IS MANAGEMENT QUALITY VALUE RELEVANT?

Vineet Agarwal
Cranfield School of Management

Richard Taffler*
The Management School, University of Edinburgh

and

Mike Brown
Nottingham Business School

Version 8.4: 15 January 2007

*Corresponding author:
Richard Taffler
Martin Currie Professor of Finance and Investment
The Management School
University of Edinburgh
William Robertson Building
50 George Square
Edinburgh
EH8 9JY

Tel: + 44 (0) 131 651 1375
Fax: + 44 (0) 131 651 3068
E-mail: Richard.Taffler@ed.ac.uk

Is management quality value relevant?

Abstract

Using a unique database of management ratings over a 14 year period, we find that quality of management *is* value relevant in that better managed firms have lower cost of equity, higher market valuations, more stable earnings, and higher profitability that persists over time. Paradoxically, while good management *appears* to be associated with lower subsequent market returns, this is entirely consistent with an informationally efficient market.

Keywords: cost of equity, expected returns, management reputation, *Management Today,* efficient market hypothesis

1. INTRODUCTION

Management quality is conventionally viewed as a key determinant of future firm performance. High executive compensation levels are predicated on the argument superior top management abilities will enhance shareholder value and the financial press lionises the CEOs of successful firms viewing them almost in heroic mould as being directly responsible for their corporations' successes (e.g. Blackhurst, 2001). In fact, Malmendier and Tate (2005) demonstrate that CEOs manage to extract significantly higher compensation after achieving superstar status. Likewise, sell-side analyst stock recommendations are predominantly driven by their views on the quality of the firm's management and strategy (Breton and Taffler, 2001).

A number of studies have addressed the issue of whether there is a relationship between quality of management (management reputation)[1] and firm performance. However findings are conflicting, with the relationship between management reputation and future stock returns variously positive, neutral (as predicted by theory) and negative, and similarly the relationship with future operating performance. This paper tests the relationship between quality of management and firm performance explicitly using a unique source of data and robust methods leading to clear conclusions. In particular, it addresses three important questions new to the literature: (i) is good management associated with lower cost of equity?, (ii) does good management have any influence on market value, and (iii) does superior operating performance persist in the case of better managed firms? Our results clearly demonstrate that well managed firms have lower cost of equity, have higher market value and continuing superior operating performance. 'Good' management enhances firm value and is *not* value destructive as argued, for example, by Malmendier and Tate (2005).

The resource based view of the firm states that sustainable competitive advantage (and superior operating performance over time) lies in possession of certain key resources (Barney, 1991). Under this framework, management quality itself is an intangible asset because it increases the firm's credibility with employees, investors, customers and suppliers (Wade et al., 2006). D'Aveni (1990) also argues that managerial prestige improves organizational legitimacy and plays an important symbolic role in organizational performance and survival. Firms with well respected managements generate an 'illusion of competence' and are thus supported by their different stakeholder groups. In a similar vein, Suchman (1995) argues that appropriate media coverage can render firms more desirable and enhance access to resources as stakeholders are most likely to engage with organizations they consider to be more predictable and trustworthy. Similarly, Pollock and Rindova (2003) and Johnson et al. (2005) argue that the financial press does not only provide information for investment decisions but also influences the framework used to make such decisions. Cohen and Dean (2005) and Lester et al. (2006) find that having a reputable management at the helm at the time of an initial public offering (IPO) reduces information asymmetry leading to lower underpricing. Further, Chemmanur and Paeglis (2005) find that such firms have higher long term returns and stronger operating performance after the IPO; Chemmanur et al. (2004) show similar results in the case of firms making seasoned equity offerings.

On the other hand, Hayward et al. (2004) argue that good CEO reputation could arise from over attribution of superior performance to management quality. This can lead to CEOs becoming overconfident and also committed to strategies that worked in the past, hence making the firm less adaptable to changes in their operating environments leading to poor future performance. Similarly, Malmendier and Tate (2005) argue that good CEO

[1] The terms quality of management and management reputation are used synonymously in this paper.

reputation leads to behavioural distortions, poorer operating performance and value destruction. In parallel vein, Wade et al. (2006) find firms that hire star CEOs earn negative returns over the next year even though operating performance does not suffer. They argue this could be because of either the 'burden of celebrity', i.e., heightened expectations that are not realised, or because the market anticipates the behavioural distortions of star CEOs and penalises their firms, with impact appearing in operating performance only with a lag.

In efficient markets, the implications of good firm reputation will already be impounded in stock prices and not associated with abnormal stock returns in the future. Better managed firms will be rewarded with lower cost of equity and higher market values according to the resource based view of the firm, or penalised with higher cost of equity and lower market values if better management reputation leads to self-serving and value destroying behaviour. In either case, management reputation is value relevant and its impact will be manifested in firm market value and future operating performance, rather than stock returns.

A number of studies, typically employing the overall rankings from *Fortune* magazine's *America's Most Admired Survey of Corporate Reputations*, claim investors can outperform the market by investing in the stocks of firms with the highest management reputations. However, the studies of Filbeck and Preece (1995 and 2003) and Filbeck et al. (1997) are based on a single year's survey and lack any industry adjustment or appropriate benchmarking. Antunovich et al. (2000) use *Fortune* surveys and rankings from 1983-1995 inclusive and report outperformance by their top decile firms over a five-year holding period. However, they ignore momentum and even acknowledge industry-specific effects explain about half their apparent mispricing.[2] Anderson and Smith (2006) employing

[2] Anginer et al. (2007) also show their results are period specific, reversing in the 10 years subsequent to their sample period.

Fortune ratings between 1983 and 2004 find that their portfolio of the top 10 ranked firms each year earns positive abnormal returns over the following year. However, these results may again reflect lack of industry controls and be unrepresentative.[3] Contrary evidence, however, is provided by McGuire et al. (1990), Antunovich and Laster (1999) and Shefrin and Statman (2003) who find no relationship between *Fortune's* rankings and subsequent one-year stock returns. Nonetheless, these latter results are not inconsistent with good reputation being value relevant.

Malmendier and Tate (2005) look at the subsequent performance of firms of award winning CEOs. While their focus is on individuals rather than firms, the characteristics of their sample are similar to our sample. They find that subsequent to winning the award, such firms earn lower returns using the market model. However, their results are sensitive to their returns generating models with no abnormal returns over one year using a matched control sample or a four factor model. Similarly the results in Wade et al. (2006) are sensitive to choice of benchmark.

