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Alternative Earnings Measures, Key Performance Indicators and Firm Value in the IT Professional Services Sector

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In recent years, there has been an increase in the use of alternative measures of earnings. For example, companies describe "pro forma" earnings in their earnings releases and analysts have developed different "street" measures of earnings. Both groups argue that these alternative, non-GAAP, earnings are intended to measure operating performance or sustainable earnings which provides better information about the value and future performance of the firm. In addition, there has been an increase in the use of non-financial measures in particular industries, such as telecommunications and internet companies. The motivation for the use of non-financial measures is to provide better information about operations of the firm. Some have raised concern that the increase in the use of these alternative earnings and non-financial measures suggest that GAAP-based financial information does not adequately provide investors with information needed to assess company value. We address this concern by examining two questions. First, what summary measure of earnings best explains firm value? Second, do concurrently released non-financial measures supplement or supplant the information in the summary earnings measures?

In October 1999, former SEC Chairman Arthur Levitt constituted a task force to examine whether current GAAP-based financial information adequately provides investors with

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information needed to assess company value. The task force concluded that improvements are needed, especially for firms in dynamic, high-growth industries because currently mandated disclosures focus primarily on historical financial transactions. This is not to say that GAAP earnings is unimportant, rather GAAP earnings may not be as useful in valuation as other measures. In support of this conjecture, firms and analysts have recently supplemented the reporting of GAAP earnings with an adjusted, non-GAAP, measure of earnings which is intended to track operating performance.[1] The belief is that these alternative measures of operating performance provide better information about the value and future performance of the firm.

Recent studies (e.g., Bradshaw and Sloan, 2002; Brown and Sivakumar, 2001) find support for this practice by documenting a closer association between an I/B/E/S measure of earnings and stock prices than GAAP earnings, suggesting that a measure focusing solely on operating performance may be more useful. However, Lev and Zarowin (1999) document a decline in the informativeness in earnings over the past twenty years, suggesting a need for supplementing earnings with non-financial, industry specific measures. Furthermore, Amir and Lev (1996) document for telecommunications firms that earnings is only associated with stock prices when it is combined with non-financial industry specific measures.

We examine 62 firms in the Information Technology (IT) Professional Services industry over a five year period. Our tests examine the explanatory power of the alternative earnings measures in explaining stock price. We examine GAAP, S&P,[2] and pro forma as alternative summary measures of earnings. We then add the non-financial measures to the model to examine their contribution to firm value. We find in periods of market expansion that the pro

[1] Hereafter we refer to alternative earnings measures released by analysts as street earnings and by firms as pro forma earnings.
[2] S&P earnings is a street measure of earnings.

forma earnings measure is more highly associated with stock price than either GAAP or S&P earnings. However, in a period of market contraction, we find that GAAP and S&P earnings are more highly associated with stock price than pro forma earnings. This indicates that GAAP and S&P earnings are the better summary measures of operating performance. In addition, we find that key performance indicators for the IT Professional Services industry are value-relevant in the presence of earnings. While the non-financial measures supplement GAAP earnings, they supplant pro forma and S&P earnings. This suggests that the key performance indicators capture the information similar to that contained in pro forma and S&P earnings, but GAAP earnings provide additional value-relevant information. To examine this result, we separate GAAP earnings into the pro forma component and the incremental components to arrive at GAAP earnings. Consistent with Doyle, Lundholm, and Soliman (2002), we find that some items omitted from GAAP earnings to arrive at pro forma earnings, restructuring charges, merger integration costs, and stock compensation expense, are value relevant. Overall, these results suggest while pro forma earnings do provide information about core operating performance, non-financial measures provide similar and more forward-looking information. Therefore, non-financial measures do a better job at summarizing core operating performance. In addition, while specific items that are eliminated from GAAP to arrive at pro forma earnings are not necessarily related to core operations, the items are still value-relevant.

Our study contributes to the extant literature in three ways. Our focus on the IT Professional Services industry has two contributions. First, we are able to identify specific non-financial measures which allow us to examine the interaction between financial and non-financial information in valuation. We contribute to the evidence provided by Amir and Lev (1996) by investigating the IT Professional Services industry and specific non-financial measures

related to this industry. Second, we are able to examine specific components of earnings that are removed to arrive at pro forma earnings. Therefore, we are able to describe why GAAP-based earnings have higher explanatory power. Doyle, Lundholm and Soliman (2002) were able to disaggregate the difference between GAAP and pro forma into unusual items and other, but were unable to disaggregate the earnings differences into finer detail. Our third contribution relates to the time period studied. We are able to examine the relation of earnings and stock prices over a complete business cycle using the period 1997 through 2001.[3] The inclusion of a period of market contraction permits us to address whether earnings from a growth period are predictive of future prospects when overall market activity is in decline.

The remainder of this paper is organized as follows. The next section discusses prior research and additional motivation for the study. Section 3 describes the sample and data. Section 4 provides the empirical results and sensitivity analyses. Finally, section 5 concludes.

2. MOTIVATION FOR THE STUDY

Recent academic research documents a decline in the relevance of earnings information and an increased relevance of balance sheet and book value information (see for example, Francis and Schipper (1999)). Collins, Maydew, and Weiss (1997) attribute the shift in value relevance from earnings to book values to the increasing frequency and magnitude of one-time items, the increasing frequency of negative earnings, and an increase in the economic importance of unrecorded intangible assets. Lev and Zarowin (1999) find the inability of the financial reporting model to capture the increased rate of change in the business environment and the increased importance of unreported intangible assets also has contributed to decreased relevance

[3] Prior studies generally limited their investigation to the 1990's, a period of market expansion.

of financial information. They view losses and special items not as causes but rather as symptoms of the decline in earnings relevance.

2.1. Earnings Relevance Based on Market Performance

The basic concept of adjusting GAAP earnings to enhance the analysis of earnings growth has existed for over 20 years. For example, Elliott and Shaw (1988) document that I/B/E/S has specifically eliminated the effects of one-time charges such as asset write-downs, employee layoffs, and restructuring charges from analysts' earnings estimates since the early 1980's. The motivation behind these adjustments is to provide an earnings number that represents the continuing operations of the firm. Since the mid-1990's, two alternative non-GAAP earnings measures, firm-specific pro forma earnings and S&P core earnings, have evolved in order to provide better measures of operating earnings. Each earnings estimate is derived by adjusting the GAAP-based earnings number for one-time items, such as acquisition charges, and non-operational items, such as losses from sales of assets.

