UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL
FACULDADE DE CIÊNCIAS ECONÔMICAS
DEPARTAMENTO DE ECONOMIA E RELAÇÕES INTERNACIONAIS

EDUARDO BORGES SILVA GRÜBLER

THE VALUE PREMIUM: A CONTEMPORARY ASSESSMENT

Porto Alegre
2017

UNIVERSIDADE FEDERAL DO RIO GRANDE DO SUL
FACULDADE DE CIÊNCIAS ECONÔMICAS
DEPARTAMENTO DE ECONOMIA E RELAÇÕES INTERNACIONAIS

EDUARDO BORGES SILVA GRÜBLER

THE VALUE PREMIUM: A CONTEMPORARY ASSESSMENT

Work presented in partial fulfillment
of the requirements for the degree of
Bachelor in Economics

Advisor: Prof. Dr. Nelson Seixas dos Santos

Porto Alegre
2017

EDUARDO BORGES SILVA GRÜBLER

THE VALUE PREMIUM: A CONTEMPORARY ASSESSMENT

Work presented in partial fulfillment
of the requirements for the degree of
Bachelor in Economics

Advisor: Prof. Dr. Nelson Seixas dos Santos

Aprovado em: Porto Alegre, 21 de dezembro de 2017.

BANCA EXAMINADORA:

Prof. Dr. Nelson Seixas dos Santos - Orientador
UFRGS

Prof. Dr. Guilherme Ribeiro de Macêdo
UFRGS

Prof. Dr. Antonio Ernani Lima
UFRGS

CIP — CATALOGING-IN-PUBLICATION

Grübler, Eduardo Borges Silva

THE VALUE PREMIUM: A CONTEMPORARY ASSESSMENT / Eduardo Borges Silva Grübler. –

.

32 f.: il.

– Universidade Federal do Rio Grande do Sul. Departamento de Economia e Relações Internacionais, Porto Alegre, BR–Brazil,

. Advisor: Nelson Seixas dos Santos.

1. Value premium. 2. Risk premium. 3. Risk factors. 4. Value investing. 5. Sentiment analysis. 6. Opinion mining. 7. Fundamental analysis. 8. Stochastic dominance. 9. Behavioral economics. 10. Review. I. Seixas dos Santos, Nelson. II. Título.

“It is the mark of an educated mind
to be able to entertain a thought
without accepting it”
— ARISTOTLE

ACKNOWLEDGMENTS

To the Undergraduate Program in Economics of the Federal University of Rio Grande do Sul - UFRGS.

To professors Antonio Ernani Martins Lima and Guilherme Ribeiro de Macêdo, for serving as my committee members.

To my advisor, Professor Nelson Seixas dos Santos, for always being a source of encouragement and tremendous technical expertise.

To my father, Vilmar.

ABSTRACT

Value Investing, as suggested by Graham (1949), has robust empirical claims on outpacing the market - this difference is known as The Value Premium. In this work, we show the historical evolution of the perception of this "anomaly"; the major theories explaining its sources; and some recent findings regarding the topic. We conclude that, besides many advancements over the years, a settling on the root causes of the value premium has yet to be achieved.

Keywords: Value premium. risk premium. risk factors. value investing. sentiment analysis. opinion mining. fundamental analysis. stochastic dominance. behavioral economics. review.

Journal of Economic Literature (JEL) Classification: G10.

RESUMO

Investimentos de Valor, como sugerido por Graham (1949), têm um robusto apelo empírico sobre sua performance acima do mercado - essa diferença é conhecida como O Prêmio de Valor. Neste trabalho, nós mostramos a evolução histórica da percepção desta "anomalia"; as dominantes teorias explicando suas fontes; e algumas descobertas recentes sobre o tema. Concluímos que, apesar de muitos avanços através dos anos, uma definição das raízes do prêmio de valor ainda não foi consolidada.

Palavras-chave: Prêmio de valor, prêmio de risco, fatores de risco, investimento de valor, análise de sentimento, opinion mining, dominância estocástica, economia comportamental, revisão.

Classificação "Journal of Economic Literature" (JEL): G10.

LIST OF ABBREVIATIONS AND ACRONYMS

E/P	Earnings to Price Ratio
C/P	Cash Flow to Price Ratio
B/M	Book (Value) to Market (Value) Ratio
D/P	Dividends to Price Ratio
BM/EV	Book to Market by Entreprise Value Ratio
P/B	Price to Book (Value) Ratio
BE	Book Equity
ME	Market Equity
BE/ME	Book Equity to Market Equity Ratio
NYSE	New York Stock Exchange
AMEX	A former American Stock Exchange

CONTENTS

1 INTRODUCTION

Value Investing, as suggested by Graham (1949), consists of finding firms which are undervalued by the market (their market price does not reflect their *intrinsic* value, the real value of the company) and profiting when the price normalizes. Even though this strategy has been successfully adopted by investors at least since 1930s, following Graham and Dodd (1934), robust empirical studies on its effectiveness started to become popular only by the 1990s.

Over the years, overwhelming evidence has been presented about the existence of the value premium - controlling for time periods, regions, firm size, etc. Various theories try to explain its existence, and two of them have resisted time and scrutiny to keep the debate open: Fama and French (1992) argue that the premium is a reflection of the greater risk an investor is exposed to when investing on value companies; and Lakonishok, Shleifer and Vishny (1994) say it is the result of the combination of consistent overestimations of future results (due to extrapolation of past good results) of growth firms coupled with the inverse being observed on forecasts about value firms (underestimations of future results' expectations, due to extrapolation of past below-expected results).

Recent technological advancements and ever more robust data sets have shone new light into the issue, which has not been solved despite its utmost importance to portfolio decision. While we cannot see a settlement on the horizon, a bevy of new tests are now available to researchers.

We intend to revisit the perception of the value premium over the last 40 years, presenting some of the most discussed arguments and counterarguments during this period, in order to better understand the current stance on the (still open) debate. We show how the breakthroughs on the topic add to each other, such as to arrive in the state of currents affairs with a full grasp on what the premium is and what is needed for a full explanation to become the dominating one.

Our methodology will consist of tying up widely cited research in order to perceive research trends and trails. We go into great detail about methodologies and data sets used, in order to provide a bigger picture about advantages and shortcomings of each step. We believe accompanying the evolution of the state of the art on the topic allows better understanding of the field as a whole while increasing the likelihood of finding possible gaps, elevating one's level of criticism. The value of science depends on the open discussion, so adding towards this ideal justifies our initiative.

