FAMA AND FRENCH REVISITED:

VALUE VERSUS GROWTH IN AN INTERNATIONAL SETTING

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Fama and French Revisited: Value versus Growth in an International Setting

Abstract:

This Thesis is a replication and prolonging of the paper *Value versus Growth: The International Evidence* written by Kenneth French and Eugene Fama in 1992. This paper aims to provide further evidence on the value premium, meaning value stocks outperform growth stocks, using a more recent time period and more Nordic countries than used in the 1992 paper. Furthermore, the study aims to determine whether or not the results are affected by the cyclicality of markets. The results document a consistently solid value premium in the timeframe of 1975-2019, explicitly during times of market turmoil. Our conclusions state that it remains relevant to choose value strategies since they, on average, still outperform the market as well as growth strategies. During volatile times, the value strategies are still clearly the better alternative.

Keywords:

Fama and French, value premium, value stocks versus growth stocks, international value versus growth, market turmoil

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I. Introduction

The general consensus in financial doctrine has for a long time been that a value premium on stocks only can be achieved by taking on additional risk. That is, if it is even possible to outperform the market in the long run. According to the capital asset pricing model (CAPM), there is a linear correlation between expected returns on stocks and their beta coefficient. The validity of the CAPM model has been challenged in the past, by Roll (1977), Banz (1981) and Hansen and Richard (1987). Such critique has motivated scholars and investment professionals to search for alternative models to estimate stock returns and formulate optimal investment strategies.

To that end, researchers have inquired into the strategies predicated on investing in stocks with low vis-à-vis high ratios of P/E, D/P, B/M, and other measures of value. Investment strategies with portfolios composed of assets with high ratios of such measures were denominated 'value strategies' and portfolios composed of assets with low ratios were denominated 'growth strategies'. For quite some time it has been consistently observed that these value portfolios outperform growth portfolios as well as the market in general (Graham and Dodd (1934) and Dreman (1977)). This discovery is not surprising in itself seeing as the anomaly could be explained by systematic risk. However, Fama and French (1992) produced findings wherein the CAPM model was unable to explain differences in returns provided by value contra growth portfolios. They find that variations in stock prices are correlated with the difference in return of high book-to-market and low book-to-market stocks (HML) as well as the difference in return of high market capitalization and low market capitalization stocks (SMB). The conclusion was that these stocks must bear additional risk that is unexplained by the beta coefficient. Although the Fama-French three-factor model was tested and proven to be proficient at explaining stock returns in the United States, the underlying economic mechanism behind the additional risk that gives rise to variations in stock returns, was left unproven.

Building on their previous research, Fama and French (1998) further examine the validity of the CAPM model on an international stage. The study finds that the CAPM model cannot explain the value premium internationally either, instead showing variations in stock returns between growth portfolios, with high book-to-market stocks, and value portfolios, with low book-to-market stocks. Rather, a two-factor model that includes a risk factor for relative distress is able to capture the value premium in international returns. Although there is extensive evidence for the Fama and French (1998) findings, more than two decades have passed since they were made. Water has flown under the bridge since then, and the world does not look the same. The time horizon of the study is only 20 years, which could very well influence the results. Furthermore, accounting practices have changed since then, which could have an effect on the values that were used in the research. Another factor is the rapid growth of listed companies from the medical technology and IT industries that did not exist to the same extent during the earlier time period. Assets in these industries are typically valued differently than other assets, with larger emphasis placed on factors other than the common financial ratios. It could be a factor that has potentially affected the general patterns of the market to an extent that has affected the value premium on value strategies, as well.

As such, the aim of this paper is to arrive at conclusions in two parts:

1. To replicate their research and prolong it to 2019 with a greater number of countries, in order to examine if their findings still hold, and
2. To extend their research and examine whether or not their findings are affected by the short-term market turmoil.

II. Literature review

The Capital Asset Pricing Model

Markowitz (1959) marks the first step in asset pricing theory wherein the mean-variance model was developed. The model proposes that investors are risk averse and maximize expected portfolio return, given variance, and minimize variance of portfolio return, given expected return. Based on that proposition, modern finance theory is built on the assumption that markets are rational. Developed by Sharpe (1964) and Lintner (1965), the CAPM model extends Markowitz's framework by providing two additional assumptions for a portfolio to be mean-variance efficient; that there is complete agreement on the joint distribution of returns with the distribution being the right one, and that there is unrestricted borrowing and lending at a risk-free rate for all investors. Using those assumptions, The CAPM model provides a tool to measure the relationship between risk and expected return on an investment, with the risk being represented by the covariance of its returns with returns on the overall market. After initial empirical testing, the applicability of the model was invalidated by several researchers. There were attempts to improve on it, notably by Black (1972) who developed a version without the assumption of unrestricted investment at the risk-free rate, instead adding unrestricted short sales of risky assets. The Black version of the CAPM model produced a mean-variance efficient portfolio that was successful in empirical testing. Since then, although the model is still extensively taught and used, it has been proven that its applicability is still restricted by its assumptions being unrealistic. This has been empirically confirmed in regard to the first version of the model by Douglas (1968) and Black, Jensen and Scholes (1972). Evidence that the Black version of the CAPM model is also lacking in its applicability has also been found by Blume and Friend (1973), Fama and MacBeth (1973), as well as by Fama and French (1992).

Value versus Growth

Fama and French (1992) made great progress in a since then extensive row of studies on the topic of *value* vs *growth* stocks. The aim of the study was to identify a value premium by investing in either of the portfolio types. Although there is no commonly established way to classify those stocks, Fama and French sorted them into portfolios based on the financial ratios B/M, E/P, leverage, and size of assets in the companies. The portfolios with the lowest book-to-market in relation to equity were regarded as *value stocks*. Those with the highest book-to-market in relation to equity were denominated *growth stocks*, although there are those who believe they would be more aptly called *glamour stocks* due to observing results that they are trending rather than outperforming the market in regard to growth. Fama and French produced results that suggested a significant discrepancy in value premium between the portfolios. The largest effect was observed in the portfolios sorted based on P/B where the average return was 21.4% for value portfolios with the lowest P/B contra 8% for growth portfolios with the highest P/B.

The difference could not be explained by value portfolios carrying more risk in regard to higher beta coefficients. Since it could not be explained by other factors either, it was proposed that the difference between the portfolios represented a risk premium. One theory, however, is that the variation arises due to the mechanisms explained by the Arbitrage Pricing Theory (Cox, Ross, 1976). Lakonishok et al. (1994) and Haugen (1995) suggest that the value premium stems from the market generally undervaluing distressed stocks and overvaluing growth stocks. On the contrary, Fama and French (1993, 1995, 1996) found evidence that there is a variation in the earnings of distressed firms that is unexplained by market earnings, as well as variation in the returns on distressed stocks that is unexplained by market return. Thus, they propose that the value premium rather stems from compensation for risk that is not captured by the CAPM. By adding a risk factor for relative distress to the Intertemporal Capital Asset Pricing Model (ICAPM) (Merton, 1973) or the Arbitrage Pricing Theory, the value premium on U.S. returns was captured.

A few years later, Fama and French (1998) replicated the study on European and emerging markets, with stocks in a total of 13 countries. Once again, the results indicated superior returns for value portfolios. As previously, the higher return could not be explained by higher beta coefficients in the value portfolios. The results were therefore once more proposed to have arisen due to a probable risk premium whose underlying economic mechanisms were left unproven, reinforcing the notion that the CAPM was insufficient in explaining stock returns. Since then, there have been extensive studies on value contra growth strategies. In general, the results show that value portfolios outperform their growth counterparts over longer time periods, (Rouwenberg et al. (2003), Athanassakos (2009)).

