Free Cash Flow, Enterprise Value, and Investor Caution

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ABSTRACT

By analyzing actual cash flows in comparison with enterprise values (market capitalization plus debt minus cash) we document that the market dramatically undervalues firms. The findings suggest that the equity market has an extraordinarily high discount rate which negates future earnings in the calculus of firm value. That is, the discount rate is so high that the vast majority of future cash flows are virtually ignored.

Our research finds that stock prices do not reflect future corporate earnings. This finding contrasts with the well known statement in finance textbooks that "the value of a firm equals the present discounted value of future cash flows." While the DCF method is normally applied to "estimated" cash flows it provides a familiar framework with which to test the equity market values against actual cash flows. We find that enterprise values are substantially less than the present discounted value of actual future cash flows. A one-dollar increase in actual future cash flows produces only a 75 cent increase in a firm's enterprise value (only 15 cents per dollar of future cash flows when company size is controlled).

Market support for our findings appears ever day in the business press. For example, the following quote from Bloomberg.com of December 8, 2008 speaks precisely to our findings.

> Cheapest Stocks Since 1995 Show Cash Exceeds Market
>
> By Michael Tsang and Alexis Xydias
>
> Dec. 8 (Bloomberg) – "Stocks have fallen so far that 2,267 companies around the globe are offering profits to investors for free. That's eight times as many as at the end of the last bear market, when the shares rose 115 percent over the next year
>
> The Bank of New York Mellon, for example, on that day December 8th had a market capitalization of $31.71 billion, debt of $35.83 billion, and cash of $75.50 billion. In this case, the market has an infinite discount rate on any and all future cash flows.

The implication of our work is clear: companies are worth far more than the market believes. This provides strong support to the private equity industry. We realize that of late private equity firms have overpaid for acquisitions and may lose their entire investment during the current phase of deleveraging. Yet, if private equity firms acquire companies at reasonable prices using less debt, they are likely to create substantial value as a consequence of the fact that companies are so undervalued by the market relative to their cash flows.

There are no previous research efforts following our methodological design based on *actual* cash flows. Rather, prior research studies have focused on the relationship

between *forecasted* cash flows (by market analysts) and enterprise value. Our approach focuses on a different question – the relationship between discounted actual future cash flows and the current market value.

INTRODUCTION

The common explanation provided in finance textbooks for the value of the firm is that it equals the present discounted value of future free cash flows (FCF). Few analysts or market observers disagree with this statement. Estimated future cash flows are used to estimate firm value. But if that proposition is true, except for estimation error, then firm value should equal the DCF of actual cash flows. In this paper, we explore the question of whether the value of the firm is related to its actual future cash flows. Existent literature on this subject includes a few studies conceptually similar to ours and a large body of work on questions peripheral to the basic issue addressed in this paper. Those related works use the FCF valuation theory to address issues of market efficiency. Our work is directed at valuation and not the market efficiency question.

Obviously actual future cash flows are unknown when analysts estimate value. Lacking actual future cash flow data, analysts create careful projections of annual cash flows for several years, usually less than 10, and then estimate cash flows in additional years with a terminal value. Public companies have value forecasts prepared for them by many unrelated individuals and organizations. Some forecasts are too optimistic while others are too pessimistic. Presumably optimistic forecasters are buyers of securities while pessimistic forecasters are sellers. A security's market price would then be the share value that clears the market of optimists and pessimists.

The specific projections of all individual forecasters are unavailable. What is known, at a point in time, is the actual market capitalization and enterprise value (EV) that results from the interactions of these many forecasts. Some researchers have tested the relationship between the value of the firm and cash flow forecasts by obtaining a sample of analyst's forecasts or forecasts from other published sources. We are not interested in the accuracy of analysts' estimates. Instead, we want to know if the market properly values companies based on their actual future results. Our first empirical test examines how closely EVs compare with the present discounted value of actual subsequent cash flows. Finding the relationship to be incomplete, our second empirical exercise considers additional explanatory factors to explain EV. This portion of the paper tests whether the accepted FCF theory fully explains EVs.

