

THE EYEBALLS HAVE IT: SEARCHING FOR THE VALUE IN INTERNET STOCKS

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Abstract

In this paper we provide insights into the manner in which (relatively sparse) accounting information, along with measures of internet usage, are employed by the market in the valuation of internet firms. Consistent with those who claim that financial statement information is of very limited use in the valuation of internet stocks, we are unable to detect a significant positive association between bottom-line net income and our sample firms' market prices; in fact, the association is actually negative. However, when we decompose net income into its components, we find *gross profits* to be *positively* and *significantly* associated with prices. In addition, both unique visitors and pageviews, as measures of internet usage, are found in most instances to provide *incremental* explanatory power (in some cases considerable) for stock prices. We also separately analyze the e-tailers, and the portal and content/community firms (the p/c firms) in our sample. For the e-tailers we find that bottom-line net income generally has a negative association with stock prices (as for the sample as a whole), while a positive and significant association exists for the p/c firms. In this respect, p/c firms' shares behave more like those of non-internet companies. Further, we find for the p/c firms that the incremental explanatory power of pageviews and of unique visitors is approximately the same; in contrast, pageviews has much greater incremental explanatory power for the e-tailers than does unique visitors. This suggests that pages viewed per visitor is an especially important metric for the e-tailers, as compared to the p/c firms.

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1. INTRODUCTION

In this paper we provide insights into the valuation of internet stocks by examining the extent to which their market values are associated with fundamental accounting information and by exploring the role played by internet usage data in explaining the firms' stock prices. This study is motivated by the fact that many internet stocks have, for some time, been selling at high prices relative to their operating performance. For example, as of November 23, 1999 Yahoo! had a P/E of 1,382, eBay a P/E of 3,351, and Amazon.com traded at a multiple to *revenue* of 22.9 (it has been unprofitable since inception) and sported a market cap of \$29.7 billion. Statistics such as these have led many players in the stock market to scratch their heads trying to make sense of the valuation of internet stocks. Toward this end, many new (and sometimes unique) valuation measures have popped up, such as market value per eyeball or acquisition cost per user, which have been used to justify the high prices that investors are paying for internet shares.

Just how hard it is to value these companies is reflected in a recent analyst research report on Amazon.com. At a time when the stock was trading for \$130 a share, the analyst issued a buy recommendation, even though his official projections led him to a valuation of only \$30. Admitting that he could justify any valuation between \$1 and \$200 (!) by varying his assumptions, the analyst stated that his recommendation was based on the opportunity, the company, and its management – all somewhat amorphous concepts.

There are two fundamental reasons why it is difficult to value internet firms. First, the

industry and the firms within it are so young that there is very little historical financial information available with which to forecast future profitability. (Most of the firms have never reported a quarterly profit and are not expected to do so for some time.) Second, the industry is evolving at such a rapid pace that whatever historical information exists is likely to be less useful for valuing these firms than for valuing those in more established industries, or even those in non-internet high-tech industries.

These difficulties notwithstanding, the internet industry does offer one important advantage – the availability of a substantial amount of non-financial data on internet usage, which investors can employ in the prediction of future revenues. It is expected that current traffic at an internet firm’s web site(s) will be positively related to future revenues, as it reflects potential future demand for the company’s products and, at least indirectly, affects the rates the firm can charge for advertising on its web site(s).¹ This data comes directly from the internet companies, as well as from independent rating firms (such as Media Metrix, PC Data, and Nielsen//Netratings), and includes, among other numbers, statistics on web site pageviews and visitors. The availability of this data provides an opportunity to explore how investors supplement relatively sparse financial information with non-financial data in the valuation process.

¹That current web traffic is a leading indicator of future revenue is consistent with the notion that attracting visitors and establishing a brand name is a very important determinant of a firm’s success. In a recent *Wall Street Journal* article (“Finding the Needles”, November 22, 1999, p. R44), Ann Winblad, co-founder of Hummer Winblad Venture Partners, stated that “Internet companies need to attract customers early and fast. That means reaching a big audience and achieving stickiness – keeping visitors at your site once they come. Those two goals drive the Internet branding process.” In another article in the same issue (“Buying the Buyers”, p. R42), Bruce Mowery, vice president of marketing and business development for more.com stated that “[w]e’ll invest what it takes to be competitive in building a large customer base and maintaining a large share of the market”. Additionally, many internet analysts employ web site usage measures in their forecasts of revenues for the firms they cover.

In our study we focus on a subset of the internet stock universe – the portals (those providing a gateway to the internet), the content/community providers (those catering to certain segments of the population or to groups of people with specific interests), and the e-tailers (who sell goods and services on the internet). These firms share a common characteristic in that their primary business involves direct contact with users on the web. They are arguably among the best-known internet firms and include the four largest internet companies – America Online, Yahoo!, eBay, and Amazon.com. Other types of internet firms, such as those providing security or those solely offering internet access, were excluded from our study, as they are of a distinctly different nature from those which we have chosen to include. Our final sample consists of 56 publicly traded internet firms spanning 179 firm-quarters. For each firm-quarter we collected detailed financial statement information, and were provided with measures of internet usage by Media Metrix.

Consistent with those who claim that financial statement information is of very limited use in the valuation of internet firms,² we are unable to detect a significant positive association between bottom-line net income and our sample firms' stock prices. In fact, in a regression of market value on book value and net income, the adjusted R^2 comes to just 3 percent, with the coefficient on net income actually turning out negative. The picture changes dramatically, though, when we decompose net income into gross profits (revenues minus cost of revenues) and its various other components (to allow for the possibility that the individual line items have different implications for future firm profitability). Not only do we find a *positive* and

²See, for example, "Do Profits Really Matter?", by Dan Mitchell (*The Standard*, December 20, 1999), at <http://www.thestandard.com/article/display/0,1151,8221,00.html>.

significant association between gross profits and prices, but there is a *large* jump in the adjusted R^2 , to *50 percent*. These results are consistent with the observation that internet firms' bottom lines often include large transitory items (such as merger-related costs), upon which investors likely place less weight in valuation, as well as items that might be considered in some firms to be investments rather than expenses (such as sales and marketing expenses or research and development costs). Gross profits, in contrast, reflects a firm's current operating performance and is often considered of a more permanent nature. In addition to these results, we find book value to have significant explanatory power for stock prices, over and above bottom-line net income. The significance disappears, however, when book value is instead included with the components of income.

Turning to the non-financial information, we find in general that internet usage measures complement the accounting data, by providing (often considerable) *incremental* explanatory power for stock prices. In particular, combining web site pageviews with bottom-line net income increases the adjusted R^2 by *34 percentage points*, while adding unique visitors leads to a more modest increase of 6 percentage points. Alongside *all* the components of net income, pageviews still increases the adjusted R^2 , but by a smaller 16 percentage points; unique visitors does not increase it at all.

These findings, taken together, suggest that internet usage measures play a significant role in the valuation of internet stocks. That the increase in the adjusted R^2 is much less when usage is combined with the *components* of net income, though, implies that usage data and individual income statement line items (especially gross profits) capture some of the same information. Once the information conveyed by the components of net income is taken into

account, the informational role of internet usage appears to be considerably diminished.

