Discount for Lack of Marketability

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Outline

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- Private Placement Theories
- Regression Models
- Controversies
- Conclusion

What is Discount for Lack of Marketability

Marketability: the ability to quickly convert property to cash at minimal cost

Discount for Lack of Marketability : an amount or percentage deducted from the value of an ownership interest to reflect the relative absence of marketability

There are some valuation books making a distinction between liquidity and marketability but in most of the literature, these terms are used interchangeably.

Sources of Illiquidity

Amihud et al. 2005 outline the sources of illiquidity:

1. Exogenous transaction costs such as fees or transaction taxes
2. Not all agents are in the market at all times
3. Difficulty of locating a counterparty especially if there is no central marketplace (search frictions)

When to Use

The valuation of closely-held firms is often carried out in two steps:

- First, valuation is done as if shares of the firm trade on a highly liquid exchange.
- Second, this value is reduced by the size of the estimated discount for lack of marketability (DLOM).

Valuation of minority interests are subject to DLOM but applying DLOM to a controlling interest is controversial.

How to Estimate DLOM

- Benchmark Approaches
  - Restricted Stock Studies (18.1%-33.5%)
  - Pre-Initial Public Offering Studies (31.8%-73.1%)
- Securities Based Approaches (8.3%-69.2%))
- Regression Models
  - Wruck 1989 (17.6%)
  - Hertzel and Smith 1993 (<13.5%)
  - Bajaj et al. 2001 (7.23%)

What is a Restricted Stock

- Public companies may raise capital through private investment in public equity (PIPE) transactions to accredited investors.

- Companies can issue registered (freely tradable) or unregistered (restricted) stocks in PIPEs.

- Restricted stocks cannot be sold to any interested investor or traded on the public exchange but can be sold to sophisticated investors during a certain holding period, after which they become registered.

- Restricted stocks are typically sold at a discount compared to the price of the publicly traded stocks. Firms do not pay the registration cost and acquire the benefits which will be discussed.

Restricted Stock Studies

These studies argue that lack of marketability can be quantified by comparing the sale price of publicly traded shares to the sale price of restricted shares of the same company that are identical in all rights except for their ability to be freely marketed.

- Use data of companies which have publicly traded shares and also have issued restricted stocks through private placements
- Measure the price difference between publicly traded shares and restricted shares
- Report the average difference as a measure of DLOM

Examples of Restricted Stock Studies

Empirical Study	Years Covered	Average Price Discount
SEC	1966-1969	25.8
Gelman	1968-1970	33.0
Trout	1968-1972	33.5
Williamette Management Associate	1981-1984	31.2
Silber	1981-1988	33.8
Columbia Financial Advisers	1996-1997	21.0
Trugman Valuation Associates	2007-2008	18.1

Two Empirical Observations about PIPEs

1. Restricted shares are sold in PIPEs and shares in PIPEs are sold at a discount, even when they are not restricted. Hence a lack of marketability cannot be the only factor behind the discount for restricted shares.

2. The share price of the pre-existing publicly traded shares often increase after a PIPE– whether restricted or not. This is in contrast to the stock price effect of a public offering.

Private Placement Theories

Below are seminal empirical papers supporting different theories about why firms issue shares through PIPEs at a significant discount.

1. Monitoring, Wruck 1989, Journal of Financial Economics
2. Certification, Hertzel and Smith 1993, Journal of Finance
3. Managerial Entrenchment, Barclay et al. 2007, Journal of Corporate Finance

Monitoring

- Monitoring management of a company is costly and it is worth to pay this cost only for large shareholders. So as the number of large share holders (ownership concentration) increase, monitoring gets more efficient.

- Private placements are associated with increase in ownership concentration.

- Investors are compensated for expected monitoring benefits so shares are sold at a discount.

- Due to this expectation of efficient monitoring, market reacts positively and price of pre-existing publicly traded shares increase.

Certification

- There is asymmetry of information about the firm value and private placement investors must do costly due diligence on the firm before committing to such a large purchase.