LITERATURE REVIEW

The earliest written discussion of the idea that the value of something is related to its future cash flows comes from Johan de Witt (1671); though the basic idea traces back to the early Greeks[1]. In modern times, the idea that corporate value is related to future dividends was first described by John Williams (1938)[2]. Durand (1957) observed what later became known as the Gordon growth model: i.e., that a dividend growing at a constant rate forever can be capitalized to estimate a firm's value. Gordon (1962) introduced a two-stage growth model that allowed a period of unstable growth to be followed by a period of stable growth with the Gordon growth model employed in the second stage.

The literature that tests the FCF theory examines a variety of valuation methods. All of these tests rely on forecasts of cash flows or earnings made contemporaneously with the valuation estimate. That is, starting in a given year, they compare actual EVs against forecasts, made that year, for the same company. For example, Francis, Olsson,

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[1] See Daniel Rubinstein, Great Moments in Financial Economics, *Journal of Investment Management* (Winter 2003)

and Oswald (2000) compared three theoretical valuation models-- discounted dividends (DD), discounted FCF, and discounted abnormal earnings (AE)[3] -- by analyzing Value Line annual forecasts for the period 1989 – 1993 for a sample of 2,907 firm years that ranges between 554 and 607 firms per year. They found that the AE model had a 27% lower absolute prediction error than the FCF model and a 57% lower absolute prediction error than the DD model.

Sougiannis and Yaekura (2001) also consider three multiperiod accounting based valuation methods: an earnings capitalization model (similar to FCF), residual income (a version of AE) without a terminal value, and residual income with a terminal value[4]. They put analyst's earnings forecasts into the three theoretical models and find overall that they provide greater insight than merely relying on current earnings, book values or dividends. Their sample covered 36,532 firm years over the period 1981 – 1998 of which 22,705 consisted of one year forecasts, 9,420 of two year forecasts, 1,279 of three year forecasts, and 3,128 of four year forecasts. They found that the AE model with a terminal value most accurately predicted current equity values in 48% of cases, the FCF model was most accurate in 18% of cases, and the AE without a terminal value was most accurate in 13% of cases. Current income and book values provided the best forecasts for the remaining 21% of the sample.

Liu, Nissim and Thomas (LNT) (2002) in an article similar to Sougiannis and Yaekura (2001) found that multiples based on analyst's forward earnings projections

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[2] See, Aswath Damodaran, "Valuation Approaches and Metrics: A Survey of the Theory," Stern School of Business Working Paper, November 2006. Damodaran notes that Ben Graham saw the connection between value and dividends but not with a discounted valuation model.

[3] Abnormal earnings as discussed by Ohlson (1995) assume that the value of equity equals the sum of book value plus abnormal earnings.

(made in the same year) explain stock prices within 15% of their actual value while historical earnings, cash flow measures, book value, and sales were not nearly as insightful. LNT argue that multiples value future profits and risk better than present value forecasts. Their multiples are derived based on current earnings and stock prices.

Gentry, Whitford, Sougiannis, and Aoki (2001) took a different theoretical and empirical approach comparing an accounting method which looked at the discounted value of future net income to a finance method that looked at the discounted value of FCFs to equity. Their analysis tested the closeness with which each model predicted capital gains. The sample included both US (1981 – 1998) and Japanese companies (1985 – 1998). Each year had between 881 and 1034 US companies and 166 to 365 Japanese companies. They found that the FCFs to equity method were not closely related to capital gains rates of return for either US or Japanese companies. In the US they found a strong relationship between cash flows associated with operations, interest, and financing (the accounting method) to capital gains; no similar relationship was found in Japan.

Finally, Dontoh, Radhakrishnan, and Ronen (2007) compared the association between stock prices and accounting figures. They found that the association between stock prices and accounting numbers has been declining over time. They suggest that this may be due to increased noise in stock prices resulting from higher trading volume driven by non-information based trading.

