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The high returns to low volatility stocks are *actually* a premium on high quality firms

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ABSTRACT

Recent empirical research shows that low volatility stocks outperform high volatility stocks around the world. This study documents that the volatility effect is associated with the quality of the firm using a large sample of international stocks. First, adding a quality factor to the Fama–French model contributes to the explanation of the volatility effect. Furthermore, the negative volatility–return relation is shown to be stronger and significant only among high quality firms which are profitable and have stable cash flows. Second, a fundamental investment strategy that goes long high quality firms and short low quality firms performs like a volatility strategy and cannot be explained by common asset pricing models. However, a low–high volatility factor adds to the explanation of the return difference between high and low quality stocks as volatility and quality strategies have a common component.

1. Introduction

A large number of recent empirical research document that low volatility stocks have higher average returns than high volatility stocks around the world.[1] The outperformance of low volatility stocks over high volatility stocks is economically exceptionally large, amounting on average to 12% per year. Baker, Bradley, and Wurgler (2011, p. 43) therefore argue that "the outperformance of low-risk portfolios is perhaps the greatest anomaly in finance".

Risk-based explanations have problems in describing the observed return pattern, as the return difference between low and high risk stocks cannot be captured by common asset pricing models. This is mainly due to the fact that low volatility stocks have typically low market betas, whereas high volatility stocks exhibit high market betas. Blitz and van Vliet (2007) therefore argue that low risk stocks should be considered as a distinct asset class in the strategic asset allocation process.

Ang, Hodrick, Xing, and Zhang (2006, 2009) rule out a large number of possible explanations for the observed volatility effect in U.S. and international returns. They provide evidence that explanations based on aggregate market volatility risk, microstructure measures, dispersion in analysts' forecasts, costs of trading, and information dissemination cannot explain the negative volatility–return relation around the world. Baker et al. (2011) offer behavioral explanations for this anomaly. They argue that the volatility effect may be partly explained by the irrational preference for high volatility stocks by individual investors and the institutional investor's mandate to beat a given benchmark which limits investments in low volatility stocks.

In this paper, we examine a large sample of international firms with two goals. First, we document that the volatility effect, the empirical evidence of high returns to low volatility stocks, is associated with the quality of the firm as measured by profitability and cash flow variability. Second, we propose a fundamental investment strategy based on the quality of the firm that performs like a volatility strategy and present evidence that volatility and quality strategies have a common component in international markets.

In the first part of the paper, we show that the high returns to low volatility stocks are associated with the quality of the firm in financial terms. After having established the puzzling negative volatility–return relation in international markets, we create at first a quality factor based on profitability or cash flow variability that we use as the fourth factor to the Fama–French model, extending it to a quality-enhanced four-factor model for explaining the return behavior of volatility portfolios. In line with Huang (2009), we use cash flow from operations as a proxy for the firm's economic earnings as accounting earnings may underestimate

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[1] See, for instance, Ang et al. (2006, 2009), Clarke, de Silva, and Thorley (2006), Blitz and van Vliet (2007), Baker et al. (2011), and Baker and Haugen (2012). However, Bali and Cakici (2008) find for the U.S. that the volatility effect is weaker when volatility portfolios are equal-weighted and when the volatility variable is estimated using monthly instead of daily data.

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the variability in operational profit due to earnings smoothing. McGuire, Schneeweis, and Branch (1990) document that profitability and operating income growth are important determinants for investors' perception of firm quality. Moreover, it is well documented that the stock market responses favorably to firms with high profitability and low cash flow variability. Fama and French (2006) show that firms with higher profitability earn higher future returns. Using a variety of alternative profitability measures, Bali, Demirtas, and Tehranian (2008) document in a broader study likewise a strong time-series and cross-sectional return predictability of profitability. Allayannis, Rountree, and Weston (2005) show that cash flow variability has a negative impact on firm value.

The regression results based on the quality-enhanced four-factor model reveal that quality adds significantly to the explanation of the volatility effect. The loadings on the quality factor decrease monotonically from low to high volatility portfolios and the risk-adjusted outperformance of low volatility stocks over high volatility stocks is reduced in magnitude and statistical significance compared to the Fama–French model.

To further examine the relation between quality and the volatility effect in international markets, we separate firms into low and high quality firms according to their profitability and cash flow variability. We document that firms with low return volatilities earn high and significant risk-adjusted returns among high quality firms but close to zero returns among low quality firms. Consequently, the volatility effect comes out to be strong among high quality firms but weak among low quality firms.

