Efficiency of Capital Markets:
Is the Value Premium Dead?

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Abstract: The efficiency of capital markets and associated market anomalies is a research subject that has historically received a lot of attention in the Finance world, mostly in developed markets. However a great deal of this work is now dated, and it is worth another look to see if the identified anomalies have persisted over the last two decades. In addition, now that the breadth and depth of data on emerging markets is more readily available, there is need a need to examine whether the anomalies are pervasive in these yet-to-be robustly analyzed markets. Against that backdrop, the purpose of this paper is to examine one of the most well-known anomalies, the value-growth premium. Specifically, I update it for the United States and 12 developed countries to incorporate such contemporary events as the Financial Crisis of 2008-9, as well as extend the analysis to 19 emerging markets using MSCI's value and growth indexes, which were not available during prior research. Using daily return data for the first time, I find no evidence of the anomaly's existence in either developed markets since 2002 or emerging markets from 1997-2014. From this, I draw the conclusion that the anomaly has either been exhaustively exploited over the last decade in developed markets, or perhaps more intriguingly, may not be persistent when examined using more granular data. In addition, it generally does not appear to extend to individual emerging markets, although there is some evidence that it exists during certain time periods on a pooled global basis.

I.   INTRODUCTION

The efficiency of capital markets is a popular topic in Finance that has received a considerable amount of attention and research over the last four decades. During this time, the general view with respect to the market's efficiency has undergone paradigmatic shifts, starting out as a largely accepted concept but over the years being subjected to repeated challenges, seemingly from all angles. Within that context, I examine the value-growth premium in this paper and whether it is persistent and pervasive on a global basis.

However, before I delve into this subject, it is necessary to specify just what is meant by the term "market efficiency." In short, efficiency means that an investor cannot earn consistent abnormal returns on a risk adjusted basis (such as via "anomalies') beyond that which the general market offers. In other words, you cannot beat Wall Street without inside information, given the ability of the market to incorporate very large quantities of information very rapidly. In a sense, agreement with the concept of market efficiency is tantamount to accepting the notion that the market is omniscient, or worse, as proffered by Burton Malkiel, a blindfolded chimpanzee throwing darts at the Wall Street Journal could select a portfolio that would so as well as the experts.

Of course, it is important to keep in mind that there are three different forms of efficiency. The first one is weak-form, which means that abnormal returns cannot be generated on average from examining historical price information, i.e., there are no predictably recurring patterns, which basically runs counter to the practice of technical trading and anomalies like the value vs. growth premium. The second form is semi-strong efficiency, which means that abnormal returns cannot be earned consistently by trading on new public information since this information is incorporated very rapidly into the price, i.e., fundamental analysis will not give an individual investor an advantage, which is bad news for Wall Street stock analysts. And the third and final form is strong-form efficiency, which means that observed prices reflect all public *and private* information, meaning that insiders cannot earn an excess return for the risk that they are taking since informational asymmetry does not exist.

In this article, I focus on the weak-form of efficiency with respect to the previously discovered value vs. growth anomaly, whereby on a risk adjusted basis, value stocks have outperformed growth stocks, even though growth stocks have higher betas and as a result, higher systematic risk, which should ultimately result in higher returns than value stocks, at least as per the capital asset pricing model. This was first examined by Basu (1977) and since then there have been many studies of this phenomenon and whether it is persistent through time. However, most of those studies have been performed on developed markets, largely due to data availability, and at this juncture need to be refreshed to include the last 15 years. As a result, the purpose of this paper is to update the results of earlier efforts on developed markets in order to test their persistence (for example, results will now include the Financial Crisis of 2008-9, in which unprecedented volatility was experienced and during which paradigmatic shifts may have occurred in the investment process) as well as expand upon that work into new emerging markets by accessing a greater breadth and depth of in-country data than was extant at the time of the prior research. In particular, I will focus/build on the research of Fama and French in their 1998 article entitled "Value versus Growth: The International Evidence," in which they examined the value vs. growth anomaly i) in 13 developed countries, finding that the anomaly was readily present in 12 of them (Italy being the lone exception), and ii) sixteen emerging markets, for

which the available data span at the time was only nine years and the number of stocks in certain countries limited (hence they did not include the results in their "headline findings" which indicated that the anomaly was present in a majority of emerging markets).

