Accepted Manuscript

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PII: S0022-0531(16)30106-5
DOI: http://dx.doi.org/10.1016/j.jet.2016.11.005
Reference: YJETH 4612

To appear in: *Journal of Economic Theory*

Received date: 15 July 2015
Revised date: 21 November 2016
Accepted date: 25 November 2016

Please cite this article in press as: Bhamra, H.S., Shim, K.H. Stochastic Idiosyncratic Cash Flow Risk and Real Options: Implications for Stock Returns. *J. Econ. Theory* (2017), http://dx.doi.org/10.1016/j.jet.2016.11.005

Stochastic Idiosyncratic Cash Flow Risk and Real Options: Implications for Stock Returns

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January 10, 2017

Abstract

Stocks with high idiosyncratic volatility perform poorly relative to low idiosyncratic volatility stocks. We offer a novel explanation of this anomaly based on real options, which is consistent with earlier findings on idiosyncratic volatility (the positive contemporaneous relation between firm-level stock returns and idiosyncratic volatility). Our approach is based on introducing stochastic idiosyncratic cash flow risk into an equity valuation model of firms with growth options. Within our model, a firm's systematic risk depends on the delta of its growth option. The growth option's delta is lower when idiosyncratic volatility rises, driving down the firm's systematic risk and hence its expected return – firms with higher idiosyncratic volatility therefore have lower expected returns. Our model additionally offers the following novel empirical predictions: (i) returns correlate positively with idiosyncratic volatility during intervals between large changes in idiosyncratic volatility (the switch effect), and (ii) the anomalies and the switch effect are stronger for firms with more real options and which undergo larger changes in idiosyncratic volatility. Empirical results support the predictions of our model.

Keywords: Idiosyncratic return volatility, cross-section of stock returns, asset pricing, real options, growth options, stochastic volatility, regime switching, mixed jump-diffusion processes.

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‡We would like to thank Efstathios Avdis, Tony Berrada, George Constantinides, Engelbert Dockner, Lorenzo Garlappi, Ralph Koijen, Chunhua Lan, Andrey Malenko, Erwan Morellec, Stijn Van Nieuwerburgh, Stavros Panageas, Konark Saxena, Paul Schneider, Mark Shackleton, Robert Tumarkin, Raman Uppal, Jin Yu, Tan Wang, seminar participants at the University of New South Wales, University of Southern California, Norwegian School of Economics (Bergen), McGill University, Nottingham University Business School, Carleton University, participants of the 2013 Adam Smith Asset Pricing Conference, the 2013 China International Conference in Finance, the 2013 Northern Finance Association Annual Meetings, the 2013 Tel Aviv University Finance Conference, the 2014 Frontiers of Finance, the 2014 European Finance Association Annual Meetings, the 2015 Society for Economic Dynamics Meetings, and the 2015 American Finance Association Annual Meetings for helpful comments and discussions. We would also like to thank the Canadian Institute of Chartered Business Valuators for the Best Paper Award at the 2013 NFA Annual Meetings. All errors are ours. Please forward comments and suggestions to k.shim@unsw.edu.au.