A further related literature examines the relationship between valuation and a) changes in dividends or b) the accounting-based residual income model. These studies are concerned with market efficiency. Dividends are a straightforward concept: they are

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[4] They also report that a 4% constant growth rate provides the best terminal value, even better than ones

the payments made to equity holders by a company. Dividends may also be thought to include all cash payouts to equity including share repurchases, share liquidations, and cash dividends. Several studies have examined whether changes in dividends relate to changes in equity values; among these are Shiller (1981), LeRoy and Porter (1981), and Campbell and Shiller (1987). These volatility tests generally find that stock market volatility can not be explained by subsequent changes in dividends. Larrain and Yogo (2008) take a slightly different look at equity volatility. Using a more aggregate sample they find that the majority of the change in asset prices (88%) is explained by cash flow growth while the remaining 12% is explained by changes in asset returns. They conclude that stock prices are not explained by dividend changes since they fail to find large variations in long-horizon discount rates.

The residual income method is conceptually more similar to FCF than to dividends. Residual income at its most basic equals the firm's net income minus the cost of its capital. The most familiar residual income model is probably EVA®. In the accounting literature, Ohlson's (1991, 1995) formulation of a residual income model (RIM) is widely accepted and has been subjected to numerous tests. RIM begins with an accounting identity; namely that the change in book value equals the difference between net income and dividends. Ohlson then defines AE as the difference between net income and lagged book value times the cost of equity. It is then a small step to observe that the present discounted value of expected future abnormal earnings plus the book value of equity equals stock price[5]. Jiang and Lee (2005) test both the RIM and the dividend

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based on individual firm growth forecasts.

[5] See Jiang and Lee (2005), page 1466.

discount model. Their test of equity volatility finds that RIM provides more and better information than dividends.

METHODOLOGY

Unlike previous studies, we rely on actual subsequent cash flows over a period of time rather than forecasts of cash flow made contemporaneously with EV. Previous researchers can be thought of as studying the consistency between contemporaneous EV determined in the market and forecasts of future cash flows. Our study does not have that focus. We instead are interested in the accuracy of market determined EVs. We compare EVs at a point in time to subsequent actual cash flows. The closer these values are the more accurate is the market in valuing companies based on their future cash flows.

In order to estimate corporate value with FCFs, annual costs of capital must be estimated for each company. An alternative is to determine value using the capital cash flow (CCF) method. CCF yields the same present value as FCF[6] but only requires a single cost of capital estimate for each firm. This is the approach we follow.

CCF is determined following Arzac (2005) as follows:

$$\text{CCF} = \text{net income} + \text{depreciation} - \text{capital expenditures} - \Delta\ \text{WC} + \Delta\ \text{deferred taxes} + \text{net interest} \qquad (1$$

where WC is working capital, and subscripts are suppressed for simplicity.

Estimated enterprise value (EEV) is calculated with the CCF estimates as follows:

$$EEV = \sum_{i=1}^{y} (CCF_{i,j})/(1+k_j)^i + TV_j/(1+k_j)^y \qquad (2$$

[6] See Arzac (2005) or Platt (2008).

where k is cost of capital, TV is terminal value, i is year, y is the final year with cash flow data and j represents firm. Terminal value is estimated according to the Gordon growth model. EEV estimates are compared with EV, the firm's actual value as of the last trading day of the year. EV is calculated following Arzac (2005) as follows;

$$EV = MarketCap + Debt - Cash \qquad (3$$

The comparison between EV and EEV is a test of the accuracy of the market's valuation process. Cases where EV exceeds (is less than) EEV are ones of overly optimistic (pessimistic) market valuation.

Data

We begin with all firms on Compustat with fiscal year end greater than 1987 for which there is data for:

- cash and short-term investments (data1),
- total assets (data6),
- current assets (data4),
- current liabilities (data5),
- short-term debt (data44),
- long-term debt (data9),
- notes payable (data206), and
- deferred taxes (data74),
- capital expenditures (data128)
- sales (data12),
- net income (data172)
- depreciation (data14)
- interest expense (data15
- interest income (data62)
- common shares outstanding (data25),
- year-end stock price (data199).

