

*The Finsia Journal of Applied Finance*  
ISSUE 2 2014

# JAFSSA

**6 Seasonality in momentum profitability**

ANGEL ZHONG,  
MANAPON  
LIMKRIANGKRAI and  
PHILIP GRAY

**12 Strong and weak momentum components: Evidence from international market indices**

GRAHAM BORNHOLT and  
MIRELA MALIN

**17 The impact of non-scheduled news on S&P/ASX 50 stocks**

LEE SMALES

**23 An emerging markets analysis of the Piotroski F-score**

CHARLES E HYDE

**29 Bank reputation in Australia:**

**A view from the inside**  
AMEETA JAIN, MONICA  
KENELEY  
and DIANNE THOMSON

FINSIA



## Members of the JASSA Editorial Board

PROFESSOR MICHAEL DREW SF Fin (Chair)  
Griffith University

ASSOCIATE PROFESSOR LAKSHMAN ALLES F Fin  
Curtin University of Technology

DR BRUCE ARNOLD  
University of New South Wales

DR JEAN CANIL  
University of Adelaide

PROFESSOR CAROLE COMERTON-FORDE  
University of Melbourne

PROFESSOR KEVIN DAVIS SF Fin (Managing Editor)  
Australian Centre for Financial Studies, Monash University  
and University of Melbourne

PROFESSOR STEPHEN EASTON  
Newcastle Business School

MARION FAHRER F Fin (Editor)  
Facom Consulting

PROFESSOR ALEX FRINO  
University of Sydney Business School

PROFESSOR KIM HAWTREY SF Fin  
BIS Shrapnel

DR ALEXANDRA HEATH  
Reserve Bank of Australia

PROFESSOR KEVIN JAMESON F Fin  
Macquarie University of Applied Finance Centre

PROFESSOR PAUL KOFMAN  
University of Melbourne

AARON MINNEY F Fin  
Challenger

PROFESSOR FARI MOSHIRIAN  
University of New South Wales

DR MAURICE PEAT F Fin  
University of Sydney Business School

DR ALIREZA TOURANI-RAD F Fin  
Auckland University of Technology

## Finsia representatives

RUSSELL THOMAS F Fin  
CEO and Managing Director

CAROLINE FALSHAW A Fin  
Senior Policy Advisor

## Contributions to JASSA

The JASSA Editorial Board welcomes original, practical and topical articles on matters of interest to the securities, finance and banking industry across Australia, New Zealand and Asia.

**Opinions and comment** presented as Letters to the Editor are welcome. Correspondence in connection with JASSA should be addressed to: The Editor, JASSA via Finsia, or via [m.fahrer@finsia.com](mailto:m.fahrer@finsia.com)

JASSA has a **wide and varied readership** throughout the financial services industry, the broader business community and institutions engaged in related academic studies.

JASSA is now included in *EconLit*, *Social Science Citation Index*, *Scopus*, *ProQuest*, *Informit* and *EBSCOHost* services.

As a not-for-profit professional association, Finsia will channel all royalties from reproduction of articles in these services into our Scholarships and Awards Fund that promotes the development of talent in the financial services industry. Authors who do not wish Finsia to retain any royalties pertaining to their published articles should contact Caroline Falshaw.

The **Editorial Board** favours articles written in a freely readable style, rather than formal scholarly work or highly technical papers. Authors should acknowledge this by minimising footnotes and appendices where possible.

Before submitting articles, **intending contributors** should contact:

Caroline Falshaw A Fin  
Manager, Corporate Affairs  
Finsia  
PO Box H99, Australia Square Sydney  
NSW 1215 Australia  
**T >** 61 2 9275 7900  
**E >** [membership@finsia.com](mailto:membership@finsia.com)

**Visit our website at [www.finsia.com](http://www.finsia.com) for JASSA author guidelines.**

Articles will be submitted to a double-blind review process and may be returned to authors with suggestions for revision. Articles accepted for publication will be edited for style, clarity and length. The Editor will consult with authors as closely as possible about changes.

All original articles published in JASSA will be considered for the award of the annual **JASSA Prize**.

**Subscription inquiries should be sent by email to: [membership@finsia.com](mailto:membership@finsia.com).**

JASSA is the journal of FINSIA – Financial Services Institute of Australasia (ACN 066 027 389, ABN 96 066 027 389), Australia Square, Sydney NSW 2000. It was formerly published as the Journal of the Australian Society of Security Analysts, and then of the Securities Institute of Australia, now incorporated into Finsia. JASSA is published four times each year, providing an avenue for views and information on matters affecting the financial services industry. No part of the material published in JASSA may be reproduced without the permission of the author or authors and of the Institute.

Acknowledgement of the author or authors, Finsia and JASSA is required.

ISSN 0313-5934

This publication is issued on the understanding that: (1) Finsia is not responsible for the results of any action taken on the basis of information in this publication, nor for any errors or omissions; (2) Finsia and the editors expressly disclaim all and any liability to any person in respect of anything and of the consequences of anything done or omitted to be done by any such person in reliance, whether whole or partial, upon the whole or any part of the contents of this publication; (3) if legal advice or other expert assistance is required, the services of a competent professional person should be sought; and (4) the views expressed in this publication are those of the contributors and not necessarily those of Finsia.

# JASSA

*The Finsia Journal of Applied Finance*  
ISSUE 2 2014

# CONTENTS

ISSUE 2 2014

4

**From the  
Managing Editor**

6

**Seasonality in momentum  
profitability**

ANGEL ZHONG, MANAPON  
LIMKRIANGKRAI and  
PHILIP GRAY

In Australia, and around the world, momentum trading generates economically and statistically significant profits. This paper documents seasonalities in momentum profitability rather than examining returns averaged across all months. We report a strong reversal around the financial year end and apparent quarter-end seasonality in momentum profits. Preliminary tests support the hypothesis that seasonality in quarterly equity returns is driven by window dressing by institutional investors.

11

**Strong and weak momentum  
components: Evidence from  
international market indices**

GRAHAM BORNHOLT and  
MIRELA MALIN

This paper provides a simple technique to modify momentum strategies to yield larger profits. Past long-term returns are used to split the conventional momentum strategy into strong and weak components. Our analysis shows that the early-stage momentum strategy consistently produces larger profits than both the late-stage momentum strategy and the pure momentum strategy. Given the widespread interest in momentum strategies, the early-stage momentum approach should be of interest to both practitioners and researchers.

# 17

## **The impact of non-scheduled news on S&P/ASX 50 stocks**

LEE SMALES

With the large increase in the availability of news, growing numbers of financial market participants are relying on news analytics software to evaluate news events. This paper explores whether indicators processed by analytics software are effective in assigning sentiment, and whether it is possible to trade profitability using such measures. Based on a sample of 33 highly liquid S&P/ASX 50 stocks, the results indicate that while the sentiment indicators correctly classify news, it is unlikely that trading strategies with time horizons of 30 seconds or more (and even moderate transaction costs) will produce statistically significant abnormal returns.

# 23

## **An emerging markets analysis of the Piotroski F-score**

CHARLES E HYDE

This paper examines whether the F-score signal developed by Piotroski (2000) can discriminate between high- and low-return stocks in emerging markets. It shows that there is a meaningful premium attached to high F-score stocks which is unrelated to the size, value and momentum premiums. This suggests that the usual explanation for the power of the F-score (i.e. investor neglect of high F-score stocks) is incomplete because big cap and high-momentum stocks are typically the most heavily scrutinised stocks in the market.

# 29

## **Bank reputation in Australia: A view from the inside**

AMEETA JAIN, MONICA KENELEY and DIANNE THOMSON

This paper investigates management perceptions of bank reputational problems. Interviews with senior bank officials identified several factors that were recognised as impacting negatively on bank reputation, including profits, fees and charges, executive salaries and reactions to changes in monetary policy. Together with media and political commentary these have contributed to the poor public view of banks and increased reputational risk, which can only be mitigated by improving the bank/customer relationship. Measures to increase customer satisfaction ratings, such as fee reductions, improved environmental and social responsibility performance along with community engagement have been employed within the banking industry and have been successful in realigning community expectations.

# FROM THE

## *Managing Editor*

KEVIN DAVIS SF Fin, Professor of Finance, University of Melbourne  
Research Director, Australian Centre for Financial Studies and Professor of Finance, Monash University

---

In view of the heavy weighting to equities by Australian superannuation funds, it is not too surprising that many of the papers in this issue of JASSA focus on strategies and techniques for enhancing the profitability of trading equities, both within developed and emerging markets. Different aspects of momentum trading are considered, as well as an analysis of the Piotroski F-Score and the potential for profitable trading using analytics software to evaluate news events.

First, the paper by Angel Zhong, Manapon Limkriangkrai and Philip Gray examines seasonality in momentum profits. Noting that momentum trading generates economically and statistically significant profits in Australia and around the world, the authors document a distinct turn-of-the-year effect and strong quarterly effects. They suggest that there is anecdotal evidence that tax-loss selling and window dressing by institutional investors contribute to these patterns, which have only existed during the past 20 years following the introduction of the superannuation guarantee system (SGS) in 1992. While the authors indicate that it is difficult to attribute the profitability of momentum trading in the past 20 years entirely to the introduction of the SGS and the resulting boom in the managed funds industry, they believe further research may shed light on how the increasing prominence of institutional investors contributes to the momentum phenomenon.

Continuing on the same theme, but focusing on evidence from international market indices, Graham Bornholt and Mirela Malin provide a simple technique to modify momentum strategies to yield larger profits. The authors use past long-term returns to split the conventional momentum strategy into strong and weak components. Their analysis shows that the early-stage momentum strategy consistently produces larger profits than both the late-stage momentum strategy and the pure momentum strategy. While the early-stage strategy provides relatively small improvements over pure momentum in the developed markets case, the early-stage strategy performs exceptionally well for the emerging markets. Bornholt and Malin indicate that given the widespread interest in momentum strategies, this early-stage momentum approach should be of interest to both practitioners and researchers.

Next, the paper by Lee Smales highlights the significant increase in the availability of news and the growth in financial market participants' use of news analytics software to evaluate news events. It explores the effectiveness of this software and whether it is possible to trade profitably using such measures. Based on a sample of 33 highly liquid S&P/ASX 50 stocks, Smales indicates that while the relationship between news sentiment and returns is in the expected direction, with negative

news producing negative returns and vice-versa, this relationship is insignificant and it would not be possible for market participants to consistently generate excess returns using a news-sentiment-based strategy once transaction costs are incurred, i.e. market efficiency holds. He notes, however, that this does not necessarily mean that investors are able to trade at a greater speed than the 30-second intervals used in this study, or at very low transaction costs, will not be able to benefit from such strategies.

Charles E Hyde undertakes an analysis of the Piotroski F-score to determine whether the F-score signal can discriminate between high- and low-return stocks in emerging markets. His key finding is that, consistent with evidence from both developed and emerging market country studies, stocks with a high F-score earn a significant return premium over stocks with a low F-score. This positive premium is robust across both countries and time. Hyde indicates that the premium attached to high F-score stocks is unrelated to the size, value and momentum premiums. He suggests that the usual explanation for the power of the F-score (i.e. investor neglect of high F-score stocks) is therefore incomplete because big cap and high-momentum stocks are typically the most heavily scrutinised stocks in the market.

With banks' reputational problems being accentuated since the global financial crisis, Ameeta Jain, Monica Keneley and Dianne Thomson investigate management perceptions of these reputational issues through interviews with senior bank officials. Respondents identified the key factors which have contributed to the poor public view of banks as: profits; fees and charges; executive salaries; reactions to changes in monetary policy; and media and political commentary. The authors note that a focus on building customer and public relations, targeting initiatives which encourage community engagement and building greater rapport with bank customers (such as fee reductions), has been successful in increasing individual customer satisfaction.

JASSA is now ranked as a 'B' journal in the Australian Business Deans Council Journal Quality List, and we hope that this will encourage you to submit an article to the journal this year. Please note that the guidelines for submission to JASSA are available at [www.finsia.com](http://www.finsia.com)

# SEASONALITY IN *momentum profitability*

ANQI (ANGEL) ZHONG, PhD student, Department of Banking and Finance, Monash University  
MANAPON LIMKRIANGKRAI, Lecturer in Finance, Department of Banking and Finance, Monash University  
PHILIP GRAY, Professor of Finance, Department of Banking and Finance, Monash University

---

*In Australia, and around the world, momentum trading generates economically and statistically significant profits. This paper documents seasonalities in momentum profitability rather than examining returns averaged across all months. We report a strong reversal around the financial year end and apparent quarter-end seasonality in momentum profits. Preliminary tests support the hypothesis that seasonality in quarterly equity returns is driven by window dressing by institutional investors.*

---

Momentum trading refers to a strategy that enters long positions in recent winners and short positions in recent losers. Academic research documents economically and statistically significant momentum returns in many global equity markets. As such, the momentum phenomenon has had a profound impact on both academic research and investment practice. While academics continue to search for a better understanding of the anomaly, momentum filters are an important component of many fund managers' stock selection process.

Australia is no exception when it comes to interest in momentum profitability, with numerous studies existing on this topic.<sup>1</sup> While, at face value, some findings appear to be conflicting, the different conclusions reached are largely attributable to the ways in which stocks are weighted within portfolios. In general, the evidence in favour of momentum profitability is overwhelming when stocks are weighted in portfolios according to their market capitalisations (i.e. value weighted), and less convincing when stocks are equally weighted.<sup>2</sup> Naturally, this suggests that momentum is stronger among large-cap stocks, which carry more influence on portfolio returns under value weighting.<sup>3</sup>

In documenting momentum profitability, it is common to report the average monthly return differential between portfolios taking long positions in past winners and short positions in past losers. For example, over the 1974–2012 period, this paper finds that a long-short momentum strategy on Australian equities generates an average monthly return of 1.72 per cent ( $t=3.69$ ). Note that this result effectively

averages momentum profits across all calendar months. While findings like this are common in the momentum literature, it is rare to see the profitability broken down to a month-by-month analysis. This is surprising, especially given that seasonalities in equity returns are well documented.

This paper, therefore, examines the seasonality of momentum profits. Rather than reporting an overall average monthly momentum profit, we tabulate momentum profits separately for each calendar month. There are several attractive reasons to study momentum seasonality. First, in the event that distinct seasonalities exist, there are obvious implications for professional traders. Second, from an academic perspective, documenting seasonalities may guide efforts to better understand what drives the momentum phenomenon.

## **Data and methodology**

Our data are sourced from the Share Price and Price Relative (SPPR) file maintained by Securities Industry Research Centre of Asia-Pacific (SIRCA). Monthly return and market capitalisation data is obtained for all ASX-listed ordinary stocks over the 1974–2012 period.

Previous Australian studies report strong momentum profits over medium-term horizons of six to 12 months (see, for example, Demir et al. 2004; Brailsford and O'Brien 2008). For consistency, we adopt a six-month period over which past performance is ranked, and a six-month period over which momentum is tested. Starting in June 1974, past momentum is calculated for all stocks that have a valid trade price at both 31 December 1973 and



30 June 1974 (dividends paid over this period are also included in the return). Stocks are sorted into 10 portfolios on the basis of this past momentum, with winners (losers) comprising the 10 per cent of stocks with the best (worst) past six-month performance. The weight given to each stock in a portfolio reflects its market capitalisation (i.e. they are value-weighted portfolios). Once established, the portfolio is held without rebalancing from July to December 1974. The return to each portfolio is calculated in each of the six holding period months. In December 1975, the ranking process is repeated and portfolios are reformed for another six months.

