The Relationship Between Firm Performance and the Market's Trust in Security Estimates: Evidence from the Public Venture Capital Industry

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Publicly traded venture capital (VC) funds invest in high risk startup companies. In the U.S., VCs report using Fair Value Accounting (ASR 118). Estimates are determined by management, and are thus subject to a certain degree of managerial discretion. The unique characteristics of VC's provide an ideal laboratory to examine the importance of fair value estimates to investors. We examine whether fair value estimates are relevant both in cases when a firm is performing well, and when it is not. We find that fair value estimates provide information incremental to historical cost only when firms' investments are performing well. This study adds to the fair value accounting debate and presents results useful for standard-setters in evaluating the effects of fair value reporting, even for investments that are not traded in active markets.

INTRODUCTION

A constant debate in the accounting literature has been over the use of historical cost accounting (HCA) versus the use of Fair Value Accounting (FVA). According to proponents of FVA, HCA financial statements are not relevant because they do not provide information about current values. According to proponents of HCA the information provided by FVA financial statements is unreliable because it is not based on arm's length transactions and may be subject to manipulation. Empiricists have explored these propositions, most often testing which valuation method offers the more relevant or reliable accounting figures. Consequently, the debate is really about the tradeoff between relevance versus reliability. FASB concepts Statement 2 states that, "the primary qualities of accounting information are relevance and reliability, and that to be useful, information must possess both of these qualities." Disclosure requirements for publicly traded VC funds provide a unique opportunity to examine the informational relevance of fair value accounting. Under Accounting Series Release (ASR) 118, VC funds are required to disclose investments in portfolio securities at fair value with the net change in fair values (i.e. unrealized gains and losses) included in the determination of net income. Additionally, these funds provide precise and finite cash flows of their investments, which allow for comparison between estimated and actual values. Prior research[1] has shown that FVA estimates of investments provide significant explanatory power for changes in share prices, incremental to historical cost information. Furthermore, historical cost figures provide *no* incremental information relative to fair value numbers disclosed.

In our study we examine the manner in which the market responds to FVA numbers. We conduct our study in the public venture capital industry, employing a unique database of two hundred and fifty investments in start-up companies made by U.S. public venture capital funds for the years 1995 to 2008.

We note that the sample includes the entire population of U.S. public VC firms that provide data covering the cash realized exit values of the VC's funds. We first divide our sample based on whether FVA numbers are above HCA numbers or below, and test whether market reaction differs when economic performance does.

To test whether fair value numbers provide information incremental to historical cost, we then conduct an information relevance test, by evaluating the market reaction to fair values when they are above historical cost, compared to fair values when they are below. We find that on average, the market responds to fair value estimates when FVA numbers are above cost. When they fall below HCA numbers, the market ignores FVA numbers.

By performing standard tests using a unique database and yielding singular results, we contribute to the voluminous research on value-relevance, and to the largely unexplored area of study on the venture capital industry.

This paper is organized as follows: In Section II we motivate our research question with the institutional features of Fair Value Accounting for public venture capitalists and the prior research literature. In Section III, we discuss methodology and research design. In Section IV, we describe the sample and data used in this study. Results are reported in Section V. Section VI concludes the paper.

INSTITUTIONAL SETTING AND RELATED LITERATURE

The Venture Capital Industry

Venture capitalists raise funds in order to invest in young, promising companies. Through a combination of due diligence, intensive monitoring and direct assistance, the venture capitalist seeks to discover companies that will eventually go public. A Venture Capital firm may be organized in several ways: it may be a publicly traded VC; a captive subsidiary of a large bank or corporation; a small business investment company or a private limited partnership (Barry 1994). The most common form is the limited partnership.

In a limited partnership VC, the venture capitalists (between two and ten) are the general partners who initiate and control the activities of a number of funds. Investors, generally institutional investors, are limited partners and may monitor the progress of the fund they are invested in, but are not involved in the day to day activities of the fund. A partnership agreement is signed at the fund's inception which clearly defines the compensation over the fund's life. Typically, general partners earn a percent of the funds' capital or assets as an annual management fee plus a percent of the profits to be paid out as investment returns are realized. This mechanism aligns the incentives of the general and limited partners, and compensation terms are rarely re-negotiated.

