

The logo features the word "Pluris" in a bold, white, sans-serif font. Above the letters, several white plus signs (+) are scattered, some appearing to trail off to the right, suggesting a sense of growth or expansion. The background is a dark blue gradient with a pattern of small, light blue dots.

Pluris

Valuation Advisors LLC

A white, wavy graphic element at the bottom of the page, resembling a stylized wave or a ribbon, with a slight shadow and gradient, giving it a three-dimensional appearance.

– Contents –

- Basic Concepts
- Level II and Level III Measurements
- Level III Disclosures
- Mark-to-Model
- Models and Illiquidity
- Examples: Auction-Rate Securities, Restricted Stock, Warrants and Convertibles
- Blockage Discounts
- Summary

– Basic Concepts –

FAS 157 WILL LIKELY REQUIRE SIGNIFICANT ADDITIONAL WORK TO ESTABLISH FAIR VALUES FOR HEDGE FUNDS, PRIVATE EQUITY FUNDS, AND PUBLIC REPORTING ENTITIES AND MAY MAKE THE YEAR-END AUDIT PROCESS MORE BURDENSOME, BUT WHY?

– FAS 157 – What’s new? –

- Funds have to mark securities at “fair value” – not new...
- “Fair value” is a market-based concept – also not new...

On the other hand:

- FAS 157 demands greater disclosures – red flags will be more visible.
- The market is defined better, giving less valuation leeway.
- The exit price concept is new.
- The measurement hierarchy is new.

– FAS 157 – What's new? (cont) –

The upshot:

- Auditors will be more reluctant to sign off on fair value measurements.
- New questions come up regularly about “what FAS 157 *really means.*”
- We're in a state of flux regarding fair value measurements.
- The huge volume of additional required disclosures may be burdensome for reporting entities.
- The next two audit seasons could be interesting.

– Definitions –

- Fair value: the price that would be received to sell an asset or transfer a liability in an orderly transaction between market participants on the measurement date.
- Orderly transaction: assumes market exposure to allow for usual and customary marketing activities prior to the measurement date; is not a forced transaction.
- Exit price: for assets held, this is the price received upon sale in a hypothetical transaction.

– Definitions (cont.) –

- Exit market*: the principal (best volume) or most advantageous (highest price) market for the asset.
- Market participants: knowledgeable, able to transact, willing to transact, and independent of the reporting entity.
- Key inputs in valuation analysis: assumptions of market participants.

** Considered from the perspective of the reporting entity – market must be available to the entity.*

– Exit v. Entry Prices –

- Purchase price is not necessarily fair value – not even on the purchase date!
 - Was the transaction between related parties?
 - Was it a forced or “fire sale” transaction?
 - Is the “unit of account” of the purchase transaction different from what it would be in an exit?
 - ❖ Did the purchase price include transaction costs?
 - ❖ Were additional securities, or separate rights, issued with the securities?
 - Were the securities purchased in a market different from the principal exit market?
 - ❖ Example: PIPE market vs. secondary market for PIPE securities.
 - ❖ Example: secondary market sales of ARS

– Valuation Inputs (the “levels”) –

Valuation techniques used to measure fair value shall maximize the use of observable inputs and minimize the use of unobservable inputs – FAS 157

- Fair Value Hierarchy – focus on inputs, not techniques:
 - Level I – Observable Inputs: unadjusted market prices for identical assets.
 - Level II – Observable Inputs: quoted prices for similar assets in active markets, quoted prices for identical or similar securities in inactive markets, other observable market inputs, and inputs derived from or corroborated by the market.
 - Level III – Unobservable Inputs: everything else.

– Fair Value Hierarchy –

- Level I securities – not a major concern (except for blockage issues).
- The big concern is Level II and especially Level III measurements – can they be trusted?
- FAS 157 – if a valuation relies on a mix of inputs, the level of hierarchy within which the measurement is classified is based on the lowest level input that is significant.
- Significant additional disclosures for Level III measurements may be expensive.

