three value portfolios are small and negative for 1998-2019 period and for the 1998-2008 and 2008-2019 half-periods. For example, the average value premium for 1998-2019 is -1.2% per month for SV, and -0.55% for BV. Since all portfolios are value-weight portfolios, knowing that MV is mostly composed of small value stocks, the average monthly excess return for the full sample 1.17% is close to that of SV for the full sample. Average value excess returns do improve from the first to the second half of the sample, although practically unnoticeable for the SV portfolio.

Average excess returns also increase across value portfolios for the full period and the first and second half-periods. Within value portfolios, average excess returns tend to increase with size. Accordingly, SV average excess return is -1.20% while BV average excess return is -0.55%, for the full sample period.

Average monthly excess returns for the growth portfolios are stronger than the value premiums for the 1998-2019 period and for the 1998-2008 and 2008-2019 half-periods. For example, SG portfolio beats the market by 1.61% per month and BG by 0.41% per month. The average growth premiums are particularly strong in the first half of the sample, 1998-2008.

Contrary to value portfolios, average excess returns for growth portfolios tend to decrease with size. Average excess returns for SG tend to be higher than the average for BG. SG average excess return is 1.61% while BG average excess return is 0.41% for the full sample period.

Paying attention to the differences between first and second-half period averages of excess returns, the largest decline in average premium is 1.78% for BG, followed by 0.76% for MG and 0.33% for SG. The decline in average excess return for BG portfolio is economically large and is within 2.25 standard errors from zero. For the value portfolios, average differences between premiums for the two half-periods increase but are within a standard error of zero, except for MV (standard error of -1.07). The biggest increase in average excess return is 1.01% for BV but is within a standard error of -0.93.

Table 3 summarizes the correlations between portfolios monthly returns, and the correlation between portfolio monthly returns and market returns.

Table 3 - Correlations between portfolios returns, and correlation of portfolio and market returns (RM), June 1998-May 2019

MV, BV, and SV are the value portfolios, and MG, BG, and SG are the growth portfolios of Table 2. RM corresponds to the market return, specifically, the S&P MERVAL monthly return. The correlation between portfolios returns and market return is denoted as Cor(R, RM).

	SV	**MV**	**BV**	**SG**	**MG**	**BG**
SV	1.00	0.97	0.69	0.52	0.79	0.75
MV	0.97	1.00	0.81	0.53	0.80	0.76
BV	0.69	0.81	1.0	0.47	0.61	0.57
SG	0.52	0.53	0.47	1.00	0.74	0.47
MG	0.79	0.80	0.61	0.74	1.00	0.91
BG	0.75	0.76	0.57	0.47	0.91	1.00
Cor (R, RM)	0.79	0.84	0.70	0.46	0.82	0.82

The increases from 1998-2008 to 2008-2019 in average monthly excess returns for the value portfolios seem large, although statistically insignificant. Evidence suggests that this is due to high volatility. The correlation between SV, MV and BV and market returns (RM), though substantial, 0.79, 0.84, and 0.70, respectively, it leaves room for independent variation. In compliance, the standard deviations of SV, MV and BV excess returns are also large, 7.3%, 6.2%, and 8.7% for the full sample (see Table 2). The same can be observed for growth portfolios. Correlations between SG, MG and BG and RM is high (0.46, 0.82, and 0.82, respectively,), and the full-sample standard deviations of monthly SG, MG and BG excess returns are also very high. However, BG average excess returns suffered the biggest decline from the first to the second half-period of the sample and is within a standard error of 2.24 from zero.

Full-period average excess returns are halfway between average premiums for 1998-2008 and 2008-2019. The full-period average excess returns for SV and MV, -1.20% and -1.17% per month, are -2.59 and -3.01 standard errors from zero, respectively. The full-period average excess returns for BV, -0.55% per month, is only -1.01 standard error from zero. Thus, for MV and SV, full-period average excess returns over Market returns are reliably positive. For BV inferences on excess returns, cannot be reliably made. The full period average excess returns for BG portfolio is within a standard error of 1.0 from zero, MG a standard error of 2.17, and SG 1.77.

From this evidence it is possible to conclude that from the first to the second half-period, due to higher correlation with the market and higher volatility, growth average excess returns evolved negatively. Value average premiums improved, although economically and statistically irrelevant. Value monthly excess returns display a lower correlation with Market returns, when comparing with growth returns, and, therefore, exhibit lower volatility. Additionally, within value portfolios, big-cap stocks seem to perform better than small-cap.

4.2. Drivers of the Value premium: Regression Analysis

As previously mentioned, for the full sample period, growth stocks display higher average excess returns than value stocks. Within value stocks, big-cap stocks perform better than small-cap. The results do not support the existence of a value premium in Argentina. However, further research must be made in the interest of explaining why this happens and what factors do have an impact on value and growth portfolios monthly returns, and value portfolios excess returns.

Results from the application of the regression (3.7) to the six portfolios' monthly returns are summarized in Table 4. Panel A displays the results for full sample period, 1998-2019; Panel B for the first half of the sample period, 1998-2008; and Panel C for the second half, 2008-2019.

Table 4 - Full-period (1998-2019) and half-period (1998-2008; 2008-2019) regressions of portfolios' monthly returns on market excess return (RM-RF), size factor (SMB), momentum factor (MOM) and inflation (INF)

The four value-weighted portfolios (SV, BV, SG, and BG) were formed using a two-step method of classification based on the market capitalization (MC) and book-market equity ratio (B/M) of stocks. *Small* stocks have MC below the S&P MERVAL media, and Big stocks have MC above the median. *Growth* and *Value* are stocks with B/M below the 30th or at or above the 70th S&P MERVAL percentile, respectively. *Market Value* and *Growth* (*MV* and *MG*) are value-weighted portfolios of all *Value* or all *Growth* stocks.
Panels A, B and C report coefficients, standard errors, and t-statistics for the coefficients, R-squared, and Adjusted R-squared for regression (3.7):

$$R_{pt} = \beta_1 + \beta_2(RM_t - RF_t) + \beta_2 SMB_t + \beta_4 INF_t + \beta_5 MOM_t + e_t$$

Where:
R_{pt} – Excess return of the portfolio *p* for period *t*
$(RM_t - RF_t)$ – Excess return on the market for period *t*
SMB_t – Size factor for period *t*
INF_t – Inflation rate for period *t*
MOM_t – Momentum factor for period *t*.

Panel A displays the results of the application of the regression (3.7) to portfolios' returns during the full sample period between June 1998 and May 2019 (1998-2019). Panel B shows the results for the first-half of the sample period between June 1998 and November 2008 (1998-2008), while Panel C presents the results for the second-half between December 2008 and May 2019 (2008-2019).

Panel A – Full-period regression of portfolios' monthly returns (R) on market excess return (RM-RF), size factor (SMB), momentum factor (MOM) and inflation (INF)

1998-2019 Period

	Coefficients					Std. Error					t-Statistic					R^2	Adjusted R^2
	C	**RM_RF**	**SMB**	**MOM**	**INF**	**C**	**RM_RF**	**SMB**	**MOM**	**INF**	**C**	**RM_RF**	**SMB**	**MOM**	**INF**		
SV	0.028	0.421	0.348	-0.267	3.361	0.008	0.037	0.085	0.088	0.555	3.610	11.283	4.106	-3.045	6.054	0.415	0.405
MV	0.029	0.431	0.152	-0.264	3.465	0.007	0.035	0.080	0.083	0.526	4.046	12.225	1.893	-3.182	6.594	0.427	0.418
BV	0.035	0.401	-0.164	-0.105	3.202	0.008	0.040	0.092	0.095	0.599	4.293	9.970	-1.791	-1.109	5.343	0.308	0.297
SG	0.036	0.347	1.372	-0.253	3.736	0.009	0.047	0.106	0.109	0.692	3.801	7.469	12.969	-2.312	5.397	0.508	0.500
MG	0.039	0.416	0.315	-0.180	4.170	0.007	0.036	0.081	0.084	0.533	5.397	11.641	3.867	-2.139	7.831	0.415	0.405
BG	0.036	0.410	-0.154	-0.213	4.103	0.007	0.037	0.083	0.086	0.543	4.895	11.244	-1.858	-2.490	7.556	0.377	0.367

Panel B – First half-period regression of portfolios' monthly returns (R) on market excess return (RM-RF), size factor (SMB), momentum factor (MOM) and inflation (INF)

1998-2008 Period

	Coefficients					Std. Error					t-Statistic					R^2	Adjusted R^2
	C	RM_RF	SMB	MOM	INF	C	RM_RF	SMB	MOM	INF	C	RM_RF	SMB	MOM	INF		
SV	0.019	0.345	0.186	-0.429	1.596	0.009	0.048	0.127	0.128	0.772	2.002	7.254	1.465	-3.356	2.068	0.416	0.396
MV	0.017	0.348	0.066	-0.386	1.597	0.009	0.045	0.121	0.122	0.738	1.920	7.639	0.546	-3.159	2.165	0.425	0.406
BV	0.021	0.282	-0.253	-0.118	0.759	0.010	0.048	0.128	0.129	0.779	2.231	5.869	-1.977	-0.914	0.975	0.306	0.284
SG	0.025	0.250	1.189	-0.110	3.449	0.012	0.059	0.159	0.160	0.963	2.090	4.210	7.505	-0.691	3.580	0.433	0.414
MG	0.031	0.343	0.049	-0.345	3.988	0.010	0.050	0.134	0.135	0.813	3.120	6.837	0.368	-2.563	4.906	0.372	0.351
BG	0.031	0.330	-0.333	-0.424	3.981	0.010	0.050	0.133	0.134	0.809	3.161	6.624	-2.501	-3.163	4.923	0.393	0.373

Panel C - Second half-period regression of portfolios' monthly returns (R) on market excess return (RM-RF), size factor (SMB), momentum factor (MOM) and inflation (INF)

2008-2019 Period

	Coefficients					Std. Error					t-Statistic					R^2	Adjusted R^2
	C	RM_RF	SMB	MOM	INF	C	RM_RF	SMB	MOM	INF	C	RM_RF	SMB	MOM	INF		
SV	0.028	0.526	0.493	-0.160	5.262	0.013	0.060	0.116	0.117	0.889	2.196	8.742	4.252	-1.370	5.918	0.486	0.469
MV	0.039	0.566	0.208	-0.183	5.327	0.012	0.056	0.107	0.108	0.821	3.274	10.182	1.943	-1.700	6.490	0.507	0.491
BV	0.045	0.618	-0.092	-0.146	6.084	0.014	0.066	0.127	0.128	0.978	3.213	9.333	-0.724	-1.137	6.222	0.432	0.413
SG	0.048	0.513	1.493	-0.484	4.982	0.016	0.076	0.147	0.147	1.125	3.001	6.732	10.187	-3.280	4.427	0.614	0.601
MG	0.044	0.494	0.486	-0.105	4.88	0.011	0.053	0.101	0.102	0.777	3.917	9.382	4.799	-1.028	6.288	0.524	0.508
BG	0.038	0.513	-0.098	-0.066	5.083	0.012	0.056	0.108	0.109	0.829	3.158	9.147	-0.909	-0.612	6.133	0.416	0.397

By applying regression (3.7) it is proposed that monthly returns of each of the six portfolios can be explained by the market return, size factor, momentum factor, and country inflation rate. Results show an Adjusted R-squared that varies between 29.7% and 50% for 1998-2019, 28.4% and 41.4% for 1998-2008, and 39.7% and 60.1% for 2008-2019 across all portfolios. Overall, one can infer that this model has high explanatory power, and its precision increases in the second-half period. Additionally, Adjusted R-squared is higher when applying the regression model to SG monthly returns. About half of the observed variation in the SG monthly returns can be explained by the model's inputs (Adjusted R-squared=0.500) for 1998-2019. The explaining power is lower for 1998-2008 (0.414) and higher for 2008-2019 (0.601). The model is less precise when applied to BG and BV monthly returns, meaning the model is less precise when applied to these portfolios returns.

By performing the t-Student test statistic, the null hypothesis that the coefficient of the market excess return over the risk-free asset (RM-RF) is statistically zero was rejected for all portfolios. The null hypothesis that the coefficient of the size factor (SMB) is statistically zero was not rejected for SV and MV portfolios for first-half sample period, BV for second-half period, MG for first-half period, and BG for second-half sample period. The null hypothesis that the coefficient of the momentum factor (MOM) is statistically zero was not rejected for BV portfolio for all sample periods (1998-2019; 1998-2008; and 2008-2019), SG for first-half period, MG and BG for second-half period. The null hypothesis that the coefficient of the country inflation (INF) is statistically zero was rejected for all portfolios, except for BV portfolio during the first-half period.

For SV monthly returns (Panel A, Table 4), coefficient estimates ($\hat{\beta}$) of the RM-RF, SMB, MOM, and INF variables are overall statistically significant, with t-statistic of 11.283, 4,106, -3.045, and 6.054 respectively, for the 1998-2019 period. The estimates for the coefficients are all positive, except the estimate associated with the MOM factor which is negative (with $\hat{\beta}$=-0.267). Monthly returns for the SV portfolio exhibit higher sensibility to changes in the INF variable (with $\hat{\beta}$=3.361), followed by the RM-RF variable ($\hat{\beta}$= 0.421). The model holds an explanatory power of 40.5%.

If we apply the model to BV monthly returns, with a t-statistic of -1.109, the MOM variable is no longer statistically significant for the full sample period. The coefficients that add explanatory power to the model are RM-RF (with $\hat{\beta}$=0.401), SMB (-0.164), and INF (3.202), with an Adjusted R-squared of 0.297.

SG monthly returns are impacted by the same variables as SV returns (RM-RF, SMB, MOM, and INF), and the coefficients estimates for these variables are statistically significant.

Adjusted R-squared equals to 0.5. Monthly returns of SG portfolio are highly sensitive to changes in inflation rates (with $\hat{\beta}$= 3.736), following the size factor ($\hat{\beta}$=1.372).

Applying the model to BG monthly returns, all variables are statistically significant, with corresponding coefficient estimates of 0.41 for RM-RF, -0.154 for SMB, -0.213 for MOM, and 4.103 for INF. Changes in the variables of this model explain about 36.7% of the changes in BG monthly returns.

If we divide the samples into first and second-half periods (Panel B and Panel C, Table 4), changes on coefficients estimates, and t-statistics are visible.

For SV monthly returns estimate coefficient for the size factor no longer is statistically significant (with t-statistic of 1.465), for the first-half period. Only three variables partially explain changes in these returns: RM-RF with $\hat{\beta}$=0.345, MOM -0.429, and INF 1.596. From the first to the second-half period, estimate coefficient for the MOM variable is no longer statistically significant with t-statistic of -1.370. Changes in SV monthly returns during the second-half period are markedly impacted by changes in the INF variable (with $\hat{\beta}$=5.262), and partially by RM-RF (0.525), and SMB (0.493) variables. Another thing to note is that the explanatory power of the model increased, from 39.64% to 46.89%, indicating that size factor, country inflation and market returns are relevant components when explaining changes in SV portfolio returns between 2008 and 2019.

Coefficient estimates for the variables RM-RF (with $\hat{\beta}$=0.282), and SMB (-0.253) are statistically insignificant for 1998-2008 when the regression is applied to BV monthly returns. However, the model holds a low Adjusted R-squared of 0.284, indicating that there are other factors that could help explain changes in BV monthly returns. Conversely, for 2008-2019, variables RM-RF (with $\hat{\beta}$=0.618), and INF (6.084) are statistically significant, and Adjusted R-squared increases to 0.413.

The results for SG monthly returns split-sample analysis are similar to the full sample analysis. All independent variables, apart from the MOM variable during the first-half period, are statistically significant. The explanatory power of the model increases from 41.42% to 60.12%, indicating that, with the addition of the momentum factor, market returns, inflation and size factor have great impact in small growth monthly returns.