This results in an initial sample of 131,518 firm-year observations. All firms are classified into their respective industries using historical SIC codes (data324).

For each firm-year in the initial sample, we compute the following variables;

EV = Market Cap (data199*data25) + Debt (data9 + data44 + data206)
- Cash (data1)

WC= Net current assets (data4 - data5) – cash (data1) + notes (data206)

D= Long term (data9) + short term (data44 + data206)

E= Share price (data199) * Number of shares (data25)

where EV is enterprise value, WC is working capital, D is debt, and E is equity.
In addition we also compute lagged values for WC and deferred taxes (data74).

Next, we obtain betas for firm-years from Compustat's *Research Insight*. Betas are winsorized at the 1st and 99th percentiles to account for extreme outliers in the data. Interest rates based on the 10-year constant maturity series (I10YR) are obtain from the *Federal Reserve Bank's* website. After merging with the interest rate data and the betas, the sample size reduces to 69,643 firm-year observations. The loss in observations is largely due to missing data on the betas or deletions due to non-availability of lagged firm-year data.

With the merged dataset, we compute the following variables, where LWC represents the lagged value of WC and Ldata74 is the lagged value for data74;

CCF = net income (data172) + depreciation (data14) - capital expenditures (data128) + WC - LWC + deferred taxes (data74) - Ldata74 + interest paid (data15) –interest received (data62);

$\beta_A = (1 / (1 + D/E))*\beta$

$KU_1 = I10YR + \beta_A *ERP_1$

$KU_2 = I10YR + \beta_A *ERP_2$

$KU_3 = I10YR + \beta_A *ERP_3$;

where CCF is capital cash flow, β_A is the asset beta, ERP is the equity risk premium, and KU_1, KU_2 and KU_3 are estimates of the unlevered cost of capital for three different ERPs ($ERP_1 = 0.03; ERP_2 = 0.05; ERP_3 = 0.07$) . Results were essential identical regardless of the choice of ERP and so we report on those for ERP_3. We then drop all observations with fiscal year greater than 2000 to allow a sufficient numbers of years of actual cash flow data to be in the dataset.

From the summary files of the *Institutional Brokers Estimate System* (IBES) database, we extract median values of long-term growth in sales forecasts for all firms. The median value is based on all analyst estimates of long-term (5 to 10 years) growth forecasts made for each firm. Prior studies use this as a measure of the estimated growth rate for a firm's cash flow. Many of the growth rate forecasts were extraordinarily large, and so we followed Sougiannis and Yaekura (2001) by using the growth rate in GDP instead of the IBES values.

The final dataset consists of 27,027 firm-year observations with complete data on all variables of interest. Of this 26,891 firm-years are data for companies with five or more years of information, amounting to 2,820 companies. Firm's whose last year of data had negative FCF were dropped from the sample since terminal value could not be calculated for them. This left us with 1,821 firms.

Some companies in our sample have only five years of actual cash flow data; others have as many as 12 years of data. Recently it has been argued that the terminal value estimate dominates estimates of present value, see Platt and Demirkan (2009). To insure that EEV estimates are not unduly influenced by estimates of terminal value, EEV is calculated repeatedly for each company starting with using five years of data and then using more years, up to 12 years, depending on how much data the company has available. Table 1 shows the number of companies which have various numbers of years of actual cash flows available. The large numbers of companies in the 12 year range are older firms that both existed in 1988 and which continued to exist after 2000. The 143 companies, for example, in the 5 year range existed for five consecutive years at some time between 1988 and 2000.

------------------Please insert Table 1 here--------------

RESULTS

Panel A of Table 2 contains coefficient estimates from regressions with EV as the dependent variable with a constant term and EEV as the independent variable. Panel B drops the constant term from the regression. Regressions are performed using first five years of actual cash flow data, then six years of data, adding one additional year at a time up to 12 years of data. When the regression includes a constant term all coefficient estimates on the EEV variable are significant at the .01 level. Several intercept terms are significant too, but several are not significant. Adjusted R^2s range between 27% and 78% explanatory power depending on the number of years of actual data employed in the regression.