Crucially, the existing literature universally uses realised returns although they are a poor measure of expected returns (Elton, 1999). Thus conflicting results could be due to an inappropriate returns generating process. An important and original contribution of our study is that we work with expected returns explicitly derived using analysts' earnings forecasts following Easton (2004) so that our risk adjustment is independent of realised returns. In addition, since in accordance with theory we would expect quality of management, if a valid construct, will already be appropriately priced by the market, we adopt the Ohlson (1995) valuation model to test for value relevance of our management reputation rankings. We also provide a better control for risk by controlling for industry

[3] As demonstrated by Anginer et al. (2007), who also show the next three 10 stock portfolios do poorly on the same basis. We also find no parallel evidence whatsoever in our very similar UK based dataset.

effects through portfolios formed using within industry rankings and a formal four-factor model approach.

As well as considering market returns, we also examine the parallel question of the putative relationship between management quality and subsequent firm operating performance. The existing literature is similarly conflicting. McGuire et al. (1990) provide some weak evidence in support of this relationship and Bloom and Van Reenan (2006) strong evidence that contemporaneous profitability is associated with good management practice. However, Wade et al. (2006) and Nanda et al. (1996) find no such evidence and Malmendier and Tate (2005) report an apparent inverse relationship. However, all these studies focus on the following year's operating performance i.e., are high reputation managements associated with higher profits next year than lower ranked managements, whereas the important question is persistence of profits. If good management leads to strong operating performance, then for high quality management there will be slower expected mean reversion in profits if current profitability is high, and more rapid mean reversion if it is low and conversely for poor quality management.

Our main findings are: (i) better managed firms have lower cost of equity and, on a risk-adjusted basis, subsequent performance of well managed firms is no different to that of poorly managed firms, (ii) better management reputation is associated with higher market value demonstrating its value relevance, and (iii) better managed firms have better operating performance that persists for longer. Our findings are consistent with the resource based view of the firm in that management quality is, on this basis, a valuable resource. They are also consistent with an informationally efficient market in that superior returns *pace* the views of analysts and investors, cannot be earned by trading on quality of

management. Our results are clearly at variance with, in particular, Malmendier and Tate (2005) who argue that 'good' managers destroy firm value.

The next section describes our data and section 3 our main findings. The final section, section 4, provides a summary of our results and our contribution.

2. DATA

(i) The most admired company survey

This paper uses the *Management Today's* survey of *Britain's Most Admired Companies* data which has been published annually since 1990 (except for 1993). This is closely based on the equivalent *Fortune* magazine's *Fortune* magazine's *America's Most Admired Survey of Corporate Reputations* published annually since 1983, being conducted on a similar basis and with virtually identical questions set.

Specifically, each year the ten largest companies in terms of market capitalisation are identified in around twenty five industry sectors and rated on nine indicators of firm quality by respondents. The specific characteristics rated are quality of management, financial soundness, quality of products, ability to attract and retain top talent, value as a long-term investment, capacity to innovate, use of corporate assets, community and environmental responsibility and quality of marketing. Companies are rated on a scale of zero (poor) to ten (excellent) on each quality measure and the nine scores are also summed to arrive at a total score. Survey questionnaires are sent out in May and collected by September with the survey results published in the December issue of *Management Today.* Well over two thousand industry experts are surveyed each year with two thirds responding.

However, what are the *Fortune* and *Management Today* surveys really measuring? McGuire et al. (1990) demonstrate the very high correlations between the different perceptions of firm quality constituting the overall *Fortune* average quality rating and several measures of prior firm financial and stock market performance. They conclude 'high *ex post* excess risk-adjusted returns lead evaluators to view the firm as high quality in all dimensions'. Fryxell and Wang (1994) similarly conclude that the *Fortune* panel of industry experts is implicitly rating firm 'reputation' in terms of investment potential and that they are not able to differentiate the different *Fortune* constructs due to 'halo' effects. Shefrin and Statman (1995) find the quality of management and value as long term investment measures are highly correlated (R^2 = 86%), showing at least *Fortune's* panel of industry experts believes well-managed companies to be synonymous with good investments.[4]

Britain's Most Admired Companies survey, as with the *Fortune* survey, is based on peer perception of senior executives of other companies within each industrial sector and senior sector analysts in the UK as identified by the Extel Financial annual ranking of investment analysts survey. While quality of management is a difficult concept to measure, both these groups of experts are very familiar with firms in their sector and are thus likely to be both informed and authoritative in their judgements. The survey scores will therefore reflect the consensus of experts and, despite potential problems, are likely to be more reliable than alternative measures.

[4] In results not reported here we find parallel evidence with our UK based data.

(ii) Data

Our unique access to the *Management Today* magazine's *Britain's Most Admired Companies* annual survey database allows us to work with the quality of management variable directly, rather than being constrained to using the overall corporate reputation ratings.[5] We use detailed ratings across 14 annual surveys (1990-2004 excluding 1993). Companies delisted before January of the year subsequent to the publication of the survey are removed from the analysis. This yields a total of 3,204 company years, or an average of 229 companies per survey.

Monthly stock returns and market capitalisations are from the London Share Price Database (LSPD) distributed by London Business School. Risk free rates, represented by one-month Treasury bill rates, are collected from DATASTREAM and the numerator of the book/market (B/M) ratio is taken from *Company Analysis* provided by Thomson Financial. Analysts' earnings forecasts, past EPS growth rates, and past EPS stability measures are collected from I/B/E/S.

To test whether the best ranked companies in each industry in each year earn higher returns than the worst ranked companies, we form 10 portfolios based on within industry quality of management rankings.[6] We then compute 12-month buy-and-hold stock returns in excess of the risk-free return for the portfolio composed of the top ranked companies (rank = 1) and for the portfolio with bottom ranked companies (rank = 10). Firms which are delisted for any reason are considered to earn the respective portfolio return to the end of their holding period. The annual buy-and-hold return on stock i is computed as:

[5] Although the two measures in this survey are highly correlated at 0.87, the most admired company total score, which is the only measure publicly available, and then only for the best rated 100 firms, is made up of nine different measures of which quality of management is only one.

[6] In contrast to prior literature, using such rankings-based sorts allows us to control for industry effects as each portfolio will have one firm from each industry.

$$BHR_i = \prod_{t=1}^{12} R_{it} \quad (1)$$

.

and the annual buy-and-hold return for portfolio P follows as:

$$BHR_P = \frac{1}{n} \sum_{i=1}^{n} BHR_i \quad (2)$$

where n is the number of firms in portfolio P.

3. RESULTS

(i) Summary statistics

Table 1 provides the summary statistics for our sample broken down by decile rankings on quality of management. The average firm has a market capitalisation of £4.02bn and an annual mean buy-and-hold return (BHR) of 14.4% over the 12-month period from the start of May in year t-1 to the end April in year t immediately prior to the commencement of year t's survey. Post-survey mean BHR from January in year t+1 to December in year t+1 is 16.1%.

