A COMPARISON OF ALTERNATIVE APPROACHES TO EQUITY VALUATION OF PRIVATELY HELD ENTREPREURIAL FIRMS

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ABSTRACT

Valuation of small entrepreurial businesses requires identifying features that are not generally considered in the valuation model of large public firms. The challenge is to translate financial theory into a practical, available measure that can be employed as a proxy for valuation of small and entrepreneurial businesses, which are not publicly traded. This paper seeks to expand the list of valuation metrics for estimating the value of non-publicly traded firms by incorporating empirically determined explanatory factors to examine the relationship of performance measures and the value of the firm. A natural byproduct of the research effort will be the empirical examination and quantification of the factors that determine a private firm's discount to publicly traded companies due to the lack of marketability and liquidity. A linear cross-sectional regression analysis was employed to extract idiosyncratic value factors for over 5,000 companies included in the database. The results of this study provide strong support for future research to identify a broader range of explanatory financial variables to determine firm value for all non-publicly traded firms. Additionally, the results of this study can be used in price discovery by entrepreneurs, investors, advisors, litigation expert witnesses and business owners that are considering a business purchase or sale.

Key Words: valuation, closely-held business, residual earnings, comparables

INTRODUCTION

The most important application of valuation theory is the accurate valuation of a firm and is perhaps one of the most difficult objectives to accomplish in all of corporate finance. In theory, the valuation of the private firm should reflect the price at which a business would change hands between willing parties when the buyer is not under any compulsion to buy *and* the seller is not under compulsion to sell *and* both the parties have reasonable knowledge of the relevant facts. The public equity markets comes closest to this idealized form of perfect capital markets and as a result firm market value is readily available and is informationally efficient; however traditional paradigms of firm valuation do not reflect the metrics of a majority of young entrepreneurial firms. Professor Ang, for example, argues that the theory of modern corporate finance was not developed with the small business in mind, even when the company is publicly traded. The challenge therefore is to translate financial theory into practical available measures that can be employed as proxies for the valuation of small privately held firms. Unfortunately, financial theory falls short when it comes to providing measures that can be employed to derive equity values that reflect the true value of small privately held businesses. This study augments this shortfall by examine the ability of relative valuation methodology to estimate the actual observed market value of 5,000 privately traded firms ranging in value from $10MM to $250MM.

Valuation of large publicly traded firms is relatively straight forward depending on the assumptions made. If one assumes that public markets are at least semi-strong form efficient, then the closing price on a large publicly traded security accurately reflects the systematic risk associated with investing in that company and the implicit *ex ante* growth rates for the company. For small privately held firms these factors are not available since most privately held companies are not listed and thus not traded on the stock exchange. To overcome this limitation, a relative valuation model having properties that make it more pragmatic when valuing private firms than traditional discounted dividends valuation methodologies is needed. Accordingly, the price prediction performance of alternative valuation models that incorporate earnings, book value, and amount of invested capital in the firm is investigated.

This study presents and tests two alternative approaches for estimating the potential value of non-public firms, which are not (yet) traded in the public marketplace. The first approach reflects an accounting perspective and looks at capitalizing the residual earnings of the firm. The Residual Income Model (RIM) expresses firm value as the sum of its invested capital and the discounted present value of the residual income from its future activities. The market value of small businesses is a function of three factors: 1) the amount and timing of cash flows, 2) the anticipated growth rate in cash flow for the future (PVGO), and 3) the capitalized return (risk premium) investors require on their investment. The spread between return on invested capital and the cost of capital (ROIC-WACC) is a reasonable place to start to estimate economic value creation. Correlation analysis shows that high ROIC-WACC spread firms are rewarded with a high

market value for a given growth rate, *ceteris paribus*. This seems to suggest that companies should seek attractive returns first and growth opportunities latter.

$$P *_{t\,=\,1+} \sum_{i=1}^{\infty} (ROE_{t+1} - r_e) * B_{t+1-1}, /Bt$$

$$IV_t / BV_t = 1 + \sum_{i=1}^{\infty} [(ROE_{t+1} - R_e) * (1 + g_{t+i-1})]/(1 + R_e) \text{ where}$$

