

Share-based Compensation and Firm Value

Lester Barenbaum
La Salle University

Walter Schubert
La Salle University

There is little agreement on how to incorporate share-based compensation into firm valuation. This is not surprising given the complexity of both the accounting for share-based compensation and its disclosure on financial statements. A review of Court opinions indicates a wide range of inputs of how, and even whether, share based compensation should be captured in the determination of firm value. We show that expected free cash flow used to value an enterprise should capture the impact of share-based compensation. We also provide an appropriate method to determine per share value that includes outstanding share-based compensation instruments.

Keywords: Valuation, Stock-based Compensation

INTRODUCTION

Appraisal rights cases and fair value determinations, as seen in published Court opinions disagree on how, and even if, share-based compensation should be captured in the determination of value. Valuation professionals that believe share-based compensation does impact firm value vary in how share-based compensation affects firm value.

This is an important issue in that over a quarter of public companies in our sample of approximately 1,200 firms reported share-based compensation exceeding 15% of earnings and cash provided by operations as illustrated on Table One.¹

TABLE 1
SHARE-BASED COMPENSATION 2014 – 2018

	2018		2017		2016		2015		2014	
	SBC/EBT	SBC/CPO	SBC/EBT	SBC/CPO	SBC/EBT	SBC/CPO	SBC/EBT	SBC/CPO	SBC/EBT	SBC/CPO
1st Quartile	4.60%	3.20%	4.50%	3.80%	1.60%	2.86%	2.91%	3.16%	3.50%	1.72%
Median	9.50%	6.60%	8.50%	6.90%	6.00%	6.30%	6.53%	6.49%	6.50%	7.50%
3rd Quartile	21.10%	13.00%	17.80%	12.40%	13.90%	13.90%	14.47%	14.50%	12.10%	4.00%

SBC = Share-based compensation

EBT= Pre-tax earnings excluding extraordinary items

CPO= Cash provided by operating activities

Here we address how share-based compensation should impact per share value through:

- An overview of accounting and financial statement disclosure for share-based compensation.
- Recommendations for the proper handling of share-based compensation in the valuation process.
- An overview of recent Court cases addressing how share-based compensation should or should not be incorporated into valuation.
- An empirical analysis of how share-based compensation impacts firm value.

IMPACT OF SHARE BASED COMPENSATION ON REPORTED EARNINGS AND CASH FLOW

The impact of share-based compensation on cash flow is clouded by how GAAP discloses share-based compensation. ASC 718 requires that companies report compensation expense for equity instruments over the instrument's vesting (service) period. A portion of the fair market value at the grant date is expensed each year over the vesting period resulting in non-cash compensation expense. As the expense is incurred, a deferred tax asset for the expected tax benefit is also recorded. This non-cash compensation expense, net of the increase in the deferred tax asset, increases operating cash flow relative to net income.

Firms typically repurchase shares to fund share based compensation. When employees decide to exercise their employee stock options the firm receives cash based upon the exercise price. Shares from the treasury are then reissued to employees. In a similar fashion, as restricted stock and restricted stock units vest, shares are issued from the treasury to employees. The operating section of the Statement of Cash Flow does not disclose expenditures necessary to fund share based compensation. Expenditures for share based compensation are disclosed as a financing activity. Actual taxable income is reduced when share-based compensation is realized by the employee which results in closing the temporary difference between taxes paid and GAAP tax expense. A permanent tax-book difference occurs when the estimated share-based value at time of grant is different from the actual value realized. All tax related flows are now reported in the operating section of the Statement of Cash Flows.

TABLE 2
YELP, INC. IMPACT OF SHARE BASED COMPENSATION

(All \$ values in thousands)	Year Ending December 31	2017	2016	2015
Net Cash Provided by Operating Activities		167,647	126,900	57,362
Non-Cash Stock Based Compensation Expense		100,415	86,261	60,842
Adjusted Net Cash Provided by Operating Activities		67,232	40,639	(3,480)
Percentage Change in Net Cash Provided by Operating Activities		59.9%	68.0%	106.1%

To see how share-based compensation can impact financial performance we have summarized YELP's Net Cash Provided by Operating Activities for the past several years on Table Two. If non-cash share-based compensation was treated as a proxy for the actual "cash expense" then net cash provided by operations would have been reduced by 78% on average for the past three years.