------------------ Please insert Table 2 Panel A and B here------------------

Without a constant term in the regression, all coefficient estimates on the EEV variable are significant at the 1% level. Estimated coefficients are very similar in size between Panel A and B. Adjusted R^2s are slightly higher without the constant term than with a constant term in the regression. Given the proximity of the two sets of regressions further discussion is confined to the regression without a constant term.

Having more data (i.e., number of years included) does not increase explanatory power of the regression. That is, knowing more about a company's future cash flows does not yield a better understanding of the market's determination of its EV. For example, the highest R^2s occurs when each company has six years of actual data. The lowest R^2s occurs when there are eight years of actual cash flows for each company

Perhaps the most interesting finding is the absolute size of the estimated coefficients. If EEV and EV are identical, that is if the market correctly values company's future cash flows, then each coefficient estimated on EEV would have a unitary value and adjusted R^2s would equal 1.00. That is, the regressions would be tautological. Clearly, the estimated coefficients are not equal to 1.00 nor does the adjusted R^2s equal 1.00. The coefficient estimated with five years of data for example, 0.391, implies that actual EV is equal to just 39% of EEV which is the highest ratio of EV to EEV. The average value across number of years of the coefficient estimated on EEV is 0.116. That is, on average EV is about 12% of the size of EEV. These findings suggest that market determined EVs underestimate actual future performance.

A second set of regressions includes all companies regardless of how many years of data they may have, and uses just their first five years of data. This increases the number of observations since the regression includes the 143 companies which only have five years of data plus the first five years of data on all other companies in the sample. By contrast, the regressions in Table 2 contain data on companies which all have the same number of observations on subsequent cash flows available. In the second set of regressions, the sample also includes the first five years of data for the 171 companies with six years of data (the sixth year is excluded and TV is calculated after the 5th year), the 144 companies with seven years of data (the sixth and seventh years are excluded and TV is calculated after the 5th year), etc. Similar samples are constructed using the first six years of data on all companies (the 143 companies with only five years of data are completely excluded), the first seven years of data (the 143 five year companies and the 171 six year companies are excluded) up to a sample including all 12 year data companies.

------------------- Please insert Table 3 here-----------------------

The regressions in Table 3 reveal that inclusively constructed samples yield more consistent coefficient estimtes across regressions using 5, 6, 7, and etc. years of data. This method of sample construction retains more observations in the low number of year's cases. For example, in the original method, a company with six years of data was excluded from the five year regression. With the more inclusive method, that company is included in the five year sample and the only thing excluded is its data for the sixth year. In addition, to increasing the number of observations in cases with few number of years, the inclusive method also impacts the actual year, between 1993 (i.e., 1988 plus five years) and 2005 (i.e., 2000 plus 5 five years) that the final year resides. This is important since the formula to calculate TV may be affected by the economic cycle and TV is a giant component of EV (see Platt and Demirkan, 2009).

With inclusive data, coefficient estimates on EEV across number of years are remarkable similar though the estimates with five and six years of data are slightly smaller. Moreover, adjusted R^2s are tightly clustered except for the five-year and six-year data cases. These regressions confirm that actual EV is less then 10% of EEV. The earlier regressions with non inclusive samples found EEV to be about 12%, on average, of EV.

Univariate statistics for the variables are provided in Table 4. The average company in our sample has $2.5 billion in total assets, an EV of $2.07 billion, and a present discounted value of future cash flows of $16 billion.

------------------- Please insert Table 4 here------------------------

EEV by itself provides an incomplete explanation of EV. Platt and Demirkan (2009) found that the market's differential valuation of cash flows could be controlled by adding an independent variable to control for the size of firms. We introduce a SIZE variable which is total assets. In addition Platt and Demirkan (2009) report better results controlling for differential size by taking the natural logarithm of variables. We also make this adjustment and report the results in Table 5.

