DISCOUNTED STOCKS AND EXCESS ANALYST COVERAGE

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Abstract

In this paper we examine whether the negative excess value of stocks (stock discounts in the Berger and Ofek (1995) spirit) is associated with low excess analyst coverage over the 1979-1997 period. We define excess analyst coverage as the difference between a firm's actual analyst following and its imputed coverage. We hypothesize that firms with high excess (low) analyst coverage are exposed to less (more) information asymmetry between managers and investors, managerial misconduct and uncertainty about future earnings than do other firms. Therefore, stocks with low excess analyst coverage profile are expected to trade at low prices as they would be more difficult for investors to value. Our findings provide evidence in support of the view that excess analyst coverage explains a significant portion of stocks' discount, indicating that higher (lower) excess analyst coverage leads to more (less) informative stock prices and offers an information-based explanation on why stocks trade at a premium (discount) . Our empirical results are also consistent with the notion that stocks of firms with high managerial power (i.e., low investor rights/weak corporate governance) trade at a discount. Finally, our analysis indicates that the information inherent in the dispersion of analyst forecasts, a surrogate for investor uncertainty, plays an important role in the determination of asset prices.

JEL classification: G11, G14, G34

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I. Introduction

The role of financial analysis has increased dramatically over the years, a reflection of the growing demand of analysts' services. For instance, in 1978 less than 30 percent of U.S. firms were covered by security analysts while in 1996 more than 63 percent of traded firms were covered.[1] Analysts produce earnings forecasts and stock recommendations for the use of market participants.[2] The reports of financial analysts are widely distributed and are of substantial interest to investors and researchers.[3] An empirical investigation of the value that is potentially created by security analysts is therefore germane to the investment community and for the understanding of financial markets.[4]

While it is generally believed that stock prices are more likely to reflect their fundamental values in the presence of financial analysis, many firms' stocks trade at a discount (i.e., below their industry-based imputed values) in spite of the deepening of analyst coverage in recent years. This raises the question of whether such discounts are linked to the degree of analyst coverage.[5] In this paper we address the excess value of the firm's equity from the excess analyst coverage perspective.[6] A distinct feature of our empirical design is the development of the excess analyst coverage measure. We define excess analyst coverage as the difference between a firm's actual analyst following and its imputed coverage. Imputed analyst coverage is measured as the sum of the average number of analysts covering

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[1] See Hong, Lim and Stein (2000).

[2] Earnings forecasts generated by security analysts are widely used by investors in their investment decisions and is believed to exert a greater influence on stock prices than historical measures of growth (see, for example, Elton, Gruber and Gultekin (1981), Rozeff (1983), Vander Weide and Carleton (1984), and Stanley, Lewellen and Schlarbaum (1984)).

[3] Earnings forecasts by analysts are often viewed as surrogates of investor expectations (Cragg and Malkiel (1968), Malkiel (1982), Givoly and Lakonishok (1984), La Porta (1996)).

[4] The importance of financial analysis has been revived by Womack (1996). He examined analysts' buy and sell recommendations of major brokerage houses and found them to have an immediate and a post-recommendation effect on stock prices.

[5] In a different context, Hong, Lim and Stein (2000) proxy information diffusion with residual analyst coverage and examine whether the momentum in stock returns is driven by the residual number of analysts tracking different stocks.

[6] Excess value is defined as in Berger and Ofek (1995).

a similar firm in the same industry, adjusting for size.[7] Negative (positive) excess analyst coverage values indicate weak (strong) coverage. We ask whether analyst coverage is a useful variable for explaining why stocks trade at a discount (i.e., low excess value) relative to the value of their industry peers.[8] We argue that a possible reason for the discounting of stocks is that they have weak analyst coverage. Stocks with weak analyst coverage are likely to be associated with increased future earnings uncertainty, information asymmetries, and non-value maximizing managerial behavior.[9] Therefore, such stocks are expected to trade at low prices as investors would find them less attractive and more difficult to value.

Jensen and Meckling (1976) have argued that security analysis has a positive effect on firm value because security analysts act as external monitors of managerial misconduct. That is, security analysis is likely to have a positive influence on firm value by restricting managers' non-value maximizing activities.[10] This view also implies that the monitoring activities of analysts tend to reduce informational asymmetries between managers and outside investors. Security analysis is also believed to improve informational efficiency and increase market's cognizance.[11] All these arguments suggest that in the absence of private information acquisition and processing by analysts, stock prices would less precisely reflect their intrinsic values. We test the hypothesis that firms with negative (positive) excess analyst coverage (i.e., firms whose analyst coverage is lower (higher) than that of their imputed analyst coverage) will trade at a discount (premium).

While security analysis acts as an external monitoring mechanism that reduces agency costs, corporate governance, an internal monitoring mechanism, also deals with the agency problems arising

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[7] For multi-segment firms, the imputed analyst coverage is measured as the sum of the average number of analysts covering single-segment firms in the industries corresponding to the firm's business segments, adjusting for size.

[8] The terms discount (relative to the value of industry peers), negative excess value, undervaluation, and mispricing are used interchangeably throughout the paper.

[9] The inverse relation between non-value maximizing managerial behavior and security analysis draws on Jensen and Meckling's (1976) study of agency problems.

[10] Doukas *et al* (2000) provide empirical evidence consistent with the prediction of Jensen and Meckling (1976) that security analysis has an adverse effect on agency costs arising from the separation of ownership and management of the firm.

[11] A stock's price tracks its fundamental value more closely when it has substantial analyst coverage. Moyer et al. (1989) argue that analysts provide useful inputs to the financial markets. These inputs are an important element of the marketplace's informational efficiency characteristics. Hence, the positive relationship between analyst coverage and firm value (see Chung and Jo (1997)) can also be attributed to the information intermediation activities of analysts. Merton (1987) argues that a firm benefits when additional investors are made aware of its existence because this increases the liquidity of the firm's equity. That is, security analysis may have a positive effect on firm

from the separation of ownership and control in the modern corporation. Thus the potential discounting of stocks may also be related to the degree of expropriation of outside investors by insiders (weak shareholder rights) as reflected in firms' governance characteristics. Therefore, in our empirical investigation of the deviation of stock prices from their imputed values, we also control for the influence of corporate governance. The valuation effects of corporate governance are investigated using the corporate governance index developed by Gompers, Ishii and Metrick (2001). Stocks of firms with weak governance attributes are expected to trade at a discount because they have high potential for wealth expropriation.[12]

This study makes several contributions to the literature. First, our analysis explores the possible link between excess analyst coverage and asset prices. We provide evidence in support of the view that excess analyst coverage explains a significant portion of the stock's undervaluation. This suggests that analysts produce pertinent information about the future prospects of the firm, not covered in conventional financial accounting reports. Furthermore, our evidence suggests that excess analyst coverage leads to more informative stock prices and offers an information-based explanation on why stocks trade at a discount and why the discount varies across firms. Second, the paper documents that the information inherent in the dispersion of analyst forecasts, a surrogate for investor uncertainty, plays an important role in the determination of asset prices. Third, our analysis contributes to the law and finance literature that examines the effect of national and state law on firm value by providing evidence that corporate-governance provisions impact on firm value.[13] Our empirical tests produce results consistent with the view that stocks of firms with high managerial power (i.e., low investor rights/weak corporate governance "constitution") trade at a discount. Finally, consistent with Doukas *et al.* (2000), who show that security analysis exerts greater monitoring on restricting managers' non-value maximizing activities in focused than diversified firms, our findings show an inverse relation between excess analyst coverage and diversification.