As shown on Table Two YELP's Net Cash Provided by Operating Activities averaged \$117.3 million during the last three years. Non-cash share-based compensation averaged 82.5 million for the same period. Not adjusting firm value for the impact of share-based compensation materially overstates Yelp's value. One proposed approach to determine firm value without deducting share-based compensation is to increase the number of shares outstanding via the Treasury Stock method. Another method is to use share-based compensation expense as a proxy for ultimate cash expenditures in the same way depreciation is often used to proxy capital expenditures. Alternatively, one can determine the actual cash expenditures for share based compensation through the disclosure found in the notes to a firm's financial statements. Yelp's actual pre-tax cash expenditures for share based compensation exceeded the

non-cash expense in each of the past three years as illustrated on Table Three. The intrinsic value of share-based compensation in a given year represents pre-tax share based compensation expenditures.

**TABLE 3
YELP'S EXPENDITURES FOR SHARE BASED COMPENSATION**

(All \$ values in thousands)	Year Ending December 31	2017	2016	2015
Net Cash Provided by Operating Activities		167,647	126,900	57,362
Intrinsic Value of Exercised Stock Options		(28,000)	(23,200)	(26,200)
Vested Restricted Stock Units		(94,068)	(51,718)	(16,138)
Excess Tax Benefit from Stock Based Compensation		-	-	6,583
Total Adjustments		(122,068)	(74,918)	(35,755)
Adjusted Net Cash Provided by Operating Activities		45,579	51,982	21,607
Percentage Change in Net Cash Provided by Operating Activities		-72.8%	-59.0%	-62.3%

Similar to a review of depreciation expense and capital expenditures, an analysis of share-based compensation expense relative to cash expenditures for share based compensation should be part of the valuation analysis.

MODELING VALUATION USING SHARE BASED COMPENSATION

A firm's expected free cash flow should incorporate the consequences of share-based compensation. Expenditures for share based compensation represent operating expenditures not financing activities. The following example demonstrates how share-based compensation impacts firm value. A firm with the following characteristics is contemplating using share-based compensation to incentivize their employees and align employee welfare with shareholder wealth as shown on Table Four.

- All Equity Firm with Invested Capital of \$100,000 at time period XX00
- Outstanding Shares = 20,000
- Revenue of \$100,000 in Year XX01
- Effective Tax Rate = 0
- Return on Invested Capital and Cost of Equity = 15%
- Payout Ratio of 60% resulting in
- Steady-State Growth = 6%

TABLE 4
VALUATION BASED UPON EXPECTED AFTER-TAX INCOME

	Year	XX01	XX02	XX03	XX04	XX05	xx06
1	Revenue	\$ 100,000	\$ 106,000	\$ 112,360	\$ 119,102	\$ 126,248	\$ 133,823
2	Total Expenses excluding compensation	\$ 60,000	\$ 63,600	\$ 67,416	\$ 71,461	\$ 75,749	80,294
3	Cash compensation (Base Salary)	\$ 23,000	\$ 24,380	\$ 25,843	\$ 27,393	\$ 29,037	\$ 30,779
4	Cash Bonus	2,000	2,120	2,247	2,382	2,525	2,676
5	Earnings Before Interest and Taxes (EBIT)	\$ 15,000	\$ 15,900	\$ 16,854	\$ 17,865	\$ 18,937	\$ 20,073
6	Investing Activities	\$ (6,000)	\$ (6,360)	\$ (6,742)	\$ (7,146)	\$ (7,575)	\$ (8,029)
7	Free Cash Flow	\$ 9,000	\$ 9,540	\$ 10,112	\$ 10,719	\$ 11,362	\$ 12,044
8	Firm Value at Year-End	\$ 106,000	\$ 112,360	\$ 119,102	\$ 126,248	\$ 133,823	
9	shares outstanding	20,000	20,000	20,000	20,000	20,000	
10	value per share	\$ 5.30	\$ 5.62	\$ 5.96	\$ 6.31	\$ 6.69	
	EPS	0.750	0.795	0.843	0.893	0.947	