- The firm compensates investors for due diligence costs by placing shares at a discount.

- The market observes this transaction and thinks that the firm must be high quality otherwise investors would never have bought the shares. So, stock prices increase.

Managerial Entrenchment

- Recent research has access to more details about investor characteristics and their behavior after transaction.

- This theory states that private placements are made mostly to passive investors which help management to solidify their control of the firm.

- Private placement discounts are compensation for block purchasers to be passive.

- Initial stock price increase is due to systematic over optimism of the market.

How These Theories Reconcile

	Monitoring	Certification	Entrenchment
Discount	+	+	+
Stock price increase	+	+	-

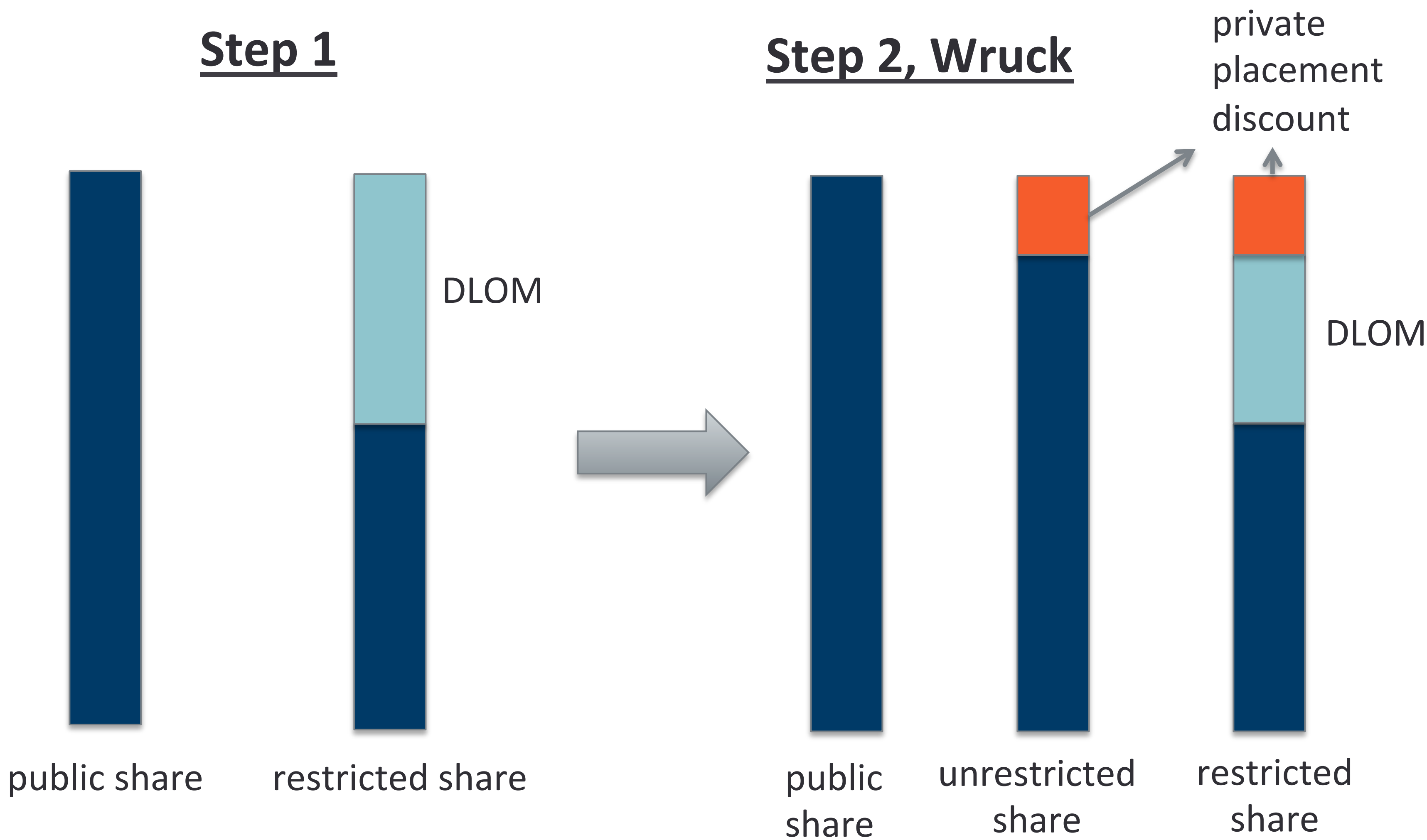
- These different explanations are not mutually exclusive but they explain different motivations for private placements despite the discounts.
- Hertzel and Smith support certification hypothesis but also find some evidence for monitoring.
- Barclay et al. (2007) support entrenchment hypothesis but state that monitoring and certification explain a minority of private placements.