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value by reducing its cost of capital through an expansion of its ownership base. Brennan and Hughes (1991) and Chung and Jo (1996) also argue that investors tend to trade only securities that they are cognizant.

[12] Gompers, Ishii and Metrick (2001) find that weaker shareholder rights are associated with lower profits, lower sales growth, higher capital expenditures, and a number of corporate acquisitions.

[13] See La Porta et al. (2001) for an analysis of the relation between international shareholder protection and firm value.

This paper is organized as follows. In the next section we discuss the link between excess value and excess analyst coverage and develop the hypotheses. Section III contains a description of the data sources and sample selection process. It also specifies the estimation of the excess market value and analyst coverage measures used in the analysis. Section IV presents and describes the empirical results. Section V provides a summary and concluding remarks.

II. Excess firm value and excess analyst coverage

Several studies using the excess market value metric (see, for example, Berger and Ofek (1995), among others) have documented that the average diversified firm trades at a discount relative to non-diversified comparable single-segment firms.[14] An underlying theme of this literature is that diversified firms tend to misallocate funds by cross-subsidizing poorly performing (low growth opportunities) divisions (Berger and Ofek (1995)). Consistent with this result, Rajan, Servaes and Zingales (2000) model the power struggles among firm's divisions and show that managers of diversified firmsdirect resources inefficiently. Moreover, they show that the diversification discount increases with the diversity of investment opportunities of the firm. Scharfstein and Stein (2000) show that the rent-seeking behavior of divisional managers tends to undermine the allocational efficiency of internal capital markets.[15] Several studies, however, have raised substantial doubt about the diversification discount (Hyland (1999) and Campa and Kedia (2000), Chevalier (2000), and Graham, Lemmon, and Wolf (2002),Whited (2001),and Villalonga (2000)). More recently, Mansi and Reeb (2002), show that the measure of excess value, as developed by Berger and Ofek (1995), creates a downward bias in diversified firms because it captures only the shareholder value of the firm. Using an excess "firm value" measure instead, they document that diversification does not destroy firm value. Notably, this stream of research does not attribute the discount (negative excess value), found in firms with diverse industrial activity, to the diversity of the firm itself.

[14] Berger and Ofek (1995) report that diversified firms are priced, on average, at approximately a 12% discount relative to comparable stand-alone firms. Lins and Servaes (1999) find supporting out-of-sample evidence by reporting similar-sized discounts in Japan and Servaes (1999) find supporting out-of-sample evidence by reporting similar-sized discounts in Japan and the U.K.

[15] Denis *et al* (1997) provide evidence in support of an agency cost explanation for corporate diversification. Their findings suggest that agency problems in diversified firms are liable for the diversification discount. They also attribute the recent rise in corporate focus to market's disciplinary forces.

Unlike the emphasis placed on diversified firms by the previous literature, in this paper we address the issue of equity undervaluation (i.e, negative excess market value) across all firms.[16] Specifically, we examine the relation between excess market value and excess analyst coverage. We assume that the number of analysts covering the average firm in a particular industry provides a benchmark of the analyst coverage that is necessary to provide effective coverage of a firm operating in that industry. This benchmark is used to measure the minimum number of analysts required to effectively monitor managerial behavior, disseminate information that would enable investors to assign market values close to the firm's intrinsic value, and achieve a satisfactory level of investor cognizance. Our excess analyst coverage measure draws on the concept of residual analyst coverage used in Hong, Lim and Stein (2000) as a measure of firm -specific information diffusion. The unique feature of the excess analyst coverage measure is that it is designed to represent the size-adjustment characteristic of the residual analyst coverage measure (Hong, Lim and Stein (2000)) and measure coverage relative to the typical analyst coverage of the firm's industry peers. Furthermore, it captures all three main functions of security analysis as explained below.

Jensen and Meckling (1976) have argued that security analysis can address the agency problems that are induced by the separation of ownership and control in the modern corporation and reduce informational asymmetries between managers and outside investors (Doukas *et al*. (2000)). These effects of security analysis are likely to be reflected in higher firm value. In this respect, our analysis investigates whether excess analyst coverage can explain the cross-sectional variation in excess market value of firms. Hence, excess analyst coverage helps to determine the transparency of the firm to outside investors and how intensely a firm is monitored by information intermediaries. Stocks of firms with weaker (stronger) analyst coverage are expected to have a lower (greater) valuations than their average industry peers as these firms are more (less) likely to engage in non-value maximizing corporate activities.

If the number of analysts covering a firm proxies for the total resources spent on private information acquisition (Bhushan (1989)), then firms with large analyst following should have a greater

[16] Security analysts issue forecast of earnings per equity share and stock recommendations. Therefore we expect a link between excess analyst following and equity mispricing.

amount of private information filtered to investors. Trading of such securities should be more informationally efficient (Moyer *et al*. (1989). Thus, investors would regard a firm as more transparent (opaque) if the firm is covered by a relatively large (small) number of analysts generating more (less) private information. High (low) analyst coverage would also entail lower (higher) uncertainty about the future prospects of the firm. As a result, demand for the firm's shares are expected to rise (decline), and so will the level of the stock's valuation relative to the average member in its industry. The distinct feature of our research design is that excess analyst coverage, a surrogate of the effort analysts expend (number of analysts) to cover a given firm relative to the effort analysts expend to cover the average firm in its industry, measures the informational efficiency of investors and markets. Moreover, analyst coverage tends to increases investor cognizance of securities they cover. This, in turn, may increase trading volume and market valuation through expansion of the stock's ownership base.[17] Merton's (1987) model demonstrates that firm values are positively associated with the breadth of investor cognizance. Consequently, firms with strong analyst coverage are expected to have higher valuations. Chung and Jo (1996) and Doukas *et al*. (2000) provide evidence consistent with this argument. Hence, when a firm's analyst coverage decreases (increases) relative to that of its average industry peers (i.e., its imputed analyst coverage), investor cognizance about the firm is likely to be lower (higher) than that of the average firm in the industry. Therefore, the firm's stock is expected to trade at a discount (premium) relative to its imputed market value.

III. Data

A. Sample Selection

Our analysis is based on all firms covered in the *Standard & Poor's Compustat Primary, Secondary, Tertiary, Full Coverage, Research and Industry Segment* databases over the 1979-1997 period. Firms with total sales of less than $20 million are excluded in order to avoid cases of firms with distorted valuation multiples due to very low sales figures. Firms are also required to have no segments

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[17] Merton(1987) argues that a firm benefits when additional investors are made aware of its existence because this increases the liquidity of the firm's equity. Brennan and Hughes (1991) and Chung and Jo (1996) also argue that

with SIC codes between 6000 and 6999 (i.e., no segments in the financial services industries). Firms included in the sample must also have information on total capital, measured as market value of common equity plus book value of debt, and their sum of segment sales should be within 1% of the total sales reported for the firm in the Compustat database (as in Berger and Ofek(1995)). These restrictions, required for the computation of the excess market value measure of each firm, resulted in a sample of 49388 firm-year observations, of which 12491 (36447) are associated with multi-segment (single-segment) firms.