The venture partnerships have predetermined, finite lifetimes of approximately ten years, after which the partnership is dissolved and the original capital plus any contractual returns on the investments are returned to the limited partners. The remainder is retained by the general partners who continue to monitor their present investments, and form another partnership in order to begin the cycle anew. Funds are raised by forming partnerships every two to five years. The typical fund makes twelve to twenty four investments over its life span. (Gompers 1999)

The VC generally follows a three-stage lifecycle.[2] In the first stage, the VC pre-screens business plans in order to select promising candidates. VC's often peruse hundreds of plans before choosing a few companies to invest in (Gompers 1994). Companies most likely to benefit from the capital and services of a VC are those with few tangible assets to pledge as collateral, and where information asymmetries are highest, such as high-tech and biotechnology companies. In such cases, VC expertise in guiding the company and in presenting it to the public is most needed. In the second stage, the VC nurtures and monitors the investment, both with staged capital infusions, and managerial assistance. In this stage, VCs gather information and maintain the option to discontinue funding projects which display little probability to go public (Gompers 1995). In the final stage, the VC harvests its investment. The VC aims to exit its investment by taking the company public through a successful IPO, but it often is forced to exit either by merger or acquisition, a sale, or, commonly (about sixty percent of the time), a liquidation. It is in this last

stage of harvesting that the differences between VC-backed companies and non-VC-backed companies becomes most apparent. In almost every industry in the U.S., venture-backed IPO's reached the public market sooner and more profitably than non-venture-backed IPO's (Lerner and Watson 2007). Well-known VC successes include Microsoft, Intel, Staples and Starbucks amongst many others.

In short, to be successful, venture capitalists must excel at a myriad of activities. They must know when, how, and from whom to raise funds. In selecting companies to invest in, they must be able to discern the winners from the losers. Once chosen, they must properly time infusions of capital to the fledgling firms, and nurture, guide and monitor the firm. Finally, they must be able to discern when the time is ripe to take the firm "to market" (Barry 1994). If the IPO is profitable, the VC will be able to pay out higher profits than those in the open market (Gompers 2008). Once a VC gains a good reputation, its fund-raising becomes much easier, as investors with capital seek out successful venture capitalists to invest with, hoping to reap high rewards when a firm goes public. (Gompers and Lerner 2002, 242).

Publicly Traded Venture Capital Firms

Though academic researchers have rarely examined publicly traded venture capital firms, it is evident from the little written on the subject that these firms are of similar size and structure to their much more popular limited partnership counterparts (Brophy 1988, Gompers 1994, Cumming and Johan 2008). The lack of attention to publicly traded VC's is not due to lack of relevance, nor to lack of interest, but rather to a lack of data. This is because only approximately fifteen VC's choose to incorporate, and their financial data is not listed on public databases such as CRSP or Compustat. Given the similarity between publicly traded VC's and privately held VC's, examining the public VC industry is useful not only in its own right but also in shedding light on the somewhat veiled limited partnership VC industry. Additionally, much can be learned by the comparisons that can be drawn between the public VC industry and other industries which have a large percentage of their net assets in securities.

Why Go Public?

In the United States[3] there are major deterrents and very few incentives for a venture capital firm to go public. This is evident from the vast difference in number between private and public VC's: private VC's number in the thousands, while there are scarcely fifteen publicly traded venture capital firms.

Under the Investment Company Act of 1940, public VC firms were restricted from transactions with their portfolio companies and investors. This changed in 1980, when the Small Business Investment Act allowed public VC firms to incorporate as Business Development Companies (BDC) that could invest in much the same manner as limited partnership VC's. However, Public VC's are subject to high costs – either by paying double taxation on corporate profits, or by trying to avoid it. Opting out of the double taxation can be done in one of two ways: one option is to register as a BDC with the SEC. However, registration is very expensive and must be renewed annually (Huemer 1992). A second alternative is to incorporate as a public partnership. This limits the firm, since there is no organized market to trade their shares, and money invested is, therefore, highly illiquid. Additionally, high broker and underwriter fees must be paid. Of course, like any public corporation, public VC's also must absorb costs of complying with financial statement regulations. Due to these factors, VC's in the United States are extremely hesitant to "go public," and, since there are many institutions with sizeable funds available for VC investing, they generally do not need to. Some firms, however, prefer (or need) to obtain capital from individual investors rather than large institutions and, therefore, incorporate.

