

# **Corporate Governance Study:**

## **The Correlation between Corporate Governance and Company Performance**

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## >>>The Correlation Between Corporate Governance and Company Performance

### Summary

We first examined whether firms with weaker corporate governance perform more poorly than firms with stronger corporate governance. We found firms with weaker corporate governance to perform more poorly. They have lower stock returns in the preceding three, five and ten-year periods than do firms with stronger corporate governance. (See table 1, panel A). For example, firms in the bottom decile of industry-adjusted CGQ<sup>®</sup> (Corporate Governance Quotient) have 5-year returns that are 3.95% below the industry average, while firms in the top decile of industry-adjusted CGQ have 5-year returns that are 7.91% above the industry-adjusted average.<sup>1</sup> The difference in performance between these two groups is 11.86%. (See table 2, panel A.)

International Business Machines Corp. (IBM) is an excellent example of good corporate governance. It had an industry CGQ of 96.3, a 3-year return 11.67% above the industry average, a 5-year return 5.90% above the industry average, and a 10-year return 19.09% above the industry average. Another example is Occidental Petroleum Corp. It had an industry CGQ of 99.5, a 3-year return 24.35% above the industry average, a 5-year return 9.75% above the industry average, and a 10-year return 5.72% above the industry average. An example of poor corporate governance is Sholodge, Inc. It had an industry CGQ of 5.1, a 3-year return 7.55% below the industry average, a 5-year return 7.09% below the industry average, and a 10-year return 19.79% below the industry average. Another example is MediaBay, Inc. It had an industry CGQ of 9.6, a 3-year return 34.84% below the industry average, and a 5-year return 38.78% below the industry average.

We next examined whether firms with weaker corporate governance are less profitable than firms with stronger corporate governance. We found firms with weaker corporate governance to be less profitable. They have lower return on assets, lower return on average equity, lower return on average investment, lower return on equity, and lower return on investment than do firms with stronger governance. (See table 1, panel A). Two examples follow. First, firms in the bottom decile of industry-adjusted CGQ have returns on equity that are 4.86% below their industry-adjusted average, while those in the top decile of industry-adjusted CGQ have returns on equity that are 18.98% above their industry-adjusted average, a performance differences of 23.84%. (See table 2, panel A.) Second, firms with weaker corporate governance have a lower return on assets because they have lower net profit margins than do firms with stronger corporate governance. (See table 1, panel B). Firms in the bottom decile of industry-adjusted CGQ have net profit margins that are 6.38% above their industry-adjusted average, while those in the top decile of industry-adjusted CGQ have net profit margins that are 21.66% above their industry-adjusted average a performance difference of 28.04%. (See table 2, panel B).

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1. Corporate Governance Quotient (CGQ) is a rating system designed to assist institutional investors in evaluating the quality of corporate boards and the impact their governance practices may have on performance. The CGQ uses a comprehensive set of objective and consistently applied criteria to each of the companies rated.

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Continuing with our previous examples, IBM had a return on equity that was 70.75% above the industry average, and a net profit margin 64.76% above the industry average. Occidental had a return on equity that was 29.31% above the industry average, and a net profit margin 23.18% above the industry average. Sholodge had a return on equity that was 29.57% below the industry average, and a net profit margin 70.19% below the industry average. MediaBay had a return on equity that was 30.83% below the industry average, and a net profit margin 5.84% below the industry average.