This portfolio formation procedure is repeated every six months through to (and including) June 2012.<sup>4</sup> This generates a time series of 462 monthly returns to the 10 momentum portfolios spanning July 1974 through to (and including) December 2012. The momentum profits reported in this paper are calculated as the difference between the returns to the winner and loser portfolios. With nearly 40 years of data, it is unlikely that the results will be unduly affected by one or two unusual months.

## Results

As noted above, the overall return to momentum trading during our sample is 1.72 per cent per month (i.e. averaged over all months). Figure 1 breaks this down by calendar month. Two particular facets warrant discussion. First, the most distinctive feature is the large positive return in June (3.23 per cent) followed immediately by a large negative return in July (-2.39 per cent). Given that these returns straddle the financial year end, it is natural to think that tax incentives may drive this seasonality. Turn-of-the-year seasonal returns are often attributed to tax-loss selling, whereby investors dump holdings of stocks that have performed poorly in order to realise tax deductible losses prior to the year end. While this argument is often made to explain seasonality in the market as whole, it is acutely relevant in a study of winners and losers.

We explore the tax-loss selling argument further by considering the unique contribution of winners and losers to the overall momentum profit in June. Although not explicitly shown in Figure 1, the short positions in losers (3.92 per cent) account for most of the momentum profits in June (3.23 per cent). This finding is consistent with the conjecture that investors who inadvertently find themselves taking long positions in these loser stocks as the financial year end approaches may sell out for tax reasons. The downward selling pressure manifests itself in large negative returns to these losers in June, which benefits momentum traders holding short positions in losers.<sup>5</sup> Curiously, in July, the losers (5.24 per cent) rebound with such strength that they dwarf

the winners (2.85 per cent), thereby driving the momentum loss in July (-2.39 per cent). This July 'contrarian' (or negative momentum) effect has also been documented by Durand et al. (2006).

The second notable aspect of Figure 1 is a quarter-end momentum effect. This is more readily apparent when concentrating on statistical significance (denoted by asterisks). While momentum profits are positive in every month except July, they are only statistically significant in March, June, September, November and December. Sias (2007) reports a similar pattern in US momentum profits, which he attributes to 'window dressing'. He conjectures that institutional investors may abandon losers to avoid reporting embarrassing stocks in their holdings. Similarly, they may make last-minute purchases of winners to give the appearance that they held respectable stocks throughout the period (Sias 2007, p. 48). Such behaviour is likely to cluster in quarter-ending months and/or at the end of the financial year, thereby contributing to the momentum seasonality. In Australia, at the end of the financial and calendar years, it is common to see media coverage on the best- and worst-performing stocks. Consistent with this, momentum profits in June and December are among the strongest.

---

*In Australia, at the end of the financial and calendar years, it is common to see media coverage on the best- and worst-performing stocks. Consistent with this, momentum profits in June and December are among the strongest.*

---

We explore the window dressing story as follows. If quarterly seasonality in momentum profitability is an outcome of window dressing, then the quarterly effect should become stronger over time as the prominence of institutional investors has increased. The introduction of the Australian Superannuation Guarantee Scheme (SGS) in 1992 provides an ideal setting in which to test this hypothesis. The SGS requires employers to make compulsory superannuation contributions on behalf of their employees. Originally set at 3 per cent of the employee's income, the rate is currently 9.25 per cent and will progressively increase to 12 per cent by 2019. As a direct consequence of the SGS, Australia now has one of the largest managed fund industries in the world, with approximately \$1.8 trillion in funds under management. Superannuation funds have clearly been the key driver in the significant growth in the Australian managed fund industry, accounting for over 80 per cent of total market share.<sup>6</sup>

Accordingly, we analyse seasonality in momentum profitability over two different periods: the pre-SGS period covering 1974 to (July) 1992, and (ii) the post-SGS period covering (July) 1992 to 2012. Figure 2 depicts the average monthly momentum profits for the pre- and post-SGS periods. Separate results are shown for averages over all months, quarter-end months, non-quarter-end months and non-quarter-end months (ex. July).<sup>7</sup>

In the pre-SGS period, there is little discernible difference in momentum profits during quarter-end months (0.82 per cent), non-quarter-end months (0.51 per cent) and non-quarter-end months (ex. July) (0.68 per cent). Statistical tests (not explicitly reported) cannot detect a difference in momentum profits between quarter-end and non-quarter-end months in the pre-SGS period. In fact, overall momentum profitability in this period (0.61 per cent) is statistically insignificant.

After the introduction of the SGS in 1992, the profitability of momentum trading clearly increases. The average monthly return rises from 0.61 per cent to 2.70 per cent (highly significant). Further, post-SGS, quarter-end months generate momentum profits of 4.58 per cent, which are significantly higher than non-quarter-ending months (1.76 per cent). Even excluding July, the quarter-end return was still 2 per cent per month higher.

The dramatic difference pre- and post-SGS raises the question of whether the seasonality depicted in Figure 1 manifests across the entire sample, or whether it may be driven in the post-SGS period. Figure 3, which presents the average momentum profits on a month-by-month basis separately for the pre- and post-SGS periods, suggests the latter. The top diagram (pre-SGS period) shows little consistency in momentum profits, little evidence of statistical differences from zero, no turn-of-the-year effect, and no evidence of quarter-end seasonality. In contrast, the bottom diagram (post-SGS) shows that momentum trading has been consistently profitable (both economically and statistically) since 1992. The turn-of-the-year effect is prominent. Quarter-end months (shown in teal) are highly profitable and statistically significant.

### Conclusions

While most studies focus on the average profitability of momentum trading (i.e. when averaged across all months), this study examines seasonality in momentum profits.

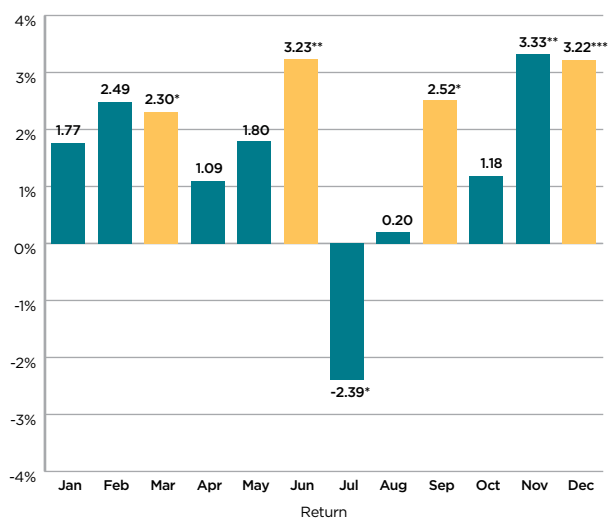
*We document a distinct turn-of-the-year effect and strong quarterly effects. There is anecdotal evidence that tax-loss selling and window dressing by institutional investors contribute to these patterns. Further, these patterns only exist during the past 20 years. The key findings appear to be driven exclusively by the period that followed the introduction of the SGS in 1992. In fact, momentum trading appears unprofitable prior to 1992.*

We document a distinct turn-of-the-year effect and strong quarterly effects. There is anecdotal evidence that tax-loss selling and window dressing by institutional investors contribute to these patterns. Further, these patterns only exist during the past 20 years. The key findings appear to be driven exclusively by the period that followed the introduction of the SGS in 1992. In fact, momentum trading appears unprofitable prior to 1992.

While it is difficult to attribute this entirely to the introduction of the SGS and the resulting boom in the managed funds industry, further research may shed light on how the increasing prominence of institutional investors contributes to the momentum phenomenon.

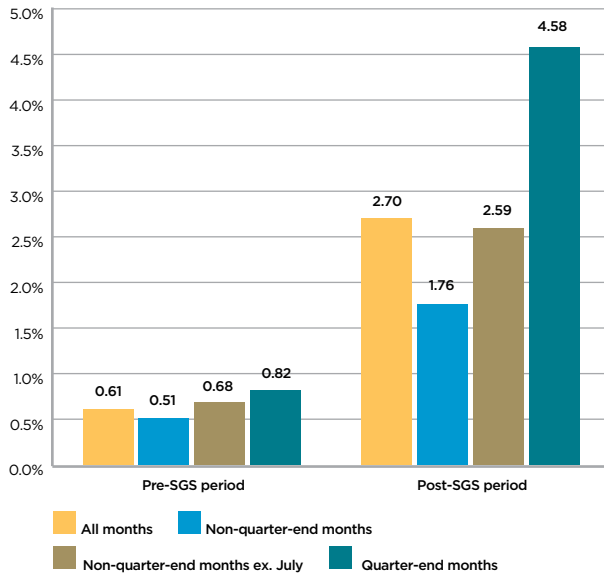
**FIGURE 1: Momentum profitability by month, 1974 to 2012**

This figure shows the average momentum profitability in each calendar month. Momentum profit is the difference in return on a portfolio long past winners and short past losers. The sample spans 1974 to 2012. Quarter-end months are differentiated with darker shading. \*\*\*, \*\* and \* signal that the reported return is statistically different from zero at the 1%, 5% and 10% confidence levels, respectively.



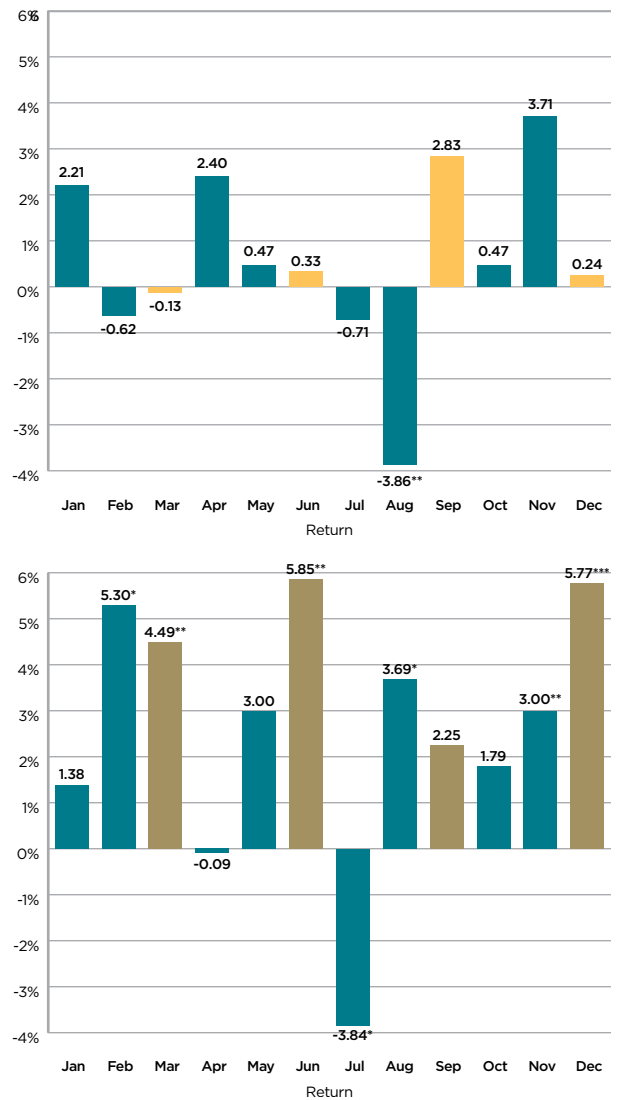
**FIGURE 2: Comparison of momentum profitability in pre- and post-SGS periods**

This figure compares momentum profitability before and after the introduction of the Superannuation Guarantee Scheme in June 1992. Momentum profit is the difference in return on a portfolio long past winners and short past losers. For each subperiod, we report the average monthly momentum profits for (i) all months, (ii) non-quarter-ending months, (iii) non-quarter-ending months (excluding July) and (iv) quarter-ending months.



**FIGURE 3: Seasonality in momentum profits pre-SGS and post-SGS**

This figure shows the average momentum profitability in each calendar month. Momentum profit is the difference in return on a portfolio long past winners and short past losers. The top (bottom) panel shows seasonality on momentum profits before (after) the introduction of the Superannuation Guarantee Scheme in June 1992. Quarter-end months are differentiated with darker shading. \*\*\*, \*\* and \* signal that the reported return is statistically different from zero at the 1%, 5% and 10% confidence levels, respectively.



## Acknowledgement

The authors gratefully acknowledge the comments and suggestions of Kevin Davis (Managing Editor), Peter Brooke and the anonymous referee.

## Endnotes

- 1 Vanstone, Hahn and Finnie (2013) provide a succinct summary of the Australian momentum literature, as well providing further evidence of momentum profitability among the S&P/ASX 100 stocks.
- 2 This point is borne out in studies by Brailsford and O'Brien (2008), O'Brien et al. (2010), Dou et al. (2013) and Gray (2014), all of which present results under both value- and equal-weights. Gray (2014) presents a separate analysis of momentum within the top 500 stocks and shows it is stronger than in the population.
- 3 Even when studies weight stocks equally, the strength of momentum profits is apparent when analysis is restricted to large caps (see Hurn and Pavlov 2003; Demir et al. 2004; Bettman et al. 2009).
- 4 This is a 'non-overlapping' approach to implementing momentum trading. Many academic papers form momentum portfolios monthly, which implies that a series of overlapping portfolios are held at any given point in time. From a practical perspective, the transaction costs involved in maintaining overlapping portfolios would be non-trivial. Nonetheless, the findings of the paper are virtually unchanged when overlapping portfolios are used. Similarly, robustness analysis shows that the findings are not sensitive to the choice of June and December as the portfolio formation points, or skipping one month between identification of winners/losers and entering long/short positions. Full results for this robustness analysis are available on request.
- 5 The pattern of momentum profits around the financial year end shown in Figure 1 is remarkably similar to US findings reported by Sias (2007). Noting that the US has a December financial year end, Sias (2007) documents large positive momentum profits in December on average, and large negative profits in January.
- 6 AusTrade (10 March 2011) Data Alert: [www.austrade.gov.au/Invest/Investor-Updates/2011/Data-Alert-110311-Australias-Managed-Funds-Assets-now-at-1-8-trillion](http://www.austrade.gov.au/Invest/Investor-Updates/2011/Data-Alert-110311-Australias-Managed-Funds-Assets-now-at-1-8-trillion) (accessed 12 July 2013).
- 7 The large negative July return shown in Figure 1 has the potential to confound results for non-quarter-end months. Hence, we also consider non-quarter-end months excluding July.

## References

- Bettman, JL, Maher, TRB and Sault, SJ 2009, 'Momentum profits in the Australian equity market: A matched firm approach', *Pacific-Basin Finance Journal*, vol. 17, no. 5, pp. 565-79.
- Brailsford, T and O'Brien, MA 2008, 'Disentangling size from momentum in Australian stock returns', *Australian Journal of Management*, vol. 32, no. 3, pp. 463-84.
- Demir, I, Muthuswamy, J and Walter, T 2004, 'Momentum returns in Australian equities: The influences of size, risk, liquidity and return computation', *Pacific-Basin Finance Journal*, vol. 12, no. 2, pp. 143-58.
- Dou, P, Gallagher, DR and Schneider, D 2013, 'Dissecting anomalies in the Australian stock market', *Australian Journal of Management*, vol. 38, no. 2, pp. 353-73.
- Durand, RB, Limkriangkrai, M and Smith, G 2006, 'Momentum in Australia: A note', *Australian Journal of Management*, vol. 31, no. 2, pp. 355-64.
- Gray, P 2014, 'Stock weighting and non-trading bias in estimated portfolio returns', *Accounting and Finance*, 54, pp.467-503.
- Hurn, S and Pavlov, V 2003, 'Momentum in Australian stock returns', *Australian Journal of Management*, vol. 28, no. 2, pp. 141-55.
- O'Brien, MA, Brailsford, T and Gaunt, C 2010, 'Interaction of size, book-to-market and momentum effects in Australia', *Accounting and Finance*, vol. 50, no. 1, pp. 197-219.
- Sias, R 2007, 'Causes and seasonality of momentum profits', *Financial Analysts Journal*, vol. 63, pp. 48-54.
- Vanstone, B, Hahn, T and Finnie, G 2012, 'Momentum returns to S&P/ASX100 constituents', *JASSA*, issue 3, pp. 15-18.

