A Rude Awakening:
Internet Shakeout in 2000

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Abstract

This study explores various value-drivers of business-to-consumer ("B2C") Internet companies' share prices both before and after the market correction in the spring of 2000. Although many market observers had predicted that the shakeout would eventually occur (e.g., Perkins and Perkins 1999), the ultimate and previously unanswered challenge lay identifying which stocks would fall and which ones would survive the shakeout. We develop an empirical valuation model and provide evidence that the Internet stocks that this model suggests were relatively over-valued prior to the Internet stock market correction experienced relatively larger drops in their price-to-sales ratios when the shakeout occurred. This result is robust to the inclusion of competing explanatory variables suggested by the economics literature related to industry rationalizations.

We examine the ability of a valuation model comprised of both financial (accounting) variables and nonfinancial web traffic metrics to explain Internet companies' market values during each of 1999 and 2000. Our findings suggest that the reach and stickiness web traffic performance measures are value-relevant to the share prices of Internet companies in each of 1999 and 2000. Our findings of significance for the year 2000 contradict the recent claims of some analysts that web traffic measures are no longer important. We also explore the valuation role of our proxy for B2C companies' current rate of "cash burn" and find that this proxy is a significant value-driver in each of 1999 and 2000, but with differential valuation implications for each period. Our results suggest that the market was favorably disposed towards Internet companies' aggressive cash expenditures in 1999, but appeared to adopt a more critical view of Internet companies' cash burn rates in 2000. Our results further suggest that investors adopted a more skeptical attitude towards expenditures on intangible investments as the Internet sector began to mature. We find that investors appear to implicitly capitalize product development (R&D) and advertising expenses (customer acquisition costs) during the earlier period when the market was more optimistic about the prospects of B2C companies. However, only product development costs are implicitly capitalized into value, on average, subsequent to the shakeout in the spring of 2000. Finally, we provide statistical evidence to support the conjecture that different parameter vectors characterize the estimated market valuation models for each of 1999 and 2000. Overall, our study provides a preliminary view of the shakeout and maturation of one of the most important New Economy industries to emerge to date – the Internet.

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1. Introduction

The market capitalization of U.S. publicly traded Internet stocks plummeted in value by approximately 45% from February to May 2000, as measured by the ISDEX, an authoritative and widely cited Internet stock index (see Figure 1).[1] Although the Internet sector was badly mauled from this stock market correction, it remains a significant component of the U.S. economy. The market capitalization of U.S. publicly traded Internet stocks was estimated to be over $1 trillion dollars prior to the shakeout (*Barron's Online*, March 20, 2000), $843 billion as of June 2000 (Morgan Stanley Dean Witter, June 2000), and $572 billion in early December 2000 (Morgan Stanley Dean Witter, December 2000).

Many market observers had predicted that the "Internet Bubble" would eventually burst (most famously, Perkins and Perkins 1999). However, the ultimate and previously unanswered challenge lay in identifying which stocks would fall and which ones would survive the shakeout. We develop an empirical valuation model and provide evidence that the Internet stocks that this model suggests were relatively over-valued prior to the Internet stock market correction experienced relatively larger drops in their price-to-sales ratios when the shakeout occurred than did the relatively "undervalued" stocks. This result is robust to the inclusion of competing explanatory variables suggested by prior research in the economics literature related to industry shakeouts.

We also examine the explanatory power of a model based on both financial (accounting) variables and nonfinancial web traffic measures to explain Internet companies' market values during 1999 and 2000. We begin our analysis with an examination of the simple pairwise correlations between monthly stock returns and contemporaneous and lagged raw web traffic metrics (both levels and changes) for each of 1999 and 2000. The correlations provide us with descriptive evidence related to the market's speed of adjustment to these widely cited non-financial performance measures. This investigation

[1] The ISDEX (http://www.wsrn.com/apps/ISDEX/) fell from a high of approximately 1100 in February 2000 to a low of about 600 in May of 2000.

is timely and important because the relation between stock returns and raw web traffic measures such as "reach"[2] has recently come under considerable scrutiny and criticism.[3]

Our study proceeds with an investigation into the value-drivers of publicly traded business-to-consumer ("B2C") Internet stocks in each of 1999 and 2000. Given the changing marketplace, the continued absence of positive profits for many companies in this sector, and the increasing skepticism of investors about the prospects of Internet companies, the search for the fundamental value drivers of these companies is of paramount importance to investors and managers. Several recent studies (e.g., Trueman, Wong, and Zhang 2000 ("TWZ"), Hand 2000(B), and Rajgopal, Kotha, and Venkatachalam 2000 ("RKV")) have documented a positive relation during the 1999 pre-shakeout period between Internet companies' market values and various combinations of financial statement variables and web traffic measures, particularly those indicating "reach".

Our study builds upon and extends the previously cited Internet studies in several ways. First, we undertake a factor analysis on an extensive set of raw web metrics with a view to synthesizing the data into a parsimonious set of relevant and orthogonal web traffic performance measures. Our factor analysis results in the extraction of three factors that capture the most relevant dimensions of website performance: (1) reach, (2) "stickiness," and (3) customer loyalty. Our "reach" factor encompasses the extent to which the Internet company is able to attract unique visitors. Website "stickiness" captures the notion of how long visitors stay at the site once they're there, and is driven primarily by web traffic metrics measuring the average time spent at the site per visit and the average number of pages viewed per visit. "Customer loyalty" is a third distinct measure of web company performance, and this factor is driven primarily by the average number of visits to the site per unique visitor per period. Our findings suggest that the reach and stickiness performance measures are value-relevant to the share prices of Internet companies in each of 1999 and 2000, while loyalty is not significant at traditional levels in either year. Our findings of significance for reach and stickiness for the year 2000

[2] Reach is defined as the number of unique visitors to a web site, and is usually stated as a percentage of the (total or active) web surfing population.
[3] See, for example, "Lyin' Eyeballs" by Scott Wooley (Forbes, August 7, 2000).

contradict the recent claims of some analysts that web traffic measures are no longer important.

We further extend the prior literature by examining the valuation role of our proxy for Internet companies' current rate of "cash burn." Industry reports in early 2000 suggested that many money-losing Internet companies were quickly depleting their stores of cash and that the pending liquidity crises were threatening the very viability of these companies as going concerns (see, e.g., *Barron's Online*, March 20, 2000). The spring of 2000 carnage in the market for Internet stocks is alleged to have been driven, in part, by investors' concerns about Internet companies' cash flow deficits (Nelson 2000). We find that our proxy for the firms' current rate of "cash burn" is significantly associated with the price-to-sales ratios of the Internet companies in our B2C sample in each of 1999 and 2000, but with differential valuation implications in each period. Consistent with anecdotal evidence at the time, our results suggest that the market was favorably disposed towards Internet companies' aggressive cash expenditures in 1999, but appeared to adopt a more critical view of Internet companies' cash burn rates in 2000.

We also examine the valuation role of a meaningfully expanded set of financial statement variables relative to those that were considered in prior studies and provide some evidence on the importance of strategic alliances in explaining the value of Internet stocks. Our findings suggest that the market treats expenditures on both marketing expenses and product development costs as assets rather than current expenses in assessing B2C companies' price-to-sales ratios prior to the market's correction for Internet stocks. In the year 2000 product development expenses continue to be capitalized as assets, however the market no longer appears to view marketing expenditures as positive net present value activities. Consistent with some industry observers' criticisms of internet companies' over-investments in expensive alliances, we find that the total number of strategic alliances entered into is negatively associated with B2C companies' price-to-sales ratios in each of 1999 and 2000.

We also focus in this study on the dramatic *changes* in investors' perceptions about the prospects of B2C Internet companies that occurred in the year 2000. We formally

document the existence of a statistically significant structural change in the valuation models applied to the common stock prices of B2C Internet companies in 2000 versus 1999. Of course, this is not the end of the story, as the Internet sector continues to mature and evolve. However, we believe that it is important to carefully follow the evolutionary process in order to learn whatever we can about the emergence, growth, shakeout, and eventual stabilization of one of the most important New Economy industries to materialize to date – the Internet.

The balance of this paper is organized as follows. Section 2 provides a brief background related to the economics of the Internet industry, and Section 3 develops the hypotheses to be tested. Section 4 discusses the collection of our sample and provides a description of the data and companies included in our study. Section 5 describes the pairwise correlations between monthly stock market returns and measures of web traffic, while Section 6 presents the results of our investigation into the value drivers of B2C Internet stocks in each of 1999 and 2000. An empirical analysis of the Internet "shakeout" is presented in Section 7, and Section 8 concludes with a summary of our findings and a discussion of future work.

2. Background to the Internet Industry

There are currently approximately 400 Internet companies trading on U.S. stock exchanges[4], with many more waiting to go public.[5] The total market value of publicly-traded Internet companies was over $1 trillion dollars prior to the shakeout in March 2000 (*Barron's Online*, March 20, 2000), and subsequently declined to approximately $843 billion as of June 2000 (MSDW, June 2000) and $572 billion as of early December 2000 (MSDW, December 2000). Since its inception with AOL's IPO in 1992, the Internet sector has evolved from a nascent stage industry to become the third-largest

[4] The InternetStockList™ (http://www.internetnews.com/stocks/list/) provides a listing of over 280 companies that went public prior to approximately the fourth quarter of 1999. IPO-Alert (www.ipo-alert.com) together with the IPODEX (http://www.internetnews.com/stocks/ipodex/) reference an additional set of over 150 Internet companies that have gone public since the autumn of 1999.