Changes in monthly returns of BG portfolio for the first-half period are influenced by changes in all four independent variables, RM-RF, MOM, SMB and INF, with coefficient estimates of 0.330, -0.333, -0.424 and 3.981, respectively, and Adjusted R-squared of 0.373. For the second-half period, only RM-RF, and INF variables are statistically significant, with

Adjusted R-squared equal to 0.397. The estimates for the coefficients are 0.513 for RM-RF variable, and 5.083 for INF.

Table 5 summarizes the application of the regression (3.7) to each of the three value portfolios' monthly excess returns.

Table 5 - Full-period (1998-2019) and half-period (1998-2008; 2008-2019) regressions of value portfolios' monthly excess returns on market excess return (RM-RF), size factor (SMB), momentum factor (MOM) and inflation (INF)

The three value-weighted portfolios of value stocks (SV, MV, and BV) are the same as in Table 4. Panels A, B and C report coefficients, standard errors, and t-statistics for the coefficients, R-squared, and Adjusted R-squared for regression (3.7):

$$ER_{pt} = \beta_1 + \beta_2(RM_t - RF_t) + \beta_2 SMB_t + \beta_4 INF_t + \beta_5 MOM_t + e_t$$

Where:
ER_{pt} – Monthly excess returns of the portfolio *p* for period *t*
$(RM_t - RF_t)$ – Excess return on the market for period *t*
SMB_t – Size factor for period *t*
INF_t – Inflation rate for period *t*
MOM_t – Momentum factor for period *t*.

Panel A displays the results of the application of the regression (3.7) to portfolio's' excess returns during the full sample period between June 1998 and May 2019 (1998-2019). Panel B shows the results for the first-half of the sample period between June 1998 and November 2008 (1998-2008), while Panel C presents the results for the second-half between December 2008 and May 2019 (2008-2019).

1998-2019 Period

	Coefficients					Std. Error					t-Statistic					R^2	Adjusted R^2
	C	**RM_RF**	**SMB**	**MOM**	**INF**	**C**	**RM_RF**	**SMB**	**MOM**	**INF**	**C**	**RM_RF**	**SMB**	**MOM**	**INF**		
SV-RM	-0.014	-0.081	0.488	-0.179	-1.132	0.005	0.027	0.060	0.062	0.395	-2.576	-3.051	8.095	-2.872	-2.870	0.258	0.246
MV-RM	-0.012	-0.070	0.292	-0.176	-1.028	0.005	0.024	0.054	0.055	0.351	-2.547	-2.971	5.435	-3.175	-2.927	0.168	0.155
BV-RM	-0.006	-0.100	-0.024	-0.017	-1.292	0.007	0.036	0.081	0.084	0.532	-0.844	-2.810	-0.298	-0.203	-2.430	0.035	0.020

1998-2008 Period

	Coefficients					Std. Error					t-Statistic					R^2	Adjusted R^2
	C	**RM_RF**	**SMB**	**MOM**	**INF**	**C**	**RM_RF**	**SMB**	**MOM**	**INF**	**C**	**RM_RF**	**SMB**	**MOM**	**INF**		
SV-RM	-0.013	-0.106	0.561	-0.212	-2.315	0.007	0.033	0.089	0.09	0.539	-2.012	-3.189	6.321	-2.378	-4.294	0.370	0.349

MV-RM	-0.015	-0.104	0.441	-0.169	-2.314	0.006	0.032	0.085	0.086	0.517	-2.349	-3.254	5.188	-1.981	-4.478	0.310	0.287
BV-RM	-0.011	-0.169	0.122	0.099	-3.151	0.01	0.049	0.13	0.13	0.788	-1.133	-3.487	0.938	0.756	-3.100	0.158	0.130

2008-2019 Period

	Coefficients					Std. Error					t-Statistic					R^2	Adjusted R^2
	C	**RM_RF**	**SMB**	**MOM**	**INF**	**C**	**RM_RF**	**SMB**	**MOM**	**INF**	**C**	**RM_RF**	**SMB**	**MOM**	**INF**		
SV-RM	-0.019	-0.015	0.437	-0.123	0.23	0.01	0.045	0.087	0.087	0.667	-2.005	-0.325	5.028	-1.412	0.344	0.185	0.158
MV-RM	-0.009	0.025	0.152	-0.147	0.294	0.007	0.035	0.067	0.068	0.516	-1.170	0.710	2.266	-2.167	0.570	0.085	0.055
BV-RM	-0.002	0.077	-0.148	-0.11	1.052	0.011	0.052	0.01	0.1	0.766	-0.195	1.484	-1.479	-1.091	1.373	0.048	0.016

Immediately one can observe the explanatory power of the regression decreased significantly. Adjusted R-squared varies between 0.02 (for BV) and 0.246 (for SV) for the full sample period. When comparing first and second half periods, the model holds higher results for the Adjusted R-squared during 1998-2008, suggesting that the model is more precise during this time period. The variables included in the model lose significance when it comes to explain changes in the value premium during the second-half period. For SV excess returns, Adjusted R-squared is 0.349 for 1998-2008, for 2008-2019 decreases to 0.158. For BV excess returns the explanatory power of the model decreases from 0.130 in 1998-2008 to merely 0.016 in 2008-2019.

When performing the t-Student test statistic, the null hypothesis that the coefficient of the market excess return (RM-RF) is statistically zero was rejected for all portfolios for the full period and first-half period. The null hypothesis is not rejected for the three value portfolios, during the second-half period. The null hypothesis that the coefficient of the size factor (SMB) is statistically zero was not rejected for BV portfolio, for all sample periods 1998-2019; 1998-2008; and 2008-2019). The null hypothesis that the coefficient of the momentum factor (MOM) is statistically zero was not rejected for BV portfolio for all periods, and for SV during the second-half period. The null hypothesis that the coefficient of the country inflation (INF) is statistically zero was not rejected for all portfolios only during the second-half period.

For SV monthly excess returns (Panel A, Table 5) results are in harmony with previous analysis on monthly returns. Coefficient estimates ($\hat{\beta}$) of the RM-RF (with $\hat{\beta}$=-0.081), SMB (0.488), MOM (-0.179), and INF (-1.132) variables are statistically significant for the 1998-2019 period, with t-statistics of -3.051, 8.095, -2.872, and -2.870. Monthly excess returns of SV portfolio exhibit higher sensibility to changes in the INF variable, followed by SMB and MOM variables. It is important to note that excess returns of SV portfolio tend to move in the same direction as the size factor, and in opposite direction as the momentum factor and country inflation.

Coefficient estimates of all independent variables are all statistically significant when the model is applied to excess returns of MV portfolio (Panel A, Table 5). Excess returns of MV portfolio are sensitive to changes in inflation (with $\hat{\beta}$=-1.028), size factor (0.292), momentum factor (-0.176), and market excess return (-0.07), in that order.

If we apply the regression to BV excess returns, SMB (with t-statistic of -0.298) and MOM (-0.203) variables are not statistically significant, contrary to previous findings on monthly returns. When the model was applied to BV monthly returns SMB was statistically

significant. The coefficients that add explanatory power to the model are RM-RF (with $\hat{\beta}$=-0.1), and INF (-1.292).

When analyzing first and second-half periods separately (Panel B and Panel C, Table 5), changes on coefficients estimates, and t-statistics are visible.

From the first to the second-half period, estimate coefficients for RM-RF, MOM, and INF variables are no longer statistically significant when the model is applied to SV excess returns, contrary to findings on SV monthly returns (RM-RF, MOM, SMB, and INF were statistically significant. Changes in SV monthly returns are partially explained by changes in the SMB variable (with $\hat{\beta}$=0.561 for 1998-2008; and $\hat{\beta}$=0.437 for 2008-2019). The explanatory power of the model decreased from 34.9% to 15.8%.

The same pattern is noticeable when the model is applied to MV excess returns. During the second half-period, the model loses explanatory power (Adjusted R-squared falls from 0.287 to 0.055), with only SMB (with $\hat{\beta}$=0.152) and MOM (-0.147) variables being statistically significant.

The model seems to hardly explain changes in BV excess returns. For 1998-2008 only two variables are statistically significant - RM-RF (with $\hat{\beta}$=-0.169), and INF (-3.151). For 2008-2019, the model fails to explain changes in BV excess returns, therefore, none of the variables are statistically significant. Previous results on monthly returns show BV monthly returns are impacted by changes in the market return and inflation. The Adjusted R-squared decreases from 0.130 to 0.016.

4.3. Size and Momentum Factors Analysis

From hereafter small and big portfolios will be denoted as SL (for Small Low portfolio), SM (Small Medium), SH (Small High), BL (Big Low), BM (Big Medium) and BH (Big High). Winner and Loser portfolios will be denoted as W and L.

Figure 2 displays the graph for the evolution of the size premium in Argentina between June 1998 and May 2019. Overall, size premium experiences variations throughout the years. The premium registers major shifts during periods of great market volatility. Particularly, when Argentina declared defaults on its debt (2001 and 2014, for example).

Figure 2 - Evolution of the size premium in Argentina between June 1998 and May 2019 (in %)

The SMB factor was calculated based on the average monthly return of the three portfolios of small size stocks (Small Low, Small Medium and Small High) minus the average monthly return of the three portfolios of big stocks (Big Low, Big Medium and Big High). Small stocks have market capitalization (MC) below the S&P MERVAL median, and Big stocks have MC above the median. Low and High are stocks with book-market equity ratio (B/M) of stocks below the 30th or at or above the 70th S&P MERVAL percentile, respectively. Medium stocks have B/M between 30th and 70th S&P MERVAL percentiles. The portfolios were formed every year in May.

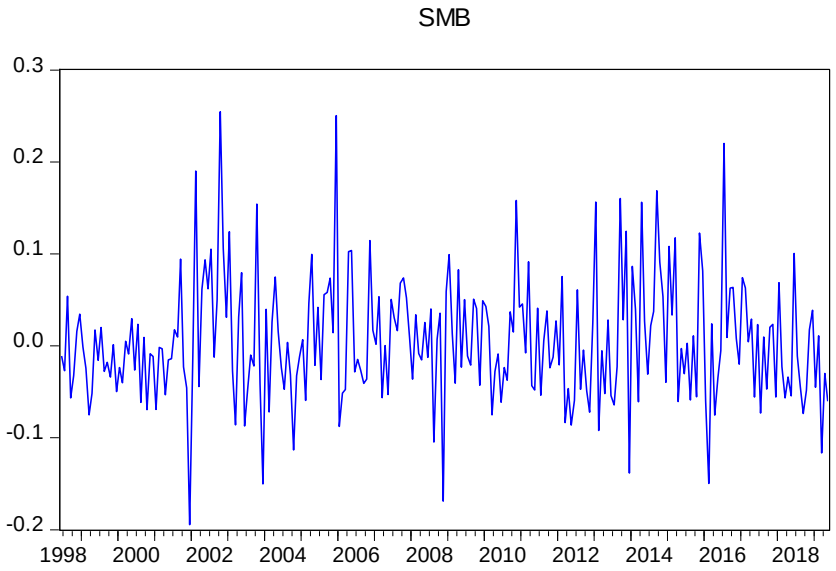


Table 6 displays the descriptive statistics for the monthly returns of the portfolios constituted to determine the SMB factor for Argentina. The results of monthly excess returns for these portfolios are displayed in the appendix, table A5.

If we compare the performance of small size portfolios and big size portfolios, small portfolios deliver higher returns than big portfolios on the long run, with an average of 3.6% per month for SL, 2.5% for SM, and 0.4% for SH. The cumulative monthly returns for SL, SM, and SH over the sample period (1998-2019) achieve 9.1%, 6.3%, and 1%, respectively. Averages and cumulative monthly returns for big portfolios are lower comparing to small portfolios, except for SH. For example, average returns for BL, BM, and BH are, respectively 2%, 2.1%, and 1%, while average returns for SH is only 0.4%. In addition, one can observe that figures for average and cumulative returns are very close across BL and BM portfolios.

Contemplating only small size portfolios, the returns are considerably higher for the portfolio composed of low B/M stocks (with average of 3.6%, and total sum of returns of 9.1%). Portfolio of high B/M stocks performs the worst (with average of 0.4%%, and total sum of returns of 1%). The same pattern is observed for big size portfolios. Low B/M stocks have higher returns than small B/M stocks. The results are also in compliance with previous findings on value and growth average returns.

Table 6 - Descriptive statistics of SL, SM, SH, BL, BM, and BH portfolios' monthly returns between June 1998 and May 2019

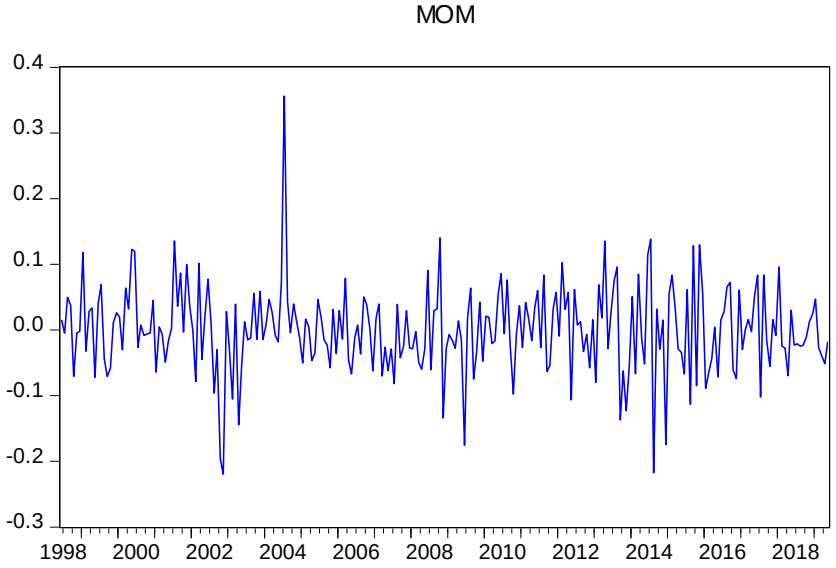
The three small size portfolios, and the three big size portfolios are the same as in Figure 2.

	SL	SM	SH	BL	BM	BH
Average	0.036	0.025	0.004	0.02	0.021	0.01
Maximum	0.773	0.545	0.494	0.58	0.513	0.317
Minimum	-0.518	-0.336	-0.445	-0.531	-0.438	-0.398
Sum	9.141	6.326	1.011	5.064	5.233	2.639

Figure 3 displays the graph for the evolution of the momentum premium in Argentina.

Figure 3 - Evolution of the momentum premium in Argentina between June 1998 and May 2019 (in %)

The momentum factor (MOM) corresponds to the difference between the weighted average return of the Winner (W) portfolio and weighted return of the Loser (L) portfolio. The W portfolio is composed of stocks with the biggest cummulated average return in the previous 12 months at the time of portfolio formation, while the L portfolio is composed of the worst performers in the previous 12 months. The portfolios were formed every year in May.