– Can We Trust Level III Measures? –

- “(...) Goldman reaped huge gains within the level 3 pot in the third quarter. For example, it made a net gain of \$2.94 billion from level 3 derivatives, financial instruments whose value is based on the value of underlying securities. And get this: \$2.62 billion of that gain was unrealized.
- “Goldman spokesman (...) responded that the level 3 derivative gains ‘did not come from level three inputs,’ but from ‘observable’ data taken from more liquid markets.
- “Why not classify the derivatives in the theoretically more liquid level 2 and level 1 pools, then? ‘The rules preclude us from doing so’.” – Fortune, October 15, 2007.

– What else is new? –

- FAS 157 removes cost-benefit analysis.
- It notes that the best valuation method may also be the most costly.
- The reporting entity need not “undertake all possible efforts to obtain info about market assumptions,” but it *cannot ignore reasonably available information*.
- Must consider information about risk & restrictions.

– Auction-Rate Securities –

- Securities initially sold with the expectation of active auction markets to provide liquidity frequently.
- Valuation must reflect the extent to which this expectation is no longer applicable.
- Current valuations a function of how long auctions are expected to keep failing, the riskiness of the securities, the applicable maximum rate, and returns on similar illiquid securities.
- Secondary markets are available and provide valuation data for securities for which auctions are failing.

– Restricted Securities –

- The effect of a restriction on resale must be considered – if that restriction would be considered by market participants.
- Example – Rule 144 restrictions. (Repeals exception in FAS 115 for restrictions shorter than one year).
- “The adjustment would reflect the amount market participants would demand because of the risk relating to the inability to access a public market...”
- For quantifying the discount, ASR 113 is referenced.

– Restricted Securities (cont.) –

- ASR 113 – old SEC rule for investment companies.
- Incorporated in FAS 157 by reference.
- Methods held to be inappropriate by the rule:
 - Valuing restricted securities at market price, without discounts.
 - Valuing restricted securities at cost.
 - Applying a constant, or rule-of-thumb, discount.
 - Determining discounts without reflecting changes in restrictions (such as reductions in the remaining holding period).
 - Amortizing the “purchase discount” at some set rate.

– LP Interests (funds) –

- Consider another “restriction”: hedge fund lock-ups and closed-end funds.
- Funds-of-funds, pension funds and other investors invest at NAV: entry price.
- Exit price?
- If an LP investor wanted to (and was able to) sell its interest, wouldn't most buyers demand a haircut for a one-year lockup?
- Alternatively, when the lock-up is over, we value at NAV.
- If no discount taken at beginning of lock-up, are we saying length of holding period doesn't matter?

– Level II and III Securities –

WHAT ARE LEVEL 3 ASSETS AND HOW ARE THEY VALUED? GIVEN THAT LEVEL III MEASUREMENTS WILL BE MET WITH GREAT SKEPTICISM FROM INVESTORS , HOW CAN FUNDS MINIMIZE THE SIZE OF THIS “BUCKET ” ?

– Level III Securities –

(we use the term loosely...)

- *“Level 3 is not that useful,” confesses a risk controller at a big European bank. Banks have tended to use it as a bucket into which they throw any securities they find hard to value and then make an educated guess at the price. Among Wall Street firms, the soaring amounts of Level 3 securities now exceed their shareholder equity. – The Economist, November 8, 2007.*
- There is no such thing as Level III securities -- only Level III measurements.

– Internally Developed Valuation Inputs–

- Level III – meant for securities where there is little market activity.
- Reporting entity may use its own data in valuation – however, inputs should reflect assumptions market participants would apply.
- Reporting entity “shall not ignore information about the assumptions of market participants that is available without undue cost and effort.”
- Level III inputs must be adjusted if information indicates market participants would use different assumptions.

– Level II Securities –

- Level II measurements:
 - More objective, since they do not rely on manager-driven “models” or other unobservable assumptions that cannot be tested.
 - More accurate, since the market provides a “check” on the value otherwise not available.
 - More precise, if market indications tend to cluster closely around a certain level of pricing.
- Investors are more likely to consider Level II measurements credible.
- So, how do we get to Level II?

– Level II Measurements –

- Quoted prices for similar assets or liabilities in active markets.
- Example: PIPE securities, other restricted securities.
- Quoted prices for identical or similar assets in inactive markets.
- Markets with few transactions.
- Markets where prices are not current, or where quotes vary over time or among market makers.
- Principal-to-principal markets or other markets where little information is publicly available.