The work will be presented as follows: we will touch on the concept of value investing, showing the generators of the school of portfolio management around it and how academy took notice; present widely influential asset pricing models, developed in parallel and used to identify and explain the value premium; revisit how the premium gained notice, via mounting evidence and practitioner appraisal; highlight the major schools of thought on the value premium's root causes, laying the most accepted and worked on hypothesis; discuss subsequent findings, both on the initial premises and possible evolutions of established approaches; then show some concluding remarks, detailing the current state on the value premium.

2 VALUE INVESTING

Just before 1929, an year marked by arguably the most devastating financial crisis we have ever seen, two professors at the Columbia Business School started propagating an investment strategy based on looking for generally financially-distressed firms, companies which had never "taken off" and/or firms which have recently underperformed market expectations. You would be able to select them by watching out for some *financial fundamentals*, such as a low price-to-earnings (P/E) ratio, and, after careful analysis, find their hidden real value, their *intrinsic value*. While they did not give it a proper name, strategies of this kind came to be known as *Value Investing*.

Many years and successful *value investors* later (perhaps the most widely known of Graham's pupils being Berkshire Hathaway's CEO Warren Buffet), academia too decided to investigate financial pointers, the aforementioned P/E ratio among many others, following the lead from accounting literature, such as Horngren (1955).

Nicholson (1960) was one of the first to notice how most of his contemporary financial practitioners, when asked if a high or low P/E firm would perform better in a 3 to 10 year period, would answer confidently that the higher multiple firm would offer bigger earnings. But how could they be so certain?

According to Nicholson (1960) "It is assumed they are brought for growth, and the low multiples only for income" was the common knowledge, meaning high P/E stocks were purchased when intended to be sold later, while one would only buy low P/E if in desire of consistent dividends (the so-called "growth stocks" tend to retain dividends for reinvesting, in order to maintain their advantaged market position).

In order to test the popular belief, he separated firms in quintiles by their P/E ratio and compared their earnings for 5-year periods. What he sees directly contradicts the common knowledge: not only low P/E companies provided a higher income, they also offered a greater appreciation, according to 1939-1959 U.S. data. Extending both his sample and time period in Nicholson (1968), those new findings corroborate his previous results.

He concludes that the E/P ratio of a company could be compared to a measurer of returns' productivity.

3 THE CAPM AND COMPETING PRICING MODELS

Drinking from (MARKOWITZ, 1952)'s Modern Portfolio theory, various asset pricing models have been developed over the years. Here we present some of the most influential ones, developed in parallel with accounting literature and used to both identify and in explaining the value premium.

3.1 Capital Asset Pricing Model - CAPM

Sharpe (1964) introduced the Capital Asset Pricing Model (CAPM), which was independently proposed by Lintner (1965) and later refined by Black (1972). Sharpe's model states that the price of an asset derives from:

- expectation of return from the asset
- return rate of a risk-less asset (generally assumed to be the sovereign interest rate i.e. U.S. government Treasury Bills)
- return of the market as a whole in excess of the risk-free rate
- covariation of the asset's return with the market's

The price of any asset should be a function of the earnings it generates, its specific, non-systemic risk, market (systemic) risk, and the cost of opportunity of allocating resources to it instead of lending to the government, which always pays - an investor must be compensated by the additional risk he or she takes, and that is called the *risk premium*.

Black (1972)'s version of the model removes the necessity of a risk-less asset, which makes it a lot more palpable, since most agents could not borrow at a risk-less rate. This evolution greatly increased the popularity of the Sharpe, Lintner, Black mean-variance equilibrium model, according to Fama and French (2004).

The added relevance brought together added scrutiny, of course.

3.2 Intertemporal Capital Asset Pricing Model - ICAPM

Merton (1973) works towards eliminating the single-period nature of the CAPM model. In his Intertemporal Capital Asset Pricing Model (ICAPM), he spins the CAPM to absorb the intertemporal nature of human decision - his rationale is that choices are not

made in a vacuum, and (market) conditions change.

Adding state and wealth variables to the CAPM, Merton's dynamic model embodies hedging against unexpected downturns and varying investment opportunities. By assuming the state variable follows a Brownian motion, his model is able to take into account both shortfalls and uphills of economic conditions.

3.3 Arbitrage Pricing Theory - APT

Ross (1976), on the other hand, critics the mean-variance efficiency of the CAPM, not accepting the assumption of normality in returns. According to Ross (1976):

> The linear relation in (the CAPM) arises from the mean variance efficiency of the market portfolio, but on theoretical grounds it is difficult to justify either the assumption of normality of returns (or local normality in Wiener diffusion models) or of quadratic preferences to guarantee such efficiency, and on empirical grounds the conclusions as well as the assumptions of the theory have come under attack.

He proposes an alternative model, the Arbitrage Pricing Theory (APT), where prices can be modeled as a linear function composed of various factors, each of them having their specific β (volatility in relation of the market as a whole), meaning different (and dynamic) sensitivities across the board. If any of those factors diverge, arbitrage opportunities arise, and since agents will always arbiter if able (due to insatiability), the divergent will be swiftly corrected.

The APT differentiates itself from the CAPM by existing outside of market equilibrium - in fact, the market portfolio has no major role in it.

Agents' expectations can vary wildly and the model still holds its weight, as opposed to what mean-variance implies. Needing so few assumptions is a major draw towards the APT.

While very powerful and theoretically elegant, the APT does not hint us on which factors should we use, severely undermining its practical applications - such estimation is inherently empiric.

3.4 Consumption-based Capital Asset Pricing Model - CCAPM

Breeden (1979) extends Merton (1973)'s work and devises a model where those state variables and wealth conditions could be amassed into a singular, real-consumption-derived variable - the Consumption-based Capital Asset-Pricing Model (CCAPM). The

CCAPM is summed up by Breeden (1979):

> (...) utilizes the *same* continuous-time economic framework as that used by Merton, likewise permitting stochastic investment opportunities. However, it is shown that Merton's multi-beta pricing equation can be collapsed into a single-beta equation, where the instantaneous expected excess return on any security is proportional to its 'beta' (or covariance) with respect to aggregate consumption alone. (...) this result extends to a multi-good world, with an asset's beta measured relative to aggregate real consumption. The fact that this model involves a single beta relative to a specific variable, rather than many betas measured relative to unspecified variables, may make it easier to test and to implement.

A great advantage of the CCAPM over the CAPM is that real consumption (intuitively) covers a greater share of an investor's portfolio than capital markets' returns alone. While it is acknowledged that human capital, real estate and consumer durables suffer from poor/insufficient coverage, they are clearly relevant to one's (financial and non-financial) asset allocation.