This paper is structured as follows: Section II provides a literature review while Section III discusses the data and methodology. The results are discussed in Section IV followed by a discussion of the practical and academic implications of the research, its limitations and potential opportunities for future work. Section VI concludes.

II.   LITERATURE REVIEW

While the majority of the literature regarding anomalies focuses on the US markets, there has been considerable work done in the international realm, as the subject and its impact on market efficiency and related asset pricing models has garnered significant attention. In this review, I start with some of the earlier work done on anomalies in general, proceed to efforts focused on the international realm and then conclude with a robust discussion of analyses related to the value-growth premium.

One of the main areas of anomaly focus is that of calendar anomalies, which have to do with seasonality or systematic temporal breaches of efficiency, These include such documented anomalies as the January effect (Thaler 1987), where stocks outperform in January vis-à-vis other months, the weekend effect (French 1980, Gibbons and Hess 1981, Keim and Stambaugh 1984, Brusa 2000), in which a profitable strategy is to sell stocks on Friday close and buy back on Monday close (since bad news is often released over the weekend), the turn-of-the-month effect (Ariel, 1987, Lakonishok and Smidt 1988), where most of stocks' capital gains come during the last four trading days of a month and first three of the subsequent month and the holiday effect (Ariel 1990; Lakonishek and Smidt, 1988), in which stock markets tend to gain on the last trading day before a holiday.

Moving along to another popular category of anomalies, non-calendar effects, of particular note is the size effect (Banz 1981; Keim 1983), which involves the negative association between a company's size, or market capitalization, and its returns, i.e., small companies tend to outperform large ones, the referenced value-growth premium discussed in more detail below and the momentum effect (Jagadeesh and Titman 1993), which links future stock returns to past returns, implying that winners continue to win while losers continue to underperform winners. Interestingly, all three of these anomalies have also been linked to improved versions of the single factor capital-asset-pricing-model predicated on beta, or the co-movement of a stock with the market portfolio, most notably by Fama and French (1993) with their three factor model that includes the size effect and value premium as independent variables in explaining the cross-section of stock market returns, and subsequently by Jagadeesh and Titman (1993) who add a fourth factor, that of momentum. Please note that an examination of the factors affecting the cross section of stocks is beyond the scope of this paper.

Lastly, the third and final category of anomalies referenced for our purposes is just a subset of the first two, extended to include foreign markets (and examining a broad set of foreign countries rather than just focusing on a single one). In this category, articles of note include Jaffe and

Westerfield (1989), who examine the monthly effect in four non-US countries, Agrawal and Tandon (1994), who look at calendar and seasonality effects in 18 countries, Fama and French's already referenced work on the value premium, Hirshleifer and Shumway (2003), who analyze the linkage between sunshine and stock returns in 25 major stock markets and Bauer, Cosemans and Schotman (2010), who test Fama and French's three-factor model in Europe. In general, these papers support the existence of anomalies in foreign markets, leading to the conclusion that anomalies in the US may simply be a local manifestation of a global phenomenon, a finding which sets the exploratory context of our paper.

Delving into the value-growth anomaly, whereby value stocks outperform growth stocks, or as is alternatively expressed, high book-to market stocks (BE/ME) outperform low book-to-market ones and/or high earnings to price equities (E/P) outperform low E/P ones (cash flow to price, or CF/P is also often used as a variable to divide stocks into value and growth categories), I note that the notion was first put forth by Dodd and Graham (1934) in their seminal book on security analysis. In the empirical literature, Basu (1977) found that for industrial firms traded on the NYSE from 1957-1971, low P/E portfolios on average, earned higher absolute and risk-adjusted rates of return than the high P/E securities. Fama and French (1992, 1994) and Lakonishok, Shleifer and Vishny (1994) also found the same in the US for high BE/ME stocks, low E/P and low C/P stocks for the period aggregating 1963-1993.