[5] See http://www.internetnews.com/stocks/ipo/ for a list of additional companies that are "on deck" (i.e., waiting to go public).

technology sector by market value. By 1999 the market wealth creation by the Internet, on an equivalent basis, exceeded that created by the PC (Perkins and Perkins 1999). Indeed, the 5-year old Internet sector is the second leading technology sector in terms of wealth creation, falling behind only the more mature software industry (Morgan Stanley Dean Witter, 2000).

Similar to most high-tech start-up businesses, Internet companies generally require significant up-front capital investments in order to establish both the technological architecture and the critical mass of customers that will be necessary to ultimately attain profitability.[6] Accordingly, most Internet companies report large expenditures on product development (sometimes referred to as R&D) and sales/marketing expenses as they attempt to grow themselves into profitability. It has been widely (and accurately) reported in the popular press that most Internet companies are still not profitable. In the absence of an established history of profit-generating ability, the "top line" (i.e., revenues) has become an important focal point in the financial analysis of companies in this sector. Most Internet analysts (including venture capitalists and others who are interested in the performance evaluation of web companies) have also come to rely upon non-financial measures of web traffic activity as indicators of the current performance and future cash generating ability of these intangible asset based firms.

Following the classification scheme provided by Wall Street Research Net © WSRN.com (http://www.wsrn.com/apps/internetstocks/), the Internet industry can be divided into the following sectors: e-tail, content/communities, financial news/services, portal, services, consultants/designers, e-commerce enablers, Internet security, isp/access, performance software, advertising, and speed/bandwidth. Of these sectors, only the first five are considered to have business models for which web traffic plays an important economic role. Entities in the e-tail, content/communities, financial news/services, portal, and services sectors are business-to-consumer (or "B2C") companies that are expected to earn revenues either directly or indirectly by attracting web traffic to their sites.

[6] The Internet may be viewed as an extreme example of Metcalfe's Law. Robert Metcalfe, inventor of the Ethernet and founder of 3Com, established the "law" which states that the value of any network increases by the square of the number of people using it (Perkins and Perkins 1999).

3. Hypotheses Development

3.1 The Value-Relevance of Non-Financial Information

We investigate whether two types of non-financial data, web traffic measures and strategic alliances, are value-relevant for the share prices of Internet stocks.

3.1.1 Web Metrics

Web traffic measures have become standard Internet company performance benchmarks that are now commonly reported in the business press, voluntarily disclosed by companies at the time of their earnings announcements, and frequently mentioned as valuation parameters in analysts' reports. Prior Internet studies (TWZ, RKV, and Hand 2000(B)) have provided evidence on the value-relevance of raw web metrics (particularly, reach or unique audience) for Internet stocks prior to the shakeout.

We expand upon this prior web metric research by investigating several additional hypotheses. First, given the plethora of web traffic metrics that are available to us from the Nielson/Netratings database, we select a parsimonious set of three orthogonal web traffic factors through the use of factor analysis and investigate the separate valuation role of these three different dimensions of web traffic performance.[7] Second, we examine the value-relevance of these three web performance factors both before and after the Internet market "correction" in March-April of 2000. This question is pertinent because some Wall Street practitioners are beginning to suggest that web traffic metrics are no longer important.[8]

[7] This initial selection of factors is of importance beyond our subsequent valuation analyses. A reading of Internet analysts' valuation reports suggests that they treat the various raw web traffic metrics as orthogonal performance measures, and that they are seemingly unaware of the potentially confounding influence of the correlations between the raw metrics.

[8] For example, in their discussion of Internet stock valuation models, UBS Warburg's Global Equity Research group stated in May 2000 that "(They) … favour cash flow and EBIT but are disenchanted with the commonly used hits – eyeballs and page-views – as statistical measures of future value creation" (UBS Warburg).

Three key dimensions of traffic generating performance are: the attraction of new visitors (or "eyeballs") to a website; the retention of visitors at the site, conditional on having gotten them to the site for a visit; and the ability to generate repeat visits from surfers who have been attracted to the site in the past. These three dimensions of web traffic performance are commonly referred to as "reach", "stickiness", and "customer loyalty", respectively.

Reach:

Reach is generally defined as the number of unique individuals who visit a site, stated as a percentage of the (active or total) websurfing population. Reach is the web metric that is most frequently cited in the business press and has been studied by prior researchers (e.g., Trueman, Wong, and Zhang 2000 ("TWZ"), Hand 2000(B), and Rajgopal, Kotha, and Venkatachalam 2000 ("RKV")). As a performance measure, reach provides an indication of the scale of the web property's visitor base, which is a measure of how successful the company has been at attracting web surfers to their site. Given the importance of scale in the B2C sector, our proxy for reach is expected to be positively associated with the value of B2C Internet companies.

Stickiness:

Website "stickiness" generally refers to a site's ability to retain a surfer at their site once a customer has arrived there. Web site "stickiness" is a desirable quality because a "sticky" site may be able to generate higher advertising rates from advertisers who believe that visitors are more likely to spend sufficient time at the site to read, retain, and/or otherwise be influenced by the ads that are placed there.

Customer Loyalty:

Customer loyalty generally refers to a website's ability to generate repeat visits from surfers who have previously visited their site. This metric is relevant because a website's ability to re-attract current visitors is expected to be an important determinant of its

ability to sustain, and/or ultimately grow to, the critical mass of traffic that is necessary to attain profitability.[9]

Both stickiness and customer loyalty reflect important dimensions of the site's brand value and are expected to be positively associated with the market values of Internet stocks.

3.1.2 Strategic Alliances

Strategic business alliances, aimed at sharing technology and other core competencies (e.g., marketing and/or existing customer base), are becoming increasingly common in the Internet sector. Analysts' reports and anecdotal evidence suggest that such strategic alliances are potentially important value drivers for Internet stocks.[10] RKV have previously examined the role of alliances as possible determinants of reach. We extend their work by investigating more directly the role of alliances as potential value drivers for Internet stocks.

We also examine whether strategic alliances remain positively valued by the market in 2000. This investigation is prompted by post-shakeout reports in the business press that the previously hyped strategic alliances have generally not lived up to expectations.[11]

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[9] For example, in a discussion of Amazon's reported first-quarter results from operations, Motley Fool™ analyst, David Gardner, claims (after mentioning that sales rose 95% from the prior year's comparative quarter) that: "The most important metric for me remains *orders from repeat customers*, and these represented 76% of all orders in the period" (Gardner 2000, emphasis Gardner's).

[10] For example, although the Internet Stock Index dropped 3.26% on October 12th, 1999, the share prices of several companies that announced alliances significantly increased in value: Stamps.com leaped 2 ½ to 35 after reaching a deal with IBM Corp. to put its postage software on IBM's Aptivas; E.piphany Inc. soared 10 11/16 to 62 11/16 as they sealed a deal with Amazon.com; and Phone.com gained an additional 9 13/16 to 214 13/16 as its shares continued to benefit from the prior day's announced deal with Ireland's Apion Ltd. (The Internet Stock Report, http://www.internetstockreport.com/close/article/0,1785,216901,00.html).

[11] For example, The Industry Standard reported in May 2000 that "as recently as six months ago, many e-commerce companies saw prominent portal alliances as a sign that they had arrived – a guarantee of traffic, sales and eventual success. But now many say the partnerships have been disappointing, and they are re-evaluating their use of marketing dollars" (http://www.thestandard.com/article/display/0,1151,14412,00.html).

3.2 The Value-Relevance of Financial Information

The "common wisdom", as represented in the business press, is that, with the exception of revenues, traditional financial statement information is not relevant for the valuation of Internet stock prices. Hand (2000A) was the first to document that financial statement data are significantly associated with the market values of publicly-traded Internet companies. However, Hand's (2000A) valuation regressions do not include the often-cited web traffic metrics as explanatory variables (or "value-drivers"), and hence his findings are potentially subject to a correlated omitted variables bias. TWZ, Hand 2000(B), and RKV all investigate the value-relevance of various subsets of financial statement data, conditional upon the inclusion of a web metric for "reach" in the valuation regressions. The results from these prior studies *vis a vis* the value-relevance of particular financial statement variables are somewhat mixed.

In the early euphoric days of the Internet industry, aggressive spending by B2C companies on acquiring customers and on developing the technological architecture and product offerings necessary to "grow to a profitable scale" were heralded by analysts and market commentators.[12] Accordingly, and following the prior literature related to start-up industries (e.g., Amir and Lev (1996)) and R&D-intensive firms (e.g., Lev and Sougiannis (1996)), we examine the value relevance of two categories of Internet companies' expenditures related to the acquisition of intangible assets: marketing expenses; and product development and R&D expenses. We hypothesize that both of these variables will be positively valued by the market in their determination of B2C stock prices during the pre-shakeout period. Given the change in sentiment that occurred when the bubble burst, we leave it as an empirical question whether the market positively values these expenditures on intangible assets after the market correction.

[12] For example, the Director of Research for on-line investment bank Wit Capital suggests that the "operating model (of Internet companies) derives from the notion that the most capital-intensive part of many Internet businesses are sales and marketing-related expenses such as customer acquisition costs. It is significant that those expenses tend to decline sharply as a percentage of revenues after reaching critical mass or market leadership positions. We believe strongly that Internet companies that achieve market leadership should generate proportionately lower variable costs over their operating lifetimes, and should therefore produce consistently stronger operating margins compared with those companies that do not enjoy the benefit of market leadership" (Cohen 1999).