The firm has equity value of \$106,000 at the end of year one employing the capitalized income method based upon expected free cash flow (row 7). Share value (row10) will be \$5.30 growing at 6% per annum based upon 20,000 outstanding shares.

The firm decides to substitute \$2,000 of stock option value for \$2,000 of cash compensation by awarding employees 1,653 at-the-money options at the end of Year One. Utilizing the Black-Scholes option pricing model with an expected term of three years yielded a fair value of \$1.21 per option. Share based compensation expense is based upon the fair value of the options at the date of grant expensed over a two-year vesting period. It is worth noting that the non-cash compensation expense will be less than the equivalent cash expense starting in year three due to the delay of expense recognition. Share based compensation expense reaches steady-state growth in year 3 as illustrated on Table 5 row 4 equaling \$2,060 growing at 6% per annum.

TABLE 5
STOCK BASED COMPENSATION EXPENSE

	XX01	XX02	XX03	XX04	XX05	XX06	
1	Cash Compensation	\$ 2,000	\$ 2,120	\$ 2,247	\$ 2,382	\$ 2,525	\$ 2,676
2	Black-Scholes Option Value	\$ 1.21	\$ 1.28	\$ 1.36	\$ 1.44	\$ 1.53	\$ 1.62
3	# of options granted	1,653	1,653	1,653	1,653	1,653	1,653
4	Stock Based Compensation Expense		\$ 1,000	\$ 2,060	\$ 2,184	\$ 2,315	\$ 2,453
5			\$ 1,000	\$ 1,000			
6			\$ 1,060	\$ 1,060			
7				\$ 1,124	\$ 1,124		
8					\$ 1,191	1,191	
9						1,262	

To determine firm value we calculate expected free cash flow. As shown on line 8 of Exhibit Six free cash flow is the sum of:

- + After-tax EBIT
- + Non-cash share-based compensation

- = Cash Flow From Operating Activities
 - Funds used for investing Activities
 - Net funds expended to meet share-based compensation
- = Free Cash Flow

The cash outflow related to share based compensation represents an operating expense and must be captured in determining a firm's free cash flow. In this example, option grants are exercised three years after being granted. As shown on row 8 the 1,653 options granted in year one is exercised in year four resulting a decrease in operating cash flow as illustrated on rows 8 and 9. Determining firm value without considering share based compensation would result an overstatement of operating cash flow resulting in an inappropriate increase firm value.