Despite this general consensus, the findings have also been questioned. A commonly raised critique is that the investigated time periods have been insufficiently long. It has also been theorized by Bourguignon and De Jong (2003) that the premium arises due to contrarian investments wherein investors buy losers and sell winners due to an expectation of shifting trends. However, the dispute that has garnered the most attention is the question of whether or not the risk has been fully accounted for. Most critics believe that the value premium is a result of taking on additional risk.

Value Premium

Although most researchers agree that value strategies yield greater returns than growth strategies, the reasons as to why are more controversial. There are two generally held views whose arguments contend with each other: the rational and the behavioural view.

The rational view, with Fama and French at the forefront, contends that value stocks either have worse future outlooks that are taken into account in price, or the finances of the companies are flawed in some way that motivates a risk premium for eventual financial distress. This risk is referred to as fundamental risk and is unaccounted for by the beta coefficient in the CAPM model making it insufficient in explaining the value premium.

Another factor that was found to have explanatory power in regard to expected return, is that many value stocks in the study are small companies. Fama and French observed that these stocks had lower beta values on average yet yielded higher returns than larger stocks. The phenomenon was attributed to smaller companies inherently carrying higher risk. Other researchers (Elfakhani, Zaher, (1998)) have proposed that smaller companies are less transparent, carrying with it a required compensation.

The behaviourist view instead contends that there is no evidence for fundamental risk. Lakonishok (1994) argues that value portfolios outperform growth portfolios because they exploit the suboptimal behaviour of the average investor and not because they are fundamentally riskier. They suggest that value strategies are contrarian to "naive" strategies that overreact to past events by overbuying stocks that have done well in the past due to extrapolating historical earnings growth too far into the future and overselling those stocks that have seen temporary losses.

The Duration-Based Explanation

Lettau and Wachter (2005) propose another, dynamic risk-based model that captures the value premium. The duration-based model uses a cross-section of assets differentiated by the timing of their cash flows. The risk perceived by investors in these cash flows is modelled using a stochastic discount factor for the economy. In addition to taking into account the cross-section of stocks sorted on price ratios, the model also accounts for aggregate dividend and stock market behavior. It manages this by assuming a log dividend growth that is normally distributed with a mean that varies over time. The results suggest that value firms covary with cash flows to a greater extent than growth firms, whereas growth firms covary with the discount rate to a greater extent than value firms. Most importantly, the model produces expected returns that match the actual returns in the data, explains the high Sharpe ratios on value assets, explains the poor explaining power of the CAPM, and captures the value premium.

Effect of Macroeconomic Factors

The question of how value and growth stock investment strategies are affected by macroeconomic factors has also been brought up. Bekaert et al. (2009). found that the risk taking is partly dependent on monetary policy. During periods of low interest environment, the 'Search for yield' leads to more risk-taking from the institutional investor.

Earlier replication of the original paper

Athanassakos (2009) replicated and prolonged the methodology of Fama and French in his paper *Value versus Growth Stock Returns and the Value Premium: The Canadian Experience 1985–2005*. His work provides further evidence for Fama and French's conclusions about the value premium using Canadian data with the time-period of 1985-2005, sorting the portfolios on price-to-earnings (P/E) and price-to-book value (P/BV). His findings about the value premium are also sustained during times of economic recessions and recoveries, as well as bull and bear markets.

III. Hypotheses and research design

Since we are replicating an earlier research, the aim of our research is to empirically test if their results still hold, that is, if value strategies outperform growth strategies, roughly 20 years later and with more countries in the dataset. Due to the extensive research that has been carried out on the subject, the hypothesis of this research is that the results will support the original findings.

The greater empirical contribution lies in our second hypothesis, surrounding whether or not the findings of Fama and French (1998) are affected by the cyclicality of markets. Our hypothesis is based on the fact that during times of confusion in the financial markets, investors tend to get more risk averse and therefore look for safer investments, such as stocks with lower valuations. Our hypothesis on the second research question is therefore that portfolios formed on value stocks outperform portfolios formed on growth stocks in times of turmoil in the financial markets.

The research will be designed after how Fama and French completed their design in both the replication and the prolonging part (time-period of replication; 1975-1995, prolonging; 1995-2019). That is, by forming portfolios of stocks in the specific country of our research after four different valuation ratios: book-to-market (B/M); earnings-price (E/P); cash earnings to price (CE/P); and dividend yield (D/P). The value portfolios (High) contain firms in the top 30% of a certain ratio, such as B/M, and the growth portfolios (Low) contain firms in the bottom 30%. Firms are included if data is found for one variable. The market return (Mkt) for the dataset is the weighted average of the returns for the markets.

We start by taking out the most relevant characteristics of the country portfolios, such as number of firms per country, country weights and average book-to-market. We then create value-weighted portfolios (market, B/M high, B/M low, B/M high minus low, E/P high, EP high minus low, CE/P high, CE/P low, CE/P high minus low, D/P high, D/P low, D/P high minus low) out of the weights from the MSCI index and World Bank database. We run a test on the annual value-weight dollar return in excess of the 1-month treasury bill rate and compare the results of market portfolios. Thereafter we

isolate the portfolios to see if there is any difference between the countries. Subsequently, we test the ability of two asset pricing models, the international CAPM and the two-factor ICAPM to see and compare how well they can explain the return. We thereafter test whether or not there are correlations between countries, both the markets themselves and B/M high minus low. Finally, we use the value-weighted average portfolios formed earlier to test and compare how value versus growth portfolios perform during markets of turmoil, by using the top and bottom 10th percentile of the weighted market average dataset based on monthly returns.

Data

The portfolio dataset is mostly collected from Kenneth French's website, apart from the US data which is aggregated from the CRSP/Compustat merged database. Kenneth French's raw data are from Morgan Stanley Capital International for 1975 to 2006 and from Bloomberg for 2007 to present. The country portfolios (except US) are first cleaned in Excel to be imported into STATA where all countries are merged into one dataset for the analysis. The US data is directly imported into STATA, cleaned from extreme outliers (0,1th percentiles) and formed into portfolios on the different valuation ratios. The dataset is later on completed with the 1-month treasury bill rate (which is collected from the WRDS database) and then used for the excess return calculations of all countries. The market return from S&P 500 from year 1975-2019 is also collected from WRDS database. The US file is then merged together with the other countries to be able to do the analysis. During the process, we discovered that some of the US companies are not part of the S&P 500 index and therefore both the value and growth US portfolio returns outperform the US index used. Since US portfolios and market return play a big role in the weighted average (48.8% and 51.5%), the average market return is somewhat offset to the portfolio returns.

The countries used in the first time-period are the United States (US), Japan (JP), Great Britain (UK), France (FR), Germany (DE), Italy (IT), the Netherlands (NL) Belgium (BE), Switzerland (CH), Sweden (SE), Australia (AS), Hong Kong (HK), and Singapore (SG). Countries used for the second time-period are the above as well as the prolonging of the Nordic Countries; Norway (NO), Finland (FI) and Denmark (DK).

