Association of British Insurers

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GOVERNANCE AND PERFORMANCE IN CORPORATE BRITAIN

Evidence from the IVIS® colour-coding system

Report from ABI Research and Investment Affairs Departments

By Mariano Selvaggi and James Upton

February 2008

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FOREWORD

The ABI's leading role in corporate governance stems from our members' belief that well-governed companies will produce better returns for shareholders over time. Long-term value creation matters to insurers because their holdings are long-term in line with their liabilities. Yet, while this has prompted us to undertake serious dialogue with companies and considered voting, the causal relationship between governance and value creation has never been demonstrated.

This piece of research, using data generated by our own Institutional Voting Information Service (IVIS), does show a clear connection between good governance, company performance and investor return. One important conclusion, not highlighted in other research, is that good governance reduces volatility of returns. Moreover, good governance is also a precursor to good performance rather than vice versa.

This research makes use of the growing IVIS database that we have been building up since the service became web-based in 2002. We can now access data going back several years. This increases the robustness of our conclusions and enables us to look at the impact of governance over an extended period in the life of companies in which our members invest.

As our database continues to expand we shall analyse these issues further. We hope that the resulting research, of which this is a first example, will help inform both companies and investors so that governance practice will become more focused on value and less driven by compliance and box-ticking. The ABI is pleased to offer this contribution to the broader debate.

Stephen Haddrill
Director General
Association of British Insurers

EXECUTIVE SUMMARY

This research seeks to answer two questions: does good governance lead to stronger operating performance, and does it lead to higher share price returns? Our findings suggest the answer is yes.

We use the ABI's Institutional Voting Information Service (IVIS) to assess the quality of company governance over a four-year period. It is the first time we have used the data in this way. We set this against data on company performance and shareholder returns generated by Thomson Financial. The studied companies are in the FTSE All-Share Index.

Among the main conclusions are the following:

- The number of years in which a company received a red top (indicating major governance concerns) is strongly and negatively correlated with its performance. Each additional (annual) red top reduces the industry-adjusted return on assets (ROA) by 1 percentage point a year. In addition, companies that are red-topped in every year underperform the rest by about 3 to 5 percentage points a year in terms of industry-adjusted ROA;

- Companies that are red-topped for breaching the pre-emption guidelines on new share issues see an annual decrease of 3 percentage points in industry-adjusted profitability and a 0.2 point decrease in the market value of assets;

- A strong indication that corporate governance leads to better performance rather than vice versa;

- Over a five-year period, the shares of well-governed companies deliver an extra return of 37 basis points a month industry-adjusted;

- The volatility of share-price returns is also lower for portfolios of well-governed companies. In addition, well-governed companies deliver higher returns when you adjust for risk;

- The overall balance of the board is important. More Non-Executive Directors (NEDs) on a board improves performance, but too great an increase in the percentage of NEDs on a board is associated with a decrease in profitability. The key is balance. This suggests that the Combined Code model of balanced boards, or of at least two independent NEDs at sub-FTSE 350 companies, is preferable to the US model that appears to favour boards with a vast majority of NEDs.

To ensure the robustness of these findings we control for a range of other factors that might also affect company performance. The time period considered also allows us to tease out the impact of governance on company performance over the medium term.

ACKNOWLEDGEMENTS

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1.0 INTRODUCTION

In this paper we address the following question: Does good governance boost profitability and value creation for UK-listed companies? The answer has important implications for the UK's corporate governance regime. If good corporate governance is linked to superior performance and poor governance to weak performance, this creates strong incentives for shareholders and companies to insist on high standards.

Despite substantial academic effort being devoted to this issue, the empirical evidence thus far has been mixed.[1] The results in this paper, however, are more positive, which in part reflects the fact that we use more comprehensive measures of corporate governance at the company level. Using judgments made by the ABI's Institutional Voting Information Service, we construct unique governance metrics for each company in the FTSE All-Share index between 2003 and 2007. We find robust links between the quality of a company's governance system and its long-term operating and stock market performance.

For example, we find that:

- Companies that receive a red top, showing the highest level of investor concern, are less profitable and generate less value over time for shareholders than other companies. A red top leads to a drop in the return on assets of about 1 percentage point per year and to drops of between 0.10 and 0.15 points a year in the ratio of market-to-book value of assets;

- Companies that are red-topped for breaching the pre-emption guidelines on new share issues see an annual decrease of 3 percentage points in industry-adjusted profitability and a 0.2 point decrease in the market value of assets;

- While good governance improves profitability and value creation, these are long-run relationships that take several years to crystallise. We find lags of two and three years in the relationship between poor governance and inferior performance. Thus focusing on short-term links between organisational governance and performance may be misguided;

- Over a 5-year period, good governance delivers higher average share-price returns after controlling for underlying volatility. Indeed the share-price return on portfolios of poorly-governed companies are more volatile than the returns on well-governed portfolios. For example, a red top results in a decrease of 23 basis points a month in industry-adjusted average returns.

[1] One of the difficulties the literature encounters is how to measure the quality of corporate governance. This point is further elaborated in Section 3.

1.1 Measuring corporate governance

Corporate governance involves the interaction of many organisational features in complex ways. Its assessment should thus be equally multidimensional. We have sought to reflect this when conducting our research.

The measure of corporate governance used in this paper is based on the Institutional Voting Information Service (IVIS), which relies on a series of colour codes to indicate the extent to which particular governance provisions cause concern.

IVIS was introduced in 1993 following the release of the Cadbury Report in December 1992. It began by reporting only on exceptional cases before developing into a report on every company in the FTSE All-Share Index. The emergence of the UK Combined Code on Corporate Governance and its "comply or explain" principle in turn gave our reporting further impetus, as did the guidance vote on the Remuneration Report, which began in 2003. The IVIS system has therefore developed over time both in scope and in range, but is underpinned by the low-key, proactive, but non-confrontational approach to corporate governance adopted by the ABI.[2]

Underlying the judgments reached by IVIS analysts is a strong belief that "one size does not fit all". The IVIS colour-coding framework is non-prescriptive in nature, and principle-based in its approach to governance practices.

1.2 Structure of the paper

The rest of the paper proceeds as follows. Section 2 gives a brief introduction to the IVIS system, which contains the raw dataset for the governance metrics used throughout the paper. Section 3 explains the company-level governance and accounting information used for our empirical analysis. Sections 4 and 5 represent the core of our analysis. The former studies the correlation between governance and profitability and operating performance. The latter considers the link between governance and stock returns and volatility. Finally, Section 6 concludes. The appendices provide additional technical details.

[2] For a description of the development of Corporate Governance Codes in the UK, see, for example, Chapter 2 in Keasey et al. (2005).

2.0 THE INSTITUTIONAL VOTING INFORMATION SERVICE

In order to help institutional investors assess the desirability of certain individual company's provisions, the ABI operates the Institutional Voting Information Service (IVIS). IVIS produces detailed but concise analysis on UK-listed companies in relation to the level of compliance with corporate governance best practice. Its main purpose is to assist ABI members with their voting decisions. There are three reports for each company annual general meeting; the Proxy Report, the Combined Code Report and the Environmental Social and Governance (ESG) Report. The first two are the focus for this research paper.

At each annual general meeting, shareholders are entitled to vote on a number of different resolutions. As standard in the UK, this includes a vote on the report and accounts, on the dividend, on a number of special powers that shareholders grant to directors for one-year periods, on the auditors, and on selection by rotation of directors. There is also a guidance vote on the remuneration of directors. Shareholders are given the opportunity to vote for, against, or to abstain, and these votes are indicated on a ballot paper known as a proxy card. It is this card which the IVIS Proxy report reproduces, along with a detailed commentary on all of the resolutions being proposed. The bulk of the report focuses on remuneration issues, which are analysed in line with ABI remuneration guidelines.

Each company that lists in the UK must also comply with certain disclosure requirements that are additional to the Companies Act. These are set out in the listing rules that are governed by the UK Listing Authority. They include rules relating to annual accounts, interim accounts, merger documents and listing particulars. In addition, they require that directors comply with the provisions of the Combined Code on Corporate Governance. This code contains principles and provisions of good governance and is split into four parts: directors; remuneration; accountability and audit; and relations with shareholders. The Combined Code on Corporate Governance is administered by the Financial Reporting Council.

The IVIS Combined Code report analyses the extent to which a listed company complies with the provisions of the Combined Code. It details each company's approach to board composition and balance, remuneration packages and procedures, and accountability and audit.

UK insurance institutions and pension funds, plus a wide range of investment institutions use IVIS. Subscribers hold approximately 35% of the equity value of the FTSE All-Share. In addition, the IVIS service is used by a range of advisors, lawyers and consultants to inform them of current trends and attitudes.

2.1 The IVIS colour-based framework

IVIS fits into the context of comply-or-explain, which is the approach adopted by the Combined Code on Corporate Governance. This approach admits that one size does not

easily fit all, and that different companies may legitimately follow different paths. Indeed different investors may take different views of the proposals put forward by a particular Company.

In the spirit of this, IVIS does not give explicit voting advice. Rather it draws up a list of key issues for investors to consider for each meeting, highlighting their seriousness through the use of a colour coding system. The colour showing the strongest concern about a key issue is red, followed by amber. A blue top indicates no areas of major concern, while a green top indicates an issue that has now been resolved. It is up to the individual investors to decide how to react.

The Proxy report and the Combined Code report can both receive one of the four colour tops. It is possible to have more than one issue driving the colour of a report and to have different colours for different issues. The details of the IVIS reports indicate which issue (or issues) has attracted concern.

IVIS reports are based on established guidelines, and colour decisions are often reached through discussion with market participants as well as engagement with companies where appropriate.