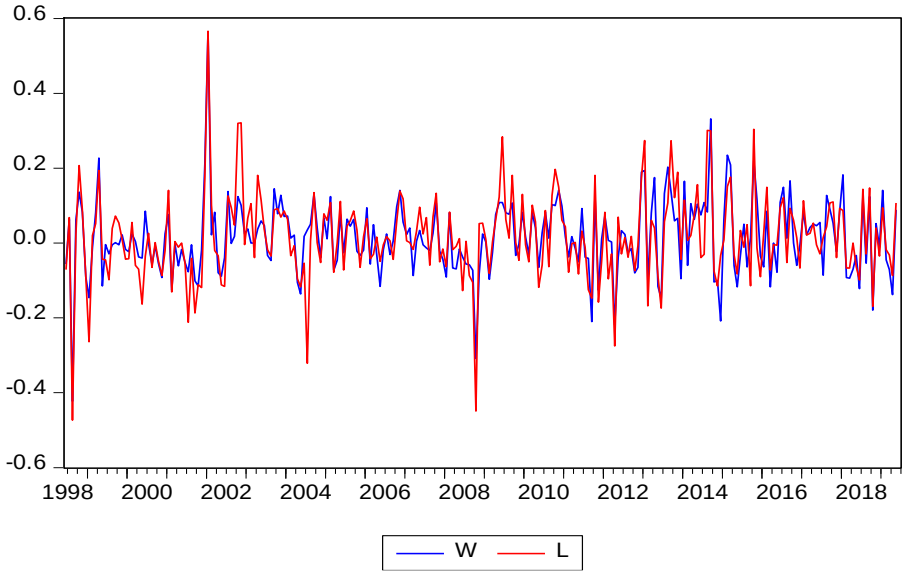


The momentum premium does not experience great variances throughout the years, when comparing to the size factor. It ranges between 10% and -10% most of the time, because the difference between W and L portfolio monthly returns is small, and in some cases not significant. For example, January 2002, W portfolio achieved a maximum of 56%; L portfolio performed slightly better, generating a monthly return of 57% (also a maximum for the period). The difference between the portfolios returns resulted in a momentum premium of only -1%.

There are, however, major shifts during periods of great market volatility, particularly, in 2001, 2004, and 2014. In 2001 the momentum premium falls sharply to -21.9%; and in 2004 it rises exponentially to 35.6%. Other significant changes in momentum premium are perceived in 2008, 2009, and during 2014-2015.

Figure 4 - Performance of Winner and Loser portfolios between June 1998 and May 2019 (in %)

The Winner and Loser portfolios are the same as in Figure 3.



The momentum premium corresponds to the difference between the monthly returns of Winner (W) and Loser (L) portfolios. In this regard, when observing the performance of W and L portfolios, as displayed in Figure 4 (the results of monthly excess returns for these portfolios are displayed in the appendix, Table A6.), one can perceive that they exhibit a similar pattern, tending to evolve in the same direction and almost by the same extent, although one of the portfolios may reach a higher return than the other. This evidence helps explain the relative stability of the momentum factor throughout the years. Additionally, the two big shifts in the momentum premium, as previously mentioned, correspond to moments when the difference between monthly returns of W and L portfolios is very large. For example, November 2002 L portfolio achieved a monthly return of 32%, comparing to a 10% monthly return for W portfolio. In this sense, L portfolio performed better than the W portfolio, therefore, the momentum premium achieved a minimum of -22% during this time. Another example, in July 2004, L portfolio had the worst performance, with a monthly return of -32% (the W portfolio generated a monthly return of 4%), causing the momentum premium to achieve a maximum of 22%.

Table 7 displays the descriptive statistics for the monthly returns of the W and L portfolios constructed to determine the MOM factor. In compliance with the previous analysis, W and L portfolios display close averages of monthly returns (1.4% and 1.5%, respectively), and reach maximums (56.5% and 56.6%) and minimums (-42.3% and -47.3%) of almost the same amounts, though at different points in time.

Table 7 - Descriptive statistics of W and L portfolios' monthly returns between June 1998 and May 2019

The Winner and Loser portfolios are the same as in Figure 3.

	W	L
Average	0.014	0.015
Minimum	-0.423	-0.473
Maximum	0.565	0.566
Sum	3.563	3.653

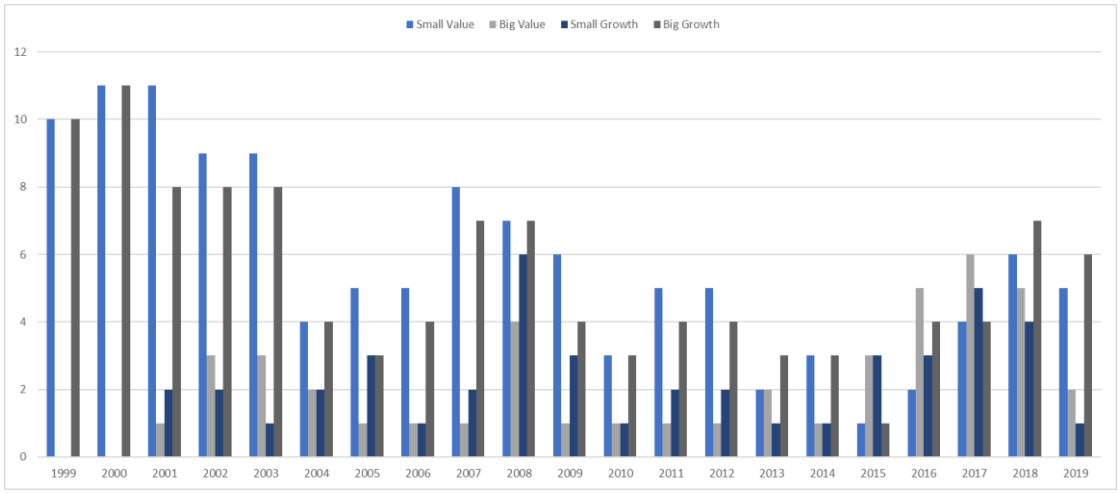
4.4. Discussion of the Results

Strong variations in portfolios excess returns coincide with periods of high volatility in financial markets. Maximums and minimums of excess returns seem to specifically coincide with the same four macroeconomic events: Dot-com Bubble (1995 to 2005); 2001 Argentina's Default; Subprime Credit Crisis in the US and the European Financial Crisis in 2008-2009; Argentina's Default in 2014.

SV excess returns suffer higher volatility during Argentina's 2001 and 2014 defaults. Excess returns of SG portfolio exhibit a similar behavior; however, a stronger volatility is observed during the Subprime Credit Crisis and the European Financial Crises in 2007-2009.

Figure 5 - Number of stocks that make up the SV, BV, SG and BG portfolios for June 1998-May 2019

BV, SV, BG, and SG correspond to the portfolios of Table 4.



It is important to note that, high fluctuations in BV and SG excess returns for 1998-2000 are primarily attributable to market premiums, and not to the performance of the portfolios. Under the methodology employed no big capitalization stock classified as value nor small capitalization stock classified as growth, thus BV and SG investment strategies were not feasible during this time (see Figure 5). Only after the year 2000 was possible to create BV and SG portfolios. This could be due to the structure of Argentina's business sector. Before the 2000s, few small size companies would have the resources to achieve growth rates significantly above the average growth for the market in the short term. Small size companies would have a more typical business structure and would operate in more traditional market sectors. Stocks from these companies were frequently classified as value. On the other hand, growth stocks are usually associated with companies with unique product lines, make high investments in innovations or (generally speaking) operate in the tech sector, which has high growth prospects. They may hold patents or have access to technologies that put them ahead of others in their industry. Before the 2000's, only established big size businesses would have the resources to invest in innovation and increase their growth prospects. With the revolution of Internet technologies, start-ups in the tech sector began to sprout across the world, and in Argentina. During the internet bubble in the late 1990s, majority of the capital ventures in Latin America went to Buenos Aires, making it the region's primary dotcom hub. A group of entrepreneurs set up several internet-based companies, with the expectation of earning high profits. The confidence of these entrepreneurs continued to drive the rise of startups in Argentina in the 2000s. In the presence of these findings, before the year 2000 Argentina's stock market would be primarily constituted of big capitalization growth stocks and small capitalization value stocks. After the Dotcom bubble, we observe the emergence of big capitalization value stocks and small capitalization growth stocks in Argentina's main index.

By analyzing value and growth portfolios regardless of whether they are big or small, we found that, for the full period and half-period samples, growth portfolios display higher average excess returns than value portfolios. Value portfolios reveal small and negative average excess returns, which indicates that value investment strategies tend to underperform growth investment strategies in the long run, for the same level of risk. The results do not corroborate with evidence found on value and size premiums, such as Fama and French (1995, 2006, 2021) and Lakonishok *et al.* (1994) for the U.S. market, and Medeiros and Bressan (2015) for Argentina.

Table 8 - Statistics for Monthly Return Premiums, R-RM (July 1963-June 2019), from Fama and French (2021)

	MV	BV	SV
1963 - 2019			
Average	0.26	0.21	0.45
Standard Deviation	2.88	2.94	3.66
t-Statistic	2.37	1.81	3.21
1963 - 1991			
Average	0.42	0.36	0.58
Standard Deviation	2.36	2.30	3.32
t-Statistic	3.25	2.91	3.19
1991 - 2019			
Average	0.11	0.05	0.33
Standard Deviation	3.31	3.46	3.98
t-Statistic	0.60	0.24	1.52

From the first-half period to the second-half period growth portfolios average excess returns decline, while average excess returns for value portfolios improve significantly. Additionally, among value portfolios the BV monthly returns experience the biggest improvement. The results are contrary to findings of Fama and French (2021), who confirmed that realized value premiums for the U.S. market decreased between 1963-1991 and 1991-2019. For the U.S. market the average for the SV portfolio decreases from 0.58% to 0.33%, whereas the average for BV drops from 0.36% to 0.05% (see Table 8).

Fama and French (2021) also suggest that in the U.S. market small cap value stocks consistently perform better than big cap value stocks. For example, between 1963-2019, SV portfolio delivers an average excess return of 0.45%, whereas BV portfolio presents an average of 0.21% (see Table 8). The same does not happen in the Argentine market. Between 1998-2019, BV portfolio reaches an average excess return of -0.55% and the SV portfolio presents an average of -1.20%. Although excess returns of value portfolios do improve during the second half period, the average remains below the average for growth, which calls into question the existence of a value premium in Argentina. Evidence on the Argentine size premium corroborates with these conclusions. Small and big portfolios of stocks with low B/M perform better than portfolios of high B/M stocks.

Despite the possibility of a non-existing Argentine value premium, one should consider the macroeconomic conditions of the market that can be pointed as justification of the poor performance of value stocks. Objectively, throughout the years Argentina has suffered several economic downturns, undermining the local stock market.

According to Asness *et al.* (2000), Lee *et al.* (2014) and Yamani and Swanson (2014) value stocks generally outperform growth, except during economic downturns and financial

crisis. Small capitalization and value stocks are usually associated with firms that tend to have persistently low earnings, higher operating leverage, and lack of flexibility in cutting assets in place, causing them to be more negatively affected by business cycles and financial crisis. Evidence also suggests that these stocks are mainly associated with financially constrained firms. The financial problems of these firms become more apparent during financial crisis, and investors stop investing in them.

Taking into account previous evidence on the field, one can more confidently point the macroeconomic conditions of Argentina as a possible cause of poor performance of value investment strategies. Argentina is an extremely volatile market, that has suffered the consequences of nine debt defaults and the impact of few international crisis, the most important being the Subprime Crisis in the U.S. in 2007 and the 2008 Financial Crisis in Europe. In this sense, it is only natural and expectable that value investment strategies would not retrieve high excess returns to investors. Evidence on the momentum premium provides more grounding for this theory. Results show that loser stocks continue to perform badly, while winner stocks continue to be best performers during periods of relative market stability. On the other hand, in presence of high market volatility loser stocks can perform better than winner stocks, during small periods of time.

Comparing the standard deviations of value and growth portfolios monthly returns, value portfolios tend to exhibit higher standard deviations, indicating that value stocks are riskier than growth stocks, with the exception being small capitalization growth portfolios which exhibit the highest results for standard deviations.

Contrary to what was found by Fama and French (1993, 1997) and Medeiros and Bressan (2015), who observe higher average returns for small portfolios characterized by a large B/M ratio, BV portfolio displays higher average excess returns than SV portfolio for both full and half-period samples. A possible explanation would be that big capitalization value stocks are riskier than small capitalization value stocks. High-risk investments are generally compensated with a higher premium. Over the long term, markets compensate investors on a higher premium for the risk taken for investing in riskier stocks. Results on monthly standard deviations are in compliance. For value portfolios, monthly standard deviations are generally higher for big capitalization compared to small capitalization. For example, for the full period sample, the standard deviation for SV is 7.32% and for BG is 8.65%. The inverse is true for growth portfolios.

Evidence on the difference in standard deviations between 1998-2008 and 2008-2019 for value and growth portfolios indicates signs of great market volatility. The standard

deviation difference for value portfolios is the highest for BV (with 12.2%), following SV (10.6%), contrasting with Fama and French (2021) results for the U.S. market. For growth portfolios, the difference in standard deviation is greater for SG (with 20.2%) than BG (8.9%), which is similar to the findings of Fama and French (2021).

From the application of regression (3.7) to monthly returns of value and growth portfolios, and subsequent analysis of the estimate coefficients, we highlight the fact that market excess return over the risk-free asset (*RM-RF*) is the only factor of risk that impacts monthly returns both in full and half-period samples. If we take a closer look at the coefficients estimates, market excess return is positive and ranks the highest in all regressions, after country inflation (INF). This leads us to conclude that there is a positive relationship between the monthly returns of the portfolios and these two factors.

By analyzing small capitalization portfolios regardless of whether they are value or growth, we found that the size factor (SMB), momentum factor (MOM), country inflation (INF) and market excess return (RM-RF) are significant to explain changes in monthly returns for the full sample period. On the other hand, for big capitalization portfolios the momentum factor (MOM) is not statistically significant when it comes to explain the changes in monthly returns of value portfolios.

Examining first and second-half periods separately, changes on regression coefficients are visible. For the first-half of the sample period, the estimate coefficient for the momentum factor is not statistically significant when the regression is applied to BV and SG portfolios, and size factor does not add explanatory power to the model for MV and MG. For the second-half of the sample period, the impact of the momentum factor on monthly returns of all portfolios (apart from MV) should be disregarded, as the estimate coefficient is no longer statistically significant. The same also happens to the size factor, exclusively for BV and BG monthly returns.

All things considered, the model suggests that monthly returns of value portfolios, independently of size, are sensitive to changes in all four factors. Despite compelling evidence, further investigation is needed. Hence, one proceeded to the application of model (3.7) to value portfolios' excess returns.

Additional evidence on the value portfolios performance suggests that, for the full period, SV excess returns exhibit higher sensibility to changes in inflation, followed by the size premium and market excess return. From the first to the second-half period, market excess returns, inflation, and momentum variables are no longer statistically significant. SV

excess returns are partially driven by changes in the size premium. The same conclusions can be taken from the application of the model to MV excess returns.

It is important to note, however, that the model partially explains changes in SV and MV excess returns between 1998-2019, with all four variables being statistically significant. On the other hand, the model fails to explain changes in BV excess returns. For 1998-2008 only two variables are statistically significant, and for 2008-2019 none of the variables is statistically significant.

From all the evidence gathered one may conclude that, the model (3.7), although with high explanatory power when applied to monthly returns of the portfolios, does not fully explain changes in value portfolios' excess returns. There are other factors that may explain changes in the value premium, namely factors specific to the firm, such as operating liabilities, operating income, gross profit, and EBIT. Further research should be made in this sense. Investor behavior can also be pointed as another factor responsible for the underperformance of value stocks. Investors tend to overreact to public information. Bad news on Argentina economy, such as concerns on a new country default, would lead investors to sell their positions in stocks registered in the Buenos Aires stock market, negatively affecting the prices of stocks. During this time, the prices would drop rapidly. On the contrary, good news regarding the local economy, for example news on debt restructure or the implementation of market-friendly reforms by the Government, would lead to investors to adopt long positions on Argentine's stocks, causing the prices to rise sharply. Differences on standard deviations and average monthly returns between first and second-half periods, cannot be fully explained by market return, inflation, size factor and momentum factor.