Table 1 here

However, more interestingly, there is an almost direct monotonic relationship between management quality and firm size with best ranked decile average firm market capitalisation of £11.1bn and worst ranked decile average firm market capitalization of only £1.8bn. A broadly similar relationship exists between decile ranking and mean book/market (B/M) ratio derived as at 30 April year t. Mean top decile firm B/M ratio is 0.40 and mean bottom decile firm B/M ratio is almost double at 0.76.

Column 4 of Table 1 shows prior returns seem to be strongly positively related to overall decile ranking with the highest decile having mean firm BHR of 20.6% and the lowest decile mean firm BHR of 5.1%, the difference being statistically significant at the

5% level (t = 2.44).[7] On the other hand, post-survey mean BHR (column 5) is negatively correlated to ranking, with the worst decile firms outperforming the best decile firms by 5.9% per year, a difference that is statistically significant (t = 2.21).[8] The last two columns of the table show that better ranked firms register far stronger annual EPS growth (13.5% for best decile against 1.2% for worst decile) and less variability (16.7% for best decile against 27.1% for worst decile) over the 5-years prior to the respective annual survey.

This preliminary analysis suggests highly ranked firms tend to be large, are 'glamour' stocks and have strong prior returns and earnings performance, whereas the worst ranked firms are much smaller, are 'value' stocks and have strongly underperformed both in terms of stock returns and earnings growth. Also, in line with Malmendier and Tate (2005) and Wade et al. (2006), there appears to be evidence that subsequent stock returns are negatively related to management reputation. We explore these issues in more detail in the following sub-sections.

(ii) Quality of management and subsequent returns

We would expect well managed firms to be better insulated from industry or economy wide factors and hence such firms should have more stable earnings and less risky cash flows, leading to lower expected returns. This sub-section first explores the subsequent risk adjusted returns from investing in well and poorly managed firms using the conventional Carhart (1997) four factor approach. It then adds to the existing literature by estimating expected returns using analyst forecasts.

[7] The best decile firms outperformed the worst decile firms in 12 out of 14 years in our sample. The non-parametric Wicoxon rank sum test statistic is 2.29 (exact p = 0.02).

[8] The best decile firms underperformed the worst decile firms in 10 out of 14 years in our sample. The non-parametric Wicoxon rank sum test statistic is 1.85 (exact p = 0.068).

A. Factor model based risk-adjusted subsequent returns

To test whether our top decile firms earn higher returns than our bottom decile firms, we form 10 portfolios based on quality of management rankings as before, and compute monthly equally-weighted portfolio returns for each portfolio for the period January to December of year t + 1 (surveys are published in December of year t). If a stock is delisted during the holding period, we assume that it earns its portfolio returns for the rest of the holding period. Portfolios are formed every January. The following Carhart (1997) four-factor model is then used:

$$R_{Pt} - R_{Ft} = a + b\,(R_{Mt} - R_{Ft}) + s\,SMB_t + h\,HML_t + w\,WML_t + e_t \qquad (3)$$

where:

R_{Pt} = the return on portfolio P during month t,

R_{Ft} = risk-free rate (one-month Treasury bill rate) as at the beginning of month t,

R_{Mt} = value-weighted return in month t on the market,

SMB_t = return on the mimicking portfolio for the size factor in month t,

HML_t = return on the mimicking portfolio for the B/M factor in month t, and

WML_t = return on the mimicking portfolio for the momentum factor in month t.

HML and SMB are constructed as by Fama and French (1993) using the 30^{th} of September of each year as the portfolio formation date. WML is constructed as in Carhart (1997).

Table 2 presents the results of the time-series regressions on the 10 portfolios formed on quality of management ranking. It shows that none of the ten portfolios earns excess returns on a risk adjusted basis. The intercept varies between –0.08% (portfolio 8) and 0.36% (portfolio 10) and none of the ten intercepts is statistically significant. The arbitrage portfolio long on best ranked firms and short on worst ranked firms earns a statistically

insignificant abnormal return of -0.35% per month. Our results are similar to those of Malmendier and Tate's (2005) results with four factor model and in sharp contrast to those of Wade et al. (2006) whose simple market model approach does not deal appropriately with risk. In fact results not reported here show that as in Malmendier and Tate (2005) the single factor model generates a statistically significant abnormal return of -0.67% per month (t = 2.10) for the arbitrage portfolio demonstrating the importance of proper control for risk.

Table 2 here

Our results show that, consistent with informationally efficient markets, and in contrast with the existing literature, there is no significant difference in future stock returns between well and poorly managed firms once risk is appropriately controlled for.

B. Quality of management and cost of equity

Existing research universally uses past realized returns as a proxy for future expected returns on the basis that, in efficient markets, realized returns are an unbiased estimate of expected returns. However, Elton (1999) casts doubt on this argument by pointing out that there have been extended periods when risky assets have underperformed riskless assets. He concludes (p. 1199): '… the more logical explanation for these anomalous results is that realized returns are a very poor measure of expected returns…'. Fama and French (1997) demonstrate the margin of error for models using past returns, even at the industry level, is about 30%, and is likely to be much greater at the individual security level. They acknowledge three problems in using realized returns to estimate expected returns: (i) misspecified model, (ii) imprecise factor returns, and (iii) imprecise factor loadings.

There is a growing body of literature that employs fundamentals rather than past returns to estimate cost of equity (see e.g. Botosan and Plumlee, 2005; Claus and Thomas, 2001; Gebhardt et al., 2001; Easton, 2004; Fama and French, 2002; O'Hanlon and Steele, 2000). We follow the method of Easton (2004) to estimate expected returns from current prices and forecasts of earnings separately using the price/earnings (P/E) ratio and the price earnings growth (PEG) ratio for three reasons: (i) they are based on the same principles as Ohlson (1995), the model we use for tests of the value-relevance of management quality, (ii) the two ratios are widely used in investment, and (iii) Botosan and Plumlee (2005) show that the PEG based estimate of cost of equity is an unbiased metric.

Easton's (2004) valuation formula (equation 6, p. 79) is given by:

$$P_0 = \frac{E_1}{r} + \frac{1}{r}\sum_{t=1}^{\infty}\frac{agr_t}{(1+r)^t} \qquad (4)$$

where:

P_0 = stock price at time 0,

E_1 = Expected earnings per share at time 1, proxied by the consensus analysts' earnings forecast,

r = required rate of return, and

agr = expected abnormal growth in earnings.