3.3 Investigating the Role of "Cash Burn"

The new millennium coincided with a dramatic reassessment by investors of the viability and prospects of Internet companies. As early as January 2000, influential sources such as Barron's and Forrester Research predicted that the availability of cash would determine the fate of many Internet companies. Accordingly, we extend our investigation of the value-drivers of Internet companies to examine the value-relevance of a proxy for the companies' current rate of "cash burn." During the pre-shakeout period, anecdotal evidence suggests that the market was favorably disposed towards Internet B2C companies' aggressive spending (i.e., the "burning of cash"), suggesting that our proxy for cash burn may be positively associated with price-to-sales ratios for 1999. Given the change in market sentiment that occurred, we predict that companies with high rates of cash burn relative to their scale of operations will be more susceptible to a shakeout during the industry downturn and will be less highly valued in the year 2000.

3.4 Structural Change

In previous sections we investigate the significance of particular B2C valuation variable candidates in each of two separate time periods. In this section we use the Chow test for structural change (Greene 1997) to formally document that the estimated valuation models for each of 1999 and 2000 are characterized by different parameter vectors.

3.5 Early Warnings of the Shakeout

The 45% drop in the ISDEX Internet stock index in the spring of 2000 was not entirely unanticipated. Many market observers had predicted that this shakeout would eventually occur (e.g., Perkins and Perkins 1999), and e-tail companies were identified as being particularly susceptible to fallout. Of course, the ultimate and still largely unanswered challenge lay in identifying which stocks would fall and which ones would survive the shakeout.

The extant industrial economics literature identifies several variables that are commonly associated with firm failure during periods of an industry shakeout, including failure to keep up with technological innovation, firm age, and firm size (Klepper and Simons, 2000). In the short time since the inception of the Internet industry, there has not yet been a significant identifiable technological innovation that would catapult some companies to success and others to failure. Accordingly, we investigate the role of firm age, firm size, cash burn, and e-tail sector membership as possible determinants of shakeout. A contribution to the industry shakeout literature is our test of whether B2C companies that were "over valued" on a relative basis (defined as having a positive residual in a price-to-sales valuation regression) would experience relatively larger drops in their price-to-sales ratios when the bubble burst.

4. Sample Selection and Data Description

4.1 Sample

The population of publicly-traded Internet companies was identified from a comprehensive list, the InternetStockList™, provided by Internet.com (http://www.internetnews.com/stocks/list/). The publicly traded Internet companies were then separated into industry segments based upon the classification scheme provided by Wall Street Research Net © WSRN.com (http://www1.wsrn.com/icom_index/index.xpl).

Because we are interested in the association between web traffic metrics and market values (prices and returns), we limit our sample of Internet companies to those for which we expect web traffic measures to be economically important. Specifically, Internet companies were included in the initial sample if they fell into the following business-to-consumer ("B2C") sectors: e-tail, content/communities, financial news/services, portal, and services. Due to data constraints, Internet companies were also excluded from the sample if their initial public offering took place after August 31, 1999. The results reported in this paper are based upon 84 publicly traded Internet companies for which

stock market prices, financial statement data, and web traffic measures were available for at least one quarter during our sample period. A list of the sample companies is provided in Table 1.

4.2 Data Description

The daily stock prices and market values of the firms included in our sample were obtained from the Datastream database. Financial statement data for companies included in the valuation regressions were hand-collected from corporate quarterly financial statements filed with the SEC. Information related to strategic alliances was derived from the Securities Data Corp. ("SDC") database.

Web traffic measures were obtained from the Nielsen/Netratings "Audience Measurement" database. Nielsen/Netratings, together with MediaMetrix and PC Data, are the leading providers of commercial web traffic databases. Nine web traffic measures are included in the Nielsen/Netratings database: unique audience (the number of unique web surfers who have visited the web property during the month), active reach (the percentage of active web surfers who visited the web property during the month), universal reach (the estimated percentage of the universe of web surfers who have visited the web property during the month), rank by unique audience for the month, the total number of pages viewed by web surfers during the month, the number of visits to the web property per unique visitor during the month, the average time spent at the web property per person, and the percentage of pages that were viewed from browser cache during the month.

The Nielsen/Netratings data is available on a monthly basis beginning with the month of February 1999. The database includes audience measures for all web properties that meet the "statistical cutoff" for that particular month.[13] Some sample companies may not make the cutoff for the Nielsen/Netratings listings in any particular month, but are

[13] According to Nielsen/Netratings, a web property meets the cutoff in any given month if a sufficient number of Nielsen/Netratings' approximately 50,000 panel members visit the site such that extrapolation to the population of web surfers as a whole can be reliably performed.

otherwise included in the database for earlier and/or later months. In such instances, based upon the Nielsen/Netratings criteria for inclusion, we assign a value of zero to the web metrics for those firm-month observations.

5. The Correlation Between Monthly Stock Returns and Web Traffic Metrics

Prior to undertaking a full valuation analysis involving quarterly financial and non-financial data, we examine in this section the association between monthly stock returns and a broad set of web metrics. In particular, we examine the speed and direction of investors' reaction to web traffic performance data. This is an important issue, given the extensive use of traffic measures by investors and financial analysts.

5.1 Contemporaneous Correlations

The Nielsen/Netratings database upon which we rely releases web traffic measures on a weekly basis during any given month, and then reports the consolidated monthly totals several weeks subsequent to the end of the month. It is therefore plausible that the market may impound the information contained in monthly levels and/or changes in web metrics within the month of their occurrence (i.e., contemporaneously).

Table 3A reports the Spearman rank correlations between monthly stock returns and the contemporaneous *levels* of web metrics for 1999 and 2000, respectively.[14] As reflected in the table, Internet companies' monthly stock returns are positively correlated with contemporaneous measures of reach, unique audience, total pageviews, and visits per person in 1999. The significance of these correlations provides preliminary evidence that, consistent with analysts' reports, anecdotal discussions in the business press, and prior research (TWZ, RKV, and Hand (2000b)), web companies that had attained a "critical mass" of customers and/or web traffic in 1999 were those that investors expected to profit most in the networked economy. As reflected in the second panel of Table 3A, the reach, unique audience, and total page view web metrics remained positively

[14] The 1999 correlations include the months of February (the inception of the database) through to December. The year 2000 correlations include the months of January through August.

correlated with monthly stock returns in the first 5 months of the year 2000, but less significantly so than in 1999.

In order to provide some descriptive evidence regarding the speed with which changes in web metrics appear to be impounded into stock price, we examine the pairwise correlations between monthly stock returns and *changes* in various measures of web traffic activity. The Spearman rank correlations provided in Table 3B suggest that the contemporaneous changes in total page views and in visits per person are both significantly correlated with the monthly percentage changes in Internet stock prices in each of 1999 and 2000. In 2000, the change in the average time spent per person per visit is also positively correlated with contemporaneous stock returns. Overall, it appears as though investors react contemporaneously to web traffic data.

5.2 One-month Lag Correlations

Although the Nielsen/Netratings service releases web traffic measures on a weekly basis during any given month, other web rating agencies upon which market participants may rely may not produce such frequent and timely information. Either because of delayed reporting or delayed market reaction, the stock market may not impound the web traffic information in a manner that is consistent with strong form market efficiency.[15]

Accordingly, we investigate the correlations between Internet companies' monthly stock returns and the one-month lag in levels and percentage changes in web traffic metrics. As shown in the top panel of Table 3C, the correlations between the current returns and the one-month lag in *levels* of reach, unique audience, total page views, and visits per person are all significant in 1999. From the bottom panel of Table 3C, it is evident that none of the lagged web metric levels are significantly correlated with monthly stock

[15] When interpreting the behavior of Internet stocks, it is important to recognize that a significant percentage of the public floats of these companies are held by individual investors (including "day traders"). Subscriptions to commercial web metric databases cost approximately $50,000 per year, so it seems reasonable to assume that individual investors are unlikely to have access to the web metric data in a timely fashion. Nevertheless, the web metric data does become disseminated through various other channels (e.g., MediaMetrix provides a free listing of the "Top 50" properties visited on their homepage, articles and corporate news releases carried in the popular press will often report the most recent web traffic statistics for the company being reported on, and web investing "chat rooms" are replete with information related to web companies' traffic performance).

returns in 2000. The results are consistent with market participants having increased the speed with which they impound web traffic levels into price in the year 2000 relative to 1999. This, in turn, could be interpreted as an increase in market efficiency with respect to the web traffic metrics.

Table 3D presents the correlations between monthly stock returns and one-month lag *changes* in web metrics. The results reflect that none of the lagged changes in web metrics are significantly correlated with monthly stock returns in either 1999 or 2000.

5.3 Correlations Between Web Metrics and One-Month Lags in Stock Returns

The preceding description of the correlations between stock returns and web metrics implicitly assumes that web metrics lead stock returns, rather than vice versa. Since we don't have a sufficiently long time series to formally test for directional causality, in Tables 3F and 3G we reverse this ordering of the leads and lags. Specifically, we examine the correlation between web metrics and the previous month's stock returns. [16] The evidence presented in Table 3F suggests that, in both 1999 and 2000, the web metrics are significantly correlated with the prior month's stock return. There are at least two possible interpretations of this evidence. First, analysts may predict web traffic performance prior to its realization, with the result that stock returns lead the realized web metrics. Alternatively, positive stock market performance may serve as a marketing mechanism that in turn drives traffic to the companies' sites. This latter interpretation is consistent with evidence presented by Bibus and Demers (2001) that greater IPO underpricing by Internet companies is associated with higher increases in traffic to the Internet companies' sites.

In Table 3G, the correlations between changes in web metrics and the prior month's stock returns are presented. The findings suggest that changes in web metrics are only significantly associated with the prior month's stock returns in 2000, but not in 1999.

