

Options Pricing and Accounting Practice

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Accounting Standards' Benefits?

- Financial economics valuation theory is about free cash flow and appropriate discount rates, not about earnings or EPS.
- Unsophisticated investors shouldn't pick stocks, but to the extent that they do, they should use analysts' definitions and recommendations, not GAAP concepts.

Information Age vs. Paper Age

- Accounting standards may have been useful when information was transmitted in paper via postal system.
- Now, push a button on your PC to switch from GAAP to IAS or to anything you want.
- Accounting standards are largely irrelevant.
- Competition among ways of defining concepts (by competing financial analysts) will increasingly guide the way information is reported in the future.
- Disclosure standards are important.

Costs of Noisy Standards

- Finance theory suggest that costs of bad standards are small.
- But to the extent that there is any reliance on accounting standards, noisy standards may distort investors' decisions.
- Better to tell unsophisticated investors that they have an incomplete picture (that valuation isn't the same as accounting), and encourage them to rely on experts' recommendations (or even better, buy index funds).

Errors in Imposing any Accounting Standard for Expensing Options

- Cash-equivalent cost of equity isn't 1:1
 - Due to external finance costs, and this varies substantially across firms. For large, established firms, it is close to one for one, for others, it may be more like 1.5 to 1.
 - Components of the wedge observed at times of equity offerings: underwriting costs plus under-pricing. For IPOs, total may exceed 50%, for average SEOs, more like 10%, but substantial cross-sectional variation.

Errors in Imposing any Accounting Standard for Expensing Options

- Illiquidity of options
 - Black-Scholes assumes perfect liquidity.
 - Illiquidity discounts can be large (private equity illiquidity discount averages about 30%).
 - Customization of employee options increases illiquidity (cross-sectional variation).
 - Small, growing firms have more illiquid stocks, and therefore, also options (cross-sectional variation).

Errors in Imposing any Accounting Standard for Expensing Options

- How to model underlying stock returns?
 - Value of options is “derivative.”
 - Normal or non-normal stock returns?
 - Parametric or non-parametric estimation?
 - Jumps or simple diffusion process?
 - Autocorrelation in stock returns?
 - How to estimate volatility?
 - Large literature indicates no consensus, and differences are very important.

Errors in Imposing any Accounting Standard for Expensing Options

Effect of Autocorrelation in Stock Returns

Strike Price	B-S Price	True Price	
		$\rho = -0.2$	$\rho = -0.45$
30	12.8	13.2	15.1
50	3.5	4.3	7.1

Errors in Imposing any Accounting Standard for Expensing Options

- Employees exercise options differently
 - Limits on hedging, posting collateral.
 - Employees have to wait to vest. Black outs.
 - Employees can forfeit.
 - These imply that employees will exercise sooner and often not be able to exercise, so effective time period of option is shorter.
 - Bodie, Kaplan, Merton (2003) recognize important cross-sectional variation in taking these effects into account, and impossibility of a simple, accurate standard for doing so.

Microsoft's Options Purchase

- Transactions prices vs. Black-Scholes
 - As of 9/03 10-K, values 2001, 2002, 2003 options as averaging (respectively) \$14.7, \$15.8, \$12.1 (using Black Scholes assumptions).
 - JP Morgan Chase reported willing to buy employee options at \$0.25 (strike price of \$45), \$0.50 (strike price of \$42), and \$2.00 (strike price of \$33) in July 2003.
 - Those options, according to Black-Scholes, should be worth roughly \$8 to \$10.
 - What's causing the big difference?
 - Effective period (two years)? Volatility measurement? Liquidity? Modeling price process?

Conclusions

- The “just do it!” approach doesn’t make sense, despite the fact that proponents are right that stock options are a (hard-to-measure) cost.
- The fact that stock options are a real cost does not mean that this cost should be addressed through GAAP rules.
- There are lots of similar valuation problems (real options, contingent assets and liabilities of firms), and we deal with those complex valuation problems through financial market analysis, not accounting standards.
- Accounting probably doesn’t matter very much, but to the extent that it does, misstated costs will distort securities purchases, and firms’ investment decisions, and harm small, growing firms the most.
- Focus on disclosure, and think “information age.”