# STRONG AND WEAK MOMENTUM COMPONENTS:

## *evidence from international market indices*

GRAHAM BORNHOLT, Senior Lecturer in Finance, Department of Accounting, Finance and Economics, Griffith University  
MIRELA MALIN, Senior Lecturer in Finance, Department of Accounting, Finance and Economics, Griffith University

---

*This paper provides a simple technique to modify momentum strategies to yield larger profits. Past long-term returns are used to split the conventional momentum strategy into strong and weak components. Our analysis shows that the early-stage momentum strategy consistently produces larger profits than both the late-stage momentum strategy and the pure momentum strategy. Given the widespread interest in momentum strategies, the early-stage momentum approach should be of interest to both practitioners and researchers.*

---

The momentum anomaly has proven to be one of the most pervasive anomalies in financial markets with a vast literature proposing either rational explanations or explanations based on investor overreaction or underreaction. The momentum strategy of Jegadeesh and Titman (1993, 2001) involves buying past strong performers (winners) and selling past weak performers (losers), where performance is measured by returns over the past three to 12 months. Recent leading articles highlight the continuing importance of the momentum effect in international stock returns. Fama and French (2012) find strong momentum returns in North America, Europe and Asia Pacific, while Asness et al. (2013) document value and momentum effects across eight diverse markets and asset classes.

In a study of US stocks, Chan and Kot (2006) show that past long-term returns can be used to produce more-powerful momentum strategies. The rationale behind their approach is based on the assumption that momentum occurring just after a reversal in long-term returns will be stronger and will persist for longer than momentum that does not follow such a turning point in the recent past. Their approach can be interpreted as using the long-term contrarian effect of DeBondt and Thaler (1985, 1987) to either boost or hinder momentum profitability.

In this paper we modify the Chan and Kot (2006) approach and simply split the traditional momentum portfolios into two based on past long-term performance. Our approach is then applied to developed market and emerging market equity

indices. The 'early-stage' momentum strategy buys short-term winners with relatively poor long-term returns and sells short-term losers with relatively good long-term returns. These indices appear to have experienced a recent reversal in their long-term performances, and so are said to be early in any such reversal. Thus we combine the continuation of the momentum effect with the reversal feature of the contrarian effect to create an enhanced momentum strategy. In contrast, the 'late-stage' momentum strategy buys short-term winners with relatively good long-term returns and sells short-term losers with relatively poor long-term returns. This strategy's profitability will not be assisted by the presence of a contrarian effect. Our analysis shows that the early-stage strategy outperforms the traditional momentum strategy; while the late-stage strategy underperforms the momentum strategy.

### **Data and methodology**

Monthly total returns data are obtained from Datastream for 44 Morgan Stanley Capital International (MSCI) market indices. These returns are calculated from prices with reinvested gross dividends (excluding withholding taxes) and cover the period January 1970 to April 2013. Returns are measured in US dollars to facilitate the interpretation of results across markets. Table 1 shows the summary statistics for the sample including the monthly mean return and standard deviation for each country. The sample size is 520 months for the developed market countries and up to 304 months for the emerging market countries. To differentiate the performance of indices in various global settings, the countries

are grouped into 18 developed markets (Panel A) to be consistent with other index based studies (e.g. Balvers and Wu 2006) and 26 emerging markets (Panel B) based on MSCI's own classification.

In this paper, we compare and contrast the traditional single-sort momentum strategy with the double-sort early-stage and late-stage momentum strategies for both groups of indices. Portfolios are formed for the developed and emerging markets separately, using the same technique for each.

For traditional (also called 'pure') momentum strategies, indices are ranked at the beginning of each month based on their past six-month returns. Each month, indices with the lowest 25 per cent of past six-month returns are assigned to the short-term loser portfolio S1, while indices with the largest 25 per cent of past six-month returns are assigned to the short-term winner portfolio S4. The arbitrage momentum portfolio (S4-S1) buys the short-term winners and sells the short-term losers.

For the early-stage and late-stage strategies, each month the short-term winner and loser portfolios are split in half based on the relative magnitude of their component indices' long-term past 60-month returns. S1L1 denotes the portfolio composed of the 50 per cent of indices in short-term loser portfolio S1 with the lowest past 60-month returns, while S1L2 denotes the portfolio with the remaining indices from S1 (those losers with relatively large past 60-month returns). Similarly, S4L1 denotes the portfolio with the 50 per cent of indices in short-term winner portfolio S4 with the lowest past 60-month returns, while S4L2 denotes the portfolio with the remaining 50 per cent of indices in winner portfolio S4 (winners with the highest past 60-month returns).

The early-stage momentum strategy buys the short-term winners with relatively poor long-term past returns and sells the short-term losers with relatively good long-term returns (S4L1-S1L2). The late-stage momentum strategy buys the short-term winners with relatively good long-term past returns and sells the short-term losers with relatively poor long-term returns (S4L2-S1L1). Early-stage indices are more likely to have experienced a recent price reversal whereas late-stage indices have experienced price continuation over a long period. Early-stage indices are considered to be 'early' in any such price reversal whereas late-stage indices are 'late' in a price continuation.

**TABLE 1: Descriptive statistics**

<b>Panel A: Developed countries</b>		
<b>Country</b>	<b>Mean %</b>	<b>SD %</b>
Australia	1.05	7.04
Austria	0.92	6.84
Belgium	1.11	5.97
Canada	0.96	5.74
Denmark	1.21	5.72
France	1.03	6.61
Germany	1.01	6.43
Hong Kong	1.69	10.15
Italy	0.71	7.49
Japan	0.95	6.20
Netherlands	1.12	5.63
Norway	1.24	7.97
Singapore	1.28	8.31
Spain	0.96	6.86
Sweden	1.35	7.06
Switzerland	1.08	5.34
UK	1.02	6.41
US	0.89	4.49
<b>AVERAGE</b>	<b>1.09</b>	<b>6.68</b>
<b>Panel B: Emerging countries</b>		
<b>Country</b>	<b>Mean %</b>	<b>SD %</b>
Argentina	2.14	15.52
Brazil	2.51	14.67
Chile	1.64	7.11
China	0.51	10.34
Colombia	1.74	9.07
Czech Republic	1.26	8.44
Egypt	1.60	9.70
Hungary	1.54	11.15
India	1.13	8.95
Indonesia	1.92	14.21
Israel	0.69	6.97
Jordan	0.39	5.29
Korea	1.15	10.89
Malaysia	1.07	8.21
Mexico	2.00	9.01
Morocco	0.95	5.52
Pakistan	1.14	10.79
Peru	1.77	9.32
Philippines	1.15	9.04
Poland	1.92	14.02
Russia	2.33	15.82
South Africa	1.25	7.90
Sri Lanka	1.10	10.47
Taiwan	1.04	10.42
Thailand	1.36	10.89
Turkey	2.23	16.36
<b>AVERAGE</b>	<b>1.44</b>	<b>10.39</b>

*Note: This table provides descriptive statistics for the return data of the 18 MSCI developed market and 26 MSCI emerging market indices from their first available months (January 1970 for the developed market indices and January 1988 or later for the emerging market indices) until April 2013, obtained from Datastream. Mean refers to the average monthly returns. SD refers to the standard deviation of monthly returns.*

We calculate portfolio returns for holding periods of three, six, nine and 12 months. Following Jegadeesh and Titman (1993, 2001), we employ the overlapping portfolio method where for a six-month holding period, for example, one-sixth of the portfolio is updated each month. Also, we follow Balvers and Wu (2006) and allow a one-month gap between the end of the formation period and the start of the holding period.

## **Results**

Table 2 (refer to the following page) presents the results of the early-stage and late-stage momentum strategies for the developed (Panel A) and emerging markets (Panel B). Each panel reports the average monthly returns of the short (S1L2), long (S4L1) and arbitrage (S4L1-S1L2) portfolios of the early-stage strategy, and the short (S1L1), long (S4L2) and arbitrage (S4L2-S1L1) portfolios of the late-stage strategy, together with their associated  $t$ -values. To allow comparisons with the traditional momentum approach, Table 2 also presents the results of the pure momentum strategy arbitrage portfolio (S4-S1) in the final two rows of the table.

**TABLE 2: Profitability of the early-stage, late-stage and momentum strategies**

		Panel A: Developed markets				Panel B: Emerging markets			
Strategy	Portfolio	Holding months				Holding months			
		3	6	9	12	3	6	9	12
Early-stage	<b>S1L2</b>	<b>0.79</b>	<b>0.65</b>	<b>0.69</b>	<b>0.79</b>	<b>0.90</b>	<b>0.77</b>	<b>0.88</b>	<b>0.89</b>
		(2.93)	(2.46)	(2.66)	(3.04)	(1.70)	(1.52)	(1.74)	(1.80)
	S4L1	1.47	1.43	1.33	1.22	1.60	1.64	1.55	1.42
		(5.40)	(5.49)	(5.15)	(4.76)	(3.31)	(3.56)	(3.47)	(3.26)
Late-stage	<b>S4L1-S1L2</b>	<b>0.68</b>	<b>0.78</b>	<b>0.64</b>	<b>0.43</b>	<b>0.70</b>	<b>0.87</b>	<b>0.67</b>	<b>0.53</b>
		(2.94)	(3.77)	(3.38)	(2.38)	(1.41)	(1.99)	(1.68)	(1.47)
	S1L1	0.97	0.91	0.98	1.00	1.70	1.35	1.39	1.47
		(3.55)	(3.52)	(3.91)	(4.10)	(3.22)	(2.65)	(2.79)	(3.01)
Mom.	S4L2	1.29	1.40	1.39	1.26	1.66	1.53	1.24	0.95
		(4.49)	(4.98)	(5.00)	(4.56)	(3.49)	(3.20)	(2.56)	(2.00)
	<b>S4L2-S1L1</b>	<b>0.32</b>	<b>0.49</b>	<b>0.41</b>	<b>0.25</b>	<b>-0.04</b>	<b>0.18</b>	<b>-0.15</b>	<b>-0.51</b>
		(1.29)	(2.13)	(1.94)	(1.27)	(-0.07)	(0.40)	(-0.35)	(-1.32)
	S4-S1	0.50	0.64	0.53	0.34	0.33	0.51	0.24	-0.02
		(2.58)	(3.65)	(3.29)	(2.30)	(0.84)	(1.44)	(0.75)	(-0.08)

Note: This table presents the average monthly returns in percentages of the short, long and arbitrage portfolios of the early-stage and late-stage strategies. First, each month  $t$ , indices are ranked based on their six-month returns from month  $t-7$  to  $t-1$  month. The 25 per cent of indices with the largest past six-month returns are grouped in the winner S4 portfolio, while the 25 per cent of indices with the smallest past six-month returns are grouped in the loser S1 portfolio. Within the short-term winner S4 and short-term loser S1 portfolios in each month  $t$ , indices are further classified based on their past 60-month returns. S1L1 denotes the portfolio composed of the 50 per cent of indices in the short-term loser portfolio S1 with the lowest past 60-month returns, while S1L2 denotes the portfolio with the remaining indices from S1. Similarly, S4L1 denotes the portfolio with the 50 per cent of indices in short-term winner portfolio S4 with the lowest past 60-month returns, while S4L2 denotes the portfolio with the remaining 50 per cent of indices in winner portfolio. The arbitrage early-stage portfolio (S4L1-S1L2) is long S4L1 and short S1L2. The arbitrage late-stage strategy portfolio (S4L2-S1L1) is long S4L2 and short S1L1. These portfolios are equally weighted and held for three, six, nine or 12 months. The monthly return for each holding period comes from employing Jegadeesh and Titman's (1993) overlapping portfolio methodology. S4-S1 refers to the corresponding pure momentum arbitrage portfolio. T-statistics are presented in parentheses.

The results of the early-stage momentum strategy for the developed markets (Panel A) and the emerging markets (Panel B) shows positive average monthly returns for all holding periods. In particular, the six-month holding period early-stage strategy applied to the developed markets earns a significant return of 0.78 per cent per month ( $t$ -stat 3.77), and it earns 0.87 per cent per month ( $t$ -stat 1.99) when applied to the emerging markets. These returns are larger than the corresponding momentum S4-S1 return of 0.64 per cent per month ( $t$ -stat 3.65) for the developed markets and the insignificant 0.51 per cent per month ( $t$ -stat 1.44) for the emerging markets for the same holding period.

In contrast, as expected, the late-stage strategy underperforms the corresponding early-stage strategy for all holding period lengths and for both developed and emerging markets. In the developed markets' case, the late-stage strategy profit is only significant with a six-month holding period. The results for the emerging markets in Panel B of Table 2 show insignificant late-stage profits for all holding periods, with three out of the four late-stage strategies showing negative returns.

### Risk-adjusted analysis

To assess whether strategy profits are simply a reward for bearing risk, we employ the same international two-factor model used by Balvers and Wu (2006) to risk-adjust raw returns. The two-factor model contains a market factor and a value minus growth factor (VMG) as follows:

$$R_{p,t} - R_{f,t} = \alpha_p + \beta_{p,wld}(R_{wld,t} - R_{f,t}) + \nu_{p,vmg}VMG_t + \epsilon_t^p$$

The dependent variable  $R_{p,t} - R_{f,t}$  is the monthly excess return of a portfolio of interest, whether it's the long, short or the arbitrage portfolio of a strategy, where  $R_{p,t}$  represents the monthly US dollar return of portfolio  $p$  at time  $t$  and  $R_{f,t}$  the monthly risk-free rate at time  $t$  represented by the one-month US T-bill return. The independent variables are as follows:  $R_{wld,t} - R_{f,t}$  corresponds to the excess return on the MSCI World market portfolio at time  $t$  and  $VMG_t$  or Value minus Growth is the return on the MSCI World Value Index minus the return on the MSCI World Growth Index at time  $t$ . These monthly indices were obtained from Datastream. The coefficients  $\beta_p$  and  $\nu_p$  are the regression loadings corresponding to the factors of the model, while the intercept  $\alpha_p$  (or simply alpha) represents the risk-adjusted abnormal return of the portfolio over the estimation period. The  $t$ -values corresponding to the regression coefficients



**TABLE 3: Risk-adjusted early-stage, late-stage and momentum profits**

Strategy	Portfolio	Panel A: Developed markets			Panel B: Emerging markets		
		Annualised raw return	$\alpha_p$	Adj. $R^2$	Annualised raw return	$\alpha_p$	Adj. $R^2$
Early-stage	S1L2	0.078	-0.039	66.9%	0.092	0.002	42.9%
			(-2.09)			(0.03)	
	S4L1	0.172	0.057	65.7%	0.197	0.113	41.0%
(2.89)			(2.62)				
Late-stage	S4L1-S1L2	0.094	0.095	-0.3%	0.104	0.111	0.2%
			(3.66)			(2.14)	
	S1L1	0.109	-0.003	57.4%	0.162	0.075	36.6%
(-0.15)			(1.55)				
Mom.	S4L2	0.168	0.053	61.8%	0.184	0.095	45.3%
			(2.42)			(2.16)	
	S4L2-S1L1	0.059	0.056	3.8%	0.022	0.020	0.1%
(2.03)			(0.37)				
Mom.	S4-S1	0.076	0.075	1.0%	0.061	0.064	-0.3%
			(3.51)			(1.52)	

Note: This table presents the two-factor regression results for the monthly returns of the early-stage, late-stage and momentum portfolios with six-month holding periods. For the early-stage strategy, S1L2 is the portfolio of short-term losers that have the best long-term performance, and S4L1 is the portfolio of short-term winners that have the worst long-term performance. For the late-stage strategy, S1L1 is the portfolio of short-term losers that have the worst long-term performance and S4L2 is the portfolio of short-term winners with the best long-term performance. For the momentum strategy, S4 is the portfolio of short-term winners and S1 is the portfolio of short-term losers. The two-factor regression model is:

$$R_{pt} - R_{ft} = \alpha_p + \beta_p(R_{wt} - R_{ft}) + \alpha_p VMG_t + \epsilon_{pt}$$

where  $R_{wt} - R_{ft}$  is the excess return on the MSCI World Market portfolio and  $VMG_t$  is the value growth factor represented by the return on the MSCI World Value Index minus the return on the MSCI World Growth Index. Annualised Raw Ret. is the annualised unadjusted return for the respective portfolio. The t-statistics presented in parentheses are corrected for heteroskedasticity using White's (1980) test.

are corrected for heteroskedasticity using White's (1980) test.