Similar to the residual income valuation framework, the first term of this equation is the capitalised value of earnings, and the second term is the present value of the stream of abnormal earnings. If we assume that expected abnormal growth in earnings (agr) = 0, then the valuation equation collapses to:

$$P_0 = \frac{E_1}{r} \qquad (5)$$

and this gives the required return as the earnings/price ratio.

Again, if we assume that the perpetual growth rate in earnings (Δagr) = 0 and dividends in year 1 = 0, then the valuation equation can be rearranged to obtain:

$$r = \sqrt{(E_2 - E_1)/P_0} \quad (6)$$

which is the square root of the inverse of the PEG ratio.

To estimate the cost of equity using the P/E ratio, we require expected earnings over the next 12 months (E_1) and the share price at the end of December of year t (P_0). Since a majority of the firms in our sample do not have December year ends, we use linear interpolation between two consensus analyst forecasts to arrive at next 12 months earnings.[9] We also use linear interpolation to obtain earnings forecasts for the further 12 months period (E_2) for our PEG ratio.[10]

Columns 2 to 4 of table 3 report the average cost of equity derived on a P/E basis and columns 5 to 7 the average cost of equity derived on a PEG basis for our ten quality of management decile portfolios. Lack of impact of *Management Today's* quality of management rating on the cost of equity is consistent with the fact that management reputation is built up over a long time period, and does not tend to change much on a year-on-year basis. In line with Easton (2004), our cost of equity estimates using the PEG ratio are higher than those estimated using the P/E ratio.

Table 3 here

Table 3 shows cost of equity increases almost monotonically as quality of management decreases; the difference between the average cost of equity of the best and worst managed

[9] For instance, in December 2000, for a firm with March year-end we estimate E_1 by linear interpolation of the forecasts for years ending March 2001 and March 2002 as at December 2000.

[10] For the same firm, we estimate E_2 by linear interpolation of the forecasts for March 2002 and March 2003 as at December 2000.

firms is -6.7% (t = 3.60) using the P/E ratio and -4.7% (t = 3.05) using the PEG ratio.[11] The difference in expected returns is strikingly similar to the difference in average next year BHR from table 1 (5.4%). The difference in residual returns (realized – expected) between the best and worst ranked deciles is a statistically and economically insignificant 1.4% per year (t = 0.78) on the P/E basis, and 1.0% per year (t = 0.43) on the PEG basis.[12] Consistent with the evidence of Fama and French (2002) among others on equity risk premia, realised returns (table 1) are much higher (an average of 9.7% above the risk-free rate) than expected returns (an average of 2.0% above the risk-free rate on the P/E basis and 3.5% above the risk-free rate on the PEG basis). Consistent with the results of the factor model approach of the previous sub-section, the best managed firms have lower expected returns than the worst managed firms.

Finally, to test whether quality of management has an influence on subsequent stock returns after taking into account expected returns, we employ Fama and MacBeth (1973) regressions of the form:

$$\{F_{it}\} = a + b\ QM_{it} + e_{it} \qquad (7)$$

where:

F_{it} is the respective dependent variable and QM_{it} is the quality of management ranking for portfolio i at the end of December of year t.

Results are presented in table 4. The positive (0.66) and statistically significant (t = 2.26) coefficient on the quality of management variable in model (i) shows that poor management is associated with significantly higher realised stock returns (BHR) over the next year, consistent with Malmendier and Tate (2005) and Wade et al. (2006). However,

[11] The cost of equity for the best managed firms is lower than that for the worst firms in 13 out of our 14 sample years on both bases. The associated non-parametric Wilcoxon rank sum z-statistic is 3.04 (exact p = 0.002).

models (ii) and (iii) show that poor management is also associated with higher *expected* returns on both P/E (coefficient = 0.60, t = 4.93) and PEG (coefficient = 0.46, t = 4.66) bases, indicating these firms are viewed in the market as higher risk. Finally, models (iv) and (v) show that the quality of management rankings have no influence on residual returns (realised – expected), with the coefficients on QM statistically insignificant for both Res_{PE} (t = 0.23) and Res_{PEG} (t = 0.70). As such, table 4 confirms the evidence of table 2 that the subsequent realised returns of well managed firms are consistent with differences in level of risk. Our results, based on *expected* returns in contrast to the existing literature, again clearly demonstrate the market is informationally efficient in this context.

Table 4 here

(iii) Is management quality value relevant?

The results of the previous sub-section demonstrate that reputation rankings have no influence on subsequent stock market performance of firms once we control for expected returns. This is consistent with market efficiency – publicly available information, including that about quality of management, will already have been impounded in market prices, and lack of subsequent outperformance does not necessarily mean that it is not value relevant.

We employ the well established Ohlson (1995) valuation model to assess value relevance of our management quality metric. The model provides an appropriate framework to measure the incremental contribution to firm value of variables other than book value and current earnings (Quirin et al., 2000). It explicitly recognises that some value relevant information will appear in accounting numbers with a time lag. Since

[12] The non-parametric Wilcoxon rank sum z-statistic is 1.35 (exact p = 0.18) on the P/E basis and 0.16 (exact p = 0.88) on the PEG basis.

management reputation is built over time,[13] we follow Easton (1999) and use price level rather than returns regression. Ohlson (1995) derives his valuation function (equation 7, p. 670) as:

$$P_t = b_1(E_t - D_t) + b_2\, BVE_t + b_3\, \nu_t \quad (8)$$

where:

P_t = market value of the firm's equity at time t,

E_t = earnings of the firm for the period (t-1, t),

D_t = net dividends paid at time t,

BVE_t = net book value at time t, and

ν_t = information other than abnormal earnings.

We make several modifications to the basic valuation equation:

(i) We assume zero dividends at time t,[14]

(ii) Information other than that contained in current earnings and book value is assumed to be represented by management quality,

(iii) Table 1 above, as well as the extant literature (e.g. McGuire et al., 1990), demonstrate prior firm performance influences quality of management rankings, leading to endogeneity between these measures and market value and hence biased OLS coefficients. Thus, we employ two-stage least squares regressions with lagged values of market value, B/M ratio, return on assets and prior year returns as instrumental variables in the first stage. We then use the estimated quality of

[13] Table 3 highlights the lack of change in cost of equity from t-1 to t+1 consistent with the stability of firm quality of management rankings over time.

[14] This is similar to the formulation used by Barth et al. (1998) and Graham et al. (2003) among others.

management scores to generate a new set of rankings in the following second stage regression:[15]

$$MV_{it} = a + b_1 NI_{it} + b_2 BVE_{it} + b_3 \hat{Q}M_{it} + e_{it} \quad (9)$$

where:

MV_{it} is the market value of equity of firm i at the end of December of year t,

NI_{it} is the net income of firm i for year t,

BVE_{it} is the book value of equity for firm i at the end of year t,

$\hat{Q}M_{it}$ is the quality of management within industry rank for firm i in year t using scores generated by the first stage regression.