The fact that IVIS does not follow a one-size-fits-all approach is one of its strengths. The way a similar issue can lead to different colour tops can be illustrated as follows. In a two-month period during the last reporting period, three companies increased the maximum payment of the annual bonuses. One company received a red top for this increase, as it was being used to replace a long-term incentive plan that had become unlikely to pay out due to poor performance. A second company received an amber top because the increase did not clearly require an improvement in performance and it was accompanied by rises in base salary. The last company received a blue top as the shift was accompanied by more stretching targets and the economic rationale underlying the change had been explained and accepted by investors during a consultation.

2.2 Individual governance provisions

In the IVIS analysis we highlight the existence of key issues that ABI members monitor. It is these key issues that form the basis of the IVIS governance provisions. There are 14 of them.

2.2.1 Proxy Report

- Remuneration Report – It is a legal requirement to have a vote on directors' remuneration. The Combined Code states that the level of remuneration should be sufficient to attract, retain and motivate, but that paying more than is necessary should be avoided. It is therefore important for shareholders to judge the suitability of the amounts on offer to executives.

- Long-term share-based incentives – When a new remuneration scheme is to be introduced or a material change is made to an existing scheme, it must be proposed to shareholders with a separate vote. This gives them the opportunity to make a considered judgement about the circumstances of the company, and the structure of the proposals.

- Pre-emption rights – The purpose of these rights is to ensure that shareholders have an opportunity to prevent their stake from being diluted by new share issues. Existing shareholders should be offered new issues before non-holders. In general, holders agree to waive their rights up to 5% of the share capital, so long as no more than 7.5% is issued in this way in a three-year period.

- Dilution – ABI guidelines state that no more than 5% of the issued share capital of a company should be awarded under executive incentive schemes in any 10-year period. In addition, an upper limit of 10% of the share capital in 10 years is set to cover all share schemes including save as you earn and self-investment plans. Shareholders consider that issuance above these levels transfers too much value to executives.

- Rule 9 waiver – If the holdings of one shareholder or group of holders reaches 30% they must make an offer for the whole company under the rules of the Takeover Panel.[3] However, a waiver can be sought removing this requirement. The concern for other holders is that a major holding can be used to exercise increasing levels of control over the company, undermining their rights.

- Shareholder Resolutions – Shareholders occasionally wish to propose a resolution at a company general meeting, for example to nominate a director to the board or to remove an existing board member. Each case will be different and it is important for holders to exercise their judgment depending on the nature of the proposals. This is particularly the case if the supporters of the resolution are not seen to be acting in the interests of all shareholders.

- Articles of Association – These set out the rules for the running of a company's internal affairs. They are wide-ranging but can include clauses relating to share capital, the issue of shares, procedures for voting and borrowing powers. Such changes have the potential for damaging the interests of shareholders, so it is important that they a considered view is taken.

- Other Issues – There are certain infrequent issues that may lead to a colour top. Examples are where there is no vote on the report and accounts, or where a resolution is proposed for any other business. The former denies the right of holders

[3] The UK Takeover Panel is an independent body, established in 1968, whose central objective is to ensure fair treatment for all shareholders during takeover bids.

to make a statement about the running of the company, while it is impossible for holders to knowledgeably vote in advance on an unframed resolution.

2.2.2 Combined Code Report

- Board composition – The recommendation in the Combined Code on Corporate Governance is that independent non-executive directors (NEDs) should represent at least half of a Board for companies in the FTSE 350. Companies ranked lower than FTSE 350 should have at least two independent NEDs. Boards that are heavily weighted towards executives or non-independent NEDs may not properly represent the interests of shareholders.

- Senior Independent Director (SID) – One of the independent NEDs should be appointed as the SID. If a shareholder has concerns, the SID should be available where contact with the Chairman, Chief Executive Office (CEO) or Finance Director has either not led to a resolution, or is not appropriate.

- Audit Committee composition – The committee should be made up of three independent NEDs, for companies in the FTSE 350, and two independent NEDs for smaller companies. One of the members should be identified as having recent and relevant experience.

- Remuneration Committee composition - The committee should be made up of three independent NEDs for companies in the FTSE 350, and two independent NEDs for smaller companies. In addition the Chairman of the board may be a member of the committee, if he or she was considered independent on appointment as Chairman.

- Joint CEO/Chairman – The Code states that there should be clear division of responsibilities at the head of the company with no one individual having unfettered powers of decision. Hence the Code states that the CEO and the chairman of the company should be different individuals.

- CEO becoming Chairman – A chief executive officer should not go on to be chairman of the same company. If exceptionally a CEO should become Chairman, the board should consult major shareholders in advance.

2.2.3 Governance provisions and colour tops

The process for deciding on which colour ranking should be given to a key issue at a particular company is multifaceted and is considered on its own merits. If an issue is identified, the company may be contacted for clarification. Any statement explaining divergence from best practice will be taken into account, along with the quality of the explanation and this will also be communicated to major holders. This is particularly

important in the case of the Combined Code, as it reinforces the comply-or-explain regime.

Consultation with major shareholders allows IVIS to benefit from the knowledge of fund managers and analysts who can provide a context for any breach. This may moderate the level of concern which is expressed in a report and means that the colour top reflects not only the overarching principle, but also the circumstances of the company.

Engagements such as these may take place after the publication of the annual report and accounts around the time of the annual general meeting. They also happen throughout the year, as companies change their remuneration structure or address governance issues. These discussions will therefore inform any judgment relating to the colour code.

2.3 Triggers of specific colour tops

Alongside the benchmark case-by-case approach, there are certain issues that receive a particular colour due to a long-standing view of the ABI Investment Committee about good governance practice. These issues are set out below. The Investment Committee is the main forum for the ABI members to discuss, and decide, investment-related issues. In addition to reviewing issues as they arise, the Committee also updates all the guidelines from time-to-time to ensure that they remain relevant.[4]

Red Tops

The following situations immediately lead to the issue of a red top:

- Board composition – Where none of the Non-Executives meet the Combined Code criteria of independence. This is irrespective of whether the company considers the individuals to be independent;
- Composition of the Audit/Remuneration Committees – Where an Executive Director is a member of the Committee;
- Rule 9 waiver – Where the holding of a concert party increases above 40% due to a share repurchase or creeping control.

Amber Tops

The following situations immediately translate into the issue of an amber top:

- Abnormal salary increases – Where the IVIS guidelines do not consider these to be appropriate, a view that is reached after discussions with the key investors. Analysis will include the comparator group, market capitalisation and past performance;

[4] ABI guidelines on executive compensation and share-based remuneration packages can be found online at www.ivis.co.uk/ExecutiveRemuneration.aspx. Guidelines reflecting other governance recommendations of the ABI Investment Committee can be found online at www.ivis.co.uk/Guidelines.aspx.

- Abnormal bonus increases – Where the IVIS guidelines may question the suitability of the increase, and therefore where it is felt that a judgement needs to be made;
- Performance Targets – Where existing targets do not appear to be demanding, or in cases where targets are reduced and this does not appear to be appropriate;
- Rule 9 waiver – Where the holding of a concert party increases to between 30% and 40% or increases within that range;
- Shareholder resolutions – Where a resolution is proposed by a holder or group of holders, an amber top is used as a means of bringing a matter of judgment to the attention of the remaining holders.

2.4 Description of the governance dataset

This section describes the company-level governance information with which we create the corporate governance metrics used throughout the rest of the report.

2.4.1 Company coverage

We analyse companies in the FTSE All-Share index whose IVIS reports were produced between January 2004 and December 2007. Investment trusts were left out of our analysis because they have special organisational features; for example, executives very rarely sit on their board. This removes many of the conflicts of interest that occur between executive and non-executive directors arising in large listed companies. We also exclude utility companies (electricity, gas and water) since specific regulations regarding price and/or service delivery make the analysis of governance and performance very difficult.[5]

The result is a dataset comprising 654 different companies and 2,007 company-year observations. These correspond to annual Proxy and Combined Code reports produced between 2004 and 2007. Not all of these companies remain active throughout the period however, as some entered the FTSE All Share after 2004, whilst others dropped out before 2007 due to takeover, merger or failure.[6]

2.4.2 Alternative governance metrics

The headline measure

Based on information from the IVIS system we construct a simple colour-based metric of governance (or headline measure) that reflects the soundness of the practices followed by a company during the year. A red top is assigned when the annual Proxy report, or the Combined Code report or both are red-topped. We assign an amber top when either the Proxy or Combined Code report is amber-topped but neither of them is red-topped. Both

[5] Table 7 of Appendix A1.1 lists the 53 industry sectors included in our dataset.

[6] The cross-tabulation of the cumulative number of blue and red tops and the number of years companies remain active in our records are shown in Tables 8 and 9 of Appendix A1.2, respectively.

cases mean that we encountered serious or contentious issues in at least one of the IVIS reports for that year. Finally, we assign a blue top when both the Proxy and the Combined Code report are blue or green topped, meaning that no governance concerns were raised during that reporting year.

According to this definition, the number of red-topped observations during the time period is 189 (9%), whereas the number of amber tops equals 659 (33%). As Table 1 shows, the proportion of red and amber tops remains relatively constant throughout the period studied. Total observations are also evenly distributed across years.

Table 1 Company-year observations, 2004-2007

	2004	2005	2006	2007	Total
Number of observations	511	515	497	484	2,007
Number of red tops	48	53	44	44	189
As % of observations	9.4	10.3	8.9	9.1	9.4
Number of Amber tops	175	172	160	152	659
As % of observations	34.2	33.4	32.2	31.4	32.8

Source: IVIS.