Incorporating provides two important benefits, amongst others. First, investors can avoid the capital gains tax, since profits can be re-invested as retained earnings. Second, individuals, rather than institutions are the primary investors, and they may not be as myopic as some institutions, such as pension funds. Gompers (1994) brings evidence from the private VC arena, that once ERISA permitted pension funds to invest in VC's, VC profitability decreased substantially due to pressures from pension funds to take their investments to market too early. A public VC fund provides executives with the flexibility to hold on to their best performing portfolio companies as long as it takes to yield their optimal return.

Additionally, it can avoid abandoning companies that require more time to reach their profit-generating potential.

Fair Value Accounting and Venture Capital Firms

Since the Public Venture Capital industry is subject to the above rules, it is ideal for conducting tests of fair value versus historical cost, to see whether fair value is indeed the better used accounting method. Previous studies have posed this important question, and attempted to answer it by exploring a variety of institutional settings such as that of investment securities, pension obligations, bank loans, closed-end mutual funds, derivatives, fixed assets and intangible assets. Value-Relevance is often determined by gauging whether fair value estimates are more largely reflected in share prices when compared with historical cost numbers (Barth 1994). With few exceptions, the general conclusion has been that fair values do provide incremental explanatory power for share prices and thus are deemed value-relevant to investors (Barth 1991, Barth 1994, Ahmed and Takeda, 1995, Venkatachalam 1996, Barth et al. 1996, Carroll et al. 1997, Barth et al. 1998, Aboody et al. 1999, Kallapur and Kwan 2004, Landsman and Shakespeare 2004, Hodder et al. 2006).[4]

Valuing Investment Portfolios

Estimation of the fair value of VC portfolios is a rigorous process requiring much expertise and due diligence. While this is generally the case with value estimation, the nature of VC investments makes the task of accurate estimation a particularly daunting one. The primary difficulty lays in the fact that VC firms investment assets are composed of a portfolio of investments in fledgling firms, which have no readily determinable market value. Valuing these firms is more art than science as start-ups are rife with unknowns (i.e. an inexperienced management team, a questionable customer base, an uncertain market for IPOs, etc.)

Venture capitalists are aware of valuation discrepancies, but 61% of responders to a recent survey maintain that they are more conservative than their competitors.[5] In public companies, as long as prices from active markets for the same asset are available, fair value accounting provides little room for manipulation and generally provides reliable information (Laux and Leuz 2010). BarHava and Rozen (2015) have found that the FVA numbers using this sample are more reliable than historical cost numbers, yet, it is unclear whether this may be in spite of undue fair value write ups.

Accounting Treatment of Public VC Investment Securities[6]

The AICPA sets forth valuation and accounting guidance for investment companies regulated under the 190 Act in the AICPA Audit and Accounting Guide Audits of Investment Companies ("the Guide"). The Guide focuses primarily on open-end and closed-end investment companies with respect to investment companies. The Guide acknowledges the guidance set forth in ASRs 113 and 118, but goes on to give further definition to the concepts of fair value and current sale. Section 2.28 of the Guide defines fair value as "the amount at which the investment could be exchanged in a current transaction between willing parties, other than in a forced or liquidation sale." The Guide continues in Section 2.35 to state that current transaction means "realization in an orderly disposition over a reasonable period."

Accounting guidance specific to public VC firms and Business Development Companies (BDCs), is mentioned in Appendix A of the Guide:

> VC Investment companies, including most Small Business Investment Companies and BDCs differ in operating method from other types of investment companies. The usual open-end or closed-end company is a passive investor, whereas the venture capital investment company is more actively involved with its investees. In addition to providing funds, whether in the form of loans or equity, the VC investment company often provides technical and management assistance to its investees as needed and requested. The portfolio of a VC investment company may be illiquid by the very nature of the investments, which are usually securities with no public market. Often, gains on those investments are realized over a relatively long holding period. The nature of the

investments, therefore, requires valuation procedures that differ markedly from those used by the typical investment company with which this Guide primarily deals.