IV. Results

Table I

Some Characteristics of the Country Samples 1975-1995

Panel A shows number of firms for each country in the portfolios in the years of 1975, 1980, 1985, 1990 and 1995, and the average number of firms for all years in that specific country. Panel B shows the value weight average of B/M for the portfolios, averaged across years. Panel C shows the MSCI country weights used to form the global portfolios later on. The countries used in this research are the United States (US), Japan (JP), Great Britain (UK), France (FR), Germany (DE), Italy (IT), the Netherlands (NL) Belgium (BE), Switzerland (CH), Sweden (SE), Australia (AS), Hong Kong (HK), and Singapore (SG).

	US	JP	UK	FR	DE	IT	NL	BE	CH	SE	AS	HK	SG
Panel A: Number of firms per Country 1975-1995													
1975	1670	191	179	109	99	72	41	36	45	37	74	26	39
1980	1882	232	162	99	94	73	41	35	49	37	72	26	37
1985	2438	249	161	85	86	61	36	26	53	34	72	32	54
1990	2706	478	211	136	116	138	51	39	119	66	102	53	63
1995	3416	528	227	126	130	140	47	39	91	54	90	70	51
Average	2422	336	188	111	105	97	43	35	71	46	82	41	49
Panel B: Value-Weight Average Book-to-Market Equity (B/M) 1975-1995													
Market		0.43	0.82	0.98	0.62	0.98	1.13	0.98	0.82	0.86	0.82	0.64	0.55
HB/M		0.70	0.70	2.26	0.88	2.12	1.90	1.90	1.98	1.82	1.74	1.50	1.06
LB/M		0.26	0.26	0.35	0.30	0.34	0.66	0.60	0.60	0.44	0.47	0.26	0.34
Panel C: MSCI Country Weights (%) 1975-1995													
1975	62.9	13.6	5.5	2.8	5.7	1.4	1.8	1.1	1.7	1.0	1.8	0.4	0.3
1985	57.1	22.1	7.9	1.4	3.0	0.9	1.5	0.5	1.6	0.7	1.7	0.9	0.9
1995	38.9	30.0	10.2	3.7	4.2	1.4	2.3	0.7	3.0	1.1	1.7	1.9	0.8
Average	48.8	24.7	9.0	2.6	4.4	1.2	1.7	0.7	2.3	0.8	1.8	1.2	0.7

Table II

Some Characteristics of the Country Samples 1995-2019

Panel A shows the number of firms for each country in the portfolios at the beginning of 1995, 2000, 2005, 2010, 2015 and 2019 and the average number of firms for all years. Panel B shows the value-weight average of B/M for the portfolios, averaged across years. Panel C shows the country weights used to form the global portfolios later on. The countries used in this research are the United States (US), Japan (JP), Great Britain (UK), France (FR), Germany (DE), Italy (IT), the Netherlands (NL) Belgium (BE), Switzerland (CH), Sweden (SE), Australia (AS), Hong Kong (HK), Singapore (SG) as well as the prolonging of the Nordic Countries; Norway (NO), Finland (FI) and Denmark (DK).

	US	JP	UK	FR	DE	IT	NL	BE	CH	SE	AS	HK	SG	NO	FI	DK
Panel A: Number of firms per Country 1995-2019																
1995	3416	528	227	126	130	140	47	39	91	54	90	70	51	30	27	32
2000	2712	483	211	103	98	106	49	28	56	56	84	62	48	28	33	34
2005	1830	668	241	116	110	88	52	33	75	71	94	75	56	32	39	29
2010	1300	2909	1539	783	884	293	144	165	267	454	1668	786	586	248	127	197
2015	1363	3128	1372	699	741	284	119	136	312	508	1590	904	653	193	123	149
2019	1549	3287	1313	689	690	335	114	132	317	777	1679	1212	636	214	151	158
Average	2028	1834	817	419	442	208	88	89	186	320	868	518	338	124	83	100
Panel B: Value-Weight Average Book-to-Market Equity (B/M) 1995-2019																
Average		0.67	0.48	0.57	0.53	0.70	0.47	0.63	0.38	0.46	0.48	0.73	0.63	0.62	0.48	0.43
Panel C: Country Weights (%) 1995-2019																
Average	51.5	11.3	7.4	5.0	4.1	2.2	1.9	0.8	3.0	1.1	2.6	5.4	1.2	0.5	1.0	1.0

As we compare the characteristics for the two different time-periods, the most obvious difference is the average number of countries used per Country. Between 2005 and 2010, all countries but the US, multiply their number of firms. The reason behind this is that the raw data are from Morgan Stanley Capital International for 1975 to 2006 and from Bloomberg for 2007 to present. The value-weighted average B/M is on average a bit lower during the latter time period.

The country weights differ a bit as well, mostly due to the fact that they are calculated based on different data. For the time period of 1975-1995, MSCI world index is used as a proxy for weights, whereas the World Bank database of market capitalization of listed domestic companies is used for 1995-2019.

Table III

Annual Dollar Returns for Global Market, Value, and Growth Portfolios: 1975–2019

Value and growth portfolios are formed based on B/M, E/P, C/P, and D/P. We denote value (high) and growth (low) portfolios by a leading H or L; the difference between them is H - L. Market is the global market portfolio. Mean is the average annual return of a portfolio. Std. is the standard deviation of the returns. Countries are weighted based on the MSCI index for the years of 1975-1995 and based on the World Bank database of market capitalization of listed domestic companies for the years of 1995-2019.

	Market	HB/M	LB/M	H-LB/M	HE/P	LE/P	H-LE/P	HC/P	LC/P	H-LC/P	HD/P	LD/P	H-LD/P
Panel A: Annual Value-Weight dollar return in excess of 1 month T-bill rate 1975-1995													
Mean	7.80	14.02	10.96	3.06	13.58	11.01	2.57	13.49	10.54	2.95	13.81	11.00	2.81
Std.	13.26	15.06	15.19	4.24	15.61	15.21	2.47	15.98	15.09	4.36	15.37	15.49	4.28
Sharpe ratio (monthly)		0.26	0.20	0.66	0.25	0.20	0.70	0.25	0.20	0.71	0.26	0.20	0.63
Panel B: Annual Value-Weight dollar return in excess of 1 month T-bill rate 1995-2019													
Mean	5.48	9.16	8.32	0.84	9.22	7.26	1.97	9.23	7.47	1.76	9.47	7.48	2.00
Std.	17.71	19.90	17.40	5.02	18.81	4.07	5.25	18.95	18.18	4.08	18.57	18.37	4.69
Sharpe ratio (monthly)		0.20	0.20	0.19	0.21	0.17	0.33	0.21	0.17	0.29	0.22	0.17	0.28

The data confirms the findings of Chan et al. (1991), Fama and French (1992, 1996, 1997), and Lakoniskok et al. (1994), providing evidence of a value premium in returns of value portfolios. Table III shows that from 1975 to 1995, the average returns of global value portfolios are 2.55 percent to 4.88 percent greater than the average returns of global growth portfolios. It also shows that average returns of global value portfolios are 5.69 percent to 6.22 percent greater than the average returns of global market portfolios.

The prevalence of a value premium in returns of value portfolios is also consistent with the global portfolio data from 1995 to 2019. Panel B shows that the average returns of global value portfolios in that time period are 4.58 percent to 5.65 percent greater than

the average returns of global growth portfolios. They are also 3.68 percent to 3.99 percent greater than the average returns of global market portfolios.