Table 3 reports the annualised regression alphas for the long, short and long-short early-stage and late-stage portfolios with six-month holding periods, together with their associated t-values. The results for the corresponding pure momentum strategy's arbitrage (S4-S1) portfolio are also displayed. Table 3 also reports the annualised average raw returns for each portfolio so that the impact of the risk adjustment can be assessed.

The developed markets' results in Panel A of Table 3 show that the arbitrage early-stage alpha is a significant 9.5 per cent per year (t-stat 3.66) which is larger than the risk-adjusted pure momentum profit of 7.5 per cent per year (t-stat 3.51). The alpha of the late-stage strategy of 5.6 per cent per year (t-stat 2.03) is considerably smaller than the early-stage alpha. The emerging markets' early-stage risk-adjusted return in Panel B of Table 3 is a significant 11.1 per cent per year (t-stat 2.14). In contrast, the corresponding pure momentum strategy alpha is an insignificant 6.4 per cent per year (t-stat 1.52), as is the late-stage strategy alpha of 2.0 per cent per year (t-stat 0.37). Overall, Table 3 shows that

the early-stage strategy outperforms both the pure momentum and the late-stage strategies, and that the two-factor model does not succeed in explaining the momentum strategies' profits.

Although size is not expected to be a factor in explaining momentum in MSCI indices because they are composed of large liquid stocks, we also investigated whether the Fama-French US three-factor model could explain momentum profits. The results for the alphas are qualitatively very similar to the results reported in Table 3. For example, the arbitrage three-factor early-stage alpha is a significant 8.9 per cent (t-stat 3.30) in the developed case and 10.4 per cent (t-stat 1.97) in the emerging markets' case. An interesting feature of the results in Table 3 is that the long side of every strategy has a significant alpha, indicating that the short-term winners are the main drivers of the abnormal momentum profits.

### Discussion and conclusion

Our results at the market index level are consistent with Chan and Kot's (2006) study of US stocks. Past long-term returns can be used to split the conventional momentum strategy into strong and weak components. The early-stage momentum

strategy consistently produces larger profits than both the late-stage momentum strategy and the pure momentum strategy. While the early-stage strategy provides relatively small improvements over pure momentum in the developed markets case, the early-stage strategy performs exceptionally well for the emerging markets. For emerging markets, recent winners that have poor long-term returns outperform recent losers with good long-term returns on an average annualised basis by 10.4 per cent per year. In contrast, recent winners outperform recent losers on an average annualised basis by only 6.1 per cent per year. The stronger raw profit results for the early-stage strategy survive risk-adjustment, producing an annualised alpha of 11.1 per cent per year.

This paper has provided a simple way to modify momentum strategies to yield larger profits. Given the widespread interest in momentum strategies, the early-stage momentum approach should be of direct interest to both practitioners and researchers. As only large liquid stocks are included in MSCI indices, professional investors have the option of investing directly in these stocks or in the exchange traded funds that are available for all 18 MSCI developed market indices and for 23 out of the 26 emerging market indices.

---

*Given the widespread interest in momentum strategies, the early-stage momentum approach should be of direct interest to both practitioners and researchers. As only large liquid stocks are included in MSCI indices, professional investors have the option of investing directly in these stocks or in the exchange traded funds that are available for all 18 MSCI developed market indices and for 23 out of the 26 emerging market indices.*

---

## Note

1 The monthly returns for the Ibbotson and Associates one-month T-bill risk-free rate were downloaded from Kenneth French's website: [www.mba.tuck.dartmouth.edu/pages/faculty/ken.french/data\\_library](http://www.mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library)

## References

- Asness, CS, Moskowitz, TJ and Pedersen, LH 2013, 'Value and momentum everywhere', *The Journal of Finance*, vol. 68, no. 3, pp. 929–85.
- Balvers, RJ and Wu, Y 2006, 'Momentum and mean reversion across national equity markets', *Journal of Empirical Finance*, vol. 13, pp. 24–48.
- Chan, K and Kot, HW 2006, 'Can contrarian strategies improve momentum profits?', *Journal of Investment Management*, vol. 4, no. 1, pp. 70–89.
- DeBondt, W and Thaler, R 1987, 'Further evidence on investor overreaction and stock market seasonality', *Journal of Finance*, vol. 42, pp. 557–81.
- DeBondt, W and Thaler, R 1985, 'Does the stock market overreact?', *Journal of Finance*, vol. 40, pp. 793–808.
- Fama, EF and French, KR 2012, 'Size, value and momentum in international stock returns', *Journal of Financial Economics*, vol. 105, pp. 457–72.
- Jegadeesh, N and Titman, S 2001, 'Profitability of momentum strategies: An evaluation of alternative explanations', *Journal of Finance*, vol. 56, no. 2, pp. 699–720.
- Jegadeesh, N and Titman, S 1993, 'Returns to buying winners and selling losers: Implications for stock market efficiency', *Journal of Finance*, vol. 48, no. 1, pp. 65–91.
- White, H 1980, 'A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity', *Econometrica*, vol. 48, pp. 817–38.

# THE IMPACT *of non-scheduled news on S&P/ASX 50 stocks*

LEE SMALES, Senior Lecturer, Department of Finance and Banking, School of Economics and Finance, Curtin Business School, Curtin University

---

*With the large increase in the availability of news, growing numbers of financial market participants are relying on analytics software to evaluate news events. This paper explores whether indicators processed by analytics software are effective in assigning sentiment, and whether it is possible to trade profitably using such measures. Based on a sample of 33 highly liquid S&P/ASX 50 stocks, the results indicate that while the sentiment indicators correctly classify news, it is unlikely that trading strategies with time horizons of 30 seconds or more (and even moderate transaction costs) will produce statistically significant abnormal returns.*

---

The advent of modern technology has facilitated a large increase in the flow of news available to financial market participants and made it costly for traders to process all asset-specific news. As a result, an increasing number of participants are starting to rely on textual algorithms and pre-processed news analytics provided by news vendors to evaluate news events. With such innovative data playing an increasingly important role in the trading of financial assets it seems appropriate to ask whether indicators of sentiment are both useful and reliable.

This paper primarily addresses a single key question: do indicators of sentiment matter, and if so, does pre-processed data do a good job of assigning such indicators in a way that allows investors to trade profitably? Using a sample of 33 highly liquid S&P/ASX 50 stocks over an 11-year time period, I examine market activity around 345,977 non-scheduled news announcements. Empirical evidence is supportive of analytics software correctly classifying news releases; there is some evidence that returns react to news prior to its arrival on the newswire but the level of returns is not sufficient to be profitable after considering transaction costs. An asymmetric response is found whereby negative news has a greater impact than positive news. Further, the empirical evidence suggests that while the relationship between news sentiment and returns is in the expected direction, this relationship is statistically insignificant (owing to large standard errors) and so it would not be possible for traders without access to extremely low transaction costs, or the ability to trade at higher frequencies, to consistently generate abnormal returns using a news sentiment based strategy.

The quantification of sentiment in news has enabled the identification of firm responses and market reactions across a wide range of news events. Negative stories are found to predict both low market returns and low firm earnings (Tetlock 2007; Tetlock et al. 2008). Several recent studies have focused on the predictability of returns based on news sentiment with Sinha (2011) and Dzielinski (2011) reporting that positive (negative) news predicts above (below) average returns, although Garcia (2013) suggests this predictability is confined to recessions. Hafez (2011) shows that news sentiment outperforms price momentum when predicting future stock market returns, while the applicability of this research in industry is highlighted by O'Hara (2014), who claims that news sentiment tools are frequently adopted in the trading strategies of high-frequency traders.

The impact of news events on other market measures such as volatility and volume has been investigated in the literature. Kalev et al. (2004) note a positive and significant impact on trading activity following the arrival of non-scheduled news, which Von Beschwitz et al. (2013) report occurs in the first few seconds after the event. Groß-Klußmann and Hautsch (2011) observe that this effect is applicable only to news identified as 'relevant'. The importance of firm-specific news sentiment is demonstrated by Ho et al. (2013) who show that the effect on volatility persistence is greater than that for macro-economic news.

The extant literature has also recognised an asymmetric effect relating to the reaction of financial markets to news events. Hafez (2013) identifies low (high) volatility stocks as having the strongest reaction to positive (negative) sentiment. More generally, Tetlock (2007), Leinweber and Sisk (2011),

and Riordan et al. (2013) emphasise the importance of negative news, reporting that the reaction is both more vigorous and more informative than that for positive news.

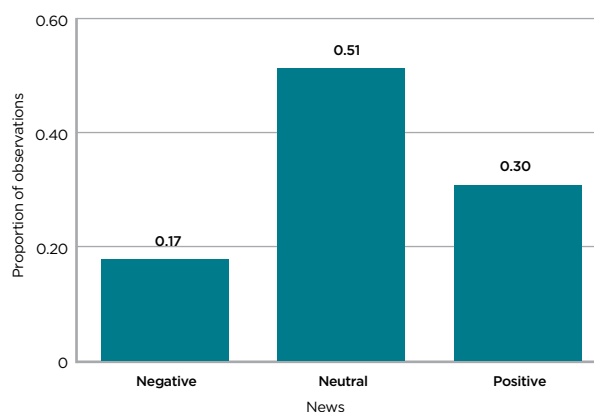
## Data

RavenPack provides real-time news analytics tools to market participants in order to capture important characteristics<sup>1</sup> of the large amounts of news that flow over the Dow Jones Newswire throughout the trading day. For every new instance in which a company is reported in the news, RavenPack produces a company level record that contains 28 fields including a timestamp (to the nearest millisecond), company identifier, and a unique identifier for each news story. The software also provides scores for relevance to the given company, novelty, and sentiment; the scores are determined using pattern recognition algorithms and are available in real-time<sup>2</sup> to subscribers.

The empirical literature (e.g. Groß-Klußmann and Hautsch 2011; Hafez 2011; Riordan et al. 2013) highlights the importance of novel information with high relevance and this provides the focus of this article; stories with a relevance score lower than 90 and a novelty score greater than 1 are therefore removed from the sample,<sup>3</sup> leaving a sample of 345,977 news headlines for the 33 stocks in my sample.

RavenPack provides subscribers with several sentiment indicators including Composite Sentiment Score (CSS), News Impact Projections (NIP), and Editorials & Commentary (BMQ). However, the results reported in this article are for the Multi-Classifer for Equities (MCQ) indicator.<sup>4</sup> MCQ is a multi-classifier score that represents the news sentiment according to the tone applicable only towards the most relevant companies mentioned in a story, with the score derived from a combination of values produced by classifiers using both a rule-based methodology that maps key words and phrases to pre-defined sentiment values, and an expert consensus methodology that trains classification algorithms on the results of financial experts manually tagging stories. The logic of focusing on this classifier is that it detects consistent sentiment classifications, and discards combinations where the classifiers have contradictory scores. An MCQ is provided only when the relevance score for a company is 90 or higher, and RavenPack assigns a score of 0 to negative sentiment, 50 to neutral and 100 to positive; my analysis scales the score to the more intuitive levels of -1, 0, +1. Figure 1 shows that news stories classified as neutral are predominant constituting around 55 per cent of all news items; the proportion of positive news items is almost double that of negative news items.

**FIGURE 1: Distribution of news sentiment in newswire messages**



To enable a high-frequency study of market dynamics it is necessary to ensure that the stocks covered within the analysis are liquid and thus I focus on the stocks which make up the S&P/ASX 50; the leading 50 domestic stocks by market capitalisation trading on the Australian Securities Exchange (ASX). As data is required for the 2,525 trading days that make up the January 2001 to November 2011 sample, the sample is reduced to the 33 stocks listed for the entire sample period. Covering 75.7 per cent of the market capitalisation of the Australian All Ordinaries Index, the sample can be considered as being representative of the Australian stock market.<sup>5</sup>

Underlying transaction data is obtained from Thomson Reuters Tick History (TRTH), via SIRCA, and aggregated into 30-second intervals. This aggregation level is a compromise between exploiting maximum information and making the analysis computationally tractable and this is especially important given that the analysis covers 11 years of data. While there may be a slight lag in TRTH data as compared to the RavenPack news release, the aggregation process and lengthy sample period should reduce any effect on the reported results. Market activity, volatility and liquidity are captured by the following variables computed over 30-second intervals. To account for intraday patterns, each of the variables is normalised by the 12-month rolling average of the corresponding underlying 30-second interval:

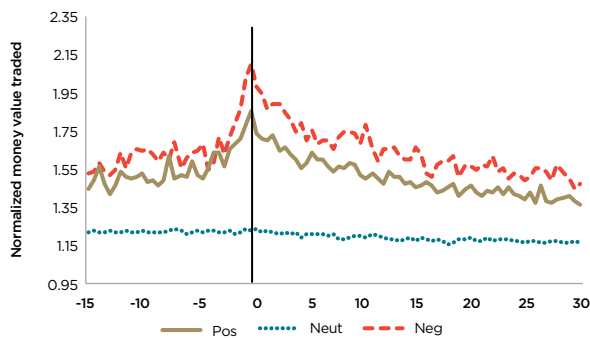
- Money value volume traded — calculated as price multiplied by volume traded in the given interval
- Volatility — calculated using the time-weighted standard-deviation of mid-point returns in each interval
- Trade order imbalance — defined as the value of the difference in cumulated buyer- and seller-initiated trades
- Bid-ask spread — defined as the average bid-ask spread over the given interval
- Returns — calculated using the mid-point of the bid-ask quote.

## Analysis and results

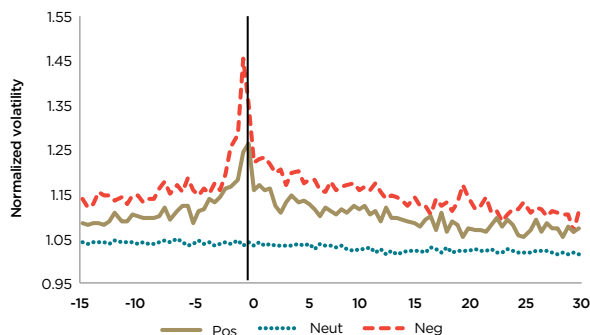
Figure 2 shows standardised measures of market activity in the period around neutral, negative and positive news announcements for the whole sample period. Consistent with Dzielinski (2011), neutral news releases appear to result in no significant change in any of the variables around the time of the news release. In contrast, both positive and negative news events elicit a sharp spike in the normalised variables in the period around the event. The above-average activities start at least 15 minutes prior to the news release, move sharply higher in the two minutes immediately prior to the release, and quickly revert to lower levels following the release. Note that trading activity (volume and order imbalance) increases despite wider than average bid-ask spreads. Consistent with Chen et al. (2003) the measures for all normalised variables are higher in the case of negative news; this is particularly so in the 30-second intervals either side of the news release.