Clearly, the Guide contemplates that public VC companies should have a different valuation methodology for their portfolios than those methodologies employed by investment companies who make passive investments in more liquid securities. However, no other methodologies are offered, and public VC managers are left with the frustrating task of valuing extremely-difficult-to-value investee companies[7]. Additionally, managers possessing a motive to inflate valuation numbers will find it remarkably simple to do so, given the subjectivity inherent in fair value estimation of currently unmarketable securities.

EMPIRICAL RELATIONS

We begin by testing whether FVA numbers *always* provide information incremental to HCA numbers – both when the firm is doing well and when it is doing poorly. In order to do so we divide our sample based on whether the fair value of investment assets is greater than or less than historical cost. We then compare results of tests conducted on the combined and divided samples.

The Incremental Effect of FVA Numbers

In order to evaluate whether FVA numbers provide incremental information beyond historical cost numbers in all circumstances, we employ a valuation model to study whether that result changes based on the economic performance of the firm, (ie. when FVA accounting numbers are above or below HCA numbers). We believe that the market should value FVA numbers regardless of the performance of the firm. We presume, therefore, that the market would recognize this to be the case and would always react significantly to FVA numbers. More explicitly, we hypothesize:

> *H1: FVA numbers have an effect incremental to HCA numbers both when the fair value is greater than the historical cost of a firm's investment assets and when it is below it;*

We begin our testing by running two simple relationship tests between market value and fair value. We first regress market value on fair value using the combined sample, and then on the divided sample. This provides a birds-eye-view of whether the market reacts significantly to fair value when it is greater than and when it is less than historical cost. In equations (1a) and (1b) we regress market value on book value and the fair value of a firm's investment portfolio, first on the entire and then on the divided sample respectively. In equations (1c) and (1d) we subtract book value from all variables in order to separate the non-estimated portion of fair value from the estimated portion. The cross-sectional estimations assume that the relationship between market value, book value, fair value and historical cost is constant across firms, which is reasonably likely for publicly traded VC firms. This is so because such firms are largely homogeneous with respect to their investments and the nature of their operations. There are, however, some potentially relevant differences among publicly traded VC's and these include fair value estimation skills and tax status.

The estimation equations are:

$$MV_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 FV_{it} + u_{it} \tag{1a}$$

$$MV_{it} = \alpha_0 + \alpha_1 BVa_{it} + \alpha_2 BVb_{it} + \alpha_3 FVa_{it} + \alpha_4 FVb_{it} + u_{it} \tag{1b}$$

$$(MV_{it} - BV_{it}) = \alpha_0 + \alpha_1 (FV_{it} - BV_{it}) + \mu'_{it} \tag{1c}$$

$$(MV_{it} - BV_{it}) = \alpha_0' + \alpha_1 (FV_{it} - BV_{it})a + \alpha_2 (FV_{it} - BV_{it})b + \mu'_{it} \tag{1d}$$

where i and t denote firms and quarters; MV represents the market value of common equity; BV represents the book value of the firm's assets before investments; and FV represents the fair value estimate of a firm's investment assets. The suffix "a" on a variable indicates that fair value is greater than cost, whereas the suffix "b" indicates that fair value is below cost. Disturbance terms are represented by u.

Next, we include a historical cost variable in order to examine the effect fair value has incremental to historical cost both when the firm is performing well and when it is not. We perform both a levels and a changes regression. In our levels regression, we once again first test the combined and then the divided sample. We estimate:

$$MV_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 COST_{it} + \alpha_3 dFVCOST + u_{it} \tag{2a}$$

$$MV_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 COST_{it} + \alpha_3 dFVCOSTa + \alpha_4 dFVCOSTb + u_{it} \tag{2b}$$

$$RETURNS_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 COST_{it} + \alpha_3 pdFV + \alpha_4 ndFV + u_{it} \tag{2c}$$

where i and t denote firms and quarters; MV represents the market value of common equity; BV represents the book value of the firm's assets before investments; and $COST$ represents the firm's investments at historical cost prices. $dFVCOST$ represents the cumulative difference between fair value and historical cost numbers. $RETURNS$ represents the quarterly stock market return yielded by the firm. $pdFV$ and $ndFV$ represent positive and negative changes in fair value estimates, respectively. Once again, the suffix "a" on a variable indicates that fair value is greater than cost, whereas the suffix "b" indicates that fair value is below cost. Disturbance terms are represented by u. To mitigate effects of heteroscedasticity common to panel data, all variables are deflated by the number of common shares outstanding (adjusted for stock dividends and splits).