Third, we examined if firms with weaker corporate governance are riskier than firms with stronger corporate governance. We found firms with weaker corporate governance to be riskier. Three examples follow. First, firms with weaker corporate governance have more share price volatility than do firms with stronger corporate governance.<sup>2</sup> (See table 1, panel A). Firms in the bottom decile of industry-adjusted CGQ have share price volatility that is 6.20% above their industry-adjusted average, while those in the top decile of industry-adjusted CGQ have share price volatility that is 5.63% below their industry-adjusted average a performance difference of 11.83%. (See table 2, panel A.) Second, firms with weaker corporate governance are riskier based on two of the three risk measures considered by Fama and French (1992) in their highly influential study, namely, they have lower price-to-book ratios and they are smaller. (See table 1, panel A). Firms in the bottom decile of industry-adjusted CGQ have price-to-book ratios that are 0.55 below their industry-adjusted average, while those in the top decile of industry-adjusted CGQ have price-to-book ratios that are 0.59 above their industry-adjusted average. (See table 2, panel A.) Third, firms with weaker corporate governance have less interest coverage and lower operating cash flow to current liabilities than firms with stronger corporate governance. (See table 1, panel A). For example, firms in the bottom decile of industry-adjusted CGQ have operating cash flow to current liabilities that is 0.01 above their industry-adjusted average, while those in the top decile of industry-adjusted CGQ have operating cash flow to current liabilities that is 0.29 above their industry-adjusted average. (See table 2, panel B.) IBM's share price volatility was 2.65% below the industry average, a price-to-book ratio 2.41 above the industry average, and an operating cash flow to current liability ratio 0.75 above the industry average. Occidental had a share price volatility that was 28.94% below the industry average, a price-to-book ratio 0.18 above the industry average, and an operating cash flow to current liability ratio 0.27 above the industry average. Sholodge had a share price volatility that was 47.71% above the industry average, a price-to-book ratio 1.81 below the industry average, and an operating cash flow to current liability ratio 0.27 below the industry average. MediaBay had a share price volatility that was 42.55% above the industry average, a price-to-book ratio 1.36 below the industry average and an operating cash flow to current liability ratio 0.34 below the industry average.

Fourth, we examined whether firms with weaker corporate governance pay out fewer dividends, exacerbating the principal-agency conflict which good corporate governance seeks to alleviate (Easterbrook 1984; Jensen 1986). Indeed, we found firms with weaker corporate governance have lower dividend payouts and lower dividend yields than do firms with stronger corporate governance. (See table 1, panel B). For example, firms in the bottom decile of industry-adjusted CGQ have a dividend payout ratio that is 3.81% below their industry-adjusted average, while those in the top decile of industry-adjusted CGQ

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2. The results also pertain to P/E, a risk measure highly correlated to P/B. They do not pertain to beta, the third, but least important of the Fama-French (1992) risk measures.

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have a dividend payout ratio that is 6.64% above their industry-adjusted average (See table 2, panel B). IBM had a dividend payout ratio 16.91% above the industry average. Occidental had a dividend payout ratio 30.83% above the industry average. Sholodge had a dividend payout ratio 13.33% below the industry average. MediaBay had a dividend payout ratio 3.48% below the industry average.

Fifth, we examined which of the four corporate governance factors considered by Institutional Shareholder Services (ISS) is the driving factor of our results. The four factors we examined are board composition, compensation, takeover defenses, and audit. Board composition is the most important factor we identified. The least important we identified is takeover defenses. (See table 3, panel B).

### **Procedures**

We undertook two analyses. First, we related industry-adjusted CGQ scores to 15 industry-adjusted "fundamental" variables suggested by ISS, and to 20 other variables that we deemed to be of interest. Second, we related all 35 fundamental variables to four aspects of CGQ: board composition, compensation, takeover defenses, and audit.

### **CGQ scores and fundamentals**

The 35 fundamental variables were subjected to a cross-sectional analysis of all firms in the CGQ database (5,460 firms) as of September 26, 2003. We omitted observations in the extreme percentile of the fundamentals (1 percent on each side). Please see the Appendix for research insight mnemonics.

1. 15 variables suggested by ISS:
  - a. Four past returns measures: 1 year total return, 3 year total return, 5 year total return, 10 year total return.
  - b. Five profitability measures: return on assets, return on average equity, return on average investment, return on equity, and return on investment.
  - c. Six risk measures: beta, max of volatility, z-score, price-to-book, price-to-earnings, market value of equity.
2. 20 variables we added:
  - a. Three profitability measures: Net profit margin, total asset turnover, financial leverage.
  - b. Four asset utilization measures: Receivables turnover, inventory turnover, fixed asset turnover, accounts payable turnover.
  - c. Six short-term liquidity risk measures: Current ratio, quick ratio, operating cash flow to current liabilities, days to collect receivables, days to sell inventory, days payable outstanding.
  - d. Two dividend measures: Dividend payout and dividend yield.
  - e. Five long-term solvency risk measures: Debt-to-equity, total debt to tangible assets, long-term debt to tangible assets, interest coverage (income), interest coverage (cash)