For the time period 1975-1995, the Sharpe ratios for the value portfolios range from 0.25 to 0.26 depending on which financial ratios they are sorted on. The Sharpe ratios for the growth portfolios are all 0.2, regardless of what ratios they are sorted on. From 1995 to 2019, the Sharpe ratios range from 0.2 to 0.22 for the value portfolios. They range from 0.17 to 0.2 for the growth portfolios. As it stands, these ratios indicate further evidence of the value premium as there is excess return per unit of volatility for the value stocks compared to the growth stocks. The data also suggests that the value premium has been pervasive since the original time period.

Table IV

Annual Dollar Returns in Excess of U.S. T-Bill Rate for Market, Value, and Growth Portfolios: 1975–1995

Value and growth portfolios are formed on B/M, E/P, CE/P, and D/P as described in Table II. We denote value (high) and growth (low) portfolios by a leading H or L; the difference between them is H - L. The first row for each country is the average annual return. The second is the standard deviation of the annual returns (in parentheses) or the t-statistic testing whether H - L is different from zero [in brackets].

	Market	HB/M	LB/M	H-LB/M	HE/P	LE/P	H-LE/P	HC/P	LC/P	H-LC/P	HD/P	LD/P	H-LD/P
Panel A: Annual Value-Weight dollar return in excess of 1 month T-bill rate 1975-1995													
US	4.20	13.77	13.62	0.73	13.92	13.56	0.94	13.64	13.93	0.29	14.34	13.64	1.28
	(12.97)	(19.50)	(18.45)	[-0.27]	(19.33)	(19.88)	[0.99]	(19.00)	(19.31)	[-0.54]	(19.38)	(19.35)	[1.23]
Japan	10.37	14.69	6.18	9.09	12.85	6.08	7.35	12.80	4.82	8.56	14.02	4.99	9.61
	(24.10)	(23.38)	(25.54)	[2.62]	(22.14)	(23.98)	[2.18]	(25.95)	(24.22)	[2.61]	(28.13)	(29.28)	[1.47]
U.K	14.44	16.40	12.68	4.31	15.87	14.27	2.18	16.50	14.13	2.96	14.21	12.88	1.91
	(23.55)	(24.87)	(23.96)	[1.45]	(25.91)	(22.96)	[0.66]	(26.82)	(22.37)	[0.87]	(25.93)	(22.73)	[0.50]
France	9.62	14.63	8.24	6.98	13.69	7.54	6.74	14.17	8.03	6.73	13.59	4.99	9.19
	(27.36)	(29.98)	(27.06)	[2.08]	(30.89)	(27.74)	[2.18]	(29.48)	(27.17)	[1.88]	(24.49)	(29.28)	[2.63]
Germany	8.20	10.89	8.26	3.22	10.11	8.42	2.28	10.94	3.97	7.55	9.12	8.43	1.28
	(23.57)	(23.21)	(24.77)	[1.12]	(20.33)	(26.14)	[0.68]	(22.52)	(22.80)	[2.90]	(20.04)	(25.87)	[0.28]
Italy	5.35	4.59	7.00	-1.82	6.00	7.45	-0.87	9.42	-1.79	11.79	8.15	7.07	1.66
	(33.17)	(30.81)	(36.71)	[-0.62]	(34.76)	(38.55)	[-0.40]	(34.57)	(33.00)	[2.84]	(31.99)	(40.10)	[0.31]
Netherlands	12.44	12.03	12.60	0.02	13.61	9.24	4.95	9.61	11.04	-0.84	11.94	10.40	2.13
	(15.80)	(28.83)	(16.57)	[-0.15]	(18.37)	(16.44)	[1.24]	(29.82)	(18.54)	[-0.32]	(18.80)	(22.06)	[0.45]
Belgium	11.19	13.30	9.14	4.74	12.72	11.31	1.99	15.31	11.35	4.54	20.50	17.76	3.32
	(20.77)	(23.52)	(21.52)	[1.27]	(24.02)	(22.25)	[0.59]	(21.39)	(20.99)	[1.14]	(19.62)	(21.56)	[0.90]
Switzerland	9.51	11.96	8.65	3.89	10.41	9.54	1.45	9.20	8.55	1.24	10.40	8.93	2.06
	(21.79)	(22.92)	(23.56)	[1.27]	(24.46)	(23.95)	[0.30]	(28.78)	(24.08)	[0.18]	(24.47)	(23.31)	[0.56]
Sweden	11.32	17.15	10.36	7.38	16.99	11.18	6.40	15.39	10.73	5.24	14.69	10.24	5.03
	(21.61)	(30.25)	(23.17)	[1.59]	(30.24)	(22.00)	[1.48]	(27.02)	(20.42)	[1.15]	(25.38)	(22.41)	[1.13]
Australia	9.17	14.20	6.60	8.18	14.15	6.93	7.80	16.45	5.18	11.85	13.67	8.17	6.08
	(24.23)	(27.44)	(25.70)	[2.19]	(24.76)	(27.99)	[1.90]	(25.41)	(26.71)	[3.10]	(24.45)	(28.06)	[1.39]
Hong Kong	19.52	22.74	16.31	7.01	23.90	19.49	5.00	23.16	18.14	5.61	21.35	20.20	1.73
	(31.14)	(37.87)	(35.80)	[1.62]	(35.27)	(35.11)	[1.29]	(35.57)	(35.28)	[1.22]	(33.01)	(35.92)	[0.34]
Singapore	12.94	19.61	11.53	8.66	14.45	12.01	3.02	12.99	8.40	5.17	10.96	12.57	-1.02
	(24.89)	(32.74)	(23.61)	[2.02]	(26.37)	(30.26)	[0.82]	(23.30)	(27.13)	[1.42]	(21.37)	(29.84)	[-0.46]

Table IV lends additional support to the idea of a value premium on returns of value portfolios. It is also evidence of the fact that not only does a value premium exist on average internationally, but also in numerous countries when you examine them in isolation. As it shows, portfolios formed on B/M and C/P have positive value premiums in each of the countries except two: Italy and the Netherlands, respectively. Portfolios formed on E/P and D/P have positive value premiums in each of the countries except only one: Italy and Singapore, respectively.

Table V

Annual Dollar Returns in Excess of U.S. T-Bill Rate for Market, Value, and Growth Portfolios: 1995–2019

Value and growth portfolios are formed on B/M, E/P, CE/P, and D/P as described in Table II. We denote value (high) and growth (low) portfolios by a leading H or L; the difference between them is H - L. The first row for each country is the average annual return. The second is the standard deviation of the annual returns (in parentheses) or the t-statistic testing whether H - L is different from zero [in brackets].