DATA COLLECTION AND SAMPLE

We use our unique sample of fourteen U.S. publicly traded venture capital firms for the years 1995 to 2008. We concluded our sample in 2008 so as to avoid noisy results caused by the recession. The list was composed using Hoover's database, The Wall Street Journal Online and by conducting searches on internet search engines using the definition of small business development companies under the Investment Company Act of 1940. Quarterly and annual reports were drawn from Thompson Research. Accounting data, including fair values of investments, historical costs of investments, net assets (at fair value and at historical cost), realized gains or losses on investments and changes in unrealized gains or losses on investments were hand collected from the firms' financial statements. Stock prices and stock returns were taken from CRSP.

Table 1 provides descriptive statistics of firms studied and their respective financial statement data. Looking at the market value of the firm, one observes that fair values are closer to market values than historical cost values are. One notices that fair values are close to, but higher than market values. Apparently the market does not always believe fair value estimates, and values assets below fair values. In later testing we examine whether this difference is due to fair values being above or below cost.

BV represents the book value of equity minus investment securities. Since investment securities make up the vast majority of a venture capital firm's assets, the mean of BV is lower than the other measures. Any deferred taxes related to investment securities are also included in the BV measure, which would contribute to the lower mean value. The mean of the positive change in FV is quite similar to the mean of the negative change in FV, however the standard deviation of the negative change is approximately *three times* that of the positive. This leads us to believe that firms steadily write up FVs, and don't wait until there is a very large amount to be written up. On the contrary, negative changes are made when a very large amount to write down has been accumulated, perhaps due to an investee firm being written off.

TABLE 1
DESCRIPTIVE STATISTICS OF BALANCE SHEET DATA FOR SAMPLE FIRMS

MV represents market value of equity; *FV* represents the fair value of the portfolio of equity investments of the public VC firm. *BV* represents book value; *Cost* represents the historical cost value of the portfolio of equity investments. *Returns* represents the quarterly stock market return of the firm. *PdFV* represents a positive change in the fair value of equity investments while *NdFV* represents a negative change.

All Firms, Years 1995-2008

Variable	Observations	Mean	Standard Deviation
MV	546	370.75	673.28
FV	546	381.09	675.22
BV	546	274.06	438.84
Cost	546	350.60	687.25
Returns	546	0.002	0.044
PdFV	546	28.64	77.69
NdFV	546	-25.28	234.65

RESULTS

We begin by taking a basic look at the relationship between market value (MV), book value (BV) and fair value (FV). In Table 2, Panel A we divide the sample based on whether fair values are greater than or less than historical cost values, and regress MV first on the combined and then on the divided sample. In Panel B we subtract BV from both sides of the equation in order to isolate the portion of FV that is estimated. Tests are performed in two ways, both appropriate for the cross-sectional data employed here. First, assuming variables are independent from one another, a random generalized least squares regression (GLS) is run. Second, a fixed effects model is employed. Fixed effects models permit pooling observations in order to increase power while mitigating cross-sectional and serial correlation that could bias reported test statistics. It assumes that the regression residuals comprise quarter-specific, firm-specific and random components. In order to mitigate possible effects of heteroskedasticity, variables are deflated by the number of common shares outstanding.

The results in Table 2 seem to indicate that the market reacts significantly to fair value estimates. However, once can see that this result is probably driven by the market's valuation of fair value estimates whenever the firm is performing favorably. This is evident from the coefficients on *FVa* and *(FV-BV)a* which are positive and significant at the one and five percent levels respectively. When the firm is doing poorly, however, and fair values fall below historical cost, the market does not react to fair value estimates at all. This may be due to a lack of interest in the company when it is not performing well. Alternatively, the lack of market reaction may be due to a lack of trust in the company and its manager-generated fair value estimates.

TABLE 2

MV represents market value of equity; *FV* represents the fair value of the portfolio of equity investments of the public VC firm. *BV* represents book value. The suffix *a* on a variable denotes fair value above cost; the suffix *b* denotes fair value below cost. The disturbance term is represented by *u*.

t- statistics are in parentheses.