The objective of the S&P core earnings measure is to provide a standardized measure of continuing operations. S&P defines a uniform set of adjustments to GAAP-based earnings to arrive at S&P core earnings. They include the following as items in their definition of core earnings: employee stock option grant expense, restructuring charges from ongoing operations, write-downs of depreciable or amortizable operating assets, purchased R&D, and pension costs.[4] S&P excludes from core earnings: goodwill impairment charges, gains/losses from the sale of assets, pension gains, unrealized gains/losses from hedging activities, merger related costs, and litigation settlements and proceeds. Blitzer et al. (2002, 5) justifies the adjustments by stating

[4] Restructuring costs, including severance, are tracked by COMPUSTAT. Stock option related expenses are currently included in the overall special charges item, but not recorded separately. Therefore, we reviewed each 10-Q and pro forma reconciliation to determine the amount of stock option expenses to include in operating earnings.

that core earnings "should include all the revenues and costs associated with those [ongoing] operations and exclude revenues or costs that arise in other parts of the business."

Eccles et al. (2001) suggest that there is little need for the uniformity implicit in the S&P earnings adjustments since they believe that firm-specific pro forma earnings disclosures are more informative than GAAP-based earnings because insiders have a greater understanding of the firm-specific value drivers. In support of this conjecture, Johnson and Schwartz (2001) demonstrate that firms which disclose pro forma earnings trade at a market premium. They conclude that pro forma earnings do not mislead investors since the magnitude of the premium is not related to the characteristics of the pro forma disclosures. However, the authors did not examine directly whether firm-specific pro forma earnings are more informative than either the more comprehensive GAAP earnings or the standardized S&P earnings in explaining levels or changes in stock price. This is an important issue since the items eliminated from GAAP earnings to arrive at pro forma earnings are inconsistent across firms, introducing the possibility that pro forma earnings are measured with more noise than a standardized measure of core operating earnings, such as S&P earnings.

Given the recent introduction of S&P earnings, its value relevance has not yet been tested. However, Bradshaw and Sloan (2002) and Brown and Sivikumar (2001) find that I/B/E/S-based street earnings, which is in the spirit of S&P earnings, replaced GAAP earnings as a primary determinant of stock prices. While the authors of both studies cite analysts' desires to eliminate the effect of one-time (restructuring) and non-cash (predominately intangible amortization or asset impairment) charges from the valuation process, neither study directly examines the claim by Eccles et al. (2001) that firm-specific pro forma earnings would be more informative.

Another limitation with prior research is that it studies only a period of strong expansion. In a different context, Davis (2002) finds that the value relevance of barter and grossed-up revenue declined after the "crash" in these stocks' values. We address this concern by extending our analysis to the 2000 and 2001 period, the first serious market contraction since the mid-1980s. Given that adjustments made to GAAP earnings are virtually always to eliminate expenses and losses, we are able to address the question of whether the more optimistic non-GAAP operation-based measures continue to outperform GAAP earnings in a declining market.

2.2. Industry Focus

Pro forma and S&P measures of earnings attempt to capture core operating performance. Recently, past SEC Chairman Harvey Pitt stated, "The recent phenomenon of pro forma financials is indicative of the need to rethink our current system. We need to consider the void that pro forma statements may be attempting to fill."[5] Extant research suggests that this void may be better filled by the disclosure of non-financial key performance indicators. This research generally finds that non-financial key performance indicators provide incremental explanatory power in security valuation when combined with traditional GAAP-based earnings.[6] Amir and Lev (1996) report an exception in their investigation of independent cellular companies. They find that, on a stand-alone basis, financial information is largely irrelevant for security valuation. However, earnings do contribute to the explanation of prices when combined with non-financial information. They conclude by recommending "the required disclosure of new and value relevant variables [such as customer churn rates] should be considered and the accounting rules governing income measurement should be modified" (p. 26).

[5] The remarks before the AICPA governing council, made by Chairman Harvey L. Pitt, can be found at http://www.sec.gov/news/speech/spch516.htm.
[6] See, for example, Hughes (2000), Behn and Riley (1999), and Ittner and Larcker (1998).

Our focus on the single industry comprising the IT Professional Services firms allows us to concentrate on an issue that is not addressed in prior studies. We examine whether the value relevance of any (or all) of the alternative earnings numbers are supplemented or supplanted by non-financial metrics that disaggregate overall earnings measures and provide specific information on important cost elements or the ability to sustain revenue growth.[7] Our single industry setting allows us to identify a consistent set of non-financial key performance indicators that would be difficult to assemble in a cross section approach.[8] In addition, this industry consists of high growth firms that the SEC task force and Amir and Lev (1996) suggest may benefit from the disclosure of supplemental data.

2.3. Value Relevance of Reconciling Items

Lev and Zarowin (1999) find the usefulness of reported financial information has deteriorated over the past 20 years for firms with a high degree of business change. They attribute this deterioration to the inability of the financial reporting model to adequately capture, in a timely fashion, the investments that drive this change. Given that non-GAAP earnings measures generally result from the elimination of primarily non-operating expenses or one-time items, we examine which, if any, of these items might supplement the informativeness of pro forma earnings and/or non-financial drivers. We were able to identify four different investing and financing items that were consistently eliminated by firms in arriving at pro forma earnings. They include restructuring charges, merger integration costs, stock compensation expense, and

[7] The issue is not the timeliness of the non-financial indicators since they are disclosed in the 10-Qs and 10-Ks. Instead, we examine whether disaggregated data on important revenue and cost components of earnings are associated with market value.

[8] The importance of incremental firm disclosures is highlighted in a recent study by PricewaterhouseCoopers that indicated 70 percent of corporate executives believed their companies' stocks were undervalued (Cheney, 2001). In general, the executives surveyed believed that non-financial disclosures that are important drivers of corporate value are not fully captured in stock price. Eccles, Herz, Keegan, and Phillips (2001) encouraged companies to publicize non-financial measures that drive future success. Otherwise analysts and individual investors will rely on their own estimates (e.g., their own version of pro forma earnings), which will inevitably either undervalue or overvalue a company.

intangible amortization. We include all other adjustments in an "other" category. Consistent with Doyle, Lundholm, and Soliman (2002), we expect these items to be incrementally value relevant over pro forma earnings.

3. SAMPLE

The IT Professional Services industry is attractive for several reasons. First, the industry exhibits the high growth characteristics that the SEC task force suggested would be difficult to value using traditional earnings measures. Second, most firms in the industry provide a pro forma measure of earnings in addition to GAAP earnings. Consistent with the concerns raised in other industries, the pro forma definitions varied greatly across firms. Third, using a database provided to us by an investment banking firm, we are also able to incorporate several non-financial key performance indicators that were consistently calculated across firms. Finally, the data is available for two years beyond the time period examined in recent studies. This period, 2000 and 2001, is important because it begins the recent market downturn that severely impacted technology firms. In contrast, to the 1990's during which valuation of "high-tech" firms was often based on projected revenue growth or market share, more emphasis in 2000 and 2001 was placed on sustainable earnings and cash flows.