Abnormal Earnings t+i
$$= Earnings_{t+i} - R_e * BV_{t+i-1}$$
$$= R_e * BV_{t+i-1}$$

$$IV_t = BV_t + \sum_{i=1}^{\infty} [AbnormalEarnings_{t+i}/(1 + R_e)i]$$

$$BV_t + \sum_{i=1}^{\infty} [Earnings_{t+i} - R_e * BV_{t+i-1}]/(1 + R_e)i]$$

The second valuation model looks at valuation of the small non-publicly traded firm from a finance perspective by employing the "method of comparables" approach. In practice, multiples derived from comparable companies that are publicly traded and subsequently priced in the market are frequently used as a point of reference. The accuracy of those multiples can be empirically assessed by comparing the pricing result for a private firm with an observable market price (e.g. market capitalization for a similar publicly-traded firm). In almost of all the empirical studies conducted so far, comparable firms have been selected on the basis of industry SIC codes. The innovative aspect of the approach presented in this inquiry is that specific control factors such as growth and profitability are used to select pure play proxies, thus not blindly relying on SIC codes to select proxy firms.

This paper provides a formal comprehensive analysis of one of the commonly used approaches, the relative comparative approach. Three primary areas of concern in applying this approach is (1) which valuation model(s) to apply, (2) how does firm size affect valuation and (3) how SIC industry classification impacts the estimated valuation model. Accordingly, the price prediction performance of alternation valuation models that incorporate earnings, book value, revenue and industry specific variables is investigated for its accuracy vis-a-vis other approaches using a cross sectional analysis of small firms data base. It is essential that the fundamental factors that drive each multiple, and the nature of the relationship between the multiple and each variable is explained and documented. Performance evaluation is applied to both the total sample and industry sub samples for both privately held firms and publicly traded ones.

The classical valuation approached is to capitalize dividends at an appropriate capitalization rate predicated upon the risk adjusted cost of capital and projected growth rates. However, this paradigm doesn't actuary reflect the

metrics for the vast majority of small non-publicly traded firms. Moreover, the more traditional alternative method of the dividend discount model (DDM) tends to not be appropriate for valuing high growth private firms. Given start-up firms and many closely held firms usually do not pay dividends, the traditional DCF approach ascribes the majority of a firm's value to its future earnings (cash flow) stream into future projections of cash flows, resulting in a larger proportion of the firm's intrinsic value appearing in later periods (terminal cash flow. Moreover, capitalizing dividends appears to be a poor surrogate for measuring the incremental increase in entrepreurial firm value since this measures the shareholder wealth distribution process, not the shareholder wealth creation process.

However, valuing a small closely held business has always been a somewhat imprecise science. Perhaps a better methodology would be to attempt to establish the potential firm valuation as a range of values instead of a discrete value. Valuation is most commonly employed in a wide array of circumstances to determine a theoretical value of a firm for purposes such as: (1) initial venture capital financing (2) estate planning, (3) litigation, (4) stock incentive plans, (5) economic damage awards, (6) divorce, (7) going public or sell, (8) and many other situations.

DIFFERENCES IN VALUATION OF CLOSELY HELD BUSINESSES AND PUBLICLY TRADED FIRMS

Inherent differences between privately held firms and publicly traded corporations clearly influence the choice of valuation methodology. Unlike larger publicly traded firms, a major problem in measuring the value of entrepreneurial firms is that the vast majority of privately owned firms are usually small in terms of investment; size of operations and market presence. As a result, small firms face higher costs in terms of compliance, transaction cost, litigation costs, bankruptcy costs, and a higher cost of debt financing than larger companies, all other things held equal. In view of non-availability of market value for the small privately held firm, it is posited that an alternative method for measuring the value of private firms can be performed with a more suitable valuation model. As a result it is possible to use the valuation model to shed light on the value creation process. Therefore, it is also important to understand which performance measure has relatively more importance for maximizing the value of the firm. Against this backdrop, this paper attempts to answer both these questions using both a regression analysis and analysis of the correlation coefficients of the variables.

