IIMB Management Review (2016) **28**, 147–159

available at www.sciencedirect.com

ScienceDirect

journal homepage: www.elsevier.com/locate/iimb

Cross sectional moments and portfolio returns: Evidence for select emerging markets

Sanjay Sehgal [a], **Vidisha Garg** [b,*]

[a] *Department of Financial Studies, University of Delhi, India*
[b] *Maitreyi College, University of Delhi, India*

Received 7 March 2014; revised 19 August 2015; accepted 5 July 2016; available online 15 July 2016

KEYWORDS
Idiosyncratic volatility;
Cross sectional variance;
Higher order moments;
Fama French model;
Trading strategies

Abstract Research does not indicate a consensus on the relationship between idiosyncratic volatility and asset returns. Moreover, the role of cross sectional higher order moments in predicting market returns is relatively unexplored. We show that the cross sectional volatility measure suggested by Garcia et al. is highly correlated with alternative measures of idiosyncratic volatility constructed as variance of errors from the capital asset pricing model and the Fama French model. We find that cross sectional moments help in predicting aggregate market returns in some sample countries and also provide information for portfolio formation, which is more consistent for portfolios sorted on sensitivity to cross sectional skewness.

Introduction

Financial markets have witnessed an upward trend in volatility over the past years. Unsystematic volatility (also referred to as idiosyncratic volatility), which is the volatility specific to an individual company, is a much researched subject. Campbell, Lettau, Malkiel, and Xu (2001) point out some of the reasons for increasing idiosyncratic risk, an important one being the increase in the variance of cash flow shocks due to the breakup of conglomerates into smaller, focussed companies. In other words, well diversified conglomerates are now replaced by separate firms with their idiosyncratic risks measured separately. Another possible reason suggested by Campbell et al. (2001) is of companies entering stock markets in the early stages of their life cycle when their profitability and long term outlook is uncertain. Increasing popularity of stock options as a mode of compensating key personnel has also led to the involvement of firms in risky activities. Volatility of equity cash flows is also affected by leverage. A higher degree of leverage makes the returns of stockholders highly volatile. Increasing volatility can also be attributed to the growing number of speculators in the derivatives market.

There has been a lot of debate on the role of idiosyncratic risk in explaining the cross sectional variation in stock returns. The capital asset pricing model (CAPM) of Sharpe (1964), Lintner (1965) and Black (1972) postulates that the expected excess stock returns are directly proportional to their beta factor. The higher the beta factor, higher is the systematic risk as well as the expected excess stock returns. In other words, investors are compensated only for bearing systematic market risk. This is because they are expected to hold

* Corresponding author. Fax: +01124118854.
E-mail address: vidisha_garg@yahoo.com (V. Garg).

http://dx.doi.org/10.1016/j.iimb.2016.07.001

the market portfolio where idiosyncratic risk is completely diversified away. So an investor will be compensated only for assuming non diversifiable risk. But in the real world, it has been observed that most investors do not hold a well-diversified market portfolio because of lack of complete information, transaction costs, liquidity requirements, taxes, and so on. Therefore, investors demand a premium for imperfect diversification. Accordingly, many researchers have worked on the importance of idiosyncratic volatility in asset pricing.

Some studies have discovered a positive relationship between idiosyncratic risk and expected returns. Goyal and Santa-Clara (2003) documented a direct relationship between idiosyncratic risk and market return. Whereas Bali, Cakici, Yan, and Zhang (2005) found that the positive relation is not in evidence if the sample period is extended. Malkiel and Xu (2006) and Fu (2009) also gave a positive relationship between idiosyncratic risk and expected returns. But a study by Ang, Hodrick, Xing, and Zhang (2006) found that the stocks with high idiosyncratic volatility have abysmally low returns. The study by Wei and Zhang (2005), on the contrary, showed that idiosyncratic volatility does not matter in explaining stock returns. So an important question that still remains unanswered is whether idiosyncratic risk is priced or not.