– Level II Measurement (cont.) –

- Observable data other than quoted market prices.
 - Interest rates and yield curves.
 - Volatilities.
 - Credit risks and default rates.
- Inputs derived primarily from observable market data through correlation or regression analysis.
- The key distinguishing characteristic (relative to Level III inputs) is that the fair value problem is solved by market participants.

– Level III Disclosures –

WHY ARE THE NEW DISCLOSURES REGARDING LEVEL 3 ASSETS SO ONEROUS? WILL SENSITIVE INFORMATION BE REQUIRED TO BE DISCLOSED?

– Level III – More Disclosures –

- New financial statement disclosures:
 - The fair value measurements on the reporting date.
 - Magnitude of fair value measurements, by hierarchy.
 - For all Level 3 measured securities, a reconciliation:
 - ❖ Total gains or losses for the period, and a description of where they are reported in the income statement.
 - ❖ Purchases, sales, issuances and settlements.
 - ❖ Transfers in and/or out of Level 3.
- For Level 3 securities, the amount of total gains or losses attributable to a change in unrealized gains or losses.
- The valuation techniques used and any changes to those techniques.

– Purpose of Additional Disclosures –

- The goal of the additional disclosures is to provide statement users with a sense of the measurement error risk implicit in each financial statement.

Level I	Level II	Level III	Total
\$120.5m	\$20.5m	\$59.0m	\$200.0m
60%	10%	30%	100%

- If a financial statement user assumes that Level I, II and III measurements are 1%, 5%, and 40%, respectively, that would imply the entire fund's measurement is 13%.

– Disclosure Concerns –

- Will the disclosures provide too much information about management's dispositions throughout the year?
- Note that any change in valuation methods for Level III must be disclosed and discussed – such changes may be significant from year to year and may be hard to explain to investors.

– Mark-to-Model –

VALUATION MODELS RESULT IN LEVEL 3 MEASUREMENTS , FOR MOST SECURITIES . THIS IS BECAUSE , WHILE BEGUILING IN THEIR SIMPLICITY, SUCH MODELS ARE ALMOST NEVER PROPERLY TESTED WITH EMPIRICAL MARKET DATA.

– Valuation Models –

- Separate empirical valuation models from theoretical models.
- Separate theoretical models that have been tested those that have not.
- Example: Black-Scholes model.
 - Theoretical model.
 - Yet, in widespread use in options markets, tested by participants and research.
 - But, what about illiquid options?

– Valuation Models (cont.) –

- Black-Scholes model example continued:
 - Model assumes both underlying security AND option are continuously tradable.
 - Market participants know that the model works only for the most-liquid issues.
 - These factors limit its usefulness under FAS 157.
- If measuring the value of actively traded options, can use the market prices to value securities (Level I).
- If not actively traded, have to rely on market data on similar, not actively traded options (Level II) or an internally developed “haircut” from Black-Scholes (Level III).
- For illiquid options (or warrants) – using Black-Scholes alone, without adjustment, would always be inappropriate, because it ignores known evidence on market participant assumptions.

– Other Models –

- Exotic non-traded derivatives are almost always valued with mathematical models.
- Model-makers and users have a burden to show that investors actually buy and sell at the prices indicated.
- In cases where the market is very thin, market prices may fluctuate wildly. At what point do we disregard the market?
- Answer, under FAS 157: never (!?)

– Mark-to-Model v. Mark-to-Market –

REPORTING ENTITIES “SHALL NOT IGNORE INFORMATION ABOUT MARKET PARTICIPANTS THAT IS REASONABLY AVAILABLE WITHOUT UNDUE COST AND EFFORT.” – FAS 157