[16] We thank John Hand for suggesting this analysis.

In summary, we find that both contemporaneous *levels* and *changes* in various web traffic metrics are significantly correlated with monthly stock returns in each of 1999 and 2000, but the significance levels decrease in the later time period. We also find that web traffic levels are significantly associated with the prior month's stock returns. More strikingly, the one-month lag in web traffic levels is significantly correlated with monthly stock returns in 1999, but the significance disappears in 2000. Similarly, the change in web traffic metrics is significantly associated with the prior month's stock returns in 2000, but not in 1999. Thus, while investors generally appear to react promptly to the release of traffic measures, the results suggest that there may have been some delayed reaction by the market in the earlier stages of the Internet economy. Alternatively stated, in the year 2000, stock market returns appear to lead changes in web metrics, whereas in 1999 that relationship did not hold.

6. The Valuation Role of Financial and Non-Financial Information

6.1 The Results of Factor Analysis on The Web Traffic Measures

Table 4 presents the results of a common factor analysis on the quarterly web traffic metrics derived from the Nielsen/Netratings database for the firms included in our sample.[17,18] Panel A shows the standardized regression coefficients associated with each factor, while Panel B presents the rotated factor pattern matrix resulting from the factor analysis, as well as the variance explained by each factor.[19] We have labeled each of the estimated factors according to the underlying web traffic performance construct that we interpret the factor to represent. As shown in the table, the first factor is labeled "REACH" because it loads heavily on the unique audience, total page views, and active reach raw web metrics. The second factor loads most heavily on the original web metrics

[17] The Nielsen/Netratings database provides monthly web traffic metrics. We compile quarterly metrics by averaging the three monthly metrics for the months included in each company's corresponding fiscal quarter.

[18] Our factor analysis results are obtained by setting the prior communality estimates to the squared multiple correlations of each included web metric variable with all other included web metric variables.

[19] The rotated factor pattern matrix is presented because it is more intuitively interpretable. The estimates are based upon the use of the varimax orthogonal factor rotation method.

for the time spent per person per visit to the site and the average number of pages viewed per person per visit, and therefore corresponds to the underlying web traffic performance construct of "stickiness". The third factor loads on the web metrics for the average number of visits to the site per person per quarter and the percentage of page views from browser cache, and accordingly appears to capture the notion of "customer loyalty".

Using the scores for each of the preceding factors, we construct variables labeled "REACH", "STICKINESS", and "LOYALTY", which we use as explanatory variables for Internet company price-to-sales ratios in our subsequent regression analyses.[20]

6.2 Valuation Results

In Tables 5 and 6 we report the estimates from regressions of Internet companies' price-to-sales ("P/S") ratios on a number of financial statement variables and our parsimonious set of web traffic performance measures for the years 1999 and 2000, respectively.[21,22] In order to produce three quarters of data for the year 2000, and to reflect the delayed release of financial statement data to the market, we compute the following price to sales ratios: the market value of the firm's common equity as of February 28, 2000 divided by the firm's total revenues for the quarter ended December 31, 1999; the market values at May 31, 2000 divided by total revenues reported for the quarter ended March 31, 2000; and the market values at August 31, 2000 divided by total revenues for the quarter ended June 30, 2000. We refer to these ratios as quarters one, two, and three of the year 2000, respectively. For 1999, we use contemporaneous market values and revenues to calculate the price-to-sales ratios. For both years, the price-to-sales ratios are matched

[20] The "visits per person" raw web metric was not available in the Neilson/Netratings database prior to August 1999. Accordingly, we estimate the factors for all quarters for which the full data is available, and then "back-fill" the first few quarters of 1999 using the firm-specific fitted factors from the first available quarter.

[21] Unless otherwise noted, all of the financial statement explanatory variables included in the regressions reported in this study are scaled by total revenues. The web traffic factors are not scaled by revenues.

[22] All of the regression results reported in the paper are for the full sample of available firms for each period, excluding observations that were considered to have undue influence on the determination of the coefficients. Observations were excluded if the absolute value of the studentized residual was greater than three and/or if the value of the Cook's distance was greater than one.

with the corresponding quarter's financial statement data and with web traffic data that are contemporaneous to the stock prices.

In a deviation from prior research in the Internet industry, we choose the price-to-sales ratio rather than market-to-book as our dependent variable in the valuation regressions. We make this research design choice for several reasons. First, price-to-sales is the financial metric that is most commonly referred to by analysts and the business press in their evaluations and discussions of Internet companies. In this sector, price-to-sales takes on the role that the price-to-earnings ratio has traditionally held in the valuation of going concern entities because most Internet companies are not yet profitable (and therefore P/E cannot be sensibly applied). A similar argument applies to the book value of equity in this sector. Book values are depressed because Internet companies have few tangible assets and their massive expenditures on the all-important intangible assets are generally expensed rather than capitalized. The market-to-book ratio therefore does not have the same economic interpretation and intuitive appeal as it does in the cross-section of more established and profitable firms. Furthermore, from a statistical perspective, the market-to-book ratios tend to "blow up" because of this small denominator problem.

6.2.1 The Relevance of Web Traffic Factors

As shown in Table 5, the REACH and STICKINESS web performance factors are significantly positively associated with the price-to-sales ("P/S") ratios in both 1999 and 2000, while LOYALTY is not significant at traditional levels in either year.[23] The finding of significance for our REACH factor is consistent with the results of prior studies that have examined the value-relevance of raw web metrics such as reach or unique visitors (TWZ, RVK, and Hand (2000b)), but is inconsistent with Hand's (2000b) finding that total page views is not a significant valuation variable. Our finding of significance for the STICKINESS factor is unique to this study, and is inconsistent with Hand's (2000b) finding of insignificance for a raw measure of the time spent at a company's websites. For several reasons, a direct comparison between our results and

[23] Although LOYALTY is negative and significant at the 10% level in the 1999 valuation regressions reported in Table 5, the negative coefficient and statistical significance disappear in the extended valuation model reported in Table 6, suggesting that the results for LOYALTY in Table 5 are likely due to a correlated omitted variable problem.

those of Hand (2000b) is not possible. First, Hand (2000b) utilizes rank regression models, while we use a more conventional linear OLS specification. Second, we examine the value-relevance of an orthogonal set of fitted web factors, while Hand (2000b) includes the original raw web metrics as dependent variables.[24] Finally, our sample is comprised of firms from only those B2C subsectors for which we expect web metrics to be relevant, while Hand (2000b) explores other economic issues and therefore includes virtually the entire population of publicly-traded Internet stocks in his study.

Our finding of statistically significant coefficients on REACH and STICKINESS in the year 2000 regressions is consistent with our hypotheses, but contrary to the recent suggestions of Wall Street analysts that web traffic metrics are no longer relevant for the valuation of Internet stocks. Thus, even as the Internet sector begins to mature and B2C companies develop longer operating histories (with the commensurate time series of financial valuation variables becoming available), the web traffic metrics that were relevant during the pre-shakeout period of the market continue to be significant determinants of Internet companies' price-to-sales ratios after the market correction.

6.2.2 The Value-Relevance of Traditional Financial Statement Information

With the exception of cost of goods/services sold (CGS), each of the income statement components is significantly value-relevant in 1999, as shown in the left column of Table 5. The positive coefficients on advertising and marketing expenses (MKTGEXP), and on R&D and product development (PRODEVLP) in 1999, are consistent with our predictions and with the results of prior studies related to the valuation of expenditures on intangible assets (e.g., Amir and Lev (1996) and Lev and Sougiannis (1996)). The findings suggest that the market viewed B2C Internet companies' material expenditures directed towards customer acquisitions and product development as <u>investments</u> rather than current expenses in 1999.

[24]For our 1999 and 2000 data, the raw web metrics exhibit significant pairwise correlation (see Table 3A). Accordingly, the direct inclusion of any subset of these raw web metrics as explanatory regression variables would likely result in a significant multicollinearity problem in our valuation estimations.

The right column of Table 5 shows that, for 2000, cost of goods/services sold (CGS) is negatively and significantly associated with the P/S ratios, product development expenses continue to be positively and significantly associated with P/S ratios, but marketing expenses are no longer significant determinants of Internet companies' P/S ratios. These findings suggest that in the year 2000, the market continues to view B2C companies' R&D and product development expenses as investments in intangible assets, but no longer considers marketing expenses to be positive net present value transactions. One possible explanation for the insignificance of marketing expenses in 2000 is the emergence of gross profits management in the maturing B2C sector. As investors began paying attention to gross margins in addition to the top line performance of these entities in 2000, Internet companies started managing their margins by moving expenses such as sales discounts and shipping costs below the gross profits line into marketing expenses (MacDonald 2000). Notably, however, the coefficient on MKTGEXP remains positive, which suggests that the market is not, on average, treating the marketing and development expenses as reductions to firm value.

6.3 The Importance of "Cash Burn"

Table 5 reports the results of our investigation into the valuation role of Internet companies' current rate of cash burn. The cash burn proxy, CFOPRNS, is defined as net cash flows from operations divided by total revenues. For many companies in the sample, cash flows from operations are negative. Because the valuation implications of the cash burn proxy are likely to be different for firms with negative versus positive cash flows from operations, we also include the variable CFOPNSnegv. CFOPNSnegv is equal to CFOPRNS for firms with negative cash flows from operations and is set equal to zero for firms with positive operating cash flows. The coefficient estimate on CFOPNSnegv is therefore interpretable as the incremental slope on the burn proxy for firms with negative operating cash flows.