The procedure used to assess if there is a relation between industry-adjusted CGQ scores and the 35 industry-adjusted fundamental variables follows.<sup>3</sup> We ordered the industry-

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3. In addition to industry-adjusted CGQ scores and industry-adjusted fundamentals, we related raw CGQ scores to raw fundamentals and index-adjusted CGQ scores to index-adjusted fundamentals. The results were more meaningful [and more intuitively appealing] using industry-adjustments so we report those only.

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adjusted CGQ scores in descending order and compared the performance measures in extreme deciles to see if the performance measures were significantly different from each other.<sup>4</sup> For example, when examining return on assets, we compared the return on assets for firms in the top industry-adjusted CGQ score decile with those in the bottom decile. We used a t-test to see if the mean value of the industry-adjusted return on assets in the top decile of industry-adjusted CGQ scores was significantly different from that in the bottom decile. We also correlated industry-adjusted CGQ scores with the 35 industry-adjusted fundamental variables, using both Pearson (parametric) and Spearman (non-parametric) correlations. The results for the correlations appear in table 1; those for the deciles in table 2.

### ***Results for 15 variables suggested by ISS***

If firms with worse corporate governance have lower past returns, industry-adjusted CGQ scores should be positively related to industry-adjusted past returns. We obtain this result for all three of the longest past return measures, namely, 3 year total return, 5 year total return, 10 year total return. Results for 1-year total return are inconclusive. The one-year year return also proxies for price momentum, a risk-factor (Carhart 1997) so one way to interpret this result is that 1-year return, a risk measure (not a performance measure), is unrelated to corporate governance. (See table 1, panel A). For evidence on results for each of the 10 deciles, see table 2, panel A.

If firms with weaker corporate governance are less profitable, industry-adjusted CGQ scores should be positively related to industry-adjusted profitability measures. We obtain this result for all five of the profitability measures we examine: return on assets, return on average equity, return on average investment, return on equity, and return on investment. (See table 1, panel A). For information on deciles, see table 2, panel A.

If firms with weaker corporate governance are riskier, industry-adjusted CGQ scores should be negatively related to industry-adjusted betas (increases in beta increase risk) and industry-adjusted max of volatility (increases in stock price volatility increase risk, and positively related to z-score (bankruptcy risk increases as z-score decreases), price-to-book (firms with lower price-to-book ratios are more risky), price to earnings (firms with lower price-to-earnings ratios are more risky), and market value of equity (larger firms are less risky). We obtain this result for five of the six risk measures. Only beta, the least important of the Fama-French risk measures, has the 'wrong' sign. (See table 1, panel A). For information on deciles, see table 2, panel A.

### ***Results for additional 20 variables***

We discuss results for those five variables that are both significant with their expected sign in table 1, panel B.<sup>5</sup>

The profitability measure, return on assets (shown to be significant in table 1, panel A) equals net profit margin times total asset turnover.<sup>6</sup> Table 1, panel B shows that firms with weaker

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4. We examined quintiles and halves for the first 15 fundamentals (please see interim report) but we only examined deciles for the next 20 fundamentals so we only include deciles in the final report.

5. We could add discussion of variables that are significant with the desired sign if we focus only on Spearman correlations [see the notes to the table], but for conservatism's sake only discuss variables having the expected Spearman and Pearson correlations.

6. This is the well-known Dupont equation, developed in the 1940s.

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governance have lower profit margins. Table 2, panel B provides decile results.

Two of the long-term solvency ratios, interest coverage (cash) and operating cash flow to total liabilities, have the 'correct sign,' suggesting that firms with weaker governance are riskier than those with stronger governance. See table 1, panel B for correlation results and table 2, panel B for decile results.

Firms with poorer governance have lower dividend payouts and lower dividend yields than do firms with stronger governance. See table 1, panel B for correlation results and table 2, panel B for decile results.