Eliminating the Effect of Private Placements

- Since all private placements are sold at a discount, it is tempting to compare the share price in private placements of restricted and unrestricted shares to measure the discount due to restriction.
- This difference is estimated to be 17.6%, 26.4%, 14.1% respectively by Wruck (1989), Hertzel and Smith (1993) and Bajaj et al.(2001).
- But, note that comparison is not between restricted and unrestricted shares of the same company. For instance, in Hertzel and Smith:

	Average Discount	Number of Observations
Restricted Shares	42.0%	18
Unrestricted Shares	15.6%	88

Eliminating the Effect of Private Placements



* Dark blue bars represent share prices

Why not take difference between averages

- For the difference between averages to measure restriction discount, all firm characteristics that contribute to private placement discount must be identical across the two samples of issues, restricted and unrestricted.

- Otherwise, in order to assess the discount solely due to restriction of shares, the effect of firm characteristics need to controlled. So, we need to use a regression model.

Regression in Hertzel and Smith 1993

The dependent variable is private placement discount.

Independent Variable	Predicted Sign	Coefficient
Intercept		1.402***
Fraction Placed	+	0.410**
Financial Distress	+	0.091
Book-to-Market Equity	-	-0.141**
Log of proceeds	-	-0.078***
Restricted Shares	+	0.135***
Single Investor		-0.091*
Management Buyer		0.021
Adjusted R^2		41.3%

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

Regression in Bajaj et al. 2001

The dependent variable is private placement discount.