	Market	HB/M	LB/M	H-LB/M	HE/P	LE/P	H-LE/P	HC/P	LC/P	H-LC/P	HD/P	LD/P	H-LD/P
Panel A: Annual Value-Weight dollar return in excess of 1 month T-bill rate 1995-2019													
US	5.71	10.57	11.86	-0.21	10.48	10.79	-0.13	10.31	10.70	-0.21	10.72	10.53	0.37
	(17.40)	(19.98)	(19.94)	[-1.83]	(19.58)	(20.33)	[-0.77]	(20.56)	(19.61)	[-0.58]	(20.53)	(19.37)	[0.25]
Japan	1.46	7.85	-1.12	9.14	5.01	-0.87	6.06	6.24	0.06	6.37	4.23	7.26	-2.85
	(22.71)	(24.96)	(23.56)	[3.01]	(20.92)	(25.03)	[2.38]	(22.42)	(23.88)	[2.68]	(19.08)	(21.79)	[-0.74]
U.K	5.55	5.91	6.35	-0.26	8.95	3.81	5.31	8.91	4.00	5.08	7.89	4.69	3.38
	(19.90)	(23.37)	(19.16)	[-0.17]	(21.04)	(21.74)	[2.17]	(20.54)	(21.77)	[1.97]	(20.49)	(23.72)	[1.18]
France	7.89	8.25	8.79	-0.36	10.05	7.44	2.79	9.44	8.11	1.51	10.23	7.26	3.15
	(22.69)	(28.47)	(22.94)	[-0.17]	(23.19)	(23.35)	[0.99]	(24.45)	(23.29)	[0.47]	(22.20)	(21.79)	[1.13]
Germany	6.86	10.65	5.71	5.11	6.53	6.47	0.24	11.58	6.76	5.00	9.83	9.19	0.82
	(23.85)	(27.07)	(24.73)	[1.66]	(26.03)	(24.49)	[0.02]	(24.50)	(24.06)	[1.45]	(25.00)	(19.04)	[0.18]
Italy	6.13	5.39	7.85	-2.29	8.07	4.60	3.65	8.13	5.40	2.92	8.09	5.05	3.21
	(25.66)	(33.32)	(24.81)	[-0.72]	(25.36)	(28.73)	[1.03]	(28.33)	(27.18)	[0.79]	(24.93)	(29.44)	[1.05]
Netherlands	8.31	11.08	8.29	2.97	10.60	6.43	4.34	8.26	9.49	-1.06	11.23	5.78	5.62
	(23.09)	(28.80)	(20.17)	[0.70]	(27.39)	(26.31)	[1.16]	(23.86)	(21.90)	[-0.28]	(26.51)	(27.89)	[1.46]
Belgium	6.92	11.01	7.28	3.91	10.18	6.76	3.59	11.55	4.00	7.72	10.14	10.13	0.19
	(26.86)	(26.15)	(24.31)	[1.09]	(33.25)	(23.51)	[0.94]	(27.69)	(24.10)	[2.17]	(34.51)	(28.54)	[0.003]
Switzerland	8.00	6.64	8.82	-2.00	6.93	7.70	-0.60	7.76	6.82	1.12	9.92	8.17	1.93
	(18.96)	(27,43)	(20.08)	[-0.66]	(22.83)	(21.82)	[-0.27]	(22.00)	(20.98)	[0.32]	(22.30)	(21.85)	[0.55]
Sweden	10.63	13.22	9.43	3.97	13.33	10.74	2.77	13.14	7.37	5.95	14.18	7.81	6.54
	(28.54)	(30,93)	(30.75)	[1.05]	(26.83)	(29.37)	[0.79]	(28.98)	(32.71)	[1.54]	(28.89)	(33.07)	[1.77]
Australia	8.30	9.33	7.69	1.82	10.31	6.74	3.75	9.77	8.20	1.75	10.26	9.02	1.42
	(24.85)	(26.00)	(25.68)	[0.70]	(26.79)	(24.21)	[1.41]	(27.40)	(23.95)	[0.59]	(25.47)	(25.35)	[0.45]
Hong Kong	7.45	9.32	5.56	3.93	11.85	3.60	8.42	10.67	3.82	7.03	13.41	8.51	5.08
	(26.24)	(32.60)	-24.77	[1.00]	(25.68)	(31.25)	[2.54]	(25.88)	(31.07)	[2.05]	(20.55)	(30.65)	[1.61]
Singapore	5.65	10.68	2.56	8.30	10.99	2.85	8.31	10.76	4.11	6.83	9.16	3.14	6.20
	(29.57)	(32.48)	(30.80)	[2.33]	(29.84)	(33.09)	[2.31]	(32.86)	(34.89)	[1.95]	(26.41)	(33.31)	[2.02]
Finland	11.39	13.07	13.94	-0.69	16.70	12.16	4.72	13.55	11.81	1.92	12.36	11.50	1.03
	(32.76)	(26.26)	(40.30)	[-0.14]	(29.30)	(40.23)	[0.82]	(26.79)	(41.17)	[0.28]	(26.13)	(39.74)	[0.14]
Norway	8.82	9.76	5.76	4.17	12.97	6.86	6.28	10.18	4.17	6.18	14.13	5.26	9.04
	(27.78)	(42.72)	(28.20)	[0.99]	(33.05)	(31.70)	[1.51]	(33.96)	(28.69)	[1.32]	(32.43)	(33.87)	[2.36]
Denmark	9.92	11.23	11.61	-0.20	10.59	8.55	2.22	9.56	15.02	-5.28	11.33	8.18	3.33
	(22.22)	(28.99)	(22.00)	[-0.10]	(31.44)	(22.68)	[0.50]	(27.59)	(24.41)	[-1.23]	(29.77)	(21.77)	[0.75]

Table V provides evidence that the value premium has persisted since it was originally proven to exist by Fama and French. The returns and standard deviations of the portfolios in Table V are similar in magnitude to those in Table IV.

On the other hand, whereas nearly all of the value portfolios in the previous time period had positive value premiums, Table V shows that it has diminished over the period of 1995 through 2019. When portfolios are formed based on B/M, only nine out of sixteen countries have positive value premiums. However, when portfolios are formed based on E/P, C/P and D/P, the results tell a different story. When portfolios are formed based on E/P, C/P and D/P, there are fourteen, thirteen, and fifteen countries, respectively, with positive value premiums.

Risk Factors

Fama and French test the ability of two asset pricing models, the international CAPM and the two-factor ICAPM (or APT), to capture the value premium by comparing the expected returns those models predict with the average returns of global market, value and growth portfolios, as well as the average returns of market, value and growth portfolios of individual countries. They carry out these tests by using a method wherein they assume that the various capital markets around the world are integrated and wherein investors do not differentiate between differences in purchasing power parity.

The CAPM

In order to test the applicability of the CAPM, we replicate the methodology of Fama and French, and run both a CAPM univariate regression and a two-factor regression. If the CAPM is the relevant model, the global market portfolio should be mean-variance efficient, meaning its expected return should be completely explained by its regression slope relative to the dollar value return, and the intercepts should be statistically indistinguishable from zero. Should they not, the CAPM is insufficient in explaining the average returns of the global market portfolio.

Table VI

CAPM and Two-Factor Regressions that Use Monthly Excess Returns on the Global Market Portfolio (M − F) and the Global Book-to-Market Value-Growth Return (H − LB/M) to Explain Monthly Excess Returns on Country Portfolios: 1975–2019

All returns are monthly. M is the global market return, F is the 1-month US T-bill rate, and R is the global value-weighted portfolio return. The method of estimation is ordinary least squares. In the CAPM regression, a is alpha, b is beta, t(a) is the T-test for whether a is differentiated from zero. R^2 is the adjusted R^2 and s(e) is the residual standard errors. The two-factor regression follows the same pattern, where c is second factor (H-LB/M) beta.