**Why firms with weaker governance perform more poorly, are less profitable, more risky, and have lower dividends than firms with better governance:**

ISS identifies four measures of corporate governance: board composition, compensation, takeover defenses, and audit.<sup>7</sup> To determine which aspects of corporate governance are most important for explaining our results, we regressed each of the 35 industry-adjusted fundamental variables on industry-adjusted board composition, compensation, takeover, and audit. Our findings appear in table 3, panel A, for the original 15 variables, and in table 3, panel B, for the additional 20 variables.

Panel A reveals that board composition has the expected result in 13 of 15 cases. These are the same 13 cases where the relation between CGQ and fundamentals are as expected (see table 1, panel A). The result is perverse for 1-year total returns and insignificant for beta. However, if 1-year returns are considered as a risk-proxy (Carhart 1997) rather than a performance measure, this result suggests that firms with better boards are less risky.

Compensation has the expected result in seven of 15 cases. These seven cases are a subset of the 11 cases that 'worked' for board compensation: three return measures (3-year total return, 5-year total return, and 10-year total return), two profitability measures (return on average equity and return on average investment), and two risk measures (price-to-book and market value of equity).

Takeover defenses has the expected result in only one of 12 cases, 1-year total return. Audit has the expected result in four cases, two returns measures (1 year total return and 5 year total return) and two risk measures (price-to-book and market value of equity).

Panel B of table 3 shows that board composition has the expected result for all five of the 20 additional measures for which we obtained the expected result in table 1, panel B, namely net profit margin, interest coverage (cash), operating cash flow to current liabilities, dividend payout and dividend yield.

Compensation has the expected result for two of the five additional measures for which we obtained a significant relation in table 1, panel B, namely dividend payout and dividend yield.

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7. They also have finer breakdowns, based on eight measures and 61 measures. We confined our analysis to the four measures.

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Takeover defenses are perverse once again. It has an unexpected result for all five of the measures for which we obtained the expected result in table 1, panel B, namely net profit margin, interest coverage (cash), operating cash flow to current liabilities, dividend payout and dividend yield.

Audit is not significant with its expected sign for any of the 20 additional measures.

In sum, board composition is the most important factor, compensation is the next most important factor (a distant second), audit is the third most important factor, and takeover is (at best) unimportant or (at worst) perverse.

### **Notes**

1. Our results pertain to a point in time, namely, September 26, 2003 and may not pertain to other time periods. We have no reason to believe that our results are unique to this particular time period, and we are in the process of verifying that our results are robust to other time periods.
2. We conduct our analyses using the entire data set. They may not pertain to subsets of the data (e.g., industries, indices).
3. Our results are based on univariate analyses, namely correlations, deciles, and regressions. They may not pertain to multivariate analyses.
4. We assume that the data we use are reliable, both the CGQ scores provide by ISS and the fundamental variables obtained from research insight.
5. We assume that high (low) CGQ scores indicate superior (inferior) corporate governance.

**Table 1 Panel A****Pearson Correlations of Industry CGQ with Original 15 Industry-Adjusted Fundamentals\***

Fundamental	Industry CGQ	Good or Bad
1 Year Total Return	Insignificant	N/A
3 Year Total Return	Positive – 1% level	Good
5 Year Total Return	Positive – 1% level	Good
10 Year Total Return	Positive – 1% level	Good
Beta	Positive – 1% level	Bad
Return on Assets	Positive – 1% level	Good
Return on Average Equity	Positive – 1% level	Good
Return on Average Investment	Positive – 1% level	Good
Return on Equity	Positive – 1% level	Good
Return on Investment	Positive – 1% level	Good
Max of Volatility	Negative – 1% level	Good
Z-score	Positive – 1% level	Good
Price-to-Book	Positive – 1% level	Good
Price-to-Earnings	Positive – 1% level	Good
Market Value of Equity	Positive – 1% level	Good

\* All fundamentals are industry mean-adjusted, using the 23 ISS defined industries, after removing the top and bottom 1% of each fundamental's distribution.

All significance levels are based on two-tailed p-values.

Spearman correlations are consistent with all fundamental results listed above.