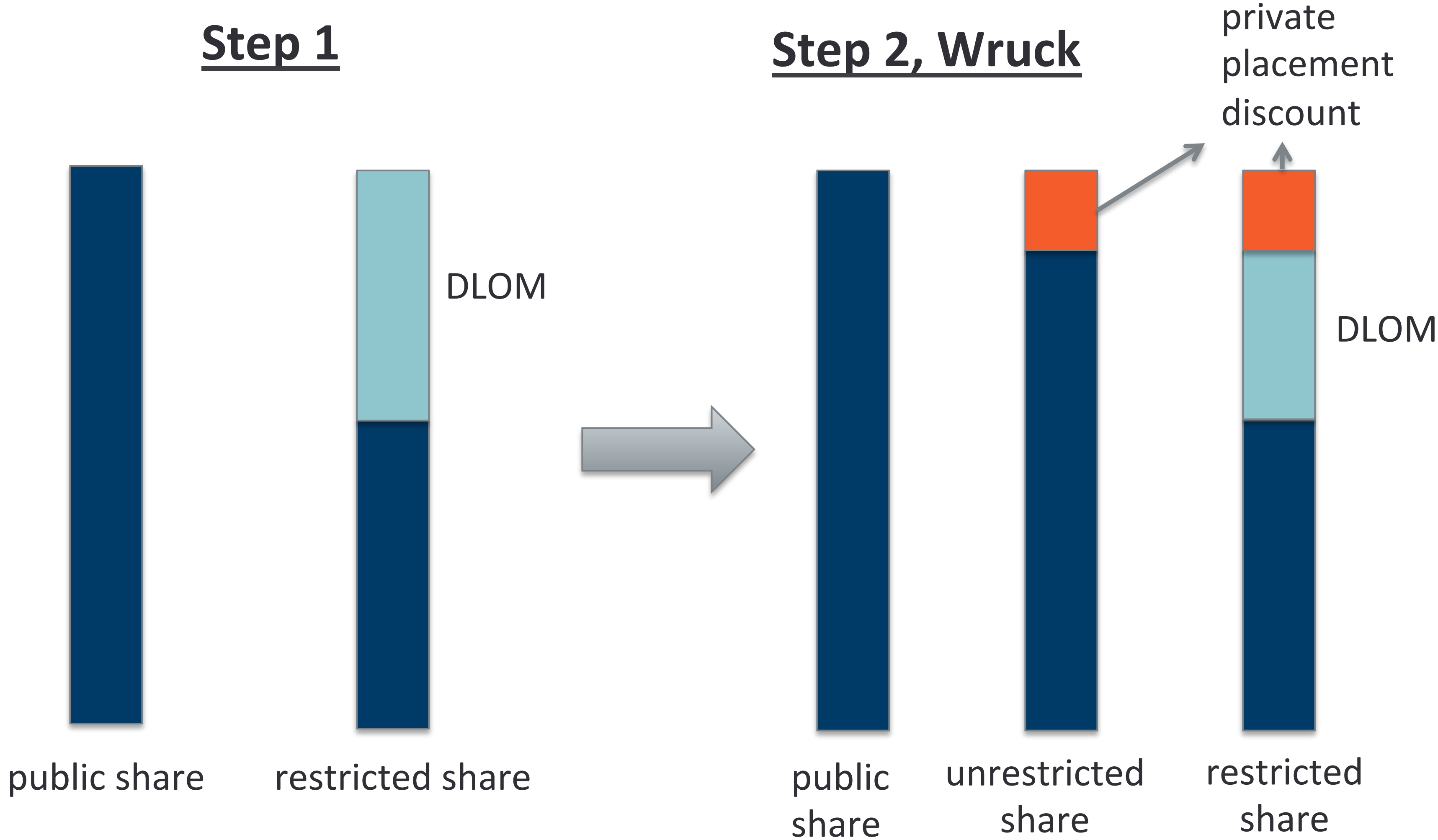
Independent Variable	Predicted Sign	Coefficient
Intercept		4.91
Fraction Placed	+	0.40**
Z-score	-	-0.08**
Restricted Shares	+	7.23**
Std. of Returns	+	3.13***
Adjusted R^2		32.3%

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

Interpretation of Restriction Discount

- H&S and Bajaj et al. estimate restriction discount to be 13.5% and 7.23% respectively.
- After controlling all factors that increase private placement discount, is the restriction discount solely due to DLOM?
- H&S argues that it is not because enforced holding period for restricted stocks incentives more due diligence by the investor (more monitoring after the purchase)
- Consistently with this argument, H&S find that placements of restricted stocks are associated with an additional 7.8% stock price increase compared to the effect of unrestricted shares.
- This evidence suggest that restriction discount is only an upper bound for DLOM.