Panel A: CAPM and Two-Factor Regressions to Explain Monthly Excess return: 1975–1995

	CAPM						Two factor regression					
	$R - F = a + b(M - F) + e(t)$						$R - F = a + b(M - F) + c(H - L/B) + e(t)$					
R - F	a	b	t(a)	R^2	s(e)		a	b	c	t(a)	R^2	s(e)
HB/M	0.51	1.01	4.21	0.82	1.90							
HE/P	0.47	1.02	3.96	0.83	1.87	HE/P	0.31	1.03	0.57	2.81	0.86	1.72
HC/P	0.46	1.01	3.87	0.82	1.89	HC/P	0.31	1.03	0.56	2.74	0.85	1.76
HD/P	0.50	1.00	4.60	0.85	1.70	HD/P	0.38	1.01	0.42	3.66	0.86	1.61
LB/M	0.24	1.03	2.30	0.87	1.64							
LE/P	0.24	1.04	2.29	0.87	1.64	LE/P	0.25	1.04	-0.02	2.28	0.87	1.65
LC/P	0.22	1.02	1.92	0.84	1.78	LC/P	0.18	1.02	0.15	1.54	0.84	1.78
LD/P	0.24	1.04	2.19	0.86	1.72	LD/P	0.26	1.04	-0.09	2.36	0.86	1.72

Panel B: CAPM and Two-Factor Regressions to Explain Monthly Excess return: 1995-2019

	CAPM						Two factor regression					
	$R - F = a + b(M - F) + e(t)$						$R - F = a + b(M - F) + c(H - L/B) + e(t)$					
R - F	a	b	t(a)	R^2	s(e)		a	b	c	t(a)	R^2	s(e)
HB/M	0.30	1.03	3.02	0.83	1.69							
HE/P	0.32	1.00	3.49	0.84	1.56	HE/P	0.31	0.96	0.51	3.64	0.87	1.42
HC/P	0.33	0.99	3.48	0.83	1.59	HC/P	0.31	0.95	0.49	3.60	0.86	1.47
HD/P	0.37	0.95	3.90	0.82	1.60	HD/P	0.36	0.90	0.56	4.13	0.85	1.45
LB/M	0.27	0.95	3.47	0.87	1.32							
LE/P	0.16	0.98	2.06	0.87	1.35	LE/P	0.16	0.98	-0.01	2.06	0.87	1.35
LC/P	0.19	0.97	2.33	0.87	1.35	LC/P	0.19	0.98	-0.10	2.38	0.87	1.35
LD/P	0.17	1.01	2.16	0.88	1.32	LD/P	0.17	1.01	0.01	2.15	0.88	1.32

Table VI suggests that the International CAPM does not explain the average returns of our global market portfolio. The table shows that the portfolios with high financial ratios, meaning the value portfolios, have alpha values of at least 0.46 above zero. The portfolios with low financial ratios, the growth portfolios, have alpha values of at least 0.22 above zero. Both of these values are greater than 3.4 standard errors from zero,

meaning they are statistically distinguishable from zero, and thus the replication confirms what Fama and French proved: that the CAPM cannot explain the average returns of value and growth portfolios in the time period 1975 to 1995. Our results deviate from the findings of Fama and French in that the intercepts of our growth portfolios are positive, whereas theirs were negative. This is in line with the data in Table III, which shows that not only do our global value portfolios outperform the market; our global growth portfolios outperform it as well. This phenomenon can also be observed in Table IV, which shows that the growth portfolios of several individual countries outperform the market portfolio. In addition to the intercepts being inexplicable by the CAPM, the model would also require that the global value portfolios have steep and positive slopes in order to explain the high average returns. On the contrary, the slopes range from 1.00 to 1.02. Neither do the global growth portfolios line up with the predictions of the CAPM; according to the model, the slope of the security market line (SML) should be positive for all portfolios bearing more risk than the risk-free rate. Since the slope for the growth portfolios are steeper than the value portfolios, this implicates a higher risk premium for the growth portfolios. As for the time period 1995-2019, the resulting alpha values are still inconsistent with the model. The CAPM test provides results of alpha values of the global value portfolios that are at least 0.30 greater than 0. Their slopes range from 0.95 to 1.03. The global growth portfolios also have alpha values that are at least 0.16 greater than zero. These slopes range from 0.95 to 1.01.

Table VII

Correlations of Excess Returns on Country Market Portfolios, M − F, and of Country Book-to-Market Value-Growth Returns, H − LB/M: 1975–1995

All returns are monthly. H - LB/M is the difference between the returns on a country's high and low book-to-market portfolios, as described in Table II. The countries used in this research are the United States (US), Japan (JP), Great Britain (UK), France (FR), Germany (DE), Italy (IT), the Netherlands (NL) Belgium (BE), Switzerland (CH), Sweden (SE), Australia (AS), Hong Kong (HK), Singapore (SG).

	Market	US	JP	UK	FR	DE	IT	NL	BE	CH	SE	AS	HK
Panel A: Correlations of Excess Returns on Country Market Portfolios, M − F: 1975-1995													
US	0.82												
JP	0.71	0.25											
UK	0.72	0.51	0.37										
FR	0.65	0.44	0.42	0.54									
DE	0.59	0.36	0.38	0.46	0.58								
IT	0.46	0.22	0.40	0.39	0.44	0.39							
NL	0.75	0.59	0.42	0.65	0.58	0.71	0.36						
BL	0.65	0.44	0.44	0.54	0.65	0.67	0.39	0.69					
CH	0.71	0.50	0.44	0.59	0.59	0.72	0.35	0.74	0.66				
SE	0.57	0.40	0.41	0.42	0.34	0.41	0.34	0.47	0.41	0.48			
AS	0.53	0.42	0.27	0.48	0.36	0.28	0.24	0.41	0.31	0.41	0.41		
HK	0.49	0.36	0.24	0.47	0.32	0.36	0.30	0.51	0.34	0.43	0.38	0.42	
SG	0.59	0.49	0.31	0.56	0.32	0.33	0.26	0.48	0.38	0.43	0.38	0.44	0.57
Panel B: Country Book-to-Market Value-Growth Returns, H − LB/M: 1975–1995													
US	0.32												
JP	0.86	-0.02											
UK	0.40	0.08	0.09										
FR	0.24	0.10	0.03	0.26									
DE	0.10	0.03	-0.07	0.00	0.04								
IT	0.07	-0.04	0.02	0.01	0.01	0.01							
NL	0.37	0.14	0.16	0.25	0.23	0.20	-0.02						
BL	0.10	0.00	0.04	0.08	0.08	-0.07	0.08	0.16					
CH	0.25	0.11	0.09	0.08	0.15	0.21	0.08	0.12	0.11				
SE	0.23	0.03	0.09	0.15	0.22	0.13	0.05	0.23	0.06	0.15			
AS	0.05	0.01	-0.08	0.13	-0.02	0.11	-0.02	0.06	0.05	0.04	0.09		
HK	0.06	0.06	-0.03	-0.02	0.06	0.11	0.19	0.07	-0.01	0.06	0.05	-0.06	
SG	0.12	0.05	0.09	-0.01	-0.03	0.07	-0.07	0.16	-0.15	-0.01	0.02	-0.11	-0.03

Although the ICAPM does not demand that the returns of portfolios of individual countries are correlated, testing whether or not there are covariances between the returns still serves the purpose of explaining the existence of financial distress risk. As such, we use the following formula and divide the variances of the excess returns and the book-to-market value-growth returns into two parts, country return variances and covariances between the returns of countries:

$$Var(R_{global}) = \sum_{i} w_i^2 \, Var(R_i) + \sum_{i} \sum_{j \neq i} w_i w_j \, Cov\,(R_i, R_j)$$

The data in Table VI shows that variances in the return of individual countries are insufficient in explaining the variances of the global market return, M-F, and the spread in global value-growth return, H-LB/M. Rather, these variances are dependent on international correlations as well. The correlations of the excess market return of all thirteen countries are positive, with an average of 0.47. Furthermore, the correlations of 60 out of 78 value-growth returns are positive, although the average is only 0.09.