3.5 Wrapping up

Those asset pricing models molded economic literature since their inception, having been widely used on various fronts. The value premium was one of them, both to identify it and trying to explain it. Next, we will dive into the premium itself and its intricacies.

4 THE VALUE PREMIUM

The CAPM's broad acceptance led academics and practitioners alike to consider firm size and earnings yield as proxies for risk, since a growing body of accounting literature reported greater-than-average gains from small and/or high E/P (mirroring Nicholson (1960)'s low P/E) firms, as seen in (BENISHAY, 1961; BEAVER; KETTLER; SCHOLES, 1970).

Broad recognition of fundamental analysis' power naturally spiked the interest on companies' balance sheets, in order to isolate the best predictors of companies' performance. One of those investigations challenged the size-effect: when market risk (measured by market β) and E/P ratios were controlled, big and small firms' returns were not statistically different. E/P, on the other hand, was shown to be correlated with earnings. According to (BASU, 1983):

> (...) the common stock of high E/P firms seem to have earned, on average, higher risk-adjusted returns than the common stock of low E/P firms. This E/P effect, furthermore, is clearly significant even after experimental control was exercised over differences in firm size, i.e., after the effect of size, as measured by the market value of common stock, was randomized across the high and low E/P groups. On the other hand, while the common stock of small NYSE firms appear to have earned considerably higher returns than the common stock of large NYSE firms, the size effect virtually disappears when returns are controlled for differences in risk and E/P ratios.

While size is shown to not have an effect on earnings, it does have an inverse influence on the captured E/P effect - the bigger the company, the weaker the high E/P bonus. Basu (1983) says:

> (...) it appears the strength of the earnings yield effect seems to vary inversely with firm size. More specifically, the results show that the E/P effect is sufficiently weak for larger than average NYSE firms that from a stochastic viewpoint it either is not significant or, at best, is marginally significant.

One possible explanation comes from coverage: big firms tend to have analysts accompanying their results at all times, but the same cannot be said about small companies. If a high E/P ratio is seem as demeaning, it makes sense to not devote highly-trained professionals' time to companies no one is interested in. Big firms, however, must be looked into despite such "flaws", since it is expected that information about those will flow faster, minimizing a possible highly-profitable purchasing opportunity.

The popular short-term approach to E/P (last year's numbers only) was also unsettling to some. Unsatisfied with how variance-prone a ratio like E/P can be, Campbell and Shiller (1986) proposed a dividend-to-price ratio (D/P), using 1981-1986 U.S. data to test it. Their rationale for choosing this metric comes from the perception that companies tend to establish dividend policies and operate by it consistently, paying up their proposal despite an above-average result or an eventual stumble (by maintaining excess returns or drawing from such reserves in times of need).

While there is certainly variation in dividend payments, they argue that dividends are a better proxy for multi-year performance measurement than single-year earnings, and their log-normalized proposed D/P ratio was able to achieve a higher predictability of future stock returns than single-year multiples had reported until then.

Academics did not fail to notice a possibly devastating limitation common to most research being done: data snooping. Since the quality of the U.S. market data back then was miles ahead of those of other countries, results relied heavily on that specific market. For example, evidence on the relevance of factors external to the CAPM at determining stock prices was piling up, but Sharpe (1964), Lintner (1965), Black (1972)'s model is supposed to be a general one: empirical tests might be biased in that particular distribution, so maybe it does hold its predictive power as intended.

Pioneering the initiative to check if such effects were not a United States' specific anomaly, Chan, Hamao and Lakonishok (1991) studied Japanese data, with a comprehensive, high-quality data set from 1971 to 1988. Analyzing earnings yield, size, book-to-market ratio and cash-flow yield, a palpable correlation of fundamental variables and expected returns was found for the Japanese market, with the book-to-market ratio being specially relevant to the relation.

In parallel, by the end of the 1980's literature and markets had converged some of their jargon, providing endless topics of research on behaviors practitioners had already embraced.

Value stocks, as defined by Graham and Dodd (1934), are underpriced ("cheap") stocks, since their *real*, *intrinsic value* is in some way hidden; the market as a whole is not able to properly assess it. Those companies have high price-to-earnings, dividend-to-earnings, cash-flow-to-earnings and/or book-value-to-market-equity ratios. Their high dividend-to-earnings ratio permits investment strategies focused on providing income.

Growth stocks, on the other hand, represent firms with low price-to-earnings, cash-flow-to-earnings and/or book-value-to-market-equity ratios. Usually big, industry-leader companies, they tend to pay few dividends if at all, instead retaining them for reinvesting in such a way to maintain their advantaged position, so their *growth* outpaces the market's. Investors buy growth stocks expecting to sell them at much higher prices later on, since by then the firm will have grown considerably.

These reported abnormal gains of value stocks over growth stocks is known as The Value Premium.

5 POSSIBLE EXPLANATIONS

With the Value Premium reasonably established, researchers went on to explain why it occurs.

While the CAPM has received a bevy of criticism throughout the years, most attacked it empirically (a particular brutal one comes from Roll (1977), arguing that testing the two-parameter model is infeasible, therefore the model is not scientific). The Value Premium, however, challenges the theoretical resolution behind it - that a greater return must come from a greater risk.

Evidence pointed towards high E/P firms outperforming low E/P firms after controlling for size and risk (Basu (1983), Campbell and Shiller (1986), Chan, Hamao and Lakonishok (1991)) - but is the risk measurement accurate?

5.1 Compensation of Risk

The market β, as proposed by Sharpe (1964), was how those studies accounted for risk. Eugene Fama and Kenneth French were not satisfied with that.

Starting with Fama and French (1992), they try to validate the CAPM, but observed average stock returns and market βs do not fit the model during the 1963-1990 period - when controlling by size, no reliable relation between the market return and the average return of a stock is found on the NYSE, AMEX and NASDAQ exchanges.

They also fail to find the supposed E/P effect on earnings: their testing points to it being completely absorbed by a combination of firm size and book-to-market ratio, and seasonality was also a non-factor on their predictions.

They do not go against modern portfolio theory, as of Markowitz (1952), and do accept the risk x reward trade-off. But they vehemently argue against the usage of market βs as the sole metric of risk - value firms must have risk-factors unaccounted for by their βs.