Using an institutional investor database provided to us by Lehman Brothers, we collected data on the entire population of IT Professional Services firms for the years 1997 to 2001. For each firm, we collected the GAAP earnings[9] reported in 10-Q or 10-K filings and pro forma earnings found in corporate press releases, and calculated the S&P earnings based on SEC filings. In addition, Lehman Brothers surveyed managers each quarter to gather information about the reconciliation of GAAP and pro forma earnings and to obtain information on key non-

[9] We define GAAP earnings in this study as earnings before discontinued operations and extraordinary items.

financial performance indicators that were not already disclosed in quarterly and annual reports filed with the SEC that were deemed relevant to the valuation of these firms. Lehman Brothers verified all of the information on the quarterly surveys at least twice in separate conversations with both the Chief Financial Officer and the Chief Executive Officer of each firm.[10]

We found four consistent adjustments made to GAAP earnings to arrive at the pro forma number; (1) restructuring charges, (2) merger integration costs, (3) stock compensation expense, and (4) intangible amortization. However, the definition of what constituted merger integration costs varied greatly across firms. In addition, we found several other items that some firms made adjustments for and others did not, including:

(1) Depreciation,
(2) Contract cost overruns and losses,
(3) In-process research and development,
(4) Losses on lease settlements,
(5) Losses on equipment sales,
(6) Costs associated with settlement of client disputes,
(7) Employee hiring and retention bonuses, and
(8) Consultant training expenses.

As shown in Table 1, Panel A, 62 firms were included in the sample. They had 635 quarterly earnings announcements, which included 443 (69.76%) announcements that included a separate pro forma number.[11] The firms reporting pro forma earnings averaged making 4.35 adjustments per announcement, with the number of adjustments increasing between 1997 (2.92) and 2001 (5.20). Due to the creation of new firms and an active acquisitions market, the number

[10] These surveys are the most complete source for the non-financial key performance indicators since two of the non-financial metrics—billing rate and duration—were not disclosed in their public filings. The surveys were completed after the end of the quarter and prior to the filing of the 10-Q. Some of the survey information was posted to the First Call system. In addition, the press releases did not generally reconcile the GAAP and pro forma earnings amounts.

[11] Because our analysis focuses on a comparison of GAAP, S&P, and pro forma earnings, we used the 443 sub-sample of observations containing pro forma earnings.

of firms varied across quarters. As shown in Panel B, 17 of the 62 firms reported earnings over the entire period. The remaining firms had data for one to fourteen quarters.[12]

Table 2, Panel A provides descriptive data on the information included in the earnings releases. The average (median) quarterly GAAP earnings was $17.2 ($3.4) million. Due to the adjustments, pro forma earnings was on average (median) higher by of $14.1 ($4.9) million. Not one pro forma earnings amount was less than the GAAP-based number. In addition, the number of adjustments made to arrive at pro forma earnings increased as GAAP earnings declined.[13] Finally, the S&P operating earnings averaged $21.4 million. It is not surprising that this number is between the GAAP and pro forma amounts since S&P adjusts for both income and expense items, whereas only the losses are typically eliminated from pro forma earnings. Of particular interest is the fact that the pro forma earnings amounts do not differ (either in mean or median) between the early and later sub-periods even though the mean (and median) GAAP and S&P earnings are significantly lower in the later sub-period.

We also collected quarterly information for five non-financial measures of performance. While value drivers are likely to vary by industry, our single-industry focus allows us to examine a larger number of key performance indicators that would not be possible in a cross-industry design. Because the value drivers may vary strategically across firms within an industry, the distribution within the non-financial value drivers permits us to capture the different strategies and value implications across firms.

For each IT Professional Services firm, we collected quarterly information on utilization, turnover, billing rate, billable headcount and duration. Utilization is a measure of efficiency and

[12] We replicated the results reported later only for the 17 firms with complete data. Our results are not significantly different on this subset than those reported in the paper.
[13] A Wilcoxon signed-rank test performed on firms that had observations in both the 1997-1999 and 2000-2001 time periods was significant at the .01 level.

is calculated as the percentage of billable consulting hours that were actually billed to clients. The billable consulting hours were calculated as the product of the number of 40-hour weeks in the reporting quarter and the number of consultants.[14] There are 2,080 billable hours per consultant per year. Turnover is the percentage of consultants that voluntarily left the firm during the quarter. This measure addresses firm effectiveness and profitability since lower turnover likely translates into higher profitability because seasoned consultants are likely more efficient and training costs for replacement hires are lower. Billing rate measures the value of the services provided. This measure is the average billing rate per hour billed to clients during the quarter.[15] Billable headcount is a measure of firm capacity and is the number of consultants the firm has on staff each quarter. Finally, duration is the average length of client contracts under which revenues will be billed. This non-financial performance indicator is a measure of backlog and customer turnover, which is important for firms in an industry where a significant percentage of revenue is derived from their top five clients.

The distributions of these non-financial key performance indicators are described in Table 2, Panel B. The average (median) utilization during the sample period was 68 (67) percent. The range extended from a low of 54 percent to a high of 88 percent. Excluding the new consultant hires that were in training during the quarter of hire, the average and median utilization increased to 89 percent. This difference reflects the substantial growth that these

[14] Some firms include all consultants (i.e., both the consultants working on projects and generating revenue and the new hires that are in training) in their calculation of total billable hours while other firms exclude new consultant hires that were in training during the quarter. Excluding the consultants in training from the calculation has the effect of increasing utilization. We standardized the reported utilization measures to include all consultants for all firms based on the information in the surveys that Lehman Brothers provided to us.

[15] An IT consultant who provided comments on the paper suggested we substitute average *realized* rate for the average billing rate. While average billing rate provides valuable information about what a firm is charging for its services, average realized rate speaks more to what the firm is actually collecting and may be more illustrative of performance. We calculate average realized rate by taking total revenue for the period and dividing it by total available hours for the period (versus total revenue divided by billable hours). Our results are the same using either measure.

professional services firms experienced during the late 1990s. Average (median) turnover was 17 percent (14 percent). The range extended from a low of 7 percent to a high of 38 percent. These turnover levels reflect the significant opportunities available to the consultants during the sample period and the challenges that managers faced in retaining qualified people. Average (median) billing rates were $146 ($144). The range extended from a low of $33 per hour to a high of $350 per hour. This spread reflects both the differences in the types of services offered across the firms and the change in the competitive landscape attributable to the decline in growth rates during the sample period. Average (median) billable headcount was 5,380 (762).[16] Finally, average (median) contract duration was 1.4 (0.8) years. Since an average of 27.3% of total annual revenue during our sample period was attributable to each firm's top five customers, longer duration means lower customer turnover and increased stability.