Chan, Hamao and Lakonishok (1991) extended the analysis outside of the US to Japan, finding that high BE/ME and low CF/P stocks in particular outperformed their growth counterparts from 1971-1988. Utilizing price to book ratios (P/B, which is essentially the inverse of the BE/ME), Capaul, Rowley and Sharpe (1993) observed that value stocks outperformed growth stocks in France, Germany, Japan and the United Kingdom from 1981-92, while Bauman, Conover and Miller (1998) expanded the international sample, studying 21 developed countries over the 1986-1996 time period and finding that the value premium generally held in the majority of years for the majority of the markets.

Fama and French (1998), in their seminal work, utilized a robust set of *four* different value-growth ratios to show that the anomaly was pervasive in 12 of 13 developed markets from 1975 – 1995 and also extended the analysis for the first time to emerging markets, finding indications that it existed in a majority of 16 emerging markets, although they refrained from reporting the result as part of their "headline findings" given that the sample period was only from 1987-1995. Barry et al (2002) expanded the sample, analyzing BE/ME effects for approx. 2,000 firms in 35 emerging markets from 1985-2000 and found that the mean return on value stocks exceeded the mean return on growth stocks, however, that result was based upon a pooling of all countries' stocks into one diversified portfolio and not individual markets. Also, while the authors did perform a cross-sectional regression by country and observed a generally positive value premium, they cautioned that the results should be interpreted with caution due the limited number of stocks in individual markets, especially in the early years. Similarly, Hart, Slagter and van Dilk (2003) studied six major stock selection strategies in 32 emerging markets from 1985-99, including the value strategy on found that portfolios formed on the basis of E/P and BE/ME ratios generated excess returns on an internationally diversified portfolio but the effects did not hold on an individual country basis.

With respect to the most recent work pertaining to the value premium, Chan and Lakonishok (2004) updated the analysis for the US and developed international countries through 2001 to

include the late 1990's, a time in which value stocks underperformed, and found that the premium persisted. In a working paper, Kouwenburg and Salomons (2005) studied 23 emerging markets from 1991-2001 and found that low P/B countries outperformed high P/B countries, however, there was no analysis of in-country effects, i.e., countries were either categorized completely as low P/B or high low P/B markets. Lischweski and Voronkova (2012) suggested that the value premium persists in Poland.

A strand of research related to these studies is that of factors explaining the cross-section of stock returns in emerging markets. To this end, I note that Claessens, Dasgupta and Glen (1998) observed strong BE/ME effects in 19 emerging markets from 1986-93 but often in the opposite direction as that postulated by the value premium while Rouwenhorst (1999) found that the average return on an internationally diversified emerging market "high B/M minus low B/M" stock portfolio was statistically significant from 1982-1997 in 20 countries, although the differences were not always significant in-country.

Against this backdrop and as stated, two clear research needs/opportunities arise from this review of the literature, namely (i) to update the previous findings regarding developed markets, including the US, as the latest research only extends through 2001 (and as noted by Malkiel (2003) regarding the US, "the period from the early 1960s through the 1990 may have been a unique period in which value stocks consistently produced higher rates of return" and (ii), to perform a country-by-country analysis of the value premium in emerging markets underpinned by sufficient data from which to draw conclusions with respect to its pervasiveness. As such, the contribution of this paper is to satisfy these two needs within the context of the examination of the following two research questions:

> 1, Is the value vs. growth phenomenon persistent in developed markets?
> 2: Is the value vs. growth phenomenon pervasive in emerging markets?

In addition, I further contribute to the literature by examining the anomaly on the basis of *daily* returns for the first time, as all studies to date have relied on monthly return data.