For the construction of the excess analyst coverage measure, we also require that firms have analyst coverage data available in the 1998 I/B/E/S database. Following Easterwood and Nutt (1999), we selected the number of analyst forecasts issued eight months prior to fiscal year-end for all stocks covered by security analysts. This permits us to create a uniform analyst coverage measure in terms of forecast horizon across all firms. The eight month horizon is also established to ensure that analysts have the previous year's annual report available to them at the time their forecast is made.[18] Observations are assigned to particular calendar years based on the month the forecast was recorded in I/B/E/S. Our final sample includes 32802 firm-year observations for 5983 firms with complete excess market value data and analyst coverage data eight months prior to fiscal year end.

B. Measures of Excess Market Value and Analyst Coverage

Since our objective is to study the relation between the excess market value of the firm's equity and excess analyst coverage, we need to develop measures for these variables. Following Berger and Ofek (1995), we define the excess value *(exval)* of the firm as the natural logarithm of the ratio of the firm's actual value to its imputed value.[19] Actual value of the firm is measured by its total capital. The imputed value is equal to the sum of imputed values for each segment. Imputed values for each of the firm's segments are calculated by multiplying the median ratio, for single-segment firms in the same industry as

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investors tend to trade only securities that they are familiar with. Gervais et al (2001) suggest that a firm with small investor base is likely to be undervalued due to limited risk sharing.

[18] According to Penman (1987) the vast majority of firms (about 92 percent) file their annual reports with the SEC within three months after the fiscal year end.

[19] Following Berger and Ofek (1995), we eliminated extreme *exval* observations, i.e. cases where the absolute value of the natural logarithm of actual to total imputed value is greater than 1.386.

the segment's designated industry, of total capital to sales by the segment's level of sales.[20] The sum of the segments' imputed values are an estimate of the firm's value if its segments were operated as stand-alone units (i.e., the firm's total imputed value). Since the excess market value measure captures only the shareholder value of the firm (Mansi and Reeb (2002)), a positive excess market value indicates that a firm's equity value is above its stand-alone counterparts (i.e., stock trades at a premium), while a negative excess market value indicates that a firm's equity value is below that of its stand-alone components (i.e., stock trades at a discount).[21]

The excess analyst coverage (*excov*) measure is constructed using the Berger and Ofek (1995) procedure employed for the estimation of the excess market value measure. Specifically, the excess analyst coverage measure is computed as the natural logarithm of the ratio of a firm's actual number of analyst following to its imputed analyst following. A firm's imputed analyst following is the sum of the imputed analyst following of its segments. A segment's imputed analyst coverage is equal to the segment's sales multiplied by its industry median analyst coverage to sales ratio. Thus, excess analyst coverage indicates whether the firm's analyst coverage is comparable to that of its stand-alone counterparts. If *excov* is positive (negative), that indicates that the firm is followed by more (less) analysts than a similar firm in the same industry. For a multi-segment firm, a positive (negative) *excov* implies that it is followed by more (less) analysts than it would if its segments were operated as stand-alone units, after adjusting for size.

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[20] We also repeated this procedure using assets-multipliers as was done in Berger and Ofek (1995). The results using the excess market values based on asset-multipliers - not reported here, but available upon request - are quantitatively and qualitatively similar to the ones based on sales-multipliers presented in this study.

[21] To illustrate that our excess market value measure is comparable to the one constructed by Berger and Ofek (1995), we examine the mean and median excess market value for the whole sample of the COMPUSTAT universe (49388 firm-year observations) as well as for the sub-samples of single- and multi-segment firms. The mean and median values for the whole sample are _0.0327 and _0.0149, respectively. The mean excess market value for single-segment firms is _0.0080, while the median is zero. The latter is of course not surprising, since we are using multipliers for the median single segment firm in each industry to compute the excess market value. In contrast to the single_segment firms, diversified (multi_segment) firms display significantly lower mean (_0.1022) and median (_0.1192) excess market value, indicating that, on average, diversified firms trade at a discount. The magnitude of the discount for diversified firms in our sample is comparable with that reported in prior studies (e.g., Berger and Ofek (1995) report mean *exval* of _0.122 for diversified firms using a sample of 3,884 firm_year observations over the 1986_1991 period). In addition, consistent with the diversification discount evidence of past studies, the mean and median excess market values are significantly lower for diversified firms than focused firms, as evidenced by the highly significant t_statistic and Wilcoxon rank_sum z_statistic, respectively. Interestingly, 59 percent of the diversified firms trade at a discount, while 49 percent of the single_segment firms have negative excess market value values.

Table 1 reports descriptive statistics for the measures of excess market value and analyst coverage. Stock of firms with positive (negative) excess analyst coverage, as shown in Panel A, trade at the premium (discount). The mean (median) excess market value for firms with positive excess analyst coverage is 0.2379 (0.2030) while the mean (median) value for firms with negative excess analyst coverage is -0.1016 (-0.0803). The mean (median) difference is statistically significant at the 1 percent level. Moreover, Panel B reveals that firms whose stocks that trade at a premium (discount) have positive (negative) excess analyst coverage as well. The median excess analyst coverage for firms with positive excess market value is 0.0133 while the median value for firms with negative excess analyst coverage is -0.5026. The median difference Wilcoxon rank-sum z-score is 54.47 and statistically significant at the 1 percent level. These results are in agreement with the view that excess analyst coverage is positively associated with excess market value, suggesting that stocks of firms with analyst coverage in excess of the industry average coverage trade at a premium.[22]

[Insert Table 1 About Here]

IV. Empirical results

In this section we address the relation between excess analyst coverage and the excess market value of the firm's equity using univariate and multivariate tests. Table 2 reports means of excess market value and analyst coverage characteristics of quintile portfolios formed annually over the 1979-1997 period. These quintile portfolios are formed after ranking firms based on *exval* and *excov,* respectively. Panel A of Table 2 displays descriptive statistics for the quintile excess market value portfolios across firms. The mean excess analyst coverage for the overall sample is -0.2813, indicating that on average firms included in our final sample are followed by less analysts than their stand-alone counterparts (imputed analyst coverage). For the firms that trade at a discount (low excess value firms(Q1)), we find that they have low excess analyst coverage. Mean excess analyst coverage for low excess value firms (Q1) firms is considerably lower than that of high excess value firms (Q5). The mean difference between

[22] We also find, not reported here, that multi-segment firms have considerably lower excess analyst coverage than single-segment firms. The mean difference Wilcoxon rank-sum z-score is -60.37 and statistically significant at the 1 percent level, suggesting that the diversification discount is partly attributed to weak analyst coverage of diversified firms.

Q5 and Q1 portfolios, reported in the last column, is 1.0248 and statistically significant at the 1 percent level. Low excess value firms are also covered by a smaller raw number of analysts than high excess value firms. The mean difference between Q5 and Q1 firms is statistically significant at the 1 percent level (with t-value of 2.7968). In addition, low excess value firms have higher analyst dispersion than high excess value firms, indicating that firms whose stocks trade at a discount (premium) are associated with higher (lower) dispersion of earnings forecasts issued by analysts. Hence, divergence of opinion among analysts, a surrogate of investor uncertainty, about the earnings prospects of the firm seems to be a determinant of the discount. The results also show that low excess value firms are considerably larger than high excess value firms. Consistent with untabulated results, the sales-based Herfindhal index indicates that low (Q1)excess value firms are more diversified than high (Q5) excess value firms. The mean difference test between low and high excess value firms shows that firms whose stocks trade at a discount are significantly more diversified than firms whose stocks trade at a premium, as evidenced by the highly significant t- and Wilcoxon rank sum z-statistics.[23] On the average, then, focused firms are subject to greater analyst coverage and lower dispersion of earnings forecasts than diversified firms.