4. RESULTS

4.1. Estimation of primary earnings models

We begin our analysis by examining the relation between the three definitions of earnings and price. Consistent with prior research, we use with the following valuation model (see for example, Francis and Schipper 1999). To assure that price contains the information included in the earnings release we use the market price as of 45 (90) days after the quarter (year) end. For each quarter, we estimate the following three models:

$$P_{iq} = \alpha + \beta_1 BV_{iq} + \beta_2 GAAP_{iq} + \varepsilon_{iq} \quad (1)$$

$$P_{iq} = \alpha + \beta_1 BV_{iq} + \beta_2 \text{Pro forma}_{iq} + \varepsilon_{iq} \quad (2)$$

$$P_{iq} = \alpha + \beta_1 BV_{iq} + \beta_2 S\&P_{iq} + \varepsilon_{iq} \quad (3)$$

[16] A few large firms such as Electronic Data Systems skew the distribution. To examine the effect of large firms or extreme observations on our reported results, we eliminated the largest firms from the analysis and then separately eliminated the five percent of extreme observations in each tail of the distribution. The results of these estimations are similar to those reported in the tables.

where BV_{iq}, $GAAP_{iq}$, Pro $forma_{iq}$ and $S\&P_{iq}$ are the book value, GAAP earnings, pro forma earnings, and S&P earnings, respectively, for firm i at the end of quarter q. [17] These equations address the question of which earnings measure is the best summary measure.

The results of these estimations, shown in Table 3, Panel A, document a significant association between GAAP earnings ($p = 0.00$) and price and S&P earnings and price ($p = 0.03$) throughout the five-year sample period. In contrast, firm-specific pro forma earnings are only weakly associated with price during the five-year sample period. Consistent with Amir and Lev (1996) the book value for these high change firms is insignificant across all specifications. The adjusted R^2s suggest that the GAAP earnings measure is more highly correlated with price than either S&P or pro forma earnings.

To more formally discriminate between the earnings specifications, we use the Vuong (1989) Z-statistic to evaluate them as competing non-nested models. Vuong (1989) provides a likelihood ratio test for model selection without presuming that either model is 'true', allowing a directional test indicating which of the competing models, if either, is closer to explaining the data. Dechow (1994) uses this test to distinguish between cash flows and earnings measures. See Appendix 2 to Dechow (1994) for a discussion of Vuong (1989). In panel A, the Z-statistics demonstrate that both GAAP and S&P earnings better explain variation in prices than pro forma. However, there is no significant difference between the GAAP and S&P models.

Panel B provides estimations for the 1997 to 1999 time period. Consistent with Panel A, the coefficient on book value is insignificant across all of the specifications during this time period. Contrary to the results presented in Panel A, the pro forma earnings model has a higher

[17] In order to facilitate our presentation and discussion of the results, we pool the quarterly regressions into two subperiods: 1997-1999, a period of market expansion; and 2000-2001, a period of market decline. In other words, the results for the 1997-1999 quarterly regressions (pooled by year) are qualitatively similar to the combined regression results. The same is true for the 2000 and 2001 regressions.

adjusted R^2 than either the GAAP or S&P earnings models. The Vuong (1989) Z-statistics provide statistical support for this observation.

Panel C provides estimations for the 2000 to 2001 time period. The results presented are consistent with the results in Panel A. That is, GAAP and S&P earnings have higher explanatory power than pro forma. The GAAP and S&P models have similar explanatory power. Vuong (1989) Z-statistics support this inference and are significant at the .07 level or better.

A partial explanation for the weaker performance of the firm-specific pro forma earnings in the later period might be explained by the inconsistency of the adjustments made during our sample period. To examine this further, we calculated the stock performance for our sample firms across the two sample sub-periods. During 1997-1999, IT Professional Service firms averaged quarterly returns of 52.7 percent. However, following technology stocks downward in the later years, the firms averaged returns of -4.2 percent during 2000-2001.[18] We also find that firms made more adjustments for greater amounts in the latter period than they did in the earlier period. This suggests that managers made additional adjustments to maintain the appearance of growth in a period of market decline. This finding is also consistent with the assertion from the past SEC Chief Accountant that the measure of pro forma earnings includes "everything but bad stuff."

In the following sections, we examine the relevance of GAAP and non-GAAP earnings when including non-financial drivers in the model and if continued relevance of GAAP may be due to the fact that GAAP includes measures of investing and financing performance.

4.2. Inclusion of non-financial value drivers

We first examine the concern raised by the SEC task force that historical-based measures of performance cannot adequately capture the value of firms in rapidly changing industries by

[18] These results are shown Table 6 and are examined more fully in a later section of this paper.

expanding the model of price to include the five non-financial operating variables described previously. The expanded models estimated are as follows:

$$P_{iq} = \alpha + \beta_1 BV_{iq} + \beta_2 GAAP_{iq} + \beta_3 Utilization_{iq} + \beta_4 Turnover_{iq} + \beta_5 Billing\ Rate_{iq} + \beta_6 Billable\ Headcount_{iq} + \beta_7 Duration_{iq} + \varepsilon_{iq} \quad (4)$$

$$P_{iq} = \alpha + \beta_1 BV_{iq} + \beta_2 Pro\ forma_{iq} + \beta_3 Utilization_{iq} + \beta_4 Turnover_{iq} + \beta_5 Billing\ Rate_{iq} + \beta_6 Billable\ Headcount_{iq} + \beta_7 Duration_{iq} + \varepsilon_{iq} \quad (5)$$

$$P_{iq} = \alpha + \beta_2 BV_{iq} + \beta_2 S\&P_{iq} + \beta_3 Utilization_{iq} + \beta_4 Turnover_{iq} + \beta_5 Billing\ Rate_{iq} + \beta_6 Billable\ Headcount_{iq} + \beta_7 Duration_{iq} + \varepsilon_{iq} \quad (6)$$

The results provided in Table 4 are consistent with the notion that non-financial operating measures are useful in valuation. Four of the five variables add significantly to the model's ability to explain prices. Utilization, turnover, billing rate, and duration are all positively related to stock price. Higher *voluntary* turnover is associated with higher prices since industry growth translates into more opportunities for the consultants. Only the billable headcount variable is not significant. The increase in explanatory power relative to the earnings-only model presented in Table 3 is significant across all earnings types and over different time periods.[19]

Of particular interest is the effect that these variables have on the ability of earnings to explain price levels. For example, when these variables are included in a regression with GAAP, GAAP earnings remain significant ($p = 0.01$) in the pooled regression over the five-year period (panel A) and the later subperiod (panel C). In contrast to our earlier results, GAAP earnings is now significant ($p = 0.05$) in the early subperiod. Also in contrast to our previous findings, pro forma is not significant at conventional levels in any of the reported regressions across panels A through C when the non-financial variables are added to the regression. In addition, S&P earnings is significant at conventional levels ($p = 0.05$) only in the early sub-period reported in

[19] F-tests are significant at the .01 level.

panel B. Also similar to the results in Table 3 the coefficient on book value is insignificant across all three time periods for each model specification.