Differences in equity cost and required returns also may result from certain portfolio effects that stem from the investment holdings of firm owners. Publicly traded firms are generally owned by investors whose loss is limited to the market value of the shares held. Investors holding well diversified portfolios face a lower level of total risk, and variability in returns, because such diversification reduces the relative impact of company-specific (i.e., unsystematic) risk in their total portfolio of investments. By contrast, owners of

closely held firms are usually quite poorly diversified, with the bulk of their personal wealth, effort and self-worth usually tied up in their firm. Without the benefit of a reduction in unsystematic risk that accrues to properly diversified investors, the primary risk facing owners of small firms is the relative variability in returns for that individual firm. Therefore, owners of closely held firms often bear greater total risk, and may have higher potential return expectations, than owners or shareholders of publicly traded firms. However, some of these increased expectations may be more easily satisfied by benefits that may be considered somewhat non-economic in nature (e.g., need for prestige or community standing, among others).

REVIEW OF THE LITERATURE

The vast majority of the empirical research on the different approaches to firm valuation and the issue of value creation have been almost exclusively focused on large firms. The paucity of empirical research for privately held firms is largely due to the lack of publicly available information. There have been a few studies focused on small and medium enterprises. Didier Van Caille (2001) studied value creation indicators and predictors of bankruptcy in small firms. Another study by Roztocki, (1999) provided a theoretical framework for the application of Economic Value Added (EVA) in small firms. The seminal study was Rick's (2002) examination of the framework for small firm mergers and acquisitions and he was the first one to posit the cumulative abnormal returns construct to empirically analyze the impact of different acquisition motives on the valuation that could be placed on the firm. Albeit, this study only dealt with large cap firms it provided a means to directly observe the behavioral finance implications on the value of the firm. Spivey's (2000) work on EVA and the Valuation of Small Business provides an overview of the standard asset, market, and income valuation methods, which are generally employed to estimate the value of small non-publicly traded firms.

Periro's study (2000), "The Valuation of Closely held Companies in Latin America" developed a comprehensive fundamental valuation model and provided supporting empirical data for valuing privately hold companies in the Latin American emerging markets. The cogent arguments of Abrams (1994) are salient for firms that do not have any liquidity, and which are closely held. It is helpful to examine and quantify the factors that determine the discount to publicly traded companies due to the lack of marketability and liquidity. Albeit, research conducted by James Ang and Nixon Kokers noted that private firms tend to sell for higher multiples of book value to equity than public firms. Moreover, these differences were found to be statistically significant. For example, the median private firm transaction multiple is 2.2 times book value equity, while for a public firm the multiple is only 1.9. This finding strongly suggests that owners of private firms receive more than shareholders of equivalent public firms, in other words private firms sell at a premium to public firms. However, this is illusionary because of the additional risk borne due to the total risk versus systematic risk of publicly traded firms. Moreover, one only has to look to the real world

announcement effect of a public firm's acquisition of equivalent private firm, the public acquirer's price usually rises. Conversely, when a publicly traded firm is acquired, the acquirer's share price usually declines or remains unchanged. This would suggest the shareholders of the acquiring firm believe they are receiving more value than they

The "comparable company method" has been employed extensively, both in theory and practice, to value private firms for which no public information is readily available. Liu, Nissim, and Thomas (2002) empirically looked at several different firm valuation methods, and concluded that while the comparable company method had some shortcomings, it worked fairly well for valuing shares of non-publicly traded firms. Frankel and Lee employ a simple version of the RIM based on mean I/B/E/S analyst forecasts to estimate an intrinsic value (V) measure for each firm. Their results demonstrate the resulting value-to-price (V/P) ratios are a better predictor of cross-sectional returns than measure such as book-to-market or firm size. One of the earliest investigations of comparable methods for valuation/pricing purposes is offered by Alford, using non – parametrical statistical tests Alford concluded that selecting comparable firms on the basis of 3 digit SIC codes is relatively efficient and additional control for firm size, return on equity and expected earnings growth did not reduce prediction error significantly. Ruback compared the accuracy of EBITDA-multiples relative to results based on a DCF valuation paradigm. The findings of this research effort suggest that as far as the accuracy of different multiple methods is concerned, a selection of comparable transactions in the same industry seems to yield better results than a similar public company approach. Kaplan and Ruback, however, did not test the suitability of bases of reference other than EBITDA.