The results in Table 5 show that for both 1999 and 2000, the ratio of cash flows generated from (or used in) operations relative to total revenues (CFOPRNS) is significantly and

positively associated with the price-to-sales ratios of Internet companies. For companies with positive operating cash flows, the positive coefficient on CFOPRNS results in a positive addition to value. The intuition for this result may be that the ability to generate positive cash flows from existing operations provides the Internet companies with greater option value - the cash provides the companies with the flexibility to adapt to rapidly changing market conditions and to react to emerging opportunities. For companies with negative cash flows from operations, the underlying value of the CFOPRNS variable is negative, and therefore the significant positive coefficient on CFOPRNS results in a reduction to overall firm value. In both Table 5 and Table 6, however, the positive coefficient on CFOPRNS in 1999 is more than offset by a negative coefficient on CFOPNSnegv. The negative coefficient on CFOPNSnegv when multiplied by the negative underlying value of the CFOPNSnegv variable results in a *positive* addition to overall firm value for companies with negative cash flows from operations in 1999. This result is consistent with anecdotal evidence from the earlier time period that the market was favorably disposed towards aggressive spending by Internet stocks.

As shown in the right hand columns of Tables 5 and 6, CFOPNSnegv is no longer significant in either valuation model for the year 2000, however CFOPRNS remains significant and positive for 2000 in both models. Thus, for firms with negative cash flows from operations in 2000, the positive coefficient on CFOPRNS multiplied by the negative value of the underlying CFOPRNS variable results in a net reduction to overall firm value. These findings are consistent with the market having adopted a more critical view of Internet companies' cash burn rates in 2000.

6.4 The Value-Relevance of Strategic Alliances

Table 6 reports the results of valuation regressions that include three variables representing the nature and extent of alliances with strategic partners. "**AOLdummy**" is an indicator variable that is set equal to one if the firm has announced a strategic alliance with AOL, and is zero otherwise. "**TOP10dummy**" is an indicator variable that is set equal to one if the firm has announced a strategic alliance with one or more of the other

"top 10" internet traffic-generating companies, which include: Lycos, Amazon, Yahoo!, MSN/Microsoft, Excite@Home, Alta Vista, GO Network, Go2Net, Time Warner (prior to the merger with AOL), and C/NET. "**TotalAlliances**" is a count variable that captures the cumulative number of strategic alliances that the company has announced itself to have entered into.

As shown in Table 6, only the TotalAlliances variable is significantly associated with the price-to-sales ratios of B2C stocks in either of 1999 and 2000. The finding of a negative association between the cumulative sum of alliances entered into (TotalAlliances) lends support to arguments in the popular press that strategic alliances do not provide their anticipated benefits (e.g., The Industry Standard, May 1, 2000). Our findings of a lack of significance for the AOL alliance variable are consistent with those of Rajgopal, et al (2000), who document a lack of association between AOL alliances and the number of unique visitors to B2C companies' websites.

6.5 Structural Change

For each of the regression models presented in Tables 5 and 6, we report the results of the Chow test for structural change. In each case, the Chow test is significant (p=.01), confirming the prediction that the estimated valuation models for 1999 and 2000 are characterized by different parameter vectors.

7. Early Warnings of the Shakeout

We estimate the full valuation model presented in Table 6 on data for the first quarter of the year 2000 only.[25,26] The correlation between the residuals from this regression model

[25] For companies with December 31st year ends, the price-to-sales ratio for Q1 2000 is defined as the market value of equity as at February 28, 2000 divided by total revenues for the quarter ended December 31, 1999, while all of the other financial variables included in the Q1 2000 model are also from the financial statements for the quarter ended December 31, 1999. For companies with fiscal years ending other than on December 31, observations are assigned to the Q1 2000 dataset if the quarter end occurred after December 31st and prior to March 31, 2000.

on Q1 2000 data and the percentage change in the price-to-sales ratios in the subsequent quarter (i.e., the change in P/S from before to after the market correction) is –0.286 and significant (p=.0268). Thus, the residuals from the first quarter valuation regression are significantly negatively correlated with subsequent changes in the P/S ratios. In other words, B2C companies that were relatively "over-valued" before the market correction according to our valuation model (i.e., those with more positive regression residuals) experienced more negative changes in their P/S ratios in the second quarter of 2000.

In Table 7 we present the results of regressing the percentage change in the P/S ratio from quarter 1 to quarter 2 of 2000 against the residuals from the first quarter of 2000 regression, together with a number of variables that prior studies in the industrial economics literature have found to be associated with companies that fail during the rationalization of a nascent industry. Consistent with the significant negative pairwise correlation result discussed above, our measure of the extent of relative over-valuation (RESIDQ1) remains significantly negatively associated with the percentage change in the price-to-sales ratio once other competing explanatory variables are added to the model.[27] Indeed, the significance of RESIDQ1 increases once the confounding effects of other explanatory variables are controlled for in the multivariate regression. Consistent with the findings of prior studies in other industries in the economics literature (e.g., Klepper and Simons (2000)), company size (logMV) is a significant determinant of shakeout in the Internet sector.[28] The positive coefficient on logMV suggests that smaller firms had more negative changes in their price-to-sales ratios, and that larger firms' price-to-sales ratios dropped less (or even increased) from February to May, 2000. Contrary to the results of prior studies, company age is not a significant determinant of shakeout. The coefficient on ETAIL, an indicator variable that is set equal to one for firms that are in the e-tail sector (and zero otherwise), is positive and significantly associated with the change in price-to-sales ratio. This result is consistent with anecdotal observations that the e-tail sector precipitated the B2C shakeout and therefore had less far to fall from February to May 2000 when the market correction too place.

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[26] The valuation regression model uses only Q1 2000 observations for which the subsequent Q2 2000 percentage price drop is available. Results are unchanged if we estimate the regression model all available Q1 2000 observations.

[27] This result may reflect to some extent the regression phenomenon of mean reversion.

[28] The results are robust to other measures of firm size, including log(total revenues) and log(total assets).

Conclusions

In this study we have explored various value-drivers of Internet companies' share prices.[29] Our study extends the pioneering work on Internet stock valuation along several dimensions: (1) we examine the role of financial and non-financial drivers both before and after the Internet market correction in March-April 2000; (2) we apply a systematic selection process (factor analysis) to the multiple web traffic measures that are available from commercial databases in order to arrive at a parsimonious set of orthogonal web performance measures; (3) we investigate the valuation role of our proxy for B2C companies' current rate of "cash burn"; and (4) we investigate the determinants of fallout during the market correction of the spring of 2000.

Our primary conclusions from this study are as follows. First, we find evidence that contradicts the claims by some analysts that web traffic metrics are no longer important. Our web traffic performance factors for both reach and stickiness remain value-relevant in 2000. Second, consistent with the findings of prior studies in other intangible asset based industries, we find that despite the expensing in financial reports of all periodic expenditures on knowledge, customer acquisitions, and technology, investors make a distinction between expenses and investments. In particular, product development (R&D) and advertising expenses (customer acquisition costs) appear to be capitalized as assets by investors in their assessment of Internet company value during the earlier period when investors were more optimistic about the prospects of B2C companies. However, only product development costs are implicitly capitalized into value, on average, subsequent to the industry shakeout in the spring of 2000. We find that our proxy for companies' current rate of "cash burn" is an important value-driver in each of 1999 and 2000, but with different value implications; in 1999 the market appeared to be favorably disposed towards Internet companies' aggressive spending, whereas in 2000 the market appears to have adopted a more critical view of Internet companies' cash burn rates. Finally, we provide statistical evidence of a structural change in the valuation model parameters for 1999 versus 2000, and we find that our measure of the relative over-

[29] The independent variables that we investigated in this study were motivated by prior research and by analysts' commentary and reports. We cannot, of course, preclude the possibility of omitted or correlated variables in our various regressions.

valuation of B2C stocks in the first quarter of 2000 is positively associated with the drop in price-to-sales ratios during the shakeout. This latter finding is robust to the inclusion of competing explanatory variables suggested by the economics literature related to industry rationalizations.

We thus provide a preliminary view of the shakeout and maturation of the B2C Internet sector. Overall, our study suggests that in the post-shakeout 2000 period investors adopted a somewhat more skeptical attitude with regards to intangible investments and aggressive spending by Internet companies; absent meaningful financial results, investors continue to rely heavily on web traffic measures; investors adopted a different valuation model in 1999 versus 2000; and those B2C stocks that our valuation model suggested were relatively over-valued in the first quarter of 2000 fell significantly more when the Internet shakeout occurred in the second quarter of 2000.