**Table 1 Panel B****Pearson Correlations of Industry CGQ with Additional Industry-adjusted Fundamentals\*\***

Fundamental	Industry CGQ	Good or Bad
Net Profit Margin	Positive – 5% level	Good
Total Assets Turnover	Negative – 1% level	Bad
Financial Leverage Index	Positive – 1% level	Bad
Receivables Turnover	Insignificant	N/A
Inventory Turnover	Insignificant <sup>1</sup>	N/A
Fixed Assets Turnover	Negative – 1% level <sup>2</sup>	Bad
Current Ratio	Negative – 1% level	Bad
Quick Ratio	Negative – 10% level	Bad
Debt-to-Equity	Insignificant <sup>3</sup>	N/A
Total Debt to Tangible Assets	Insignificant <sup>4</sup>	N/A
Interest Coverage (Income)	Insignificant <sup>5</sup>	N/A
Interest Coverage (Cash)	Positive – 1% level	Good
Operating Cash Flow to		
Current Liabilities	Positive – 1% level	Good
Days to Sell Inventory	Insignificant <sup>6</sup>	N/A
Days to Collect Receivables	Insignificant	N/A
Accounts Payable Turnover	Negative – 1% level	Bad
Days to Pay Payables	Positive – 5% level	Bad
Dividend Payout	Positive – 1% level	Good
Dividend Yield - Monthly	Positive – 1% level	Good
Long-term Debt to Tangible Assets	Positive – 5% level	Bad

\*\* All fundamentals are industry mean-adjusted, using the 23 ISS defined industries, after removing the top and bottom 1% of each fundamental's distribution.

1. Becomes positively significant at 10% level when Spearman Correlations are used.

2. Becomes insignificant when Spearman Correlations are used.

3. Becomes positively significant at 1% level when Spearman Correlations are used.

4. Becomes positively significant at 1% level when Spearman Correlations are used.

5. Becomes positively significant at 1% level when Spearman Correlations are used.

6. Becomes negatively significant at 5% level when Spearman Correlations are used.

**Table 2 Panel A**

**Mean of Original 15 Industry-Adjusted Fundamentals in Deciles formed by Industry CGQ\***

Decile	Industry CGQ	Total Return 1 Year	Total Return 3 Year	Total Return 5 Year	Total Return 10 Year	Beta	Return on Assets	Return on Avg Equity	Return on Avg Investment	Return on Equity	Return on Investment	Max of Volatility	Z-score	Price-to-Book	Price-to-Earnings	Market Value of Equity
1	95.34	-6.36	6.48	7.91	5.09	0.02	9.78	17.28	13.87	18.98	17.93	-5.63	1.69	0.59	6.18	3031.27
2	85.47	0.51	2.33	3.57	2.59	0.03	4.65	7.04	5.98	7.85	7.69	-3.87	0.54	0.37	1.53	808.26
3	75.62	-3.47	0.89	2.69	1.95	0.01	0.86	1.66	2.96	3.36	0.20	0.67	0.41	-0.07	3.20	137.83
4	65.67	-1.32	-0.34	-0.42	-0.77	0.06	-1.43	-2.94	-3.61	-8.37	-5.36	-0.76	-0.47	0.27	-0.38	-55.44
5	55.71	9.31	-0.33	-0.92	-0.94	0.09	-1.28	-2.90	-1.13	0.32	-2.95	-0.33	-0.60	-0.13	-2.16	-455.67
6	45.73	1.02	0.35	-1.09	-1.44	0.00	-1.82	-2.84	-3.42	-6.80	-4.06	0.31	-0.08	0.02	-3.16	-505.75
7	35.70	1.49	-1.87	-1.55	-1.84	-0.04	-2.31	-2.08	-1.64	-5.16	-1.66	1.25	-0.34	-0.13	-0.56	-654.28
8	25.64	-1.94	-3.32	-3.73	-3.16	-0.07	-6.15	-12.40	-8.46	-6.58	-9.94	3.44	-0.36	0.03	-2.24	-737.66
9	15.55	-0.51	-4.66	-4.49	-4.21	-0.02	-1.76	-1.37	-5.24	-0.37	-2.04	-0.87	-0.64	-0.44	-1.32	-793.96
10	5.27	1.43	-0.19	-3.95	-2.22	-0.08	-0.85	-2.75	0.16	-4.86	-0.75	6.20	-0.16	-0.55	-1.47	-764.92
Expected Sign		+	+	+	+	-	+	+	+	+	+	-	+	+	+	+
Decile 1-10		-7.79	6.67	11.86	7.31	0.10	10.63	20.03	13.71	23.84	18.68	-11.83	1.85	1.14	7.65	3796.19
Significance Level		10%	1%	1%	1%	5%	1%	1%	1%	1%	1%	1%	1%	1%	1%	1%