Our international evidence is related to previous U.S. findings. Huang (2009) shows that average returns decrease with higher levels of cash flow variability and that cash flow variability is closely related to the idiosyncratic volatility in average returns. Irvine and Pontiff (2009) find that the increase in idiosyncratic volatility over time (Campbell, Lettau, Malkiel, & Xu, 2001) is associated with an increase in the cash flow variability and that this increase is largely attributable to the intensified market competition. Wei and Zhang (2006) document that stock return volatility is negatively related to the profitability of the firm. While the relation of idiosyncratic volatility with profitability and cash flow variability has been documented for the United States, this relation is virtually unknown for other countries. Using a large sample of international equity markets, we thus contribute to the literature by documenting how the volatility anomaly is affected when the firm's profitability and cash flow variability is taken into account which has likewise not been directly investigated by the previous U.S. literature.

Though financial leverage is also well-known to influence investors' perception of firm quality (McGuire et al., 1990), we do not use financial leverage as a quality characteristic in this study due to the fact that Ang et al. (2006, 2009) find that controlling for leverage cannot explain the observed volatility effect in U.S. and non-U.S. equity markets.

In the second part of the paper, we show that a financial quality or low fundamental risk strategy performs like a return volatility strategy. Based on our international findings and the previous U.S. evidence, we propose an easily implementable yearly-rebalanced strategy that goes long high quality stocks, i.e., firms with high profitability and low cash flow variability and short low quality stocks, i.e., firms with low profitability and high cash flow variability. We find that the return difference associated with quality is large and similar to the one documented for a low–high volatility strategy. In particular, the risk-adjusted outperformance of high quality stocks over low quality stocks amounts to more than 0.91% per month and cannot be explained by common asset pricing models. Furthermore, assessing the performance over longer horizons shows that the outperformance lasts for up to three years after portfolio formation, making the quality strategy exceptionally promising for long-term investors. Though the return difference between high quality stocks and low quality stocks cannot be attributed to conventional measures of risk, we present evidence that the quality strategy and the volatility strategy have a common component as a low–high volatility factor adds significantly to the explanation of the return behavior of the quality strategy.

In this study, we define quality solely in terms of financial strength using measures based on profitability and cash flow variability which aim to reflect the quality of the firm. Profitable firms with stable cash flows have assumingly solid business models and sustainable competitive advantages in the market and should therefore be regarded as firms of high quality. However, we are well aware that firm quality can be defined in other ways. For instance, Anderson and Smith (2006) and Anginer and Statman (2010) use the survey of company reputation published by the Fortune magazine to separate firms into groups of admired (high quality) firms and spurned (low quality) firms. Hence, our findings may be potentially related to the strand of literature examining the relation between the firm's perceived reputation and subsequent returns due to the fact that the firm's reputation is highly correlated with the firm's financial strength as pointed out by McGuire et al. (1990).

The remainder of the paper is organized as follows. Section 2 describes the international data and variables. Section 3 establishes the puzzling negative relation between volatility and average returns in international markets. In Section 4, we show that the volatility effect is related to the financial quality of the firm. Section 5 investigates the performance of a quality strategy based on profitability and cash flow variability, and shows that volatility and quality strategies have a common component. Finally, Section 6 concludes the paper.

2. Data and variables

The international sample in this study consists of firms from 22 non-U.S. developed markets. The selection of countries resembles the countries classified as developed markets according to Morgan Stanley Capital International (MSCI). We obtain total return data on common stocks from Datastream and accounting data (e.g., the book value of equity) from Worldscope. All data are denominated in U.S. dollars and the one-month U.S. Treasury bill rate is used as the risk-free rate. We follow Ang et al. (2009) and exclude very small firms by eliminating the 5% of firms with the lowest market capitalization in each country. The sample period is July 1985 to December 2011. However, we use for the construction of variables accounting data going back to 1980 (the initial year of available accounting information in Worldscope).

Panel A in Table 1 shows summary statistics for the countries included in the international sample. Except for five markets, the majority of countries in the sample have return data available from the beginning of the sample period. The two largest markets are Japan and the United Kingdom. Japan accounts on average for 2469 firms and 31.2% of the sample's total market capitalization, whereas the United Kingdom constitutes 1215 firms and 13.5% of total market capitalization. The remaining countries are smaller in terms of sample firms and total market capitalization.

The variables used in this study are defined as follows. A firm's size is its market capitalization, i.e., its stock price multiplied by the number of shares outstanding. Book-to-market is the ratio of book value of equity to the market value of equity at the fiscal year end. Volatility is the idiosyncratic volatility relative to the Fama–French model using daily returns over the previous month (Ang et al., 2006, 2009). Profitability is equity income (income before extraordinary items) divided by lagged book equity. Cash flow variability is the standard deviation of cash flow from operations scaled by the number of shares outstanding measured over a five-year period.

The construction of the Fama–French model follows Fama and French (1993, 1998). The market factor (MKT) is the value-weighted return of all stocks in excess of the risk-free rate. The size factor (SMB, small minus big) is the return difference between a portfolio of small stocks and a portfolio of big stocks. The value factor (HML, high minus low) is the return difference between a portfolio of high book-to-market stocks and a portfolio of low book-to-market stocks.