(iv) Finally, Barth and Kallapur (1996) argue that the coefficient estimates of such price level equations could be biased due to scale differences in the cross-section of firms. Thus following Easton and Sommers (2003), who argue that market capitalization is the appropriate scale variable, we use weighted least squares regression to remove the bias due to scale.

In an informationally efficient market, if better management is an asset (following the resource based view of the firm) then it will generate abnormal income in the future and b_3 will be negative. However, if good management reputation leads to behavioural distortions and value destruction (Malmendier and Tate, 2005), it will lead to lower income in the future and b_3 will be positive. If management quality is not relevant to firm valuation, b_3 will be zero. The results of Fama and MacBeth (1973) regressions using equation (9) are presented in table 5. As can be seen, the coefficient on quality of management is negative

[15] Although the standard errors of such a second stage regression formulation are biased, this does not matter here since these standard errors are not used to compute t-statistics in Fama-MacBeth regressions.

and highly significant (t = 3.84) demonstrating that better management is associated with higher market value. [16]

Table 5 here

Our findings so far show that while management quality is value relevant and has a positive impact on market value, the market is informationally efficient with respect to this information. Lack of relationship between management quality and subsequent returns is therefore not surprising.

(iv) Quality of management and future operating performance

The results of the previous sub-section demonstrate that the market's belief that well managed firms will earn superior future profits is reflected in market values. While there is a consensus in the literature that prior financial performance is an important determinant of management reputation, there is little agreement on whether such management skill has any impact on future financial performance. Malmendier and Tate (2005) find the performance of firms with 'superstar' CEOs declines after the award year while Wade et al. (2006) find no difference in operating performance of firms subsequent to their CEOs receiving a *Financial World* CEO of the year award. On the other hand Bloom and Van Reenan (2006) find good management practices are associated with higher profitability.

If superior (inferior) past financial performance is due to good (bad) luck rather than any superior capability, there will be strong mean reversion in profitability in the following year. On the other hand, if management is an inimitable and non-tradeable asset that provides firms with sustainable competitive advantage, then not only should firms with superior managements earn higher current profits, their above normal profitability should

[16] The coefficient on quality of management is negative for 12 out of the 14 years (p = 0.013 for sign test).

persist for a longer time. In contrast to existing work which only considers subsequent profitability, we also test for degree of mean reversion in operating profits on an individual firm basis.

Table 6 presents summary statistics for the profitability of firms by portfolio decile. It shows that the profitability of firms in all ranking deciles (except the worst) decreases after the ranking year. The results are consistent with Wade et al. (2006) but inconsistent with Malmendier et al. (2005), better managed firms do not experience significant deterioration in operating performance in the year subsequent to the ratings. Our evidence is also consistent with that of Fama and French (1995) – although better managed firms (which are also larger and have lower B/M) experience a decline in profitability they nonetheless remain much more profitable than poorly managed firms (which are smaller and have high B/M).

Table 6 here

(v) Quality of management and mean reversion in profitability

Finally, to test the hypothesis that better ranked firms have slower mean reversion in profitability, we again run Fama and MacBeth (1973) cross-sectional regressions of a form similar to Fama and French (2000):[17]

$$RoA_{it+1} - RoA_{it} = a + b_1 RoA_{it} + b_2 QM_{it} + b_3 NDP_{it} + b_4 DP_{it}*QM_{it} + b_5 NDP_{it}*QM_{it} + b_6 (RoA_{it} - RoA_{it-1}) + e_{it} \quad (10)$$

where:

RoA is the earnings before interest and taxes divided by book value of total assets,

[17] This formulation assumes quality of management and realized change in next year's profits are not co-determined. Consistent with this argument, adopting a parallel two-stage least squares regression approach as in the previous sub-section provides essentially identical results.

QM is the quality of management within industry rank,

NDP is the negative deviations from industry median RoA,

DP is the difference between RoA for firm i and industry median RoA, and

i and t are the firm and time subscripts respectively.

Results are presented in table 7. The coefficient on RoA shows strong mean reversion in profitability, on average 14% of the RoA figure. The lagged change in profitability coefficient is also large and significant. Importantly, however, the coefficient on quality of management is negative (-0.34) and highly significant (t = 3.06) indicating that better managed firms, consistent with our expectations, have slower mean reversion. The coefficients on other terms are not significant showing that speed of mean reversion does not differ when profitability is below average or above average.[18]

Table 7 here

Our findings clearly demonstrate the value of good management as measured by *Management Today* rankings, in contrast to existing work. Past superior performance of well managed firms is not (purely) due to luck, it is (at least partly) due to the superior ability of the management as evidenced by continued high profitability and slower mean reversion in profitability for such firms.

4. SUMMARY AND DISCUSSION

This paper makes a unique contribution to the debate on whether management quality is a meaningful construct. Specifically, we work with a clean measure of quality of management, Easton (2004) expected returns in addition to realised returns, Ohlson (1995) test of value relevance and the Fama and French (2000) test of mean reversion in

[18] The coefficient on quality of management ranking is negative in 12 out of 14 years (p = 0.013 for the sign test).

profitability. Our more appropriate empirical methods lead to much clearer and more definitive results than existing work. In particular, we find that while firms with good management appear to underperform firms with poor management, as in earlier studies, this is just a manifestation of the lower cost of equity of well managed enterprises. Also, consistent with the resource based view of the firm, and *contra* Malmendier and Tate (2005), we find that good management enhances firm value: well managed firms have higher profitability, are able to sustain superior operating performance for longer, and are rewarded by higher market valuations. The observed lack of relationship on a risk adjusted basis between management quality and subsequent returns is due to such information being efficiently priced by the market, rather than due to its lack of inherent value.

References

Anderson, J. and G. Smith (2006), 'A Great Company can be a Great Investment', *Financial Analysts Journal*, Vol. 62(4), pp. 86-93.

Anginer, D., K.L. Fisher, M. Statman (2007), 'Stocks of Admired Companies and Despised Ones', Unpublished manuscript, Leavey School of Business, Santa Clara University.

Antunovich, P. and D.S. Laster (1999), 'Do Investors Mistake a Good Company for a Good Investment?', *Federal Reserve Bank of New York*, *Staff Report,* no. 60.

Antunovich, P., D.S. Laster and S. Mitnick (2000), 'Are High-Quality Firms Also High-Quality Investments?', *Current Issues in Economics and Finance,* Vol. 6, pp. 1-6.

Barney, J. (1991), 'Firm Resources and Sustained Competitive Advantage', *Journal of Management*, Vol. 17, pp. 99-120.