Furthermore, the fact that pageviews provides more explanatory power for stock prices than does unique visitors in our sample of firms implies that the number of pages viewed by each visitor conveys important information to investors.

These results apply to our sample of firms *taken as a whole*. To obtain further insights into the pricing of internet stocks we divide our sample into two groups: the e-tailers, and the portal and content/community firms (together referred to as the p/c firms). A major difference between these two groups of firms is in the way that they generate revenues. The e-tailers produce revenues by attracting visitors to their web sites and selling products, while the p/c firms depend for their revenues largely on advertising. Because of this, we expect there to be differences in the way in which investors use the available financial data in valuation, as well as differences in the relative importance of visitors and pageviews as measures of internet usage. For the e-tailers we find it to be the case that bottom-line net income is negatively associated with stock prices, as for our sample as a whole; however, a positive and significant association exists for the p/c firms. In this respect, p/c firms' shares behave more like those of non-internet companies. Further, we find for the p/c firms that the incremental explanatory power of pageviews and of unique visitors is approximately the same, while pageviews has much greater incremental explanatory power for the e-tailers than does unique visitors. This suggests that pages viewed per visitor is an especially important metric for the e-tailers, as compared to the p/c firms.

While ours is the first paper to consider the role of non-financial data in the valuation of

internet stocks,³ others have explored its role in other contexts. For example, Amir and Lev (1996) examined the valuation implications of different types of non-financial information, in conjunction with the available financial data, within the wireless communications industry. The usefulness of patent citations for predicting future market-to-book ratios and stock returns for high-tech firms was explored by Deng, Lev, and Narin (1999), while Chandra, Procassini, and Waymire (1997) examined price reactions to the announcement of the book-to-bill ratio within the semiconductor industry. Finally, Ittner and Larker (1998) considered the relation between customer satisfaction measures and both accounting numbers and market values, and examined the ability of these measures to predict revenues.

The plan of this paper is as follows. In Section 2 we link internet firm stock prices to the underlying financial and non-financial information available to investors and specify our regression equations. This is followed in Section 3 by a description of the data collected for our tests. The results of our regression analyses are presented in Section 4. A summary and conclusions section ends the paper.

2. *THE EMPIRICAL MODEL*

2.1 LINKING INTERNET STOCK PRICES TO FUNDAMENTAL INFORMATION

As a foundation for our empirical tests, in this subsection we relate an internet firm's stock price to its underlying financial and non-financial data. We begin with the well-known residual income model:⁴

³In concurrent research Hand (1999) analyzes the pricing of internet stocks using financial data.

⁴See, for example, Ohlson (1995) for a detailed discussion of this model.

$$P_t = BV_t + \sum_{i=1}^{\infty} \frac{E(RE_{t+i})}{(1+r)^i} \quad (1)$$

where P_t is the firm's stock price at the end of the current period t , BV_t is the book value of its common equity at that time, RE_{t+i} is its residual earnings for period $t+i$ (defined as the period's earnings available to common shareholders less a charge applied to beginning-of-period book value), r is the firm's required rate of return on its equity capital, and $E(\cdot)$ is the expectation operator.

Decomposing the firm's period $t+i$ earnings into its components yields:

$$E_{t+i} = GP_{t+i} - OX_{t+i} - NX_{t+i} \quad (2)$$

where GP_{t+i} is the firm's gross profits (revenues minus cost of revenues) for the period, OX_{t+i} its operating expenses (principally sales and marketing costs, research and development, and general and administrative expenses), and NX_{t+i} its nonoperating expenses.

Next, we tie investors' expectation for each of the components of earnings to the currently available accounting information and internet usage data, through two primary assumptions. First, we conjecture that future gross profits is positively (and linearly) related to the current period's gross profits, operating expenses, and web site usage. That operating expenses is expected to have a positive relation with future gross profits reflects the notion that it represents, in part, an investment by the firm, which is designed to increase future revenues. Current period web site usage is conjectured to be positively related to next period's gross profits since it reflects potential future demand for the company's products and, at least indirectly, affects the rates the firm can charge for advertising on the company's web sites.

Second, we assume that future expected operating expenses is (linearly) related to current operating expenses and that future nonoperating expenses (aside from net interest expense) is expected to be zero.

These assumptions, in conjunction with expressions (1) and (2), can be shown to yield the following relation:

$$P_t = a_0 + a_1 BV_t + a_2 GP_t + a_3 OX_t + a_4 USAGE_t \quad (3)$$

The signs of a_2 and a_4 are expected to be positive, while the remaining coefficients are of ambiguous sign.^{5,6}

2.2 THE REGRESSION EQUATIONS

We first run the following simple regression of market value on net income (both deflated by book value):

$$\frac{MV_{jt}}{BV_{jt}} = \alpha_0 + \alpha_1 \frac{1}{BV_{jt}} + \alpha_2 \frac{NTINC_{jt}}{BV_{jt}} + \epsilon_{jt} \quad (4)$$

where:

MV_{jt} = firm j 's market value at the time of its quarter t earnings announcement,

BV_{jt} = firm j 's book value of common equity at the end of quarter t , and

⁵From a theoretical perspective, Penman (1998) shows that the sign of the coefficient on book value, a_1 , should be positive. Empirically, though, he finds it to be negative in some cases. Zhang (1999) argues that a negative coefficient is consistent with conservative accounting. That a_3 can be of either sign follows from the fact that operating expenses enters expression (2) negatively, while, at the same time, is assumed to have a positive impact on future gross profits.

⁶It should be recognized that the magnitudes of the coefficients in expression (3) are likely to vary over time, as each of our internet firms evolves and matures. Consequently, it does *not* follow that the change in a firm's stock price over time is linearly related to the change in the right-hand side variables in (3).

$NTINC_{jt}$ = net income available to firm j 's common shareholders in quarter t .

Expression (4) strictly follows from (3) only under restrictive conditions on the growth rates of the various income statement line items, and under the assumption that financial data, alone, is sufficient for valuation purposes. Nevertheless, we run this regression in order to directly address the often-heard assertion that net income plays only a small role, at best, in the valuation of internet stocks.

We next decompose net income into its components and run the following regression:

$$\frac{MV_{jt}}{BV_{jt}} = \alpha_0 + \alpha_1 \frac{1}{BV_{jt}} + \alpha_2 \frac{GP_{jt}}{BV_{jt}} + \alpha_3 \frac{MKTG_{jt}}{BV_{jt}} + \alpha_4 \frac{RND_{jt}}{BV_{jt}} + \alpha_5 \frac{OTHEXP_{jt}}{BV_{jt}} + \epsilon_{jt} \quad (5)$$

where:

GP_{jt} = firm j 's gross profits (revenues minus cost of revenues) for quarter t ;

$MKTG_{jt}$ = firm j 's sales and marketing expenses for quarter t ;

RND_{jt} = firm j 's research and development expenses for quarter t (not including the expensing of any acquired in-process research and development costs), and

$OTHEXP_{jt}$ = firm j 's other operating expenses for quarter t (including general and administrative, depreciation and amortization, and merger-related costs).