***, **, * denote statistical significance at 1%, 5% and 10% respectively.

Panel A: *(n=531)*

(1a) $MV_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 FV_{it} + u_{it}$

	a_0	BV_{it}	FV_{it}	R^2
Random GLS	2.213*	0.275***	0.514***	0.93
	(1.67)	(12.14)	(20.26)	
Fixed Effects	1.478***	0.256***	0.567***	0.93
	(3.68)	(11.07)	(22.59)	

(1b) $MV_{it} = \alpha_0 + \alpha_1 BVa_{it} + \alpha_2 BVb_{it} + \alpha_3 FVa_{it} + \alpha_4 FVb_{it} + u_{it}$

	a_0	Bva_{it}	BVb_{it}	Fva_{it}	FVb_{it}	R^2
Random GLS	1.633	0.241***	0.707***	0.559***	0.231***	0.94
	(1.25)	(10.45)	(7.89)	(21.28)	(3.69)	
Fixed Effects	1.752***	0.243***	0.699***	0.553***	0.230***	0.94
	(3.69)	(10.48)	(7.71)	(20.42)	(3.63)	

Panel B: *(n=531)*

(1c) $(MV_{it} - BV_{it}) = \alpha_0 + \alpha_1 (FV_{it} - BV_{it}) + \mu'_{it}$

	α_0	α_1	Corr. Coefficient
Random GLS	0.737	0.002**	Chi^2(1) = 5.52
	(0.76)	(2.35)	P = 0.018
Fixed Effects	0.817**	0.001	R^2 = 0.46
	(1.70)	(1.54)	

(1d) $(MV_{it} - BV_{it}) = \alpha_0' + \alpha_1(FV_{it} - BV_{it})a + \alpha_2(FV_{it} - BV_{it})b + \mu'_{it}$

	$á_0$	$á_1$	$á_2$	R^2
Random GLS	0.816	0.002**	0.001	0.46
	(0.81)	(2.36)	(0.82)	
Fixed Effects	0.867**	0.001*	0.000	0.41
	(2.34)	(1.74)	(0.14)	

TABLE 3
TESTING THE EFFECT OF FAIR VALUE AND CHANGES IN FAIR VALUE ON MARKET VALUES

MV represents market value of equity; *FV* represents the fair value of the portfolio of equity investments of the public VC firm. *BV* represents book value; *Cost* represents the historical cost value of the portfolio of equity investments. *PdFV* represents a positive change in the fair value of equity investments while *NdFV* represents a negative change. *dFVCost* represents the cumulative difference between fair value and historical cost; *Returns* represents the quarterly market return of a firms stock. The suffix *a* on a variable denotes fair value above cost; the suffix *b* denotes fair value below cost. The disturbance term is represented by u. *t*- statistics are in parentheses.
***, **, * denote statistical significance at 1%, 5% and 10% respectively.

Panel A: *(n=531)*

(2a) $MV_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 COST_{it} + \alpha_3 dFVCOST_{it} + \mu_{it}$

	a_0	BV_{it}	$COST_{it}$	$dFVCOST_{it}$	R^2
Random GLS	5.502***	0.180***	0.314***	0.698***	0.92
	(4.00)	(7.70)	(10.07)	(23.09)	
Fixed Effects	5.520***	0.174***	0.303***	0.706***	0.91
	(10.86)	(7.49)	(9.59)	(22.75)	

(2b) $MV_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 COST_{it} + \alpha_3 dFVCOSTa_{it} + \alpha_4 dFVCOSTb_{it} + \mu_{it}$

	a_0	BV_{it}	$COST_{it}$	$dFVCOSTa_{it}$	$dFVCOSTb_{it}$	R^2
Random GLS	4.515***	0.120***	0.344***	2.621***	0.616	0.92
	(4.60)	(8.20)	(10.18)	(21.54)	(0.225)	
Fixed Effects	4.785***	0.186***	0.310***	2.726***	0.222	0.91
	(8.76)	(7.73)	(9.02)	(21.21)	(0.44)	