------------------Insert Table 5 here---------------------

The first two regressions in Table 5 explain the logged value of EV as a function of the logged value of EEV. The first regression includes a constant term while the second regression drops the constant term. In both cases, the logged value of EEV is significant at the 1% level. The coefficients can be interpreted as elasticities since the dependent and the independent variables are in natural logarithmic form. The coefficients suggest that a 1% change in EEV results in approximately a 0.75% change in EV.

Adding the log of the SIZE variable (total assets) improves the results. In regression 3 with a constant term, there is a large jump in the adjusted R^2 (in comparison with regression 1). The adjusted R^2 without a constant term also increases. In both regressions 3 and 4, the coefficient estimated on EEV suggests that a 1% change in EEV results in a 0.14% change in EV while a 1% change in SIZE results in a 0.82% change in EV. The coefficient estimates on SIZE suggest that the market awards a higher EV to large firms. The coefficient estimates on EEV suggest that an additional dollar of future cash flows is worth far less than a dollar in the present. This finding is surprising.

CONCLUSION

We began this paper saying that the most common explanation in finance textbooks for the value of the firm was that it equaled the present discounted value of future cash flows. We do not find EVs to be closely related to the actual future cash flows. Our results suggest that a better description for textbooks is that the value of the firm is related to but unequal to the present discounted value of future cash flows. In conjunction with Platt and Demirkan (2009) which finds that the TV is the principle part of EEV (i.e., approximately 92.3%) it would seem that the market values firms based on their near term (perhaps five years or fewer) subsequent cash flows. In fact, one dollar increase in future cash flows produces far less of an increase in a firm's EV. Theoretically this conforms to a version of the Gordon (1962) two-stage growth model with a WACC based discount rate during the early period and a very high discount rate during the future period).

Supporting evidence to our surprising finding appear in everyday stock market tables. For example, the following quote from Bloomberg.com of December 8, 2008 speaks precisely to our findings.

> Cheapest Stocks Since 1995 Show Cash Exceeds Market
>
> By Michael Tsang and Alexis Xydias
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> Dec. 8 (Bloomberg) – "Stocks have fallen so far that 2,267 companies around the globe are offering profits to investors for free. That's eight times as many as at the end of the last bear market, when the shares rose 115 percent over the next year.
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> Bank of New York Mellon Corp. in New York, Danieli SpA in Buttrio, Italy and Seoul-based Namyang Dairy Products Co. hold more cash than the value of their stock and debt as the slowing world economy wiped out $32 trillion in capitalization this year."

The Bank of New York Mellon, for example, on that day had a market capitalization of $31.71 billion, debt of $35.83 billion, and cash of $75.50 billion. In this case, the market has an infinite discount rate on any and all cash flows.

A possible explanation for our higher EEV estimate than actual EV is that our unlevered cost of capital (k^u) estimate is too low and therefore associated with a too high TV estimate. However, we calculated three k^u estimates, based on generally accepted equity risk premium (ERP) levels and then used the highest k^u. It is true however, that there is a k^u which equilibrates EV with our EEV. While we did not perform that calculation, we suspect that the equilibrating ERP is multiples of the 7% ERP incorporated into our k^u.

Another possible explanation is that forecasts relied upon the valuation process are inaccurate and that future cash flows far exceed what analysts had expected. We find this to be the least satisfactory explanation.

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Table 1
Number of Sample Companies with a Given Number of Years of Data Available

Year	***Number of Companies***
5	143
6	171
7	144
8	165
9	83
10	102
11	89
12	924

Table 2:
Regression Results for Models Explaining EV as a Function of EEV

Panel A – Regressions with an intercept

Number of Years of Data	*Intercept (t-value)*	*Coefficient (t-value)*	*Adj. R2 (%)*	*Number of Observations*
5	-1,229.579* (1.72)	0.405*** (14.23)	61.94	143
6	667.829*** (3.32)	0.019*** (24.32)	77.64	171
7	136.433 (0.43)	0.141*** (8.42)	32.81	144
8	387.489 ** (2.06)	0.040*** (7.86)	26.97	165
9	336.507 (1.25)	0.1441*** (5.81)	28.52	83
10	673.119* (1.95)	0.070*** (9.23)	45.44	102
11	1,162.486*** (2.73)	0.025*** (5.60)	25.69	89
12	1,547.963*** (6.50)	0.067*** (24.31)	38.98	924