This regression corresponds to expression (3) (divided through by book value), with internet usage data suppressed as an explanatory variable and with operating expenses broken down into sales and marketing, research and development, and other operating expenses. By decomposing net income into its components we allow for the possibility that the various income statement line items have different implications for future profits. These differences could result from

variations in growth rates across individual line items and the possibility that investors consider some expenses to actually be investments in the company's future. This decomposition is particularly important for internet firms that are growing rapidly, and spending significant amounts of money to ensure the continuation of this growth.⁷

We then augment regressions (4) and (5) by including a measure of internet usage, $USAGE_{jt}$, as an additional independent variable, along with the financial data. This yields:

$$\frac{MV_{jt}}{BV_{jt}} = \alpha_0 + \alpha_1 \frac{1}{BV_{jt}} + \alpha_2 \frac{NTINC_{jt}}{BV_{jt}} + \beta \frac{USAGE_{jt}}{BV_{jt}} + \epsilon_{jt} \quad (4')$$

and

$$\frac{MV_{jt}}{BV_{jt}} = \alpha_0 + \alpha_1 \frac{1}{BV_{jt}} + \alpha_2 \frac{GP_{jt}}{BV_{jt}} + \alpha_3 \frac{MKTG_{jt}}{BV_{jt}} + \alpha_4 \frac{RND_{jt}}{BV_{jt}} + \alpha_5 \frac{OTHEXP_{jt}}{BV_{jt}} + \beta \frac{USAGE_{jt}}{BV_{jt}} + \epsilon_{jt} \quad (5')$$

In running (4') and (5') we alternatively measure internet usage by the number of unique visitors to the firm's web site(s) and by the number of pageviews at its site(s). Based on our previous discussion, we expect the signs of α_2 and β to be positive, with the other coefficients of ambiguous sign.

3. THE DATA AND DESCRIPTIVE STATISTICS

3.1 SAMPLE SELECTION CRITERIA

Our initial sample consisted of all those firms appearing on the InternetStockList

⁷This decomposition is likely to prove important in understanding how investors value firms in other industries as well.

(compiled by internet.com) as of July 15, 1999.⁸ To this list we added Netscape, geocities, and broadcast.com, which were acquired prior to July 1, 1999, and Excite, which merged with @Home earlier in the year. From this sample we retained only those firms that we judged to be primarily portals, content/community providers, or e-tailers.⁹ This left us with 73 firms. We then deleted those firm-quarters for which either the firm's earnings announcement did not disclose all of the individual income statement line items that were needed for our analysis, or for which the firm's common equity book value was negative.¹⁰ Of the remaining firm-quarters we eliminated those for which Media Metrix did not supply internet usage data (as described below). Our final sample consists of 56 firms and 179 firm-quarters of earnings announcements. The appendix provides a list of these firms.

3.2 FINANCIAL INFORMATION

The financial statement information in our study was taken directly from the quarterly earnings announcement press releases (appearing on either PR Newswire or Business Wire) for each of our firms, from the time of its initial public offering. From each announcement we extracted the following information: (1) revenues, (2) cost of revenues, (3) sales and marketing expenses, (4) research and development costs, (5) total operating expenses other than cost of

⁸According to internet.com, the InternetStockList is "[a] comprehensive list of the more than one hundred publicly-traded companies involved solely in Internet-related business".

⁹In classifying firms we relied primarily on the self-descriptions contained in their earnings announcements.

¹⁰We require book value to be positive since we deflate by it in our regressions.

revenues, (6) net income, and (7) end-of-quarter book value.¹¹

We chose to obtain our financial data via this route, rather than retrieve it from Compustat, because we wanted our data set to consist solely of information known to investors at the time of the earnings announcement. Compustat's data may differ from that available to investors at the earnings release date because (1) its data is obtained from companies' 10-Q filings, which may include more detailed information than what is available in the original press release, and (2) Compustat restates historical financial information whenever the firms, themselves, issue restated numbers.¹²

We computed the total market value of equity (the undeflated dependent variable) at the time of each earnings announcement by multiplying the firm's closing price per share on the trading day subsequent to the earnings announcement by the number of shares outstanding at that time.^{13,14} We used the time of the earnings announcement to measure market value, rather than the end of the quarter, to ensure that the stock price incorporated the earnings information released.

¹¹In a few cases a firm would report earnings for the quarter ending just prior to its initial public offering. In that case the firm's end-of-quarter book value would not include the proceeds of the offering. For each such quarter we restated the book value on a pro forma basis, to reflect the offering proceeds. We did so by setting it equal to the book value at the end of the succeeding quarter (after the firm's share offering) minus the earnings for the quarter.

¹²For those instances in which companies participate in conference calls right after the earnings announcement, investors may actually have access to additional financial information than what is available in the press release. While this will introduce noise into our data, it should not bias our findings.

¹³Since we were unable to determine the exact number of common shares outstanding on the day following the earnings announcement, we used as an approximation the number of outstanding shares listed on the face of the firm's 10-Q. This number is reported as of a date that is usually within a few weeks of the earnings announcement.

¹⁴If investors discount a firm's stock price to account for the possibility of future stock option exercise, then multiplying price per share by number of shares currently outstanding (without adding an estimate of the number of options expected to be exercised) will give a conservative estimate of the firm's total market value. However, it is not expected to introduce a bias into our results.

3.3 NON-FINANCIAL INFORMATION: INTERNET USAGE DATA

There are two potential sources for web site usage data – the internet companies, themselves, and independent measurement firms. It might be expected that the internet companies would be the superior source for usage data on their own web sites. Unfortunately, not all companies provide such data each quarter. Even those that do may not define their usage measures in the same manner, making intercompany comparisons problematic. (For example, one firm might count the same page viewed twice by a given user in a single day as two pageviews, while another might count it as only one. Or, one firm might count as two users a single person who logs onto its web site twice in a given time period, while another firm might count that user only once.) Using an independent measurement firm as the data source, on the other hand, avoids these problems by providing a reliable time series of usage data that is consistently defined across internet companies.

For our study we obtained web usage data from Media Metrix, which has the longest time series of data of any independent internet rating firm, and which was described in a recent *Wall Street Journal* article as the most widely used web rating company.¹⁵ Their services are utilized by more than 500 clients, including financial services companies, advertising agencies, and e-commerce marketers. Media Metrix provided us with their monthly Web Report for the months of October and December 1998, and March, June, and September 1999.¹⁶ This report

¹⁵See “The Tricky Task of Tracking Web Users” (November 22, 1999, p. C1), by Nick Wingfield.

¹⁶An official at Media Metrix told us that the web usage data for months prior to October 1998 is not strictly comparable to that for the post-October period due to the company’s merger with RelevantKnowledge, another web rating firm, around that time.

provides a number of different metrics for all reportable web sites that have a projected reach of 0.4% or higher.^{17,18} It is normally released to clients (who pay a fee to obtain access to the report) a few weeks after the end of the month.¹⁹ The company also issues a press release each month listing the number of unique visitors to the top 50 web sites during the previous month. This information, however, is a very small subset of that contained in the monthly Web Report.