**FIGURE 2: Stock market activity in period surrounding newswire releases**

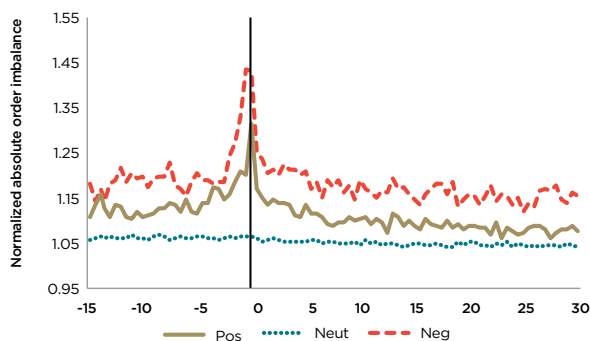
### MV volume traded around news



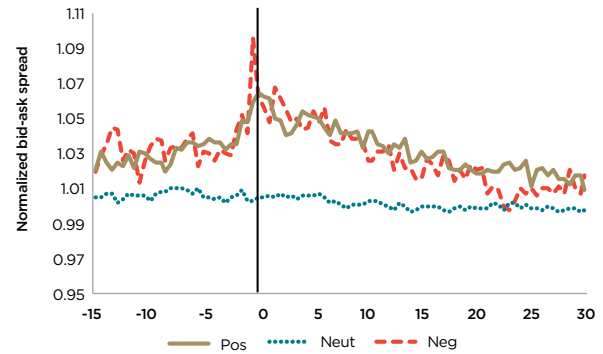
### Volatility around news



### Order imbalance around news

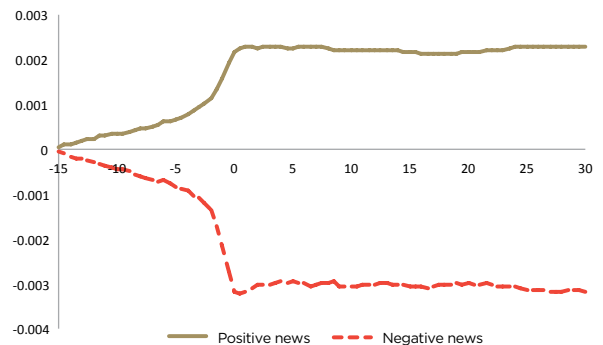


### Bid-ask spread around news



The profitability of trading on news items is first considered using an event study framework, with cumulative abnormal returns calculated using a standard market model and averaged over all stocks. Figure 3 shows the average cumulated abnormal returns around highly relevant news – disaggregated into positive and negative news events as defined by the MCQ. Starting 15 minutes before the disclosure I observe positive (negative) cumulated abnormal returns in reaction to positive (negative) news items. While price movements are observed prior to news releases there are only limited movements in the following periods and this suggests the possibility of the presence of information leakage, and potentially the clustering of news items. However, once moderate transaction costs are considered, the impact on returns is sufficiently small as to render trading on news items non-profitable.

**FIGURE 3: Cumulative abnormal returns around negative and positive newswire messages**



I investigate the relationship between non-scheduled news releases and changes in returns, and the market activity variables, at high-frequency 30-second intervals. In utilising a specification that is at least partially contemporaneous I do not wish to imply causality, but instead seek to examine the reliability of statistical relations. This relationship is estimated using an ordinary least square (OLS) specification:

$$\Delta IV_{kt} = \beta_0 + \beta_1 \text{News}_{kt} + \beta_2 \text{News}_{kt-1} + \epsilon_t$$

**TABLE 1: Regression results for news sentiment and standardised market measures**

Dependent variables	Constant	News	News (-1)	Adj R <sup>2</sup>	F-Stat	DW
Returns	0.690 (3.383)	3.241 (38.028)	0.234 (36.043)	0.001	1.944	1.954
Volume	0.916 *** (0.005)	0.150 *** (0.046)	0.068 ** (0.032)	0.019	18.90	1.693
Volatility	0.635 *** (0.002)	0.070 *** (0.021)	0.039 ** (0.018)	0.010	125.20	1.423
Order imbalance	0.890 *** (0.002)	0.051 *** (0.019)	0.047 ** (0.020)	0.013	42.79	1.761
Bid-ask spread	1.000 (0.001)	0.019 (0.011)	0.020 (0.014)	0.002	2.514	1.142

Note: Dependent variables for this series of regression results are Returns (calculated as  $100 * \ln(P_t/P_{t-1})$ ), Money Value of Volume traded (calculated as Price x Volume), Volatility (calculated as standard deviation of mid-point changes), Order Imbalance (calculated as the MV Volume of buy initiated trades – MV Volume of sell initiated trades), and Bid-Ask Spread (calculated as the time-weighted average bid-ask spread) for each 30-second interval during the trading day. The variables are normalized to 1 using a 12-month rolling average. The independent variable, News, is news sentiment (and 1-lag) occurring in the given 30-second interval, t. Since the dependent variables are normalized to 1, using a 12-month rolling average, the t-test for the constant term is whether it differs from 1.

Sample period: 2 January 2001 – 1 November 2011

Where  $\Delta IV_{kt}$  is the change in the independent variable (Returns, Volume, Volatility, Order Imbalance or BAS) and  $News_{kt}$  is the sentiment of news occurring for company  $k$  during the 30-second interval  $t$ . News releases are also disaggregated into negative and positive components in order to assess the possibility of an asymmetric response to news:

$$\Delta IV_{kt} = \beta_0 + \beta_1 News_{t-} + \beta_2 News_{t-1} + \beta_3 News_{t+} + \beta_4 News_{t-1} + \epsilon_t$$

Where  $News_{t-}$  is the sentiment of news items released during interval  $t$ , conditional on negative news (i.e.  $News_t < 0$ ) and 0 otherwise, and  $News_{t+}$  is the sentiment of news items released during interval  $t$ , conditional on positive news ( $News_t > 0$ ) and 0 otherwise.

Table 1 presents the results for the regression with aggregated news effects, Newey-West standard errors are used to correct for possible autocorrelation in the variables. The relationship between news and returns is in the direction one would expect, i.e. more positive news results in higher returns and more negative news in lower returns. However, the size of the standard error for returns is so large that the estimated coefficients are insignificant. Volume, volatility, and order imbalance all seem to be significantly affected by the presence of news releases and the sign of the coefficients suggests that volume and volatility increases (decreases) in the periods of positive (negative) news. The positive coefficient for order imbalance implies that the number of buy (sell) orders outweighs the number of sell (buy) orders when there is positive (negative) sentiment. The bid-ask spread does not appear to deviate significantly from the standardised value of 1 during either period and is not significantly affected by the sentiment of newswire messages. The results suggest that although market activity is significantly related to news sentiment there is little scope for market participants to make significant trading profits, at least in the 30-second time intervals considered.

**TABLE 2: Regression results for disaggregated news sentiment and standardised market measures**

Dependent variables	Constant	Negative news	Negative news (-1)	Positive news	Positive news (-1)	Adj R <sup>2</sup>	F-stat	DW
Returns	0.514 (1.548)	4.971 (9.645)	3.266 (8.891)	3.785 (27.741)	2.112 (19.656)	0.004	3.188	1.954
Volume	0.915 *** (0.004)	-1.140 *** (0.185)	-1.119 *** (0.185)	0.849 *** (0.138)	0.715 *** (0.116)	0.064	47.50	1.694
Volatility	0.634 *** (0.002)	-0.397 *** (0.085)	-0.304 *** (0.085)	0.313 *** (0.062)	0.221 *** (0.062)	0.036	180.95	1.423
Order imbalance	0.890 *** (0.002)	0.370 *** (0.090)	0.250 *** (0.085)	0.288 *** (0.058)	0.157 *** (0.056)	0.045	49.74	1.761
Bid-ask spread	1.000 (0.001)	-0.088 (0.054)	-0.069 (0.053)	0.070 * (0.039)	0.062 (0.039)	0.005	3.925	1.156

Note: Dependent variables for this series of regression results are Returns (calculated as  $100 * \ln(P_t/P_{t-1})$ ), Money Value of Volume traded (calculated as  $Price \times Volume$ ), Volatility (calculated as standard deviation of mid-point changes), Order Imbalance (calculated as the MV Volume of buy initiated trades – MV Volume of sell initiated trades), and Bid-Ask Spread (calculated as the time-weighted average bid-ask spread) for each 30-second interval during the trading day. The variables are normalized to 1 using a 12-month rolling average. The independent variables disaggregate sentiment into Negative News and Positive News measures (with 1-lag) occurring in the given 30-second interval,  $t$ . Since the dependent variables are normalized to 1, using a 12-month rolling average, the  $t$ -test for the constant term is whether it differs from 1.

Results for the disaggregated news variables are presented in Table 2. Ex-ante expectations would be for negative (positive) news to elicit negative (positive) returns and this corresponds with the reported results; again the standard errors of returns are large enough to make all of the coefficients statistically insignificant. Both volume and volatility increase in the presence of news events, while order imbalance also changes significantly with negative (positive) news eliciting more sell (buy) orders. As with the aggregated news there appears to be no significant relationship between news and the bid-ask spread. Finally, across all variables there is evidence of an asymmetric news effect where the coefficients for negative news are at least 26 per cent larger than for positive news. This is likely related to the relative scarcity of negative news items.

### Conclusion

The results add to the growing literature on news sentiment, and the use of news analytics in financial markets. There is some evidence that the classification of news sentiment and relevance is correct in the sense that the exhibited response matches ex-ante expectations. The results also support the extant literature concerning the presence of an asymmetric response to news, with negative news relating to larger changes in market activity.

*The reported evidence suggests that while the relationship between news sentiment and returns is in the expected direction, with negative news producing negative returns and vice-versa, this relationship is insignificant and it would not be possible for market participants to consistently generate excess returns using a news sentiment based strategy once transaction costs are incurred, i.e. market efficiency holds. Of course, this does not necessarily mean that investors able to trade at a greater speed than the 30-second intervals used in this study, or at very low transaction costs, will not be able to benefit from such strategies.*

Therefore, it is likely that high frequency traders, many of whom receive transaction cost rebates from the exchange, would have the greatest potential to incorporate this type of news analytics into a successful trading strategy. Also, investors looking to execute large orders may be able to utilise news analytics to understand changes in market activity.

## Endnotes

- 1 More extensive information on the RavenPack news analytics tool, complete with details on the methodology of assigning sentiment scores may be found at [www.ravenpack.com](http://www.ravenpack.com)
- 2 The processed data is available to market participants (at a cost) almost instantaneously; academic researchers are able to access this information only at a later stage.
- 3 RavenPack assigns each story a Relevance score in the range [0,100] with 0 indicating a passive mention and 100 indicating predominantly mentioned, while novelty is indicated by the Event\_Novelty\_Index. A new story, published for the first time has an index value equal to 1.
- 4 The analysis has also been repeated with the CSS measure and the results were qualitatively similar.
- 5 Details of the companies and related news releases are available from the author on request.
- 6 Negative news multiplied by the positive coefficient in Table 3 gives the expected negative returns.
- 7 Negative news multiplied by the negative coefficients in Table 3 give the positive (increase) in measures.

## References

- Chen, CWS, Chiang, TC and So, MKP 2003, 'Asymmetrical reaction to US stock-return news: Evidence from major stock markets based on a double-threshold model', *Journal of Economics and Business*, vol. 55, pp. 487–502.
- Dzielinski, M 2011, 'News sensitivity and the cross-section of stock returns', NCCR Finrisk working paper, no. 719.
- Garcia, D 2013, 'Sentiment during recessions', *Journal of Finance*, vol. 68, pp. 1267–300.
- Groß-Klußmann, A and Hautsch, N 2011, 'When machines read the news: Using automated text analytics to quantify high frequency news-implied market reactions', *Journal of Empirical Finance*, vol. 18, pp. 321–40.
- Hafez, PA 2013, *Attention conditions stock market reaction to news sentiment*, available at RavenPack.com
- Hafez, PA 2011, 'How news events impact market sentiment' in *The Handbook of News Analytics in Finance*, (eds) G Mitra and L Mitra, Wiley & Sons.
- Ho, K-Y, Shi, Y and Zhang, Z 2013, 'How does news sentiment impact asset volatility? Evidence from long memory and regime-switching approaches', *North American Journal of Economics and Finance*, vol. 26, pp. 436–56.
- Kalev, PS, Liu, W-M, Pham, PK and Jarnecic, E 2004, 'Public information arrival and volatility of intraday stock returns', *Journal of Banking & Finance*, vol. 28, pp. 1441–67.
- Leinweber, D and Sisk, J 2011, 'Event driven trading and the 'new news'', *Journal of Portfolio Management*, vol. 38, pp. 110–24.
- O'Hara, M 2014, 'High-frequency trading and its impact on markets', *Financial Analysts Journal*, vol. 70, no. 3.
- Riordan, R, Storckenmaier, A, Wagener, M and Zhang, SS 2013, 'Public information arrival: Price discovery and liquidity in electronic order markets', *Journal of Banking & Finance*, vol. 37, pp. 1148–59.
- Sinha, NR 2011, 'Under-reaction to news in the US stock market', working paper.
- Tetlock, PC, Saar-Tsechansky, M and Macskassy, S 2008, 'More than words: Quantifying language to measure firms' fundamentals', *Journal of Finance*, vol. 63, pp. 1437–67.
- Tetlock, PC 2007, Giving content to investor sentiment: The role of media in the stock market, *Journal of Finance*, vol. 62, pp. 1139–68.
- Von Beschwitz, B, Keim, DB and Massa, M 2013, 'Media-driven high frequency trading: Evidence from news analytics', *INSEAD Working Paper*.



# AN EMERGING MARKETS ANALYSIS *of the Piotroski F-score*

CHARLES E HYDE is Honorary Associate, Applied Finance Centre, Macquarie University.  
This research was largely undertaken in his previous capacity as Head of Quantitative Research, Metisq Capital.

---

*This paper examines whether the F-score signal developed by Piotroski (2000) can discriminate between high- and low-return stocks in emerging markets. It shows that there is a meaningful premium attached to high F-score stocks which is unrelated to the size, value and momentum premiums. This suggests that the usual explanation for the power of the F-score (i.e. investor neglect of high F-score stocks) is incomplete because big cap and high-momentum stocks are typically the most heavily scrutinised stocks in the market.*

---

The F-score is a measure of financial strength and is a composite of nine financial items. A stock is assigned a binary score for each item and the nine scores are then summed to give the F-score for the stock, ranging between zero and nine. The items together with their desired properties are: (i) positive profitability; (ii) increase in profitability; (iii) positive cash flow; (iv) negative accruals; (v) increase in profit margin; (vi) increase in asset turnover; (vii) decrease in leverage; (viii) increase in financial liquidity; and (ix) no issuance of new equity.

Piotroski found that in the US between 1976 and 1996, for the 20 per cent of stocks with the highest book-to-price ratio (deep value stocks), high F-score stocks outperformed all stocks by 7.5 per cent p.a. The effect was most pronounced for small stocks with low share turnover and no analyst coverage, consistent with the F-score being most effective for stocks for which the market is slow to incorporate relevant financial information. Deep-value stocks are typically neglected by analysts and investors and thus likely to impound new information more slowly. Indeed, Piotroski shows high F-score stocks tend to experience large positive reactions to subsequent earnings announcements.<sup>1</sup>

We do not restrict attention to deep value stocks in our analysis since emerging markets are likely to be slower to price in new information for all stocks. The finding by Mohr (2012) that the F-score effectively discriminates between high- and low-return stocks among growth stocks provides additional justification for broadening the analysis to include all stocks. We estimate the premium to high F-score stocks and examine whether the premium is robust to controls for size, value and momentum effects.