5. Conclusions and Study Implications

Recent findings on the shrinking value premium have been a hot topic between value investors. The possible disappearance of the value premium can be disastrous to value investors returns, therefore, further research on overlooked stock markets is necessary.

The present dissertation was carried out to fill some gaps in the recent literature related to the value premium in under researched markets, specifically, Argentina. For this purpose, it was used a sample of 72 stocks of the S&P MERVAL, from June 1997 to May 2019. The sample period established for the study was June 1998 until May 2019.

For the full period of study (1998-2019) results show negative average excess returns for the three value portfolios, and positive average excess returns for all three growth portfolios. The average value premium is -1.2% per month for small cap stocks, and -0.55% for big cap stocks. Looking at growth portfolios, small cap stocks deliver an average premium of 1.61%, while big cap stocks return only 0.41% to investors.

Average excess returns of value portfolios do improve from the first to the second-half period of the sample. The average excess return for SV portfolio increases from -1.36% to -1.03%. The average for BV portfolio experiences the biggest growth, increasing from 1.06% in the first-half period to -0.04% in the second-half period. It is important to note, nevertheless, average excess returns of value portfolios remain below the averages for growth excess returns. During the second-half period SG and BG portfolios reached positive average excess returns of 1.44% and 0.48%, respectively.

Against this background, recent performance of value investment strategies does not differ from the historical pattern for the Argentine market, because growth stocks constantly deliver, for the same level of risk, higher average excess returns than value stocks between June 1998 and May 2019.

The findings are, however, contrary to what was found by Fama and French (2021) for the U.S. market. The authors found that, between 1963-1991 and 1991-2019, the average value premium decreased in the U.S. market, whereas the premium for growth increased. Our results show that for Argentina the average excess returns for value stocks improves through time (average for SV increases from -1.36% to -1.03%, and BV average rises from -1.06% to -0.04%), while the average for growth stocks deteriorates (SG decreases from 1.78% to 1.44%, and BG average falls from 1.30% to 0.48%) between 1998-2019.

Evidence for the U.S. market also suggests that small cap stocks consistently deliver higher average excess returns than big cap stocks. The same does not happen for the Argentine market.

Taking into consideration the economic background of Argentina, it would be expected value investment strategies did not perform well in this market. The impact of negative macroeconomic events affected more negatively value stocks than growth stocks. Small and value stocks are largely associated with financially distressed firms that struggle during economic downturns. During the period of study, Argentina suffered two debt defaults and was negatively impacted by the U.S. Subprime Crisis and the European Financial Crisis. In agreement, excess returns on value portfolios arrived at historical minimums during these economic downturns. The maximums that followed were not sufficient to compensate the previous losses, maintaining the averages for the full period and half-periods very low.

When analyzing the drivers of value portfolios' monthly returns and excess returns, results on the regression analysis provide material for the fundamental theory on the value premium. Country inflation and market excess returns seem to have great influence in all portfolios' performance in the long run. There is a strong positive correlation between inflation and market excess returns and portfolios' monthly returns. However, value premium moves in opposite direction relative to these two factors because of negative correlation, which would explain the underperformance of value investment strategies. By contrast, the size factor seems to have more impact on the monthly returns and premium of value small capitalization stocks. The momentum factor is only relevant during the first-half period of the sample (1998-2008), negatively impacting the value premium.

Results provide further support to the fundamental theory of the value premium. Value stocks' returns and excess returns are driven by variables such as market return, size, momentum, and inflation, indicating market anomalies are present in this market. If market anomalies do exist, one could question the efficiency of Argentina's market. Hence, investors could take advantage of these market anomalies to predict future excess returns of stocks, and thereafter optimize their investment strategies.

The delimitations of this thesis are focused on three essential points. Firstly, data for the S&P MERVAL constituents regarding price close, book value per share, market capitalization and total common stocks outstanding is limited before the year of 1998 which limited the number of business cycles that can be analyzed. Secondly, there were stocks that had to be eliminated from the sample due to the unavailability of firm-related data. Thirdly, and final, due to limited number of stocks for portfolio formation, stocks of financial firms were included in the sample.

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7. Appendix

Table A1 - Sample of stocks used in the study

Nr.	Firm	Ticker
1	Acindar	ACI.BA^G09
2	Agrometal	AGRO.BA
3	Alpargatas	ALP.BA^A14
4	Aluar Aluminio Argentino SAIC	ALUA.BA
5	Petrobras	APBR.BA^K19
6	Astra CAPS	AST.BA^J01
7	Atanor	ATA.BA^H04
8	Autopistas Sol	AUSO.BA
9	Bagley Argentina	BAG.BA^I99
10	Banco Bbva Argentina SA	BBAR.BA
11	Hipotecario	BHIP.BA
12	Banco Macro SA	BMA.BA
13	B Gaming	BOG.BA^K13
14	Boldt	BOLT.BA
15	Banc Patagonia	BPAT.BA
16	Bolsas y Mercados Argentinos SA	BYMA.BA
17	Carlos Casado	CADO.BA
18	Capex	CAPX.BA
19	Carboclor	CARC.BA
20	Enel Gener Costa	CECO2.BA
21	Celulosa Argenti	CELU.BA
22	CPSA	CEPU.BA
23	CINBA SA	CIZ.BA^J05
24	SCP - Sociedad Comercial del Plata SA	COME.BA
25	Corcemar	COR.BA^H99
26	Cresud SACIF y A	CRES.BA
27	Consultario	CTIO.BA
28	Cablevision Holding SA	CVH.BA
29	Gas Cuyana	DGCU2.BA
30	Dycasa	DYCA.BA
31	Empresa Distribuidora y Comercializadora Norte SA	EDN.BA
32	Siderca	ERC.BA^H03
33	Fiplasto	FIPL.BA
34	Banc Gal Bue Air	GAL.BA^G15
35	Garovaglio	GARO.BA
36	Naturgy BAN	GBAN.BA
37	Grupo Clarin	GCLA.BA
38	Grupo Financiero Galicia SA	GGAL.BA
39	Holcim Argentina	HARG.BA
40	Unipar Indupa	INDU.BA

41	IRSA	IRSA.BA
42	Ledesma	LEDE.BA
43	Longvie	LONG.BA
44	Metrogas Argenti	METR.BA
45	Mirgor	MIRG.BA
46	Molinos	MOLI.BA
47	Morixe Hermanos	MORI.BA
48	Pampa Energia SA	PAMP.BA
49	Quickfood	PATY.BA
50	Petrobras Argent	PER.BA^E18
51	Petrolera Pampa	PETR.BA^H18
52	Phoenix Global	PGR.BA
53	Polledo	POLL.BA
54	PDVSur	PSUR.BA
55	Renault Argentna	REN.BA^H06
56	Repsol	REP.BA^A19
57	Rigolleau	RIGO.BA
58	Inst Rosenbusch	ROSE.BA
59	San Miguel AG	SAMI.BA
60	Sevel Argentina	SEV.BA^C00
61	Socotherm Amer	SOC.BA^L15
62	Banco Santander	STD.BA^A19
63	Telefonica AR	TEA2.BA^E10
64	Telecom Argentina SA	TECO2.BA
65	Telefonica	TEF.BA^G19
66	Transportadora de Gas del Norte SA	TGNO4.BA
67	Transportadora de Gas del Sur SA	TGSU2.BA
68	Transener - Compania de Transporte de Energia Electrica en Alta Tension	TRAN.BA
69	Tenaris	TS.BA^J19
70	Ternium Argentin	TXAR.BA
71	YPF SA	YPFD.BA
72	Nuevo Ban Suquia	BSUQ.BA

Table A2 – Country inflation and interest for loans between local financial institutions monthly rates (in %)

	Inflation rate	Interest rate for loans between local financial institutions
31/05/1998	-0.1	6.20
30/06/1998	0.2	5.79
31/07/1998	0.3	6.15
31/08/1998	0	7.36
30/09/1998	0	8.21
31/10/1998	-0.4	7.02
30/11/1998	-0.2	7.69
31/12/1998	0	7.14
31/01/1999	0.5	7.82
28/02/1999	-0.2	6.47
31/03/1999	-0.8	6.17
30/04/1999	-0.1	5.20
31/05/1999	-0.5	6.38
30/06/1999	0	6.90
31/07/1999	0.2	5.84
31/08/1999	-0.4	5.88
30/09/1999	-0.2	7.74
31/10/1999	0	9.16
30/11/1999	-0.3	8.11
31/12/1999	-0.1	8.59
31/01/2000	0.8	7.18
29/02/2000	0	7.83
31/03/2000	-0.5	6.38
30/04/2000	-0.1	6.70
31/05/2000	-0.4	7.17
30/06/2000	-0.2	7.18
31/07/2000	0.4	7.04
31/08/2000	-0.2	7.19
30/09/2000	-0.2	8.25
31/10/2000	0.2	8.95
30/11/2000	-0.5	11.11
31/12/2000	-0.1	13.40
31/01/2001	0.1	7.24
28/02/2001	-0.2	5.80
31/03/2001	0.2	22.48
30/04/2001	0.7	14.34
31/05/2001	0.1	9.32
30/06/2001	-0.7	8.34
31/07/2001	-0.3	48.10
31/08/2001	-0.4	20.63

30/09/2001	-0.1	11.67
31/10/2001	-0.4	20.14
30/11/2001	-0.3	80.61
31/12/2001	-0.1	-
31/01/2002	2.3	39.02
28/02/2002	3.1	30.70
31/03/2002	4	37.32
30/04/2002	10.4	91.14
31/05/2002	4	67.57
30/06/2002	3.6	44.73
31/07/2002	3.2	67.54
31/08/2002	2.3	56.51
30/09/2002	1.4	29.34
31/10/2002	0.2	19.07
30/11/2002	0.5	7.08
31/12/2002	0.2	6.30
31/01/2003	1.3	5.62
28/02/2003	0.6	6.72
31/03/2003	0.6	8.48
30/04/2003	0.1	6.41
31/05/2003	-0.4	4.63
30/06/2003	-0.1	3.88
31/07/2003	0.4	2.45
31/08/2003	0	1.48
30/09/2003	0	1.55
31/10/2003	0.6	1.62
30/11/2003	0.2	1.64
31/12/2003	0.2	1.60
31/01/2004	0.4	1.39
29/02/2004	0.1	1.24
31/03/2004	0.6	1.22
30/04/2004	0.9	1.23
31/05/2004	0.7	3.30
30/06/2004	0.6	2.17
31/07/2004	0.5	1.90
31/08/2004	0.3	2.22
30/09/2004	0.6	2.32
31/10/2004	0.4	2.34
30/11/2004	0	2.30
31/12/2004	0.8	2.25
31/01/2005	1.5	2.23
28/02/2005	0.9	2.22
31/03/2005	1.5	2.39

30/04/2005	0.5	2.81
31/05/2005	0.6	3.34
30/06/2005	0.9	4.69
31/07/2005	1	5.06
31/08/2005	0.4	4.36
30/09/2005	1.2	4.58
31/10/2005	0.8	4.69
30/11/2005	1.2	6.64
31/12/2005	1.1	6.74
31/01/2006	1.3	7.19
28/02/2006	0.4	5.41
31/03/2006	1.2	8.21
30/04/2006	1	7.51
31/05/2006	0.5	6.05
30/06/2006	0.5	7.26
31/07/2006	0.6	7.78
31/08/2006	0.6	7.01
30/09/2006	0.9	7.63
31/10/2006	0.9	6.78
30/11/2006	0.7	8.08
31/12/2006	1	8.11
31/01/2007	1.1	6.93
28/02/2007	0.3	6.81
31/03/2007	0.8	7.73
30/04/2007	0.7	7.19
31/05/2007	0.4	7.67
30/06/2007	0.4	7.96
31/07/2007	0.5	10.43
31/08/2007	0.6	10.68
30/09/2007	0.8	11.11
31/10/2007	0.7	8.99
30/11/2007	0.9	10.12
31/12/2007	0.9	9.33
31/01/2008	0.9	8.31
29/02/2008	0.5	7.47
31/03/2008	1.1	8.03
30/04/2008	0.8	8.09
31/05/2008	0.6	10.21
30/06/2008	0.6	10.60
31/07/2008	0.4	9.81
31/08/2008	0.5	9.23
30/09/2008	0.5	9.54
31/10/2008	0.4	13.41

30/11/2008	0.3	15.54
31/12/2008	0.3	14.52
31/01/2009	0.5	12.67
28/02/2009	0.4	11.41
31/03/2009	0.6	11.18
30/04/2009	0.3	11.42
31/05/2009	0.3	11.22
30/06/2009	0.4	10.90
31/07/2009	0.6	10.61
31/08/2009	0.8	9.93
30/09/2009	0.7	9.48
31/10/2009	0.8	9.27
30/11/2009	0.8	9.00
31/12/2009	0.9	9.12
31/01/2010	1	8.96
28/02/2010	1.2	8.56
31/03/2010	1.1	8.67
30/04/2010	0.8	8.65
31/05/2010	0.7	8.89
30/06/2010	0.7	9.00
31/07/2010	0.8	9.29
31/08/2010	0.7	9.33
30/09/2010	0.7	9.47
31/10/2010	0.8	10.21
30/11/2010	0.7	9.54
31/12/2010	0.8	9.82
31/01/2011	0.7	9.94
28/02/2011	0.7	9.77
31/03/2011	0.8	9.99
30/04/2011	0.8	9.79
31/05/2011	0.7	9.68
30/06/2011	0.7	9.68
31/07/2011	0.8	10.38
31/08/2011	0.8	9.68
30/09/2011	0.8	9.94
31/10/2011	0.6	11.84
30/11/2011	0.6	11.42
31/12/2011	0.8	10.43
31/01/2012	0.9	9.87
29/02/2012	0.7	9.61
31/03/2012	0.9	9.91
30/04/2012	0.8	9.60
31/05/2012	0.8	9.39

30/06/2012	0.7	9.72
31/07/2012	0.8	9.82
31/08/2012	0.9	10.00
30/09/2012	0.9	10.13
31/10/2012	0.8	10.39
30/11/2012	0.9	10.36
31/12/2012	1	10.85
31/01/2013	1.1	10.97
28/02/2013	0.5	11.19
31/03/2013	0.7	12.13
30/04/2013	0.7	11.51
31/05/2013	0.7	13.79
30/06/2013	0.8	13.39
31/07/2013	0.9	13.72
31/08/2013	0.8	12.09
30/09/2013	0.8	12.36
31/10/2013	0.9	12.37
30/11/2013	0.9	15.42
31/12/2013	1.4	19.82
31/01/2014	3.6	16.44
28/02/2014	3.4	14.74
31/03/2014	2.6	19.32
30/04/2014	1.8	14.96
31/05/2014	1.4	17.25
30/06/2014	1.3	22.60
31/07/2014	1.4	15.83
31/08/2014	1.3	18.93
30/09/2014	1.4	13.22
31/10/2014	1.2	21.15
30/11/2014	1.1	20.10
31/12/2014	1	21.87
31/01/2015	1.1	22.98
28/02/2015	0.9	20.56
31/03/2015	1.3	21.18
30/04/2015	1.1	17.93
31/05/2015	1	22.57
30/06/2015	1	18.02
31/07/2015	1.3	23.89
31/08/2015	1.2	22.80
30/09/2015	1.2	22.00
31/10/2015	1.1	25.16
30/11/2015	2	21.87
31/12/2015	3.9	25.91