The significance for explaining the distress risk of assets, lies in the fact that the significantly lower average correlation between value-growth returns does not cause a low volatility in the returns. The standard deviation of the book-to-market value-growth return, 6.99, is about 50 percent of the standard deviation of the global market return, 13.26, despite the low correlation.

Table VIII

Correlations of Excess Returns on Country Market Portfolios, M − F, and of Country Book-to-Market Value-Growth Returns, H − LB/M: 1995–2019

All returns are monthly. H - LB/M is the difference between the returns on a country's high and low book-to-market portfolios, as described in Table II. The countries used in this research are the United States (US), Japan (JP), Great Britain (UK), France (FR), Germany (DE), Italy (IT), the Netherlands (NL) Belgium (BE), Switzerland (CH), Sweden (SE), Australia (AS), Hong Kong (HK), Singapore (SG) as well as the prolonging of the Nordic Countries; Norway (NO), Finland (FI) and Denmark (DK).

	Market	US	JP	UK	FR	DE	IT	NL	BE	CH	SE	NO	DK	FI	AS	HK
Panel A: Correlations of Excess Returns on Country Market Portfolios, M − F: 1995-2019																
US	0.85															
JP	0.61	0.28														
UK	0.75	0.37	0.54													
FR	0.74	0.36	0.52	0.87												
DE	0.73	0.38	0.47	0.83	0.93											
IT	0.64	0.29	0.43	0.77	0.88	0.81										
NL	0.73	0.35	0.52	0.87	0.92	0.89	0.82									
BL	0.61	0.26	0.42	0.80	0.82	0.79	0.74	0.86								
CH	0.69	0.35	0.53	0.79	0.81	0.79	0.70	0.83	0.77							
SE	0.75	0.42	0.49	0.81	0.87	0.86	0.76	0.84	0.70	0.74						
NO	0.64	0.28	0.48	0.80	0.77	0.71	0.68	0.75	0.69	0.68	0.73					
DK	0.67	0.33	0.45	0.79	0.79	0.78	0.73	0.81	0.76	0.74	0.77	0.75				
FI	0.67	0.39	0.45	0.69	0.75	0.71	0.65	0.70	0.57	0.60	0.76	0.60	0.61			
AS	0.70	0.34	0.57	0.79	0.74	0.72	0.65	0.73	0.67	0.69	0.74	0.75	0.67	0.62		
HK	0.67	0.35	0.52	0.66	0.59	0.59	0.49	0.61	0.50	0.55	0.61	0.61	0.56	0.49	0.68	
SG	0.67	0.35	0.52	0.67	0.62	0.62	0.52	0.64	0.55	0.57	0.63	0.64	0.56	0.48	0.73	0.84
Panel B: Country Book-to-Market Value-Growth Returns, H − LB/M: 1995-2019																
US	0.37															
JP	0.60	-0.03														
UK	0.56	-0.03	0.15													
FR	0.68	0.00	0.27	0.44												
DE	0.35	-0.01	0.04	0.34	0.45											
IT	0.49	-0.07	0.29	0.29	0.53	0.25										
NL	0.48	-0.03	0.17	0.45	0.47	0.20	0.33									
BL	0.31	-0.14	0.10	0.38	0.24	0.20	0.28	0.34								
CH	0.48	0.04	0.07	0.44	0.42	0.22	0.29	0.41	0.29							
SE	0.41	-0.04	0.26	0.20	0.49	0.44	0.25	0.09	0.15	0.05						
NO	0.31	-0.01	0.12	0.24	0.30	0.10	0.19	0.19	0.17	0.35	0.12					
DK	0.26	-0.09	0.22	0.21	0.24	0.09	0.14	0.21	0.16	0.12	0.22	0.17				
FI	0.34	-0.02	0.23	0.08	0.27	0.22	0.21	-0.04	0.13	0.01	0.40	0.12	0.10			
AS	0.33	-0.02	0.15	0.31	0.26	0.10	0.16	0.07	0.16	0.15	0.15	0.12	0.10	0.21		
HK	0.42	-0.02	0.12	0.06	0.21	0.11	0.09	0.14	0.12	0.16	0.12	0.12	-0.04	0.17	0.06	
SG	0.31	-0.04	0.18	0.13	0.18	0.10	0.06	0.06	0.11	0.13	0.12	-0.01	0.06	0.08	0.12	0.37

These results confirm that the previous findings are not unique to the time period 1975-1995 but have continued. From 1995 to 2019, the variances in the returns of individual countries are still dependent on the international correlations. The correlations of the excess market return of all thirteen countries are still positive, with an average of 0.47 once again. The correlations of 62 out of 136 value-growth returns are positive, with an average of 0.2. Thus, the percentage of positive correlations has decreased while the average value has increased, from 0.09. Finally, the standard deviation of the book-to-market value-growth return, 3.90, has diminished in relation to the standard deviation of the global market return, 17.78.

Table IX

Annual Dollar Returns for Global Market, Value, and Growth Portfolios: 1975–2019 in Markets of Turmoil

We form portfolios based on sorted values of the ratios; B/M, E/P, CE/P, and D/P. Value portfolios (indicated with a leading H, for high) include firms whose ratio is among the highest 30 percent for a given country. Growth portfolios (indicated with a leading L, for low) include firms in the bottom 30 percent. H-L is the difference between the high and low returns. Market is the weighted average market portfolio return. The global portfolios include the thirteen countries in panel A and B, and the additional three countries are added in panel C and D. Our definition of times of market turmoil is the top and bottom 10th percentiles in the value weighted average market return. The data is based on monthly observations and presented as yearly return.

Years positive turmoil occurred (panel A) is: 1975, 1976, 1978, 1980-1984, 1986, 1989-1993. Years where negative turmoil occurred (panel B) is: 1975, 1976, 1978-1982, 1984, 1986, 1987, 1989-1994. Years where positive turmoil occurred (panel C) is: 1996-2004, 2009, 2010, 2013. Years where negative turmoil occurred (panel D) is: 1996-1998, 2000-2002, 2008-2012, 2015, 2018.