Individual governance provisions

As well as the headline measure of corporate governance detailed above, we are also able to use the individual provisions that feed into the IVIS Proxy and Combined Code reports to see which are the main drivers of the colour assigned to the company. Figures 1 and 2 illustrate how often each governance provision "determines" a red top on each of the IVIS reports during the period studied.[7]

As Figure 1 indicates, material concerns regarding the company's remuneration report drive the vast majority of Proxy red tops over the period (120 out of 176 cases), whereas board composition explains the majority of red tops on the Combined Code report (54 out of 69 cases).[8]

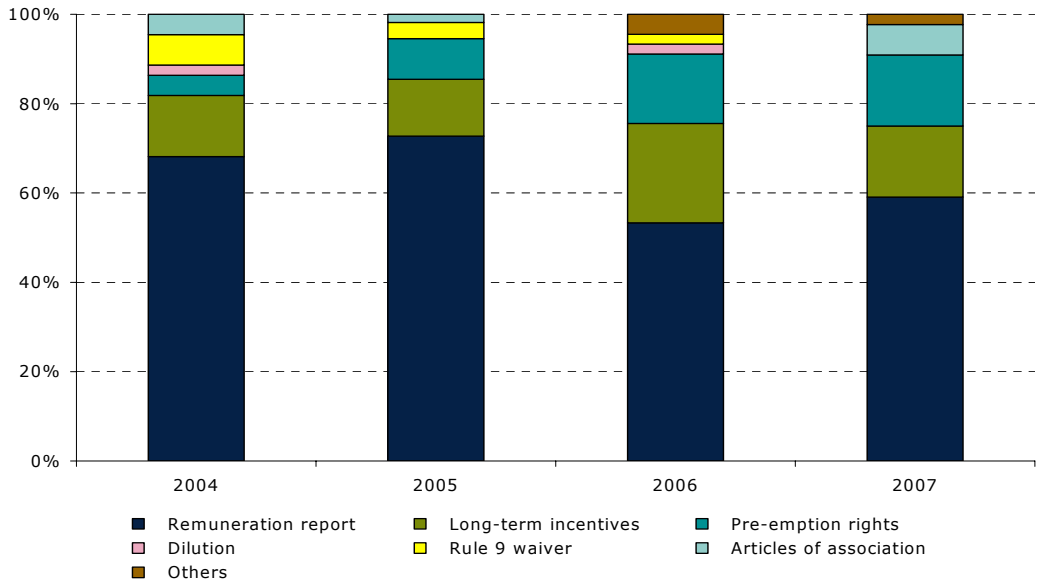
Overall, the IVIS Proxy report appears to be the main driver of our definition of red and amber tops. This is particularly true for the case of amber tops, as only seven cases out of 659 amber tops relate to problems with the Combined Code report.

As mentioned above, there are certain governance provisions that automatically trigger red tops on both IVIS reports. As an example, a company with no independent NED on its board will receive not only a red top on the Combined Code report but also a red top for the Proxy report when there is a resolution for the re-election of a NED.

[7] The underlying frequency data for both red tops and amber tops can be found in Table 10 of Appendix A1.3.

[8] As can be observed in Table 10 of Appendix A1.3, the Remuneration report also drives amber tops in 557 out of 654 Proxy report cases, with the second driver being long-term incentives.

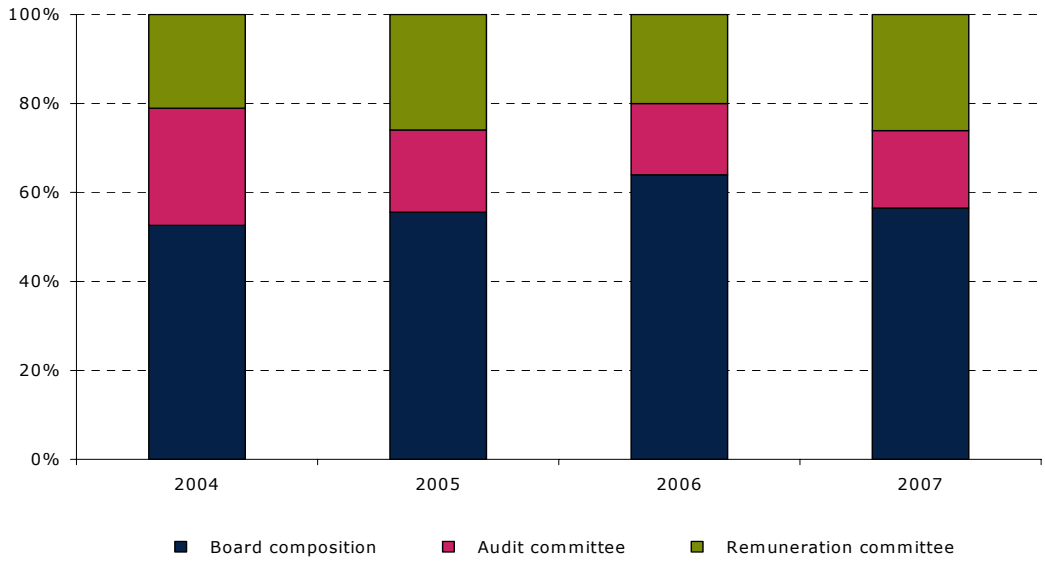
Figure 1 Distribution of Proxy red tops across provisions, 2004-2007



Note: The bars indicate the percentage of cases in which the individual governance provision results in a red top on the company's proxy report.

Source: IVIS.

Figure 2 Distribution of Combined Code red tops across provisions, 2004-2007



Note: The bars indicate the percentage of cases in which the individual governance provision results in a red top on the company's combined code report.

Source: IVIS.

The IVIS governance score

There are 14 main governance provisions the IVIS research monitors. To supplement the measures of corporate governance detailed above and thereby improve the robustness of our conclusions, we further develop a scoring framework that quantifies the quality of a company's governance in each year. This is the IVIS governance score, and is calculated in the following way:

- A provision that displays best practice receives zero points;
- A provision that raises some level of concern, but where the report remains a blue top, receives *one* point;
- Where a provision is contentious and leads to an amber top, it receives *two* points;
- Where a provision is contentious and leads to a red top, it receives *three* points.

In this way, the ideal report would have a total score of zero. A hypothetical report with a contentious red-topped issue in each provision would receive a score of 42. A report with just one issue leading to an amber top, or one with two issues remaining on a blue top would each receive two points.[9]

Table 2 shows how the cumulative value of the governance score varies among the 361 companies with four years' worth of IVIS data. For these companies, the average value of the cumulative score during the period is 9.7. The minimum and maximum values are 0 and 41, respectively.

Table 2 Governance score for companies with four years' IVIS records

	Cumulative value of the IVIS score					
	Between 0 and 3	Between 4 and 6	Between 7 and 9	Between 10 and 13	Between 14 and 17	18+
Number of companies	43	76	88	81	44	29

Source: IVIS.

[9] Table 11 of Appendix A1.4 reports summary statistics for the annual IVIS governance score for the 654 companies and for three sub-samples. The distribution of the score is (positively) skewed, which means there are only very few companies in our dataset with very high values of the score. Indeed when one looks at the full sample 90% of the yearly values are located between 0 and 5.

3.0 METHODOLOGY

This section describes key features of the methodology and financial data underlying our empirical approach. Our analysis fits into the branch of literature that investigates how governance practices at the company level, within a single country, impinge on company valuation and shareholder returns.

Those readers interested in the main findings can go directly to Sections 4 and 5 of this paper without loss of insight. While we do explain some basic features of our methodology below, additional technical details are provided in Appendix A2.

3.1 Data

The company-level accounting and financial information we use throughout the paper has been obtained from Thomson Financial (Thomson One Banker). We matched the IVIS dataset to the relevant financial year-end data to ensure performance and governance data cover the same periods. The complete dataset with 2007 records is free of survivor bias as it encompasses all companies that were in the FTSE All-Share during the period, including those which entered after 2004 and others that dropped out before 2007. A subset of that data is the 361 companies that were in the sample for all four years.

3.1.1 Performance measures

In order to assess whether good corporate governance makes a difference, we focus on two commonly used measures of company's performance: return on assets (ROA) and Tobin's Q (Q).[10] As discussed in Arcot and Bruno (2006), ROA is the preferred measure of performance in the literature as, unlike various measures of profits, it is not affected by leverage, extraordinary items, and other discretionary items. Tobin's Q is used as a basic robustness check, and because it is a widely used performance measure in the economics and finance literature.

- Return on Assets is calculated as the ratio of Earnings before Interest and Taxes (EBIT) to Total Assets.

- Tobin's Q is calculated as the market value of a company divided by the accounting (i.e. replacement) value of the company's assets. If the result is between 0 and 1, this means the market value of the company falls short of the accounting value of its assets.

It is important to control for potential industry-specific effects that may distort the direct comparison of performance measures across industries. To account for this, we calculate

[10] Numerous academic papers highlight the advantages of these two measures of operating performance. See, for example, Barber and Lyon (1996), Gompers et al. (2003) or Arcot and Bruno (2006).

the relevant performance metric for each company over the four-year period and compute the median performance metric on an industry-by-industry basis.[11] This median figure is then subtracted from each company's annual performance result.

3.1.2 Control variables

There are some variables that have consistently been found to account for some of the variations in company performance over time. These include size, growth prospects, profit margins, asset composition, leverage and market capitalisation.

To control for these differences, and to be consistent with previous economics and finance literature, our regressions include the following variables:[12]

- Turnover;
- Turnover growth in the year;
- Total Assets;
- Gross margin - (Earnings before Interest and Taxes (EBIT) / Turnover);
- Profit margin – (Net Earnings / Turnover);
- Market-to-book ratio – (Market value / Book value of Common Equity);
- Investment intensity – (Capital Expenditure / Turnover);
- Fixed asset – (Property, Plant and Equipment / Total Assets);
- Intangibles –(Intangible Assets / Total Assets);
- Tangibility – (Property, Plant and Equipment / Turnover);
- Long-term leverage – (Long-term Debt / Total Assets);
- Free cash flow to assets – (Free Cash Flow / Total Assets);
- Free cash flow to PPE – (Free Cash Flow / Property, Plant and Equipment);
- FTSE Ranking;
- FTSE 350 – indicates inclusion in the FTSE 350;
- New entrant - indicates that a company's first IVIS report is after 2004.