\* Deciles were formed by Industry CGQ in descending order. The mean of each industry mean-adjusted fundamental was calculated in each decile. All fundamentals are industry mean-adjusted using the 23 ISS defined industries, after removing the top and bottom 1% of each fundamental's distribution. A t-test was performed to test whether a significant difference exists between the means in the two extreme deciles (deciles 1 and 10). Significance levels are based on two-tailed p-values.

**Table 2 Panel B**

**Mean of Additional Industry-Adjusted Fundamentals in Deciles Formed by Industry CGQ\***

Decile	Net Profit Margin	Total Assets Turnover	Financial Leverage Index	Receivables Turnover	Inventory Turnover	Fixed Assets Turnover	Current Ratio	Quick Ratio	Debt to Equity	Total Debt to Tangible Assets	Interest Coverage (Income)	Interest Coverage (Cash)	Operating Cash Flow to Current Liabilities	Days to Sell Inventory	Days to Collect Receivables	Payables Turnover	Days to Pay Payables	Dividend Payout	Dividend Yield - Monthly	Long-Term Debt to Tangible Assets	
1	21.66	-0.04	0.43	0.02	3.10	-1.04	-0.40	-0.30	0.14	2.21	14.20	0.21	0.29	-1.60	4.10	-0.85	83.05	6.64	0.34	2.37	
2	5.55	-0.01	0.17	-0.45	-2.28	-0.59	-0.16	-0.06	0.10	0.93	6.99	0.08	0.05	-2.63	0.38	-0.87	63.70	3.87	0.13	1.04	
3	-3.84	-0.05	-0.15	-1.68	-0.29	-0.61	0.09	0.03	-0.09	-0.39	-0.85	0.03	0.00	0.17	-7.27	0.38	87.64	1.66	0.14	-0.55	
4	-3.43	0.00	-0.11	1.05	1.33	-0.21	0.01	0.02	-0.06	-0.09	-6.91	-0.01	0.00	-13.17	-8.43	0.42	-33.32	0.73	0.04	0.66	
5	-11.86	0.00	-0.05	-0.13	-0.37	0.75	-0.03	0.03	-0.06	-0.40	-6.87	-0.11	-0.12	-1.25	34.05	-0.44	22.50	-0.78	-0.05	0.89	
6	-0.44	0.01	-0.28	0.19	-0.02	0.06	0.15	0.13	-0.03	-0.90	-0.04	-0.08	-0.08	13.20	4.34	0.40	-123.39	-2.24	-0.07	-0.46	
7	-6.14	0.01	-0.02	0.37	0.25	0.50	0.26	0.20	0.01	-2.76	-9.50	-0.13	-0.14	-5.00	-2.09	-0.51	-44.48	-2.04	-0.08	-2.08	
8	1.99	0.04	-0.17	1.39	-2.33	0.11	0.11	-0.02	-0.11	-0.91	-8.09	0.00	0.05	1.30	-18.16	-0.17	60.77	-4.02	-0.13	-2.48	
9	-13.81	0.03	0.09	0.18	-0.33	0.28	0.15	0.16	0.02	0.45	-2.80	-0.10	-0.11	6.09	-4.25	0.77	22.65	-2.42	-0.22	-0.58	
10	6.38	0.03	0.01	-0.75	0.54	1.16	-0.10	-0.14	0.05	1.50	9.11	0.04	0.01	4.88	-6.55	1.30	-182.70	-3.81	-0.19	0.26	
Expected Sign	+	+	+	+	+	+	+	+	-	-	+	+	+	-	-	+	-	+	+	-	
Decile	1-10	15.28	-0.07	0.42	0.77	2.56	-2.20	-0.30	-0.16	0.09	0.71	5.09	0.17	0.28	-6.48	10.65	-2.15	265.75	10.45	0.53	2.11
Significance Level		1%	10%	5%	i	i	5%	10%	i	i	i	5%	1%	1%	i	i	1%	1%	1%	1%	i

