International Review of Economics and Finance 25 (2013) 326–337

Contents lists available at SciVerse ScienceDirect

International Review of Economics and Finance

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

Country-specific idiosyncratic risk and global equity index returns

C. James Hueng [a,*], Ruey Yau [b]

[a] Department of Economics, Western Michigan University, Kalamazoo, MI 49008, USA
[b] Department of Economics, National Central University, Taoyuan 32001, Taiwan, ROC

ARTICLE INFO

Article history:
Received 13 January 2012
Received in revised form 24 July 2012
Accepted 24 July 2012
Available online 2 August 2012

JEL classifications:
G11
G12
G15

Keywords:
Country-specific risk
Idiosyncratic volatility puzzle
International asset pricing

ABSTRACT

Studies have claimed that the "idiosyncratic volatility puzzle" in the firm-level data can be explained by certain time-series properties of the firm-specific shocks. The absence of this puzzle in the country-level index data implies that the time-series properties of the country-specific shocks are different from those of the firm-specific shocks. We find that the differences are, first, lagged idiosyncratic volatility is a better proxy for expected idiosyncratic risk in the country-level data. Second, idiosyncratic skewness is not a significant factor determining country-level index returns. Finally, country-specific index returns show momentum, as opposed to return reversals documented in the firm-level data.

1. Introduction

The capital asset pricing model by Sharpe (1964) and Lintner (1965) demonstrates that investors enjoy the benefit of reducing nonsystematic risk from diversification while holding the market portfolio in equilibrium. In reality, however, investors rarely hold well-diversified portfolios.[1] The lack of diversification among most investors indicates that idiosyncratic risk should be priced because under-diversified investors require compensation for bearing this risk.

Given the benchmark prediction of a positive relationship between idiosyncratic risk and excess returns, the related empirical evidence is far from being conclusive. In particular, the "idiosyncratic volatility puzzle" found by Ang, Hodrick, Xing, and Zhang (2006) in the U.S. market has attracted much research. This puzzle arises from the empirical evidence of cross-sectional analyses showing that stocks with high idiosyncratic volatilities in the previous month have abysmally low average monthly returns.

Ang, Hodrick, Xing, and Zhang (2009) point out that the puzzle found by Ang et al. (2006) may be dependent on the particular sample used. To explore the possibility of datasnooping, they check whether the puzzle exists in other markets. They find the same puzzling evidence that stocks with high idiosyncratic volatility tend to have low average returns in each of the G7 equity markets and in a larger sample of 23 developed markets.

Both studies (Ang et al., 2006, 2009) investigate the relationship between expected returns and the associated risk within a country using cross-sectional firm-level data. The discussion of the datasnooping problem of the puzzle has never been extended to another investment avenue—the market for international equity indices. Country-level cross-sectional analyses have used

* Corresponding author. Tel.: +1 21 269 387 5558; fax: +1 21 269 387 5637.
E-mail addresses: James.Hueng@wmich.edu (C.J. Hueng), ryau@mgt.ncu.edu.tw (R. Yau).

[1] Campbell, Lettau, Malkiel, and Xu (2001) suggest that an investor needs to hold at least 50 randomly selected stocks to achieve complete portfolio diversification. Goetzmann and Kumar (2008), however, examine more than 60,000 equity investment accounts from 1991 to 1996 and find that less than 10% of the investors hold more than ten stocks.

1059-0560/$ – see front matter © 2012 Elsevier Inc. All rights reserved.
http://dx.doi.org/10.1016/j.iref.2012.07.014

these global index data to discuss the international CAPM or international market integration/segmentation (e.g., Driessen & Laeven, 2007; Li, Sarkar, & Wang, 2003; You & Daigler, 2010), but have never addressed the datasnooping issue of the puzzle in these data. Studies suggesting international market segmentation such as Bali and Cakici (2010) find evidence of a positive and significant relationship between country-specific idiosyncratic volatilities in the previous month and future index returns. This absence of the abnormal puzzle in the international equity index market simply confirms the normal positive risk–return relationship and may not deserve much attention from the literature on the idiosyncratic volatility puzzle.

However, the evidence that the puzzle does not exist in the international equity index market provides a new path of research. Rather than discussing the datasnooping issue of the idiosyncratic volatility puzzle, we use this evidence to investigate the differences in the time-series properties between the firm-level and country-level data. Specifically, some studies claim that the puzzle can be explained by certain time-series properties of the idiosyncratic shocks. If these explanations are legitimate, the time series properties of the country-level data must differ from those of the firm-level data since the puzzle does not exist in the international index data. This would have important implications for different investment strategies in firm-level stock portfolios and in international index portfolios.