III.   DATA AND METHODOLOGY

Return data for the analysis with respect to developed markets will be drawn from the time period beginning in 2002, which picks up where the last fulsome analysis ended, and continue through 2013. The data will be pulled from Bloomberg and consist of the Morgan Stanley Capital International (MSCI) Value and Growth indexes for each of the 13 developed economies included in the analysis. As stated, returns are calculated on a daily basis, which is more granular than past studies which have relied on monthly data. Regarding emerging markets, daily MSCI Value and Growth Index data will also be pulled from Bloomberg beginning in 1997 and extending through 2013 for each of the 19 countries, resulting in a time series comprising 17 years. As noted, Fama and French (1998) had previously examined data from only 1987-95 (for 16 countries) and thus were precluded from making firm observations due to the limited data span while Barry et al's (2002) result held for an internationally diversified portfolio of 2,000 emerging market stocks, i.e., were not in-country.

The indexes, which are available as investment vehicles, are proactively managed to ensure that the included stocks match the requisite value and growth criteria. MSCI constructs such indexes based on the countries and stocks included in its MSCI All Country World Index. From 1997 to 2003, stocks in a given country were allocated to either their respective value or growth indexes based on their Price to Book Value (P/BV) ratios. Effective on May 30, 2003, the company changed their process to a more dynamic two-dimensional multi-factor approach. Specifically, MSCI began to define value style characteristics based on three variables, BV/P, the 12-month forward earnings to price ratio and dividend yield (D/P), and growth style characteristics utilizing five variables, namely long-term forward earnings per share (EPS) growth rate, short-term EPS growth rate, current internal growth rate, long-term historical EPS growth trend and long-term historical sales per share growth trend. For each security in a given country level index, values for the aforementioned eight variables are calculated and the data is winsorized at the 5% level to eliminate the distortive effect of outliers.

To standardize the variables and hence, make them comparable across different units of measurement and scales, a z-score is computed for each variable for each security. MSCI then calculates aggregate value z-scores for each security by averaging the three value variables z-scores and aggregate growth z-scores by averaging the five growth variables. Individual securities are then assigned to either the value or growth index based on which of the two style characteristics is dominant. However, because MSCI targets a 50% free float adjusted market capitalization for each index, essentially splitting the market value of the country index in half into these two styles, securities for which the aggregate z-score of the dominate style is furthest from the origin in their "style space" are allocated first into their respective indexes until such time that the 50% target has been met. As such, the indexes are constructed on a relative basis as opposed to an absolute one, meaning that securities which exhibit a certain style on an absolute basis could potentially end up in the other style's index. Also, it is important to note that some securities which exhibit characteristics of both styles could end up being split across both indexes on a weighted basis, depending upon which style is more prevalent.

Regarding rebalancing, the indexes are reviewed semi-annually at the end of May and November, with new value and growth z-scores calculated and the allocation process being repeated. In addition, interim style reviews for new securities added to respective country indexes are conducted in February and August while ad hoc reviews due to mergers and acquisitions, spin-offs and large IPO's may occur periodically.

Econometrically, the methodology will largely follow that of Fama and French in their 1998 paper whereby the authors calculated the mean returns of value and growth stocks by country, subtracted the means from another to determine the value premium (if any) and then tested whether the premium was statistically different from zero. In doing so, the existence of the premium will be examined on different temporal "cuts" of the data to examine persistence.

IV.   RESULTS

First I examine the daily value premium in developed markets for the entire time period 2002-2014. Surprisingly, as can be seen below in Table 1, the premium is not observable in 11 of the 13 markets examined, including the US, on a statistically significant basis, with only Japan and

Sweden exhibiting the anomaly. In addition, there is no global value premium when all the countries are pooled. This runs counter to prior literature covering earlier time periods, suggesting that either the anomaly was not persistent over the last decade, or prior results were not granular enough in terms of the periodicity of returns.