3.2 Analytical approach

The methodological approach used to uncover the impact of organisational governance on company performance is based on multivariate econometric analysis. This is a rigorous method that allows us to determine the relationships between a number of relevant factors simultaneously.

Our estimates are based on ordinary least squares (OLS) regressions. The dependent variables are the two measures of performance, and the key explanatory variables are our governance metrics constructed from IVIS. We opt for OLS rather than fixed-effect panel data regressions because our measures of corporate governance exhibit little variability over time, which would induce problems of identification if we used panel data

[11] The different industry sectors in our dataset are detailed in Table 7 of Appendix A1.1.

[12] Basic descriptive statistics for these variables can be found in Table 12 of Appendix A2.2.

analysis.[13] We compute robust standard errors clustered at the company level to get better estimates.[14]

3.2.1 Related literature

Corporate governance involves the interaction of many organisational features in complex ways. Its assessment should thus be equally multidimensional. We have sought to reflect this when conducting our research. [15]

The IVIS dataset underlying our analysis has not been used in any other research, but previous academic studies have used similar datasets on corporate governance practices. For example, Bruno and Claessens (2006) use data from Institutional Shareholder Services, which has international coverage. The 24 provisions monitored by the Investor Responsibility Research Centre, which mostly applies to US governance, are used by Gompers et al. (2003) and Bebchuk et al. (2005). The most commonly used measures of performance, in turn, are returns on assets, Tobin's Q and returns to shareholders, so they are also the key company performance metrics we consider.

Empirical research has often focused on a purely quantitative metric of good governance. Typically, the key governance indicators are indices that compile governance practices for items included in the chief executive's compensation package, corporate charter or board structure.[16] To illustrate, a "Committees Index" might assign one point to each committee a company has, or an "Entrenchment Index" might assign one point if a company has no poison pills or if the board is annually re-elected to reflect the ease with which incumbent executives can be replaced.

To some extent, the whole methodology resembles a box-ticking approach to corporate governance where compliance with a provision mechanically feeds into a broad index. The resulting metric of strict adherence to provisions could thus be contrived. While our basic approach is similar in spirit, the judgements embodied in the IVIS colour-coding scheme allow us to also consider hidden ingredients of a company's governance system that tend to be missing from governance measures used in previous research.

[13] See, for example, Gompers et al. (2003) or Arcot and Bruno (2006) for discussions of similar issues.

[14] See Appendix A2 for further description of our methodology and the data used.

[15] Keasey et al. (2005) is an accessible volume with related discussions on corporate governance issues.

[16] For recent examples, see Bebchuk et al. (2005), Gompers et al. (2003), Bruno and Claessens (2006), and Core et al. (2006).

4.0 GOVERNANCE AND COMPANY PERFORMANCE

This section asks the following question: is there a link between governance and company performance? In summary, we find that:

- The more years in which a company receives red tops, the worse the company's performance as defined by both return on assets and Tobin's Q;
- Companies that receive a red top for pre-emption rights issues see a significant and negative impact on performance;
- The overall balance of the board is important. More non-executive directors (NEDs) on the board improve performance, but too great an increase in the percentage of NEDs on a board can be associated with a decrease in profitability.

4.1 Red tops and company performance

This section uses the number of years in which the company was red-topped at a given point in time as the key indicator of the quality of its governance. The principal findings of this part of our empirical analysis are set out in Box 1.[17]

Box 1 Relationship between corporate governance and performance

- Across the whole dataset, the number of red tops received by a company during the period is strongly and negatively correlated with its performance. Each additional year for which the company gets a red top reduces its industry-adjusted ROA by about 1 percentage point a year.
- For companies with four years' worth of IVIS reports, there is also a strong and negative correlation between the number of annual red tops and Tobin's Q. A red top reduces the industry-adjusted valuation of a company by about 0.10 points a year. The sample average Tobin's Q is 1.92 so this represents a 5% decrease.

Robustness tests

- We created an additional sample made up of companies that are red-topped at least once during the time period. We find that for these companies each additional red top reduces industry-adjusted ROA by about 2 percentage points a year.[18] The impact on Tobin's Q is to reduce the industry-adjusted valuation of the company by 0.15 points per year.[19]

[17] More detailed econometric results can be found in Appendix A2.3.

[18] This is detailed in Table 13, Panel C, of Appendix A2.3.

- We created an indicator variable that takes value 1 if the company is red topped in every year it appears in our dataset. We look at all the companies and also a subset that have at least three years' worth of IVIS data. We find that these red-topped companies underperform the rest by about 3 to 5 percentage points per year for industry-adjusted ROA. Their industry-adjusted Tobin's Q is also lower by 0.34 points, and this difference is statistically significant.[20]

- Companies that are in our IVIS dataset for longer are likely to receive red tops in more years, everything else being equal. To control for this, we focused on companies that are in our IVIS dataset for at least three years and counted the number of red tops they had accumulated up to their third and fourth years. We confirm the link between poor governance and inferior performance: every additional red top reduces industry-adjusted ROA by 1 percentage point and Tobin's Q by 0.08 points a year.[21]

- Reassuringly, the results show that the control variables behave in a similar way to previous studies. For example, the larger a company is, the poorer it tends to perform. In addition, the higher the fraction of fixed and intangible assets, the worse is the company's performance. A strongly positive correlation is also found between an increased ratio of the market-to-book value of common equity and both ROA and Q. The free-cash-to-assets ratio behaves in the same way.

[19] This is detailed in Table 13, Panel D, of Appendix A2.3.

[20] This is detailed in Table 14 of Appendix A2.3.

[21] This is detailed in Table 15 of Appendix A2.3.

The importance of a long-term stance

Corporate governance can have a long-standing impact on performance. We therefore also assess the robustness of our findings by studying if there is a lag between a red top and subsequent performance. To do this we focus on the subset of companies that are in the sample for all four years, and create a variable that indicates in which year a red top was issued.

We find a strong and negative impact of poor governance on ROA performance after a three-year lag. The effect on Tobin's Q appears to take two years to crystallise and is also strong and negative. These findings suggest that the importance of corporate governance is felt over time rather than as an immediate impact on the performance of a company.[22]

4.2 Individual governance provisions and company performance

We look at the impact on ROA and Tobin's Q of the individual governance provisions that lead to a colour top. In particular we consider the cumulative number of times the provision resulted in a colour top up to a given point in time. To avoid drawing inferences from very small sample sizes, we only consider provisions that lead to a colour top in at least 2% of the 2,007 company-year observations. In addition to these, we also consider the number of independent NEDs on a board and the percentage of the board that they represent in a given year.

It is worth noting that many of the provisions are interlinked, which makes it difficult to disentangle the individual effect of each. To illustrate, when a company has problems with a long-term incentive plan it is also likely to have connected problems with its remuneration report.[23]

Our results suggest not all governance provisions are strongly correlated with company performance.[24] The principal findings are set out in Box 2.[25]

[22] The econometric outputs are detailed in Table 16 of Appendix A2.3.

[23] The correlations between provisions are reported in Table 17 of Appendix A2.3.

[24] This is not surprising, as not all individual provisions are likely to contribute to the same degree to the identified correlation between governance and company performance. Bebchuk et al. (2005) draw a qualitatively similar conclusion when they focus on the 24 governance provisions monitored by the Investor Responsibility Research Center.

[25] More detailed outputs can be found in Table 18 of Appendix A2.3.

Box 2 Individual governance provisions and performance

- Each additional red or amber top received for breaching the pre-emption guidelines leads to an annual decrease of 3 percentage points in industry-adjusted profitability (ROA) and a 0.2 point decrease in the value of assets (Tobin's Q);

- The overall balance of the board is important. An increase in the percentage of NEDs on a board is associated with a decrease in industry-adjusted ROA.

- We also find that issues with articles of association appear to have a positive impact on Tobin's Q. There are potentially many different article changes that could affect the colour of a report, and a relatively small amount of data, so it is difficult to make a definite statement about why this apparent link should exist.

Robustness tests

- As in previous sections, we created an alternative sample made up of companies that are red or amber-topped at least once during the period. In these cases we also find higher numbers of NEDs on a board improve performance: an extra NED translates into a half-percentage point increase in industry-adjusted ROA, other things being equal.

The findings relating to board composition for companies that were red or amber-topped at least once during the period deserve further comment. On the surface they appear to indicate a contradiction in that a higher percentage of NEDs on a board decreases performance, while more NEDs improves performance. The key is balance. This suggests that the Combined Code model of balanced boards, or of at least two independent NEDs at sub-FTSE 350 companies, is preferable to the US model that appears to favour boards with a majority of NEDs, at least in the UK context.[26]

4.3 Analysis of causality

The issue of causation is an important one in the corporate governance literature. The key question is whether governance drives performance, or whether the causal link could run in the opposite direction. We use lagged values of governance and performance to determine the direction of the link, an approach which is similar to that used by Landier et al (2005) and Arcot and Bruno (2006).

[26] For related discussions on the link between the composition of Boards of Directors and company performance, see Hermalin and Weisbach (2003) and Klein (1998).

We focus on the subset of companies that are in the sample for all four years, and then record the quality of the governance and the performance of the company both at the start and end of that period. Taking the IVIS governance score as an indicator, we give a value of 1 if the company's total score in the respective year is higher than 4. Recall that governance is said to be poor when this score is high. Of the 361 firms being considered, 42 (12%) show a high score in 2004 and 50 (14%) have a high score in 2007.

We find that a high score, poor governance, in 2004, is strongly and negatively correlated with performance in 2007. The link does not diminish when we include the performance in 2004 as an additional control.[27] So good governance results in improved performance.

There does seem to be an indication that a high Tobin's Q in 2004 leads to worse governance in 2007. However the quality of fit for this model is low, which suggests the analysis as a whole is not very informative. In addition, the results for ROA do not seem to be able to explain anything about subsequent governance quality in 2007. Superior performance in early years does not lead to significant changes in a company's governance practices later on.

We therefore conclude that, at least for ROA, it is governance that has an impact on performance rather than the other way round.