As analyst coverage (controlling for size) is lower in emerging markets (Griffin et al. 2010), it is plausible that emerging markets may be slower to price in new information than developed markets. Indeed, a range of studies provide evidence in this direction, some based on the relative success of traditional alpha signals (Griffin et al. 2010; Harvey 1995) and others looking the existence of serial correlation and information leakage (Rouwenhorst 1998; Bhattacharya et al. 2000; Van der Hart et al. 2003). The lower informational efficiency of emerging markets could plausibly result in the F-score having even more power in emerging markets than developed markets.

Previous studies using financial statement analysis to separate winners from losers have either focused on developed markets (Piotroski (2000) and Mohanram (2005) look at the US; Mohr (2012) examines the Eurozone) or subsets of the global emerging markets universe (Tantipanichkul (2011) studies Thailand; Galdi and Broedel Lopes (2009) focus on Brazil; Kang and Ding (2005) study Asia ex Japan). Here we examine the effectiveness of the F-score signal across all countries in the MSCI Emerging Markets Index. Adopting this broader global context is important given that many institutional investors access emerging markets only through global mandates.

## **Data and methodology**

Our analysis employs start-of-month data spanning the period January 2000 to December 2011. The universe is the MSCI Emerging Markets Index. The sample contains 667 stocks in January 2000, 805 stocks in December 2011 and 99,658 stock-date observations in total. All portfolio average excess returns are equal-weighted.

Portfolios are formed monthly starting January 2000 and ending July 2011 for six-month holds and January 2011 for 12-month holds. The excess return for a stock is calculated as the total return for the stock less the accumulation index return for the country/region to which the stock is assigned. Similarly, when conditioning returns on size, value and momentum, we sort stocks based on their ranking relative to other stocks in the same country/region to which the stock is assigned – thus, the resulting portfolios are country-neutral. The only countries examined in isolation are those which contain many stocks and have a large market capitalisation. All other countries are aggregated into geographic groupings. See Table 1.

**TABLE 1: Country groupings**

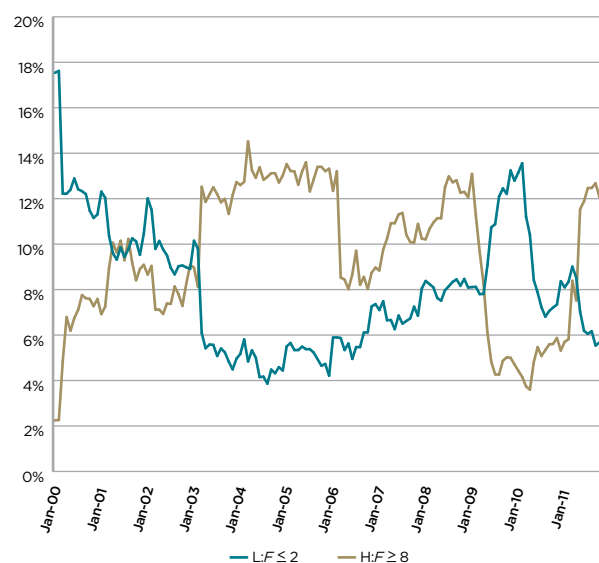
Grouping	Constituents
SE Asia	Indonesia, Malaysia, Philippines and Thailand
Latin America ex Brazil	Chile, Colombia, Mexico, Peru
E Europe and N Africa	Czech Republic, Egypt, Hungary, Morocco, Poland, Russia, Turkey
Individual countries	Brazil, China, India, Korea, South Africa, Taiwan

The F-score is defined in Table A.1 in the Appendix. Observations of F-scores between 4 and 7 (inclusive) account for 75 per cent of our data sample, while only 13 per cent are associated with the extreme scores of 0, 1, 8 or 9. There is little year-to-year variation in the average F-score, with the annual equal-weighted average F-score across all stocks remaining within the range of 4.89 to 5.66. The average F-score reached its lowest points in the years 2000, 2009 and 2010, periods of weak economic growth. There is also little variation across countries, with the country average F-score ranging from 5.05 (South Africa) to 5.50 (Latin America ex Brazil).

The F-score does not vary greatly with the value- or momentum-rank of stocks. The equal-weighted average F-score for the bottom 50 per cent of stocks ranked on the book-to-price (BP) ratio (i.e. the most expensive stocks) is only 0.11 lower than for the top 50 per cent of stocks. The difference in the average F-score between high and low (six-month) momentum stocks is only slightly higher at 0.21.

We compare the equal-weighted excess returns of high F-score stocks ( $F \geq 8$ , denoted H) to that of low F-score stocks ( $F \leq 2$ , denoted L).<sup>2</sup> These two bins contain on average 9.5 per cent and 8.0 per cent, respectively, of the available stocks at each date – the time variation in the number of stocks in the two bins is shown in Figure 1. These cut-offs ensure that while comparing stocks at the tails of the F-score distribution, there are sufficient observations in each bin to ensure the results are statistically meaningful.

**FIGURE 1: Time variation in the sample sizes of the high (H) and low (L) bins**



## Results

### The premium to high F-score stocks

Among deep value stocks, those in the H bin generate a premium relative to all deep value stocks. Table 2 shows that for stocks in the top 20 per cent of value as ranked by BP, this premium is 3.51 per cent p.a. (2.06 per cent p.a.) for the six-month (12-month) holding period – the associated *t*-statistics for these estimates are shown in parentheses. This is lower than the 7.5 per cent premium observed by Piotroski, but still economically meaningful and statistically significant in the case of the six-month holding period. Table 2 also shows that this premium varies with value, being negative for stocks in the lowest 20 per cent of value and positive but small for the middle 60 per cent of stocks as ranked by BP. The finding of a negative premium for growth stocks points to a difference between emerging and developed market stocks – Mohr (2012) found a positive premium for growth stocks in Europe.

**TABLE 2: Premium of high F-score stocks relative to all stocks within each value tier**

BP rank	High F-score ( $F \geq 8$ ) stocks - all ( $F \geq 0$ ) stocks return differential (% p.a.)	
	Six-month hold	12-month hold
Bottom 20% (expensive)	-1.07 (1.28)	-1.53 (1.67)
Middle 60%	0.83 (1.79)	0.84 (1.54)
Top 20% (cheap)	3.51 <sup>a</sup> (3.58)	2.06 (1.53)

<sup>a</sup> Statistically significant at  $p = 0.01$  level.

Using the entire data sample (not just value stocks), we find that stocks in the H bin generate a higher average return than stocks in the L bin for holding periods of six and 12 months, confirming the existence of a broad-based premium to high F-score stocks. Table 3 shows that this H–L premium is substantial, similar and statistically significant for the two holding periods, being 4.10 per cent p.a. for the six-month holding period and 4.36 per cent p.a. for the 12-month holding period.

**TABLE 3: Annualised excess return of high (H) and low (L) F-score stocks**

F-score	EW average excess return (% p.a.)	
	Six-month hold	12-month hold
H: $F \geq 8$	3.33 <sup>a</sup> (9.37)	3.41 <sup>a</sup> (7.96)
L: $F \leq 2$	-0.77 (1.54)	-0.95 (1.75)
H–L premium	4.10 <sup>a</sup> (6.77)	4.36 <sup>a</sup> (6.31)

<sup>a</sup> Statistically significant at  $p = 0.01$  level.

The above analysis was repeated using cut-offs of  $F \geq 7$  and  $F \leq 3$ , respectively, (utilising 41 per cent of the total sample compared to 18 per cent above) to estimate the H–L premium. The resulting H–L premium was slightly higher than that shown in Table 3, being 5.28 per cent and 4.94 per cent p.a. for the six- and 12-month holding periods. In what follows, we report results only for the six-month holding period.

Despite cross-sectional variation in the H–L premium across the individual countries/regions in the emerging markets universe, Table 4 shows that the premium is positive in all countries except Brazil. The negative premium for Brazil is noteworthy given that it is one of the larger countries by market capitalisation in the emerging markets universe.

**TABLE 4: The premium to high F-score stocks by country/region**

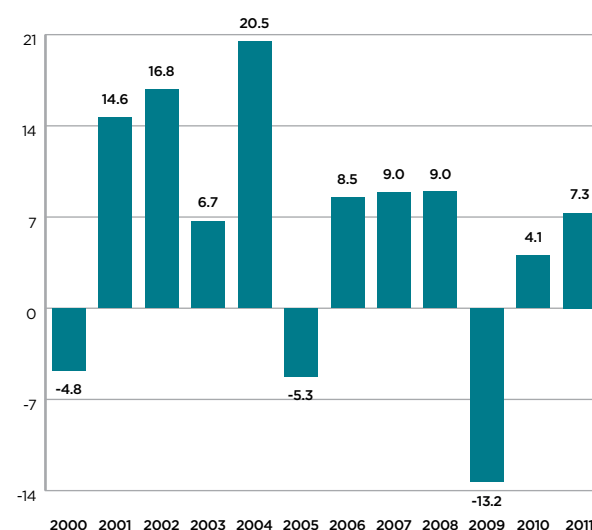
Country/region	H–L premium (% pa)	<i>t</i> -statistic
Korea	6.82 <sup>b</sup>	2.51
Taiwan	1.25	0.63
India	13.09 <sup>a</sup>	3.89
SE Asia	14.20 <sup>a</sup>	6.61
China	12.46 <sup>a</sup>	4.59
E Europe and N Africa	0.90	0.39
Latin America ex Brazil	0.32	0.12
Brazil	-13.49 <sup>a</sup>	3.60
South Africa	6.96 <sup>a</sup>	2.57

<sup>a</sup> Statistically significant at  $p = 0.01$  level.

<sup>b</sup> Statistically significant at  $p = 0.05$  level.

The H–L premium displays appreciable time-series variation, although it is negative in only three of the 12 years in our sample period. Two of these years (2000 and 2009) were periods where large market swings occurred, suggesting that the F-score is a weaker signal when markets are particularly volatile.

**FIGURE 2: Yearly variation in the premium to high F-score stocks**



There is also variation in the contribution each of the nine F-score components makes to the overall H–L premium. Table 5 shows that the Profitability, Cash Flow, Accruals and  $\Delta$ Net Capital components generate the strongest contributions while only  $\Delta$ Leverage makes a negative (though small and not statistically significant) contribution to the overall H–L premium. The return differential here is the return to stocks which score 1 on the component minus the return to stocks that score 0.

**TABLE 5: Component contributions to the premium to high F-score stocks**

F-score component	H–L premium (% p.a.)	<i>t</i> -statistic
$F_1$ : Profitability	3.62 <sup>a</sup>	7.96
$F_2$ : $\Delta$ Profitability	0.76 <sup>a</sup>	3.19
$F_3$ : Cash flow	4.94 <sup>a</sup>	11.97
$F_4$ : Accruals	2.74 <sup>a</sup>	9.71
$F_5$ : $\Delta$ Profit margin	1.16 <sup>a</sup>	4.84
$F_6$ : $\Delta$ Asset turnover	0.70 <sup>a</sup>	2.93
$F_7$ : $\Delta$ Leverage	-0.23	0.97
$F_8$ : $\Delta$ Liquidity	1.34 <sup>a</sup>	5.58
$F_9$ : $\Delta$ Net capital	2.91 <sup>a</sup>	11.73

<sup>a</sup> Statistically significant at  $p = 0.01$  level.

It is plausible that the premium to high F-score stocks will be largest when the information contained in the financial statements is new (i.e. recently reported) as the market will have had little time to react to this data. Most stocks in the emerging markets universe have a December financial year end, meaning that new financial information generally is released in

March. The intuition above is confirmed in Table 6, with the H-L premium being larger in the March quarter than in the remaining three quarters. Moreover, the H-L premium is higher in the first half of the year than the second half, indicating that the F-score becomes a less useful signal as its informational content becomes increasingly stale.

**TABLE 6: Quarterly variation in the premium to high F-score stocks**

Quarter	H-L premium (% p.a.)	t-statistic
Jan-Mar	7.95 <sup>a</sup>	6.13
Apr-Jun	5.49 <sup>a</sup>	4.52
Jul-Sep	-0.18	-0.16
Oct-Dec	3.39 <sup>a</sup>	2.72

<sup>a</sup> Statistically significant at p = 0.01 level.

### The size effect

The premium to stocks with a high F-score can be attributed to the size premium only if stocks with a high F-score are on average smaller than low F-score stocks. However, our analysis shows that the opposite is true: the average MSCI Index weight of H stocks is nearly double that of L stocks (0.0019 versus 0.0010). Similarly, the average market capitalisation of H stocks is \$6.68b versus \$4.82b for L stocks. This also suggests that the strategy of choosing high F-score stocks is capable of being implemented in that it doesn't rely on the selection of very small stocks.<sup>3</sup> High F-score stocks do, however, have somewhat lower average daily liquidity than that for all stocks: \$18.1m versus \$26.6m.

Table 7 shows that when stocks are sorted into two size baskets (with equal numbers of names), the premium is positive and statistically significant from zero for both large and small stocks. This is consistent with the H-L premium being independent of the size effect. While a more discriminating sort could have been used (e.g. top 20 per cent of size versus bottom 20 per cent), the fact that high F-score stocks are larger than low F-score stocks suggests that the results in Table 7 would be little changed.

*We show that the H-L premium is similar for large and small stocks (0.06 per cent p.a. differential is not statistically significant). This contrasts with Piotroski's finding that the premium is concentrated within small stocks.*

We show that the H-L premium is similar for large and small stocks (0.06 per cent p.a. differential is not statistically significant). This contrasts with Piotroski's finding that the premium is concentrated within small stocks. Moreover, since new information generally is rapidly impounded into large cap stock prices, our

findings suggest that the H-L premium in emerging markets is driven by something other than the failure to rapidly incorporate new financial information into stock prices.

**TABLE 7: Impact of size on the premium to high F-score stocks**

Size	H-L premium (% p.a.)
Big: top 50% by size rank	4.75 <sup>a</sup> (6.27)
Small: bottom 50% by size rank	4.69 <sup>a</sup> (4.98)

<sup>a</sup> Statistically significant at p = 0.01 level.

### The value effect

We now show that the observed premium to high F-score stocks is not just the value premium in another guise. If the H-L premium is attributable to the value premium, high F-score stocks must display higher value on average than low F-score stocks. The evidence, however, is mixed and depends critically on how value is defined. The average BP ratio of high F-score stocks is actually 9 per cent lower than for low F-score stocks (0.65 v. 0.72), while the average earnings-to-price (EP) ratio of high F-score stocks is close to double that for low F-score stocks (0.088 v. 0.045). Clearly the H-L premium in Table 3 is not being driven by the classical BP value premium.

Table 8 shows that the premium to high F-score stocks exists within high-value stocks and also within low-value stocks, indicating that the H-L premium is not being driven by the value premium. The premium is higher for value stocks than for growth stocks regardless of whether value is defined by the BP or EP ratio. This difference is consistent with the results in Table 2.

**TABLE 8: Impact of value on the premium to high F-score stocks**

Value	H-L premium (% p.a.)	
	BP	EP
High: top 50% by value rank	4.82 <sup>a</sup> (4.52)	4.18 <sup>a</sup> (3.85)
Low: bottom 50% by value rank	2.27 <sup>a</sup> (3.00)	-0.03 (0.03)

<sup>a</sup> Statistically significant at p = 0.01 level.