Fama and French (1992) conclude:

> Variables like size, E/P, leverage, and book-to-market equity are all scaled versions of a firm's stock price. They can be regarded as different ways of extracting information from stock prices about the cross-section of expected stock returns. Since all these variables are scaled versions of price, it is reasonable to expect that some of them are redundant for explaining average returns. Our main result is that for the 1963-1990 period, size and book-to-market equity capture the cross-sectional variation in average stock returns associated with size, E/P, book-to-market equity, and leverage.

In Fama and French (1993), they choose to study returns from both the stock market and the bond market, since, if markets are integrated, a single model should explain both assets' average returns.

Three stock-market factors are found to covary with stock returns:

- Overall market factor (risk)
- Firm size
- Book-to-market equity

Those, however, have little if any role in (non low-grade corporate) bond returns. Two term-structure factors link those markets:

- Difference between the monthly long-term government bond return and the one-month Treasury bill rate measured at the end of the previous month
- Difference between the return on a market portfolio of long-term corporate bonds and the long-term government bond return

Those findings lead them to their "Fama-French Multi Factor Model", which aims to fix the stated problems of the CAPM by adding to the pricing equation "true" markers of risk.

5.2 Behavioral Bias

Lakonishok, Shleifer and Vishny (1994), on the other hand, provide a very different take on the Value Premium. They reduce the problem into two hypothesis:

- Investors (naively) extrapolate past results, so a contrarian strategy is rational
- Value stocks are inherently riskier than growth (or, as they call it, glamour) stocks

They present solid evidence that investors extrapolate growth rates of earnings, sales and other performance-linked variables of growth/glamour companies, which by definition have excelled in the past - that is, they are consistently overestimated in comparison with those of value stocks. This suffices for the development of a viable profitable strategy, but explicitly contrarian strategies are modeled and shown to outperform 'usual' value strategies.

They argue that risk does not seem able to explain the difference in earnings: the trio of authors compare value stocks' performance with glamour stocks' during various crisis-ridden market periods and the outperformance keeps happening during those turbulences.

This goes against the assumption that a higher return must imply a higher risk (given some risk, investors seek for the highest possible return from it; given some targeted return, investors seek the minimum risk able to provide it), but the behavioral explanation is considered able to explain it due to how strong the evidence is, in their opinion.

Investors must either not know about value stocks performing better than growth stocks or simply prefer them for some other reason. Ignorance does not seem plausible, since praise for value investing goes back at least since the 1930, by Graham and Dodd (1934). Investor's preferences, on the other hand, are briefly discussed:

- Extrapolation of past results causes judgment errors
- Equalization of well-run businesses with good investments, regardless of opportunity cost
- Expectancy of short-term returns
- Agency problems of money managers

Extrapolation of past results is justified by investors wanting to see spectacular results on the stocks they own and past results being enough fodder of confirmation bias as in order to justify it.

Investors might have more confidence that big, known businesses are less likely to go bankrupt, but fail to take into account the opportunity cost of those investments, preferring a 'safer', less-profitable one.

Value stocks also do not seem to offer a good return in a short period of time, since their results do not affect their price as much as good news from growth stocks, as early demonstrated by Basu (1983) - since individual investors have a higher tendency to act on tips, hoping for fast riches, they are more prone to put their money on companies they know. Value's outperformance comes over a relatively long period of time (5+ years), which is not easily perceived by the common investor, so a balanced portfolio for the mid/long term is not taken into consideration.

Money managers, on the other hand, must keep their sponsors happy at all times - and should a bear market arise and prices drop suddenly, it is way easier to explain how such movements happen from time to time when you have participations on big, known to be well-run companies than if you have relatively unknown assets in your portfolio: that might cause the client to move their money elsewhere. In short, institutional investors might overly disdain variance in returns and/or overvalue consistent (even if lower) results, mostly in line with individual investor's bias.

5.3 Methodological Problems

The non-existence of the Value Premium can be a third-way. As proposed by Kothari, Shanken and Sloan (1995), the Value Premium is nothing but a mirage - the fruit of unsupervised survivorship bias. High E/P firms are more financially distressed than low E/P firms, so a lot of them go bankrupt. The few survivors do grant a bigger return, based on the risk taken - but you cannot generalize the results of the best of the bunch to the entire asset class.

The Value Premium can also be disregarded as an abnormality from specific data sets, as suggested by Black (1993) and MacKinlay (1995). They point towards p-hacking, which can be summarized, in an informal way, as "if you run enough regressions from a data set, you will find some correlation, but it is most probably spurious (not significant in explaining the effect)".

5.4 Counterarguments

Following those developments, Fama and French update their model (FAMA; FRENCH, 1996):

> The model says that the expected return on a portfolio in excess of the risk-free rate is explained by the sensitivity of its return to three factors:
>
> the excess return on a broad market portfolio
> - the difference between the return on a portfolio of small stocks and the return on a portfolio of large stocks
> - the difference between the return on a portfolio of high-book-to-market stocks and the return on a portfolio of low-book-to-market stocks.

They argue against the concurring theories, which they summarize as follows:

1. a substantial part of the premium found is due to survivor bias on the dataset, as of Kothari, Shanken and Sloan (1995)
2. data snooping, that is, fixating on explaining variables of their question but only in the same data set used to identify the possible answer, as of Black (1993)
3. the premium exists but not due to some rational process (validating an rational asset-pricing equilibrium model) but thanks to over/under reactions of investors, as of Lakonishok, Shleifer and Vishny (1994)

In response to those, they provide multiple data sets controlled for survivorship bias where we can see the Value Premium present, in case of (1) and (2); and Fama and French argue

that irrationality in those actions is probably present but is not sufficient to explain the behavioral pattern - the high distress premium persists for many years after the mean reversion of earnings growth.

One specific kind of asset had always been left out of possible value premium analysis: financial firms. Intuitively, if the researcher believes leverage might be an explanatory variable for earnings, he or she must indeed keep those firms out, since leverage in the financial industry works in a very different way, when compared to other industries. Fama and French had done just that.

Barber and Lyon (1997), however, pick the holdout data from Fama and French (1992)'s base for two reasons: one can define value firms by the use of other ratios, such as the book-to-market equity and E/P; and because it was not taken into account in previous analysis, a result corroborating the analyzed data's findings would weaken the claim of p-hacking, since by definition p-hacking is finding spurious relations in a given data set, and this was a different one.

They document similar relations between firm size, book-to-market ratios and security returns from both financial and non-financial firms. According to Barber and Lyon (1997):

> We document that financial and non-financial firms have very similar return patterns. Both financial and non-financial firms exhibit a significant size and book-to-market premium. Furthermore, we are unable to reject the null hypothesis that the size or book-to-market premium differ between financial and non-financial firms.