Bath, M., W. Beaver, W. Landsman (1998), 'Relative Valuation Roles of Equity Book Value and Net Income as a Function of Financial Health', *Journal of Accounting and Economics*, Vol. 25, pp. 1-34.

Blackhurst, C. (2001), 'Britain's Most Admired Companies', *Management Today,* December, pp. 43-51.

Bloom, N. and J. Van Reenan (2006), 'Measuring and Explaining Management Practices across Firms and Countries', forthcoming *Quarterly Journal of Economics*.

Botosan, C. and M. Plumlee (2005), 'Assessing Alternative Proxies for the Expected Risk Premium', *Accounting Review*, Vol. 80, pp. 21-53.

Breton, G. and R. J. Taffler (2001), 'Accounting Information and Analyst Stock Recommendation Decisions: A Content Analysis Approach', *Accounting and Business Research,* Vol. 31, pp. 91-101.

Brown, B. and S. Perry (1994), 'Removing the Financial Performance Halo from *Fortune's* "Most Admired" Companies', *Academy of Management Journal*, Vol. 37, pp. 1347-1359.

Carhart, M. (1997), 'On the Persistence in Mutual Fund Performance', *Journal of Finance*, Vol. 52, pp. 57-82.

Chemmanur, T. and I. Paeglis (2005), 'Management Quality, Certification, and Initial Public Offerings', *Journal of Financial Economics*, Vol. 76, pp. 331-368.

Chemmanur, T., I. Paeglis and K. Simonyan (2004), 'Management Quality, Financial Policies, and Performance of Seasoned Equity Issuers', *Working Paper,* Caroll School of Management, Boston.

Claus, J. and J. Thomas (2001), 'The Equity Risk Premium as Low as Three Percent? Evidence from Analysts Earnings Forecasts for Domestic and International Stocks', *Journal of Finance*, Vol. 56, pp. 1629-1666.

Cohen, B.D. and T.J. Dean (2005), 'Information Asymmetry and Investor Valuation of IPOs: Top Management Team Legitimacy as a Capital Market Signal', *Strategic Management Journal*, Vol. 26, pp. 683-690.

D'Aveni, R. (1990), 'Top Managerial Prestige and Organizational Bankruptcy', *Organization Science*, Vol. 1, pp. 121-142.

Easton, P. (1999), 'Security Returns and the Value Relevance of Accounting Data', *Accounting Horizons*, Vol. 13, pp. 399-412.

_____ (2004), 'PE Ratios, PEG Ratios, and Estimating the Expected Rate of Return on Equity Capital', *Accounting Review*, Vol. 79, pp. 73-95.

_____ and G. Sommers (2003), 'Scale and the Scale Effect in Market-Based Accounting Research', *Journal of Business Finance and Accounting*, Vol. 30, pp. 25-55.

Elton, E. (1999), 'Expected Return, Realized Return, and Asset Pricing Tests', *Journal of Finance*, Vol. 54, pp. 1199-1220.

Fama, E. and K. French (1993), 'Common Risk Factors in the Returns on Stocks and Bonds', *Journal of Financial Economics*, Vol. 33, pp. 3-56.

_____(1995), 'Size and Book-to-market Factors in Earnings and Returns', *Journal of Finance*, Vol. 50, pp. 131-155.

_____(1997), 'Industry Costs of Equity', *Journal of Financial Economics*, Vol. 43, pp. 153-193.

_____(2000), 'Forecasting Profitability and Earnings', *Journal of Business*, Vol. 73, pp. 161-175.

_____(2002), 'The Equity Premium', *Journal of Finance*, Vol. 58, pp. 609-636.

Fama, E. and J.D. MacBeth (1973), 'Risk, Return, and Equilibrium: Empirical Tests', *Journal of Political Economy*, Vol. 81, pp. 607-636.

Filbeck, G., R. Gorman and D. Preece (1997), 'Fortune's Most Admired Firms: An Investor's Perspective', *Studies in Economics and Finance*, Vol. 18, pp. 74-93.

Filbeck, G. and D. Preece (1995), 'Britain's Most Admired Firms: Are They Worth it?', *Journal of Global Business*, Vol. 6, pp. 23-31.

_____ (2003), 'Fortune's Best 100 Companies to Work for in America: Do They Work for Shareholders?', *Journal of Business Finance and Accounting*, Vol. 30, pp. 771-797.

Fryxell, G. and J. Wang (1994), 'The Fortune Corporate 'Reputation' Index: Reputation for What?', *Journal of Management*, Vol. 20, pp. 1-14.

Gebhardt, W., C. Lee and B. Swaminathan (2001), 'Towards an Ex-ante Cost of Capital, *Journal of Accounting Research*, Vol. 39, pp. 135-176.

Graham, R., C Lefanowicz and K. Petroni (2003), 'The Value-relevance of Equity Method Fair Value Disclosures', *Journal of Business Finance and Accounting*, Vol. 30, pp. 1065-1088.

Hayward, M., V. Rindova and T. Pollock (2004), 'Believing One's Own Press: The Causes and Consequences of CEO Celebrity', *Strategic Management Journal*, Vol. 25, pp. 637-653.

Johnson, J., A. Ellstrand, D. Dalton and C. Dalton (2005), 'The Influence of the Financial Press on Stockholder Wealth: The Case of Corporate Governance', *Strategic Management Journal*, Vol. 26, pp. 461-471.

Lester, R. S. Certo, C. Dalton, D. Dalton and A. Cannella Jr (2006), 'Initial Public Offering Investor Valuations: An Examination of Top Management Team Prestige and Environmental Uncertainty', *Journal of Small Business Management*, Vol. 44, pp. 1-26.

Malmendier, U. and G. Tate (2005), 'Superstar CEOs', Unpublished manuscript, Stanford University.

McGuire, J., T. Schneeweis and B. Branch (1990), 'Perceptions of Firm Quality: A Cause or Result of Firm Performance', *Journal of Management*, Vol. 16, pp.167-180.

Nanda, S., T. Schneeweis and K. Eneroth (1996), 'Corporate Performance and Firm Perception: The British Experience', *European Financial Management*, Vol. 2, pp. 197-221.

O'Hanlon, J. and A. Steele (2000), 'Estimating the Equity Risk Premium Using Accounting Fundamentals', *Journal of Business Finance and Accounting*, Vol. 27, pp. 1051-1083.

Ohlson, J. (1995), 'Earnings, Book Values, and Dividends in Equity Valuation', *Contemporary Accounting Research*, Vol. 11, pp. 661-687.