Panel B: *(n=533)*

(2c) $RETURNS_{it} = \alpha_0 + \alpha_1 BV_{it} + \alpha_2 COST_{it} + \alpha_3 dFVCOST_{it} + \alpha_4 pdFV_{it} + \alpha_5 ndFV_{it} + \mu_{it}$

	a_0	BV_{it}	$COST_{it}$	$dFVCOST_{it}$	$pdFV_{it}$	$ndFV_{it}$	R^2
Random GLS	0.007*	-0.000	-0.000*	0.000	0.002**	-0.000	0.18
	(1.89)	(-0.55)	(-1.96)	(0.42)	(2.39)	(-0.10)	
Fixed Effects	0.012**	-0.000	-0.001**	0.000	0.003*	-0.000	0.15
	(2.02)	(-0.66)	(-1.98)	(0.26)	(1.82)	(-0.05)	

In Table 3, we include historical cost in the regression. We wish to see whether FVA numbers always provide information incremental to HCA numbers, or whether the result does not hold true under certain circumstances. Panel A shows that though in the combined sample (2a) fair value estimates provide information incremental to historical cost, it is evident from (2b) that this is only the case when fair values are above cost, not when they are below. The coefficient on *dFVCOSTa,* which denotes the difference between fair value and cost, when it is a positive one, is positive and highly significant. On the contrary, the coefficient on *dFVCOSTb*, denoting the difference between fair value and cost when it is a negative one, is insignificant. In Panel B, we employ a changes regression and regress stock market returns on *BV, COST, pdFV* and ndFV which represent positive and negative changes in fair value estimates, respectively. In this case, the coefficient on *pdFV*, indicating positive changes in fair value estimates is positive and significant, whereas the market does not seem to react to negative changes at all. The

evidence in the tables above lead us to reject our hypothesis 1a, that fair value estimates are valued by the market whether fair values are greater than or less than cost. Though fair value estimates are valued by the market when fair values are greater than cost, we find that fair value estimates are not valued by the market when fair values are less than historical cost numbers.

CONCLUSION

We have tested whether fair value numbers provide information incremental to historical cost, both when fair values are greater than and when they are less than historical cost values. We conducted an information relevance test, and found that on average, the market responds to fair value estimates when FVA numbers are above cost. On the contrary, the market does not significantly value FVA numbers when they fall below HCA numbers.

ENDNOTES

1. For example, see Barth (1994), Ahmed and Takeda (1995), Bernard, Merton, and Palepu (1995), Petroni and Wahlen (1995), Barth, Beaver and Landsman (1996), Eccher, Ramesh and Thiagarajan (1996), Nelson (1996), Barth and Clinch (1998).
2. For a detailed discussion of the VC lifecycle, see Morsefield and Tan (2006), and Gompers and Lerner (2002).
3. In other countries where corporate tax laws are different, such as Australia, Canada, India, Israel, and the United Kingdom, a much greater percentage of VC's are publicly traded.
4. Also see Petroni and Wahlen 1995, Bernard et al. 1995, Barth et al. 1996, Eccher et al. 1996, Nelson, 1996, Barth and Clinch 1998, Higson 1998, Kallapur and Kwan 1998, Muller 1999, Easton 1999, Barth et al. 2001, Kothari 2001, Carroll et al. 2002, Hand 2005.
5. The Tuck Survey of 288 VC firms offers statistics regarding the valuation of portfolio securities:

   The percent of firms that:

Use industry guidelines as a basis for evaluation	35%
Are aware of valuation discrepancies for the same portfolio company	76%
Would like to see an industry valuation standard	48%
Think agreement among industry players is low	74%
Believe their valuation are more conservative than their peers	61%
Say Advisory Boards are minimally involved	48%
Are concerned about confidentiality of the portfolio company	52%

   [source: Foster Center for Private Equity, Tuck School of Business at Dartmouth]
6. While the accounting treatment of investment securities was discussed in BarHava and Rozen's 2015 paper, we include information about "The Guide" in this section which details fair value estimation of investment securities.
7. Joan Sweeney and Penny Roll, COO's of Allied Capital Corporation, suggest that the best source for choosing how to value these securities would be to follow SBA guidelines for SBIC's. The SBA has been regulating the activity of SBICs since the late 1950's and has developed over many years valuation guidelines that specifically address the unique characteristics of an illiquid portfolio of privately negotiated securities. The SBA has adapted valuation guidelines for SBICs to use in valuing their portfolio investments.
   Refer to http://www.sba.gov/INV/valuate.html for a complete explanation of the SBA Valuation Guidelines.

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