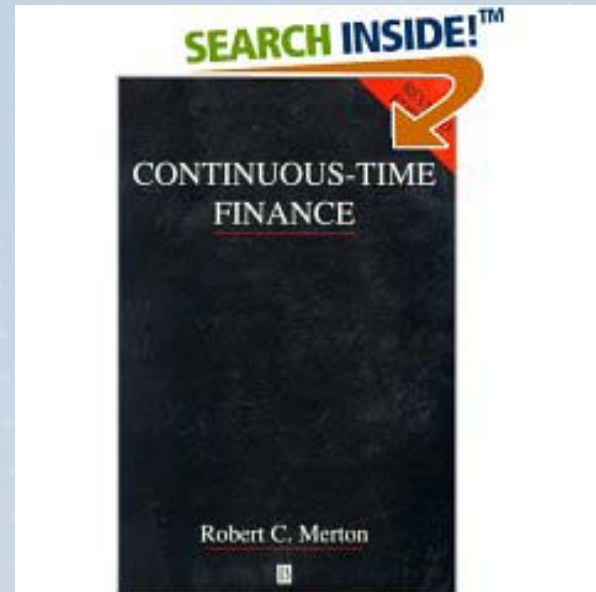
– Models and Illiquidity –

- Illiquid securities are always worth less than fully liquid securities, c. p.
- The impact of illiquidity on securities prices is hard to model and has not been successfully modeled in testable, peer-reviewed research.
- Most valuation models from the literature – even widely used models, such as CAPM or Black-Scholes – take full liquidity as one of their “simplifying assumptions.”

– Models and Illiquidity (cont.) –

Case in point:

- Continuous-Time Finance – Robert C. Merton
- Basis for many of the advances in modern finance: breaking trading activity down to infinitesimally small steps.
- Problem: illiquid assets do not move in such steps, as they do Not trade continuously.



– Illiquidity Discounts –

- Illiquidity discounts describe the difference between the as-if-fully-liquid price and “fair value”.
- Illiquidity discounts are a function of:
 - Length or severity of liquidity restrictions.
 - Risk of illiquid securities.
- Is volatility the best measure of risk? Is beta?
- Example: “off-the-run” Treasuries
 - The 29-year (off-the-run) Treasury bond always trades at a discount from the 30-year bond, because it’s less liquid.
 - Discount is typically small (low risk compared with equities), but the spread can widen when there is market stress.

– Illiquidity Discounts (cont.) –

- Illiquidity discounts apply to all restricted, or otherwise illiquid, securities, except for pure “blockage” illiquidity.
- Transaction data from arm’s-length secondary market sales (investor to investor) of restricted securities are the best available “exit price” indications.
- Transaction data from private placement studies is also widely used to determine illiquidity discounts.
- Theoretical models, such as the Longstaff, Finnerty and Tabak models, are occasionally used, but empirical testing on these models has been very limited.

– What if the Market Dries Up? –

- Example: 2007 credit crunch.
- “the Center for Audit Quality (made it clear) that despite the severity of the current market crunch, they intend to apply the fair value standard consistently” – Accounting Web, November 20, 2007.
- “In the white paper the Center refused to consider transaction volume as an indicator of a ‘distressed’ sale” – Financial Week, November 15, 2007.
- “The auditors have to do this as a matter of self-interest and survival” – Ed Ketz (quoted in Accounting Web).

– Center for Audit Quality –

- White paper on “Measurements of Fair Value in Illiquid (Or Less Liquid) Markets.”
- “Questions have arisen about (...) whether current market prices are more indicative of distressed sales”.
- In 2004 release, the SEC held that the registrant violated GAAP by using a definition of fair value that assumed supply and demand were in reasonable balance.
- Specifically, the SEC objected to the practice of ignoring quoted prices and “taking the longer view”.

– Center for Audit Quality (cont.) –

- If transactions are occurring in a usual and customary manner, those deals are not “forced” sales.
- The fact that transaction volume is low does not indicate the sales are forced or distressed sales.
- Decreased volumes in a market do not necessarily mean the market has become inactive.
- “Markets with a reduced transaction volume under current conditions are still considered active if transactions are occurring frequently enough on an ongoing basis to obtain reliable pricing information.”

– Center for Audit Quality (cont.) –

The final word on available market data:

- FAS 157 requires that quoted prices from active markets be considered whenever available – Level I inputs.
- If the market is not active, observable transactions in that market are Level II inputs – and must be considered.
- Conclusion: market data cannot be ignored when measuring fair value.
- “In most cases, the use of a valuation model is acceptable only when quoted prices in active markets are not available.”