The explanatory power analysis is consistent with the results presented in Table 3. Across all three time periods (panels A to C), GAAP earnings has a higher adjusted R^2 relative to S&P earnings and S&P earnings has a higher adjusted R^2 relative to pro forma earnings. Except for the early sub-period of expansion, Vuong (1989) Z-statistics demonstrate that the GAAP model better captures the variation in prices than either the S&P or pro forma models. In the early sub-period, the Z-statistic is not able to distinguish between the GAAP and S&P models. Overall, the results in Table 4 suggest that GAAP earnings captures some aspects of value that are different than the core operating performance attempted to be captured by pro forma earnings. The results are mixed for S&P operating earnings. Therefore, we examine the pro forma result in more detail in the following section.

4.3. Why do GAAP earnings remain informative given forward-looking measures?

An explanation of the higher explanatory power of GAAP earnings over pro forma earnings in the presence of key performance indicators focuses on the types of items eliminated from GAAP earnings to arrive at pro forma earnings. Consistent with extant research, adjustments made to GAAP earnings to arrive at pro forma earnings generally results in earnings that approximate sustainable operating earnings. For example, items that are consistently eliminated relate to investing or financing decisions such as acquisition adjustments, gains or losses on sale of long-lived assets, asset write downs, and gains or losses on debt retirements. The addition of key performance indicators to the regression models should dominate historical operating earnings measures if they are more timely measures and are more predictive of future operating performance. That is, pro forma earnings and key performance indicators may attempt

to measure operating performance, but the non-financial measures are better measures of operating performance.

By definition, pro forma earnings do not capture the investing or financing information eliminated from GAAP earnings. These items are eliminated from GAAP to arrive at an alternative earnings measure since they are considered to be non-operating. The eliminated items may be recurring or non-recurring items and therefore, the overall effect on price is uncertain. In general, one-time events have a one-to-one correspondence with price changes, while recurring events have a multiplicative effect on price. This reality suggests two implications. First, the valuation effect of the eliminated items will be positively related to price, but the coefficient should be smaller than the coefficient on sustainable operating earnings if there are significant non-recurring eliminated items. Second, it is this element of valuation that supports the informativeness of GAAP over and above pro forma earnings.

We examine whether it is the information in these eliminated items that supports the price informativeness of GAAP by estimating the following regressions:

$$P_{iq} = \alpha + \beta_1 BV_{iq} + \beta_2 \text{Pro forma}_{iq} + \beta_3(\text{GAAP-Pro forma})_{iq} + \beta_4 \text{Utilization}_{iq} + \beta_5 \text{Turnover}_{iq} + \beta_6 \text{Billing Rate}_{iq} + \beta_7 \text{Billable Headcount}_{iq} + \beta_8 \text{Duration}_{iq} + \varepsilon_{iq} \quad (7)$$

$$P_{iq} = \alpha + \beta_1 BV_{iq} + \beta_2 \text{Pro forma}_{iq} + \beta_{3a}(\text{Restructuring Charges})_{iq} + \beta_{3b}(\text{Merger Integration Costs}) + \beta_{3c}(\text{Stock Compensation Expense})_{iq} + \beta_{3d}(\text{Intangible Amortization})_{iq} + \beta_{3e}(\text{Other})_{iq} + \beta_4 \text{Utilization}_{iq} + \beta_5 \text{Turnover}_{iq} + \beta_6 \text{Billing Rate}_{iq} + \beta_7 \text{Billable Headcount}_{iq} + \beta_8 \text{Duration}_{iq} + \varepsilon_{iq} \quad (8)$$

These estimations permit two tests not directly shown in prior studies. First, is there information content in the items that are eliminated to arrive at non-GAAP earnings? Second, is the coefficient on eliminated items significantly smaller, as would be predicted for a combination of recurring and non-recurring items?

Table 5 presents the regression results. As shown in column one, the items eliminated from pro forma earnings explain price. While pro forma earnings remains insignificant the

coefficient on the eliminated items (GAAP – Pro forma) is significant and greater than zero (p = 0.01). In addition, the coefficient is significantly smaller than would be predicted if they are viewed as continuing items suggesting the market prices them as "transitory" components of earnings. Equally important is the fact that the non-financial operating measures do not subsume the price relevance of the items eliminated from GAAP earnings to arrive at the alternative earnings measures.

We further examine the informativeness of items eliminated from pro forma earnings by partitioning out the four items for which we have sufficient numbers of observations. All of the remaining adjustments are included in "other." The four items examined separately include restructuring charges, merger intergration costs, stock compensation expense and intangible amortization. As shown in column 2 of Table 5, the first three variables are significant in explaining price levels.[20] Only, the intangible amortization, which is widely accepted as not being correlated with stock prices is insignificant.[21] Again, this finding supports the claim by Lev and Zarowin (1999) that earnings models may not capture the effect of all financing and investing decisions.

4.4. Explanation of change in performance

To gain a better understanding of why GAAP earnings appear to provide a better link to earnings in the later years, we rerun the regressions in the previous sections in a changes format. In other words, we replace price as the dependent variable with returns from the announcement period. The return is a quarterly return calculated through 45 days after the quarter close (90 days for the fourth quarter). The earnings variables and non-financial variables are

[20] Similar results are found for returns when changes in these variables are included in the regression.
[21] This finding on restructuring charges is consistent with Elliott and Shaw (1988). The other category included various items that were sufficiently different across firms or lacked sufficient observations to allow for meaningful conclusions.