Media Metrix generates its raw data from a random panel of 50,000 internet users who are willing to install tracking software on their computers at home and/or at work. This data is retrieved either in real-time via the web (for one-third of its panel members) or on a monthly basis by mail via disk (for two-thirds of the panel). The monthly web usage figures are extrapolated from the sample data based on the firm's estimate of the total number of web users.²⁰

We choose to focus on two measures of internet usage, "unique visitors" and "pageviews", which are among the most often-cited measures in the popular press. For a given firm, unique visitors is the estimated number of different individuals who visit the firm's web site(s) during a particular month. The numbers for unique visitors are taken directly from Media Metrix's monthly Web Report. Pageviews is the estimated number of pages viewed by those individuals visiting the firm's web site(s) during the month. While it is not directly reported by

¹⁷Media Metrix defines **reach** as the "percentage of projected individuals...that accessed the web content of a specific site or category among the total number of projected individuals using the web during the month."

¹⁸Until recently, Media Metrix only tracked domestic web users. It has expanded its coverage globally, and is now the only web rating company in the U.S. that tracks international users.

¹⁹Since access to the Web Report is fee-based, the extent to which (non-client) investors have access to it on a timely basis is unclear. To the degree that they do not, we are less likely to find a significant association between the web usage measures and market prices.

²⁰The other major web rating firms use similar sampling techniques to compute their internet usage numbers.

Media Metrix (there is no universally agreed-upon definition of this measure), we estimate it by multiplying together three measures that they do provide: (1) the number of unique visitors, (2) the average usage days per visitor in a month, and (3) the average daily unique pages viewed per visitor in a month.²¹

For the firm-quarters ending December 1998, and March, June, and September 1999 we pair our financial data with the non-financial data in Media Metrix's report of the same month.^{22,23} For the firm-quarters ending in September 1998 we use the October 1998 data, extrapolating back to September by taking the difference between the October and December 1998 Media Metrix usage numbers and assuming constant growth per month over the quarter.

3.4 DESCRIPTIVE STATISTICS

Table I provides descriptive data on the firms and firm-quarters in our final sample. As measured by length of time since their initial public offering, our firms are quite young. Our oldest firm has been trading (as of December 31, 1999) for more than 7½ years and the youngest for slightly less than 6 months. The mean (median) trading duration is 21 (16) months.

²¹Media Metrix gives the precise definition of **unique visitor** as “[t]he estimated number of different individuals within a designated demographic or market break category that accessed the Web content of a specific site or category among the total number of projected individuals using the web during the month.” **Average usage days per visitor** is defined by them as “[t]he average number of different days in the month, per person, in which a site or category was visited.” **Average (daily) unique pages per visitor in a month** is defined as “the average number of different page requests made per day over the course of the month by those persons visiting the specific site or category.”

²²A very small minority of firm-quarters end approximately one month later than the rest. For the purposes of pairing these firm-quarters with non-financial data, we treat the quarters as if they ended at the same time as the others. This means that the internet usage data for these sample points will be a month out-of-date.

²³For some firm-quarters the Web Report comes out after the earnings announcement date. In these cases, the firm's stock price at that date would not be expected to fully reflect the non-financial data. This will reduce the power of our tests, but will not introduce any bias. This problem will be minimized to the extent that investors have access to Media Metrix's Weekly Flash. According to the company's web site the Weekly Flash “is designed to provide preliminary ‘snapshot’ audience measurement indicators”.

Unreported statistics show that only two of our firms came public before 1996, while 6 began trading during 1996, 8 in 1997, 14 in 1998, and 26 in the period from January 1 - July 15, 1999.²⁴ As is true for the internet firm population in general, most of our sample firms are unprofitable. In only 28 (16 percent) of the 179 firm-quarters in our sample, and for only 10 (18 percent) of our 56 firms, were positive profits reported. The market value/earnings (P/E) ratio for these few profitable firm-quarters averages an astounding 3,731 (the median is 866), and ranges as high as 34,919 (for Netscape - 3rd fiscal quarter 1998). The market value/revenue ratio also averages a very high 135 (median of 86), with a maximum of 771 (eBay - 1st fiscal quarter 1999). The average market capitalization over these 179 firm-quarters is \$6.3 billion (the median is \$715 million), and ranges as high as \$155 billion (America Online - 1st fiscal quarter 2000). In contrast, the book value of these firms averages only \$224 million (median of \$84 million), with a maximum of \$3.8 billion. The market-to-book ratio, as a consequence, averages 21 (the median is 8.8), with a maximum of 351 (Amazon.com - 1st fiscal quarter 1999). With respect to the internet usage measures, the average number of unique visitors per month at our firms' web sites is 7.1 million (the median is 3.1 million), with a maximum of 42.6 million. The average number of web site pageviews per month is 798.9 million (median of 63.0 million), and ranges as high as 16.6 billion.

While our firms are, in general, not profitable and have relatively low revenues, they are growing rapidly. The average *quarter-to-quarter* revenue increase is 37 percent (with a median of 28 percent), and ranges as high as 179 percent. At the same time, the growth in unique

²⁴With internet shares so much in demand, the pace of initial public offerings has accelerated during 1999, with over 150 internet firms going public in the last half of the year.

visitors averages 21 percent (median of 10 percent), with a maximum of 366 percent, and the growth in pageviews is 35 percent (median of 16 percent), with a maximum of 473 percent. As these statistics confirm, investors in the market are clearly paying for growth, rather than current performance.

Table II, panel A provides statistics on both the dependent variable and all of the explanatory variables included in at least one of our regressions. All of these variables are deflated by book value. The dependent variable, the market-to-book ratio, has a mean of 21.0 and a standard deviation of 39.6. By comparison, the mean net income-to-book value is -0.11, with a standard deviation of 0.13. Each of the components of net income, as a fraction of book value, have means and standard deviations that are roughly equal to each other and no greater than 0.10 in magnitude. The mean unique visitors-to-book value is 0.05, with a standard deviation of 0.06. In contrast, pageviews/book value has a much higher mean, 2.8, and a standard deviation of 6.4, more than twice as large as its mean.

Panel B of Table II presents the correlation matrix for the independent variables in the regressions (all deflated by book value). Somewhat surprisingly, net income has a significant correlation with only one income statement component, sales and marketing expenses (and the correlation is unexpectedly *positive*). It is also significantly (and positively) correlated with only one of the two measures of internet usage, unique visitors. Gross profits is positively and significantly correlated with each of the expense components, as well as with both internet usage measures. The correlation between the two non-financial measures, unique visitors and pageviews, is positive and relatively high, at 0.40. This is not surprising, given that unique visitors is one of the three components used to calculate pageviews.