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Figure 1
ISDEX Internet Stock Index Weekly Price Chart

TABLE 1
List of Internet Companies Included in the Study

	Company	Ticker Symbol	Sector		Company	Ticker Symbol	Sector
1	1-800-FLOWERS.COM	FLWS	e-tail	43	Infonautics	INFO	content/community
2	About.com	BOUT	content/community	44	Infoseek	SEEK	portal
3	Alloy Online	ALOY	e-tail	45	InfoSpace.com	INSP	portal
4	Amazon.com	AMZN	e-tail	46	InsWeb	INSW	e-tail
5	America Online (AOL)	AOL	portal	47	internet.com	INTM	content/community
6	Ameritrade Holding	AMTD	financial news/svcs	48	iTurf	TURF	content/community
7	Ask Jeeves	ASKJ	services	49	iVillage	IVIL	content/community
8	Audible	ADBL	e-tail	50	JFAX.com	JFAX	services
9	Audiohighway	AHWY	e-tail	51	Launch Media	LAUN	content/community
10	barnesandnoble.com	BNBN	e-tail	52	LookSmart	LOOK	content/community
11	Beyond.com	BYND	e-tail	53	Lycos	LCOS	portal
12	BigStar Entertainment	BGST	e-tail	54	Mail.com	MAIL	services
13	Bluefly	BFLY	e-tail	55	MapQuest.com	MQST	services
14	Broadcast.com	BCST	content/community	56	MarketWatch.com	MKTW	financial news/svcs
15	C/NET	CNET	content/community	57	MP3.com	MPPP	content/community
16	CareerBuilder	CBDR	content/community	58	Mpath Interactive	MPTH	content/community
17	CDnow	CDNW	e-tail	59	Multex.com	MLTX	financial news/svcs
18	Cheap Tickets	CTIX	e-tail	60	musicmaker.com	HITS	e-tail
19	Concentric Network	CNCX	services	61	MyPoints.com	MYPT	services
20	Crosswalk.com	AMEN	e-tail	62	NetBank	NTBK	financial news/svcs
21	Cyberian Outpost	COOL	e-tail	63	Network Solutions	NSOL	services
22	DLJdirect	DIR	financial news/svcs	64	NextCard	NXCD	financial news/svcs
23	drkoop.com	KOOP	content/community	65	ONSALE	ONSL	e-tail
24	drugstore.com	DSCM	e-tail	66	Peapod	PPOD	e-tail
25	Earthweb	EWBX	content/community	67	Preview Travel	PTVL	e-tail
26	E*TRADE Group	EGRP	financial news/svcs	68	priceline.com	PCLN	e-tail
27	eBay	EBAY	e-tail	69	Quokka Sports	QKKA	content/community
28	EDGAR Online	EDGR	financial news/svcs	70	Salon.com	SALN	content/community
29	eFax	EFAX	services	71	SportsLine USA	SPLN	content/community
30	Egghead.com	EGGS	e-tail	72	Stamps.com	STMP	services
31	E-Loan.com	EELN	financial news/svcs	73	StarMedia Network	STRM	portal
32	eToys	ETYS	e-tail	74	Student Advantage	STAD	content/community
33	Exodus Communications	EXDS	services	75	Talk City	TCTY	content/community
34	fashionmall.com	FASH	e-tail	76	theglobe.com	TGLO	content/community
35	FatBrain.com	FATB	e-tail	77	TheStreet.com	TSCM	financial news/svcs
36	Go2Net	GNET	content/community	78	Ticketmaster Online-CitySearch	TMCS	e-tail
37	GoTo.com	GOTO	services	79	uBid	UBID	e-tail
38	HeadHunter.NET	HHNT	content/community	80	US SEARCH Corp.com	SRCH	services
39	Healtheon(WebMD)	HLTH	services	81	Value America	VUSA	e-tail
40	Homestore.com	HOMS	content/community	82	Xoom.com	XMCM	services
41	Hoover's Inc.	HOOV	financial news/svcs	83	Yahoo!	YHOO	portal
42	HotJobs.com	HOTJ	content/community	84	ZD Net	ZDZ	content/community

TABLE 2

PANEL B 1999: Pearson Correlations Between Regression Variables (N=120)

	PRSALES	CGS	MKTGEXP	PRODEVLP	REACH	STICKINESS	LOYALTY	CFOPRNS	CFOPNSnegv	Top10dummy	AOLdummy	TotalAllnc
PRSALES	1.000	0.040	**0.269**	*0.159*	**0.179**	**0.359**	**-0.369**	-0.094	**-0.206**	-0.031	**0.180**	0.052
CGS		1.000	**0.429**	-0.073	**-0.190**	**-0.216**	0.111	**-0.473**	**-0.488**	**-0.180**	**-0.186**	*-0.167*
MKTGEXP			1.000	**0.220**	*-0.163*	*-0.155*	0.073	**-0.766**	**-0.884**	-0.148	-0.131	**-0.204**
PRODEVLP				1.000	-0.119	-0.098	0.028	*-0.168*	**-0.215**	0.057	-0.138	-0.136
REACH					1.000	0.026	**-0.222**	**0.198**	**0.210**	**0.442**	**0.429**	**0.866**
STICKINESS						1.000	**-0.551**	*0.172*	**0.181**	0.147	**0.417**	0.125
LOYALTY							1.000	-0.091	-0.116	-0.049	-0.043	0.017
CFOPRNS								1.000	**0.917**	0.142	*0.157*	**0.219**
CFOPNSnegv									1.000	*0.171*	*0.190*	**0.235**
Top10dummy										1.000	**0.200**	**0.559**
AOLdummy											1.000	**0.546**
TotalAllnc												1.000

TABLE 2

PANEL B 2000: Pearson Correlations Between Regression Variables (N=192)

	PRSALES	CGS	MKTGEXP	PRODEVLP	REACH	STICKINESS	LOYALTY	CFOPRNS	CFOPNSnegv	Top10dummy	AOLdummy	TotalAllnc
PRSALES	1.000	**-0.272**	-0.022	*0.119*	**0.408**	**0.319**	**0.320**	0.118	0.065	0.099	**0.211**	**0.297**
CGS		1.000	**0.178**	-0.077	**-0.176**	**-0.161**	**-0.311**	**-0.294**	**-0.273**	**-0.154**	-0.091	**-0.159**
MKTGEXP			1.000	**0.413**	**-0.179**	**-0.147**	**-0.229**	**-0.835**	**-0.838**	-0.086	0.079	**-0.190**
PRODEVLP				1.000	-0.077	-0.056	-0.027	**-0.435**	**-0.437**	0.089	0.029	-0.069
REACH					1.000	0.047	0.036	**0.213**	**0.179**	**0.425**	*0.136*	**0.761**
STICKINESS						1.000	0.039	**0.175**	**0.149**	0.035	**0.253**	**0.269**
LOYALTY							1.000	**0.273**	**0.252**	**0.173**	**0.222**	**0.467**
CFOPRNS								1.000	**0.906**	0.115	-0.108	**0.221**
CFOPNSnegv									1.000	0.116	*-0.123*	**0.193**
Top10dummy										1.000	0.007	**0.476**
AOLdummy											1.000	**0.334**
TotalAllnc												1.000

TABLE 3

Panel A1999: Spearman Rank Correlations Between 1999 Monthly Stock Returns and Contemporaneous Web Metric *Levels**

	RETRNMTH	REACH	UNIQAUD	PAGEVIEW	PAGEPP	VISITPP	TIMEPP
RETRNMTH	1.000	**0.129**	**0.131**	**0.142**	0.077	**0.144**	-0.027
REACH		1.000	**0.998**	**0.860**	**0.259**	**0.447**	**0.283**
UNIQAUD			1.000	**0.870**	**0.275**	**0.446**	**0.280**
PAGEVIEW				1.000	**0.683**	**0.627**	**0.599**
PAGEPP					1.000	**0.625**	**0.811**
VISITPP						1.000	**0.716**
TIMEPP							1.000

TABLE 3 (cont'd)

Panel A2000: Spearman Rank Correlations Between 2000 Monthly Stock Returns and Contemporaneous Web Metric *Levels**

	RETRNMTH	REACH	UNIQAUD	PAGEVIEW	PAGEPP	VISITPP	TIMEPP
RETRNMTH	1.000	**0.084**	**0.085**	**0.101**	**0.082**	*0.066*	*0.075*
REACH		1.000	**0.999**	**0.905**	**0.387**	**0.457**	**0.344**
UNIQAUD			1.000	**0.907**	**0.390**	**0.457**	**0.345**
PAGEVIEW				1.000	**0.721**	**0.644**	**0.658**
PAGEPP					1.000	**0.673**	**0.921**
VISITPP						1.000	**0.702**
TIMEPP							1.000

* Correlations that are significant at the .10 level are *italicized.*
Correlations that are significant at the .05 level are in **bold-faced** type.
Correlations that are significant at the .01 level are in **underlined, bold-faced** type.

TABLE 3 (cont'd)

Panel B1999: Spearman Rank Correlations Between 1999 Monthly Stock Returns and Contemporaneous *Changes in* Web Metrics*

	RETRNMTH	CHGREACH	CHGAUD	CHGVIEWS	CHGPAGPP	CHGVISIT	CHGTIMEPP
RETRNMTH	1.000	0.034	0.059	*0.081*	0.068	*-0.113*	-0.013
CHGREACH		1.000	**0.963**	**0.596**	**0.151**	0.006	0.050
CHGAUD			1.000	**0.606**	**0.149**	-0.030	0.070
CHGVIEWS				1.000	**0.806**	**0.351**	**0.474**
CHGPAGPP					1.000	**0.504**	**0.599**
CHGVISIT						1.000	**0.509**
CHGTIMEPP							1.000

TABLE 3 (cont'd)

Panel B2000: Spearman Rank Correlations Between 2000 Monthly Stock Returns and Contemporaneous *Changes in* Web Metrics*

	RETRNMTH	CHGREACH	CHGAUD	CHGVIEWS	CHGPAGPP	CHGVISIT	CHGTIMEPP
RETRNMTH	1.000	0.046	0.06	*0.071*	0.040	0.003	0.051
CHGREACH		1.000	**0.986**	**0.579**	**-0.048**	-0.050	-0.004
CHGAUD			1.000	**0.592**	-0.044	-0.044	0.003
CHGVIEWS				1.000	**0.692**	**0.358**	**0.596**
CHGPAGPP					1.000	**0.499**	**0.804**
CHGVISIT						1.000	**0.511**
CHGTIMEPP							1.000

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Correlations that are significant at the .05 level are in **bold-faced** type.
Correlations that are significant at the .01 level are in **underlined, bold-faced** type.