Pollock, T.G. and V.L. Rindova (2003), 'Media Legitimization Effects in the Market for Initial Public Offerings', *Academy of Management Journal*, Vol. 46, pp. 631-642.

Quirin, J., K. Berry and D. O'Bryan (2000), 'A Fundamental Analysis Approach to Oil and Gas Firm Valuation', *Journal of Business Finance and Accounting*, Vol. 27, pp. 785-820.

Shefrin, H. and M. Statman (2003), 'The Style of Investor Expectations', in T. D. Coggin and F. J. Fabozzi (eds.), *The Handbook of Equity Style Management* (Wiley Finance), pp. 195-218.

Suchman, M.C. (1995), 'Managing Legitimacy: Strategic and Institutional Approaches', *Academy of Management Review*, Vol. 20, pp. 571-610.

Wade, J., J. Porac, T. Pollock and S. Graffin (2006), 'The Burden of Celebrity: The Impact of CEO Certification Contests on CEO Pay and Performance', *Academy of Management Journal*, Vol. 49, pp. 643-680.

Table 1: Summary statistics of decile portfolios based on quality of management

Each year, all the companies in the *Britain's Most Admired Companies* list that were listed on the London Stock Exchange in January of the calendar year immediately after the publication of the respective annual survey are aggregated into ten portfolios based on their within industry quality of management rank. The 'best' portfolio contains all the companies ranked 1 in each industry and the 'worst' portfolio contains all the companies ranked 10 in each industry. Mean size is the average of the mean market capitalisations of the stocks in each portfolio on 30th April of the survey year (t), mean B/M is the average of the mean B/M of the stocks in each portfolio on 30th April of year t, prior year BHR is the annual buy-and-hold return on the portfolios from May of year t-1 to April of year t, and post-survey BHR is the annual buy-and-hold return on the portfolios from January to December of year t+1. Annual EPS growth is the average annual EPS growth, and EPS stability is the standard deviation of EPS over the five years prior to portfolio formation. B/M is the ratio of book value (shareholders' equity – preference capital + deferred taxes – minority interests) as at the end of April of year t and market capitalisation on that date. Companies delisted during the holding period are assumed to earn the respective portfolio returns subsequently. The t-statistic is for the test of difference between the best and worst ranked firms.

Portfolio rank	Mean size (£m)	Mean B/M	Prior-year BHR (%)	Post-survey BHR (%)	Annual EPS growth (%)	EPS stability (%)
Best	11069.0	0.40	20.6	13.7	13.5	16.7
2	7357.5	0.45	19.6	13.7	10.3	13.4
3	4311.5	0.46	18.0	14.9	10.5	14.0
4	3429.3	0.47	18.1	14.4	8.6	15.4
5	2787.8	0.52	15.3	16.0	6.9	18.9
6	2238.7	0.54	16.7	17.4	9.9	16.1
7	2167.2	0.59	8.3	16.0	5.4	20.6
8	2099.2	0.62	9.6	15.6	5.6	23.7
9	2048.7	0.63	9.3	20.3	0.6	23.9
Worst	1840.2	0.76	5.1	19.6	1.2	27.1
Overall average	4022.0	0.54	14.4	16.1	7.5	18.8
best – worst			15.6	-5.9	12.3	-10.4
t-statistic			(2.44)	(2.21)	(4.96)	(2.35)

Table 2: Quality of management and subsequent risk-adjusted returns

Portfolios are formed as follows: at the end of December of each year, all stocks in the *Britain's Most Admired Companies* list for that year and listed on the London Stock Exchange are grouped into 10 portfolios based on their within industry quality of management rankings. R_{Pt} is the equally-weighted return on portfolio P in month t, R_{Ft} is the 1-month Treasury Bill rate at the beginning of month t, R_{Mt} is the value-weighted return on all stocks listed on the London Stock Exchange in month t, SMB_t is the return on the mimicking portfolio for the size factor in month t, HML_t is the return on the mimicking portfolio for the B/M factor in month t and WML the return on the mimicking portfolio for the momentum factor in month t. Stocks that are delisted during the holding period are assumed to earn portfolio returns for the rest of the period. Figures in brackets are t-statistics. The following regression is carried out for each of the 11 portfolios:

$$R_{Pt} - R_{Ft} = a + b\,(R_{Mt} - R_{Ft}) + s\,SMB_t + h\,HML_t + w\,WML_t + e_t \qquad (3)$$

Coefficients	Portfolio rank										Best - Worst
	Best	2	3	4	5	6	7	8	9	Worst	
a	0.00	-0.03	0.12	0.07	0.10	0.07	-0.03	-0.08	0.13	0.36	-0.35
	(0.02)	(-0.19)	(0.71)	(0.39)	(0.53)	(0.32)	(-0.15)	(-0.41)	(0.65)	(1.12)	(1.15)
b	1.14	1.17	1.08	1.10	1.26	1.16	1.19	1.13	1.16	1.19	-0.06
	(30.04)	(24.52)	(24.80)	(23.73)	(25.31)	(20.79)	(21.31)	(21.06)	(22.76)	(14.03)	(0.69)
s	0.10	0.15	0.23	0.27	0.31	0.41	0.42	0.47	0.40	0.44	-0.34
	(2.71)	(3.05)	(5.33)	(5.80)	(6.29)	(7.33)	(7.62)	(8.83)	(7.91)	(5.19)	(4.11)
h	0.11	0.14	0.14	0.25	0.30	0.31	0.33	0.43	0.40	0.42	-0.31
	(2.35)	(2.38)	(2.66)	(4.50)	(5.04)	(4.57)	(4.88)	(6.67)	(6.43)	(4.10)	(3.15)
w	-0.12	-0.14	-0.07	0.00	-0.02	-0.02	0.06	-0.03	0.01	0.14	-0.25
	(-2.56)	(-2.35)	(-1.38)	(-0.05)	(-0.35)	(-0.35)	(0.94)	(-0.39)	(0.17)	(1.29)	(2.51)
Adjusted R^2	0.85	0.79	0.79	0.78	0.80	0.74	0.74	0.76	0.77	0.56	0.08

Table 3: Average cost of equity

Each year all the companies in the *Britain's Most Admired Companies* list that were listed on the London Stock Exchange in January of the calendar year immediately after the publication of the respective annual survey are grouped into 10 portfolios based on their within industry quality of management ranks. Columns 2 to 4 report the time-series mean of average cost of equity computed on a P/E basis for all the firms in our sample for which analysts' forecasts for EPS are available for two periods subsequent to December of the year the survey is published, and are > 0. Columns 5 to 7 report the time-series mean of average cost of equity derived on a PEG basis for all the firms in our sample for which analysts' forecasts for EPS are available for three periods subsequent to December of the year the survey is published, and are > 0. t refers to December of the year of the rankings, t-1 refers to December of the year preceding the rankings and t+1 refers to December of the year subsequent to the rankings. The t-statistic is for the test of difference between the time series average cost of equity of the best and worst ranked firms.