	Market	HB/M	LB/M	H-LB/M	HE/P	LE/P	H-LE/P	HC/P	LC/P	H-LC/P	HD/P	LD/P	H-LD/P
Panel A: Annual Value-Weight dollar return in excess of 1 month T-bill rate 1995-2019 in positive turmoil													
Mean	13.96	15.86	13.23	2.86	15.00	13.09	2.14	14.88	13.15	1.96	14.66	13.15	1.74
Std.	8.71	12.57	9.30	3.88	12.29	9.30	3.90	12.13	9.48	3.68	12.62	9.69	4.16
Sharpe ratio (monthly)		2.19	2.40	0.73	2.09	2.49	0.65	2.07	2.40	0.57	1.86	2.69	0.29
Panel B: Annual Value-Weight dollar return in excess of 1 month T-bill rate 1995-2019 in negative turmoil													
Mean	-15.45	-14.59	-14.00	-0.37	-14.14	-15.14	1.22	-13.94	-14.90	1.19	-13.00	-15.45	2.67
Std.	13.50	13.10	12.91	2.20	13.14	13.62	2.47	12.54	13.54	2.32	12.18	13.67	3.36
Sharpe ratio (monthly)		-1.55	-1.70	-0.03	-1.49	-1.88	0.58	-1.55	-1.88	0.50	-1.45	-1.84	0.96
Panel C: Annual Value-Weight dollar return in excess of 1 month T-bill rate 1975-1995 in positive turmoil													
Mean	12.63	13.11	12.87	0.87	12.97	13.13	0.47	13.06	12.75	0.95	13.24	12.74	1.13
Std.	7.98	9.28	8.64	2.16	9.64	8.97	2.17	9.35	8.80	1.94	9.04	8.94	1.62
Sharpe ratio (monthly)		1.97	1.93	0.40	1.86	1.95	0.32	1.95	1.96	0.55	1.80	1.80	0.58
Panel D: Annual Value-Weight dollar return in excess of 1 month T-bill rate 1975-1995 in negative market turmoil													
Mean	-9.92	-10.09	-10.26	0.80	-10.13	-10.21	0.71	-9.92	-10.14	0.85	-9.75	-10.35	1.23
Std.	6.39	6.97	7.09	1.22	7.11	6.97	1.15	7.22	7.08	1.22	6.61	7.17	1.46
Sharpe ratio (monthly)		-1.47	-1.60	0.72	-1.49	-1.58	0.70	-1.42	-1.50	0.79	-1.59	-1.56	0.87

The data provides evidence of a value premium in returns of value portfolios, confirming the results of earlier tests for times of turmoil as well. The table above shows that during times of positive turmoil in the market, value portfolios beat the growth portfolios in all cases but one, in both time periods. The value portfolios also beat the market average in all cases but one, while the growth portfolios underperform the market in in four out of eight cases.

During times of negative turmoil in the market, value portfolios once again beat the growth portfolios in seven out of eight cases. The market portfolio is only beaten once in the later time period, while it is beaten by all portfolios in the earlier time period. When looking at monthly Sharpe ratio, it is hard to conclude anything; some high portfolios beat low and vice versa. The reason behind this is the fact that these months are not in a time-series manner, but the lowest and the highest moments of market return.

V. Discussion

The purpose of this paper was to further test for the existence of a value premium on value stocks by prolonging the original time period until 2019 and carrying out a test on three additional countries: Denmark, Norway and Finland. Putting the data together for comparison, it is clear that value portfolios still tend to perform better than growth portfolios. Portfolios formed on B/M in 1975-1995 have positive value premiums in each of the countries except two. Compared to 1995-2019, portfolios formed on B/M have positive value premiums in nine out of sixteen countries. Numerous questions arise. Is this partly explained by the Dot-com bubble in 1995-2000 where many IT-related growth companies gained tremendously? Does the Lehman Brothers crash have something to do with it? Or, is it perhaps the fact that the value premium made it a crowded trade and therefore it lost its advantage? The fact that value portfolios are more volatile in many scenarios might insist on the latter scenario, since it is one of the biggest traits of crowded trades.

If the markets are efficient, how come the value premium still persists? Why has it not been arbitraged away? When portfolios are formed based on the other three ratios used in this paper, E/P, C/P and D/P, the results tell a different story. When portfolios are formed based on E/P, C/P and D/P, there are fourteen, thirteen, and fifteen countries, respectively, out of a total of sixteen countries with positive value premiums. If it is because of higher volatility, and therefore risk, in the value portfolios compared to the growth ones, the efficiency of the market still holds. This notion is supported by Table II and III, which show that the assets in the value portfolios have higher volatility than the growth ones. However, we also ran univariate and bivariate regressions in order to test for a potential causal correlation between risk and return. Both tests supported a value premium. We can also conclude from these tests that the value premium is unexplainable by the ICAPM, as well as a two-factor version of the ICAPM, seeing as the alpha and beta values are statistically inconsistent with the ones predicted by the models. Furthermore, our tests for covariances of returns across countries showed that global market and financial distress risks derive in some measure from these covariances.

The results of the final facet of our research, regarding the performance of the portfolios in times of turbulence in the market, are also conclusive regarding the persistence of the value premium and the performance of value and growth investment strategies. The evidence shows value portfolios consistently outperform growth portfolios even during negative turmoil in the market, in both time periods. The same is true for periods of positive turmoil in the market; value portfolios beat the growth portfolios in all cases but one, in both time periods. The value premium is still prevalent. Is it possibly more so than in times of calm markets? According to our results, that seems to be the case seeing as growth portfolios performed significantly worse in times of both positive and negative turmoil.

As it stands, our empirical evidence supports the argument that there are other factors than risk that explain the value premium. However, in order to fully grasp the causes for the value premium, this issue must be studied from a number of different angles.

Limitations

As stated in the data section, there is something of a discrepancy when it comes to the stocks used forming the portfolios and the index used as market index in the US data series. We contacted Kenneth French and corresponded with him about the possibility of accessing existing data on US portfolios, but he had not had the time to complete them. Due to time constraints, we concluded that the solution used in this paper would be the optimal one. Since the US has a large part of the value-weighted index, this discrepancy affects the average portfolios and market. Nevertheless, the results show that our data still provides the evidence we aimed to find.

Another limitation occurred when calculating the weights for the second time period. We used the World Bank database of market capitalization of listed domestic companies. However, some Nordic countries did not have data for a few years. Instead, we assumed that those countries grew at the same rate as the Nordic country we had data for.

Another factor is that the results could be affected by outliers wherein the premium is driven only by a small number of value stocks with very large positive returns. Conversely, the growth portfolios could have been impacted by a small number of stocks with very large negative returns. The portfolio samples for the countries other than the US are from MSCI and Bloomberg, which cover mostly large international assets. A more complete sample would have counteracted the size effect of firms.

Furthermore, as discussed previously, the findings in this paper contribute to the ongoing debate whether or not the excess return is driven by taking on risk. De Bondt and Thaler (1985, 1987) argue that extreme losers outperform the market over the subsequent several years. This could affect our portfolios widely; companies in the value portfolios could all be on the verge of bankruptcy, and therefore have a low book-to-market valuation — and much higher risk. The larger problem is that this dispute combines more than the risk debate, which is empirically hard to differentiate, find proxies for and therefore also test.

With that said, a good start for an improvement on our methodology could be achieved by using a more complete sample, which would have counteracted the size effect of firms. To be able to isolate the risk effect more accurately and put an end to the debate regarding whether or not the excess return is driven by taking on additional risk, is another topic for further research.

VI. Conclusions

The goal for most of the stock market participants, both individuals and professionals, is to find strategies to beat the benchmarks and furthermore create a premium in returns. In times of market turmoil, such as the times we are experiencing now with the Covid-19 pandemic, to stay rational to an investing strategy could be a difficult task.

Looking back at our two research questions;

1. To replicate Fama and French's research and prolong it to 2019 with a greater number of countries, in order to examine if their findings still hold, and
2. To extend their research and examine whether or not their findings are affected by the short-term market turmoil.

What we can conclude from our research is that it remains relevant to choose value strategies since they, on average, still outperform the market as well as growth strategies. During volatile times, the value strategies are still clearly the better alternative. If it is based on the fact that people get more risk-averse during times of turmoil is hard to say. The short answers to our initial research questions are therefore: 1.) The findings still hold, with a greater number of countries and throughout 1975-2019; and 2.) The value premium persists in short-term market turmoil.

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