[27] Table 19 of Appendix A2.4 looks at the relationship between governance and performance, whereas Table 20 in the same Appendix considers the hypothesised link from performance to governance.

5.0 GOVERNANCE AND SHARE-PRICE PERFORMANCE

In this section we consider whether there is a robust relationship between the quality of a company's governance, its share-price return, and the volatility of that return. In Section 5.1 we explain the methodology and the construction of two portfolios of companies, one by IVIS governance score and another by colour top. We detail the results in Sections 5.2 and 5.3.

In summary, we examine the 60-month period from December 2002 to November 2007 and find that:

- Share-price returns of well-governed companies are significantly less volatile than those of poorly-governed companies;[28]
- Well-governed companies deliver higher risk-adjusted returns. Our two portfolios of well-governed companies deliver 18% and 13% higher average returns to investors than the portfolios of poorly-governed companies after underlying risk is accounted for;
- Being red-topped in an additional year leads to a drop of about 23 basis points a month in industry-adjusted returns, and to a decrease of 3 points in the industry- and risk-adjusted Sharpe ratio over the studied period.

5.1 Methodology

According to the efficient markets hypothesis, share prices should quickly incorporate the impact of a company's governance practice, and so there should be no persistent impact of governance on prices. Our findings are indicative of the validity of this conjecture.

Our methodology is similar to that used by Gompers et al. (2003) and Arcot and Bruno (2006). We focus on the 361 companies for which we have four years' worth of IVIS data and separate them into different portfolios depending on the quality of their governance. Then we analyse whether there is a robust link between corporate governance and share-price returns in the 5-year period from December 2002 to November 2007. Studying the impact on share price returns over a five-year period is relevant for many institutional shareholders. ABI members, in particular, hold the bulk of their investments long-term in order to match their liabilities.

5.1.1 Share-price returns data

Thomson Financial provides us with information on monthly share price returns, which includes capital gains (or losses) and dividends in the month. We then subtract from each return the monthly interest rate on 1-month gilts. This is the month-end gilt repo (general

[28] The difference in standard deviation of monthly returns is statistically significant at the 1% level.

collateral) rate as published by the Bank of England. The result is a measure of excess return representing the additional reward accrued to shareholders for the investment risk taken.

Removing 18 companies for which we do not have 60 months share price data, leaves 343 companies generating 20,580 observations. We use this to calculate equal-weighted raw and industry-adjusted monthly returns on the portfolios described below over the five-year period.

5.1.2 Share price performance measures

We focus on two measures of share price performance: the industry-adjusted monthly return and the Sharpe ratio.

To compute industry-adjusted returns, within each sector we calculate the median return for the five-year period and then subtract it from the monthly return of each company in that sector. This measure allows us to control for the differences in returns across sectors. For example, companies in the good governance portfolio might be in relatively risky industries. In such a case, extra returns in excess of the risk-free rate could be rewarding the underlying extra risk, rather than being driven by the governance of the company.

The Sharpe ratio is, in turn, the ratio of average excess returns to the standard deviation of those returns. It thus tells us whether the mean returns on a portfolio are a result of good investment decisions or of extra risk. The greater a share's Sharpe ratio, the better its risk-adjusted performance has been.

5.1.3 Score-based portfolios

We use the IVIS governance score described in Section 3 to group companies into three portfolios ranked by level of compliance with good governance practice, labelled S1, S2, and S3. Table 3 shows the number of companies in each portfolio.

Portfolio S1 is made up of those companies with an average IVIS governance score over the period of less than 2. This portfolio therefore includes all of the companies that only ever received blue tops. Due to our use of the average, it may also include some companies with a few more contentious issues if they have otherwise been well governed. S2 contains companies with average scores between 2 and 3, whereas S3 contains those with a score of 3 or greater. This last portfolio therefore contains any company that was always red-topped for any provision during the period 2004-2007.

Table 3 Number of companies in each score-based portfolio

	Portfolio S1 (good governance)	Portfolio S2	Portfolio S3 (poor governance)	Total
Number of companies	132	102	109	343
As % of total	38%	30%	32%	100%

5.1.4 Colour-based portfolios

These portfolios are based on the number of occasions a company received a colour top and the seriousness of the issue. As they are colour-based we call them C1, C2, C3 and C4. Table 4 shows the number of companies in each portfolio.

Portfolio C1 is made up of those companies that received only blue tops during the period, and is the best portfolio from a governance standpoint. C2 includes those that only received one amber or red top. C4 represents those companies that were red or amber topped on more than three occasions, and are therefore the worst governed companies. All the remaining companies make up C3.

Table 4 Number of companies in each colour-based portfolio

	Portfolio C1 (good governance)	Portfolio C2	Portfolio C3	Portfolio C4 (poor governance)	Total
Number of companies	65	108	91	79	343
As % of total	19%	31%	27%	23%	100%

5.2 Results

The main findings of our analysis of the impact of governance on share-price returns are set out in Box 3.

Box 3 Governance and share price returns

- The returns on well-governed companies are less volatile than those on poorly-governed companies. The standard deviation of the returns on S1 is 9% smaller than the standard deviation of the returns on S3 (see Table 5);
- If one compares a portfolio of well-governed companies with a portfolio of poorly-governed companies, the portfolio of well-governed companies delivers higher average returns when you adjust for risk. This portfolio delivers 18% higher average share-price returns to investors than the other, and the difference in performance is substantially larger when returns are industry-adjusted. This is captured by the Sharpe ratios of Tables 5;
- Investing £100 in the portfolio of well-governed companies (S1) yields roughly £120 by the end of 2007. Investing £100 in the portfolio of poorly-governed companies (S3) yields just £102. Figure 3 illustrates this.

Robustness tests

- The portfolios based on colour, C1 – C4, show the same underlying trends as S1-S3 (see Table 6). Volatility is 10% higher for the portfolio of poorly-governed companies and the Sharpe ratio is 13% higher for the portfolio of well-governed companies.

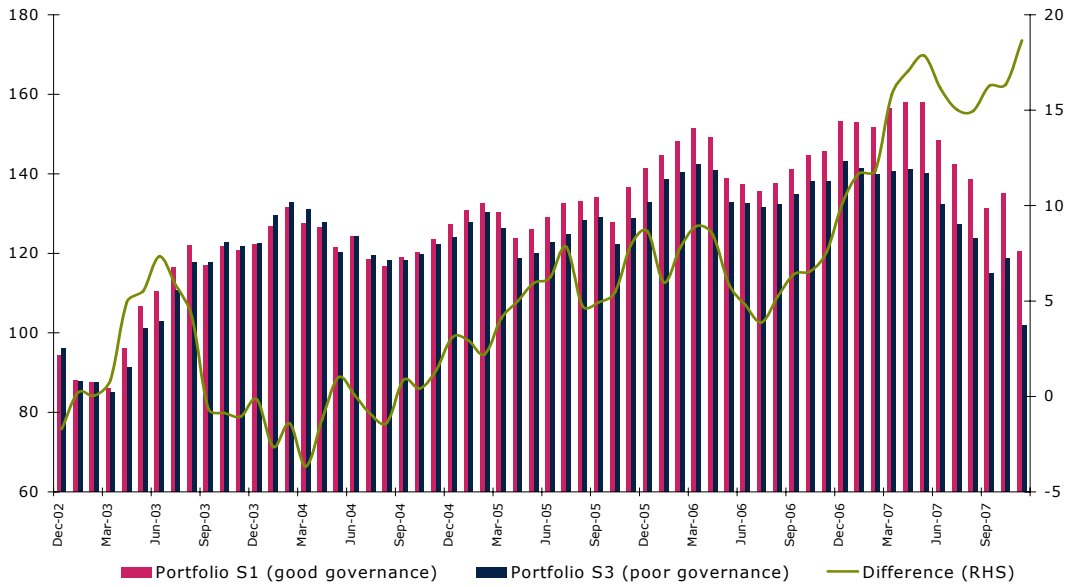
Table 5 Analysis of score-based portfolios, Dec/02 to Nov/07 (Percentage points)

	Score-based portfolios		
	S1 (good governance)	S2	S3 (poor governance)
Raw return			
(1) Mean	1.63	1.41	1.51
(2) Standard deviation	9.29	8.89	10.17
(3) Coefficient of variation: (2)/(1)	5.70	6.30	6.74
(4) Sharpe ratio (percentage points)	17.55	15.88	14.85
Industry-adj. return			
(1) Mean	0.40	0.24	0.12
(2) Standard deviation	9.28	8.88	10.16
(3) Coefficient of variation: (2)/(1)	23.20	37.00	84.67
(4) Sharpe ratio (percentage points)	4.31	2.70	1.18

Note: Industry-adjusted returns use the industry groups outlined in Appendix A1.1.

Source: IVIS and Thomson Financial.

Figure 3 Cumulative returns on score-based portfolios, Dec/02 to Nov/07



Source: IVIS and Thomson Financial.

Table 6 Analysis of colour-based portfolios, Dec/02 to Nov/07 (Percentage points)

	Colour-based portfolios			
	C1 (good governance)	C2	C3	C4 (poor governance)
Raw excess return				
(1) Mean	1.56	1.52	1.52	1.52
(2) Standard deviation	9.05	9.00	9.84	9.98
(3) Coefficient of variation	5.80	5.92	6.47	6.57
(4) Sharpe ratio	17.26	16.91	15.46	15.25
Industry-adj. excess return				
(1) Mean	0.26	0.27	0.30	0.20
(2) Standard deviation	9.05	8.98	9.82	9.96
(3 Coefficient of variation	34.81	33.26	32.73	49.8
(4) Sharpe ratio	2.87	3.01	3.05	2.01

Note: Industry-adjusted returns use the industry groups outlined in Appendix A1.1.

Source: IVIS and Thomson Financial.

5.2.1 Further analysis

In this section we examine the statistical significance of the links found in the previous section using regression analysis similar to that used in Section 4.