TABLE 3 (cont'd)

Panel C1999: Spearman Rank Correlations Between 1999 Monthly Stock Returns and One-Month Lags in Web Metric *Levels**

	RETRNMTH	LAGREACH	LAGUNIQ	LAGPGVIU	LAGPGPP	LAGVISTPP	LAGTIMEPP
RETRNMTH	1.000	**0.121**	**0.121**	**0.116**	0.049	**0.167**	-0.024
LAGREACH		1.000	**0.998**	**0.849**	**0.235**	**0.438**	**0.260**
LAGUNIQ			1.000	**0.859**	**0.249**	**0.437**	**0.256**
LAGPGVIU				1.000	**0.678**	**0.624**	**0.593**
LAGPGPP					1.000	**0.621**	**0.812**
LAGVISTPP						1.000	**0.728**
LAGTIMEPP							1.000

TABLE 3 (cont'd)

Panel C2000: Spearman Rank Correlations Between 2000 Monthly Stock Returns and One-Month Lags in Web Metric *Levels**

	RETRNMTH	LAGREACH	LAGUNIQ	LAGPGVIU	LAGPGPP	LAGVISTPP	LAGTIMEPP
RETRNMTH	1.000	0.064	0.063	**0.086**	**0.085**	**0.077**	*0.067*
LAGREACH		1.000	**0.999**	**0.906**	**0.402**	**0.488**	**0.364**
LAGUNIQ			1.000	**0.908**	**0.404**	**0.487**	**0.364**
LAGPGVIU				1.000	**0.728**	**0.666**	**0.667**
LAGPGPP					1.000	**0.672**	**0.916**
LAGVISTPP						1.000	**0.700**
LAGTIMEPP							1.000

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Correlations that are significant at the .01 level are in **underlined, bold-faced** type.

TABLE 3 (cont'd)

Panel D1999: Spearman Rank Correlations Between 1999 Monthly Stock Returns and One-Month Lag *Changes in* Web Metrics*

	RETRNMTH	LAGCHGRCH	LAGCHGAUD	LAGCHGVIU	LAGCHGPGP	LAGCHGVPP	LAGCHGTPP
RETRNMTH	1.000	0.009	0.015	0.044	0.074	0.017	0.039
LAGCHGRCH		1.000	**0.957**	**0.590**	**0.151**	-0.060	0.060
LAGCHGAUD			1.000	**0.599**	**0.144**	-0.099	*0.092*
LAGCHGVIU				1.000	**0.812**	**0.362**	**0.489**
LAGCHGPGP					1.000	**0.554**	**0.604**
LAGCHGVPP						1.000	**0.465**
LAGCHGTPP							1.000

TABLE 3 (cont'd)

Panel D2000: Spearman Rank Correlations Between 2000 Monthly Stock Returns and One-Month Lag *Changes in* Web Metrics*

	RETRNMTH	LAGCHGRCH	LAGCHGAUD	LAGCHGVIU	LAGCHGPGP	LAGCHGVPP	LAGCHGTPP
RETRNMTH	1.000	*0.074*	**0.083**	0.035	-0.002	0.010	*0.072*
LAGCHGRCH		1.000	**0.987**	**0.586**	0.003	-0.017	0.041
LAGCHGAUD			1.000	**0.595**	0.005	-0.005	0.045
LAGCHGVIU				1.000	**0.727**	**0.405**	**0.608**
LAGCHGPGP					1.000	**0.528**	**0.784**
LAGCHGVPP						1.000	**0.542**
LAGCHGTPP							1.000

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Correlations that are significant at the .05 level are in **bold-faced** type.
Correlations that are significant at the .01 level are in **underlined, bold-faced** type.

TABLE 3 (cont'd)

Panel E1999: Spearman Rank Correlations Between 1999 Current and One-Month Lag *Changes in* Web Metrics*

	CHGREACH	CHGAUD	CHGVIEWS	CHGPAGPP	CHGVISIT	CHGTIMEPP	LAGCHGRCH	LAGCHGAUD	LAGCHGVIU	LAGCHGPGP	LAGCHGVPP	LAGCHGTPP
CHGREACH	1.000	**0.963**	**0.596**	**0.151**	0.006	0.050	-0.036	-0.060	0.034	0.068	**0.190**	0.060
CHGAUD		1.000	**0.606**	**0.149**	-0.030	0.070	0.019	-0.029	0.076	**0.098**	**0.207**	0.042
CHGVIEWS			1.000	**0.806**	**0.351**	**0.474**	-0.017	-0.060	-0.074	*-0.087*	0.041	**-0.111**
CHGPAGPP				1.000	**0.504**	**0.599**	-0.028	-0.065	**-0.153**	**-0.186**	-0.090	**-0.185**
CHGVISIT					1.000	**0.509**	0.013	0.026	-0.107	**-0.174**	**-0.217**	**-0.135**
CHGTIMEPP						1.000	**0.105**	*0.083*	**-0.103**	**-0.225**	**-0.190**	**-0.310**
LAGCHGRCH							1.000	**0.957**	**0.590**	**0.151**	-0.060	0.060
LAGCHGAUD								1.000	**0.599**	**0.144**	-0.099	*0.092*
LAGCHGVIU									1.000	**0.812**	**0.362**	**0.489**
LAGCHGPGP										1.000	**0.554**	**0.604**
LAGCHGVPP											1.000	**0.465**
LAGCHGTPP												1.000

TABLE 3 (cont'd)

Panel E2000: Spearman Rank Correlations Between 2000 Current and One-Month Lag *Changes in* Web Metrics*

	CHGREACH	CHGAUD	CHGVIEWS	CHGPAGPP	CHGVISIT	CHGTIMEPP	LAGCHGRCH	LAGCHGAUD	LAGCHGVIU	LAGCHGPGP	LAGCHGVPP	LAGCHGTPP
CHGREACH	1.000	**0.986**	**0.579**	-0.048	-0.050	*-0.004*	**-0.127**	**-0.142**	-0.021	*0.064*	**0.097**	**0.105**
CHGAUD		1.000	**0.592**	-0.044	-0.044	0.003	**-0.148**	**-0.176**	-0.046	0.059	**0.098**	**0.101**
CHGVIEWS			1.000	**0.692**	**0.358**	**0.596**	-0.041	-0.057	**-0.145**	**-0.169**	-0.047	**-0.117**
CHGPAGPP				1.000	**0.499**	**0.804**	**0.078**	**0.081**	**-0.133**	**-0.275**	**-0.162**	**-0.233**
CHGVISIT					1.000	**0.511**	**0.110**	**0.086**	-0.027	**-0.121**	**-0.311**	**-0.108**
CHGTIMEPP						1.000	0.052	0.044	**-0.110**	**-0.217**	**-0.234**	**-0.272**
LAGCHGRCH							1.000	**0.987**	**0.586**	0.003	-0.017	0.041
LAGCHGAUD								1.000	**0.595**	0.005	-0.004	0.045
LAGCHGVIU									1.000	**0.727**	**0.405**	**0.608**
LAGCHGPGP										1.000	**0.528**	**0.784**
LAGCHGVPP											1.000	**0.542**
LAGCHGTPP												1.000

TABLE 3 (cont'd)

Panel F1999: Spearman Rank Correlations Between 1999 Web Metrics and One-Month Lag in Monthly Stock Returns*

	LAGRETRN	REACH	UNIQAUD	PAGEVIEW	PAGEPP	VISITPP	TIMEPP
LAGRETRN	1	**0.145**	**0.156**	**0.149**	0.071	0.081	-0.007
REACH		1.000	**0.998**	**0.860**	**0.259**	**0.447**	**0.283**
UNIQAUD			1.000	**0.870**	**0.275**	**0.446**	**0.280**
PAGEVIEW				1.000	**0.683**	**0.627**	**0.599**
PAGEPP					1.000	**0.625**	**0.811**
VISITPP						1.000	**0.716**
TIMEPP							1.000

TABLE 3 (cont'd)

Panel F2000: Spearman Rank Correlations Between 2000 Web Metrics and One-Month Lag in Monthly Stock Returns*

	LAGRETRN	REACH	UNIQAUD	PAGEVIEW	PAGEPP	VISITPP	TIMEPP
LAGRETRN	1	**0.120**	**0.123**	**0.148**	**0.117**	**0.135**	**0.105**
REACH		1.000	**0.999**	**0.905**	**0.387**	**0.457**	**0.344**
UNIQAUD			1.000	**0.907**	**0.390**	**0.457**	**0.345**
PAGEVIEW				1.000	**0.721**	**0.644**	**0.658**
PAGEPP					1.000	**0.673**	**0.921**
VISITPP						1.000	**0.702**
TIMEPP							1.000

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Correlations that are significant at the .01 level are in **underlined, bold-faced** type.