31/01/2016	4.1	25.89
29/02/2016	2.7	24.80
31/03/2016	3	35.43
30/04/2016	3.4	36.89
31/05/2016	4.2	34.46
30/06/2016	3.1	31.54
31/07/2016	2	29.09
31/08/2016	0.2	28.38
30/09/2016	1.1	26.94
31/10/2016	2.4	26.15
30/11/2016	1.6	25.66
31/12/2016	1.2	24.68
31/01/2017	1.3	24.15
28/02/2017	2.5	23.61
31/03/2017	2.4	22.84
30/04/2017	2.6	23.98
31/05/2017	1.3	24.51
30/06/2017	1.2	24.80
31/07/2017	1.7	25.15
31/08/2017	1.4	26.04
30/09/2017	1.9	26.48
31/10/2017	1.5	26.03
30/11/2017	1.4	27.97
31/12/2017	3.1	29.16
31/01/2018	1.8	27.49
28/02/2018	2.4	27.07
31/03/2018	2.3	26.59
30/04/2018	2.7	26.96
31/05/2018	2.1	38.39
30/06/2018	3.7	39.66
31/07/2018	3.1	47.45
31/08/2018	3.9	45.75
30/09/2018	6.5	60.45
31/10/2018	5.4	69.72
30/11/2018	3.2	63.40
31/12/2018	2.6	58.79
31/01/2019	2.9	56.00
28/02/2019	3.8	45.78
31/03/2019	4.7	55.10
30/04/2019	3.4	65.67
31/05/2019	3.1	70.34

Table A3 – S&P MERVAL index monthly return (in %)

	Monthly Return
30/06/1998	-0.090
31/07/1998	0.067
31/08/1998	-0.496
30/09/1998	0.059
31/10/1998	0.185
30/11/1998	0.066
31/12/1998	-0.128
31/01/1999	-0.145
28/02/1999	0.024
31/03/1999	0.098
30/04/1999	0.295
31/05/1999	-0.073
30/06/1999	-0.050
31/07/1999	-0.047
31/08/1999	0.063
30/09/1999	0.053
31/10/1999	0.008
30/11/1999	-0.005
31/12/1999	0.026
31/01/2000	0.028
29/02/2000	0.109
31/03/2000	-0.104
30/04/2000	-0.111
31/05/2000	-0.093
30/06/2000	0.068
31/07/2000	0.010
31/08/2000	-0.056
30/09/2000	0.002
31/10/2000	-0.075
30/11/2000	-0.099
31/12/2000	0.042
31/01/2001	0.246
28/02/2001	-0.201
31/03/2001	0.018
30/04/2001	-0.019
31/05/2001	0.008
30/06/2001	-0.088
31/07/2001	-0.226
31/08/2001	-0.003
30/09/2001	-0.273
31/10/2001	-0.080
30/11/2001	-0.104

31/12/2001	0.378
31/01/2002	0.397
28/02/2002	-0.098
31/03/2002	0.091
30/04/2002	-0.117
31/05/2002	-0.200
30/06/2002	0.099
31/07/2002	0.024
31/08/2002	0.043
30/09/2002	0.052
31/10/2002	0.096
30/11/2002	0.135
31/12/2002	0.053
31/01/2003	0.046
28/02/2003	0.077
31/03/2003	-0.047
30/04/2003	0.116
31/05/2003	0.064
30/06/2003	0.121
31/07/2003	-0.014
31/08/2003	-0.057
30/09/2003	0.149
31/10/2003	0.116
30/11/2003	0.069
31/12/2003	0.073
31/01/2004	0.062
29/02/2004	0.036
31/03/2004	0.016
30/04/2004	-0.109
31/05/2004	-0.124
30/06/2004	-0.008
31/07/2004	0.022
31/08/2004	-0.015
30/09/2004	0.182
31/10/2004	0.119
30/11/2004	-0.059
31/12/2004	0.126
31/01/2005	-0.001
28/02/2005	0.126
31/03/2005	-0.107
30/04/2005	-0.038
31/05/2005	0.097
30/06/2005	-0.083
31/07/2005	0.098
31/08/2005	0.048

30/09/2005	0.069
31/10/2005	-0.052
30/11/2005	-0.034
31/12/2005	-0.007
31/01/2006	0.151
28/02/2006	-0.046
31/03/2006	0.049
30/04/2006	0.058
31/05/2006	-0.143
30/06/2006	0.034
31/07/2006	-0.006
31/08/2006	-0.023
30/09/2006	-0.015
31/10/2006	0.085
30/11/2006	0.099
31/12/2006	0.061
31/01/2007	-0.010
28/02/2007	-0.001
31/03/2007	0.017
30/04/2007	0.024
31/05/2007	0.040
30/06/2007	-0.024
31/07/2007	-0.005
31/08/2007	-0.056
30/09/2007	0.059
31/10/2007	0.072
30/11/2007	-0.063
31/12/2007	-0.025
31/01/2008	-0.069
29/02/2008	0.074
31/03/2008	-0.027
30/04/2008	-0.004
31/05/2008	0.051
30/06/2008	-0.045
31/07/2008	-0.093
31/08/2008	-0.077
30/09/2008	-0.106
31/10/2008	-0.458
30/11/2008	-0.017
31/12/2008	0.083
31/01/2009	-0.002
28/02/2009	-0.055
31/03/2009	0.100
30/04/2009	0.125
31/05/2009	0.219

30/06/2009	0.000
31/07/2009	0.080
31/08/2009	0.035
30/09/2009	0.152
31/10/2009	0.019
30/11/2009	0.015
31/12/2009	0.078
31/01/2010	-0.010
28/02/2010	-0.034
31/03/2010	0.066
30/04/2010	0.009
31/05/2010	-0.084
30/06/2010	-0.008
31/07/2010	0.091
31/08/2010	-0.024
30/09/2010	0.123
31/10/2010	0.129
30/11/2010	0.081
31/12/2010	0.077
31/01/2011	0.020
28/02/2011	-0.039
31/03/2011	-0.020
30/04/2011	0.005
31/05/2011	-0.047
30/06/2011	0.033
31/07/2011	-0.012
31/08/2011	-0.114
30/09/2011	-0.185
31/10/2011	0.165
30/11/2011	-0.125
31/12/2011	-0.040
31/01/2012	0.124
29/02/2012	-0.051
31/03/2012	0.013
30/04/2012	-0.167
31/05/2012	-0.007
30/06/2012	0.039
31/07/2012	0.023
31/08/2012	0.003
30/09/2012	0.018
31/10/2012	-0.054
30/11/2012	0.040
31/12/2012	0.165
31/01/2013	0.193
28/02/2013	-0.127

31/03/2013	0.103
30/04/2013	0.129
31/05/2013	-0.097
30/06/2013	-0.159
31/07/2013	0.121
31/08/2013	0.159
30/09/2013	0.195
31/10/2013	0.077
30/11/2013	0.102
31/12/2013	-0.059
31/01/2014	0.110
28/02/2014	-0.040
31/03/2014	0.097
30/04/2014	0.062
31/05/2014	0.129
30/06/2014	0.022
31/07/2014	0.037
31/08/2014	0.181
30/09/2014	0.245
31/10/2014	-0.130
30/11/2014	-0.116
31/12/2014	-0.134
31/01/2015	-0.010
28/02/2015	0.123
31/03/2015	0.121
30/04/2015	0.106
31/05/2015	-0.109
30/06/2015	0.076
31/07/2015	-0.049
31/08/2015	-0.006
30/09/2015	-0.117
31/10/2015	0.239
30/11/2015	0.040
31/12/2015	-0.105
31/01/2016	-0.032
29/02/2016	0.148
31/03/2016	-0.009
30/04/2016	0.055
31/05/2016	-0.079
30/06/2016	0.147
31/07/2016	0.074
31/08/2016	-0.010
30/09/2016	0.064
31/10/2016	0.055
30/11/2016	-0.010

31/12/2016	-0.031
31/01/2017	0.119
28/02/2017	0.003
31/03/2017	0.058
30/04/2017	0.037
31/05/2017	0.061
30/06/2017	-0.020
31/07/2017	-0.015
31/08/2017	0.089
30/09/2017	0.100
31/10/2017	0.069
30/11/2017	-0.038
31/12/2017	0.111
31/01/2018	0.150
28/02/2018	-0.057
31/03/2018	-0.059
30/04/2018	-0.036
31/05/2018	-0.049
30/06/2018	-0.092
31/07/2018	0.118
31/08/2018	0.000
30/09/2018	0.133
31/10/2018	-0.126
30/11/2018	0.065
31/12/2018	-0.039
31/01/2019	0.182
28/02/2019	-0.052
31/03/2019	-0.030
30/04/2019	-0.124
31/05/2019	0.138

Table A4 – Monthly excess returns of SV, BV, MV, SG, BG, and MG portfolios, June 1998 and May 2019

Four value-weighted portfolios - Small Value (SV), Big Value (BV), Small Growth (SG), and Big Growth (BG) - were formed every year in May using a two-step method of classification based on the market capitalization (MC) and book-market equity ratio (B/M) of stocks. *Small* stocks have MC below the S&P MERVAL media, and *Big* stocks have MC above the median. *Growth* and *Value* are stocks with B/M below the 30th or at or above the 70th S&P MERVAL percentile, respectively. *Market Value* and *Growth* (*MV* and *MG*) are value-weighted portfolios of all *Value* or all *Growth* stocks.

	SV	**BV**	**MV**	**SG**	**BG**	**MG**
30/06/1998	-0.008	0.090	-0.187	0.187	-0.202	0.187
31/07/1998	-0.019	-0.067	0.116	-0.116	0.176	-0.116
31/08/1998	0.116	0.496	-0.876	0.876	-1.316	0.876
30/09/1998	-0.090	-0.059	0.028	-0.028	0.022	-0.028
31/10/1998	-0.064	-0.185	0.305	-0.305	0.509	-0.305
30/11/1998	0.044	-0.066	0.177	-0.177	0.277	-0.177
31/12/1998	0.051	0.128	-0.205	0.205	-0.308	0.205
31/01/1999	-0.070	0.145	-0.361	0.361	-0.628	0.361
28/02/1999	-0.010	-0.024	0.037	-0.037	0.084	-0.037
31/03/1999	-0.138	-0.098	0.057	-0.057	0.152	-0.057
30/04/1999	-0.233	-0.295	0.357	-0.357	0.557	-0.357
31/05/1999	0.033	0.073	-0.112	0.112	-0.183	0.112
30/06/1999	-0.002	0.050	-0.101	0.101	-0.127	0.101
31/07/1999	-0.007	0.047	-0.101	0.101	-0.182	0.101
31/08/1999	-0.064	-0.063	0.062	-0.062	0.106	-0.062
30/09/1999	-0.025	-0.053	0.082	-0.082	0.163	-0.082
31/10/1999	-0.008	-0.008	0.008	-0.008	0.078	-0.008
30/11/1999	0.039	0.005	0.029	-0.029	0.041	-0.029
31/12/1999	-0.123	-0.026	-0.071	0.071	-0.045	0.071
31/01/2000	-0.058	-0.028	-0.001	0.001	0.069	0.001
29/02/2000	-0.077	-0.109	0.141	-0.141	0.233	-0.141
31/03/2000	0.069	0.104	-0.139	0.139	-0.215	0.139
30/04/2000	0.038	0.111	-0.184	0.184	-0.235	0.184
31/05/2000	0.003	0.093	-0.183	0.183	-0.304	0.183
30/06/2000	-0.111	0.084	-0.111	0.211	-0.149	0.219
31/07/2000	0.024	-0.063	0.090	-0.109	0.108	-0.112
31/08/2000	-0.074	-0.083	-0.047	-0.049	0.061	-0.071
30/09/2000	0.058	-0.033	0.086	-0.171	0.173	-0.188
31/10/2000	0.016	0.079	-0.133	-0.105	0.040	-0.140
30/11/2000	0.014	0.103	-0.180	0.096	-0.185	0.097
31/12/2000	-0.080	-0.095	0.057	-0.022	0.054	-0.022
31/01/2001	-0.192	-0.209	0.261	-0.245	0.373	-0.267
28/02/2001	0.106	0.158	-0.249	0.092	-0.199	0.082
31/03/2001	-0.026	-0.034	0.025	-0.042	0.050	-0.047
30/04/2001	-0.037	0.053	-0.101	0.054	-0.025	0.039
31/05/2001	-0.013	0.043	-0.043	0.029	-0.039	0.028

30/06/2001	0.029	0.045	-0.100	0.044	-0.124	0.049
31/07/2001	0.036	-0.068	-0.149	0.085	-0.166	0.089
31/08/2001	0.003	0.012	-0.010	0.042	-0.111	0.062
30/09/2001	0.072	-0.003	-0.216	0.223	-0.368	0.254
31/10/2001	-0.061	-0.134	-0.025	-0.088	0.074	-0.108
30/11/2001	0.022	0.037	-0.116	-0.002	-0.034	-0.018
31/12/2001	-0.300	-0.117	0.241	-0.358	0.558	-0.422
31/01/2002	0.098	-0.080	0.530	-0.193	0.773	-0.241
28/02/2002	0.057	-0.210	0.103	0.196	-0.091	0.235
31/03/2002	-0.257	-0.208	0.054	0.135	0.016	0.143
30/04/2002	-0.104	-0.120	-0.106	0.134	-0.140	0.141
31/05/2002	0.077	-0.130	-0.045	0.226	-0.244	0.266
30/06/2002	-0.179	-0.205	0.118	0.017	-0.122	0.044
31/07/2002	0.115	0.116	0.024	0.364	-0.214	0.390
31/08/2002	0.001	0.081	-0.017	0.211	-0.151	0.226
30/09/2002	-0.002	-0.057	0.093	-0.093	0.093	-0.093
31/10/2002	0.159	-0.016	0.227	0.451	-0.225	0.501
30/11/2002	0.233	-0.044	0.343	-0.191	0.368	-0.194
31/12/2002	-0.069	-0.140	0.106	-0.056	0.121	-0.058
31/01/2003	-0.034	-0.060	0.065	0.273	-0.229	0.305
28/02/2003	-0.054	-0.053	0.076	-0.069	0.157	-0.078
31/03/2003	-0.006	0.040	-0.082	-0.116	0.126	-0.139
30/04/2003	-0.047	0.004	0.077	0.131	0.004	0.139
31/05/2003	0.088	-0.074	0.186	-0.065	0.140	-0.060
30/06/2003	-0.048	-0.101	0.156	-0.293	0.326	-0.350
31/07/2003	-0.022	-0.004	-0.026	-0.128	0.126	-0.178
31/08/2003	0.017	-0.004	-0.043	-0.107	0.061	-0.142
30/09/2003	-0.041	-0.007	0.126	-0.010	0.138	-0.014
31/10/2003	-0.004	-0.127	0.198	0.235	-0.172	0.359
30/11/2003	0.009	0.124	-0.008	-0.037	0.073	-0.064
31/12/2003	0.054	0.107	0.038	-0.205	0.316	-0.298
31/01/2004	0.043	0.044	0.062	0.142	-0.098	0.195
29/02/2004	-0.064	-0.024	0.010	-0.071	0.132	-0.112
31/03/2004	0.017	0.052	-0.008	-0.027	-0.029	-0.020
30/04/2004	-0.025	-0.048	-0.093	0.136	-0.241	0.185
31/05/2004	-0.045	0.005	-0.157	0.117	-0.194	0.129
30/06/2004	-0.037	0.003	-0.042	0.025	0.000	0.004
31/07/2004	-0.007	0.044	-0.021	0.011	0.011	-0.005
31/08/2004	0.035	0.034	-0.014	-0.054	0.065	-0.093
30/09/2004	-0.063	-0.079	0.196	-0.035	0.243	-0.059
31/10/2004	-0.111	-0.052	0.070	-0.180	0.242	-0.267
30/11/2004	-0.022	0.049	-0.118	0.141	-0.155	0.159
31/12/2004	0.028	-0.119	0.248	-0.295	0.350	-0.346
31/01/2005	0.040	0.101	-0.052	0.092	-0.106	0.119
28/02/2005	-0.068	-0.074	0.131	0.013	0.186	-0.014