– Example: ACAS –

- “The most surprising piece of the company’s earnings release (was the) valuation of its investment in European Capital, a publicly traded (...) stock that fell 18%” – TheStreet.com, “American Capital avoids loss with fishy math,” November 2, 2007.
- Drop resulted in \$140m loss, instead took \$2m gain.
- A control premium was added to the valuation, because the company owns a 65% stake.
- However, the large stake is also illiquid.
- ACAS release is down 9% since the release.

– Example: Auction-Rate Securities –

AUCTION-RATE SECURITIES WERE ISSUED WITH THE CLEAR EXPECTATION (AMONG ALL OR MOST PURCHASERS) THAT THE SECURITIES WOULD BE LIQUID AT REGULAR INTERVALS (E.G. 7 DAYS). WHERE THAT ASSUMPTION NO LONGER APPLIES, SECURITIES MAY NO LONGER BE WORTH PAR.

– Exit Market Example: SecondMarket –

- SecondMarket: Trade ARS and restricted securities.
- Approximately 3000 members; primarily hedge funds and other institutions.
- Members manage over \$1 trillion in assets.
- More than 800 transactions over 3 years.
- Competitive bidding, negotiated transactions.
- Standard documents, shorter closing times.
- Restrictive legend transfers, buyer assumes remainder of holding period in return for a discount.

– LiquiStat Database –

- More than 1 000 transactions (Auction-rate securities, restricted stock, warrants, convertibles, hybrids, units).
- Discounts from 5% to 85%.
- Discounts a function of block size, days left of holding period, “borrowability” of shares, volatility, market capitalization, revenues, total assets, market-to-book ratio, trading volume, etc.

– Basics of Auction-Rate Securities –

- Types of ARS: MARS, SLARS, and ARPS, etc.
- Auctions at set intervals, usually 7 days (but up to 60)
- The yield reset y at each auction, at market-clearing level
- Maximum Applicable Rate, or “penalty” rate, applies if failed auction
- Auction failure if not enough buyers to purchase shares or notes of all sellers
- Until this February, the banks would step in as buyer of last resort, whenever an auction looked like it might fail

– Basics of ARSs (cont.) –

- Typical issuers and ARS issues:
 - Municipalities, student loan writers, and others issuing debt with long-term maturity. High penalty rates if auctions fail.
 - Closed-end mutual fund issuing preferred shares with no maturity. Low (floating) penalty rates if auctions fail.
- Secondary market emerging as auctions fail:
 - Significant number of buyers, including distressed debt funds
 - Bid and ask prices dependent on market view of how long auctions are likely to keep failing
 - Valuation metrics considered include penalty rate relative level, type of issuer, volatility and liquidity of (fund) investors.

– ARS Valuation Metrics –

- Risk of issuer (fund or other)
 - Kind of issuer (funds, munis, CDOs)
 - Volatility of revenues/earnings or asset values
 - Illiquidity of assets in fund
 - Type of assets (fund strategy, assets classes, industry sector)
 - Leverage and interest/dividend coverage
- Liquidity (auctions or secondary market)
 - When did auctions begin failing?
 - Auction failure-rate
 - Issuer attitude towards refinancing

– ARS Valuation Metrics (cont.) –

- Yield
 - Maximum applicable yield (“penalty” rate)
 - Taxable-equivalent yield
 - Yields on comparable instruments (AAA corporate preferreds, traded v. non-traded muni bonds, etc)
- Other Terms/Characteristics
 - Perpetual? Maturity date?
 - Size of interest. Size relative to market
 - Ease or difficulty of transferring “bidding rights”
 - Other terms in prospectus

– Example: Restricted Stock –

RESTRICTED COMMON STOCK REPRESENTS SHARES ISSUED WITHOUT REGISTRATION, AND SUBJECT TO THE VERY SIGNIFICANT ILLIQUIDITY CONSTRAINTS OF RULE 144 , INCLUDING A HOLDING PERIOD, VOLUME LIMITS, MANNER OF SALE, AND OTHER RULES .