commensurately computed as the difference from the prior quarter.[22] The following regressions were estimated:

$$R_{iq} = \alpha + \beta_1 GAAP_{iq} + \beta_2 \Delta GAAP_{iq} + \beta_3 \Delta Utilization_{iq} + \beta_4 \Delta Turnover_{iq} + \beta_5 \Delta Billing\ Rate_{iq} + \beta_6 \Delta Billable\ Headcount_{iq} + \beta_7 \Delta Duration_{iq} + \varepsilon_{iq} \quad (9)$$

$$R_{iq} = \alpha + \beta_1 \Delta Pro\ forma_{iq} + \beta_2 \Delta Pro\ forma_{iq} + \beta_3 \Delta Utilization_{iq} + \beta_4 \Delta Turnover_{iq} + \beta_5 \Delta Billing\ Rate_{iq} + \beta_6 \Delta Billable\ Headcount_{iq} + \beta_7 \Delta Duration_{iq} + \varepsilon_{iq} \quad (10)$$

$$R_{iq} = \alpha + \beta_1 S\&P_{iq} + \beta_2 \Delta S\&P_{iq} + \beta_3 \Delta Utilization_{iq} + \beta_4 \Delta Turnover_{iq} + \beta_5 \Delta Billing\ Rate_{iq} + \beta_6 \Delta Billable\ Headcount_{iq} + \beta_7 \Delta Duration_{iq} + \varepsilon_{iq} \quad (11)$$

Table 6 reports the average measures that were used as inputs in the above regressions. Consistent with our earlier discussion, the industry experienced extreme returns that averaged 52.7 percent per quarter during the earlier sub-period. This return is commensurate with both the actual and projected sales growth for the industry. This growth slowed in the calendar year 2000, leading to a decline in the valuations for most of the firms in the industry. The GAAP and pro forma earnings measures parallel the market metric. For example, firms experienced an average increase in GAAP earnings of $1.9 million per quarter during the first three sample years. This growth was followed by a decline of $2.6 million per quarter during the later two years. Pro forma earnings increased by an average of $3.2 million during the first two sample years, but only declined by $1.7 million during the later two years. This smaller decline in pro forma earnings reflects both an increase in the number of adjustments to the GAAP earnings and an increase in the magnitude of the adjustment amounts. S&P earnings changes fall between the GAAP and pro forma earnings changes, paralleling the results of the levels analysis reported in Table 2.

Utilization increased by 1.5% in the early subperiod, reflecting the amount of business that was available to any of the firms that had enough consultants to commit to the work

[22] Hand (1989) reports that the focus of the financial press is on year-to-year changes in quarterly earnings. However, we calculate sequential changes given the high rate of growth for these firms.

schedule. Voluntary turnover increased by 3.7 percentage points each quarter, reflecting the significant abundance of opportunities across firms during this high growth phase. Billing rates per hour increased, on average, each quarter during the early subperiod, reflecting both the increased demand for services relative to supply and the increasing complexity of the services provided. The increase in billable headcount attests to the growth and the increase in contract duration attests to the increased complexity of the services offered. All of the measures declined during the later subperiod, consistent with slower industry growth followed by industry consolidation and contraction.

The regression estimations using the change variables are provided in Table 7. In general, these results are consistent with and support the results reported in Table 4. All of the non-financial key performance metrics significantly add to some of the models' ability to explain returns. Changes in utilization, turnover and billing rate are positively related to returns and significant at conventional levels ($p \leq 0.05$) in all of the regressions. The change in billable headcount variable is significant at $p \leq 0.05$ only for the GAAP earnings model while the change in duration variable is significant at $p \leq 0.10$ in all regressions.

The results in table 7 confirm that GAAP and S&P earnings capture aspects of value that are different than the core operating performance that pro forma earnings attempt to highlight. Again, it appears that the value relevance of the pro forma earnings is largely subsumed by the non-financial key performance measures.

4.5. The role of cash flows

Dechow (1994) refers to popular press assertions that cash flows may provide a more meaningful measure of value than reported earnings. Her results are consistent with the prediction that earnings better measure firm performance than cash flows for firms with more

volatile operating, investment and financing activities. She demonstrates that working capital accruals are more important for mitigating timing and matching problems in cash flows, especially in shorter performance measurement intervals.

We examine whether our results are robust to alternative 'earnings' specifications by examining cash from operations as an alternative earnings measure. Similar to Dechow (1994), we find that GAAP earnings explain significantly more of the variation in stock prices and returns than the cash flow measure (Vuong's Z-statistic = 6.92, p = 0.01). Vuong's Z-statistics are not significantly different across cash from operations, pro forma earnings, and S&P earnings models. One explanation for this result is that all of these measures eliminate income statement effects of transactions related to investing and financing decisions.

5. CONCLUSIONS

This study examines the value-relevance of alternative earnings measures in the presence of non-financial measures for firms in the IT Professional Services industry. We begin our analysis by examining the value-relevance of GAAP earnings, S&P core operating earnings, and firm-specific pro forma earnings. In periods of market expansion, we find that the pro forma earnings measure is more highly associated with prices and returns than GAAP and S&P earnings. However, during a time of market contraction, we find that GAAP and S&P earnings are more highly correlated with prices and returns than pro forma earnings. We next examine the incremental relevance of industry specific non-financial measures. We find that the information contained in pro forma earnings is supplanted by non-financial measures. Lastly, we find that the information eliminated from GAAP-based earnings to arrive at pro forma earnings is value relevant throughout the period examined even after including non-financial information.

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Table 1
Frequency of Earnings Announcements by Year and Number of Quarters in Sample

Panel A: Frequency of firms and earnings announcements by year

	# of firms[1]	# of earnings announcements	# of pro forma earnings announcements	% of earnings announcements with pro forma	Average # of adjustments[2]
1997	24	83	37	44.58%	2.92
1998	34	116	72	62.07%	3.17
1999	39	135	103	76.30%	3.94
2000	43	154	122	79.22%	5.08
2001	41	147	109	74.15%	5.20
Total or Average	62	635	443	69.76%	4.35

Panel B: Frequency of firms and earnings announcements by number of quarters in sample

# of quarters in sample	# of firms	# of earnings announcements	# of pro forma earnings announcements
20	17	340	231
14	2	28	20
13	2	26	19
12	3	36	22
10	2	20	16
9	3	27	21
8	4	32	24
7	4	28	20
6	5	30	20
5	6	30	21
4	4	16	12
3	5	15	10
2	2	4	4
1	3	3	3
Totals	62	635	443

[1] A total of 62 firms contributed 635 earnings announcements. Panel B describes data availability based on number of quarters.
[2] This is the average number of adjustments firms used to reconcile GAAP earnings to pro forma earnings.