31/03/2005	0.008	0.064	-0.153	0.135	-0.260	0.188
30/04/2005	0.019	-0.074	0.040	0.131	-0.189	0.246
31/05/2005	-0.074	0.072	-0.025	0.222	-0.094	0.256
30/06/2005	0.017	-0.005	-0.064	0.198	-0.190	0.223
31/07/2005	-0.047	-0.114	0.153	-0.158	0.213	-0.170
31/08/2005	0.013	-0.092	0.135	0.010	0.074	0.022
30/09/2005	0.015	0.008	0.075	-0.102	0.191	-0.125
31/10/2005	0.031	0.237	-0.224	0.437	-0.469	0.486
30/11/2005	-0.035	-0.053	-0.019	-0.116	0.115	-0.143
31/12/2005	-0.015	0.007	-0.026	-0.063	0.062	-0.081
31/01/2006	-0.046	-0.075	0.174	-0.123	0.272	-0.143
28/02/2006	-0.023	-0.036	-0.034	0.007	-0.045	0.009
31/03/2006	-0.103	-0.107	0.052	0.058	0.006	0.067
30/04/2006	-0.110	0.014	-0.045	0.037	-0.083	0.045
31/05/2006	0.113	0.014	-0.061	0.014	-0.160	0.034
30/06/2006	-0.039	-0.044	0.039	-0.092	0.091	-0.104
31/07/2006	0.057	0.061	-0.009	-0.025	0.048	-0.038
31/08/2006	-0.027	-0.015	-0.034	0.038	-0.010	0.033
30/09/2006	0.024	0.121	-0.102	0.041	-0.044	0.028
31/10/2006	0.001	-0.039	0.120	-0.110	0.223	-0.133
30/11/2006	-0.031	-0.079	0.142	0.222	-0.073	0.270
31/12/2006	0.037	0.083	0.021	0.244	-0.117	0.274
31/01/2007	-0.004	-0.017	0.002	0.036	0.053	0.024
28/02/2007	0.029	-0.018	0.041	-0.026	0.029	-0.023
31/03/2007	-0.142	-0.047	-0.068	0.041	-0.017	0.029
30/04/2007	0.053	0.085	-0.004	0.056	-0.045	0.065
31/05/2007	0.016	0.071	-0.009	-0.041	0.097	-0.065
30/06/2007	0.124	0.049	0.025	-0.004	-0.008	0.011
31/07/2007	0.076	0.027	0.026	0.066	-0.022	0.088
31/08/2007	-0.028	-0.030	-0.055	0.054	-0.033	0.044
30/09/2007	-0.016	-0.066	0.091	0.135	-0.102	0.224
31/10/2007	0.073	0.055	0.084	0.136	-0.055	0.200
30/11/2007	0.005	-0.064	-0.019	0.037	-0.048	0.051
31/12/2007	0.007	0.005	-0.024	-0.018	-0.024	-0.018
31/01/2008	-0.044	-0.019	-0.086	0.007	-0.100	0.014
29/02/2008	0.022	-0.035	0.111	-0.030	0.061	-0.007
31/03/2008	-0.025	-0.062	-0.004	-0.022	0.030	-0.038
30/04/2008	-0.059	-0.035	-0.019	-0.013	0.005	-0.024
31/05/2008	-0.045	-0.104	0.089	-0.034	0.053	-0.018
30/06/2008	-0.121	0.052	-0.194	0.196	-0.310	0.246
31/07/2008	0.114	-0.040	0.038	-0.071	-0.006	-0.052
31/08/2008	-0.113	0.042	-0.210	0.058	-0.079	0.002
30/09/2008	0.001	0.114	-0.203	0.087	-0.264	0.113
31/10/2008	0.013	0.061	-0.499	-0.020	-0.511	-0.014
30/11/2008	-0.088	-0.108	0.001	-0.358	0.503	-0.573

31/12/2008	0.032	-0.173	0.259	-0.220	0.274	-0.226
31/01/2009	0.023	-0.130	0.129	-0.044	0.019	0.003
28/02/2009	-0.073	-0.211	0.063	-0.262	0.195	-0.319
31/03/2009	-0.128	-0.121	0.094	-0.116	0.182	-0.154
30/04/2009	-0.105	-0.194	0.200	0.042	0.050	0.106
31/05/2009	-0.028	-0.178	0.347	-0.336	0.528	-0.413
30/06/2009	0.144	0.290	-0.109	0.826	-0.570	0.941
31/07/2009	0.066	0.074	0.073	-0.147	0.192	-0.177
31/08/2009	0.009	0.052	0.003	-0.007	0.034	-0.014
30/09/2009	0.060	0.093	0.127	0.101	-0.020	0.137
31/10/2009	0.015	0.004	0.027	0.020	-0.202	0.078
30/11/2009	-0.133	-0.020	-0.070	0.052	-0.026	0.041
31/12/2009	0.086	0.139	0.038	0.080	-0.053	0.103
31/01/2010	-0.074	-0.007	-0.059	0.264	-0.207	0.301
28/02/2010	-0.020	0.015	-0.060	0.067	-0.121	0.082
31/03/2010	0.005	0.081	0.009	0.076	0.093	0.055
30/04/2010	0.056	0.101	-0.024	-0.024	0.074	-0.049
31/05/2010	-0.037	-0.048	-0.075	-0.123	0.036	-0.151
30/06/2010	-0.030	0.064	-0.087	0.026	0.000	-0.003
31/07/2010	-0.004	-0.051	0.131	-0.079	0.173	-0.093
31/08/2010	-0.023	-0.050	-0.002	-0.122	0.162	-0.176
30/09/2010	0.002	-0.089	0.200	-0.090	0.175	-0.082
31/10/2010	0.084	0.027	0.176	-0.065	0.167	-0.062
30/11/2010	0.064	-0.132	0.244	-0.055	0.153	-0.025
31/12/2010	-0.016	0.077	0.000	0.089	0.059	0.069
31/01/2011	-0.009	-0.047	0.052	0.138	-0.054	0.173
28/02/2011	-0.069	-0.047	-0.057	0.077	-0.085	0.086
31/03/2011	-0.014	-0.031	-0.006	0.107	-0.147	0.154
30/04/2011	-0.007	0.073	-0.061	0.026	-0.028	0.015
31/05/2011	-0.045	-0.042	-0.049	-0.053	0.024	-0.078
30/06/2011	0.032	0.034	0.032	0.066	-0.029	0.086
31/07/2011	0.005	0.122	-0.109	0.039	-0.077	0.028
31/08/2011	-0.002	0.043	-0.151	0.100	-0.160	0.103
30/09/2011	0.069	-0.104	-0.041	-0.193	-0.004	-0.206
31/10/2011	0.035	0.117	0.097	0.018	0.165	-0.005
30/11/2011	-0.095	-0.077	-0.140	0.044	-0.107	0.033
31/12/2011	-0.065	0.020	-0.111	0.150	-0.161	0.167
31/01/2012	-0.041	-0.066	0.144	-0.046	0.102	-0.031
29/02/2012	-0.019	-0.030	-0.042	0.145	-0.143	0.178
31/03/2012	-0.132	0.014	-0.108	0.110	-0.089	0.103
30/04/2012	-0.145	-0.079	-0.221	-0.005	-0.120	-0.039
31/05/2012	0.083	0.199	-0.104	0.039	-0.043	0.019
30/06/2012	-0.034	0.021	0.011	-0.073	0.149	-0.108
31/07/2012	-0.026	-0.097	0.058	0.093	-0.040	0.118
31/08/2012	-0.054	-0.040	-0.004	-0.133	0.109	-0.161

30/09/2012	-0.062	0.029	-0.028	0.018	-0.078	0.030
31/10/2012	-0.071	-0.007	-0.085	-0.031	-0.038	-0.043
30/11/2012	-0.175	0.017	-0.055	0.029	-0.052	0.029
31/12/2012	0.064	0.039	0.178	-0.114	0.265	-0.136
31/01/2013	0.049	-0.046	0.241	0.315	-0.068	0.392
28/02/2013	-0.009	-0.019	-0.123	-0.177	0.085	-0.229
31/03/2013	-0.023	0.016	0.084	0.012	0.092	0.010
30/04/2013	-0.043	0.101	0.057	-0.057	0.236	-0.101
31/05/2013	-0.040	-0.014	-0.111	0.141	-0.288	0.186
30/06/2013	-0.042	0.019	-0.205	-0.014	-0.134	-0.032
31/07/2013	-0.052	0.007	0.076	-0.057	0.157	-0.077
31/08/2013	-0.048	0.110	0.040	0.140	-0.046	0.161
30/09/2013	-0.116	0.053	0.069	0.592	-0.502	0.735
31/10/2013	0.038	0.030	0.083	0.120	-0.037	0.150
30/11/2013	-0.006	0.034	0.071	0.374	-0.384	0.488
31/12/2013	0.082	-0.191	0.146	-0.609	0.633	-0.731
31/01/2014	0.081	-0.023	0.188	0.082	0.117	0.100
28/02/2014	-0.052	0.074	-0.134	0.289	-0.384	0.351
31/03/2014	-0.116	0.067	-0.040	0.112	-0.096	0.126
30/04/2014	-0.017	0.008	0.043	0.219	-0.200	0.280
31/05/2014	-0.059	0.017	0.071	0.064	0.087	0.060
30/06/2014	-0.076	-0.035	0.012	0.006	-0.029	0.037
31/07/2014	-0.021	-0.035	0.041	-0.006	-0.098	0.098
31/08/2014	0.093	0.040	0.195	0.041	0.237	0.009
30/09/2014	0.135	0.002	0.279	0.050	0.148	0.149
31/10/2014	0.089	0.056	-0.122	0.073	-0.364	0.254
30/11/2014	0.050	-0.007	-0.102	0.024	-0.266	0.147
31/12/2014	0.073	0.026	-0.122	0.037	-0.141	0.052
31/01/2015	0.056	0.003	0.003	0.031	-0.084	0.096
28/02/2015	-0.044	0.035	0.103	0.134	-0.148	0.322
31/03/2015	0.009	0.026	0.117	0.135	-0.137	0.326
30/04/2015	-0.141	-0.120	0.101	-0.180	0.257	-0.297
31/05/2015	0.039	0.024	-0.106	0.043	-0.129	0.061
30/06/2015	-0.120	-0.070	0.062	-0.060	0.072	-0.065
31/07/2015	0.030	0.054	-0.056	0.091	-0.065	0.095
31/08/2015	0.000	-0.021	0.000	-0.015	0.060	-0.041
30/09/2015	0.086	0.035	-0.102	-0.010	0.014	-0.060
31/10/2015	-0.111	0.044	0.195	0.107	0.039	0.174
30/11/2015	0.091	-0.029	0.074	0.069	0.059	0.075
31/12/2015	0.203	0.010	-0.050	0.038	-0.032	0.030
31/01/2016	-0.031	0.027	-0.049	0.090	-0.093	0.109
29/02/2016	-0.182	-0.018	0.102	-0.129	0.312	-0.219
31/03/2016	0.113	-0.099	0.051	-0.165	0.330	-0.285
30/04/2016	-0.054	-0.032	0.049	-0.049	0.230	-0.127
31/05/2016	-0.029	0.056	-0.103	0.052	-0.057	0.032

30/06/2016	-0.037	-0.046	0.150	-0.072	0.149	-0.072
31/07/2016	0.062	-0.050	0.119	0.283	-0.207	0.464
31/08/2016	-0.015	-0.016	-0.010	0.036	-0.026	0.046
30/09/2016	-0.006	0.007	0.059	0.146	-0.071	0.218
31/10/2016	-0.012	-0.057	0.073	0.026	-0.028	0.082
30/11/2016	-0.058	-0.019	-0.025	0.030	-0.114	0.079
31/12/2016	0.004	0.050	-0.049	-0.047	-0.004	-0.072
31/01/2017	-0.044	0.037	0.087	0.178	-0.209	0.342
28/02/2017	0.115	0.006	0.047	-0.030	-0.018	0.006
31/03/2017	0.024	0.018	0.061	-0.029	0.041	-0.018
30/04/2017	0.017	0.013	0.038	-0.024	0.035	-0.023
31/05/2017	-0.077	0.009	0.027	-0.095	0.102	-0.137
30/06/2017	-0.022	0.017	-0.041	0.133	-0.137	0.168
31/07/2017	-0.022	0.005	-0.030	-0.065	0.096	-0.111
31/08/2017	0.008	0.005	0.091	0.008	0.025	0.032
30/09/2017	-0.018	0.023	0.078	0.037	0.081	0.036
31/10/2017	0.095	0.024	0.108	-0.139	0.204	-0.174
30/11/2017	0.037	-0.004	-0.015	-0.037	0.025	-0.051
31/12/2017	0.029	0.006	0.124	-0.097	0.213	-0.129
31/01/2018	0.022	-0.011	0.168	-0.031	0.153	-0.025
28/02/2018	-0.021	-0.006	-0.065	0.018	-0.100	0.030
31/03/2018	-0.005	-0.010	-0.056	-0.086	0.028	-0.116
30/04/2018	-0.007	0.016	-0.049	-0.013	0.040	-0.046
31/05/2018	-0.067	0.068	-0.123	0.051	-0.106	0.045
30/06/2018	-0.054	-0.025	-0.113	0.378	-0.491	0.431
31/07/2018	0.088	0.010	0.173	-0.220	0.360	-0.247
31/08/2018	-0.083	0.079	-0.115	0.270	-0.258	0.291
30/09/2018	0.022	0.031	0.127	-0.144	0.298	-0.169
31/10/2018	-0.112	0.001	-0.207	0.004	-0.182	0.001
30/11/2018	-0.081	-0.067	0.056	0.029	-0.002	0.037
31/12/2018	0.023	-0.078	0.033	-0.127	0.083	-0.134
31/01/2019	-0.063	-0.019	0.150	-0.054	0.168	-0.056
28/02/2019	0.008	-0.011	-0.038	0.019	-0.064	0.023
31/03/2019	-0.037	0.111	-0.136	0.055	-0.073	0.046
30/04/2019	-0.076	-0.011	-0.170	0.056	-0.179	0.058
31/05/2019	-0.025	-0.055	0.159	-0.195	0.283	-0.213

Table A5 – Monthly returns of SL, SM, SH, BL, BM, and BH portfolios between June 1998 and May 2019

There are three value-weighted portfolios of small size stocks (Small Low, Small Medium and Small High), and three value-weighted portfolios of big stocks (Big Low, Big Medium and Big High). Small stocks have market capitalization (MC) below the S&P MERVAL median, and Big stocks have MC above the median. Low and High are stocks with book-market equity ratio (B/M) of stocks below the 30th or at or above the 70th S&P MERVAL percentile, respectively. Medium stocks have B/M between 30th and 70th S&P MERVAL percentiles. The portfolios were formed every year in May.