In several studies of restricted securities going back to 1966, there have been several consistent findings. Maher examined restricted stock purchases during 1969-73 made by four mutual fund companies. These stocks traded at an average discount of 35% on publicly traded stock in the same companies. Maroney reported a mean discount of 35% for acquisitions of 146 restricted stock issues by 10 investment funds, using data from 1970. Silber in 1991 found that median discount for restricted stock was 33.8%. Silber developed the following regression equation between the size of the discount and the characteristics of the firm issuing the registered stock. (See Table 2 for descriptions of variables).

$$LN(RPRS) = 4.33 +0.0361LN(REV)-0.142 \ LN(RBRT)+0.174DERN +0.332DCUST$$

DATA SET

Pratt's Stats™ Private Transaction Database highlighting the financial and transactional details of the sales of privately and closely held companies, was employed to collect data on a cross section of firms segregated by industry SIC and cross-sectionally. As of August 2004, the database had compiled details on approximately 5,100 private and closely held business sales from 1997 to 2003 ranging in deal price from under $1,000,000 to $1,000,000,000. The industries

represented in the database are diverse, as evidenced by the roughly 640 unique SIC Codes and 850 unique NAICS Codes. Six databases record detailed information on the sales of "Main Street" companies, middle market privately held companies, middle market publicly traded companies, control premiums, implied minority discounts, and marketability discounts. Additional market transactions as reported by BIZCOMPS@, on small private firms priced at less than $1 million were included in the database.

METHODOLOGY

Two approaches to private firm valuation will be compared. These include (1) relative valuation in which the value of a privately held firm is compared to the values assessed by the market for similar or comparable firms. The process involves identifying comparable firms and obtaining market values for these assets. These values must be standardized values, since the absolute prices cannot be used for direct comparison; thus this process standardizes price multiples. These standardized value or multiples are then compared to the standardized values, controlling for differences between the firms that affect the multiple. Prices are standardized using common idiosyncratic variables such as earnings, cash flows, or book value or revenues.

Earnings may be measured by net income, operating income, or earnings before interest, taxes, depreciation and amortization (EBITDA). For instance, a buyer might try to acquire a company's equity for about four times EBITDA, plus the firm's cash, and less the outstanding debt—but the price could reflect substantially higher multiples due to informational inefficiencies in the small firm venture capital market. Different procedures are used in capitalizing a company's earnings to find value, but the underlying concept is always the same: Determine a "normalized earnings" and capitalize it at some rate of return, called a capitalization rate—or alternatively at some multiple of earnings. However, in doing so, we are making implicit assumptions about the firm's riskiness and its expected future growth in earnings. The greater the firm's risk, the lower the multiple should be, and the greater the expected growth in earnings, the higher the multiple to be used. The multiples will also vary based on competitive conditions that exist in the product marketplace.

The appropriateness of using earnings to value a firm is the subject of on-going debate. Some contend that the market values a firm based on future cash flows, and not its reported earnings. Moreover, it is argued that there are simply too many ways to influence the firm's reported earnings within generally accepted accounting principles boundaries (GAAP) that result in material differences in the valuation estimate but no fundamental difference in the intrinsic value of the firm. For these individuals, a firm's value is the present value of the firm's "free cash flows." Free cash flow valuation defines the value of the firm to be the present value of its expected future cash flows. More specifically, a firm's economic or intrinsic value is equal to the present value of its "free cash flows" discounted at the company's cost of capital, plus the value of the firm's non-operating assets. Examples of non-operating assets include such items as excess investments in

marketable securities and the amount by which the firm's pension fund is over-funded. We then compute shareholder or equity value as firm value less the value of outstanding interest-bearing debt.

EMPIRICAL EVIDENCE

Since Ball and Brown (1968), most empirical research on private firm valuation has been conducted employing a multi-linear regression model where stock return (or price) appears as the dependent variable and contemporaneous accounting data appear as the independent variables. Accordingly, accounting data variables that better explain (higher r2) contemporaneous return (or price) are considered more "value relevant," and are generally assumed to provide a sound theoretical basis for valuation. The critical question to be addressed in this research is whether an abnormal yield spread is positively correlated to stock prices. In order to test this hypothesis, a stepwise OLS regression analysis was performed. The independent variable is abnormal return spread and the dependent variable is firm value (market value of equity and debt divided by equity).