Examining the excess analyst quintile portfolios, reported in Panel B, we observe a monotonic and positive relationship between excess analyst coverage and excess market value. These results confirm that stocks with low (high) excess analyst coverage trade at a discount (premium). High analyst coverage firms are considerably smaller and less diversified firms than low analyst coverage firms. Furthermore, high analyst coverage firms are associated with lower analyst dispersion than firms with low analyst coverage. The mean difference test between high and low analyst coverage firms is -0.0020 and statistically significant at the 1 percent level. These results suggest that divergence of opinion among security analysts about future earnings is much higher in firms characterized by low information transparency and sub-par external monitoring. Interestingly, the mean difference t-statistics for the *naf*, *size* and *herfs* variables suggest that high excess analyst coverage firms are smaller, less diversified and tracked by fewer analysts than low excess analyst coverage firms. Overall, the evidence appears

[23] The mean difference results for the *exval*, *naf* and *size* variables are consistent with the findings of previous studies. Berger and Ofek (1995), among others, show that diversified firms have significantly lower excess market valuation than focused firms. Doukas *et al* (2000) report that diversified firms are followed by a significantly larger number of analysts and are significantly larger than focused firms.

consistent with the view advanced in this paper that firm's excess value is positively linked to the excess analyst coverage.

[Insert Table 2 About Here]

A. Excess Market Value and Analyst Coverage

If excess analyst coverage measures analysts' monitoring role and the effort to reduce information asymmetry between insiders and outside investors by dissemination of firm-specific information, it should exert a significant impact on firm's excess market value. As hypothesized in the previous section, the relation between excess analyst coverage and excess market value should be positive. To test whether the potential for misvaluation is related to the degree of analyst coverage, we estimate the following equation using fixed effects regressions over the 1979-1997 period.

exval = f(excov, naf, size, ebits, capxs, disp, control variables)

Following Berger and Ofek (1995), the above equation controls for firm size (*size*), profitability , *(ebits)*, and growth opportunities, (*capxs)*. The *size*, *ebits* and *capxs* variables are measured by the natural logarithm of sales, EBIT-to-sales ratio, and capital expenditures-to-sales ratio, respectively. In line with prior research (Doukas *et al.* (2000), and Chung and Jo (1996)), we also include controls in these equations for the raw number of analysts *(naf)*, and the dispersion among analysts' forecasts (*disp)*.[24] The *naf* variable represents the number of analysts reporting earnings forecasts for the firm's fiscal year-end earnings as of eight months prior to fiscal year-end. The dispersion variable, *disp,* captures the divergence of opinion among analysts' forecasts and is measured by the standard deviation of the forecasts issued eight months prior to the fiscal year-end standardized by the stock price at the beginning of the fiscal year. Finally, we control for the firm's degree of industrial diversification using several alternative measures. The diversification measures include, the number of business segments reported by the firm (*nseg)*, a sales-based Herfindahl index (*herfs)*, and a sales-based entropy measure, (*entro)*.[25]

[24] Note that the dispersion measure, *disp*, requires that at least two forecasts are available for a particular firm. Therefore, the regression models including *disp* rely on a smaller number of observations.

[25] The entropy measure is constructed using the methodology of Palepu (1985) and incorporates three elements of a company's diversity of operations: (1) the number of a firm's reported business segments, (2) the distribution of the firm's sales across business segments, and (3) the degree of relatedness across the different business segments. The entropy measure is defined as $entro = \sum_j P_j \ln(1/P_j)$, where P_j is the share of the j^{th} segment in the total sales of the firm.

Since, our analysis relies on the combination of cross-sectional and times series data for 5983 firms, we use fixed-effects regression procedures to capture the heterogeneity among individual firms.[26]

Table 3 reports panel data regression results for ten different specifications of the above model. Consistent with our hypothesis, the evidence shows that there is a positive relationship between excess market value and excess analyst coverage. The coefficient of the excess analyst coverage, *excov*, variable is positive and significant at the1percent level in all regressions, indicating that firms with positive excess analyst coverage are associated with higher (lower) excess values. That is, stocks of firms with analyst coverage above that of their industry peers trade at higher values than stocks of comparable firms with analyst coverage below that of their industry peers.

The coefficients of the control variables are consistent with the findings of previous studies (i.e., Berger and Ofek (1995) and Chung and Jo (1996), among others).The coefficients of *naf*, *ebits* and *capxs* variables are invariably positive and significant, while the *size* variable has negative and significant coefficients in all regressions. These results indicate that excess market value increases with the number of analysts that follow the firm, profitability and growth opportunities, while it decreases with size. Interestingly, the evidence also shows that dispersion in earnings' forecasts among analysts, *disp*, is negatively related to excess market value, consistent with the notion that investor uncertainty reduces shareholder value. The coefficients of the diversification variable, *nseg*, are not significant. The coefficients of the other two diversification variables, however, have the expected sign and are statistically significant at the 1 percent level, suggesting that corporate diversification reduces shareholder value.

Overall, these findings are consistent with the view that security analysis has a positive valuation impact of firm value by reducing managerial misconduct and information asymmetries between insider

[26] The fixed-effects estimator technique (also known as the within-groups estimator or the least squares dummy variable model) transforms the data into deviations from individual means. It is appropriate when the focus is on the particular cross-sectional units used to estimate the model -as is the case here. The drawback of the fixed-effects estimator model is that it cannot estimate time-invariant effects. On the other hand, the random effects (or error components) model treats the individual (firm) effect as a random component of the error term and the parameters are estimated by generalized least squares (GLS). The random effects model's drawback is that it requires the assumption that the unobservable firm effect is uncorrelated with the observable parameters, which in this case would be a questionable assumption. For the purpose of choosing among the fixed-effects and the random-effects models we compute the Hausman test P^2-statistic that indicates whether the random-effects and the fixed-effects models coefficients are significantly different from each other. A high P^2-statistic rules in favor of the fixed-effects model. It should be noted that the results using the random effects model are qualitatively similar to the ones from the fixed-effects model presented here.

and outside investors.[27] The evidence suggests that stocks are likely to trade at a discount when they have inferior analyst coverage relative to the analyst coverage that similar firms have in the same industry. Moreover, the evidence points out that firms with high excess analyst coverage are subject to lower earnings forecast dispersion than firms with low excess analyst coverage and, therefore, investors are likely to attach higher values to the stocks of these firms because they perceive them as less risky. In general, firms are likely to experience increases (decreases) in shareholder value when excess analyst coverage improves (deteriorates). Our results are consistent with managers' desire to decrease asymmetric information by issuing tracking stock and activities of increasing industrial focus through asset sales. These actions invariably result in improved security analyst coverage.