We look at two performance measures: a company's 60-month industry-adjusted average return and the Sharpe ratio. As key governance measures we consider which score-based portfolio the company belongs to; the number of red tops received during the period; and the average total governance score. The control variables are those considered in Section 4, and they take their most recent value in our dataset.

The chief findings are set out in Box 4.[29]

Box 4 Governance and share-price performance

- When comparing S1 (good governance) with S3 (poor governance), S1 is positively and significantly correlated with the company's mean industry-adjusted return and Sharpe ratio. The shares of well-governed companies deliver an extra return of 37 basis points a month industry-adjusted and outperform those of poorly-governed companies by 4 basis points a month, after controlling for risk.

Robustness tests

- Reassuringly, other poor corporate governance metrics are negatively and significantly correlated with the average industry adjusted share price return and the Sharpe ratio. These include the company's cumulative red tops and the average IVIS score over the period. For example, other things being equal, an additional red top leads to a drop of 23 basis points a month in industry-adjusted returns and to a decrease of 4 basis points a month industry- and risk-adjusted.

[29] More detailed econometric outputs in Tables 21 and 22 of Appendix A3.

6.0 CONCLUDING REMARKS

This paper looks at the correlation between good governance and operating performance and share-price returns. We also tested the strength and direction of any potential link between the two. The findings strongly suggest that there is a robust causal relationship between good corporate governance and superior company performance.

Our analysis used three main metrics of the quality of a company's governance. These are the number of red tops received by a company, the value of a quantitative governance score developed for this research, and the number of times a governance provision led to the associated IVIS report being colour-topped. Reassuringly, our findings are generally aligned.

To check the robustness of our findings, firm and share-price performance are also measured in different ways. For example we consider returns on assets, the market-to-book value of assets, returns on the company's share and the Sharpe ratio.[30] We found strong links between good governance and strong performance across all these measures.

[30] Specifically, the Sharpe ratio is the ratio of average excess returns to the standard deviation of the returns. The ratio tells us whether the mean returns on a portfolio are a result of good investment decisions or of extra risk. The greater a share's Sharpe ratio, the better its risk-adjusted performance has been.

A1 DESCRIPTIVE STATISTICS

A1.1 Industrial sectors in our dataset

Table 7 Number of observations by sector

	Total	
	Number	Percentage
Aerospace	21	1.0
Airlines	15	0.7
Auto Parts	10	0.5
Banks and Personal Finance	86	4.3
Brewers	8	0.4
Broadcast & Entertainment	26	1.3
Broadband and Internet	25	1.2
Building Materials & Fixtures	28	1.4
Business Support	191	9.5
Clothing and Personal	60	3.0
Coal and Mining	48	2.4
Commercial Vehicles & Trucks	1	0.0
Computing	114	5.7
Containers & Packaging	20	1.0
Defence	18	0.9
Delivery Services	5	0.2
Distillers & Vintners	6	0.3
Diversified Industrials	8	0.4
Electronics	73	3.6
Farming & Fishing	3	0.1
Food	75	3.7
Furnishings	4	0.2
Gambling	13	0.6
Health Care Providers	10	0.5
Heavy Construction	39	1.9
Home Construction	41	2.0
Home Improvement Retailers	25	1.2
Hotels	11	0.5
Household Products	12	0.6
Industrial Machinery	63	3.1
Industrial Suppliers	42	2.1

	Total	
	Number	Percentage
Insurance and Reinsurance	103	5.1
Investment Management	62	3.1
Marine Transportation	8	0.4
Media Agencies	25	1.2
Medical Equipment	59	2.9
Oil and Gas	73	3.6
Pharmaceuticals	41	2.0
Publishing	70	3.5
Real Estate Holding & Development	115	5.7
Recreational	20	1.0
Restaurants & Bars	55	2.7
Semiconductors	15	0.7
Soft Drinks	5	0.2
Specialised Consumer Services	6	0.3
Speciality Chemicals	31	1.5
Speciality Retailers	57	2.8
Telecommunications	57	2.8
Tobacco	11	0.5
Toys	8	0.4
Transportation	46	2.3
Travel & Tourism	34	1.7
Waste & Disposal Services	5	0.2
TOTAL	2,007	100.0

A1.2 Blue and red tops

Table 8 Blue tops and number of active periods

Number of blue tops	Number of years the company was active				Number of companies
	1	2	3	4	
0	50	25	14	35	124
1	61	39	21	50	171
2		30	32	97	159
3			21	109	130
4				70	70
Total	111	94	88	361	654

Source: IVIS.

Table 9 Red tops and number of active periods

Number of red tops	Number of years the company was active				Number of companies
	1	2	3	4	
0	88	69	67	292	516
1	23	17	14	51	105
2		8	3	10	21
3			4	2	6
4				6	6
Total	111	94	88	361	654

Source: IVIS.

A1.3 Individual governance provisions

Table 10 Importance of individual governance provisions, 2004-2007

Panel A – Number of red tops explained by each provision

	2004	2005	2006	2007	Total
Proxy Report					
Remuneration report	30	40	24	26	120
Long-term incentives	6	7	10	7	30
Pre-emption rights	2	5	7	7	21
Dilution	1	0	1	0	2
Rule 9 Waiver	3	2	1	0	6
Shareholder resolutions	0	0	0	0	0
Articles of association	2	1	0	3	6
Other issues	0	0	2	1	3
Combined Code Report					
Board composition	10	15	16	13	54
No SID	0	0	0	0	0
Audit committee composition	5	5	4	4	18
Remuneration committee composition	4	7	5	6	22
Joint CEO/Chairman	0	0	0	0	0
CEO to chairman	0	0	0	0	0
No. of Red Tops	**48**	**53**	**44**	**44**	**189**
No. of Proxy Red Tops	45	48	42	41	176
No. of Combined Code Red Tops	14	20	18	17	69

Panel B – Number of amber tops explained by each provision

	2004	2005	2006	2007	Total
Proxy Report					
Remuneration report	149	151	136	121	557
Long-term incentives	22	25	24	24	95
Pre-emption rights	4	3	3	3	13
Dilution	1	0	0	0	1
Rule 9 Waiver	3	4	5	5	17
Requisitioned resolutions	1	0	4	4	9
Articles of association	3	4	11	11	29
Other issues	1	0	1	1	3
Combined Code Report					
Board composition	1	0	0	1	2
No SID	0	0	0	0	0
Audit committee composition	1	0	0	0	1
Remuneration committee composition	1	0	1	0	2
Joint CEO/Chairman	1	0	0	0	1
CEO to chairman	0	0	2	3	5
No. of Amber Tops	**175**	**172**	**160**	**152**	**659**
No. of Proxy Amber Tops	174	172	159	149	654
No. of Combined Code Amber Tops	2	0	2	3	7

Note: In a given year the elements of each governance report may add up to more than 100% because of rounding or because the individual provisions are not mutually exclusive.

Source: IVIS.

A1.4 The IVIS governance score

Table 11 Descriptive statistics, 2004-2007

	Number of observations	Mean value	Standard deviation	Minimum value	Maximum value
Total score (full sample)	2007	2.60	2.22	0	18
Total score (blue tops)	1,159	1.43	1.30	0	5
Total score (amber tops)	659	3.60	1.47	2	10
Total score (red tops)	189	6.34	2.93	3	18

Source: IVIS.

A2 GOVERNANCE AND OPERATING PERFORMANCE

A2.1 Explanation of estimation techniques

The estimated models respond to the following general functional form:

$$Performance_{i,t} = \alpha + \beta\, CG_{i,t} + \gamma\, Controls_{i,t} + \varepsilon_{i,t}\,.$$

In the above expression, "performance" is the specific measure of operating performance being used, α is a vector/matrix of constant term/s, "CG" includes the governance metrics and "Controls" stands for the list of control variables. The sign and significant level of the coefficient/s on CG, β, indicate respectively the direction and strength of any association between operating performance and governance.

All the outputs reported throughout this paper are based on the econometrics package Stata 9.2.

A2.2 Descriptive statistics

Table 12 Description of variables used in our econometric analysis

Name of variable	Number of observations	Mean value	Standard deviation	Minimum value	Maximum value
Return on assets (ROA)	1,980	0.08	0.12	-0.89	0.84
Industry-adjusted ROA	1,980	-0.12	11.34	-91.71	82.82
Tobin's Q (Q)	1,977	1.92	1.40	0.55	25.43
Industry-adjusted Q	1,977	0.26	1.30	-2.19	23.76
Turnover (in natural log)	1,998	6.08	1.80	-1.87	12.05
Turnover growth	1,993	0.21	1.92	-1.00	76.18
Assets (in natural log)	2,004	6.46	1.87	1.93	13.81
Assets-squared	2,004	45.27	28.13	3.74	190.76
Gross margin	1,959	0.15	0.45	-4.77	4.13
Profit margin	1,989	0.07	0.58	-9.66	7.60
Market to book (in natural log)	1,924	0.98	0.78	-0.94	6.99
Investment intensity	1,997	0.14	0.46	0.00	8.93
% Fixed assets	2,002	0.28	0.27	0.00	0.99
% Intangible assets	2,000	0.18	0.20	0.00	0.91
Tangibility ratio	1,996	1.06	3.45	0.00	59.44
Long-term leverage	2,004	0.17	0.18	0.00	2.41
Free cash flow to assets	2,003	0.01	0.15	-4.87	1.37
Free cash flow to PPE	1,993	0.74	18.04	-390.73	435.00
Ranking	2,007	323.28	200.05	1	709

Name of variable	Number of observations	Mean value	Standard deviation	Minimum value	Maximum value
FTSE 350	2,007	0.56	0.50	0	1
New entrant	2,007	0.13	0.34	0	1

A2.3 Main econometric results

A2.3.1 Accumulated red tops and company performance

In the following table, panel A examines the relationship between the number of red tops and (industry-adjusted) ROA whereas panel B considers the link between red tops and (industry-adjusted) Q. The same applies to columns C and D. The coefficients of the explanatory variables translate into a percentage-point change in the annual industry-adjusted ROA and into a point change in the annual industry-adjusted Tobin's Q.