Table 2
Descriptive Statistics

Panel A: Distribution of GAAP, S&P, and pro forma earnings[1]

($ in millions)	Mean	Median	1st Quartile	3rd Quartile	Standard Deviation
1997 to 2001 (n=443)					
GAAP	$17.2	$3.4	$0.8	$21.2	$49.3
Pro forma	$31.3	$8.3	$2.3	$42.1	$53.9
Difference	$14.1	$4.9	$1.5	$20.9	$35.2
# of Adjustments	4.4	4.0	1.0	5.0	2.4
S&P	$21.4	$5.1	$1.2	$28.2	$50.6
1997 to 1999 (n=212)					
GAAP	$21.5	$9.9	$1.9	$34.6	$56.4
Pro forma	$32.1	$15.6	$4.8	$48.4	$64.2
Difference	$10.6	$5.1	$2.9	$13.8	$7.8
# of Adjustments	3.5	3.4	2.0	4.0	3.1
S&P	$25.6	$10.3	$3.0	$36.7	$41.4
2000 to 2001 (n=231)					
GAAP	$13.2	$2.1	-$0.7	$16.9	$41.8
Pro forma	$30.6	$14.7	$3.2	$45.2	$61.9
Difference	$17.4	$2.6	$3.9	$28.3	$20.1
# of Adjustments	5.1	5.0	4.0	6.5	4.4
S&P	$17.6	$3.7	$2.1	$17.4	$44.6

Table 2—*continued*

Panel B: Distribution of Non-financial Key Performance Indicators[2]

	Mean	Median	1st Quartile	3rd Quartile	Standard. Deviation
1997 to 2001 (n=443)					
Utilization	68%	67%	62%	74%	58.8%
Turnover	17%	14%	12%	23%	8.5%
Billing Rate	$146	$144	$122	$181	$59
Billable Headcount	5,380	762	309	5,828	16,523
Duration (years)	1.4	0.8	0.5	1.8	0.6
1997 to 1999 (n=212)					
Utilization	79%	84%	73%	83%	69.2%
Turnover	20%	16%	14%	26%	18.4%
Billing Rate	$169	$170	$130	$185	$73
Billable Headcount	5,832	824	471	6,257	14,826
Duration (years)	2.3	2.2	0.9	2.6	1.2
2000 to 2001 (n=231)					
Utilization	58%	56%	55%	67%	68.3%
Turnover	15%	13%	10%	66%	13.9%
Billing Rate	$124	$122	$113	$164	$68
Billable Headcount	4,968	597	278	5,421	13,609
Duration (years)	0.6	0.3	0.2	1.2	0.8

[1] GAAP is the earnings before extraordinary items and discontinued operations. Pro forma is the company-reported earnings from its press release. Difference is pro forma earnings minus GAAP earnings. Number of adjustments is the number of reconciling items between pro forma and GAAP earnings. S&P is the standardized operating earnings number recommended by Standard & Poor's.

[2] Utilization is the percentage of billable consulting hours in the reporting quarter billed to clients. Turnover is the percentage of consultants that voluntarily left the firm during the quarter. Billing rate is the average rate per hour billed to clients during the quarter. Billable headcount is the number of consultants the firm has on staff each quarter. Duration is the average length of client contracts under which revenues will be billed.

Table 3
Regression estimates of price on alternative measures of earnings

$$P_{iq} = \alpha + \beta_1 BV_{iq} + \beta_2 Earnings_{iq} + \varepsilon_{iq}$$

Panel A: Pooled quarterly data over the years 1997 to 2001 (443 firm-quarter observations)

	Earnings Type		
	GAAP	Pro Forma	S&P
Intercept	3.083	2.837	3.720
	(11.21)	(9.72)	(7.63)
Book Value	0.072	0.057	0.091
	(0.84)	(0.72)	(0.88)
Earnings	3.219***	2.281*	2.383**
	(4.63)	(1.66)	(1.92)
Adjusted R^2	.078	.034	.043
Vuong Z-statistic	*p* = .04 GAAP vs. Pro Forma	*p* = .06 Pro Forma vs. S&P	*p* = .13 GAAP vs. S&P

Panel B: Pooled quarterly data over the years 1997 to 1999 (212 firm-quarter observations)

	Earnings Type		
	GAAP	Pro Forma	S&P
Intercept	1.381	0.987	1.053
	(8.92)	(9.16)	(7.26)
Book Value	0.038	0.079	0.151
	(0.51)	(0.76)	(0.73)
Earnings	2.326*	1.884***	1.826***
	(1.57)	(2.82)	(2.19)
Adjusted R^2	.023	.068	.028
Vuong Z-statistic	*p* = .03 GAAP vs. Pro Forma	*p* = .05 Pro Forma vs. S&P	*p* = .37 GAAP vs. S&P

Panel C: Pooled quarterly data over the years 2000 to 2001 (231 firm-quarter observations)

	Earnings Type		
	GAAP	Pro Forma	S&P
Intercept	1.702	3.122	2.304
	(7.73)	(8.35)	(8.94)
Book Value	0.824	0.682	0.607
	(1.16)	(0.97)	(1.02)
Earnings	11.537***	1.837	5.626**
	(4.22)	(0.72)	(1.81)
Adjusted R^2	.066	.022	.045
Vuong Z-statistic	*p* = .02 GAAP vs. Pro Forma	*p* = .07 Pro Forma vs. S&P	*p* = .27 GAAP vs. S&P

Note: The GAAP, pro forma and S&P earnings measures are defined in Table 2.
***(**)(*) Significant at the .01 (.05) (.10) level

Table 4
Regression estimates of price on alternative earnings measures and key performance indicators

$$P_{iq} = \alpha+\beta_1 BV_{iq}+\beta_2 Earnings_{iq}+\beta_3 Utilization_{iq}+\beta_4 Turnover_{iq}+\beta_5 Billing\ Rate_{iq}+\beta_6 Headcount_{iq}+\beta_7 Duration_{iq}+\varepsilon_{iq}$$

Panel A: Pooled quarterly data over the years 1997 to 2001 (443 firm-quarter observations)

	Earnings Type		
	GAAP	Pro Forma	S&P
Intercept	1.127*	1.283**	1.718**
	(1.38)	(2.09)	(2.06)
Book Value	0.195	0.219	0.319
	(0.84)	(0.87)	(0.68)
Earnings	7.517***	2.206*	3.792*
	(4.16)	(1.47)	(1.59)
Utilization	6.726***	7.269***	8.301***
	(6.71)	(5.18)	(4.73)
Turnover	3.0825**	2.673**	3.302**
	(1.92)	(1.91)	(1.99)
Billing Rate	2.204***	2.191***	2.106***
	(2.45)	(2.34)	(2.32)
Headcount	0.831	0.861	0.839
	(0.77)	(0.72)	(0.92)
Duration	5.923***	4.804***	5.297***
	(3.84)	(3.27)	(3.82)
Adjusted R^2	.347	.194	.226
Vuong Z-statistic	p = .01 GAAP vs. Pro Forma	p = .19 Pro Forma vs. S&P	p = .02 GAAP vs. S&P