Table 1: Developed Markets Daily Value Premium, 2002-2014

Developed Markets Daily Value Premium	2002-2014
All Markets	(0.0040392)
US	(0.0057139)
Japan	0.0114913*
UK	(0.0016871)
France	(0.0024210)
Germany	(0.0088341)
Italy	0.0073562
Netherlands	(0.0102222)
Belgium	(0.0559093)**
Switzerland	(0.0138060)
Sweden	0.029012**
Australia	(0.0081768)
Hong Kong	(0.0076345)
Singapore	0.0140014

*** p<0.01, ** p<0.05, *p<0.1

I then divide the 2002-2014 timeframe into three distinct segments, covering the period before the Great Financial Crisis of 2008-2009, the years 2008 and 2009, and the time after 2009, in order to ascertain whether the anomaly existed in any sub-periods.

Table 2: Developed Markets Daily Value Premium

Developed Markets Daily Value Premium	2002-2007	2008-2009	2010-2014
All Markets	0.0022628	(0.0152957)	(0.0073355)*
US	0.0040328	(0.0251075)	(0.0102097)
Japan	0.0186524**	0.0411623*	(0.0105955)
UK	0.0038567	-0.0210349	(0.0004900)
France	0.0030627	0.0236728	(0.0172422)
Germany	0.0100651	(0.0290581)	(0.0245212)*
Italy	0.0161797	0.0026241	(0.0020034)
Netherlands	0.001816	(0.0531673)	(0.0072200)
Belgium	(0.0216661)	(0.1540498)*	(0.0577513)**
Switzerland	(0.0060729)	(0.0569130)	(0.0051692)
Sweden	0.0606904***	0.0010581	0.0001482
Australia	(0.0287531)**	(0.0177517)	0.0225749*
Hong Kong	(0.0362433)**	0.0580135*	0.0009927
Singapore	0.0038299	0.0397591	0.0160239

*** p<0.01, ** p<0.05, *p<0.1

As can be seen in Table 2 below, the number of value premium positive countries is no greater than two in any period. In addition, it is of interest to note that a growth premium is even observable in the 2010-2014 when all markets are pooled, albeit at a 10% significance level.

Now turning our attention to emerging markets, I first examine whether the anomaly is extant in the holistic time period 1997-2014, noting that this is the first time that such a broad sample of emerging markets has been examined over such an extensive time period on a country by country basis.

Table 3: Emerging Markets Daily Value Premium, 1997-2014

Emerging Markets Daily Value Premium	1997-2014
All Markets	0.0097686**
Argentina	0.0229191
Chile	0.0075714
China	0.0442183***
Columbia	0.0425498***
Czech Republic	0.0001896
Hungary	0.0115442
India	(0.0097127)
Indonesia	(0.0008841)
Israel	(0.0025650)
Korea	0.0048854
Malaysia	0.0267676***
Mexico	(0.0080911)
Peru	(0.0160321)
Poland	0.0248838*
Russia	0.0134820
South Africa	0.0020556
Taiwan	0.0006081
Thailand	0.0059826
Turkey	0.0191886

*** $p < 0.01$, ** $p < 0.05$, *$p < 0.1$

While there is a statistically significant daily value premium for the entire sample of countries when viewed holistically (as can be seen in the first row of Table 3), the anomaly is not observable on an in-country basis in 16 of the 19 countries examined, with China, Columbia and Poland constituting the exceptions. This result suggests that emerging markets are generally efficient in this regard.

I then divide the sample into sub-periods again to explore existence in any of these periods. For emerging markets, I have divided the 1997-2014 timeframe into five segments given the longer sample period and associated greater incidence of events that may have caused temporary structural breaks.

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Table 4: Emerging Markets Daily Value Premium