	SL	**SM**	**SH**	**BL**	**BM**	**BH**
30/06/1998	0.000	-0.048	-0.098	-0.015	-0.098	0.000
31/07/1998	0.000	0.019	0.049	0.060	0.089	0.000
31/08/1998	0.000	-0.336	-0.380	-0.440	-0.438	0.000
30/09/1998	0.000	-0.053	-0.031	-0.006	0.092	0.000
31/10/1998	0.000	0.130	0.121	0.203	0.145	0.000
30/11/1998	0.000	0.080	0.110	0.100	0.043	0.000
31/12/1998	0.000	-0.017	-0.077	-0.104	-0.093	0.000
31/01/1999	0.000	-0.170	-0.216	-0.267	-0.116	0.000
28/02/1999	0.000	-0.033	0.014	0.047	0.006	0.000
31/03/1999	0.000	0.006	-0.041	0.095	0.096	0.000
30/04/1999	0.000	0.252	0.062	0.200	0.270	0.000
31/05/1999	0.000	-0.070	-0.040	-0.070	-0.091	0.000
30/06/1999	0.000	-0.009	-0.051	-0.026	0.013	0.000
31/07/1999	0.000	-0.025	-0.054	-0.080	-0.059	0.000
31/08/1999	0.000	0.022	-0.001	0.044	0.060	0.000
30/09/1999	0.000	0.075	0.028	0.081	0.076	0.000
31/10/1999	0.000	-0.002	0.000	0.070	0.029	0.000
30/11/1999	0.000	0.032	0.034	0.011	0.051	0.000
31/12/1999	0.000	-0.019	-0.097	0.026	0.007	0.000
31/01/2000	0.000	-0.036	-0.030	0.070	-0.065	0.000
29/02/2000	0.000	-0.011	0.032	0.091	0.050	0.000
31/03/2000	0.000	-0.071	-0.035	-0.077	-0.044	0.000
30/04/2000	0.000	-0.064	-0.073	-0.051	-0.059	0.000
31/05/2000	0.000	-0.114	-0.090	-0.121	-0.172	0.000
30/06/2000	0.100	0.094	-0.043	0.062	0.016	0.152
31/07/2000	-0.019	0.025	0.035	-0.001	0.024	-0.053
31/08/2000	-0.096	-0.068	-0.130	0.012	0.017	-0.139
30/09/2000	-0.085	-0.010	0.060	0.002	-0.033	-0.032
31/10/2000	-0.238	-0.006	-0.060	-0.065	-0.034	0.003
30/11/2000	-0.083	-0.052	-0.084	-0.088	-0.110	0.004
31/12/2000	0.035	-0.014	-0.037	0.032	0.039	-0.053
31/01/2001	0.017	0.097	0.054	0.129	0.209	0.037
28/02/2001	-0.157	-0.098	-0.095	-0.107	-0.195	-0.043
31/03/2001	-0.017	0.015	-0.008	0.009	0.007	-0.016
30/04/2001	-0.047	-0.044	-0.056	0.029	-0.051	0.034
31/05/2001	-0.014	0.007	-0.005	-0.010	-0.007	0.051

30/06/2001	-0.056	-0.096	-0.059	-0.080	-0.046	-0.043
31/07/2001	-0.063	-0.150	-0.190	-0.081	-0.082	-0.294
31/08/2001	0.032	-0.046	0.000	-0.070	0.017	0.010
30/09/2001	0.007	-0.097	-0.201	-0.145	-0.152	-0.276
31/10/2001	-0.113	-0.147	-0.141	-0.014	-0.104	-0.215
30/11/2001	-0.117	-0.070	-0.082	-0.036	-0.029	-0.067
31/12/2001	-0.118	0.240	0.078	0.199	0.324	0.260
31/01/2002	0.337	0.545	0.494	0.580	0.513	0.317
28/02/2002	0.299	0.165	-0.040	0.105	0.055	-0.308
31/03/2002	0.189	0.042	-0.166	0.151	0.163	-0.117
30/04/2002	0.028	0.050	-0.222	-0.006	-0.085	-0.237
31/05/2002	0.182	-0.178	-0.123	-0.018	-0.053	-0.330
30/06/2002	0.135	-0.116	-0.080	-0.105	-0.037	-0.105
31/07/2002	0.388	0.130	0.140	0.150	0.051	0.141
31/08/2002	0.194	-0.039	0.044	0.060	0.053	0.124
30/09/2002	0.000	0.134	0.050	0.000	0.041	-0.005
31/10/2002	0.678	0.273	0.255	0.226	0.137	0.079
30/11/2002	0.152	0.210	0.368	0.177	0.144	0.091
31/12/2002	0.050	0.073	-0.016	0.064	0.036	-0.087
31/01/2003	0.338	0.071	0.012	0.043	0.019	-0.013
28/02/2003	0.007	0.041	0.023	0.088	0.041	0.024
31/03/2003	-0.198	-0.009	-0.053	0.010	-0.006	-0.007
30/04/2003	0.208	0.137	0.068	0.135	0.064	0.120
31/05/2003	0.121	0.094	0.153	0.075	0.063	-0.009
30/06/2003	-0.137	0.043	0.073	0.033	0.188	0.021
31/07/2003	-0.153	0.022	-0.036	-0.002	-0.010	-0.017
31/08/2003	-0.150	0.007	-0.040	-0.047	-0.045	-0.061
30/09/2003	0.116	0.124	0.108	0.128	0.144	0.142
31/10/2003	0.433	0.091	0.112	0.063	0.122	-0.011
30/11/2003	-0.045	0.125	0.078	0.036	0.052	0.193
31/12/2003	-0.167	0.026	0.127	0.110	0.147	0.180
31/01/2004	0.203	0.036	0.105	0.044	0.075	0.106
29/02/2004	-0.061	0.000	-0.027	0.061	0.054	0.012
31/03/2004	-0.036	0.091	0.032	-0.057	-0.001	0.068
30/04/2004	0.043	-0.051	-0.133	-0.105	-0.104	-0.157
31/05/2004	-0.040	-0.099	-0.168	-0.077	-0.157	-0.119
30/06/2004	-0.017	-0.008	-0.045	0.025	-0.019	-0.004
31/07/2004	-0.010	0.005	0.015	0.021	0.064	0.065
31/08/2004	-0.067	0.105	0.020	0.011	0.016	0.020
30/09/2004	0.161	0.084	0.119	0.208	0.147	0.103
31/10/2004	-0.111	-0.007	0.008	0.062	0.100	0.068
30/11/2004	0.022	-0.101	-0.081	-0.014	-0.039	-0.010
31/12/2004	-0.047	0.029	0.153	0.054	0.110	0.007
31/01/2005	0.040	0.029	0.039	-0.014	0.002	0.100
28/02/2005	0.144	-0.012	0.058	0.199	0.117	0.052

31/03/2005	-0.018	0.014	-0.099	-0.125	-0.073	-0.043
30/04/2005	0.171	-0.046	-0.018	-0.058	-0.021	-0.112
31/05/2005	0.197	0.088	0.023	0.128	0.073	0.169
30/06/2005	0.039	-0.006	-0.066	0.007	-0.078	-0.088
31/07/2005	-0.032	0.003	0.050	0.055	0.093	-0.017
31/08/2005	0.090	0.078	0.061	0.084	0.023	-0.044
30/09/2005	0.209	0.101	0.084	0.089	0.053	0.077
31/10/2005	0.260	0.062	-0.021	-0.032	-0.073	0.185
30/11/2005	0.050	-0.077	-0.069	0.000	-0.051	-0.087
31/12/2005	0.773	-0.018	-0.022	-0.001	-0.018	0.000
31/01/2006	-0.119	0.080	0.104	0.149	0.104	0.076
28/02/2006	-0.269	-0.004	-0.069	-0.038	-0.067	-0.082
31/03/2006	-0.078	-0.015	-0.054	0.063	-0.009	-0.058
30/04/2006	0.447	-0.046	-0.051	-0.046	0.016	0.072
31/05/2006	-0.011	-0.023	-0.031	-0.146	-0.101	-0.130
30/06/2006	-0.054	-0.030	-0.005	-0.001	0.007	-0.010
31/07/2006	-0.034	0.051	0.052	0.023	0.035	0.055
31/08/2006	0.004	-0.065	-0.051	0.028	-0.022	-0.038
30/09/2006	-0.061	0.013	0.009	-0.003	-0.019	0.105
31/10/2006	0.010	0.036	0.086	0.113	0.081	0.046
30/11/2006	0.364	0.112	0.067	0.149	0.032	0.019
31/12/2006	0.264	-0.014	0.098	0.127	0.027	0.143
31/01/2007	0.038	0.019	-0.013	0.089	-0.025	-0.027
28/02/2007	0.015	0.037	0.028	0.003	-0.064	-0.020
31/03/2007	-0.027	-0.003	-0.125	0.024	0.021	-0.030
30/04/2007	0.052	0.025	0.077	0.012	0.031	0.110
31/05/2007	-0.050	0.046	0.056	0.056	0.042	0.111
30/06/2007	0.021	0.054	0.101	-0.012	0.011	0.025
31/07/2007	0.092	0.005	0.071	0.045	0.010	0.022
31/08/2007	-0.001	-0.014	-0.084	0.020	-0.083	-0.085
30/09/2007	0.226	0.035	0.044	0.033	0.074	-0.007
31/10/2007	0.220	0.153	0.145	0.081	0.088	0.127
30/11/2007	0.018	0.004	-0.058	-0.011	-0.054	-0.128
31/12/2007	-0.042	0.016	-0.019	-0.042	-0.008	-0.020
31/01/2008	-0.078	-0.104	-0.113	-0.093	-0.007	-0.088
29/02/2008	0.081	0.075	0.097	0.031	0.080	0.040
31/03/2008	-0.026	-0.032	-0.053	0.008	-0.004	-0.090
30/04/2008	-0.032	-0.034	-0.063	-0.008	-0.037	-0.039
31/05/2008	0.055	-0.005	0.006	0.019	0.013	-0.053
30/06/2008	0.003	-0.109	-0.166	-0.114	-0.128	0.007
31/07/2008	-0.033	-0.125	0.020	-0.077	-0.048	-0.133
31/08/2008	-0.152	-0.123	-0.190	-0.021	-0.095	-0.035
30/09/2008	-0.116	0.025	-0.105	-0.177	-0.048	0.008
31/10/2008	-0.518	-0.236	-0.445	-0.531	-0.376	-0.398
30/11/2008	-0.357	-0.015	-0.105	0.144	0.010	-0.125

31/12/2008	0.039	0.074	0.115	0.054	0.087	-0.091
31/01/2009	0.085	0.009	0.021	-0.024	-0.026	-0.132
28/02/2009	-0.199	-0.062	-0.128	-0.067	-0.096	-0.266
31/03/2009	-0.022	-0.007	-0.028	0.066	0.020	-0.022
30/04/2009	0.242	0.053	0.019	0.092	0.043	-0.069
31/05/2009	0.012	0.081	0.191	0.192	0.119	0.041
30/06/2009	0.717	0.067	0.144	0.255	0.232	0.291
31/07/2009	-0.074	0.130	0.145	0.045	0.035	0.154
31/08/2009	-0.003	0.144	0.045	0.027	0.133	0.088
30/09/2009	0.228	0.184	0.212	0.081	0.145	0.246
31/10/2009	0.048	-0.041	0.034	-0.181	0.077	0.023
30/11/2009	-0.017	-0.011	-0.118	0.027	-0.040	-0.005
31/12/2009	0.118	0.218	0.163	0.027	0.108	0.217
31/01/2010	0.204	0.011	-0.083	0.056	-0.036	-0.017
28/02/2010	0.006	-0.016	-0.054	-0.055	-0.054	-0.019
31/03/2010	0.085	0.057	0.072	0.169	0.123	0.148
30/04/2010	-0.048	0.104	0.066	0.050	0.043	0.111
31/05/2010	-0.198	-0.017	-0.121	-0.087	-0.090	-0.132
30/06/2010	-0.060	-0.016	-0.038	0.027	-0.013	0.055
31/07/2010	0.052	0.028	0.087	0.094	0.104	0.040
31/08/2010	-0.123	0.034	-0.047	0.040	0.010	-0.074
30/09/2010	0.109	0.111	0.126	0.084	0.117	0.034
31/10/2010	0.111	0.089	0.213	0.102	0.109	0.156
30/11/2010	0.189	0.298	0.145	0.097	0.110	-0.051
31/12/2010	0.089	0.281	0.062	0.148	0.002	0.155
31/01/2011	0.190	0.070	0.011	0.084	0.077	-0.028
28/02/2011	0.019	-0.071	-0.108	-0.009	-0.042	-0.086
31/03/2011	0.101	0.133	-0.034	-0.041	0.018	-0.051
30/04/2011	-0.035	-0.055	-0.001	-0.002	-0.037	0.078
31/05/2011	-0.102	-0.085	-0.091	-0.029	-0.018	-0.088
30/06/2011	0.097	0.097	0.066	0.037	0.032	0.068
31/07/2011	-0.070	-0.042	-0.006	-0.038	-0.028	0.110
31/08/2011	-0.051	-0.067	-0.116	-0.061	-0.120	-0.071
30/09/2011	-0.234	-0.202	-0.116	-0.198	-0.180	-0.289
31/10/2011	0.115	0.159	0.200	0.183	0.081	0.282
30/11/2011	-0.097	-0.135	-0.220	-0.063	-0.149	-0.202
31/12/2011	0.040	0.099	-0.105	-0.011	-0.017	-0.020
31/01/2012	0.099	-0.002	0.083	0.056	0.126	0.058
29/02/2012	0.102	-0.036	-0.070	0.002	-0.150	-0.081
31/03/2012	0.002	-0.028	-0.118	0.021	0.058	0.028
30/04/2012	-0.226	-0.253	-0.311	-0.125	-0.280	-0.246
31/05/2012	-0.064	-0.046	0.076	-0.004	0.036	0.192
30/06/2012	-0.062	0.017	0.005	0.076	0.002	0.060
31/07/2012	0.151	0.001	-0.003	0.053	-0.013	-0.074
31/08/2012	-0.137	-0.005	-0.051	-0.025	0.010	-0.037

30/09/2012	-0.010	0.031	-0.044	-0.060	0.004	0.047
31/10/2012	-0.117	-0.060	-0.124	-0.069	-0.024	-0.061
30/11/2012	-0.026	-0.009	-0.134	-0.023	0.013	0.057
31/12/2012	0.063	0.200	0.229	0.151	0.061	0.205
31/01/2013	0.556	0.140	0.242	0.247	0.075	0.147
28/02/2013	-0.299	-0.125	-0.137	-0.092	-0.046	-0.146
31/03/2013	0.096	0.058	0.080	0.104	0.027	0.119
30/04/2013	0.000	0.163	0.086	0.179	-0.005	0.230
31/05/2013	0.031	-0.065	-0.138	-0.147	0.002	-0.111
30/06/2013	-0.220	-0.145	-0.202	-0.148	-0.116	-0.140
31/07/2013	0.019	0.082	0.069	0.100	0.135	0.128
31/08/2013	0.180	0.201	0.110	0.094	0.197	0.268
30/09/2013	0.661	0.354	0.079	0.090	0.275	0.248
31/10/2013	0.203	0.011	0.115	0.083	0.055	0.106
30/11/2013	0.445	0.182	0.096	-0.011	0.224	0.136
31/12/2013	-0.463	-0.188	0.023	0.024	0.013	-0.250
31/01/2014	0.270	0.052	0.191	0.200	-0.033	0.087
28/02/2014	0.155	0.035	-0.091	-0.095	0.039	0.035
31/03/2014	0.072	0.101	-0.019	0.016	0.157	0.164
30/04/2014	0.262	0.247	0.045	0.019	-0.003	0.070
31/05/2014	0.136	0.287	0.069	0.151	0.114	0.145
30/06/2014	0.018	-0.036	-0.053	-0.023	0.056	-0.013
31/07/2014	0.035	0.012	0.016	-0.104	0.098	0.003
31/08/2014	0.236	0.155	0.274	0.278	0.053	0.221
30/09/2014	0.329	0.479	0.381	0.198	0.238	0.247
31/10/2014	-0.049	-0.044	-0.041	-0.291	-0.043	-0.074
30/11/2014	-0.078	-0.105	-0.066	-0.242	-0.046	-0.123
31/12/2014	-0.085	-0.225	-0.061	-0.104	-0.041	-0.107
31/01/2015	0.033	0.196	0.045	-0.054	0.013	-0.008
28/02/2015	0.237	0.162	0.079	-0.014	0.234	0.158
31/03/2015	0.252	0.244	0.130	-0.002	0.129	0.147
30/04/2015	-0.079	-0.062	-0.035	0.078	-0.058	-0.014
31/05/2015	-0.063	-0.154	-0.070	-0.087	-0.107	-0.085
30/06/2015	0.002	-0.005	-0.044	0.012	0.026	0.006
31/07/2015	0.035	0.009	-0.019	0.026	-0.014	0.006
31/08/2015	-0.016	-0.058	-0.006	0.045	0.078	-0.027
30/09/2015	-0.112	-0.005	-0.031	0.004	-0.102	-0.082
31/10/2015	0.302	0.235	0.128	0.146	0.403	0.283
30/11/2015	0.143	0.249	0.131	0.128	0.016	0.011
31/12/2015	-0.012	0.037	0.098	0.006	-0.032	-0.095
31/01/2016	0.041	-0.094	-0.063	-0.003	0.073	-0.005
29/02/2016	-0.027	0.117	-0.034	0.184	0.191	0.130
31/03/2016	-0.115	0.016	0.103	0.165	-0.123	-0.108
30/04/2016	0.000	-0.044	0.001	0.181	-0.020	0.023
31/05/2016	-0.052	-0.003	-0.108	-0.006	-0.029	-0.023