TABLE 6
VALUE BASED UPON FREE CASH FLOW NET OF SBC EXPENDITURES

	Year	XX01	XX02	XX03	XX04	XX05	XX06
1	Revenue	\$ 100,000	\$ 106,800	\$ 114,062	\$ 121,819	\$ 129,421	\$ 137,481
2	Total Expenses excluding compensation	\$ 60,000	\$ 64,080	\$ 68,437	\$ 73,091	\$ 77,653	\$ 82,489
3	Cash compensation (Base Salary)	\$ 23,000	\$ 24,564	\$ 26,234	\$ 28,018	\$ 29,767	\$ 31,621
4	Stock Based Compensation from Table __	\$ -	\$ 1,000	\$ 2,060	\$ 2,184	\$ 2,315	\$ 2,453
5	Earnings Before Interest and Taxes (EBIT)	\$ 17,000	\$ 17,156	\$ 17,331	\$ 18,526	\$ 19,687	20,918
6	Cash Flow from Operations	\$ 17,000	\$ 18,156	\$ 19,391	\$ 20,709	\$ 22,002	\$ 23,372
7	Investing Activity	\$ (6,800)	\$ (7,262)	\$ (7,756)	\$ (7,603)	\$ (8,060)	\$ (8,536)
8	Funds received from exercise				\$ 9,471	\$ 10,000	\$ 10,529
9	Funds spent upon exercise				\$ (11,174)	\$ (11,851)	\$ (12,562)
10	Distributable Free Cash Flow	\$ 10,200	\$ 10,894	\$ 11,634	\$ 11,404	\$ 12,090	\$ 12,803
11	Firm Value at Year-End	\$ 114,638	\$ 120,940	\$ 127,447	\$ 135,160	\$ 143,344	\$ 152,042
12	Share Price	\$ 5.73	\$ 6.05	\$ 6.37	\$ 6.76	\$ 7.17	\$ 7.60
13	Shares outstanding beg of yr	20,000	20,000	20,000	20,000	20,000	20,000
14	Shares repurchased			(1,653)	(1,653)	(1,653)	(1,653)
15	Shares issued			1,653	1,653	1,653	1,653
16	Shares outstanding end of yr	20,000	20,000	20,000	20,000	20,000	20,000

Free cash flow (Table Six row 10) represents free cash flow including expenditures resulting from share-based compensation as shown on rows 8 and 9. Firm value in any given year is based upon the present value of expected future cash flows. As expected free cash flows do not grow at a constant rate until year four. Firm value shown on row 11 of Table Six is greater than firm value shown on row 8 of Table Four as the expenditures for share based compensation (Table Six rows 8 & 9) are less than the cash bonus shown on row 4 of Table Four. A lower option value could result in more monies being expended to fund share based compensation relative to the cash equivalent. Furthermore, the relationship between the net cash flow resulting from share based compensation relative to the equivalent cash expense also depends upon how close the share price tracks the initial option value over time.

VALUE PER SHARE

Value per share is based upon the number of outstanding shares rather than the number of diluted shares via the treasury method. Firm value captures both the timing and level of expected share-based compensation expenditures for existing shareholders. The number of outstanding shares stays at 20,000 over time as the firm repurchases shares to issue to employees as they exercise. Outstanding shares via

the Treasury Method may be dilutive resulting in a value per share being based upon greater than the 20,000 outstanding shares resulting in a material overstatement of firm value.

Our modeling demonstrates that the correct way to incorporate the impact of share-based compensation on firm value is to calculate firm value based upon the expected free cash flow net of expected share-based compensation expenditures. Value per share is then calculated based upon the number of outstanding shares. Using the number of diluted shares outstanding would represent a double counting of the impact of share-based compensation, when the cash flows have been accounted for. Using the number of diluted shares outstanding when not adjusting for share based compensation does not correctly capture the value per share.

OVERVIEW OF RECENT COURT CASES

Our modeling clearly shows that free cash flow should include the impact of share-based compensation. Share based compensation is constructed to provide value to employees as part of their compensation package. The expected cost of share-based compensation awarded to employees is expected to reduce firm value.

William S. Wisiaowski in his valuation of Ancestry.Com Inc. [Ancestry, 2015] did not make any adjustments for non-cash share based compensation as he opined that trying to capture potential free cash flow impact is too speculative. He states: “[I decided] not to include any impact for share-based compensation in my DCF analysis because adding the future share trading price adds yet another level of assumptions which are difficult to prove... I continue to believe that non-inclusion of share-based compensation expense in free cash flow for purposes of a DCF valuation is the proper treatment....”

The Court decided not to adjust cash flow for share-based compensation in its valuation of 3M Cogent [Merion Capital, L.P. v. 3M Cogent Inc., 2013]. The Court also commented that the respondent’s expert did not show that share-based compensation would impact the actual cash flows of the company.