For example, Huang, Liu, Rhee, and Zhang (2010) argue that the puzzle is caused by the omission of lagged stock returns as a regressor in the cross-sectional regressions. They find that past returns have a negative effect on current returns (return reversal). In addition, there is a positive contemporaneous correlation between realized idiosyncratic volatility and stock returns. Therefore, if lagged returns are omitted from the regression, the effect of past idiosyncratic volatility on expected returns is negatively biased. Once return reversals are controlled for, they find a significantly positive relationship between the conditional idiosyncratic volatility and expected returns.

Fu (2009), on the other hand, inspects the second moment of the idiosyncratic shocks. He argues that since idiosyncratic volatilities are time-varying with a small average first-order autocorrelation, lagged idiosyncratic volatility is not a good estimate of expected idiosyncratic volatility. Therefore, the negative relationship between lagged idiosyncratic risk and excess returns does not represent the expected risk–return relationship. Instead, Fu models the idiosyncratic volatility as an exponential GARCH (EGARCH) process, and uses the estimated conditional idiosyncratic volatility to proxy for the expected idiosyncratic volatility. He finds evidence of a positive relationship between the estimated conditional idiosyncratic volatilities and stock returns.

Boyer, Mitton, and Vorkink (2010) consider the investors' preference for positive skewness in an attempt to explain the puzzle. They provide evidence supporting the theory that expected idiosyncratic skewness and expected returns are negatively correlated (Barberis & Huang, 2008; Mitton & Vorkink, 2007). In addition, they find that past idiosyncratic volatility is a strong predictor of future idiosyncratic skewness and that the relationship between past idiosyncratic volatility and expected idiosyncratic skewness is positive. Therefore, investors may accept lower expected returns on stocks that have experienced high idiosyncratic volatility because these stocks have higher expected idiosyncratic skewness. This provides a novel explanation of the idiosyncratic volatility puzzle.

The empirical results from these studies suggest that the above time series properties of the firm-level idiosyncratic shocks must differ from those of the country-specific idiosyncratic shocks in Bali and Cakici (2010). Specifically, based on the arguments of Fu (2009), the idiosyncratic volatilities of a specific country index return relative to the world market must be highly autocorrelated, and therefore past idiosyncratic volatility is a good predictor of expected idiosyncratic volatility. If not, then Bali and Cakici's (2010) test would be invalid and a better measure of the expected idiosyncratic volatility needs to be used to test the risk–return relationship in the country-level cross-sectional regressions.

Furthermore, the relationships among return, idiosyncratic volatility, and idiosyncratic skewness in the firm-level data found by Boyer et al. (2010) may not hold in the international index market. On the one hand, Bali and Cakici's (2010) results may simply imply that, unlike the preference for lottery-like stocks in domestic asset portfolios, international investors do not prefer positively skewed index securities in their under-diversified international portfolios. However, on the other hand, if they do prefer positive skewness, then past idiosyncratic volatility should not positively predict future idiosyncratic skewness in the international index market; otherwise, the positive relationship between lagged idiosyncratic volatility and future returns found by Bali and Cakici (2010) would imply that portfolios with higher idiosyncratic skewness earn higher returns.

Using international equity index data, we find that, first, lagged idiosyncratic volatility is not a bad predictor of future idiosyncratic volatility in the country-level index data, and performs better than that in the firm-level data. It provides useful information on expected idiosyncratic volatility just as the conditional idiosyncratic volatility does. Second, idiosyncratic skewness in the country-level index data is essentially zero. Therefore, it does not play a role in determining the index returns and can be ignored in the pricing of international portfolios. Finally, return reversals are not present in the country-level index data and, instead, a momentum effect is found. This momentum effect, however, does not alter our conclusions on the higher moments of the idiosyncratic shocks.

The next section discusses the time-series properties of the country-specific idiosyncratic volatility and its relationship with the expected returns. Section 3 investigates the role of idiosyncratic skewness in international asset pricing. Section 4 elaborates on the economic meaning of our statistical findings and concludes the paper.

2. Returns and idiosyncratic volatilities

The idiosyncratic volatility puzzle reported by Ang et al. (2006, 2009) results from the following cross-sectional regression using firm-level data:

$$R_{i,t} = \gamma_{0,t} + \gamma_{1,t} IVOL_{i,t-1} + \Gamma_t X_{i,t-1} + \varepsilon_{i,t}, \tag{1}$$