Portfolio rank	**Cost of equity (P/E basis)**			**Cost of equity (PEG basis)**		
	t-1	t	t+1	t-1	t	t+1
Best	6.8	6.8	6.6	8.3	9.2	8.7
2	6.6	7.1	7.0	8.3	8.6	9.2
3	7.0	7.1	7.2	8.8	9.2	9.0
4	7.4	7.4	7.4	9.1	9.1	9.5
5	8.4	8.3	8.2	9.6	9.9	11.2
6	8.8	8.4	8.3	10.6	10.0	10.1
7	9.5	10.0	9.8	10.5	10.6	10.9
8	10.0	10.3	9.1	11.2	10.8	10.5
9	9.1	9.2	9.5	10.7	11.7	11.2
Worst	12.4	13.6	10.0	13.4	13.9	10.8
Overall	8.5	8.7	8.2	9.9	10.2	10.0
Best – Worst	-5.6	-6.7	-3.4	-5.0	-4.7	-2.1
t-statistic	(4.19)	(3.60)	(4.31)	(4.50)	(3.05)	(4.28)

Table 4: Quality of management, realised returns and expected returns

Each year all the companies in the *Britain's Most Admired Companies* list that were listed on the London Stock Exchange in January of the calendar year immediately after the publication of the respective annual survey are analysed. BHR is the annual buy-and-hold return on the portfolios formed on quality of management decile ranks (1 = best, 10 = worst) from January to December of year t+1, where t refers to the survey year. r_{PE} is the cost of equity calculated on a P/E basis, and r_{PEG} is the cost of equity derived on a PEG basis. Res_{PE} and Res_{PEG} are the residual portfolio returns computed as the difference between realised return and expected return on P/E and PEG bases respectively. Companies delisted during the holding period are assumed to earn the respective portfolio returns subsequently. Figures in brackets are the t-statistics. Slopes are estimated by Fama-MacBeth cross-sectional regressions for each of the 14 years in the sample period using the following equation:

$$\{F_{it}\} = a + b\ QM_{it} + e_{it} \quad (7)$$

where:

F_{it} is the respective dependent variable for portfolio i at time t, and QM_{it} is the quality of management ranking for portfolio i at the end of December of year t.

Model	Dependent variable	Intercept	QM
(i)	BHR	12.52	0.66
		(3.08)	(2.26)
(ii)	r_{PE}	5.52	0.60
		(8.22)	(4.93)
(iii)	r_{PEG}	7.76	0.46
		(14.87)	(4.66)
(iv)	Res_{PE}	7.00	0.06
		(1.83)	(0.23)
(v)	Res_{PEG}	4.76	0.20
		(1.18)	(0.70)

Table 5: Market value of equity and quality of management

Each year all the companies in the *Britain's Most Admired Companies* list that were listed on the London Stock Exchange in January of the calendar year immediately after the publication of the respective annual survey are analysed. MV_{it} is the market value of equity of firm i at the end of December of year t, NI_{it} and BVE_{it} are the net income and book value of equity of firm i respectively based on the latest annual report available at the end of December of year t, and $\hat{Q}M_{it}$ is the derived within industry quality of management rank for firm i in year t based on an appropriate first stage regression. Figures in brackets are the t-statistics. Slopes are estimated by Fama-MacBeth cross-sectional regressions for each of the 14 years in the sample period using the following second stage weighted least squares regression:

$$MV_{it} = a + b_1 NI_{it} + b_2 BVE_{it} + b_3 \hat{Q}M_{it} + e_{it} \quad (9)$$

	Intercept	**NI_t**	**BVE_t**	**QM_t**	**Adj R^2**
(i)	0.03	0.63	0.67		0.36
	(1.63)	(2.75)	(6.04)		
(ii)	0.16	0.52	0.72	-0.02	0.41
	(4.22)	(2.25)	(6.31)	(3.84)	

Table 6: Operating performance

Each year all the companies in the *Britain's Most Admired Companies* list that were listed on the London Stock Exchange in January of the calendar year immediately after the publication of the respective annual survey are grouped into 10 portfolios based on their within industry quality of management ranks. The table reports the time-series average of medians of return on assets (RoA) computed as the ratio of earnings before interest and taxes and book value of assets for the year before the ranking is published (t-1), the year of publication (t) and two years after the publication (t+1 and t+2). The t-statistic is for the test of difference between the time series average RoAs of best and worst ranked portfolios.

Portfolio	**RoA**			
Rank	t-1	t	t+1	t+2
Best	12.29	11.22	10.48	9.55
2	11.07	10.73	10.54	9.31
3	10.43	10.01	9.22	8.56
4	9.85	10.18	9.69	8.81
5	9.57	9.26	8.31	7.71
6	8.98	8.58	8.05	7.28
7	8.97	8.45	7.85	7.41
8	8.78	8.04	7.05	6.84
9	8.07	6.76	6.55	6.84
Worst	7.07	5.48	5.65	5.86
Overall	9.57	8.99	8.39	7.93
Best – Worst	5.22	5.74	4.83	3.69
t-statistic	(11.39)	(11.55)	(7.36)	(5.54)

Table 7: Mean reversion in profitability

Each year all the companies in the *Britain's Most Admired Companies* list that were listed on the London Stock Exchange in January of the calendar year immediately after the publication of the respective annual survey are analysed. Return on assets for firm i (RoA_i) is computed as the ratio of the earnings before interest and taxes and book value of assets and QM_{it} is the within industry quality of management rank in year t. DP_i is the difference between RoA_{it} and industry median RoA_t, and $NDP_i = DP_i$ when DP_i is negative, 0 otherwise. Figures in brackets are the t-statistics. Slopes are estimated by Fama-MacBeth cross-sectional regressions for each of the 14 years in the sample period using the following equation:

$$RoA_{it+1} - RoA_{it} = a + b_1 RoA_{it} + b_2 QM_{it} + b_3 NDP_{it} + b_4 DP_{it}*QM_{it} + b_5 NDP_{it}*QM_{it} + b_6 (RoA_{it} - RoA_{it-1}) + e_{it} \quad (10)$$

a	**b_1**	**b_2**	**b_3**	**b_4**	**b_5**	**b_6**	**Adj R^2**
1.62	-0.14	-0.34	-0.18	-0.03	0.02	-0.16	0.30
(1.77)	(2.28)	(3.06)	(0.93)	(1.29)	(0.49)	(3.45)	