### The momentum effect

The H-L premium also appears to be independent of the momentum effect. In order for the H-L premium to be explained by the momentum premium, the average momentum of high F-score stocks must be higher than for low F-score stocks. In fact, the average six-month price momentum is virtually identical for both types of stocks, while the average 12-month momentum is a statistically significant 54 per cent higher for H stocks than L stocks. So, if the H-L premium in Table 3 is driven by the

momentum premium, it is clearly unrelated to the six-month momentum premium.

As with size and value, we find that the H-L premium is independent of price momentum. Table 9 shows that the H-L premium is positive and statistically significantly different from zero for both high- and low-momentum stocks using either six-month or 12-month formation periods. The difference in the H-L premium between high- and low-momentum stocks is not statistically significant for the six-month formation period but is significant for the 12-month period. In summary, there is no evidence to suggest that the observed H-L premium is being driven by the momentum premium.

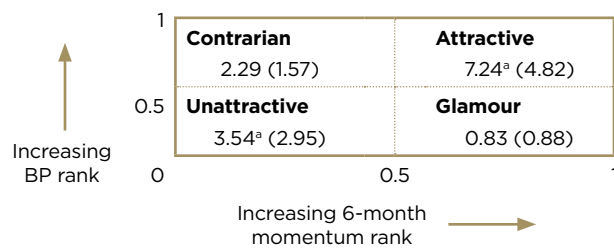
**TABLE 9: Impact of momentum on the premium to high F-score stocks**

Momentum	H-L premium (% p.a.)	
	6-month momentum	12-month momentum
High: top 50% by momentum rank	4.05 <sup>a</sup> (5.10)	5.97 <sup>a</sup> (7.67)
Low: bottom 50% by momentum rank	3.72 <sup>a</sup> (4.05)	2.33 <sup>a</sup> (2.57)

<sup>a</sup> Statistically significant at p = 0.01 level.

Figure 3 combines the insights from Tables 8 and 9, showing the tendency of high F-score stocks to outperform low F-score stocks is strongest in the high-value and high-momentum (Attractive) quadrant. Nonetheless, the average H-L premium is positive in all four quadrants.

**Figure 3: The premium to high F-score stocks on the value momentum complex (% p.a.)**



<sup>a</sup> Statistically significant at p=0.01 level

## Discussion and conclusion

*Our key finding is that, consistent with evidence from both developed and emerging market country studies, stocks with a high F-score earn a significant return premium over stocks with a low F-score. This positive premium is robust across both countries and time.*

Our key finding is that, consistent with evidence from both developed and emerging market country studies, stocks with a high F-score earn a significant return premium over stocks with a low F-score. This positive premium is robust across both countries and time. The signal is most effective in the context of value/momentum investing strategies in emerging markets, this intersection being the focus of many quantitative strategies.

Our results are consistent in key respects with the few individual emerging country studies that have been previously undertaken. Like Kang and Ding (2005) we find a positive premium in Asia and our results for Thailand are consistent with those of Tantipanichkul (2011). In contrast to the strong negative premium we observe, Galdi and Broedel Lopes (2009) find a positive premium for Brazil. However, this is driven mostly by small- and medium-sized stocks which we do not include in our analysis.

However, our results suggest the efficiency with which new information is impounded into stock prices cannot be the only source of the premium to high F-score stocks. Something other than analyst/investor neglect must explain why the H-L premium is the same for big cap and small cap stocks, and somewhat larger for high-momentum stocks than low-momentum stocks. Large cap and high-momentum stocks attract greater analyst and financial news coverage than any other part of the market. In emerging markets, a fuller explanation of the drivers of the premium to high F-score stocks is required.

## Acknowledgements

The author would like to thank an anonymous referee, as well as John Beggs, David Beggs and Rob Trevor for helpful comments.

## Endnotes

- 1 Choi and Sias (2012) provide additional evidence to support the 'slow impounding of new information' hypothesis by showing that future institutional investor demand is high for stocks with high F-scores.
- 2 Piotroski defines the H bin similarly ( $F \geq 8$ ) but uses the more restrictive  $F \leq 1$  definition of the L bin. Including  $F = 2$  in the L bin makes the two bins better balanced in terms of the number of data points in each.
- 3 The average MSCI Index weight for all stocks in the sample is 0.0014 and the average market capitalisation is \$5.24b.
- 4 The average MSCI Index weight for all stocks in the sample is 0.0014 and the average market capitalisation is \$5.24b.

## References

- Bhattacharya, U, Daouk, H, Jorgenson, B, Kehr, CH, 2000, 'When an event is not an event: The curious case of an emerging market', *Journal of Financial Economics*, vol. 55, pp. 69–101.
- Choi, NY, Sias RW, 2012, 'Why does financial strength forecast stock returns? Evidence from subsequent demand from institutional investors', *Review of Financial Studies*, vol. 25, pp. 1550–87.
- Galdi, FC, Broedel Lopes, A 2009, 'Limits to arbitrage and value investing: Evidence from Brazil', available at [ssrn.com/abstract=1099524](https://ssrn.com/abstract=1099524)
- Griffin, JM, Kelly, PJ and Nardari, F 2010, 'Do market efficiency measures yield correct inferences? A Comparison of Developed and Emerging Markets', *Review of Financial Studies*, vol. 23, no. 8, pp. 3225–77.
- Harvey, CR 1995, 'Predictable risk and returns in emerging markets', *Review of Financial Studies*, vol. 8, pp. 773–816.
- Kang, J, Ding, D 2005, 'Value and growth investing in Asian stock markets 1991–2002' in *Research in Finance*, (ed.) AH Chen, JAI Press, Greenwich, vol. 22, pp. 113–39.

Mohanram, P 2005, 'Separating winners from losers among low book-to-market stocks using financial statement analysis', *Review of Accounting Studies*, vol. 10, pp. 133–70.

Mohr, J-HM 2012, 'Utility of Piotroski F-score for predicting growth stock returns', working paper, MFIE Capital.

Piotroski, JD 2000, 'Value investing: The use of historical financial information to separate winners and losers', *Journal of Accounting Research*, vol. 38, pp. 1–41.

Rouwenhorst, KG 1998, 'International momentum strategies', *Journal of Finance*, vol. 53, pp. 267–84.

Tantipanichkul, P 2011, 'Separating winners from losers in Thai stock markets using financial statement analysis', paper presented at the 2011 Barcelona European Academic Conference.

Van der Hart, J, Slagter, E and Van Dijk, D 2003, 'Stock selection strategies in emerging markets', *Journal of Empirical Finance*, vol. 10, pp. 105–32.

## Appendix

The components of the F-score are detailed in Table A.1. The components  $F_1$  to  $F_8$  change only once per year in our monthly dataset (due to the annual frequency of the financial year-end reporting cycle) while  $F_9$  changes every month since market capitalisation data updates daily.

**Table A.1: Components of the F-score**

	Name	Definition	Formula
$F_1$	Profitability	Net profit including extraordinary items/total assets at start of period	$F_1 = 1$ if profitability > 0, otherwise $F_1 = 0$ .
$F_2$	$\Delta$ Profitability	Profitability in current period – profitability in one-year prior period	$F_2 = 1$ if $\Delta$ profitability > 0, otherwise $F_2 = 0$ .
$F_3$	Cash flow	Operating cash flow/total assets	$F_3 = 1$ if cash flow > 0, otherwise $F_3 = 0$ .
$F_4$	Accruals	Profitability – cash flow	$F_4 = 1$ if accruals < 0, otherwise $F_4 = 0$ .
$F_5$	$\Delta$ Profit margin	Gross margin in current period – gross margin in one-year prior period	$F_5 = 1$ if $\Delta$ profit margin > 0, otherwise $F_5 = 0$ .
$F_6$	$\Delta$ Asset turnover	Asset turnover in current period – asset turnover in one-year prior period	$F_6 = 1$ if $\Delta$ asset turnover > 0, otherwise $F_6 = 0$ .
$F_7$	$\Delta$ Leverage	(Total long term debt/total assets in current period) – (Total long term debt/total assets in one-year prior period)	$F_7 = 1$ if $\Delta$ leverage < 0, otherwise $F_7 = 0$ .
$F_8$	$\Delta$ Liquidity	(Current assets/current liabilities in current period) – (Current assets/current liabilities in one-year prior period)	$F_8 = 1$ if $\Delta$ liquidity > 0, otherwise $F_8 = 0$ .
$F_9$	$\Delta$ Net capital	Change in market cap over the prior six months – change in market cap due to the change in share price	$F_9 = 1$ if $\Delta$ net capital < 0, otherwise $F_9 = 0$ .

The F-score is defined as:

$$F = \sum_{i=1}^9 F_i$$

Thus, the F-score takes on a minimum value of 0 and a maximum value of 9.

# BANK REPUTATION IN AUSTRALIA: *a view from the inside*

AMEETA JAIN, Senior Lecturer, School of Accounting, Economics and Finance, Deakin University  
MONICA KENELEY, Professor, School of Accounting, Economics and Finance, Deakin University  
DIANNE THOMSON, Senior Lecturer, School of Accounting, Economics and Finance, Deakin University

---

*This paper investigates management perceptions of bank reputational problems. Interviews with senior bank officials identified several factors that were recognised as impacting negatively on bank reputation; including profits, fees and charges, executive salaries and reactions to changes in monetary policy. Together with media and political commentary these have contributed to the poor public view of banks and increased reputational risk, which can only be mitigated by improving the bank/customer relationship. Measures to increase customer satisfaction ratings, such as fee reductions, improved environmental and social responsibility performance along with community engagement have been employed within the banking industry and have been successful in realigning community expectations.*

---

It has been said that reputation is one of the most valuable assets of a company, particularly a financial institution (Stansfield 2006). Factors that affect reputation therefore can potentially have a significant impact on a company's bottom line. The issue of corporate reputation has attracted increased attention over the past two decades. This is particularly so in the financial services sector where the relationships developed are based largely on trust. Media outlets, ratings agencies, analysts, regulators as well as consumers have turned their attention not only to the actions of banks but also to their underlying management objectives (Stansfield 2006). The reputation of banks globally has suffered not only as a result of the recent financial crises but also through a combination of management decisions that have been perceived negatively by their customer base.

Dissatisfaction with bank fees, for example, is an international phenomenon, expressed by 50 per cent of surveyed customers worldwide (Ernst & Young 2012). The perception that banks charge high fees is increasing customer attrition rates (Ernst & Young 2012, p. 8). In a recent US survey of reputations within 17 diverse industrial and service sectors it was found that financial services firms and banks had the lowest reputation (Landy 2013). This is similar to the Australian experience where banks are also rated lowest of the industries surveyed<sup>1</sup> and have a disapproval rating of 42 per cent (ABA 2012a, 2012b). Further, poll results reveal that almost 76 per cent of

Australians think that bank profits are too high and 77 per cent of people believe that bank profits need to be curtailed (ABA 2012a). The UK experience finds that 70 per cent of the surveyed population consider that British banks are driven by greed (Rowe 2012).

Despite their success in weathering the financial storm in the wake of the global financial crisis (GFC), Australian banks have come under intense criticism from politicians, the media and customers. Media reports that sensationalise bank profits have added fuel to the fire. Media reports have also added to public perceptions that banks are not treating their customers fairly. See for example, 'NAB defends super profits' (Gluyas and Murdoch 2012), 'Big banks slash jobs, bristle over rates' (Kehoe 2012), and 'RBA to hold interest rates despite greedy banks not passing on cuts' (McMahon 2013). The result has been an increase in negative public perceptions about the banking sector and an ensuing rise in reputational risk.

The manner in which banks and other financial institutions identify and manage their reputation and reputational risk has become the focus of increased scrutiny (Trotta and Cavallaro 2012). In this context, and given the importance of reputation, particularly for providers of financial services, this paper investigates management perceptions of the reputational problems that they face. It addresses two key questions: What do senior bank officials think is the cause of perceptions that have had a negative impact on bank reputation? What strategies

have been devised to address the issue? The paper also analyses management's understanding of the issue and considers measures that have been put in place to mitigate the problem.

### Corporate reputation

Previous multidisciplinary research has identified many disparate determinants of corporate [bank] reputation, which include internal identity, history, corporate behaviour, economic performance, and stakeholder perceptions (Fombrun and Van Riel 1997; Bennett and Kottasz 2000; Trotta and Cavallaro 2012). Walsh and Beatty (2007) argue that corporate reputation is influenced strongly by the customer's evaluation of the firm based on personal experience and/or information received about the firm. Bontis et al. (2007) make a direct link between customer satisfaction and reputation in the banking industry.

Reputational risk is broadly defined by the Basel Committee on Bank Supervision (BCBS) as 'the risk arising from negative perception on the part of customers, counterparties, shareholders and investors' (Trotta and Cavallaro 2012, p. 22). Over the past two decades Australian banks have experienced several periods of declining community and customer satisfaction. In the late 1990s, the major banks experienced community backlash at the closure of bank branches (Argent and Rolley 2000; Rugimbana et al. 2007). The anti-bank reaction and public dissatisfaction with the performance of banks was further reinforced with the introduction of fees for services. More specifically, the National Australia Bank's reputation was significantly and negatively affected in the wake of \$4.1 billion losses associated with its unsuccessful venture into the US loan market in 2001 and the scandal associated with its foreign currency dealings in 2004 (Thomson and Jain 2010). Recently, bank reputations have been tarnished as a result of the reactions of banks to cuts in the official cash rate and what has been viewed by the public as excessive profit-taking and payment of executive salaries. For example, the results of a recent Ernst & Young Consumer Banking Survey indicated 67 per cent of Australian respondents cited dissatisfaction with the banks' 'bonus' culture as an issue (Ernst & Young 2012).

Triggers such as the events mentioned above highlight the fragile nature of corporate reputation and reinforce the necessity of managing reputational risk. To improve corporate reputation it is important to understand what influences customer and public perceptions of the organisation.

### The study

A series of interviews with CEOs and other senior bank officials from a sample of authorised deposit-taking institutions (ADIs) were conducted

between February and July 2013 (Table 1). Thirteen organisations were interviewed representing a cross section of the banking industry, including the Australian Bankers' Association (ABA). Seven of the officials interviewed were CEOs and the remaining were in senior management positions.

**TABLE 1: Organisation of origin of interviewees**

	Total number of entities June 2013	Number of interviews
ABA	1	1
Major banks	4	3
Other domestic banks	15	9

In face-to-face interviews, senior bank executives were asked the following questions about bank reputation: 'How do you think the financial industry rates in their reputation in comparison with other service industries: such as airline, public transport, and real estate agents? And why?'.<sup>2</sup> Thematic analysis (Boyatzis 1998) was performed on the interview transcripts. These interviews form the basis of the following discussion, which examines causes of poor reputation and reputation risk management.

### Management perceptions of factors impacting on reputation

Analysis of interviews, point to several factors affecting the reputation of banks. Table 2 summarises the causes of poor bank reputation as described in the interviews.

**TABLE 2: Factors contributing to poor bank reputation**

Contributing factors	Total responses
Media	9
Inadequate approach to community responsibilities	8
Absolute size of profits	7
Fees and charges	6
Withholding interest rate cuts	6
Salaries of senior officials and CEOs	5
Government and politicians	4
Poor public relations	2
Tall poppy syndrome	1
Complex interbank trading and bank products	1
Concentration of power	1
Privileged place in society	1
Ignorance of the business of banking	1

The media was blamed for encouraging the spread of negative perceptions that contributed to the poor reputation of banks. There was a general opinion that the media sensationalised negative reports about banks. It was felt that both the media and politicians had adopted an anti-bank sentiment in recent times and used this to pursue their own agendas. As one respondent stated [banks were] 'constantly



pounded by political parties for their own interest'. The banks and the ABA responded to this attack with the ABA leading a media offensive and employing separate media relations and customer relationship managers. The ABA, a strong and vocal lobby for the banks retaliated with its own media releases. These included: 'Reserve Bank confirms borrowers do not pay more when banks hold back' (ABA 2012c); 'Households paying less in bank fees' (ABA 2013a); 'Doing it tough? Banking industry package to help those experiencing financial difficulties' (ABA 2013b); and 'Record level — banks' customer satisfaction' (ABA 2013c).