[Insert Table 3 About Here]

B. Excess Market Value and Corporate Governance: A Robustness Test

B1. Univariate Results

So far we have addressed the potential for mispricing from an external perspective. We asked the question of whether analyst coverage is a relevant variable in explaining the stock's excess market valuation. We now examine the excess market value of the firm's equity from an internal perspective. In other words, we investigate whether the stock's excess market valuation is associated with weak corporate governance characteristics. To test the valuation effects of corporate governance, we introduce in our analysis a corporate governance index (gi), in our analysis originally developed by Gompers, Ishii and Metrick (2001). This index uses 24 different provisions that define the power sharing relationship between managers and investors. The index is constructed by adding one point for every provision that restricts shareholder rights, or increases managerial power. Thus *gi* has a range from 0 to 24, where higher values indicate lower investor rights (higher managerial power) The *gi* is available for the years 1990, 1993 and 1995, and not for every firm included in the dataset used in the previous tables. The total number of firm-year observations for *gi* is 2316.

Panels A and B of Table 4 report quintile portfolios formed each year based on the excess value (*exval*) and coverage (*excov)* measures, respectively. The Table also reports the mean difference tests between the Q5 and Q1 portfolios. Consistent with the view that strong corporate governance protects

[27] For a sub-sample of all equity firms, we find similar results to those reported here.

shareholder rights (reduces managerial power), the evidence shows that portfolios with high (low) excess value have low (high) *gi* values. Firms with increased managerial power (weak corporate governance characteristics) exhibit low excess values. The mean difference test statistic between the top (Q5) and bottom (Q1) quintiles indicates that firms whose stocks trade at a discount have significantly weaker corporate governance characteristics (managerial power firms) than firms whose stocks trade at a premium, as evidenced by the highly significant t-statistic. The evidence, as shown in Panel B, also reveals that firms with high coverage (Q5), are associated with low *gi* values while firms with low analyst coverage (Q1) have high *gi* values. The t-statistic of the mean difference test is 0.5582 and statistically significant at the 1 percent level.

[Insert Table 4 About Here]

B2. Cross-section Regression Results

To test whether the cross-section of excess market value is related to the firm's governance characteristics, we introduce the governance index, *gi,* in the regression analysis and estimate the following equation using OLS regressions with year dummy variables to control for individual year effects.

exval = f(excov, gi, naf, size, ebits, capxs, disp, control variables)

Table 5 presents the regression results. Consistent with the evidence reported in Table 3, these findings invariably show that there is a strong positive relationship between excess market value and excess analyst coverage. As before, controlling for the firm's governance characteristics, the coefficient of the excess analyst coverage variable is positive and significant at the1percent level in all regressions, indicating that stocks with analyst coverage above that of their industry peers trade at higher values than comparable stocks with analyst coverage below that of their industry peers. As expected, the regression results also reveal that there is a negative and significant relation between excess market value and the corporate governance index. Consistent with the evidence of Gompers, Ishii and Metrick (2001), who find that firms with weaker shareholder rights have lower profits, our evidence indicates that firms with weak governance (higher managerial power) trade at a discount. The coefficients of the *naf, size, ebits* and *disp* variables remain significant and with the expected sign, while the coefficients of all three diversification measures become insignificant at any conventional level, suggesting that corporate diversification does not necessarily result in value loss. This result appears to be consistent with several recent studies that

have raised considerable doubts about the diversification discount.[28] Overall, these results provide support for the conjecture that stocks of firms with low excess analyst coverage and weak corporate governance are more prone to trade at a discount (negative excess market valuation).

[Insert Table 5 About Here]

V. Conclusions

In this paper we assess the excess shareholder value from the analyst coverage perspective for a panel of firms over the 1979-1997 period. Specifically, we analyze whether the negative excess valuation of stocks is associated with low excess analyst coverage by examining whether analyst coverage is an important variable for explaining why stocks trade at a discount (i.e., negative excess value) relative to the value of their industry peers. We hypothesize that firms with high (low) excess analyst coverage are exposed to less (more) information asymmetry between managers and investors, managerial misconduct and uncertainty about future earnings than do other firms. Therefore, stocks with low analyst coverage are expected to trade at low prices as they would be less attractive and more difficult for investors to value. We also hypothesize that stocks of firms with weak corporate governance are expected to trade at a discount because it is believed that they have high potential for wealth expropriation.

Our findings offer evidence in support of the view that excess analyst coverage explains a significant portion of the firm's equity undervaluation, indicating that weaker (stronger) excess analyst coverage results in less (more) informative prices. Our empirical results are also consistent with the notion that stocks of firms with high managerial power (i.e., low investor rights/weak corporate governance) trade at a discount. Finally, our analysis indicates that the information inherent in the dispersion of analyst forecasts, a surrogate for investor uncertainty, plays an important role in the determination of asset prices. We find an inverse relation between analyst dispersion and excess firm value, suggesting that divergence of opinion among analysts about the future prospects of earnings contributes to the discounting of stocks.

[28] See, Hyland (1999), Campa and Kedia (2000), Chevalier (2000), Graham, Lemmon, and Wolf (2002) Villalonga (2000b) and Mansi and Reeb (2002).

REFERENCES

Berger, P., and E. Ofek, 1995, Diversification's effect on firm value, *Journal of Financial Economics* 37, 39-65.

Bhushan, R, 1989, Firm characteristics and analyst following, *Journal of Accounting and Economics* 37, 39-65.

Brennan, M., and P. Hughes, 1991, Stock prices and the supply of information, *Journal of Finance* 46, 1665-1691.

Campa, J., and S. Kedia, 2000, Explaining the diversification discount, Working Paper, Harvard Business School.

Chevalier, J., 2000, Why do firms undertake diversifying mergers? An investigation of the investment policies of merging firms, Working Paper, University of Chicago.

Chung, K. H., and H. Jo, 1996, The impact of security analysts' monitoring and marketing functions on the market value of firms, *Journal of Financial and Quantitative Analysis* 31, 493-512.

Cragg, L., and B.Malkiel,1968, The Concensus and Accuracy of Some Predictions of the Growth of Corporate Earnings, *Journal of Finance* 23, 67-84.

Dennis, D. J., D. K. Denis, and A. Sarin, 1997, Agency problems, equity ownership, and corporate diversification, *Journal of Finance* 52, 135-160.

Doukas, J., C. Kim and C. Pantzalis, 2000, Security Analysis, Agency Costs, and Company Characteristics, *Financial Analysts Journal* 56, (6) : 54-63.

Easterwood, J. C. and S. R. Nutt, 1999, Inefficiency in Analysts' Earnings Forecasts: Systematic Misreaction or Systematic Optimism?, *Journal of Finance* 54, 1777-1797.

Elton, E. J., M. Gruber, and M. Gultekin, 1981, Expectations and Share Prices, *Management Science* 27, 975-987.

Gervais, S, R. Kaniel, and D. H. Mingelrin, 2001, The High-volume Return Premium, *Journal of Finance*, forthcoming.

Givoly, D., and J. Lakonishok, 1984, Earnings Expectation and Properties of Earnings Forecasts - A R eview and Analysis of the Research, *Journal of Accounting Literature* 3, 85-107.

Gompers, P.A., J.L. Ishii, and A. Metrick, 2001, Corporate governance and equity prices, Working paper, Harvard Business School.

Graham, J., M. Lemmon, and J. Wolf, 2002, Does corporate diversification destroy value?, *Journal of Finance,* forthcoming.