4. EMPIRICAL RESULTS

4.1 THE FULL SAMPLE

In columns A and D of Table III we report the results of regressing market value on bottom-line net income, and on the components of net income, respectively (with all variables deflated by book value), without including any of the measures of internet usage.²⁵ Consistent with those who claim that financial statement information is of very limited usefulness in the valuation of internet firms, we are unable to detect a significant positive association between net income and market value; in fact, the adjusted R^2 is only 3 percent and the association is actually negative. The lack of a significant positive association may be the result of the fact that the net income of internet firms frequently includes transitory items, for which investors likely place less weight in valuation, as well as the possibility that investors consider some income statement line items to be investments rather than expenses.²⁶

Once we include the components of net income in the regression the adjusted R^2 jumps to 50 percent. In addition, we find that gross profits is *positively* and *significantly* associated with market value.²⁷ This suggests that gross profits is viewed by investors as more permanent

²⁵All t-statistics are adjusted for heteroscedasticity using White's (1980) standard errors, if the null of homoscedasticity is rejected at the 5 percent level.

²⁶Hayn (1995) documents differences in the market implications of earnings for firms reporting profits and for those reporting losses. She argues that the differences are due to the market's perception of losses as transitory. We have chosen not to decompose our sample in this manner, for two reasons. First, the vast majority of our firms have losses. Second, unlike more traditional firms, these losses stem to a large extent from ongoing operating expenditures, such as sales and marketing, and research and development. Therefore, investors may not view as transitory the losses of internet companies.

²⁷We also ran a regression that included revenues and cost of revenues as separate independent variables in place of gross profits. As expected, the coefficients on these variables is found to be opposite in sign, and insignificantly different from each other in magnitude. This decomposition has no effect on the significance of the other independent variables.

in nature and as a less noisy measure of current operating performance than is bottom-line net income. In contrast to gross profits, neither research and development nor sales and marketing costs is significantly associated with market prices, in a positive or a negative direction. This result is consistent with investors finding these expenses to be of little use in valuing internet firms. However, the result could also be due to investors viewing these costs as normal expenses for some internet firms, and as investments for others (more about this below).²⁸ Other operating expenses as well does not exhibit a significant association with stock prices. Since this variable includes many individual income statement line items, we do not attempt to interpret the lack of a significant coefficient.²⁹

It is also interesting to note that the intercept term (which corresponds to the coefficient on book value in expression (3)) is statistically positive when included with bottom-line net income (panel A), but insignificant alongside the components of income (panel D). Stated another way, book value has incremental explanatory power for the stock prices of internet firms over and above net income; in contrast, when net income is decomposed into its components, book value loses its significance.³⁰

In the remaining columns of Table III we report the results of examining the incremental

²⁸Lev and Sougiannis (1996) show that in other industries, capitalized research and development costs are positively priced in the market, consistent with investors viewing research and development as an investment, rather than an expense.

²⁹In line with our results, Hand (1999) independently finds a negative coefficient on core net income (net income minus special items) for a subsample of firms whose core net income is negative. In contrast to what we show, he also finds revenues to be negatively associated with stock prices, while cost of revenues, sales and marketing costs, and research and development expenses have a positive association.

³⁰While several prior studies have shown a significant association between book value and stock prices in other industries (see, for example, Easton and Harris (1991) and Penman (1998)), none have examined its incremental explanatory power when combined with the income statement components.

explanatory power of the internet usage measures. We find that unique users and pageviews are in general *positively* and *significantly* associated with market value when included alongside the financial statement information.³¹ Combined with bottom-line net income, for example, pageviews increases the adjusted R^2 from 3 percent to 37 percent (column C), while alongside the components of net income, the increase in the adjusted R^2 is a more modest 16 percentage points (column F). When included with bottom-line net income, unique visitors also increases the adjusted R^2 , but by a relatively small 6 percentage points (column B). Combined with the income statement components, though, there is no change in the adjusted R^2 (column E). Taken as a whole, these findings imply that measures of internet usage are important factors in the valuation of internet stocks, even after allowing for investors to interpret the individual line items of net income differentially. However, the fact that the increase in the adjusted R^2 is so much less when these measures are included with the *components* of net income suggests that the individual income statement line items (especially gross profits) and the non-financial data capture some of the same information. Once the information conveyed by the components of net income is taken into account, the informational role of internet usage appears to be considerably diminished.^{32,33}

³¹We also ran a set of regressions in which both unique visitors and pageviews were included as independent variables along with the financial data. These regressions yield qualitatively similar results to those discussed here.

³²To control for cross-correlations in the residuals across time, we repeated our tests separately for each of the quarters ending September and December 1998, and March, June, and September 1999. The results are qualitatively very similar to those obtained using the full sample. In particular, the coefficients on both gross profits and pageviews remain positive and significant in virtually all the quarters, while that for unique visitors becomes insignificant in a few cases.

³³As a robustness check, we added firm age, growth in revenues, and growth in internet usage as control variables to our regressions. The results obtained are very similar to those reported above.

4.2 PARTITIONS BY FIRM-TYPE

Our results thus far pertain to our sample of firms *taken as a whole*. To obtain further insights into the pricing of internet stocks we analyze separately the e-tailers, and the portal and content/community firms (together referred to as the p/c firms). We choose this partition because these two groups of firms differ in the way they generate revenues. Specifically, the e-tailers produce revenues by attracting visitors to their web sites and selling products, while the p/c firms depend for their revenues largely on advertising. Because of this, certain individual income statement line items may be relatively more useful in the prediction of the future revenues and profits of the e-tailers than in the prediction of the revenues and profits of the p/c firms (and vice-versa). As a result, it is possible that some line items will show up as having a significant association with the stock prices of the e-tailers (p/c firms), but not with the prices of the p/c firms (e-tailers). Alternatively, it is possible that a particular line item could be significantly associated with the prices of both sets of firms, but in opposite directions, as investors consider the line item to be an investment for one type of firm and an expense for the other. For example, sales and marketing might be viewed as an investment for the e-tailers, necessary to bring in visitors who will buy products in future periods, and as an expense for the p/c firms, used to generate the current period's advertising revenues. Furthermore, there may be differences in the relative importance of unique visitors and pageviews as measures of internet usage. Ex-ante, one might conjecture that pageviews should be relatively more important for the p/c firms, as revenues from advertisers are normally calculated on the basis of number of web site pages viewed by visitors, while unique visitors should be relatively more important for the e-tailers, as the amount of purchases made depends on the number of customers the firms attract.

Table IV presents descriptive statistics for these two groups of firms. With respect to time since public offering, both the e-tailers and the p/c firms are quite young (with a median time on the market of less than 1½ years). The p/c firms are larger than the e-tailers, both in terms of median market value (\$796 million vs. \$604) and book value (\$102 million vs. \$79 million). The median market-to-book ratio is also higher for the p/c firms than for the e-tailers (9.8 vs. 6.2) as is the median market value/revenue ratio (104 vs. 49). (Differences in the market value/earnings ratio are not very meaningful, given the small sample sizes.) In terms of internet usage, the p/c firms have a greater number of visitors (a median of 4.6 million vs. 2.0 million) and pageviews (a median of 106 million vs. 41 million) per month than the e-tailers. The p/c firms are also growing faster than the e-tailers, as measured by median quarter-to-quarter revenue growth (30 percent vs. 24 percent) and median pageview growth (18 percent vs. 13 percent). However, the median growth rate in unique visitors is higher for the e-tailers than for the p/c firms (13 percent vs. 6 percent).