30/06/2016	0.078	0.087	0.109	0.077	0.112	0.100
31/07/2016	0.401	0.277	0.136	0.076	0.055	0.023
31/08/2016	0.027	-0.023	-0.025	0.010	-0.033	-0.025
30/09/2016	0.205	0.226	0.058	0.075	0.156	0.070
31/10/2016	0.099	0.075	0.043	-0.002	0.031	-0.003
30/11/2016	0.005	-0.004	-0.067	-0.084	0.022	-0.029
31/12/2016	-0.096	0.050	-0.026	-0.051	0.019	0.020
31/01/2017	0.265	0.129	0.075	-0.031	0.121	0.156
28/02/2017	0.017	0.060	0.118	-0.048	0.046	0.008
31/03/2017	0.032	0.081	0.083	0.012	0.094	0.076
30/04/2017	0.013	0.124	0.053	0.011	0.043	0.049
31/05/2017	-0.068	0.082	-0.016	0.007	0.087	0.071
30/06/2017	0.092	0.027	-0.042	-0.004	0.014	-0.003
31/07/2017	-0.095	-0.101	-0.037	0.031	-0.035	-0.010
31/08/2017	0.098	0.110	0.097	0.033	0.151	0.094
30/09/2017	0.116	0.049	0.082	0.118	0.146	0.123
31/10/2017	-0.032	0.150	0.164	0.065	0.064	0.093
30/11/2017	-0.052	-0.005	-0.001	-0.012	-0.074	-0.042
31/12/2017	0.027	0.067	0.140	0.116	0.167	0.117
31/01/2018	0.138	0.268	0.172	0.122	0.111	0.139
28/02/2018	-0.047	-0.140	-0.078	-0.082	-0.054	-0.062
31/03/2018	-0.142	-0.121	-0.064	-0.058	-0.030	-0.070
30/04/2018	-0.062	-0.051	-0.043	0.027	-0.060	-0.020
31/05/2018	-0.072	-0.074	-0.116	-0.055	-0.063	0.019
30/06/2018	0.264	-0.173	-0.147	-0.113	-0.126	-0.117
31/07/2018	-0.047	0.159	0.205	0.140	0.082	0.128
31/08/2018	0.155	-0.118	-0.083	0.012	-0.003	0.079
30/09/2018	-0.018	0.093	0.155	0.153	0.134	0.164
31/10/2018	-0.203	-0.159	-0.238	-0.178	-0.152	-0.125
30/11/2018	0.085	0.084	-0.015	0.027	0.076	-0.002
31/12/2018	-0.094	0.023	-0.016	-0.044	-0.042	-0.117
31/01/2019	0.096	0.108	0.119	0.115	0.181	0.163
28/02/2019	-0.019	-0.069	-0.044	-0.045	-0.056	-0.063
31/03/2019	-0.081	-0.137	-0.067	-0.017	0.001	0.081
30/04/2019	-0.113	-0.138	-0.200	-0.122	-0.104	-0.135
31/05/2019	-0.036	0.062	0.113	0.088	0.148	0.084

Table A6 – Monthly returns of Winner and Loser portfolios between June 1998 and May 2019

There are two portfolios composed of winner (W) and loser (L) stocks. Winner stocks of year *t* are the top half with the biggest cummulated average return in the previous 12 months at the time of portfolio formation. Loser stocks are the worst performers in the previous 12 months. The Winner and Loser portfolios were formed every year in May.

	L	W
30/06/1998	-0.0711	-0.0557
31/07/1998	0.0676	0.0628
31/08/1998	-0.4727	-0.4229
30/09/1998	0.0241	0.0617
31/10/1998	0.207	0.1362
30/11/1998	0.0879	0.0834
31/12/1998	-0.0877	-0.0897
31/01/1999	-0.2636	-0.1458
28/02/1999	0.0199	-0.0125
31/03/1999	0.0523	0.0805
30/04/1999	0.194	0.2273
31/05/1999	-0.0432	-0.1151
30/06/1999	-0.0447	-0.0041
31/07/1999	-0.0977	-0.0289
31/08/1999	0.0388	-0.0048
30/09/1999	0.0715	0.001
31/10/1999	0.0535	-0.0047
30/11/1999	0.0104	0.0219
31/12/1999	-0.043	-0.0167
31/01/2000	-0.0424	-0.0229
29/02/2000	0.0548	0.0248
31/03/2000	-0.0602	0.0037
30/04/2000	-0.0696	-0.0374
31/05/2000	-0.1627	-0.04
30/06/2000	-0.0347	0.0849
31/07/2000	0.0262	-0.0005
31/08/2000	-0.0652	-0.0578
30/09/2000	0.0011	-0.0071
31/10/2000	-0.0468	-0.053
30/11/2000	-0.0872	-0.0915
31/12/2000	-0.0199	0.025
31/01/2001	0.1405	0.0765
28/02/2001	-0.1306	-0.1259
31/03/2001	0.0036	-0.0028

30/04/2001	-0.0115	-0.0605
31/05/2001	0.0004	-0.0169
30/06/2001	-0.0546	-0.0523
31/07/2001	-0.2125	-0.077
31/08/2001	-0.0408	-0.0046
30/09/2001	-0.1875	-0.1009
31/10/2001	-0.1115	-0.1146
30/11/2001	-0.1187	-0.0193
31/12/2001	0.1732	0.2101
31/01/2002	0.5661	0.5654
28/02/2002	0.1008	0.0222
31/03/2002	-0.0197	0.0817
30/04/2002	-0.034	-0.0789
31/05/2002	-0.1124	-0.089
30/06/2002	-0.1165	-0.0392
31/07/2002	0.1261	0.1376
31/08/2002	0.0949	-0.0014
30/09/2002	0.0482	0.0182
31/10/2002	0.3199	0.1242
30/11/2002	0.3208	0.1013
31/12/2002	-0.0041	0.0239
31/01/2003	0.0667	0.0378
28/02/2003	0.1049	-0.0003
31/03/2003	-0.0391	0.0004
30/04/2003	0.1813	0.037
31/05/2003	0.1145	0.0594
30/06/2003	0.0351	0.0474
31/07/2003	-0.0181	-0.0332
31/08/2003	-0.0352	-0.0473
30/09/2003	0.0895	0.1451
31/10/2003	0.0921	0.0781
30/11/2003	0.0691	0.1277
31/12/2003	0.0856	0.071
31/01/2004	0.0629	0.072
29/02/2004	-0.034	0.0127
31/03/2004	-0.007	0.0206
30/04/2004	-0.0964	-0.1046
31/05/2004	-0.1174	-0.1355
30/06/2004	-0.0537	0.0183
31/07/2004	-0.3208	0.0352
31/08/2004	0.0061	0.05

30/09/2004	0.1354	0.1313
31/10/2004	0.0012	0.0408
30/11/2004	-0.0523	-0.0392
31/12/2004	0.0776	0.0666
31/01/2005	0.0611	0.0109
28/02/2005	0.1077	0.1243
31/03/2005	-0.0776	-0.0731
30/04/2005	0.0003	-0.0463
31/05/2005	0.1105	0.0757
30/06/2005	-0.0725	-0.0263
31/07/2005	0.0453	0.0643
31/08/2005	0.06	0.0452
30/09/2005	0.0856	0.0627
31/10/2005	0.0352	-0.0225
30/11/2005	-0.0648	-0.0335
31/12/2005	0.0165	-0.0193
31/01/2006	0.0649	0.0941
28/02/2006	-0.0417	-0.0556
31/03/2006	-0.0299	0.0488
30/04/2006	0.0159	-0.0302
31/05/2006	-0.049	-0.1159
30/06/2006	-0.0047	-0.0175
31/07/2006	0.0167	0.0242
31/08/2006	0.0055	-0.0308
30/09/2006	-0.0442	0.006
31/10/2006	0.0583	0.0966
30/11/2006	0.139	0.1406
31/12/2006	0.118	0.0557
31/01/2007	0.0061	0.0232
28/02/2007	0.0006	0.0402
31/03/2007	-0.0174	-0.0873
30/04/2007	0.0312	0.0051
31/05/2007	0.0959	0.0341
30/06/2007	0.0235	-0.0054
31/07/2007	0.0684	-0.0132
31/08/2007	-0.0585	-0.0197
30/09/2007	0.0685	0.0262
31/10/2007	0.1329	0.1074
30/11/2007	-0.0501	-0.0206
31/12/2007	-0.0156	-0.0432
31/01/2008	-0.0626	-0.0911

29/02/2008	0.0834	0.0812
31/03/2008	-0.0181	-0.0673
30/04/2008	-0.0094	-0.069
31/05/2008	0.0119	-0.0165
30/06/2008	-0.1273	-0.0366
31/07/2008	0.0051	-0.0556
31/08/2008	-0.0871	-0.0578
30/09/2008	-0.1046	-0.0726
31/10/2008	-0.4494	-0.3091
30/11/2008	0.0523	-0.0819
31/12/2008	0.0525	0.0241
31/01/2009	0.0101	0.0034
28/02/2009	-0.0812	-0.0972
31/03/2009	0.0034	-0.0246
30/04/2009	0.062	0.0759
31/05/2009	0.1231	0.1077
30/06/2009	0.2839	0.1084
31/07/2009	0.063	0.0809
31/08/2009	0.0128	0.0768
30/09/2009	0.1814	0.1066
31/10/2009	0.0016	-0.0326
30/11/2009	-0.0455	-0.0031
31/12/2009	0.1298	0.0824
31/01/2010	-0.0052	0.0158
28/02/2010	-0.0499	-0.0304
31/03/2010	0.1013	0.0806
30/04/2010	0.0575	0.0408
31/05/2010	-0.1183	-0.0647
30/06/2010	-0.0585	0.0272
31/07/2010	0.0874	0.082
31/08/2010	-0.0628	0.0135
30/09/2010	0.1268	0.1034
31/10/2010	0.1971	0.0995
30/11/2010	0.1486	0.1406
31/12/2010	0.0615	0.0985
31/01/2011	0.0441	0.0175
28/02/2011	-0.0782	-0.0366
31/03/2011	-0.0017	0.0166
30/04/2011	0.0025	-0.0138
31/05/2011	-0.0828	-0.0498
30/06/2011	0.0324	0.0922

31/07/2011	-0.0116	-0.0383
31/08/2011	-0.1248	-0.0413
30/09/2011	-0.147	-0.21
31/10/2011	0.1813	0.1275
30/11/2011	-0.1581	-0.1264
31/12/2011	-0.0459	0.0112
31/01/2012	0.0824	0.0732
29/02/2012	-0.0959	0.0065
31/03/2012	-0.0287	0.0027
30/04/2012	-0.2751	-0.2179
31/05/2012	0.0688	-0.0376
30/06/2012	-0.029	0.0328
31/07/2012	0.0152	0.0229
31/08/2012	-0.0384	-0.0258
30/09/2012	0.0181	-0.0146
31/10/2012	-0.0741	-0.0804
30/11/2012	-0.0074	-0.0648
31/12/2012	0.1745	0.1899
31/01/2013	0.274	0.1944
28/02/2013	-0.1678	-0.0988
31/03/2013	0.0613	0.0797
30/04/2013	0.04	0.1749
31/05/2013	-0.0879	-0.116
30/06/2013	-0.1743	-0.1477
31/07/2013	0.0572	0.1324
31/08/2013	0.1071	0.2028
30/09/2013	0.2731	0.1364
31/10/2013	0.1215	0.0591
30/11/2013	0.1892	0.0662
31/12/2013	-0.0429	-0.0949
31/01/2014	0.1149	0.1654
28/02/2014	0.0068	-0.0598
31/03/2014	0.0198	0.1048
30/04/2014	0.0752	0.0631
31/05/2014	0.1561	0.1043
30/06/2014	-0.0395	0.0749
31/07/2014	-0.0298	0.1084
31/08/2014	0.3007	0.0833
30/09/2014	0.3003	0.3319
31/10/2014	-0.0752	-0.1044
30/11/2014	-0.1154	-0.1003

31/12/2014	-0.0327	-0.2076
31/01/2015	0.0082	0.0629
28/02/2015	0.1514	0.2348
31/03/2015	0.1763	0.2086
30/04/2015	-0.031	-0.06
31/05/2015	-0.0831	-0.1173
30/06/2015	0.0337	-0.033
31/07/2015	-0.0109	0.0505
31/08/2015	0.0492	-0.0638
30/09/2015	-0.1139	0.0142
31/10/2015	0.3045	0.2197
30/11/2015	-0.0132	0.1163
31/12/2015	-0.09	-0.0349
31/01/2016	0.0245	-0.0644
29/02/2016	0.149	0.0848
31/03/2016	-0.0723	-0.1165
30/04/2016	-0.004	0.0003
31/05/2016	-0.0061	-0.0777
30/06/2016	0.0935	0.1087
31/07/2016	0.1214	0.1491
31/08/2016	-0.0522	0.0134
30/09/2016	0.0933	0.1659
31/10/2016	0.0607	0.0001
30/11/2016	0.0143	-0.0599
31/12/2016	-0.0668	-0.006
31/01/2017	0.1126	0.083
28/02/2017	0.0213	0.0218
31/03/2017	0.0258	0.0419
30/04/2017	0.0534	0.0509
31/05/2017	-0.0053	0.0462
30/06/2017	-0.0286	0.0548
31/07/2017	0.0155	-0.0864
31/08/2017	0.0437	0.1274
30/09/2017	0.107	0.0907
31/10/2017	0.1096	0.0541
30/11/2017	-0.0394	-0.0234
31/12/2017	0.0935	0.0853
31/01/2018	0.0867	0.1825
28/02/2018	-0.0675	-0.0918
31/03/2018	-0.0668	-0.0944
30/04/2018	-0.0005	-0.0702

31/05/2018	-0.0633	-0.0332
30/06/2018	-0.0994	-0.1225
31/07/2018	0.1437	0.1228
31/08/2018	-0.0289	-0.0538
30/09/2018	0.1473	0.1243
31/10/2018	-0.1691	-0.1793
30/11/2018	0.0398	0.0521
31/12/2018	-0.0353	-0.0113
31/01/2019	0.0939	0.1408
28/02/2019	-0.0181	-0.045
31/03/2019	-0.0318	-0.0708
30/04/2019	-0.0869	-0.1383
31/05/2019	0.107	0.0895