Hyland, D., 1999, Why firms diversify: an empirical examination, Working Paper, University of Texas_Arlington.

Jensen, M. C., and W. H. Meckling, 1976, Theory of the firm: Managerial behavior, agency costs and ownership structure, *Journal of Financial Economics* 3, 305-360.

Lamont, O., 1997, Cash flow and investment: Evidence from internal capital markets, *Journal of Finance* 52, 83-109.

La Porta, R., 1996. Expectations and the Cross-Section of Stock Returns. *Journal of Finance* 51, 1715-1742.

La Porta, R., F. Lopez-de-Silanes, A. Shleifer, and R. Vishny, 2001, Investor protection and corporate valuation, Working paper, Harvard University.

Lins, Karl, and Henri Servaes, 1999, International evidence on the value of corporate diversification. *Journal of Finance* 54, 2215-2239.

Malkiel, B., 1982, Risk and Return: A New Look, in B.Friedman, ed., *The Changing Role of Debt and Equity in Financing U.S. Capital Formation,* National Bureau of Economic Research, Chicago, University of Chicago Press.

Mansi, A.A., and D.M. Reeb, 2002, Corporate diversification, What gets discounted?, Forthcoming, *Journal of Finance*.

Merton, R., 1987, A simple model of capital market equilibrium with incomplete information, *Journal of Finance* 42, 483-510.

Moyer, R. C., R. E. Chatfield, and P. M. Sisneros, 1989, Security analyst monitoring activity: Agency costs and information demands, *Journal of Financial and Quantitative Analysis* 24, 503-512.

Palepu, K., 1985, Diversification strategy, profit performance and the entropy measure, *Strategic Management Journal* 6, 239-255.

Penman, S. 1987, The distribution of earnings news over time and seasonalities in aggregate stock returns, *Journal of Financial Economics* 18, 199-228.

Rajan, R., H. Servaes, and L. Zingales, 2000, "The cost of diversity: The diversification discount and inefficient investment", *Journal of Finance* 55, 35-80.

Servaes, H., 1996, The value of diversification during the conglomerate merger wave, *Journal of Finance* 55, 1201-1225.

Sharfstein, D., and J. Stein, 2000, The dark side of internal capital markets: divisional rent-seeking and inefficient investment, *Journal of Finance* 55, 2537-2564.

Shin, H-H. and R. M. Stulz. 1998. "Are internal capital markets efficient?" *Quarterly Journal of Economics* May, 531-552.

Villalonga, B., 2000, Diversification discount or premium? New evidence from BITS establishment level data, Working Paper, UCLA

White, H., 1980, A heteroscedasticity-consistent covariance matrix estimator and a direct test for heteroscedasticity, *Econometrica*, 817-838.

Table 1
Descriptive Statistics for the Excess Value and Excess Analyst Coverage Measures Based on the Intersection of the Compustat and I/B/E/S Samples (N=32802)

Reported are descriptive statistics for the excess value (Panel A) and excess analyst coverage measures using the sample of firms that fulfill the following two criteria: (1) be followed by security analysts (i.e., be listed in I/B/E/S), and (2) be listed in Compustat with sales more than $20 million and information available from the Compustat Industry Segment (CIS) database for the years 1979-1997. Excess value (*exval*) is computed as in Berger and Ofek (1995) using a sales multiplier. Excess analyst coverage (*excov*) is computed as the natural logarithm of the ratio of a firm's actual number of analyst following to its imputed analyst following. A firm's imputed analyst following is the sum of the imputed analyst followings of its segments, where its segment's imputed analyst following is equal to the segment's sales multiplied by its industry median analyst following to sales ratio (computed for single-segment firms in the industry).

Panel A: Descriptive statistics for the excess value (*exval*). Also reported are the mean and median difference tests for *exval* between the samples of firms with analyst coverage exceeding the imputed analyst coverage (*excov*$0) and with analyst coverage short of the imputed analyst coverage (*excov*<0). The mean (median) difference test statistic is the t- (Wilcoxon rank-sum z-) statistic. *, **, *** indicate significance at the 10%-, 5%- and 1%-levels, respectively.

	Whole sample (N=32802)	**Firms with *excov* $ 0 (N=14014)**	***Firms with excov* < 0 (N=18788)**	***Mean (median) difference tests: t-value, (z-statistic)***
mean	*0.0434*	*0.2379*	*-0.1016*	*60.17 ****
std. deviation	*0.5326*	*0.5160*	*0.4974*	
minimum	*-1.3856*	*-1.3829*	*-1.3856*	
25th percentile	*-0.2977*	*-0.0778*	*-0.4304*	
median	*0.0138*	*0.2030*	*-0.0803*	*56.95 ****
75th percentile	*0.3816*	*0.5949*	*0.1975*	
maximum	*1.3859*	*1.3854*	*1.3859*	

Panel B: *Descriptive statistics for excess analyst coverage (excov*). Also reported are the mean and median difference tests for *excov* between the samples of firms valued at an equity premium (*exval*$0) and at an equity discount (*exval*<0), respectively. The mean (median) difference test statistic is the t- (Wilcoxon rank-sum z-) statistic. *, **, *** indicate significance at the 10%-, 5%- and 1%-levels, respectively.

	Whole sample (N=32802)	**Firms with *exval* $ 0 (N=17804)**	***Firms with exval* < 0 (N=14998)**	***Mean (median) difference tests: t-value, (z-statistic)***
mean	*-0.2813*	*-0.0179*	*-0.5941*	*53.48 ****
std. deviation	*1.0137*	*0.9781*	*0.9651*	
minimum	*-7.3003*	*-7.2123*	*-7.3003*	
25th percentile	*-0.8834*	*-0.5499*	*-1.1839*	
median	*-0.1642*	*0.0133*	*-0.5026*	*54.47 ****
75th percentile	*0.3496*	*0.5949*	*0.0194*	
maximum	*5.4267*	*5.4267*	*4.0813*	

Table 2

Excess Value and Analyst Coverage Characteristics of Quintile Portfolios Formed by Excess Value (exval), and Excess Analyst Coverage (excov)

This table reports means of excess value and analyst coverage characteristics of quintile portfolios formed each year based on *exval* (panel A) and *excov* (Panel B). *exval* is measured as the natural logarithm of the ratio of a firm's actual value to its imputed value. A firm's imputed value is the sum of the imputed values of its segments, where its segment's imputed value is equal to the segment's sales multiplied by its industry median capital to sales ratio (computed for single-segment firms in the industry). analyst coverage characteristics are described by the following variables: *excov*, the excess analyst following measure, computed as the natural logarithm of the ratio of a firm's actual number of analyst following to its imputed analyst following. A firm's imputed analyst following is the sum of the imputed analyst followings of its segments, where its segment's imputed analyst following is equal to the segment's sales multiplied by its industry median analyst following to sales ratio (computed for single-segment firms in the industry). *naf* is the number of analysts following the firm (i.e., number of analysts providing one fiscal year ahead earnings forecasts, 8 months prior to fiscal year-end). *disp* is the dispersion of analyst forecasts, measured as the standard deviation of forecasts made 8 months prior to fiscal year-end standardized by the beginning of the fiscal year stock price. *size* is the natural logarithm of sales. *herfs* is the sales-based Herfindahl index. Q5-Q1 results represent differences in means between the top (Q5) and bottom (Q1) quintiles. The sample period is 1979-1997. The sample size is 32802 firm-year observations. Note that the sample size for the *disp* variable is 27038 firm-year observations. This is due to the additional requirement that there are at least two forecasts available in order to compute *disp*.