In valuing BMC Software Inc, [Merion Capital LP v. BMC Software, Inc. 2015] Boris J. Steffen relied on the discounted cash flow method to determine the fair market value. BMC Software used share-based compensation as part of their employee compensation package. Share based compensation represented seven percent of revenue in 2013 and the firm had a policy of repurchasing shares to meet the expected cost of option exercises. Mr. Steffen did not include share-based compensation as a reduction in future free cash flow. However, Mr. Steffen did determine share value by increasing the number of the number of shares outstanding using the treasury stock method. In a similar fashion, free cash flow utilized by both experts in the [Estate of Gallagher v. Comm’r, 2011] did not include the impact of share-based compensation. One expert reduced firm value by the intrinsic value of all outstanding options. The other expert used fully diluted shares to capture the impact of outstanding options without capturing the benefit of monies received from option exercises. In Kleinort Benson Ltd. v Silgan Corp, 1995 the Court following both experts altered the Treasury Method by including all currently granted options in their determination of outstanding shares and increase equity value by the proceeds from outstanding options in the money at the valuation date. Although not explicitly stated it appears share-based compensation was treated as a non-cash expense by both experts. Increasing the number of outstanding shares in lieu of capturing the expected reduction of free cash flow results in an overstatement of value.

In valuing Cox Radio [Towerview LLC v. Cox Radio, Inc, 2013] one expert diluted shares by 4.5% to account for the number percentage of shares available for share-based compensation relative to shares outstanding. The cash flow consequences of option exercises were included in his projection of expected free cash flows. The Court in valuing Norcraft Cos., Inc [Blueblade Capital Opportunites, LLC v. Norcraft Cos., Inc. 2018] added back share-based compensation when determining the free cash flow. Value per share was based upon the use of fully diluted shares outstanding. In both these cases the current number of outstanding shares should have been utilized since the expected cash flow consequences were captured.

While the Court cases discussed above have not properly addressed the impact share-based compensation has on firm value, several other cases we reviewed have reduced projected free cash flow

by the expected impact of share based compensation. In determining the fair market value of Solera Holdings Inc. [Appraisal Solera Holdings, Inc., 2018] one expert used the cash the firm would have to spend to fund share based compensation as a percentage of forecasted revenue while the other expert used firm projections. In valuing DFC Global [DFC Global Corp., 2016] both experts estimated free cash flow by deducting their estimates of the expected cash flow impact of share-based compensation.

DISCLOSURE ISSUES

Goldman Sachs was criticized for using non-cash share-based compensation as a proxy for anticipated cash outflows in their valuation of Merge Healthcare Inc. [Merge Healthcare Inc. S'holders Litig., 2017] given that management used GAAP operating cash flows which exclude share-based compensation in their management plan presented to shareholders. This is a common criticism in litigation concerning the fair value of an enterprise. Certain major shareholders of Shutterfly addressing executive compensation policies stated:

“We are also troubled by a number of items from our review of the Company’s proxy materials, including but not limited to: ...The fact that the Company’s free cash flow definition excludes the ongoing, real cost to shareholders of stock compensation, which we believe should be treated as a cash expense...”

How to characterize share-based compensation also plays a large role in the continuing discussion of the use on Non-GAAP by firms to evaluate their performance. Yelp presents its Non-GAAP earnings by removing non-cash share-based compensation expense from GAAP net income. This results in Non-GAAP earnings increasing by \$247.5 million over the three-year period ending December 31, 2107.

TABLE 7
STOCK BASED COMPENSATION IMPACT ON NON-GAAP EARNINGS

	2017	2016	2015
GAAP net income (loss)	152,858	(4,670)	(32,900)
Non-Cash Stock Based Compensation Expense	100,415	86,261	60,842
Amortization of Intangible Assets	6,639	6,805	6,475
Restructuring & Integration Costs	288	3,455	
Gain of disposal of business unit	(164,779)		
Tax impact for above items	(15,255)	(32,411)	(5,512)
Non-GAAP Net Income	80,166	59,440	28,905

While net Income totaled \$115.3 million for three year period, the question for regulators and users of financial statements is how historical non-cash share based compensation should impact analyst views on the quality and volume of earnings.

