

Discussion Paper

Migration, Size and Value Premium: Australian Evidence

Philip Gharghori, Accounting and Finance, Monash University

Madhu Veeraraghavan, Accounting and Finance, Monash University

1. Background and aims of project

This project examines a controversial area of financial economics that has provided a lively ongoing debate in the literature. The controversy relates to a number of studies that have investigated the cross-section of average stock returns on US common stocks and found little relationship with the betas of the traditional Capital Asset Pricing Model (CAPM). These studies show that variables such as firm size (Banz, 1981), leverage (Bhandari, 1988) and the firm's book value of equity to its market value (Chan, Hamao and Lakonishok, 1991, Fama and French 1993, 1996, 1998) adequately explain the cross-section of average stock returns. In their groundbreaking paper, Fama and French (hereafter FF) (1992) show that the cross-section of average equity returns in the US shows little or no relation to the betas of the traditional CAPM. FF (1992) report that firm size and book-to-market equity provide a simple and powerful explanation of the cross-sectional variation in the average returns on stocks. In their subsequent papers, FF (1993, 1996 and 1998) document that an overall market factor, firm size and book to market equity help explain the variation in average stock returns better than the CAPM. Miller (1999) states that although the single-beta CAPM managed to withstand more than three decades of intense scrutiny, the current consensus is that a single risk factor is not sufficient for describing the cross-section of expected stock returns. In a similar vein, Cochrane (1999, p. 36) states "We once thought that the CAPM provided a good description of why average returns on some stocks, portfolios, funds or strategies were higher than others. Now we recognize that the average returns of many investment opportunities cannot be explained by the CAPM and multifactor models are used in its place".

Although the multifactor model of FF (1996) is widely regarded as the dominant asset pricing model there is some evidence that the size and value premiums have diminished (at least in the US) in recent years. In contrast, Australian evidence¹ shows that the size and value premiums are much larger in Australia than the U.S. Thus, Australia is an ideal market to assess the migration hypothesis of FF (2007). First, we follow FF (2007) and ask whether migration of firms across various types contributes to the size and value premiums for Australian portfolios. Second, we explore the role of momentum as a source of size and value premiums. We investigate the role of momentum (Jegadeesh and Titman, 1993) as it is left unexplained by the CAPM and the multifactor model (FF, 1996) and also because it challenges the efficiency and rationality of financial markets.

2. Significance and Innovation

Capital market theory is concerned with the equilibrium relationship between risk and return on assets with uncertain future payoffs. This theory has attracted considerable attention in the recent past as critics have questioned the empirical validity of the CAPM. Mounting evidence suggests

¹Halliwell, Heaney and Sawicki (1999), Gaunt (2004), Gharghori, Chan and Faff (2006, 2007), and Durand, Juricev and Smith (2007).

that the beta of the CAPM is lacking in cross-sectional explanatory power. Although the multifactor model of FF (1996) is widely regarded as the dominant asset pricing model little has been published on understanding the sources behind the size and value premiums. The only exception is FF (2007) who report that migration of firms across types contributes to size and value premiums for US portfolios. If the FF (2007) story is robust it must hold under a wide variety of conditions. We put the migration story of FF (2007) to the test by applying it to Australian portfolios. In addition, we innovate by assessing the contribution of momentum as a source of size and value premiums.

3. Description of Approach

Monthly market capitalisation and market returns are obtained from the Australian Graduate School of Management (AGSM) database. The accounting data is obtained from Aspect Financial. Our sample period is from January 1990 to December 2006. Stocks are assigned to two portfolios of size (Small and Big) based on whether their December market equity (ME) is above or below the median ME. The same stocks are allocated in an independent sort to three ME/BE groups (Value, Neutral and Growth) based on a 30-40-30 split. Following, Gharghori et al. (2006, 2007), we use market capitalisation in December t-1 to form size groups, and market capitalisation in December t-1 and book-equity in the fiscal period t-1 to form the ME/BE groups. Six size-ME/BE groups are formed at the intersection of the two size and three ME/BE groups. Portfolios are formed in December of year t-1 and rebalanced annually. Note that firms in the six portfolios might have changed size and/or ME/BE classification when rebalanced in December t. However, this does not imply that firms can migrate to only one of the six intersection portfolios. FF (2007) propose four more groups to which a stock may migrate. They are: (1) “Bad Delist” – where stocks disappear during period t for substandard reasons, for example not meeting listing requirements or bankruptcies, (2) “Good Delist” – where stocks disappear for operational reasons, for example merger or listing overseas, (3) “Neg” – where stocks have negative book equity in period t, (4) “NA” – where stocks have missing book or market equity in period t. In short, firms in each of the six size-ME/BE portfolios can migrate to any of the ten groups. That is, firms allocated to one of the six intersection portfolios can remain in that portfolio, move to one of the other five portfolios or move to one of the four groups. In essence, the focus of our study is to analyse whether migration contributes to the size and value premiums.²