Panel A: Excess value (*exval*) portfolios

	Q1 Low *exval*	***Q2***	***Q3***	***Q4***	***Q5 High exval***	***All firms***	***Q5 - Q1***
exval	*-0.6999*	*-0.2200*	*0.0275*	*0.2987*	*0.8090*	*0.0434*	*1.5090 ****
excov	*-0.7826*	*-0.4849*	*-0.2513*	*-0.1311*	*0.2422*	*-0.2813*	*1.0248 ****
naf	*5.4024*	*6.8435*	*7.5819*	*8.4106*	*8.1992*	*7.2883*	*2.7968 ****
disp	*0.0171*	*0.0134*	*0.0102*	*0.0088*	*0.0073*	*0.0111*	*-0.0098 ****
size	*5.7551*	*5.8891*	*5.8202*	*5.7895*	*5.3379*	*5.7184*	*-0.4172 ****
herfs	*0.8321*	*0.8414*	*0.8959*	*0.8802*	*0.9186*	*0.8737*	*0.0866 ****

Panel B: *Excess analyst coverage (excov)* portfolios

	Q1 Low *excov*	***Q2***	***Q3***	***Q4***	***Q5 High excov***	***All firms***	***Q5 - Q1***
exval	*-0.2095*	*-0.0867*	*0.0144*	*0.1439*	*0.3487*	*0.0434*	*0.5582 ****
excov	*-1.7623*	*-0.7253*	*-0.1889*	*0.2152*	*1.0338*	*-0.2813*	*2.7966 ****
naf	*8.8677*	*7.6441*	*6.7761*	*6.7136*	*6.4457*	*7.2883*	*-2.4219 ****
disp	*0.0124*	*0.0114*	*0.0111*	*0.0106*	*0.0104*	*0.0111*	*-0.0020 ****
size	*7.1144*	*6.1376*	*5.5937*	*5.1612*	*4.6078*	*5.7184*	*-2.5067 ****
herfs	*0.7359*	*0.8428*	*0.9080*	*0.9371*	*0.9429*	*0.8737*	*0.2070 ****

****, **, * signify that the observed difference in means is significant at the 1%, 5% and 10% levels, respectively.*

Table 3
Panel Data Regressions of Excess Value on Excess Analyst Coverage

This table reports fixed effects regression results for different models. The dependent variable is excess value, exval, measured as the natural logarithm of the ratio of a firm's actual value to its imputed value. A firm's imputed value is the sum of the imputed values of its segments, where its segment's imputed value is equal to the segment's sales multiplied by its industry median capital to sales ratio (computed for single-segment firms in the industry). The independent variables are: *excov*, the excess analyst coverage measure, computed as the natural logarithm of the ratio of a firm's actual number of analyst coverage to its imputed analyst coverage. A firm's imputed analyst coverage is the sum of the imputed analyst followings of its segments, where its segment's imputed analyst following is equal to the segment's sales multiplied by its industry median analyst following to sales ratio (computed for single-segment firms in the industry). *naf* is the number of analysts following the firm, i.e. number of analysts providing one fiscal year ahead earnings forecasts, 8 months prior to fiscal year-end. *size* is the natural logarithm of the firm's annual sales. *ebits* is the ratio of EBIT to sales. *capx* is the ratio of capital expenditures to sales. *nseg* is the number of business segments. *herfs* is a sales-based Herfindahl index. *entro* is the entropy measure of diversification. *disp* is the dispersion of analyst forecasts, measured as the standard deviation of forecasts made 8 months prior to fiscal year end standardized by the beginning of the fiscal year stock price. *, **, *** indicate significance at the 10%-, 5%- and 1%-levels, respectively.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
intercept	0.1006 *** (48.05)	0.0863 *** (15.82)	0.3267 *** (11.69)	0.2499 *** (7.35)	0.3323 *** (12.13)	0.1334 *** (57.31)	0.1101 *** (17.20)	0.2490 *** (7.64)	0.1647 *** (4.28)	0.2558 *** (7.98)
excov	0.2032 *** (56.54)	0.2005 *** (53.88)	0.1576 *** (35.75)	0.1566 *** (35.49)	0.1567 *** (35.51)	0.2154 *** (50.29)	0.2123 *** (48.74)	0.1756 *** (32.46)	0.1742 *** (32.15)	0.1742 *** (32.17)
naf		0.0019 *** (2.84)	0.0064 *** (8.12)	0.0065 *** (8.19)	0.0065 *** (8.18)		0.0026 *** (3.91)	0.0053 *** (6.57)	0.0054 *** (6.66)	0.0054 *** (6.65)
size			-0.0621 *** (-11.70)	-0.0619 *** (-11.65)	-0.0619 *** (-11.66)			-0.0423 *** (-7.10)	-0.0423 *** (-7.11)	-0.0424 *** (-7.11)
ebits			0.4005 *** (24.12)	0.3995 *** (24.06)	0.3999 *** (24.08)			0.4642 *** (22.80)	0.4624 *** (22.71)	0.4630 *** (22.74)
capxs			0.2747 *** (17.98)	0.2738 *** (17.92)	0.2739 *** (17.93)			0.2535 *** (15.39)	0.2526 *** (15.34)	0.2526 *** (15.34)
nseg			-0.0015 (-0.38)					-0.0027 (-0.63)		
herfs				0.0832 *** [3.68]					0.0919 *** (3.72)	
entro					-0.0430 *** [-3.40]					-0.0487 *** (-3.55)
disp						-0.8623 *** (-10.91)	-0.8392 *** (-10.59)	-0.3573 *** (-4.54)	-0.3598 *** (-4.57)	-0.3597 *** (-4.57)
Firm effects F-value	7.89 ***	7.40 ***	7.44 ***	7.44 ***	7.45 ***	7.68 ***	7.26 ***	7.36 ***	7.36 ***	7.37 ***
R^2 (within)	0.1065	0.1068	0.1437	0.1441	0.1440	0.1094	0.1100	0.1447	0.1453	0.1452
Model F-stat [Prob > F]	3196.41 [0.0000]	1602.65 [0.0000]	719.67 [0.0000]	722.28 [0.0000]	721.90 [0.0000]	1344.47 [0.0000]	902.00 [0.0000]	507.11 [0.0000]	509.35 [0.0000]	509.16 [0.0000]
Hausman P^2 [Prob > P^2]	2.53 [0.1116]	174.70 [0.0000]	289.75 [0.0000]	292.75 [0.0000]	292.47 [0.0000]	55.10 [0.0000]	165.89 [0.0000]	213.86 [0.0000]	214.02 [0.0000]	214.05 [0.0000]
Total N	32802	32802	31559	31559	31559	27038	27038	25966	25966	25966
# of firms	5983	5983	5814	5814	5814	5146	5146	4981	4981	4981

Table 4

Corporate Governance Characteristics (*gi*) of Quintile Portfolios Formed by Excess Value (*exval*), and Excess Analyst Coverage (*excov*)