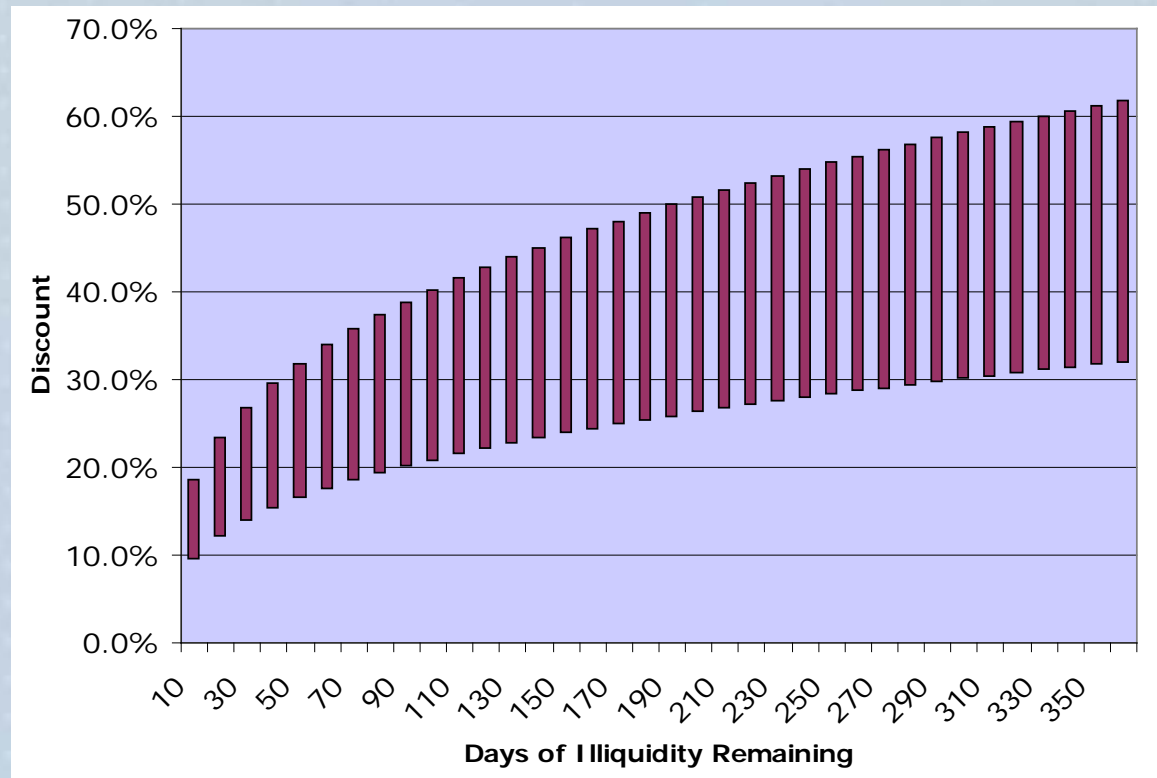
– Basics of Restricted Stock –

- Typically issued without registration.
 - In PIPE (private investment in public equity) transactions.
 - As compensation.
 - As part of bankruptcy/workout process.
 - In mergers and acquisitions.
 - Also, control or affiliate stock.
- Can be sold to the public via a prospectus sale.
- Can be sold to the public relying on Rule 144.
- Can be sold in private transactions using the 4 (1-1/2) exemption.

– The Private Sale Process (SecondMarket) –

- Section 4 (1-1/2) exemption.
 - Hybrid of 4(1) and 4(2) exemptions in the '33 Act.
- No general solicitation.
- Buyers should be accredited investors.
- Securities keep restrictive legend.
- Buyers should have investment intent.
 - “Rule of thumb”.
- Registration rights, if any, transfer.
- Private sales price at a discount from market.

– Discount Varies with Holding Period –



– Rule 144 Holding Period – to 6 mths –

- SEC just approved change in Rule 144 – holding period cut in half. Also, changes to volume limits and other changes.
- Longer holding periods – greater discounts. However:
 - Not a linear relationship (quadratic).
 - Factors other than the holding period also important.
- LiquiStat: discounts better correlated with log of days remaining or square-root of days remaining.
 - Halving the holding period will NOT halve the discount.
- Most PIPEs are registered well before 180 days after the placement.
 - Reducing the holding period will likely not have a significant impact on the valuation of the average PIPE.