Table V provides the results of separately regressing the e-tailers' and p/c firms' stock prices on the available financial and non-financial information (with all variables again deflated by book value). As shown in panel A, bottom-line net income is negatively associated with market prices for the e-tailers, as is true for our sample as a whole. In contrast, there is a *positive* and *significant* association between net income and market value for the p/c firms. In this regard, p/c firms' shares behave more like those of non-internet companies. When net income is decomposed into its components (panel D), gross profits is found to have a statistically positive association with the market values of both firm types, as for the sample as a whole. Additionally, sales and marketing costs exhibit a *significantly negative* association with

the stock prices of the p/c firms; this is not true for the e-tailers. Apparently, investors view sales and marketing costs for the p/c firms as normal expenses of doing business, rather than as investments, just as would be expected for firms in more established industries. In contrast to sales and marketing expense, research and development costs are not significantly associated with stock prices. Additionally, in both sets of regressions we find book value to have *significant* incremental explanatory power for the stock prices of p/c firms, but not for the e-tailers. This characteristic suggests, once again, that the p/c firms are more like non-internet companies than are the e-tailers.

With respect to the non-financial data, both unique visitors and pageviews exhibit a *significant* and *positive* association with the market prices of the e-tailers and the p/c firms in every instance but one (as is true in our sample as a whole). For the p/c firms the incremental contribution of pageviews to the adjusted R^2 is slightly more than that of unique visitors; for the e-tailers, in contrast, the incremental impact of pageviews is considerably greater than that of unique visitors. For example, the adjusted R^2 for the e-tailers increases by 15 percentage points when unique visitors is combined with net income, but it jumps by *46 percentage points* when pageviews is included instead. That pageviews provides a much larger increase in the adjusted R^2 for the e-tailers, as compared to unique visitors (contrary to prior conjectures), suggests that investors consider it insufficient for an e-tailer to bring visitors to its site(s); the visitors must actually spend time searching the pages for items to buy.³⁴

As in any industry classification, our e-tailers and our p/c firms each reflect somewhat

³⁴As we did for the full sample, we checked the robustness of our findings by adding firm age, growth in revenues, and growth in internet usage in our subsample regressions. The qualitative findings remained unchanged.

diverse groups of companies. For example, in the e-tailer group, Amazon.com fits the traditional retailer definition in that it buys at wholesale and sells at retail, while eBay is in some sense an e-commerce enabler, in that it provides services and software that enable individuals to buy and sell goods among themselves. Furthermore, some of the e-tailers provide content as well. In the p/c group, iVillage is more of a pure content/community firm, delivering information of interest to women, while Autoweb.com not only provides information for car buyers and owners, but also serves to match potential buyers with car dealers. America Online, in addition to serving as a portal, receives subscription revenues from customers.

While this diversity permits increased subsample sizes, it has the potential for introducing noise into our regression results. In a second series of tests we included in our e-tailer group only those firms whose business model entails, for the most part, buying goods and services at wholesale and selling them at retail. This meant, for example, that we eliminated eBay since they don't sell their own goods, and Ticketmaster Online-City Search since they not only sell tickets, but also provide free city guides through the City Search web site. We removed from our p/c group those firms with a substantial amount of e-commerce or subscription revenues, such as America Online and Student Advantage.

For the restricted e-tailer subsample we find bottom-line net income to be significantly and negatively associated with stock prices, while gross margin has a positive and significant association, as before. In contrast to our prior results, book value in general now has a significant and negative association with stock prices. Furthermore, research and development costs are now positively and significantly associated with prices, suggesting that investors consider it to be an investment, rather than an expense. As before, unique visitors and

pageviews provide incremental explanatory power alongside net income. However, when income is decomposed into its components, the significant explanatory power disappears. The pure e-tailers, therefore, look very much like traditional retailers in the sense that the detailed financial statement numbers have a strong association with stock prices, but measures of internet traffic do not. The regression results for our restricted sample of p/c firms is, for the most part, the same as previously found. One major difference is that research and development expenses now exhibits a significant association with stock prices, as is true for the e-tailers. Overall, these results suggest that the role played by financial and non-financial data in the valuation of e-tailers depends on how e-tailers are defined; this is less true for the p/c firms.

4.3 ASSESSING THE IMPACT OF THE SHARE LOCK-UP PERIOD

As previously mentioned, most of our sample firms are quite young, as measured by time from initial public offering. Consequently, several of our firm-quarter observations fall within the insider share lock-up period. During this period insiders (such as managers, directors, employees, and venture capitalists) are prohibited from selling their shares; as a result, the share float is a small fraction (often 20 percent or less) of the total number of shares outstanding. To the extent that a firm's stock price is artificially inflated during the lock-up period due to a restriction on the supply of shares, the relation between the financial and non-financial measures and market value during this time might not be representative of that existing after lock-up ends.

To explore the impact of the lock-up period on our results, we run separate regressions for the 70 firm-quarter observations (out of 179) falling within the first six months after the initial public offering and for those falling outside of that period. We choose six months since it

is the normal lock-up period. For the most part we find the (untabulated) subsample results to be similar to each other and to our full-sample results. In particular, gross profits and pageviews remain positively and significantly associated with stock prices, while unique users provides relatively little, if any, incremental explanatory power. Our subsample results differ from each other only with respect to bottom-line net income and book value. For the firm-quarters that are past the lock-up period, net income is negatively associated with stock prices, as for our sample as a whole; however, the association is generally insignificant for the firm-quarters subject to the lock-up restriction. Furthermore, alongside the components of net income, book value has a negative association with stock prices for the firm-quarters beyond the lock-up period. In contrast, it is positively associated with prices for the firm-quarters under the lock-up restriction.

5. SUMMARY AND CONCLUSIONS

In this paper we have examined the ways in which investors employ (relatively sparse) financial information, along with measures of internet usage, in the valuation of internet firms. Consistent with the claim by some that financial information is of little use in the valuation of internet stocks, we cannot detect a significant positive association between net income and market prices; in fact, we find a negative association. When net income is broken down into its components, though, there is a positive and significant association between gross profits and prices, as well as a large jump in the adjusted R^2 . These results are consistent with the observation that internet firms' bottom lines often include large transitory items, as well as items that investors might consider to be investments rather than expenses. Gross profits, in contrast, is usually considered to be more permanent in nature.

Both unique visitors and pageviews, when added as measures of internet usage to the financial statement numbers in our regressions, in general provide significant incremental explanatory power for stock prices, often increasing the adjusted R^2 considerably. Pageviews, though, provides more explanatory power for stock prices than does unique visitors for our sample of firms. This implies that the number of pages viewed by each visitor gives important information to investors. In addition, we find that the increase in R^2 is smaller when either unique visitors or pageviews is combined with the components of net income, than when it is included alongside just bottom-line net income. This suggests that usage data captures some of the same information as do the individual income statement line items (especially gross profits); after the information content of these items is taken into account, the informational role of internet usage appears to greatly diminish.