This table reports means of the corporate governance index (gi) for firms that fall within the quintile portfolios formed each year based on *exval* (panel A) and *excov* (Panel B). Number of observations are reported in brackets. *exval* is measured as the natural logarithm of the ratio of a firm's actual value to its imputed value. A firm's imputed value is the sum of the imputed values of its segments, where its segment's imputed value is equal to the segment's sales multiplied by its industry median capital to sales ratio (computed for single-segment firms in the industry). analyst coverage characteristics are described by the following variables: *excov*, the excess analyst coverage measure, computed as the natural logarithm of the ratio of a firm's actual number of analyst following to its imputed analyst following. A firm's imputed analyst following is the sum of the imputed analyst followings of its segments, where its segment's imputed analyst following is equal to the segment's sales multiplied by its industry median analyst following to sales ratio (computed for single-segment firms in the industry). *gi* is the corporate governance index developed in Gompers, Ishii and Metrick (2001). This index uses 24 different provisions that define the power sharing relationship between managers and investors. The index is constructed by adding one point for every provision that restricts shareholder rights, or increases managerial power. Thus *gi* has a range from 0 to 24, where higher values indicate lower investor rights (higher managerial power). The *gi* is available for the years 1990, 1993 and 1995, and not for every firm included in the data set used in the previous tables. The total number of firm-year observations for *gi* is 2316. Q5-Q1 results represent differences in means between the top (Q5) and bottom (Q1) quintiles.

Panel A: Excess value (*exval*) portfolios

	Q1 Low *exval*	***Q2***	***Q3***	***Q4***	***Q5 High exval***	***All firms***	***Q5 - Q1***
gi	*9.5671 [395]*	*9.2854 [515]*	*9.2951 [498]*	*8.9806 [515]*	*8.4606 [393]*	*9.1278 [2316]*	*-1.1065 ****

Panel B: *Excess analyst coverage (excov*) portfolios

	Q1 Low *excov*	***Q2***	***Q3***	***Q4***	***Q5 High excov***	***All firms***	***Q5 - Q1***
gi	*9.5477 [743]*	*9.1150 [626]*	*8.9347 [414]*	*8.7373 [354]*	*8.6480 [179]*	*9.1278 [2316]*	*-0.5582 ****

****, **, * signify that the observed difference in means is significant at the 1%, 5% and 10% levels, respectively.*

Table 5

Robustness Tests: Regressions of Excess Value on Excess Analyst Coverage Measure and Corporate Governance Index

This table reports heteroscedasticity-adjusted regression results for models including the corporate governance index (gi) as an independent variable. The dependent variable is excess value, exval, measured as the natural logarithm of the ratio of a firm's actual value to its imputed value. A firm's imputed value is the sum of the imputed values of its segments, where its segment's imputed value is equal to the segment's sales multiplied by its industry median capital to sales ratio (computed for single-segment firms in the industry). The independent variables are: *excov*, the excess analyst coverage measure, computed as the natural logarithm of the ratio of a firm's actual number of analyst following to its imputed analyst following. A firm's imputed analyst following is the sum of the imputed analyst followings of its segments, where its segment's imputed analyst following is equal to the segment's sales multiplied by its industry median analyst following to sales ratio (computed for single-segment firms in the industry). *gi* is the corporate governance index developed in Gompers, Ishii and Metrick (2001). This index uses 24 different provisions that define the power sharing relationship between managers and investors. The index is constructed by adding one point for every provision that restricts shareholder rights, or increases managerial power. Thus *gi* has a range from 0 to 24, where higher values indicate lower investor rights (higher managerial power) *gi* is available for the years 1990, 1993 and 1995, and not for every firm included in the dataset used in the previous tables. *naf* is the number of analysts following the firm, i.e. number of analysts providing one fiscal year ahead earnings forecasts, 8 months prior to fiscal year end. *size* is the natural logarithm of the firm's annual sales. *ebits* is the ratio of EBIT to sales. *capx* is the ratio of capital expenditures to sales. *nseg* is the number of business segments. *rnseg* is the munber of related 2-digit SIC code segments. *unseg* is the number of unrelated 2-digit SIC code segments. *rentro* and *uentro* are entropy measures of related and unrelated diversification, respectively. *disp* is the dispersion of analyst forecasts, measured as the standard deviation of forecasts made 8 months prior to fiscal year end standardized by the beginning of the fiscal year stock price. Coefficients are heteroscedasticity-adjusted (White (1980)). *, **, *** indicate significance at the 10%-, 5%- and 1%-levels, respectively.

Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
intercept	0.2996 *** [8.29]	0.1594 *** [4.31]	0.2592 *** (3.13)	0.2075 ** (2.23)	0.2537 *** (3.06)	0.3466 *** [9.30]	0.1932 *** [5.03]	0.3101 *** (3.44)	0.2432 ** (2.49)	0.3032 *** (3.38)
excov	0.1619 *** [14.24]	0.1638 *** [15.57]	0.1363 *** (9.97)	0.1321 *** (9.64)	0.1333 *** (9.71)	0.1556 *** [13.29]	0.1701 *** [15.48]	0.1394 *** (9.38)	0.1349 *** (9.01)	0.1361 *** (9.09)
gi	-0.0142 *** [-4.15]	-0.0174 *** [-5.36]	-0.0154 *** (-4.65)	-0.0147 *** (-4.44)	-0.0149 *** (-4.51)	-0.0148 *** [-4.28]	-0.0169 *** [-5.11]	-0.0151 *** (-4.47)	-0.0145 *** (-4.27)	-0.0147 *** (-4.34)
naf		0.0147 *** [12.98]	0.0162 *** (8.94)	0.0161 *** (8.91)	0.0161 *** (8.93)		0.0142 *** [11.90]	0.0160 *** (8.95)	0.0159 *** (8.92)	0.0160 *** (8.94)
size			-0.0298 ** (-2.33)	-0.0285 ** (-2.23)	-0.0289 ** (-2.25)			-0.0309 ** (-2.31)	-0.0300 ** (-2.24)	-0.0302 ** (-2.26)
ebits			0.4707 *** (3.06)	0.4715 *** (3.07)	0.4714 *** (3.07)			0.3788 ** (2.28)	0.3788 ** (2.29)	0.3788 ** (2.29)
capxs			0.0086 (0.12)	0.0105 (0.15)	0.0099 (0.14)			-0.0006 (-0.02)	0.0009 (0.01)	0.0004 (0.01)
nseg			0.0015 (0.18)					-0.0021 (-0.24)		
herfs				0.0438 (1.15)					0.0586 (1.51)	
entro					-0.0164 (-0.75)					-0.0252 (-1.13)
disp						-5.9320 *** (-6.19)	-5.1277 *** (-5.72)	-4.4710 *** (-5.14)	-4.5018 *** (-5.18)	-4.4952 *** (-5.17)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Total N	2316	2316	2249	2249	2249	2178	2178	2114	2114	2114
R^2	0.1038	0.1699	0.1937	0.1941	0.1939	0.1376	0.1958	0.2114	0.2122	0.2118
Model F-stat [Prob > F]	62.77 [0.0000]	94.81 [0.0000]	60.93 [0.0000]	60.76 [0.0000]	60.79 [0.0000]	52.88 [0.0000]	75.30 [0.0000]	50.43 [0.0000]	50.56 [0.0000]	50.47 [0.0000]