They do highlight that their findings do not point towards an answer to the root of the Value Premium - it merely generalizes previous literature. The *real* question is left open. According to Barber and Lyon (1997):

> At this juncture, the critical issue, which remains unsolved, is whether size and book-to-market are proxies for unidentified risk factors (as suggested by Fama and French (1993), Fama and French (1996) or security mispricing (as suggested by Lakonishok, Shleifer and Vishny (1994)).

The criticism based on data problems, such as p-hacking and survivorship bias, had received a major (albeit not definitive) blow from time-varied, survivorship controlled, geographically newborn works such as Chan, Hamao and Lakonishok (1991) and Barber and Lyon (1997). This rushed academics towards analyzing new data and settling the issue.

Investigating the behavioral school of thought further, Porta et al. (1997) examine market's reactions for earnings announcement, up to 5 years after portfolio formation. They argue that this is a direct test for their mis-extrapolation hypothesis - if surprises are systematically positive for value stocks and systematically negative for growth stocks, investor/analyst bias must be, at least in part, cause of the error. Such methodology also

hints on the learning process of the market about future prospects of value and growth stocks.

Their results show substantially higher post-announcement returns for value stocks than for growth stocks, persistently. According to Porta et al. (1997):

> In the full sample of NYSE, AMEX and NASDAQ firms, earnings announcement return differences explain approximately 25-30% of the annual return differences between value and glamour stocks in the first two to three years after portfolio formation and approximately 15-20% of return differences over years four and five after formation.

They note how size seems to have a role, too: the difference in returns for larger-than-average companies are lessened, possibly due to bigger firms being widely-followed, which in effect adjusts prices to news in a more continuous fashion.

Following Chan, Hamao and Lakonishok (1991), Fama and French (1998) check returns from value and growth stocks in other territories. They use the 1975-1995 Morgan Stanley's Capital International (MSCI) database, which contains information of most non-american, non-japanese developed markets, such as the french, australian and german markets.

They classify stocks into value or growth in four different ways: B/M, E/P, C/P and D/P. Somewhat surprisingly, they all reproduce the value premium, showing some interchangeability.

Since they are interchangeable, Fama and French conclude that they must describe a common risk - which is compensated by the value premium.

Interestingly, they do not make this particular analysis with their multifactor model, but instead use both Merton (1973)'s ICAPM and Ross (1976)'s APT. They find that while an international CAPM cannot explain the value premium, a one-state variable ICAPM or a two-factor APT, when coupled with a risk factor for relative financial distress, is able to account for it.

6 FURTHER DEVELOPMENTS

Revolving contradicting evidence and plausible theoretical constructs on both the behavioral bias and the the risk-optimizing rationality lines of thinking kept mainstream academia from solving the root cause of the value premium problem. When unable to settle the debate, the next natural step is to dive deeper on the generators of those excess returns - segregate stocks into ever smaller contingents until a definite separator arises.

Piotroski (2000) elaborates on the heavily documented high book-to-market over-performance. He proposes additional filters, using simple accounting-based fundamental analysis, to separate 'winners from losers' - and reports major gains with the subsequent strategy.

By the end of the millenia, evidence on high B/M firms' stocks outperforming low B/M firms was overwhelming. Given that, Joseph Piotroski reports how that premium comes from a few winners (44% of the high B/M group, in his study), while other high B/M firms kept their status and underperformance, getting delisted or going bankrupt. Given that, he proposes two different strategies:

- Selecting financially strong high B/M firms
- Doing the former while shorting high B/M 'expected losers'

Both are tested for the 1976-1996 period. Their results are: (i) an increase of at least 7.5% anually (through the selection of financially strong high B/M firms) when compared to a normal value portfolio; and (ii) a 23% annual return between the aforementioned period.

The extra selection seems to have an effect exclusively when applied to small and medium firms, however.

Mirroring Lakonishok, Shleifer and Vishny (1994)'s thesis, Piotroski finds re-peated market surprises surrounding those filtered value firms. According to Piotroski (2000), "the market is systematically surprised by the future earnings announcements of these two groups."

Consistently, he finds, returns shortly following a quarterly announcement are 0.041 higher than those of predicted "losers" - he notes how in just 12 trading days (the three-day market reactions after each of the quarterly announcements) one-sixth of total annual return difference between ex ante strong and weak firms can be achieved.

Those reported gains, he also notes, are concentrated in 'invisible' companies; those with low share turnover, no or few analysts covering, etc.

Slicing up behavioral biases believed to take place in the formation of the value premium is a way reducing the problem into better-testable hypothesis. Levis and Liodakis (2001) assume behavioral biases take place and examines the phenomenon of extrapolation of the past by investors.

Using 30 years of U.K.'s data, they fail to find evidence of it in their research, as opposed to what Lakonishok et al. had suggested.

According to Levis et al., the heart of the discrepancy is the asymmetry on good (bad) news from value (growth) firms. While the latter have disproportionately high appreciation in face of positive surprises, the former suffer harshly from worse-than-expected results.

A stronger stance is taken by Skinner and Sloan (2002). They see the value premium arising **entirely** from the disproportional negative effects of worse-than-expected results of growth stocks. According to Skinner and Sloan (2002), "After controlling for the asymmetric response of growth stocks to negative earnings surprises, we show that there is no remaining evidence of a stock return differential between growth stocks and other stocks."

In fact, their research points towards growth stocks performing better than value stocks in periods without negative surprises, so called 'economic booms'. According to Skinner and Sloan (2002):"(...) while growth stocks underperform on average, they systematically outperform other stocks in 'boom' periods during which a relatively low frequency of negative earnings surprises are reported."

It should be noted how this assertion comes right after the "dot com" bauble - an extraordinary appreciation of IT-related companies (Internet firms, telecoms, etc.) followed by a catastrophic burst (GOODNIGHT; GREEN, 2010).

Internet companies tend to operate on very few physical assets, so their BM/ME, according to Fama and French (1993) the best multiple to differentiate growth stocks from value stocks, is extremely low - meaning they are classified as growth stocks.

Dot com firms are questioned by Chan and Lakonishok (2004): how can stocks with such volatility be considered less riskier, as Fama and French (1993) proposes? According to Chan and Lakonishok (2004):

> On the basis of the risk argument, Internet stocks, which had virtually no book value but stellar market value in the 1990s, would be considered much less risky than traditional utility stocks, which typically have high book values relative to market values. Note also that the idea that value stocks have higher risk surfaced only after their higher returns became apparent.