TABLE 3 (cont'd)

Panel G1999: Spearman Rank Correlations Between 1999 Changes in Web Metrics and One-Month Lag in Monthly Stock Returns*

	LAGRETRN	CHGREACH	CHGAUD	CHGVIEWS	CHGPAGPP	CHGVISIT	CHGTIMEPP
LAGRETRN	1	0.058	0.037	-0.025	-0.057	0.053	**0.102**
CHGREACH		1	**0.963**	**0.596**	**0.151**	0.006	0.050
CHGAUD			1	**0.606**	**0.149**	-0.030	0.070
CHGVIEWS				1	**0.806**	**0.351**	**0.474**
CHGPAGPP					1	**0.504**	**0.599**
CHGVISIT						1	**0.509**
CHGTIMEPP							1

TABLE 3 (cont'd)

Panel G2000: Spearman Rank Correlations Between 2000 Changes in Web Metrics and One-Month Lag in Monthly Stock Returns*

	LAGRETRN	CHGREACH	CHGAUD	CHGVIEWS	CHGPAGPP	CHGVISIT	CHGTIMEPP
LAGRETRN	1	**0.100**	**0.110**	**0.098**	0.048	**0.111**	0.064
CHGREACH		1	**0.986**	**0.579**	**-0.048**	-0.05	-0.004
CHGAUD			1	**0.592**	-0.044	-0.044	0.003
CHGVIEWS				1	**0.692**	**0.358**	**0.596**
CHGPAGPP					1	**0.499**	**0.804**
CHGVISIT						1	**0.511**
CHGTIMEPP							1

* Correlations that are significant at the .10 level are *italicized.*
Correlations that are significant at the .05 level are in **bold-faced** type.
Correlations that are significant at the .01 level are in **underlined, bold-faced** type.

TABLE 3 (continued)

Variable Name	Definition
RETRNMTH	Monthly change in the market value of the company's common stock
LAGRETRN	Prior month's change in the market value of the company's common stock
REACH	The percentage of active web surfers who viewed the site during the month
UNIQAUD	Unique Audience - the number of unique web surfers who viewed the site during the month
PAGEVIEW	Page Views - the total number of pages viewed at the site during the month
PAGEPP	Pages per Person - the average number of pages viewed per person per visit during the month
VISITPP	Visits per Person - the average number of visits to the site per unique visitor during the month
TIMEPP	Time per Person - the average time spent at the site per person per visit
CHGREACH	Change in Reach (i.e., the percentage change in reach relative to the prior month)
CHGAUD	Change in Unique Audience
CHGVIEWS	Change in Page Views
CHGPAGPP	Change in Pages per Person
CHGVISIT	Change in Visits per Person
CHGTIMEPP	Change in Time per Person
LAGREACH	Prior month's Reach (i.e., one-month lag in Reach)
LAGUNIQ	Prior month's Unique Audience
LAGPGVIU	Prior month's Page Views
LAGPGPP	Prior month's Pages per Person
LAGVISTPP	Prior month's Visits per Person
LAGTIMEPP	Prior month's Time per Person
LAGCHGRCH	Prior month's Change in Reach (i.e., one-month lag in Change in Reach)
LAGCHGAUD	Prior month's Change in Unique Audience
LAGCHGVIU	Prior month's Change in Page Views
LAGCHGPGP	Prior month's Change in Pages per Person
LAGCHGVPP	Prior month's Change in Visits per Person
LAGCHGTPP	Prior month's Change in Time per Person

TABLE 4
RESULTS OF FACTOR ANALYSIS

Factor analysis on quarterly web traffic metrics derived from the Nielsen/Netratings database.

Panel A - Standardized Regression Coefficients

	Factor 1 "REACH"	Factor 2 "Stickiness"	Factor 3 "Loyalty"
Nielsen/Netratings Web Metric			
Unique Audience	0.8329	-0.5515	-0.0013
Total Page Views	0.8799	-0.1455	-0.0056
Visits per Person	0.8888	0.1882	0.1006
Pages per Person	0.7852	0.5607	0.0219
Time per Person	0.7979	0.5492	-0.1054
% Pageviews from Browser Cache	0.1118	-0.0216	0.2632
Reach (% Active Population)	0.8243	-0.5531	-0.0557

Panel B - Rotated Factor Pattern Matrix

	Factor 1 "REACH"	Factor 2 "Stickiness"	Factor 3 "Loyalty"
Nielsen/Netratings Web Metric			
Unique Audience	**0.9684**	0.1821	0.1641
Total Page Views	**0.7189**	0.5056	0.1511
Visits per Person	0.4765	**0.7411**	**0.2433**
Pages per Person	0.1561	**0.9431**	0.1326
Time per Person	0.1923	**0.9551**	0.0100
% Pageviews from Browser Cache	0.0536	0.0382	**0.2791**
Reach (% Active Population)	**0.9717**	0.1799	0.1092
Variance Explained by Each Factor	48.2%	47.9%	3.9%
Cumulative Variance Explained	48.2%	96.1%	100.0%

TABLE 5
COMPARATIVE 1999 & 2000 REGRESSIONS - MARKET VALUE SCALED BY TOTAL REVENUES
THE VALUE-RELEVANCE OF CURRENT "CASH BURN"

OLS regressions of internet companies' quarterly price-to-sales ratios on accounting variables (scaled by total revenues) and web traffic factors. The 1999 regressions include all available firm quarters ending in calendar year 1999 except for quarters ending on 12/31. The 2000 regressions include observations with market prices falling in calendar year 2000 matched with financial statement variables for the quarters ending two months prior to the market price date (e.g., market prices as of 2/28/00 are matched with financial statement variables for the quarter ending 12/31/99, and so forth through to market prices as of 8/31/00 being matched with financial statement variables for the quarter ending 6/30/00.)

The reported results are for regressions on the full sample of firm quarter observations excluding observations that were considered to have an undue influence on the determination of the coefficients. Observations were excluded if the absolute value of the studentized residual was greater than three and/or if the value of the Cook's distance was greater than one.

Dependent Variable: Market Value of Equity Scaled by Total Revenues

	Coefficient estimates *(p-values)*		
	1999		**2000**
Intercept	-99.604 *(.535)*		-73.811 *(.186)*
REACH	16.631 *(.073)*		21.282 *(.0001)*
STICKINESS	26.863 *(.006)*		13.158 *(.0006)*
LOYALTY	-25.882 *(.033)*		5.508 *(.573)*
CFOPRNS	48.314 *(.015)*		12.010 *(.058)*
CFOPNSnegv	-61.723 *(.054)*		-7.859 *(.451)*
CGS	17.220 *(.570)*		-25.283 *(.043)*
MKTGEXP	31.244 *(.169)*		15.216 *(.124)*
PRODEVLP	101.3 *(.059)*		25.223 *(.054)*
# obs.	120		192
White's Chi-Square	60.26 *(.229)*		39.47 *(.916)*
Adj.R-squared	32.4%		30.4%
Chow Test (p-value)		5.313 *(0.01)*	

TABLE 6
COMPARATIVE 1999 & 2000 REGRESSIONS - MARKET VALUE SCALED BY TOTAL REVENUES
THE VALUE-RELEVANCE OF ALLIANCES & CURRENT "CASH BURN"

OLS regressions of internet companies' quarterly price-to-sales ratios on accounting variables (scaled by total revenues), web traffic factors, and strategic alliance variables. The 1999 regressions include all available firm quarters ending in calendar year 1999 except for quarters ending on 12/31. The 2000 regressions include observations with market prices falling in calendar year 2000 matched with financial statement variables for the quarters ending two months prior to the market price date (e.g., market prices as of 2/28/00 are matched with financial statement variables for the quarter ending 12/31/99, and so forth through to market prices as of 8/31/00 being matched with financial statement variables for the quarter ending 6/30/00.)

The reported results are for regressions on the full sample of firm quarter observations excluding observations that were considered to have an undue influence on the determination of the coefficients. Observations were excluded if the absolute value of the studentized residual was greater than three and/or if the value of the Cook's distance was greater than one.

Dependent Variable: Market Value of Equity Scaled by Total Revenues

	Coefficient estimates *(p-values)*		
	1999		**2000**
Intercept	-159.51 *(.324)*		-125.60 *(.028)*
REACH	65.929 *(.002)*		39.147 *(.0001)*
STICKINESS	38.136 *(.003)*		14.921 *(.0001)*
LOYALTY	-2.434 *(.879)*		10.844 *(.263)*
CFOPRNS	44.798 *(.020)*		11.038 *(.073)*
CFOPNSnegv	-57.113 *(.070)*		-3.123 *(.759)*
Top10dummy	-18.498 *(.534)*		-10.096 *(.329)*
AOLdummy	40.299 *(.358)*		19.436 *(.116)*
TotalAlliances	-8.362 *(.012)*		-3.752 *(.001)*
CGS	27.299 *(.358)*		-19.388 *(.102)*
MKTGEXP	18.964 *(.049)*		15.216 *(.124)*
PRODEVLP	120.60 *(.022)*		29.553 *(.022)*
# obs.	120		192
White's Chi-Square	100.02 *(.127)*		79.74 *(.697)*
Adj.R-squared	36.6%		35.3%
Chow Test (p-value)		4.483 *(0.01)*	

TABLE 7
DETERMINANTS OF THE SHAKEOUT

OLS regressions of the change in B2C companies' price-to-sales ratios from Q1 to Q2 of 2000 on the residuals from the Q1 2000 regression and other predicted determinants of shakeout.

The reported results are for regressions on the full sample of available year 2000 2nd quarter observations excluding observations that were considered to have an undue influence on the determination of the coefficients. Observations were excluded if the absolute value of the standardized residual was greater than three and/or if the value of the Cook's distance was greater than one.

Dependent Variable: Percentage Change in Price-to-Sales Ratio

	Coefficient estimates *(p-values)*
Intercept	-1.695 *(.0001)*
AGE	-0.00010 *(.218)*
logMV	0.058 *(.0002)*
ETAIL	0.119 *(.031)*
CFOPNSnegv	0.019 *(.427)*
RESIDQ1	-0.002 *(.002)*
# obs.	57
White's Chi-Square	17.59 *(.550)*
Adj.R-squared	28.9%