Emerging Markets Daily Value Premium	1997-1999	2000-2002	2003-2007	2008-2009	2010-2014
Overall	0.0039098	0.0155434	0.0095638*	0.0300037***	0.0008791
Argentina	0.0414715	0.0354867	(0.0145506)	0.0892803	n/a
Chile	(0.0061536)	(0.0042445)	(0.0013453)	0.0489220	0.0158137
China	0.1472912**	0.1004439	0.0077337	0.0128295	(0.0058472)
Columbia	0.1078423**	0.0494915	0.0365838	0.0244063	0.0101061
Czech Republic	(0.088902)**	0.0076327	0.0264982	0.0376499	0.0084420
Hungary	0.0010402	0.0365117	(0.0238171)	0.0464398	0.0252040
India	(0.1299849)***	0.0244889	0.0319234*	0.053585*	(0.0263169)*
Indonesia	(0.0148281)	(0.0414015)	(0.0006704)	0.0621002	0.0056260
Israel	(0.0081553)	(0.0738808)	0.0212532	0.0064824	0.0175784
Korea	(0.0464916)	0.0240247	0.0127416	0.0645468*	(0.0085339)
Malaysia	0.0877883*	0.0523295	(0.0038011)	0.0507235**	(0.0012040)
Mexico	(0.0044814)	0.0083839	(0.0439611)**	0.0180849	0.0062531
Peru	(0.0180534)	(0.0834262)	0.0404114	(0.0285039)	(0.0265699)
Poland	0.0180136	0.0442053	0.0119492	0.0598259	0.0156549
Russia	0.0060858	0.0438118	0.0223170	(0.0053584)	(0.0027236)
South Africa	(0.0291701)	(0.0000622)	0.0272122*	0.0426329	(0.0210432)
Taiwan	0.0018813	0.0111211	(0.0123624)	0.0061697	0.0045651
Thailand	(0.0164443)	0.0311771	0.0151163	(0.0130336)	0.0005868
Turkey	0.0316653	0.0292301	0.0284932	0.0107406	(0.0017499)

*** $p<0.01$, ** $p<0.05$, *$p<0.1$

The specific time periods and associated reasoning for these "snapshots" are 1997-1999 to correspond with the dot.com boom, 2000-2002 for the bursting of the tech bubble, 2003-2007 to account for the run-up to the Great Financial Crisis of 2008-2009, 2008 and 2009 to cover the actual years of the crisis, and 2010 to the present time for the post-crisis trend.

Again, as can be viewed in Table 4, there is no evidence of a persistent value premium. However, it is of interest to note that the premium is observable on a pooled all-market basis during the financial crisis in 2008-2009, during which time it was statistically significant at the 1% level. This suggest that value stocks held up better during this time than growth stocks by an economically significant difference of 7.5% (0.03 x 250 trading days), a result which is not surprising given that such stocks are generally expected to hold up better during downturns. Nonetheless, when I examine the premium on an in-country basis, I discover that it only holds in three instances.

V. CONCLUSION

I contribute to the extant literature on the value anomaly by (i) updating previous findings regarding developed markets, including the US (as the latest research only extends through 2001), (ii) performing a broad based country-by-country analysis of the value premium in emerging markets underpinned by sufficient data from which to draw conclusions and (iii) utilizing daily returns for the first time.

Interestingly, I find no evidence of the anomaly's existence in either developed markets since 2002 or emerging markets from 1997-2014. This result holds for both the entire time periods under study as well as in general subsections of time partitioned according to contemporary events. From this, I draw the conclusion that the anomaly has either been exhaustively exploited and thus, may have disappeared from developed markets over the last decade, or perhaps more intriguingly, may not be persistent when examined on a daily basis. In addition, it generally does not appear to extend to individual emerging markets, although there is some evidence that it exists during certain time periods on a pooled global basis.

As limitations to the paper, I cite that I utilize the MSCI Value and Growth indexes and hence, rely upon their methodology for categorizing growth and value stocks, rather than identifying such stocks ourselves via construction of portfolios of individually chosen stocks based on identified criteria (of course, using the MSCI indexes has enabled us to examine the anomaly on a daily basis). In addition, I proffer that there may be idiosyncrasies with respect to utilizing daily returns which I may have not considered, e.g., is there a distortion caused by portfolios not being rebalanced on a daily basis?

With respect to further research opportunities, I believe that the anomaly should be tested in developed markets for as far back as the daily MSCI data extends to see how the daily returns compare to historical results using monthly returns. Additionally, potential reasons for the non-persistence and /or non-pervasiveness of the anomaly in both developed and emerging markets should be rigorously examined and a determination made as to whether there has been a structural break in the value premium, or did it ever truly exist.

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