Panel B: Pooled quarterly data over the years 1997 to 1999 (212 firm-quarter observations)

	Earnings Type		
	GAAP	Pro Forma	S&P
Intercept	1.186*	0.894*	1.583*
	(1.41)	(1.60)	(1.51)
Book Value	0.293	0.351	0.248
	(0.84)	(0.92)	(0.71)
Earnings	2.934**	2.283	2.637**
	(2.02)	(1.18)	(1.88)
Utilization	10.174***	9.309***	11.261***
	(4.31)	(3.19)	(3.26)
Turnover	3.082**	4.129***	3.857***
	(2.11)	(2.51)	(2.37)
Billing Rate	2.280***	2.083***	3.484***
	(3.92)	(4.61)	(4.06)
Headcount	0.416	0.827	0.537
	(0.72)	(1.13)	(0.82)
Duration	5.206***	6.194***	4.953***
	(4.18)	(3.97)	(4.08)
Adjusted R^2	.231	.186	.227
Vuong Z-statistic	p = .01 GAAP vs. Pro Forma	p = .02 Pro Forma vs. S&P	p = .68 GAAP vs. S&P

Table 4—*continued*

Panel C: Pooled quarterly data over the years 2000 to 2001 (231 firm-quarter observations)

	Earnings Type		
	GAAP	Pro Forma	S&P
Intercept	0.873*	1.826**	2.020***
	(1.39)	(2.27)	(2.51)
Book Value	0.284	0.183	0.231
	(0.52)	(0.75)	(0.49)
Earnings	8.516***	0.867	3.926*
	(2.41)	(0.85)	(1.52)
Utilization	10.085***	8.731***	7.626***
	(2.91)	(3.26)	(2.87)
Turnover	2.604**	2.482**	2.915**
	(1.99)	(1.84)	(1.93)
Billing Rate	2.341***	1.834**	2.481**
	(2.65)	(2.14)	(1.87)
Headcount	0.923	0.795	1.791
	(0.94)	(1.08)	(1.22)
Duration	4.822***	5.632***	5.214***
	(2.94)	(3.13)	(2.67)
Adjusted R^2	.257	.148	.184
Vuong Z-statistic	p = .01 GAAP vs. Pro Forma	p = .25 Pro Forma vs. S&P	p = .04 GAAP vs. S&P

Note: The GAAP, pro forma and S&P earnings measures are defined in table 2. The key performance indicators are also defined in Table 2.

***(**)(*) Significant at the .01 (.05) (.10) level

Table 5
Regression estimates of price on pro forma earnings, difference between GAAP and pro forma earnings (and its components), and key performance indicators

$$P_{iq} = \alpha + \beta_1 BV_{iq} + \beta_2 Pro\ forma + \beta_3 (GAAP - Pro\ forma)_{iq} + \beta_4 Utilization_{iq} + \beta_5 Turnover_{iq} + \beta_6 Billing\ Rate_{iq} + \beta_7 Headcount_{iq} + \beta_8 Duration_{iq} + \varepsilon_{iq}$$

Pooled quarterly data over the years 1997 to 2001 (443 firm-quarter observations)

(n=443)	GAAP – Pro forma summary differences	GAAP – Pro forma individual differences
Intercept	1.313**	1.282**
	(2.16)	(1.99)
Book Value	0.206	0.194
	(0.82)	(0.79)
Pro forma	1.682	1.673
	(1.26)	(1.31)
GAAP – Pro forma	0.144***	
	(2.37)	
Restructuring Charges		0.047***
		(2.26)
Merger Integration Costs		0.051***
		(2.81)
Stock Compensation Expense		0.029*
		(1.69)
Intangible Amortization		0.006
		(0.38)
Other		0.013
		(1.03)
Utilization	11.811***	11.805***
	(7.41)	(7.52)
Turnover	3.116*	3.093**
	(1.73)	(1.77)
Billing Rate	2.204***	2.207***
	(2.55)	(2.63)
Headcount	0.529	0.516
	(0.64)	(0.72)
Duration	5.806***	5.822***
	(5.81)	(5.90)
Adjusted R^2	.405	.419

***(**)(*) Significant at the .01 (.05) (.10) level

Table 6
Means for Quarterly Changes in Price, Earnings Measures, and Key Performance Indicators

	1997-1999 (n=212)	2000-2001 (n=231)
Returns	52.7%	-4.2%
Earnings changes ($ millions):		
GAAP	$1.9	-$2.6
Proforma	$3.2	-$1.7
S&P	$2.1	-$2.3
Utilization	1.5%	-3.2%
Turnover	3.7%	-2.9%
Billing rate (per hour)	$12	-$8
Billable Headcount	151	-92
Duration (years)	0.2	-0.2

Returns is calculated as the average quarterly change in price over the time period. The earnings and key performance measures are defined in table 2.

Table 7
Regression estimates of returns on change in alternative earnings measures and change in key performance indicators

$$R_{iq} = \alpha + \beta_1 Earnings_{iq} + \beta_2 \Delta Earnings_{iq} + \beta_3 \Delta Utilization_{iq} + \beta_4 \Delta Turnover_{iq} + \beta_5 \Delta Billing\ Rate_{iq} + \beta_6 \Delta Headcount_{iq} + \beta_7 \Delta Duration_{iq} + \varepsilon_{iq}$$

Pooled quarterly data over the years 1997 to 2001 (443 firm-quarter observations)

	Earnings Type		
	GAAP	Pro Forma	S&P
Intercept	-0.013***	-0.017***	-0.092***
	(-4.82)	(-2.84)	(-3.29)
Earnings	1.913***	1.506	1.166*
	(2.84)	(1.19)	(1.64)
ΔEarnings	0.581***	0.296	0.462**
	(3.05)	(1.31)	(1.94)
ΔUtilization	0.590***	0.538**	0.602***
	(2.65)	(2.24)	(2.81)
ΔTurnover	0.335**	0.306**	0.325*
	(1.71)	(1.93)	(1.63)
ΔBilling Rate	0.096***	0.322***	0.113***
	(7.43)	(5.11)	(4.83)
ΔHeadcount	0.073**	0.088	0.089*
	(1.82)	(1.16)	(1.31)
ΔDuration	0.406**	0.304*	0.335***
	(2.12)	(1.48)	(2.69)
Adjusted R^2	.106	.084	.088

Note: The GAAP, pro forma and S&P earnings measures are defined in table 2.
***(**)(*) Significant at the .01(.05)(.10) level