i = Insignificant

\* Deciles were formed by Industry CGQ in descending order. The mean of each industry mean-adjusted fundamental was calculated in each decile. All fundamentals are industry mean-adjusted using the 23 ISS defined industries, after removing the top and bottom 1% of each fundamental's distribution. A t-test was performed to test whether a significant difference exists between the means in the two extreme deciles (deciles 1 and 10). Significance levels are based on two-tailed p-values.

**Table 3 Panel A**

**Regressions of Original 15 Industry-adjusted Fundamentals on Four Industry Subscores\***

Fundamental	Expected Sign for Board	Actual Board	Expected Sign for Compensation	Actual Compensation	Expected Sign for Takeover	Actual Takeover	Expected Sign for Audit	Actual Audit
1 Year Total Return	+	Negative - 1% level	+	Insignificant	+	Positive - 5% level	+	Positive - 1% level
3 Year Total Return	+	Positive - 1% level	+	Positive - 1% level	+	Negative - 1% level	+	Insignificant
5 Year Total Return	+	Positive - 1% level	+	Positive - 1% level	+	Negative - 1% level	+	Positive - 1% level
10 Year Total Return	+	Positive - 1% level	+	Positive - 1% level	+	Negative - 1% level	+	Insignificant
Beta	-	Insignificant	-	Insignificant	-	Insignificant	-	Positive - 1% level
Return on Assets	+	Positive - 1% level	+	Insignificant	+	Negative - 1% level	+	Insignificant
Return on Average Equity	+	Positive - 1% level	+	Positive - 5% level	+	Negative - 1% level	+	Insignificant
Return on Average Investment	+	Positive - 1% level	+	Positive - 1% level	+	Negative - 1% level	+	Insignificant
Return on Equity	+	Positive - 1% level	+	Insignificant	+	Negative - 1% level	+	Insignificant
Return on Investment	+	Positive - 1% level	+	Insignificant	+	Negative - 1% level	+	Insignificant
Max of Volatility	-	Negative - 1% level	-	Insignificant	-	Insignificant	-	Insignificant
Z-score	+	Positive - 1% level	+	Insignificant	+	Negative - 1% level	+	Insignificant
Price-to-Book	+	Positive - 5% level	+	Positive - 5% level	+	Insignificant	+	Positive - 1% level
Price-to-Earnings	+	Positive - 1% level	+	Insignificant	+	Negative - 10% level	+	Insignificant
Market Value of Equity	+	Positive - 1% level	+	Positive - 1% level	+	Negative - 1% level	+	Positive - 1% level

\* All fundamentals are industry mean-adjusted, using the 23 ISS defined industries after removing the top and bottom 1% of each fundamental's distribution. We regressed each industry mean-adjusted fundamental on the four industry sub-scores: Board Composition, Compensation, Takeover Defense, and Audit. All significance levels are based on two-tailed p-values.