The second most important cause of damage to bank reputation identified was an inadequate approach to community responsibility. This stemmed from the late 1990s when branch closures were handled insensitively. The disenfranchisement of local communities, both in suburban and regional areas had a lasting impact on community perceptions. Bank executives now realise that changes to retail banking services were not well managed and failed to adequately take into account community impacts. As one interviewee commented 'There has been a lot of public relations catastrophes'. Two of the officials stated that banks had historically poor public relations. There were past instances when CEOs and other officials issued irresponsible statements in the lay press causing public outrage. This is now managed by having formal customer relationship managers and media relationship offices.

Seven respondents identified the size of bank profits as an issue. It was stated that banks are large organisations in the public eye and so are their profits. Some of the interviewees emphasised that the media and, consequently, the public, tended to ignore the fact that, in terms of measures of profitability, the banks do not have excessively high rates of return on equity. Related to the public perception that banks make excessive profits was the issue of fees and charges. It was acknowledged that decisions surrounding fees and interest rates have a large impact on customer welfare.

Six respondents felt that bank reputation suffered as a result of the perception that banks were withholding the interest rate reductions that were encouraged by the easing of monetary policy. In the past, there was a fair degree of certainty that bank interest rate movements would closely follow RBA changes to the cash rate. The increased costs in funding arrangements post-GFC resulted in banks no longer passing on the full rate cuts associated with monetary policy easing. Respondents felt that there was a general lack of understanding about the nature of banking and the costs involved, but it was recognised that banks could have done more themselves to educate the public in this respect.

Thirty-eight per cent of respondents saw executive salary packages as an issue. Although this matter was not viewed as being as critical as others in influencing public perceptions, it has been addressed by banks in recent times. The banks are increasingly linking salaries to customer satisfaction. The CBA, for example, has linked the salaries of the CEO and other executives to a customer focus, introducing a '25 per cent hurdle requirement for customer satisfaction'.<sup>3</sup> This is in line with international trends, which are increasingly encouraging a more customer-oriented focus.

Other causes of poor bank reputation (each mentioned only by a single official) included: the Australian tall poppy syndrome (the habit of criticising successful people and organisations, in this case banks); complex interbank dealings and products; the failure of overseas ventures; the loss of the privileged position of banks and bankers in society post-deregulation; and continued ignorance of the public, media and politicians about the reality of banking business and their costs and profits.

In summary, the management of the major banks felt that the causes of poor reputation were largely due to negative press and media attention. However, it is recognised that not enough has been done in the past to explain their actions and foster positive perceptions among their customers and the community at large. In this respect there has been a failure to manage effectively the change in banking culture associated with the transition to modern banking.

---

*Banks have taken steps to address reputational problems, which have been accentuated since the GFC. In addition to linking executive salary packages more closely to customer satisfaction, greater emphasis has been placed on corporate social responsibility activities and engaging with the community.*

---

Banks have taken steps to address reputational problems, which have been accentuated since the GFC. In addition to linking executive salary packages more closely to customer satisfaction, greater emphasis has been placed on corporate social responsibility activities and engaging with the community. For example, charitable donations, providing assistance in disadvantaged areas such as supporting indigenous Australians, addressing financial exclusion, engaging in environmental measures and 'volunteer days', with bank employees contributing significant service to community projects. Specific measures to improve customer satisfaction have been introduced. These have included initiatives such as the establishment of

customer councils, the simplification of products and processes and the expansion of online services. Results of bank image surveys indicate that this approach has stabilised falling customer satisfaction rankings and has improved the fundamental bank image. Table 3 summarises the results of the Roy Morgan Bank Image Statements for four questions relating to bank fees, honesty, equality and appreciation of customer perspective.

**TABLE 3: Mean rating for selected survey questions\***

	April- Sept 2008	April- Sept 2010	April- Sept 2012	April- Sept 2013
Your bank treats you as an equal partner	4.6	4.7	4.9	5.1
Your bank appears to appreciate and take your perspective	4.7	4.8	5.0	5.1
Your bank is honest and upfront	5.0	5.2	5.3	5.4
Your bank has fair fees and charges	4.1	4.4	4.6	4.8

Source: Roy Morgan Bank Image Statement 2008–2013.  
\* A seven-point scale ranging from 7 (highest score) to 1 (lowest score) was used.

The increased focus by banks and the ABA on customer and public relations has had positive results. In each case satisfaction ratings over the five-year period have made continual, small incremental increases with three of the four questions relating to customer/banking relationships now scoring over five out of a potential seven points. Community dissatisfaction with the level of bank fees and charges is reflected in the low 4.1 score in 2008 (Table 3). Other polling on bank fees and charges showed 49 per cent of the community felt that banks should not charge anything and a further 39 per cent believed that banks should only charge what it costs them for basic transaction accounts (ABA 2012b).

The most significant change in the bank image statements over the five-year period has been the 10 per cent improvement in customers agreeing that banks have fair fees and charges. The RBA's 2013 survey of bank fees validates this view and reports that since 2010 total fees paid by households have fallen by \$1.12 billion or 22 per cent, taking fees paid by households to their lowest level for seven years (RBA 2013). Both competitive and regulatory reasons have caused banks to reduce and abolish many fees. For example, banking reforms in 2011 removed exit fees, and introduced responsible lending requirements, standardised layout of key information on credit card statements, and the requirements for credit card payments to be allocated to highest interest rate components followed in 2012. Also, recent voluntary reductions by banks on the number and size of fees imposed on late credit card

payments or overdrawn accounts have ameliorated some of the community concern.

While there is a general recognition that customer opinion is a key determinant of bank reputation, there still appears to be something of a mismatch between the two groups. On the one hand, management views adverse media attention as the most important influence on reputation. On the other hand, surveys of consumer banking suggest that pricing is the single most important driver of customer satisfaction (Ernst & Young 2012). The interview results suggest that banking executives do not have a complete understanding of the changing nature of the relationship between banks, their customer base and the broader community. The Ernst & Young survey of consumer banking suggests a shift in customer attitude to banks and banking. Consumers are listening more to other sources of information when making decisions about financial products. They are becoming less loyal to one particular bank and taking more control of banking relationships (Ernst & Young 2012). This in line with the ABA's view that bank customers now want certainty, stability and control in their banking activities (Münchenberg 2013).

## Conclusion

In industries, such as banking and financial services, corporate reputation is particularly important as the essential relationships between the various participants are based on trust. Although it is a multi-dimensional concept, customers have an important impact as key stakeholders. Prior literature suggests that reputation is influenced by customer evaluation of the firm and that this is determined by their experience and perceptions. The problem of reputational risk for the banking sector was highlighted during the GFC but continues as an ongoing issue. To better manage risk, bank executives need to have an understanding of what influences customer and public perceptions.

The results of interviews with senior bank officials indicate that several factors are recognised as negatively affecting bank reputation. Profits, fees and charges, executive salaries and reactions to changes in monetary policy were all identified as issues. However, senior bank officials see the major cause of poor reputation stemming from the anti-bank sentiment championed in the media and by politicians. While this has undoubtedly had an impact, evidence from other surveys would suggest that is perhaps not as significant as bank management suspects.

Customer satisfaction has continued to improve due to falling product prices, innovation and technology, improved customer service and transformation in access (ABA 2014). Capgemini and Efma's World Retail Banking Report (2013) found that Australians

rate fourth in the world after Canada, the US and the Philippines in their customer experience. Within Australia, bank customer satisfaction reached a high of 81.6 per cent in January 2014. The major reason for the improvement over the past year was the interest rate reductions for the major banks' housing loan customers (Roy Morgan 2014). This demonstrates the significance of fees and pricing to customer satisfaction. Other reasons for improving customer satisfaction may be the result of class actions against banks including those for penalty fees in recent years. The increased scrutiny by the regulatory bodies has also undoubtedly influenced the way banks have handled their reputational challenges. For example, legislative change to fees, new responsible lending requirements and a number of parliamentary enquiries into the banking industry have had a positive impact (e.g. Senate Economics References Committee, Inquiry into the post-GFC banking sector; and ASIC and APRA inquiries).

---

*Banks have addressed reputational problems by aligning their actions more closely with community expectations. A focus on building customer and public relations, targeting initiatives which encourage community engagement and building greater rapport with bank customers has been successful in increasing individual customer satisfaction.*

---

Banks have addressed reputational problems by aligning their actions more closely with community expectations. A focus on building customer and public relations, targeting initiatives which encourage community engagement and building greater rapport with bank customers has been successful in increasing individual customer satisfaction. Individual banks report that four out of every five customers are satisfied with their bank — a record high for the industry (Münchenberg 2013). However, the community's attitude to the industry overall is much less favourable with 20 per cent of Australians neutral or unsure of their view of banks and 45 per cent having a negative view (Münchenberg 2013). Nevertheless, it is likely that community attitudes will change over time if satisfaction levels continue to improve. The study suggests that further reforms to the bank/customer relationship may be needed before banks are totally successful in realigning the community expectations with their banking business.

## Acknowledgement

This research was supported by an ACFS Research Grant. We also acknowledge and thank the Australian Bankers' Association for their assistance.

## Endnotes

- 1 Industries surveyed and ranked from best to worst: Mining, Airlines, Telecommunications, Electricity suppliers, Banks (ABA 2012a).
- 2 These questions were part of a broader survey. Analysis of the other data collected is outside the scope of this paper. The complete data set comprises survey questions relating to and including bank reputational issues as well as information on the perceptions of mutual banks and the challenges before the banking and mutual industry.
- 3 This means that 25 per cent of the long-term incentive awards to the CEO and senior executives will be linked to customer satisfaction, with 100 per cent vesting applying if the average ranking for the CBA group over the performance period is 1st, with 50 per cent vesting if the average ranking is 2nd and no vesting on the average ranking sliding to below 2nd. This comparison is with the other three banks in the big four.
- 4 An example of social responsibility by a major bank is that of NAB staff who volunteered the equivalent of 17,060 days in 2013 valued at \$8.9 million (National Australia Bank 2013).

## References

- Argent, NM and Rolley, F 2000, 'Financial exclusion in rural and remote New South Wales, Australia: a geography of bank branch rationalisation, 1981–98', *Australian Geographical Studies*, vol. 38, no. 2, pp. 182–203.
- Australian Bankers' Association Inc. (hereafter listed as ABA) 2014, *Financial System Inquiry Submission*, available at <http://www.bankers.asn.au/FSI/ABA-submissions/ABA-submissions>
- ABA 2013a, *Households paying less in bank fees: Average weekly fees paid by households fall for third consecutive year*, available at <http://www.bankers.asn.au/Media/Media-Releases/Media-Release-2013/Households-paying-less-in-bank-fees>
- ABA 2013b, *Doing it tough? Banking industry package to help those experiencing financial difficulties*, available at <http://www.bankers.asn.au/Media/Media-Releases/Media-Release-2013/Doing-It-Tough>
- ABA 2013c, *Record level – banks' customer satisfaction*, available at <http://www.bankers.asn.au/Media/Media-Releases/Media-Release-2013/Record-level---banks--customer-satisfaction>
- ABA 2012a, 'Internal Data 1'.
- ABA 2012b, 'Internal Data 2'.
- ABA 2012c, *Reserve Bank confirms borrowers don't pay more when banks hold back on interest rates*, available at <http://www.bankers.asn.au/Media/Media-Releases/Media-Release-2012/Reserve-Bank-confirms-borrowers-don-t-pay-more-when-banks-hold-back-on-interest-rates>
- Bennett, R and Kottasz, R 2000, 'Practitioner perceptions of corporate reputation: An empirical investigation', *Corporate Communications: An International Journal*, vol. 5, no. 4, pp. 224–34.
- Bontis, N, Booker, LD and Serenko, A 2007, 'The mediating effect of organizational reputation on customer loyalty and service recommendation in the banking industry', *Management decision*, vol. 45, no. 9, pp. 1426–45.
- Boyatzis, RE 1998, *Transforming Qualitative Information: Thematic Analysis and Code Development*, Sage, New Delhi.
- Capgemini and Efma 2013, *World Retail Banking Report*, as cited in Deloitte Access Economics 2014, *Competition in Retail Banking*, Commissioned Report by ABA, Appendix E, available at <http://www.bankers.asn.au/FSI/ABA-submissions/ABA-submissions>

- Ernst & Young 2012, 'The Customer Takes Control: Consumer Banking Survey 2012', *Ernst & Young*.
- Fombrun, C and Van Riel, C 1997, 'The reputational landscape', *Corporate Reputation Review*, vol. 1, nos. 1 and 2, pp. 5–10.
- Gluyas, R and Murdoch, S 2012, 'NAB defends bank super-profits', *The Australian*, 27 September.
- Kehoe, J 2012, 'Big banks slash jobs, bristle over cuts', *Australian Financial Review*, 3 February 2012.
- Landy, H 2013, 'American Banker's 2013 Survey of Bank Reputations', *American Banker*, vol. 25, June.
- McMahon, S 2013, 'RBA to hold interest rates despite greedy banks not passing on cuts', *The Daily Telegraph*, 1 February.
- Münchenberg, S 2013, *Delivering what the community wants*, 14 March, speech delivered to the AB + F Mortgage Innovation Forum, Sydney.
- National Australia Bank 2013, *Volunteering and giving*, available at <http://cr.nab.com.au/what-we-do/volunteering-and-giving>
- Reserve Bank of Australia 2013, 'Banking fees in Australia', in June Quarter, *The Bulletin*, available at [www.rba.gov.au/publications/bulletin/2013/jun/index.html](http://www.rba.gov.au/publications/bulletin/2013/jun/index.html)
- Roy Morgan 2014, 'Satisfaction with banks reaches record high', press release 26 February, available at <http://www.roymorgan.com/findings/5451-satisfaction-with-banks-reaches-record-high-201402260024>
- Rowe, O 2012, *Reputation of Banking*, YouGov plc, London.
- Rugimbana, R, Quazi, A and Keating, B 2007, 'Study of a small Australian regional community after bank closures', *Journal of Management and World Business Research*, vol. 4, no. 1, pp. 10–21.
- Stansfield, G 2006, 'Thoughts on reputation and challenges for global financial institutions', *Geneva Papers on Risk and Insurance*, vol. 31, no. 3, pp. 470–79.
- Thomson, D and Jain, A 2010, 'Corporate Social Responsibility reporting: A business strategy by Australian banks?', *Corporate Ownership and Control*, vol. 7, no. 4, pp. 213–7.
- Trotta, A and Cavallaro, G 2012, 'Measuring corporate reputation: A framework for Italian banks', *International Journal of Economics and Finance Studies*, vol. 4, no. 2, pp. 21–30.
- Walsh, G and Beatty, SE 2007, 'Customer-based corporate reputation of a service firm: Scale, development and validation', *Journal of the Academy of Marketing Science*, vol. 35, no. 1, pp. 127–43.

FINSIA



**Head Office**

Level 18, 1 Bligh Street  
Sydney NSW 2000  
PO Box H99  
Australia Square  
NSW 1215 Australia

**T >** 1300 346 742  
61 2 9275 7900

**F >** 61 2 9275 7999  
membership@finsia.com

*finsia.com*

FINSIA - Financial Services Institute of Australasia  
ABN 96 066 027 389 ACN 066 027 389  
FINSIA NZ Ltd GST 96 458 150