Table 13 Corporate governance and performance

	Panel A: industry-adj. ROA		**Panel B**: industry-adj Q	
	(1)	(2)	(3)	(4)
Total Red Tops (cumulative)	-0.85**	-0.97*	-0.04	-0.08**
Sales	0.55	0.81	-0.05	-0.09*
Sales growth	-0.09	1.71	0.05	0.13*
Assets	-3.39**	-4.28**	-1.54***	-0.92***
Assets-squared	0.07	0.11	0.07***	0.04***
Gross margin	13.12***	14.78***	0.04	0.04
Profit margin	-3.11**	-4.09***	-0.09	-0.10
Market to Book	1.38***	1.85***	0.44***	0.44***
Inv. Intensity	0.98	1.58	-0.03	0.04
% Fixed	1.37	0.12	-0.36***	-0.23*
% Intangibles	-7.77***	-7.72***	-1.22***	-1.03***
Tangibility	-0.52***	-0.55***	0.03***	0.02
LT leverage	-0.96	-0.93	0.25	-0.02
Free cash to assets	36.76***	32.69***	1.02	1.24***
Free cash to PPE	-0.01	-0.05**	0.002	-0.003
Ranking	-0.02***	-0.02***	-0.004***	-0.003***
FTSE 350	-2.22***	-1.69**	0.05	-0.05
New entrant	1.87***	--	0.29***	--
Year effects	Yes	Yes	Yes	Yes
Sample	All	Balanced dataset	All	Balanced dataset
Observations	1,863	1,358	1,846	1,344
R-squared	0.47	0.44	0.51	0.58

	Panel C: industry-adj. ROA		**Panel D**: industry-adj. Q	
	(5)	(6)	(7)	(8)
Total Red Tops (cumulative)	-1.66*	-2.14**	-0.06	-0.15**
Sales	0.17	-0.17	-0.03	-0.09
Sales growth	-1.22***	-0.25	0.04	0.12
Assets	3.84	-3.55	-2.68***	-0.83
Assets-squared	-0.55*	0.02	0.16***	0.04
Gross margin	15.51**	18.84*	-0.27	-0.37
Profit margin	-7.71	-12.55	0.34	0.44
Market to Book	0.46	1.99*	0.61***	0.55***
Inv. Intensity	6.18**	-0.002	-0.33	-0.01
% Fixed	3.76	4.66	-0.36	-0.15
% Intangibles	-4.12	0.23	-0.97**	-0.47
Tangibility	-1.06***	-0.60	0.10***	0.07*
LT leverage	-3.81	-7.95	0.09	-0.54
Free to assets	51.48***	34.02***	0.74	2.41***
Free to PPE	-0.11**	0.03	-0.02**	-0.05***
Ranking	-0.04***	-0.04***	-0.004***	-0.003***
FTSE 350	-4.48**	-4.92**	0.03	-0.12
New entrant	1.09	--	0.14	--
Year effects	Yes	Yes	Yes	Yes
Sample	Red topped at least once	Red topped at least once; balanced set	Red topped at least once	Red topped at least once; balanced set
Observations	374	257	370	255
R-squared	0.56	0.50	0.66	0.73

Note: These results are based on OLS regressions with robust standard errors clustered at the company level. All regressions are statistically significant according to the usual F test. Columns (1) and (3) are the results of analysis of the whole dataset. Columns (2) and (4) are in turn based on the subset of companies that were in the FTSE All-Share index for the whole period studied. Columns (5) and (7) are based on the sample of companies that were red topped at least once, while columns (6) and (8) looks at companies that appear in our governance dataset during four consecutive years and are red topped at least once during that period. The symbols ***, ** and * indicate that the coefficient is statistically significant at the 1, 5 and 10 per cent levels, respectively.

Source: Thomson Financial and IVIS.

A2.3.2 Additional robustness checks

Table 14 Red top indicator and performance

	Panel A: adj. ROA		**Panel B:** adj. Q	
	(1)	(2)	(3)	(4)
Red topped every year	-3.15**	-4.81***	0.04	-0.39***
Controls omitted				
Sample	All	Firms with at least three years' records	All	Firms with at least three years' records
Observations	1,863	1,592	1,846	1,576
R-squared	0.47	0.46	0.51	0.57

Note: These results are based on OLS regressions with robust standard errors clustered at the company level. All regressions are statistically significant according to the usual F test. In the interest of space, the coefficients for the control variables are omitted, but they are available from the authors upon request. The symbols ***, ** and * indicate that the coefficient is statistically significant at the 1, 5 and 10 per cent levels, respectively.

Source: Thomson Financial and IVIS.

Table 15 Accumulated red tops and performance (third and fourth year)

This table considers companies with three or more IVIS records in our dataset. For these companies, we look at their performance and accumulated red tops in the third and fourth years.

	Industry-adjusted ROA	**Industry-adjusted Q**
Accumulated red tops	-1.02**	-0.08***
Controls omitted		
Sample	Companies with at least three years' records	Companies with at least three years' records
Observations	756	755
R-squared	0.45	0.51

Note: These results are based on OLS regressions with robust standard errors clustered at the company level. All regressions are statistically significant according to the usual F test. In the interest of space, the coefficients for the control variables are omitted, but they are available from the authors upon request. The symbols ***, ** and * indicate that the coefficient is statistically significant at the 1, 5 and 10 per cent levels, respectively.

Source: Thomson Financial and IVIS.

A2.3.3 Lagged red tops and firm performance

Table 16 Corporate governance and operating performance

	Adj. ROA	Adj. Q
Red topped (current year)	1.27	0.21
Red topped (1-year lag)	-1.03	-0.05
Red topped (2-year lag)	-0.09	-0.27***
Red topped (3-year lag)	-3.11***	-0.08
Controls omitted		
Year effects	Yes	Yes
Sample	Balanced dataset	Balanced dataset
Observations	336	336
R-squared	0.52	0.63

Note: These results are based on companies with four years' worth of IVIS reports and OLS regressions with robust standard errors. All regressions are statistically significant according to the usual F test. In the interest of space, the coefficients for the control variables are omitted, but they are available from the authors upon request. The symbols ***, ** and * indicate that the coefficient is statistically significant at the 1, 5 and 10 per cent levels, respectively.

Source: Thomson Financial and IVIS.

A2.3.4 Individual provisions and operating performance

Table 17 Correlations between governance variables, 2004-2007

	Rem. report	LTIPs	Pre-emption	Rule 9 waiver	Articles Assoc.	Board comp.	Audit cttee	Rem. cttee	NEDs
Rem. report	1.00								
LTIPs	0.20	1.00							
Pre-emption	0.00	0.01	1.00						
Rule 9 waiver	0.01	-0.04	-0.02	1.00					
Articles assoc.	0.06	0.09	0.03	0.00	1.00				
Board comp.	0.12	0.07	0.12	-0.01	-0.01	1.00			
Audit cttee	0.12	-0.03	0.13	-0.01	0.03	0.34	1.00		
Rem. cttee	0.14	0.01	0.08	-0.01	-0.02	0.26	0.78	1.00	
NEDs	-0.02	0.04	-0.06	0.04	0.02	-0.11	-0.15	-0.06	1.00
% NEDs	0.02	0.08	-0.03	0.02	-0.01	-0.06	-0.18	-0.12	0.76

Table 18 Individual provisions and operating performance

	Panel A: adj. ROA		**Panel B**: adj. Q	
	(1)	(2)	(3)	(4)
Rem. report	0.21	0.15	0.03	0.04
LTIPs	0.27	-0.04	-0.07	-0.04
Pre-emption	-2.95***	-3.22***	-0.22***	-0.19***
Rule 9 waiver	0.15	-0.45	0.03	0.05
Articles assoc.	1.30**	1.20*	0.13**	0.13**
Board comp.	-0.29	-0.25	0.02	-0.08
Audit committee	-0.45	-2.00***	0.03	-0.02
Rem. committee	-0.96	-0.40	-0.13	-0.14***
NEDs	0.24	0.30	-0.01	-0.02
% NEDs	-7.41**	-5.82*	-0.02	-0.05
Controls omitted				
Sample	All	Balanced dataset	All	Balanced dataset
Observations	1,863	1,358	1,846	1,344
R-squared	0.48	0.45	0.52	0.59

Note: These results are based on OLS regressions with robust standard errors clustered at the company level. All regressions are statistically significant according to the usual F test. In the interest of space, the coefficients for the control variables are omitted, but they are available from the authors upon request. The symbols ***, ** and * indicate that the coefficient is statistically significant at the 1, 5 and 10 per cent levels, respectively.

Source: Thomson Financial and IVIS.

	Panel C: adj. ROA		**Panel D**: adj. Q	
	(5)	(6)	(7)	(8)
Rem. report	0.16	0.04	0.06*	0.05*
LTIPs	0.33	-0.12	-0.05	-0.03
Section 95	-3.10***	-3.36***	-0.18***	-0.19***
Rule 9 waiver	-0.03	-0.73	0.05	0.05
Articles assoc.	0.93	0.99	0.16***	0.12*
Board comp.	-0.33	-0.22	0.05	-0.06
Audit committee	0.15	-1.78***	-0.001	0.001
Rem. committee	-1.35*	-0.58	-0.13*	-0.17***
NEDs	0.51**	0.54**	-0.01	0.0001
% NEDs	-8.98**	-7.90**	-0.28	-0.33
Controls omitted				
Sample	Firms red or amber topped at least once	Firms red or amber topped at least once; balanced set	Firms red or amber topped at least once	Firms red or amber topped at least once; balanced set
Observations	1,420	1,088	1,404	1,075
R-squared	0.49	0.46	0.61	0.61

Note: These results are based on OLS regressions with robust standard errors clustered at the company level. All regressions are statistically significant according to the usual F test. In the interest of space, the coefficients for the control variables are omitted, but they are available from the authors upon request. The symbols ***, ** and * indicate that the coefficient is statistically significant at the 1, 5 and 10 per cent levels, respectively.