According to Chan and Lakonishok (2004), only a 'metaphysical' definition of risk would support Fama and French (1992)'s claim about value stocks being inherently

riskier.

The deepening of globalization has permitted a great increase in the flow and subsequently the efficiency of capital. Accounting for that, (YEN; SUN; YAN, 2004) studies the Singaporean stock market, one which has increased 15 fold from 1990 to 2000. While Singapore was briefly touched by Fama and French (1998), it had a 0.7% weight in that past study, so a new optic in a highly-technological, newly developed country could provide further discoveries.

It does indeed deliver some new findings. Singapore had a particularity in the 1975-1997 studied period: short selling was not permitted. While the value premium is found, it is concentrated in the first 2 years after portfolio formation. Estimations on value stocks' earnings growth rates are also not underestimated (but growth stocks' earnings growth rates are overestimated), as usually seen.

The researchers test the CAPM and Fama and French (1998)'s two-factor model, to unsatisfying results - the value premium cannot be explained using them, they believe. Therefore, they focus on Lakonishok, Shleifer and Vishny (1994)'s cognitive bias line, and find the aforementioned overestimation of growth stocks' earnings growth rate.

Evidence so far had always found an overestimation coupled with an underestimation (of value stocks' earnings growth rates). Singapore's singular cause may be an indication of confirmation bias playing a role in the value premium - analysts want bad results because this way shorting such stocks is a profitable move.

Proceeding with extra stratifications in order to try to isolate the value premium, Anderson and Brooks (2006), based on the notion that a single sample of annual earnings is a very poor indicator of a company's fundamental value, as stated by Campbell and Shiller (1986), show us how identifying high P/E firms using multiple-year financial statements (they use 8-year intervals, which goes in line with Graham and Dodd (1934)'s suggestion of 5-to-10-year periods) greatly increases the value premium - as much as doubling the 6% difference in earnings found in UK companies for the 1975-2005 period.

Anderson and Brooks (2006) conclude:"We show that the power of the effect has until now been seriously underestimated due to taking too short-term a view of earnings."

As of note, this value premium enhancement does not appear when using only 2 or 3 years as complimentary financial information - 5 year considerations, however, are enough for significant gains to be had.

Bird and Casavecchia (2007) complement the search for the value premium in a different way. Following Piotroski (2000), they recognize how the majority of value stocks are not good investments - the value premium is generated by a few 'winners' severely outperforming the market, but most of those high-multiple stocks are in fact

underperformers. Even though enough patience tends to pays off, investors' cost of opportunity piles up and an efficient portfolio cannot be chosen with no extra information. According to Bird and Casavecchia (2007):

> Although these valuation multiples might provide a logical basis for identifying stocks that are candidates for a reversion in recent poor market performance, they tell us little or nothing about when this reversion is likely to occur, if indeed at all.

They propose a strategy where one not only takes into account a qualitative approach of financial distress on each firm (therefore selecting 'winners') but also makes use of the relatively new tool that is (market) sentiment analysis, a momentum metric, as a way of delving deeper on the problem of the extended time frame needed for the value premium to arise, pointing towards the optimal time frame for value purchasing.

Sentiment analysis, also known as opinion mining, is an amalgamation of computational processes, such as natural language processing, text analysis and and computational linguistics, aimed at identifying and quantifying subjective information (PANG; LEE et al., 2008), which is clearly something of interest of applied social sciences. Sentiment analysis can help economists at validating their models of human behavior, and one of the major proposed explanations of the value premium relies on cognitive bias by investors and analysts.

Their results show significant gains can be achieved by both financial distress analysis and sentiment analysis. When comparing their market sentiment and financial health indicators, however, we are shown how momentum completely dominates the latter - that is, good financial fundamentals are necessary but **timing** is the true differential.

Those findings also reinforce previous conjectures on the inverse relationship between expectancy-breaking and value/growth firms - value stocks realize exceedingly high earnings when their earnings statement outperform market predictions, while growth stocks' losses when they do not meet what was expected are disproportionate.

Fama and French return to the value and growth trenches in Fama and French (2007). Continuing the trend of breaking down the value premium, they show how returns from 1927-2006 american portfolios were composed by dividends and three sources of capital gain:

- growth in book equity, primarily from earnings retention
- convergence in price-to-book ratios from mean reversion in profitability and expected returns
- upward drift in P/B

Value stocks' market appreciation traces back almost entirely to convergence, while growth in book equity is marginal, trending down. Growth stocks, on the other hand, rely heavily on book-equity appreciation, while having negative convergence towards the mean.

Dividends, as expected, are a considerable part of value stocks' earnings - not so much for growth stocks'. They also note how dividends contribute more to average returns on big-cap stocks as they do to small-cap stocks.

Fama and French argue (and their results corroborate) that convergence towards the mean has got to be expected by investors, since firms have always passed through restructures and by consequence saw their profitability increase - since people learn, how could they consistently be surprised by such events?

A root from the claimed additional risk carried by value strategies is suggested by Gulen, Xing and Zhang (2008). Analyzing cyclical behavior of expected returns, they find that the value premium displays strong countercyclical variations. Investigating further, they report that value companies are less financially flexible in adjusting to worsening economic conditions (measured as higher short-term interest rate and higher default spread) than growth firms, which incurs into higher costs of equity, which is as an additional source of risk.

They document how value firms have higher ratios of fixed assets to total assets, higher financial leverage and higher operating leverage than growth firms. Since the marginal utility of wealth increases during recessions, liabilities from financial and fixed costs gain importance.

The economic intuition behind this comes from value firms' assets being less profitable than growth firms', which results in a bigger incentive do disinvest during recessions. The prices of those assets to be sold is lower during recessive times, which worsens the fundamentals of a company selling them. This results in the price of risk varying more for value firms, which is consistent with their greater returns over time.

Cyclical behavior reports are directly contradicted by the stochastic dominance approach in Abhyankar, Ho and Zhao (2008). With a robust, fifty-year data set, they found no evidence against value stocks' performance stochastically dominating growth stocks' in all three orders of dominance, both during the full sample period as well as during economic booms, while they could not find the dominance during recessions - the inverse of what a risk-relying root cause should present.