An important issue in various research studies is the measurement of idiosyncratic volatility. Most of the studies use the variance of error terms of standard asset pricing models like CAPM and the Fama French (FF) model to proxy idiosyncratic risk. This is the approach used by Ang et al. (2006) and Bekaert, Hodrick, and Zhang (2008). But this measure has a drawback in terms of the frequency for which it can be obtained. In other words, this measure fails to give a daily series of idiosyncratic risks unless one uses high frequency intraday data, which poses several estimation problems. Moreover this measure is model based and hence influenced by the estimated parameters of the specific model.

In this study, we use cross sectional variance of stock returns as a measure of idiosyncratic risk as suggested by Goyal and Santa-Clara (2003), and Garcia, Garcia and Martellini (2011). This measure has an advantage as it can be measured for any observation frequency, and does not require the estimation of other parameters, making it model free. Another contribution of this paper is that it evaluates the role of cross sectional higher order moments in predicting aggregate market returns. We also employ cross sectional higher order moments along with cross sectional variance for portfolio formation and assess if the excess returns on these portfolios can be explained by standard risk models. These areas are relatively unexplored in the existing finance literature. This study makes an attempt to fill these important research gaps using select emerging markets. The research covers BRIICKS economies (Brazil, Russia, India, Indonesia, China, South Korea, and South Africa), a variation of the more popularly understood BRICS (Brazil, Russia, India, China and South Africa), as we also include three fast emerging economies, i.e., South Africa, South Korea, and Indonesia in our study. The selected emerging market basket represents the world's major emerging economies. The economic scenario, the regulatory environment and the market microstructure issues vary across these markets. Therefore, these economies cannot be considered as a single market and it is important to study them separately. These markets currently play an important role in global trade and are keenly followed by international fund managers for risk diversification purposes.[1]

The objectives of the study are:

- To estimate non-model and model based measures of idiosyncratic risk and check their degree of association.
- To assess the return predictability power of cross sectional variance (CSV) and higher order moments, i.e., cross sectional skewness (CSS) and cross sectional kurtosis(CSK).
- To investigate if more profitable portfolios can be formed by using the information contained in the cross sectional higher order moments vis-a-vis cross sectional variance.
- To check whether the returns on these portfolios can be explained by asset pricing models like CAPM and the FF model.

The paper is organised as follows. The second section gives a brief review of the literature and the third section indicates the testable hypotheses. In the fourth section, we describe our data and their sources. The fifth section discusses the methodology used and the sixth section covers the empirical results. The last section contains the summary and the concluding remarks.

Review of literature

Goyal and Santa-Clara (2003) established a relationship between idiosyncratic risk and market return. They used CRSP stock market data for all the stocks with valid return and market capitalisation data. The sample period for their study was from July 1962 to December 1999. They found that the market return was positively related to the lagged average stock variance. Variance of the market, on the other hand, did not have predictive power for the market return. Average stock variance was calculated every month as the equally weighted cross-sectional average of the variances of the stocks traded in that month. They interpreted their measure of idiosyncratic risk as a measure of heterogeneity across the stocks or as the cross sectional dispersion of stock returns without establishing any formal relationship between the two measures. Their results are robust to the macroeconomic variables that predict stock market returns.

Drew, Naughton, and Veeraraghavan (2004) investigated the role of idiosyncratic volatility in asset pricing on the Shanghai Stock Exchange (SSE) by employing the mimicking portfolio approach of Fama and French. They used the monthly stock returns and market values of all firms listed on the SSE for the sample period running from December 1993 to December 2000. They used a multifactor model wherein they studied the relationship between the expected portfolio return and market factor, size factor, and idiosyncratic volatility. They found that small and low idiosyncratic volatility stocks yield higher returns. While the size premium is in conformity with the existing literature, the negative relationship between idiosyncratic volatility and returns has been termed as irrational (Drew et al., 2004).

Wei and Zhang (2005) re-examined the results of Goyal and Santa-Clara (2003) and found that the direct relationship between the equal weighted average stock variance and the

[1] Errunza and Padmanabhan (1988); Harvey (1993).