We further divide our sample into two groups, the e-tailers and the portal and content/community firms (the p/c firms). For the e-tailers we find that bottom-line net income is negatively associated with stock prices, as for our sample as a whole. However, there is a positive and significant association for the p/c firms, just as is generally the case for non-internet companies. With respect to the non-financial data, we find for the p/c firms that the incremental explanatory power of pageviews and of unique users is approximately the same; in contrast, pageviews has much greater incremental explanatory power for the e-tailers than does unique visitors. Pages viewed per visitor, therefore, appears to be an especially important metric for the e-tailers, as compared to the p/c firms.

There are many additional issues of interest that lie within this line of research. One particularly promising area for future work is an examination of the effect which firm age has on

the manner in which investors use the available financial and non-financial information in the valuation of internet firms. As internet companies mature, we would expect the financial statement data to provide more information relative to the measures of internet usage. Given that the vast majority of internet firms are still very young, though, it may take some time before this issue can be successfully tackled.

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Appendix: The sample firms

This table lists the names and ticker symbols of the 56 internet companies in our final sample. The initial sample consisted of firms which appeared on the InternetStockList, compiled by internet.com, as of July 15, 1999, as well as Netscape, geocities, broadcast.com, and Excite. We retained those firms that we judged to be primarily portals, content/community providers, or e-tailers; this left us with 73 firms. We excluded all firm-quarters for which either the firm's earnings announcement did not disclose all of the individual income statement line items that were needed for our analysis, or for which the firm's common equity book value was negative. This reduced our sample by ten firms. We further excluded another seven firms for which Media Metrix data was not available.

Firm name (previous name)		Ticker	Firm name		Ticker
1	Alloy Online	ALOY	31	Launch Media	LAUN
2	Crosswalk.com (Didax)	AMEN	32	Lycos	LCOS
3	Amazon.com	AMZN	33	Liquid Audio	LQID
4	America Online	AOL	34	Mail.com	MAIL
5	Ask Jeeves	ASKJ	35	MarketWatch.com	MKTW
6	Autoweb.com	AWEB	36	Multex.com	MLTX
7	broadcast.com	BCST	37	MapQuest.com	MQST
8	Bluefly (Pivot Rules)	BFLY	38	Netscape	NSCP
9	barnesandnoble.com	BNBN	39	Onsale	ONSL
10	About.com (Miningco.com)	BOUN	40	priceline.com	PCLN
11	Beyond.com (Software.net)	BYND	41	Preview Travel	PTVL
12	CareerBuilder	CBDR	42	RealNetworks	RNWK
13	CDNow	CDNW	43	Salon.com	SALN
14	C/Net	CNET	44	Infoseek	SEEK
15	Cyberian Outpost	COOL	45	SportsLine USA	SPLN
16	Cheap Tickets	CTIX	46	US Search Corp.com	SRCH
17	CyberShop.com	CYSP	47	Student Advantage	STAD
18	eBay	EBAY	48	theglobe.com	TGLO
19	Egghead.com	EGGS	49	Ticketmaster Online-City Search	TMCS
20	eToys	ETYS	50	TheStreet.com	TSCM
21	EarthWeb	EWBX	51	iTurf	TURF
22	Excite	XCIT	52	uBid	UBID
23	FatBrain.com (Computer Literacy)	FATB	53	Value America	VUSA
24	geocities	GCTY	54	Xoom.com	XMCM
25	Go2Net	GNET	55	Yahoo!	YHOO
26	GoTo.com	GOTO	56	ZDNet Group	ZDZ
27	Intelligent Life	ILIF			
28	Infospace.com (Go Network)	INSP			
29	internet.com	INTM			
30	iVillage	IVIL			

TABLE I
Description of the data

The sample consists of 56 publicly traded firms listed on internet.com's InternetStockList (as of July 15th, 1999) that we classified as either portals, content/community providers, or e-tailers. Summary statistics are presented for 179 firm-quarter observations, covering the period from September, 1998 to September, 1999. Age is measured as the number of months since the initial public offering. Market value of common shareholders' equity is calculated using the closing price on the day after the earnings announcement, multiplied by the total number of shares outstanding at that time. Book value of common shareholders' equity is measured as of the end of the quarter. Net income is equal to the quarterly earnings available to common shareholders. Unique visitors is the estimated number of different individuals who visit a firm's web site(s) during a particular month and pageviews is the number of unique visitors multiplied by both the average usage days per visitor and average daily unique pages viewed per visitor in a month. Growth is measured quarter-to-quarter. All numbers (except age and ratios) are in millions of dollars.

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
Age	179	21.3	16.0	17.3	5.0	93.0
Market value	179	6270	715	19893	47	154777
Book value	179	224	84	460	4	3849
Market value / Book value	179	21.0	8.8	39.6	1.4	350.6
Market value / Earnings (Earnings>0)	28	3731	866	7216	119	34919
Market value / Revenues (Revenues>0)	177	135	86	148	3	771
Unique visitors	179	7.1	3.1	9.5	0.2	42.6
Pageviews	179	798.9	63.0	2293.8	0.7	16598.8
Revenue growth	142	37%	28%	34%	-18%	179%
Unique visitor growth	152	21%	10%	50%	-57%	366%
Pageview growth	166	35%	16%	82%	-70%	473%

TABLE II
Descriptive statistics and correlation coefficients on the regression variables

Panel A provides descriptive statistics on the dependent and explanatory variables that are used in the pooled regressions. Panel B reports the Pearson correlation coefficients as well as the corresponding p-values among the explanatory variables. All variables are deflated by the end-of-quarter book value. Market value of common equity (MV) is calculated using the closing price on the day after the earnings announcement multiplied by the total number of shares outstanding at that time. BV denotes book value of common shareholders' equity at the end of the fiscal quarter. NTINC is net income available to common shareholders. GP denotes gross profits, calculated as revenue minus cost of sales. MKTG is sales and marketing expenses. RND denotes R&D expenses. OTHEXP represents other operating expenses, aside from MKTG and RND. VISITORS is the estimated number of different individuals who visit a firm's web site(s) during a particular month and PAGEVIEWS is the number of unique visitors multiplied by both the average usage days per visitor and average daily unique pages viewed per visitor in a month.