– Restricted Stock Discounts (SecondMarket) –

	Market Cap (\$m)	Block Size	Revenues (\$m)	Holding Period (Days)	Market Price	Volatility	Discount
Average	293	450%	124	203	\$7.89	86%	28.3%
Median	203	76	38	210	4.03	77	22.9
1st Quintile	407	35	48	227	13.11	81	12.8
2nd Quintile	100	59	54	251	3.63	74	19.4
3rd Quintile	90	40	54	105	3.85	76	22.9
4th Quintile	232	256	13	229	5.24	68	35.0
5th Quintile	99	274	7	197	2.70	104	47.5

– Pluris Restricted Stock Models –

- Can't cut/paste the graph. Not transferring. See original presentation online to see if we need the graph.

– Why not just use the purchase discount? –

- ASR 113 (and FAS 157, by extension) prohibits a simple application of the purchase discount, amortized as the holding period is “earned away”.
- But why?
- Lack of information on how the discount is amortized, i.e., it should not be reduced proportionally.
- Many factors other than just the holding period are important to the size of the discount.
- The purchase price (for the PIPE) is not an exit price, as the PIPE market is not the exit market market.

– Example: Warrants –

WARRANTS ARE FREQUENTLY ISSUED TO INSIDERS , SERVICE PROVIDERS , PIPE INVESTORS AND OTHERS AS “ SWEETENERS .” BLACK-SCHOLES ALWAYS OVERVALUES WARRANTS BECAUSE THEY ARE ILLIQUID.

– Basics of Warrants –

- Typically not tradable; illiquid even if the underlying stock is registered and freely tradable – Black-Scholes inapplicable, in either case.
- “Ratchets” can reset the strike price, partially, fully or more than fully, if the issuer sells stock for prices that are below certain thresholds.
 - In addition, standard anti-dilution protections always apply.
- Cashless exercise provisions are becoming more and more common.

– Warrant Transactions –

- SecondMarket – more than 400 “trades” in warrants.
- Average closing time shortening; around 12 business days (versus 7 for restricted stock) now.
- Warrants always trade at discount from Black-Scholes.
- Warrants most often trade at a premium over intrinsic value; sometimes at a discount.

– Warrant Discounts (SecondMarket) –

	Market Cap (\$m)	Stock Price	Intrinsic Value	Delta	Money-ness	Volatility	Discount
Average	231	\$6.81	\$2.31	0.817	0.202	86.3%	42.7%
Median	153	4.12	0.38	0.831	0.153	69	44.2
1st Quintile	229	7.66	2.16	0.903	0.471	52	15.3
2nd Quintile	160	4.96	1.42	0.841	0.317	66	30.2
3rd Quintile	127	4.40	0.43	0.794	0.139	60	44.5
4th Quintile	123	2.45	0.00	0.830	-0.058	83	56.8
5th Quintile	106	2.44	0.00	0.803	-0.184	90	66.9

– Warrant Discounts –

- The “moneyness” of the warrant is a key driver of the discount.
 - Moneyness or $\ln(s/k)$: measure of how far into or out of the money the warrant is.
 - Measure of the riskiness of the instrument: warrants that have significant intrinsic values are less “leveraged” than right at-the-money warrants.
- Warrants on high-volatility stocks tend to have higher discounts.
 - Contradictory effects: higher volatility drives the Black-Scholes values up, but also drives up the discount.

– Convertible Debentures –

MOST CORPORATE DEBT SECURITIES ARE LESS-THAN-FULLY LIQUID, WHICH SHOULD AFFECT THEIR FAIR VALUE. WITH CONVERTIBLES , BECAUSE THEY ARE EQUITY- LIKE, THE HIGHER RISK WILL ALSO LEAD TO HIGHER ILLIQUIDITY DISCOUNTS.

– Basics of Convertibles –

- Can be convertible debentures or preferred shares.
- With mandatory redemption after a certain number of years, preferred share issues can be modeled in a way that's similar for debentures (set time to “maturity”).
- Can have fixed conversion prices, floating conversion prices or both (the lesser of).
- Can be subject to “resets” under certain circumstances.
- May have face value and conversion price denominated in different currencies.

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