To ease the task in analysing the migration portfolios, we follow FF (2007) in grouping the 60 migration portfolios (six intersection portfolios with ten possible outcomes) into 24 summarised migration portfolios (six intersection portfolios into four groups). The four groups are: (1) “Same” – This category groups firms that either stay in the same size-ME/BE portfolio or move to “NA”. (2) “Plus” – This category groups firms that improve in type or move to “Good Delist”. (3) “Minus” – This category groups firms that either deteriorate in type, or move to “Bad Delist” or move to “Neg”. (4) “dSize” – This category groups firms that change size classification (small to big or big to small). In summary, our objective is to understand the extent to which migration contributes to the size and value premiums in stock returns.

The analysis of migration focuses on portfolio returns in year t, i.e. the year in which stocks migrate. As an extension of FF’s analysis, we aim to investigate the returns³ on the same portfolios in year t-1. That is, we wish to examine if stock return momentum is the driver of the migration returns. In addition, we propose to classify all stocks in December t-1 into winner,

² For example, FF (2007) find that stocks that migrate from the small to the big portfolios are the primary drivers of the size premium.

³ Past 6 month and past 12 month returns will be analysed as Gharghori, Lee and Veeraraghavan (2007) show that in Australia, momentum is stronger over a 6 month formation period.

neutral and loser categories based on their past returns and replicate the migration analysis for each of these categories. This will provide further insight into whether momentum is driving the returns of the migrating firms and thus whether it is responsible for the size and value premiums.

References

Banz, Rolf W., 1981, The relation between return and market value of common stocks, *Journal of Financial Economics* 9, 3-18.

Bhandari, Laxmi Chand, 1988, Debt/Equity ratio and expected common stock returns: Empirical Evidence, *Journal of Finance* 43, 507-528.

Chan, Louis K.C., Yasushi Hamao, and Josef Lakonishok, 1991, Fundamental and stock returns in Japan, *Journal of Finance* 46, 1739-1789.

Cochrane, John H., 1999, New facts in finance, *Economic Perspectives* 23, 36-66.

Durand, Robert B., Alex Juricev, and Gary W. Smith, 2007, SMB – Arousal, disproportionate reactions and the size-premium, Forthcoming *Pacific-Basin Finance Journal*.

Fama, E. and French, K. 1992, “The cross-section of expected stock returns”, *Journal of Finance* 47, pp. 427-465.

Fama, E. and French, K. 1993, “Common risk factors in the returns on stocks and bonds”, *Journal of Financial Economics*, 33, pp. 3-56.

Fama, Eugene F., and Kenneth R. French, 1996, Multifactor explanations of asset pricing anomalies, *Journal of Finance* 51, 55-84.

Fama, Eugene F., and Kenneth R. French, 1998, Value versus growth: The international evidence, *Journal of Finance* 53, 1975-1999.

Fama, Eugene F., and Kenneth R. French, 2007, Migration, *Financial Analysts Journal* 63, 48-58.

Gaunt, Clive, 2004, Size and book-to-market effects and the Fama and French three factor asset pricing model: Evidence from the Australian stock market, *Accounting and Finance* 44, 1-26.

Gharghori, P., Chan, H., and Faff, F, 2006, “Factors or Characteristics? That is the Question”, *Pacific Accounting Review* 18, pp 21-46.

Gharghori, P., Chan, H., and Faff, F, 2007, “Are the Fama-French Factors Proxying Default Risk?”, Forthcoming *Australian Journal of Management*.

Gharghori, P., Lee, R., and Veeraraghavan, M, 2007, “Are stock returns related to short-term and long-term past returns? Australian evidence”, Monash University working paper.

Halliwell, Jason, Richard Heaney, and Julia Sawicki, 1999, Size and book to market effects in Australian share markets: A time series analysis, *Accounting Research Journal* 12, 122-137.

Jegadeesh, N., and Titman, S., 1993, Returns to buying winners and selling losers: Implications for market stock efficiency, *Journal of Finance* 48, 65-91.

Lakonishok, J., Shleifer, A., and Vishny, R, 1994, “Contrarian investments, extrapolation, and risk”, *Journal of Finance* 49, pp. 1541-1578.

Miller, Merton H., 1999, The History of Finance, *Journal of Portfolio Management* 25, 95-101.