Panel A: Descriptive statistics on the dependent and explanatory variables in the OLS regressions, 179 firm-quarter observations

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
MV / BV	179	21.01	8.76	39.57	1.39	350.58
NTINC / BV	179	-0.11	-0.08	0.13	-0.80	0.15
GP / BV	179	0.08	0.05	0.10	-0.03	0.84
MKTG / BV	179	0.10	0.07	0.09	0.00	0.78
RND / BV	179	0.03	0.02	0.03	0.00	0.30
OTHEXP / BV	179	0.07	0.04	0.08	-0.02	0.61
VISITORS / BV	179	0.05	0.03	0.06	0.00	0.43
PAGEVIEWS / BV	179	2.81	0.67	6.37	0.02	59.04

TABLE II (continued)Panel B: *Pearson correlation among the explanatory variables, deflated by book value, 179 firm-quarter observations*

	NTINC / BV	I / BV	GP / BV	MKTG / BV	RND / BV	OTHEXP / BV	VISITORS / BV
I / BV	-0.266 0.000						
GP / BV	-0.051 0.501	-0.098 0.193					
MKTG / BV	0.205 0.006	-0.510 0.000	0.524 0.000				
RND / BV	-0.009 0.901	-0.455 0.000	0.697 0.000	0.402 0.000			
OTHEXP / BV	0.105 0.164	-0.707 0.000	0.497 0.000	0.340 0.000	0.671 0.000		
VISITORS / BV	0.220 0.003	-0.071 0.348	0.283 0.000	0.257 0.001	0.208 0.005	0.099 0.187	
PAGEVIEWS / BV	-0.053 0.483	0.207 0.005	0.313 0.000	0.018 0.815	0.018 0.806	-0.019 0.796	0.401 0.000

TABLE III
OLS regressions based on 179 firm-quarter observations

This table reports the results of regressing market value on various financial and non-financial measures (all scaled by book value). See Table II for variable definitions. Column A reports the results of regressing market value on net income. Column B (C) gives the results of adding unique visitors (pageviews) as an independent variable. In column D are the results of regressing market value on the components of net income. Column E (F) shows the results when unique visitors (pageviews) is added as an independent variable. The t-statistics are based on White's (1980) standard errors if the null of homoscedasticity is rejected at the five percent level. Those in bold indicate statistical significance at the 0.10 level using a two-tailed test.

	A	B	C	D	E	F
INTERCEPT	17.37 (4.27)	10.76 (2.47)	2.9 (0.81)	-4.41 (-1.27)	-5.30 (-1.47)	-10.32 (-1.99)
1 / BV	-176205 (-1.40)	-269368 (-2.16)	-178825 (-1.76)	-43075 (-0.47)	-63359 (-0.68)	-60315 (-1.37)
NTINC / BV	-62.81 (-2.65)	-61.78 (-2.69)	-101.31 (-5.20)			
GP / BV				242.13 (7.36)	236.58 (7.07)	121.39 (3.27)
MKTG / BV				19.03 (0.62)	22.34 (0.72)	32.98 (1.28)
RND / BV				168.28 (1.57)	161.95 (1.51)	345.79 (3.07)
OTHEXP / BV				-0.90 (-0.03)	-3.37 (-0.10)	41.51 (1.41)
VISITORS / BV		162.41 (3.56)			33.16 (0.93)	
PAGEVIEWS / BV			3.71 (9.85)			2.71 (3.65)
Adjusted R ²	0.03	0.09	0.37	0.50	0.50	0.66

TABLE IV
Descriptive statistics by firm type

Summary statistics are presented for 179 firm-quarter observations by firm type, covering the period from September, 1998 to September, 1999. See Table I for variable definitions. All numbers (except age and ratios) are in millions of dollars.

PANEL A: *The e-tailers*

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
Age	79	17.7	17.0	8.3	5.0	32.0
Market value	79	3548	604	6605	47	27182
Book value	79	146	79	174	10	838
Market value / Book value	79	25.5	6.2	55.5	1.4	350.6
Market value / Earnings (Earnings>0)	9	5584	4445	5665	176	15693
Market value / Revenues (Revenues>0)	79	103	49	151	3	771
Visitors	79	3.4	2.0	3.3	0.2	12.1
Pageviews	79	322.9	40.6	1093.4	0.7	5673
Revenue growth	64	33%	24%	31%	-18%	140%
Unique visitor growth	67	29%	13%	66%	-39%	366%
Pageview growth	73	33%	13%	81%	-40%	473%

PANEL B: *The portal and content/community firms*

Variable	N	Mean	Median	Std Dev	Minimum	Maximum
Age	100	24.2	13.0	21.6	5.0	93.0
Market value	100	8420	796	25819	52	154777
Book value	100	286	102	587	4	3849
Market value / Book value	100	17.5	9.8	19.0	1.5	88.2
Market value / Earnings (Earnings>0)	19	2853	673	7830	119	34919
Market value / Revenues (Revenues>0)	98	160	104	141	20	658
Visitors	100	10.1	4.6	11.6	0.2	42.6
Pageviews	100	1174.9	106.4	2862.6	1.9	16599
Revenue growth	78	40%	30%	37%	-2%	179%
Unique visitor growth	85	15%	6%	31%	-57%	146%
Pageview growth	93	37%	18%	84%	-70%	464%

Table V
OLS regressions by firm type

This table reports the results of separately regressing the e-tailers' (E) and the portals' and content/community providers' (P/C) market values on the various financial and non-financial measures (with all variables again deflated by book value). See Table II for variable definitions and Table III for regression descriptions. The t-statistics are based on White's (1980) standard errors if the null of homoscedasticity is rejected at the five percent level. Those in bold indicate statistical significance at the 0.10 level using a two-tailed test.

	A		B		C		D		E		F	
	<i>E</i>	<i>P/C</i>	<i>E</i>	<i>P/C</i>	<i>E</i>	<i>P/C</i>	<i>E</i>	<i>P/C</i>	<i>E</i>	<i>P/C</i>	<i>E</i>	<i>P/C</i>
INTERCEPT	16.98 (1.80)	21.07 (8.72)	2.14 (0.23)	16.04 (5.92)	-2.28 (-0.33)	14.94 (5.46)	-6.53 (-0.98)	9.51 (3.13)	-8.06 (-1.16)	8.21 (2.73)	-13.35 (-2.45)	7.06 (3.23)
1 / BV	-483791 (-1.47)	72403 (1.01)	-646545 (-2.12)	10619 (0.20)	-420021 (-1.80)	68368 (1.53)	-154894 (-0.68)	10128 (0.16)	-210028 (-0.87)	-18488 (-0.30)	-35729 (-0.32)	8626 (0.24)
NTINC / BV	-117.31 (-2.87)	62.51 (3.08)	-88.43 (-2.33)	65.87 (3.29)	-169.72 (-5.75)	49.83 (2.21)						
GP / BV							399.35 (6.68)	128.53 (4.96)	386.79 (6.21)	117.52 (4.58)	164.39 (3.03)	97.37 (3.39)
MKTG / BV							40.31 (0.74)	-75.45 (-2.36)	42.04 (0.76)	-72.46 (-2.33)	8.82 (0.33)	-64.12 (-2.39)
RND / BV							-29.04 (-0.14)	103.91 (1.22)	-63.76 (-0.29)	96.13 (1.15)	442.90 (2.79)	130.66 (0.92)
OTHEXP / BV							-72.32 (-1.15)	15.81 (0.59)	-59.34 (-0.91)	-0.05 (-0.00)	41.54 (1.13)	15.80 (0.73)
VISITORS / BV			630.63 (3.99)	98.71 (3.50)					99.17 (0.75)	55.73 (2.46)		
PAGEVIEWS / BV					4.90 (8.77)	1.58 (3.93)					3.58 (6.90)	1.06 (2.62)
Adjusted R ²	0.08	0.07	0.23	0.21	0.54	0.23	0.62	0.31	0.62	0.34	0.81	0.37
No. of observations	79	100	79	100	79	100	79	100	79	100	79	100