RESULTS

If one assumes that price is proportional to the average P/E ratio for a set of comparable firms, the *ex post* performance of the P/E model is inferior to other parsimonious alternative valuation models. Moreover, the results indicate that predictive errors are negatively correlated with earnings or book values, suggesting under-pricing (discounts) for the smallest firms. Our results suggest that multivariate linear regression models incorporating an intercepts, earnings, book value of equity and market value of invested capital corrects econometric problems of the proportional models. The results of the study suggest that earnings, book value, and spread between cost of capital and ROE provide important incremental information in predicting price. Finally, a surprisingly small improvement in explanatory power of models estimated on industry sub samples. If one assumes that all firms have identical AR persistence parameters in abnormal earnings, that firms have identical discount rates and that non-accounting information is either value irrelevant or affects all firms in exactly the same way. In fact, if these assumptions are empirically descriptive, one only needs to use market multiples (e.g., P/E and P/B ratios) for valuation purposes.

CONCLUSIONS

In view of non-availability of market value (stock prices), the alternative method for measuring the value of entrepreneurial firms can be performed with the available financial statements. It is also desirable to understand which performance measure has relatively more importance for maximizing the value of the firm. Against this backdrop, this paper sought to answer both these questions using a statistical analysis. Economic theory posits that businesses

earning above cost of capital returns trade at a firm value to invested equity ratio in excess of one. Moreover, holding the abnormal spread and growth constant – the higher the warranted firm value/invested equity multiple. The data appears to support the financial theory.   This period of time covered both a bull market (1997-2000) and a bear market (2000-2003). Further, additional statistical tests of the goodness of fit between the independent and dependent variable, demonstrates that there is a very high probability that the regression line fits the theoretical line.   The key is that the market recognizes and rewards positive economic rents in the form higher stock prices.

We present an alternative valuation methodology to estimate the amount of discount. Four valuation multiples for a set of private firms are computed and compared to a comparable set of public transaction. These two sets of multiples are then compared and the differences between the two as our measure of the private company discount.   He discount for earnings multiples is statistically significant.   The discount using the book value multiples is also significant. Cross-sectional regressions are estimated for differences in size and historical growth rates between the private and public companies in our sample.   After controlling for other explanatory variables, the results indicate a statistically and economic significant private company discount of approximately 30 - 40%.

The empirical results strongly suggest that a selection of comparable firms based on control factors, especially expected earnings growth rates and rates of return on invested capital is superior to a selection based on SIC industry codes. Moreover, the additional control of industry membership does not significantly increase pricing accuracy of the models.   Additionally the study offers some guidance with respect to the reliability of different bases of reference as well as diverse methods of estimating multiples from comparable data sets.

Employing different samples, there is general support for the argument that firm size and age is non-linearly positively related to firm value. Albeit, age appears to exert a strong positive impact on firm value, it is not empirically clear why ex post one should expect such a positive correlation.   One possible explanation is that firms in mature as well as infant industries keep learning about their own efficiencies in core competencies over time and find their niches in the product market as they age or with age a firm's reputation might be enhanced as a result of reputation building leading to a positive impact on firm valuation.

Contrary to the conventional view that different industries have distinct and different relative multiples, the results of this study strongly suggest overall value rankings are observed for almost all industries examined. The empirical results strongly suggest that a selection of comparable firms based on control factors appears to be superior to a selection based on SIC industry codes. Moreover, no improvement in pricing error is observed when one considers more complex measures of value based on short-cut residual income models than the firm comparable approach. In spite of the seemingly overwhelming importance in the literature of industry SIC classification as a selection criterion for comparable company proxies, the results of this inquiry demonstrate that financial predictors are of considerably greater importance in the pricing accuracy that can be obtained if comparable firm selection is determined on fundamental metrics

instead of SIC codes. Finally, as to choice of an appropriate statistical price estimator, the empirical results of this study that employing the median multiple yields a more accurate firm equity pricing model.