The three levels of stochastic dominance are:

1. First order: value strategies perform just as well or better than growth strategies in

every possible ordered state of nature (time frame, economic cycle, etc)

2. Second order: given the same risk, value strategies pay at least as much or better than growth strategies
3. Third order: value strategies are less likely to incur disastrous loss

(Theoretically, a lower order stochastic dominance contains a higher order one, but those are tested separately to improve robustness)

Stochastic dominance evaluation between investment strategies provides many advantages, such as comparing the whole returns distribution instead of its mean or median; not requiring any specific asset pricing model; and making minimal assumptions (investors are risk-averse, insatiable, and prefer positive skewness).

Relevant changes on institutional bases would force us to reconsider the strength of the value premium effect in present and upcoming periods. United States' 2000 Regulation Fair Disclosure demands public traded companies to disclose information to all investors at the same time, reducing drastically information asymmetry between investors and/or analysts.

This leveling measure seems to have had an effect on forecasting accuracy (JONG; APILADO, 2009) in both direction and dispersion, lessening market surprises. Since many authors, such as (LAKONISHOK; SHLEIFER; VISHNY, 1994; LEVIS; LIODAKIS, 2001; SKINNER; SLOAN, 2002), suggest those are one of the major if not the sole reason the value premium exists, expectancy of its strength shall be calibrated accordingly in upcoming models.

We have shown how the value premium question has been treated for the last decades, including some of the most recent developments. It can be noticed how it has consistently challenged majority view and evolved towards an ever more complex problem. While new technologies might help to finally settle the issue, we cannot be sure yet that a consistent, robust explanation has even been considered. The next few years surely are gonna be exciting in the value premium research.

7 CONCLUDING REMARKS

The Value Premium and its roots have sparkled heated debate for over two decades, with a definite conclusion still to be reached. Evidence both crediting and discrediting the two most accepted theories of the Premium's inception, Fama and French (1992)'s risk-adapted portfolio formation and Lakonishok, Shleifer and Vishny (1994)'s behavioral extrapolations, is vast and keeps being discovered. Perhaps the true generating system has yet to be discovered?

We have seen how the Value Premium has manifested itself in varying time frames, geographical regions and market conditions. While p-hacking cannot be completely ruled out, piling evidence weakens its likelihood by the day.

By presenting literature heavyweights and tracing the route on the hows and whys of its tendencies, we have shown the relevance and complexity of the value premium and its (yet to be formally defined) originating factors. This work can guide the value premium researcher while also serving as an introduction to practitioners and other interested parties.

Exciting new tools might help us toward a solution. A globalized world with marginal costs of information allows us highly advanced risk management systems, identifying and quantifying exposures we had never consciously isolated, but had always took into account thanks to experience and expertise. On the other hand, topic modeling and deep learning-based sentiment analysis provides us with unprecedented levels of market momentum understanding, turning investor's deepest bias into wide-open information.

An ever-more-rapidly changing world also challenges how fast both practitioners and academics can adapt. New regulations, lifestyles and even classes of assets demand levels of flexibility not seen since before the industrial revolution, so more agile and more precise methods of analysis will only increase their already utmost importance.

What we can certainly affirm is that the body of knowledge on human decision-making has been vastly improved since the Premium has been first unveiled, in a way every single investor is able to make more informed choices accounting for business and market cycles, robust statistical tools, intricate valuation techniques and his or hers own possible behavioral biases.

REFERENCES

ABHYANKAR, A.; HO, K.-Y.; ZHAO, H. Value versus growth: stochastic dominance criteria. **Quantitative Finance**, v. 8, n. 7, p. 693–704, 2008. Available from Internet: <https://EconPapers.repec.org/RePEc:taf:quantf:v:8:y:2008:i:7:p:693-704>.

ANDERSON, K.; BROOKS, C. The long-term price-earnings ratio. **Journal of Business Finance and Accounting**, v. 33, n. 7-8, p. 1063–1086, 2006. Available from Internet: <https://EconPapers.repec.org/RePEc:bla:jbfnac:v:33:y:2006-09:i:7-8:p:1063-1086>.

BARBER, B.; LYON, J. D. Firm size, book-to-market ratio, and security returns: A holdout sample of financial firms. **Journal of Finance**, v. 52, n. 2, p. 875–83, 1997. Available from Internet: <https://EconPapers.repec.org/RePEc:bla:jfinan:v:52:y:1997:i:2:p:875-83>.

BASU, S. The relationship between earnings' yield, market value and return for nyse common stocks: Further evidence. **Journal of Financial Economics**, v. 12, n. 1, p. 129–156, 1983. Available from Internet: <https://EconPapers.repec.org/RePEc:eee:jfinec:v:12:y:1983:i:1:p:129-156>.

BEAVER, W.; KETTLER, P.; SCHOLES, M. The association between market determined and accounting determined risk measures. **The Accounting Review**, JSTOR, v. 45, n. 4, p. 654–682, 1970.

BENISHAY, H. Variability in earnings-price ratios of corporate equities. **The American economic review**, JSTOR, v. 51, n. 1, p. 81–94, 1961.

BIRD, R.; CASAVECCHIA, L. Sentiment and financial health indicators for value and growth stocks: The european experience. **The European Journal of Finance**, v. 13, n. 8, p. 769–793, 2007. Available from Internet: <https://EconPapers.repec.org/RePEc:taf:eurjfi:v:13:y:2007:i:8:p:769-793>.

BLACK, F. Capital market equilibrium with restricted borrowing. **The journal of business**, JSTOR, v. 45, n. 3, p. 444–455, 1972.

BLACK, F. Beta and return. **The journal of portfolio management**, Institutional Investor Journals, v. 20, n. 1, p. 8–18, 1993.

BREEDEN, D. T. An intertemporal asset pricing model with stochastic consumption and investment opportunities. **Journal of Financial Economics**, v. 7, n. 3, p. 265–296, 1979. Available from Internet: <https://EconPapers.repec.org/RePEc:eee:jfinec:v:7:y:1979:i:3:p:265-296>.

CAMPBELL, J.; SHILLER, R. The dividend-price ratio and expectations of future dividends and discount factors. n. 2100, 1986. Available from Internet: <https://EconPapers.repec.org/RePEc:nbr:nberwo:2100>.

CHAN, L. K.; HAMAO, Y.; LAKONISHOK, J. Fundamentals and stock returns in japan. **The Journal of Finance**, Wiley Online Library, v. 46, n. 5, p. 1739–1764, 1991.

CHAN, L. K.; LAKONISHOK, J. Value and growth investing: Review and update. **Financial Analysts Journal**, CFA Institute, v. 60, n. 1, p. 71–86, 2004.