FIRM VALUE AND SHARE BASED COMPENSATION

To the extent investor views follow our analysis that non-cash share-based compensation will require future cash expenditures, we expect to these expectations are embedded in the current share price of public companies. Regression analysis can help isolate the impact of share-based compensation on firm value. Following Penman and Yehuda [2009] among others our regression took the following form:

$$(MVE) = a + b_1 EBT + b_2 EBT * SBC + e$$

where: MVE= Market Value of Equity at firm's fiscal year end
 EBT = Pre-tax Earnings prior to extraordinary items
 SBC = Share-based Compensation

Our hypothesis is that b_1 should have a positive coefficient and b_2 should have a negative coefficient. The positive b_1 coefficient tells us that the market value of equity increases with increased earnings. However the sign and significance of b_2 provide us insight into how investors view share-based compensation. If investors view share-based compensation as having no impact of firm value, we would expect b_2 to have a positive coefficient. That is share based compensation lowers reported earnings without depressing firm value. A b_2 statistically equal to zero tells that that share based compensation is an appropriate expense that lowers income. A statistically negative b_2 implies that reported share-based compensation has a larger impact than its impact on income. This would be consistent with investors expecting share-based compensation expenditures exceeding the non-cash expense. The results of the regression are shown below.

TABLE 8
REGRESSION RESULTS: IMPACT OF STOCK BASED COMPENSATION
MARKET VALUE OF EQUITY

Panel A					
Share Based Compensation Impact on Market Value of Equity					
	2018	2017	2016	2015	2014
Intercept		12,640	7,575	4,527	5,710
EBT	22.4 *	34.0 *	15.1 *	15.1 *	16.3 *
EBT * SBC	0.0089 NS	-0.0036 NS	-0.0005 NS	-0.0012 **	-1.46 NS
Panel B					
Share Based Compensation Impact on Market Value of Equity (eliminated top & bottom 10% of sample)					
	2018	2017	2016	2015	2014
Intercept	(2,410)	(4,401)	7,178	592	(1,177)
EBT	19.7 *	61.6 *	2.24 *	13.8 *	33.0 *
EBT * SBC	-0.219 ***	-0.1941 **	0.075 NS	0.074 *	-0.102 ***
* significant at the 1% level (two-tail)					
** significant at the 5% level (two-tail)					
*** significant at the 10% level (two-tail)					
NS not significant					

As expected b_1 was significant at the 99% percent level in all four years reflecting the market value of equity is positively influenced by EBT. The sign and significance of the b_2 is consistent with our view that investors recognize that non-cash share-based compensation expense results in reduced operating cash flows and negatively impacts firm value.

CONCLUSION

In summary, financial reporting for share-based compensation affects book income, taxes, and cash flow in different ways across time. The vesting of share-based compensation instruments represents a non-cash expense that reduces book income, which is not recognized by the IRS as a deductible expense. As a non-cash expense operating cash flow will be increased relative to income. Free cash flow that adds back SBC since it is a non-cash expense will overstate firm value. When stock options are exercised the cash expenditure to provide employees with stock is classified within the financing section of the Statement of Cash Flows. However, this expenditure is clearly an expenditure that must be deducted in the calculation of free cash flow in a similar fashion to how capital expenditures impact free cash flow. The accounting expense for share based compensation may be a reasonable proxy for the actual expenditure just like depreciation expense is often used as a proxy for annual capital expenditures. Share repurchases are typically used to fund share-based compensation. In determining per share value the number of outstanding shares at the valuation date should be utilized. Use of the Treasury Method in lieu of capturing the expected reduction in free cash will not result in an accurate per share value. To the extent a firm's long-term operating characteristics deviate from the core valuation assumptions utilized in our explanatory model adjustments may be necessary.

ENDNOTE

1. Our sample of approximately 1,200 public companies was drawn from those in the following industry groups: Industrial, Consumer Discretionary & Staples, Information Technology and Communications who had a share price in excess of \$2 per share, were traded on a major US stock exchange, had positive earnings, and reported share-based compensation.

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