**Table 3 Panel B**

**Regressions of Original 15 Industry-adjusted Fundamentals on Four Industry Subscores\***

Fundamental	Expected Sign for Board	Actual Board	Expected Sign for Compensation	Actual Compensation	Expected Sign for Takeover	Actual Takeover	Expected Sign for Audit	Actual Audit
Net Profit Margin	+	Positive – 1% level	+	Insignificant	+	Negative – 1% level	+	Negative – 1% level
Total Assets Turnover	+	Insignificant	+	Negative – 1% level	+	Insignificant	+	Negative – 1% level
Financial Leverage Index	-	Positive – 1% level	-	Insignificant	-	Negative – 5% level	-	Insignificant
Receivables Turnover	+	Insignificant	+	Insignificant	+	Positive – 5% level	+	Insignificant
Inventory Turnover	+	Insignificant	+	Insignificant	+	Insignificant	+	Insignificant
Fixed Assets Turnover	+	Insignificant	+	Negative – 1% level	+	Positive – 1% level	+	Insignificant
Current Ratio	+	Negative – 1% level	+	Insignificant	+	Positive – 5% level	+	Insignificant
Quick Ratio	+	Negative – 1% level	+	Insignificant	+	Positive – 1% level	+	Insignificant
Debt-to-Equity	-	Positive – 5% level	-	Insignificant	-	Negative – 1% level	-	Insignificant
Total Debt to Tangible Assets	-	Positive – 10% level	-	Positive – 5% level	-	Negative – 1% level	-	Insignificant
Interest Coverage (Income)	+	Positive – 10% level	+	Positive – 10% level	+	Negative – 1% level	+	Negative – 5% level
Interest Coverage (Cash)	+	Positive – 1% level	+	Insignificant	+	Negative – 1% level	+	Negative – 1% level
Operating Cash Flow to Current Liabilities	+	Positive – 1% level	+	Insignificant	+	Negative – 1% level	+	Negative – 1% level
Days to Sell Inventory	-	Insignificant	-	Insignificant	-	Insignificant	-	Insignificant
Days to Collect Receivables	-	Insignificant	-	Insignificant	-	Positive – 10% level	-	Insignificant
Accounts Payable Turnover	+	Negative – 1% level	+	Insignificant	+	Insignificant	+	Insignificant
Days to Pay Payables	-	Insignificant	-	Insignificant	-	Positive – 1% level	-	Insignificant
Dividend Payout	+	Positive – 1% level	+	Positive – 1% level	+	Negative – 1% level	+	Insignificant
Dividend Yield - Monthly	+	Positive – 1% level	+	Positive – 1% level	+	Negative – 1% level	+	Insignificant
Long-term Debt to Tangible Assets	-	Positive – 5% level	-	Positive – 1% level	-	Negative – 1% level	-	Insignificant

\* All fundamentals are industry mean-adjusted, using the 23 ISS defined industries after removing the top and bottom 1% of each fundamental's distribution. We regressed each industry mean-adjusted fundamental on the four industry sub-scores: Board Composition, Compensation, Takeover Defense, and Audit. All significance levels are based on two-tailed p-values.

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## Appendix

Our Variable Name	Mnemonic in Research Insight
1 Year Total Return	TRT1Y
3 Year Total Return	TRT3Y
5 Year Total Return	TRT5Y
10 Year Total Return	TRT10Y
Beta	BETA
Return on Assets	ROA
Return on Average Equity	ROAE
Return on Average Investment	ROAI
Return on Equity	ROE
Return on Investment	ROI
Max of Volatility	VOLTD
Z-score	ZSCORE
Price-to-Book	MKBK
Price-to-Earnings	PE
Market Value of Equity	MKVAL
Net Profit Margin	NPM
Total Assets Turnover	ATT
Financial Leverage Index	LEVIDX
Receivables Turnover	RECX
Inventory Turnover	IN VX
Fixed Assets Turnover	FXATO
Current Ratio	CR
Quick Ratio	QR
Debt-to-Equity	DLTT / SEQ
Total Debt to Tangible Assets	DTAT
Interest Coverage (Income)	ICBT
Interest Coverage (Cash)	CFL / (LCT+DLTT)
Operating Cash Flow to Current Liabilities	CFL / LCT
Days to Sell Inventory	360 / IN VX
Days to Collect Receivables	360 / RECX
Accounts Payable Turnover	$(\text{COGS} + \text{INVT} - \text{INVT}[-1]) / \text{AP}$
Days to Pay Payables	$360 / (\text{COGS} + \text{INVT} - \text{INVT}[-1]) / \text{AP}$
Dividend Payout	DVPOR
Dividend Yield - Monthly	DVYDC
Long-term Debt to Tangible Assets	$\text{DLTT} / (1/(\text{DTAT}/\text{DT}))$

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