FAMA, E.; FRENCH, K. The cross-section of expected stock returns. **Journal of Finance**, v. 47, n. 2, p. 427–65, 1992. Available from Internet: <https://EconPapers.repec.org/RePEc:bla:jfinan:v:47:y:1992:i:2:p:427-65>.

FAMA, E.; FRENCH, K. Common risk factors in the returns on stocks and bonds. **Journal of Financial Economics**, v. 33, n. 1, p. 3–56, 1993. Available from Internet: <https://EconPapers.repec.org/RePEc:eee:jfinec:v:33:y:1993:i:1:p:3-56>.

FAMA, E.; FRENCH, K. Multifactor explanations of asset pricing anomalies. **Journal of Finance**, v. 51, n. 1, p. 55–84, 1996. Available from Internet: <https://EconPapers.repec.org/RePEc:bla:jfinan:v:51:y:1996:i:1:p:55-84>.

FAMA, E.; FRENCH, K. Value versus growth: The international evidence. **Journal of Finance**, v. 53, n. 6, p. 1975–1999, 1998. Available from Internet: <https://EconPapers.repec.org/RePEc:bla:jfinan:v:53:y:1998:i:6:p:1975-1999>.

FAMA, E. F.; FRENCH, K. R. New lists: Fundamentals and survival rates. **Journal of financial Economics**, Elsevier, v. 73, n. 2, p. 229–269, 2004.

FAMA, E. F.; FRENCH, K. R. The anatomy of value and growth stock returns. **Financial Analysts Journal**, CFA Institute, v. 63, n. 6, p. 44–54, 2007.

GOODNIGHT, G. T.; GREEN, S. Rhetoric, risk, and markets: The dot-com bubble. **Quarterly Journal of Speech**, Taylor & Francis Group, v. 96, n. 2, p. 115–140, 2010.

GRAHAM, B. **The Intelligent Investor**. United States: Harper and Brothers, 1949.

GRAHAM, B.; DODD, D. **Security Analysis**. United States: McGraw-Hill, 1934.

GULEN, H.; XING, Y.; ZHANG, L. Value versus growth: Time-varying expected stock returns. n. 15993, 2008. Available from Internet: <https://EconPapers.repec.org/RePEc:nbr:nberwo:15993>.

HORNGREN, C. T. Security analysts and the price level. **The Accounting Review**, JSTOR, v. 30, n. 4, p. 575–581, 1955.

JONG, P. de; APILADO, V. P. The changing relationship between earnings expectations and earnings for value and growth stocks during reg fd. **Journal of Banking and Finance**, v. 33, n. 2, p. 435–442, 2009. Available from Internet: <https://EconPapers.repec.org/RePEc:eee:jbfina:v:33:y:2009:i:2:p:435-442>.

KOTHARI, S. P.; SHANKEN, J.; SLOAN, R. G. Another look at the cross-section of expected stock returns. **The Journal of Finance**, Wiley Online Library, v. 50, n. 1, p. 185–224, 1995.

LAKONISHOK, J.; SHLEIFER, A.; VISHNY, R. Contrarian investment, extrapolation, and risk. **Journal of Finance**, v. 49, n. 5, p. 1541–78, 1994. Available from Internet: <https://EconPapers.repec.org/RePEc:bla:jfinan:v:49:y:1994:i:5:p:1541-78>.

LEVIS, M.; LIODAKIS, M. Contrarian strategies and investor expectations: the uk evidence. **Financial Analysts Journal**, CFA Institute, v. 57, n. 5, p. 43–56, 2001.

LINTNER, J. The valuation of risk assets and the selection of risky investments in stock portfolios and capital budgets. **The review of economics and statistics**, JSTOR, p. 13–37, 1965.

MACKINLAY, A. C. Multifactor models do not explain deviations from the capm. **Journal of Financial Economics**, Elsevier, v. 38, n. 1, p. 3–28, 1995.

MARKOWITZ, H. Portfolio selection. **The journal of finance**, Wiley Online Library, v. 7, n. 1, p. 77–91, 1952.

MERTON, R. Theory of rational option pricing. **Bell Journal of Economics**, v. 4, n. 1, p. 141–183, 1973. Available from Internet: <https://EconPapers.repec.org/RePEc:rje:bellje:v:4:y:1973:i:spring:p:141-183>.

NICHOLSON, S. F. Price-earnings ratios. **Financial Analysts Journal**, CFA Institute, v. 16, n. 4, p. 43–45, 1960.

NICHOLSON, S. F. Price ratios in relation to investment results. **Financial Analysts Journal**, CFA Institute, v. 24, n. 1, p. 105–109, 1968.

PANG, B.; LEE, L. et al. Opinion mining and sentiment analysis. **Foundations and Trends in Information Retrieval**, Now Publishers, Inc., v. 2, n. 1–2, p. 1–135, 2008.

PIOTROSKI, J. Value investing: The use of historical financial statement information to separate winners from losers. **Journal of Accounting Research**, v. 38, p. 1–41, 2000. Available from Internet: <https://EconPapers.repec.org/RePEc:bla:joares:v:38:y:2000:i::p:1-41>.

PORTA, R. L. et al. Good news for value stocks: Further evidence on market efficiency. **The Journal of Finance**, Wiley Online Library, v. 52, n. 2, p. 859–874, 1997.

ROLL, R. A critique of the asset pricing theory's tests part i: On past and potential testability of the theory. **Journal of financial economics**, Elsevier, v. 4, n. 2, p. 129–176, 1977.

ROSS, S. The arbitrage theory of capital asset pricing. **Journal of Economic Theory**, v. 13, n. 3, p. 341–360, 1976. Available from Internet: <https://EconPapers.repec.org/RePEc:eee:jetheo:v:13:y:1976:i:3:p:341-360>.

SHARPE, W. Capital asset prices: A theory of market equilibrium under conditions of risk. **Journal of Finance**, v. 19, n. 3, p. 425–442, 1964. Available from Internet: <https://EconPapers.repec.org/RePEc:bla:jfinan:v:19:y:1964:i:3:p:425-442>.

SKINNER, D. J.; SLOAN, R. G. Earnings surprises, growth expectations, and stock returns or don't let an earnings torpedo sink your portfolio. **Review of accounting studies**, Springer, v. 7, n. 2, p. 289–312, 2002.

YEN, J. Y.; SUN, Q.; YAN, Y. Value versus growth stocks in singapore. **Journal of Multinational Financial Management**, v. 14, n. 1, p. 19–34, 2004. Available from Internet: <https://EconPapers.repec.org/RePEc:eee:mulfin:v:14:y:2004:i:1:p:19-34>.