Source: Thomson Financial and IVIS.

A2.4 Analysis of causality

Table 19 Performance in 2007 as a function of governance in 2004

	Panel A: adj. ROA		**Panel B**: adj. Q	
	(1)	(2)	(3)	(4)
High 2004 score (poor governance)	-2.94***	-2.69**	-0.15*	-0.11**
Adj. ROA in 2004	--	0.16***	--	--
Adj. Q in 2004	--	--	--	0.31***
Sales	0.83	0.89	-0.04	-0.05
Sales growth	-2.86	-2.39	0.15	0.11
Assets	-5.42**	-5.40**	-1.02***	0.79***
Assets-squared	0.15	0.16	0.04***	0.03***
Gross margin	13.59***	12.28***	0.19	0.18
Profit margin	-3.34	-2.66	-0.04	-0.09
Market to Book	2.35***	2.11***	0.51***	0.37***
Inv. Intensity	0.08	0.47	-0.01	-0.01
% Fixed	2.29	3.00*	-0.12	0.07
% Intangibles	-5.59***	-4.27**	-0.93***	-0.49***
Tangibility	-0.44***	-0.43***	0.01	0.002
LT leverage	-0.56	-0.24	-0.13	-0.15
Free to assets	34.69***	34.82***	0.83	0.60
Free to PPE	-0.04	-0.05**	0.004**	0.003**
Ranking	-0.03***	-0.03***	-0.003***	-0.003***
FTSE 350	-2.71**	-2.47**	0.05	0.12
Fiscal year effects	Yes	Yes	Yes	Yes
Sample	Balanced set	Balanced set	Balanced set	Balanced set
Observations	336	334	336	328
R-squared	0.52	0.55	0.62	0.71

Note: The underlying sample is made up of companies with four years' worth of IVIS reports. The results are based on OLS regressions with robust standard errors clustered at the company level. All regressions are statistically significant according to the usual F test. The values of the control and dependent variables are those corresponding to 2007. The symbols ***, ** and * indicate that the coefficient is statistically significant at the 1, 5 and 10 per cent levels, respectively.

Source: Thomson Financial and IVIS.

Table 20 Governance in 2007 as a function of performance in 2004

These regressions consider two alternative measures of governance in 2007 as dependent variables: the value of the governance score in that year, and an indicator taking value 1 if the score is higher than four. As the latter is a binary dependent variable, we estimate a logit model.

	Panel A: Poor governance		**Panel B**: Poor governance	
	(OLS)	(Logit)	(OLS)	(Logit)
Adj. ROA in 2004	-0.00	-0.01	--	--
Adj. Q in 2004	--	--	0.39**	0.51**
High 2004 score (poor governance)	1.35***	1.49***	1.50***	1.71***
Sales	-0.20	-0.04	-0.18	-0.08
Sales growth	0.44	1.03	0.47	1.10*
Assets	-0.27	-0.58	0.13	0.39
Assets-squared	0.02	0.03	0.001	-0.02
Gross margin	-0.76	-1.92	-0.86	-1.90
Profit margin	0.48	0.55	0.48	0.51
Market to Book	0.17	-0.03	0.06	-0.12
Inv. Intensity	0.04	-0.25	0.10	-0.18
% Fixed	0.41	2.00*	0.65	2.18*
% Intangibles	0.51	-0.21	0.87***	0.42
Tangibility	0.03	0.14*	0.02	0.13*
LT leverage	-0.76	-4.38**	-0.88	-4.56**
Free to assets	0.52	1.77	0.33	1.46
Free to PPE	0.002	-0.01	0.002	-0.02
Ranking	0.002	0.001	0.003*	0.003
FTSE 350	0.71*	0.65	0.74*	0.59
Fiscal year effects	Yes	Yes	Yes	Yes
Sample	Balanced set	Balanced set	Balanced set	Balanced set
Observations	334	334	328	328
R-squared	0.11	0.18	0.14	0.20

Note: The underlying sample is made up of companies with four years' worth of IVIS reports. The results are based on OLS regressions with robust standard errors clustered at the company level. All regressions are statistically significant according to the usual F test. The values of the control and dependent variables are those corresponding to 2007. In the above table, OLS refers to ordinary least squares estimates where the dependent variable is the value of the governance score in 2007. Logit refers to the logit model for the analysis of binary outcomes where the dependent variable is an indicator taking value 1 if the governance score in 2007 is higher than four. The symbols ***, ** and * indicate that the coefficient is statistically significant at the 1, 5 and 10 per cent levels, respectively.

Source: Thomson Financial and IVIS.

A3 GOVERNANCE AND SHARE-PRICE RETURNS

A3.1 Econometric analysis

The results reported here are based on standard (cross-sectional) OLS regressions. The coefficients of the corporate governance variables represent the basis points change in industry-adjusted returns and the point change in the Sharpe ratio.

Table 21 Corporate governance and share-price performance

	Mean adj. return	Sharpe ratio
Good governance portfolio	0.40***	0.04***
Sales	-0.26**	-0.03**
Sales growth	0.98***	0.08***
Assets	-0.38	-0.01
Assets-squared	0.01	0.001
Gross margin	-0.22	-0.007
Profit margin	0.05	-0.007
Market to Book	-0.05	0.002
Inv. Intensity	0.15	0.008
% Fixed	-0.01	0.007
% Intangibles	-0.18	-0.02
Tangibility	-0.03	-0.004
LT leverage	-0.81	-0.08
Free to assets	2.66**	0.28**
Free to PPE	-0.02*	-0.003*
Ranking	-0.005***	-0.0004***
FTSE 350	-0.77**	-0.07**
Sample	Companies in S1 or S3	Companies in S1 or S3
Observations	226	226
R-squared	0.30	0.27

Note: These results are based on cross-sectional OLS regressions considering the last year the company appears in our financial dataset. All regressions are statistically significant according to the usual F test. The symbols ***, ** and * indicate that the coefficient is statistically significant at the 1, 5 and 10 per cent levels, respectively.

Source: Thomson Financial and IVIS.

Table 22 Corporate governance and share-price performance

	Panel A: mean adj. return		**Panel B**: Sharpe ratio	
	(1)	(2)	(3)	(4)
Total Red Tops (cumulative)	-0.23***	--	-0.03***	--
Average score	--	-0.15***	--	-0.02***
Sales	-0.23***	-0.25***	-0.02**	-0.03**
Sales growth	1.25***	1.13***	0.12***	0.10***
Assets	-0.54**	-0.57*	-0.03	-0.03
Assets-squared	0.02	0.02*	0.001	0.001
Gross margin	-0.27	-0.33	-0.01	-0.02
Profit margin	0.09	0.12	0.004	0.0002
Market to Book	0.07	0.05	0.01	0.01
Inv. Intensity	0.16	0.16	0.01	0.01
% Fixed	0.11	0.12	0.02	0.02
% Intangibles	-0.42	-0.40	-0.05	-0.05
Tangibility	-0.03	-0.03	-0.004*	-0.004
LT leverage	-0.93**	-0.89**	-0.09**	-0.09**
Free to assets	2.40**	2.60***	0.27***	0.29***
Free to PPE	-0.01	-0.01	-0.001	-0.001
Ranking	-0.004***	-0.004***	-0.0003***	-0.0003***
FTSE 350	-0.49*	-0.45*	-0.05	-0.04
Sample	All studied companies	All studied companies	All studied companies	All studied companies
Observations	319	319	319	319
R-squared	0.29	0.30	0.26	0.27

Note: These results are based on cross-sectional OLS regressions and financial information at the company level refers to the last period the company appears in our dataset. All regressions are statistically significant according to the usual F test. The symbols ***, ** and * indicate that the coefficient is statistically significant at the 1, 5 and 10 per cent levels, respectively.

Source: Thomson Financial and IVIS.

REFERENCES

Arcot, S. and Bruno, V. (2006): "One size does not fit all, after all: evidence from corporate governance", *Mimeo, London School of Economics, November 2006*.

Barber, G. M. and Lyon, J. (1996): "Detecting long-run abnormal operating performance: the empirical power and specification of test statistics", *Journal of Financial Economics, Vol. 41, pp. 359-399*.

Bebchuk, L., Cohen, A. and Ferrell, A. (2005): "What Matters in Corporate Governance?", Discussion Paper 491, Harvard John Olin Center for Law, Economics, and Business.

Bruno, V. and Claessens, S. (2006): "Corporate Governance and Regulation: Can There Be Too Much of a Good Thing?", FMG Discussion Paper 574, London School of Economics, October 2006.

Core, J., Guay, W, and Rusticus, T. (2006): "Does Weak Governance Cause Weak Stock Returns? An Examination of Firm Operating Performance and Investors' Expectations", Journal of Finance, Vol. 41 (2), pp. 655-687.

Gompers, P., J. Ishii and A. Metrick (2003): "Corporate Governance and Equity Prices", Quarterly Journal of Economics, Vol. 118 (1), pp. 107-155.

Hermalin, B. and Weisbach, M. S. (2003): "Boards of Directors as an Endogenously Determined Institution: A Survey of the Economic Literature", *Economic Policy Review*, Vol. 9, pp. 7-26.

Keasey, K., Thompson, S. and Wright, M. (2005): "*Corporate Governance. Accountability, Enterprise and International Comparisons*", John Wiley & Sons, Ltd, England.

Klein, A. (1998): "Firm Performance and Board Committee Structure", Journal of Law & Economics, Vol. 41 (1), pp. 275-303.

Landier, A., Sraer, D. and Thesmar, D. (2005): "Bottom-Up Corporate Governance", *Mimeo, Stern School of Business, October 2005*.

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