Panel B– Regressions without an intercept

Number of Years of Data	*Coefficient (t-value)*	*Adj. R2 (%)*	*Number of Observations*
5	0.391*** (15.34)	62.10	143
6	0.020*** (24.10)	77.23	171
7	0.144*** (9.10)	36.24	144
8	0.043*** (8.80)	31.66	165
9	0.157*** (6.89)	35.89	83
10	0.075*** (10.44)	51.40	102
11	0.027*** (6.02)	28.37	89
12	0.071*** (25.72)	41.69	924

*, **, and *** indicate significant at the 10%, 5%, and 1% respectively.

Table 3
Regression Results for Models Explaining EV as a Function of EEV.

Panel A: With intercept

No. of Years	***Intercept (t-value)***	***Coefficient (t-value)***	***Adj. R2 (%)***	***Number of Observations***
5	1,429.673*** (8.77)	0.040*** (24.90)	25.38	1,821
6	1,432.113*** (9.39)	0.038*** (26.35)	29.26	1,678
7	1,187.469*** (9.21)	0.063*** (29.52)	36.63	1,507
8	1,255.404*** (7.35)	0.062*** (28.29)	36.99	1,363
9	1,402.144*** (7.30)	0.063*** (26.67)	37.25	1,198
10	1,458.245*** (7.09)	0.063*** (25.74)	37.26	1,115
11	1,528.893*** (6.84)	0.062*** (24.43)	37.06	1,013
12	1,547.963*** (6.50)	0.067*** (24.31)	38.98	924

Panel B: Without Intercept

No. of Years	***Coefficient (t-value)***	***Adj. R2 (%)***	***Number of Observations***
5	0.042*** (26.06)	27.18	1,821
6	0.040*** (27.47)	31.00	1,678
7	0.066*** (31.24)	39.28	1,507
8	0.066*** (29.98)	39.71	1,363
9	0.066*** (28.26)	39.97	1,198
10	0.066*** (27.33)	40.08	1,115
11	0.066*** (25.89)	39.78	1,013
12	0.071*** (25.72)	41.69	924

Notes: Regressions include all companies with Five Years of Data and additional Years of Data are excluded. Similarly they include all Companies with Six Years of Data excluding other years of data and follow the same fashions for other years. *, **, and *** indicate significant at the 10%, 5%, and 1% respectively.

Table 4:
Univariate statistics for variables that are used in the regressions

Variable	***N***	***Mean***	***Median***	***Standard Deviation***
EV	1,821	2,065.06	183.56	7,952,91
EEV	1,821	16,005.95	1,291.91	10,103.72
Sales	1,821	1,690.75	161.88	6,389.51
Assets	1,821	2,449.86	166.03	10,268.87

Table 5:
Multivariate regression with ln(EV) as the Dependent Variable

All Data Case – 5 Years

	Independent Variables	*Intercept (t-value)*	*Ln(EEV) (t-value)*	*Ln(Assets) (t-value)*	*Adj.R^2 (%)*	*No. of Obs.*
Reg. 1		0.275** (2.93)	0.785*** (63.10)		69.17	1,775
Reg. 2			0.751*** (188.85)		95.26	1,775
Reg. 3		0.049 (0.91)	0.139*** (10.90)	0.817*** (61.08)	90.07	1,775
Reg. 4			0.146*** (14.39)	0.816*** (61.29)	98.48	1,775

Definitions of variables: Size is the dollar amount of assets, MB is the market-to-book ratio which is calculated by market value of equity divided by book value of equity, and ROA is return of asset which is found by dividing net income before interest and taxes by total assets at the beginning of the fiscal year. Beta, the asset beta, is the stock's riskiness relative to the market, and can be proxy for the volatility of stock.