Table 1

Methods, models and approximations

Profitability Measures

ROA = Return on assets defined as income after taxes divided by the average total assets, expressed as a percentage.
ROE = Return on equity measured as income available to common equity divided by average common equity, expressed as a percentage.
SPREAD = Return on common equity (ROE) minus the weighted average cost of capital.
PRICE/BV = Current market value of common equity divided by the average book value of equity.
MVIC/PRICE = Invested capital measured as average total long term debt, other long term liabilities and shareholder equity divided by the current market value of common equity.
PRICE/BV = Current market value of the common equity divided by average book value of common equity.
PRICE/EBT = Current market value of the common equity divided by earnings available to shareholders before tax.
PRICE/NI = Current market value of the common equity divided by earnings available to shareholder after tax.
MVIC/EBITDA = Invested capital measured as average total long term debt, other long term liabilities and shareholder equity divided by earnings available to common equity before tax, depreciation and amortization.
MVIC/EBIT = Invested capital measured as average total long term debt, other long term liabilities and shareholder equity divided by earnings available to common equity before interest and tax.
MVIC/DISEARN = Invested capital measured as average total long term debt, other long term liabilities and shareholder equity divided by discretionary earnings (FCF).

MVIC/BVIC = Invested capital measured as average total long term debt, other long term liabilities and shareholder equity divided by the average book value of invested capital

Cash Flow Measures
PRICE/GROSS CF = CMV of equity divided by cash flow measured as after tax income available to common shareholders plus depreciation, depletion and amortization.
PRICE/SALES = CMV of equity/sales of the firm

Leverage
LTD/TA = Average long term debt plus other long term liabilities divided by total assets.

Regression Models
Regression Model 1: Dependent variable is price/bv; independent variables are spread, bv/equity, mivc/sales, mivc/ebitda/ mvic/bvic, profit margin, dq/cf, eq/ni.
Regression Model 2: Dependent variable is price/bv; independent variables are spread, profit margin, ebit/sales, ato, fato, ebit/interest expense, and leverage.
Regression Model 3: Dependent variable is mvic/price; independent variables are spread, bv/equity, mivc/sales, mivc/ebitda/ mvic/bvic, profit margin, dq/cf, eq/ni.
Regression Model 4: Dependent variable is mvic/price; independent variables are spread, profit margin, ebit/sales, ato, fato, ebit/interest expense, and leverage.

Private Firm Discount Model:

RPRS = Relative price of private equity to publicly traded stock
REV = Revenues of the private firm (in millions of dollars)
RBRT =Restricted block relative to total common equity in percentage
DERN=1 if earnings are positive; 0 if earnings are negative
DCUST=1 if there is a customer relationship with the investor; 0 otherwise

Table 2
Descriptive Statistics for Sample of Firms

Number of observations = 474

Variables	Mean	Std. Dev.
PRICE TO BV	5.2674	3.8915
SPREAD(%)	.2693	.4029
BV OF EQUITY ($M)	7,549	14,098
MARKET TO BOOK	3.6050	2.7501
MARKET TO GROSS CF	10.265	6.767
PROFIT MARGIN (%)	.1239	.3484
ASSET T/O	1.9364	1.0415
FA T/O	8.9864	7.5102
LEVERAGE	.1923	.1720
EQUITY TO SALES	1.8229	4.7983
EQUITY TO GCF	10.265	6.7674
ROE (%)	17.9687	12.3577
MVIC TO BVIC	3.603	2.7522

Number of observations = 422

Pricing Models

RIM ($MM)	14,392.1	6,316.6
Comparable - #1 ($MM)	19,295.4	11,432.9
Comparable - #2 ($MM)	17,142.8	9,412.3

Table 3
Pearson Correlation Coefficients Comparing
Actual Equity Price with Valuation Models

VALUATION MODEL	CORRELATION (p-value)	PRICING ACCURACY (p-value)
Price to BV	.4681 (.0001)	13,441 (.0001)
P/E	.5008 (.0001)	15,932 (.0001)
RIM	.2429 (.0003)	8,673 (.0005)

Table 4
Regression analysis for value of firms by different valuation methods

Variable	Coefficient (p) RIM Approach	Coefficient (p) COMPARIABLES Approach	Coefficient (p) COMPARIABLES Approach
CONSTANT	1.561	5.639	2.696
MVICBVIC	.727	.819	.835
SPREAD	.473	4.883	3.340
EQNI	.289	2.696	4.463
BVEQUITY	- .226	-.174	.281

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