Evolution of Literature



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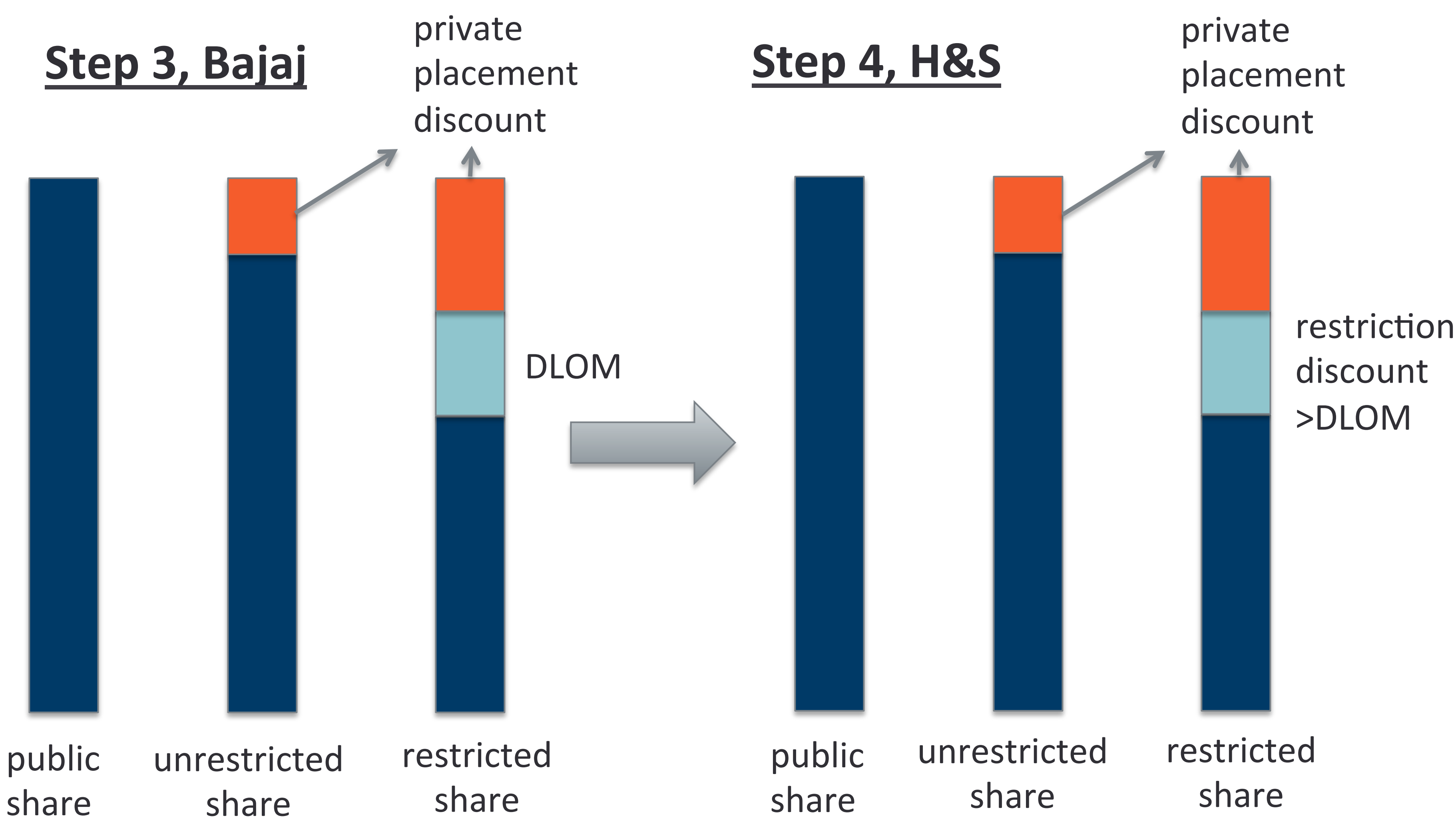

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Practitioner's View

- Academic literature studies private placements and not much interested in restriction discount or DLOM.
- Practitioners mostly support restricted stock studies and criticize regression models. For instance, Willamette Valuation 2014:
  - Low R^2
  - Omitted variable bias
  - Interpretation of regression coefficients: "the statistical significance of a coefficient does nothing to support the accuracy of the numerical value of the coefficient"
  - Can not extrapolate the results of a regression
  - Various degrees of registration
- Problems stated above do not justify to use average discount as a measure of DLOM.

Concluding Remarks-Firm Specific Discount

- Another criticism from practitioner's literature which is in line with the suggestions in IRS DLOM Job Aid or Damodaran 2005: DLOM should vary across firms so a valuator should not use the results from any of the analytical studies without getting behind the data.
- Damodaran 2005:
  - Liquidity of assets owned by the firm
  - Financial health of the firm
  - Possibility of going public in the future
  - Size of the firm
  - Control component
- But the variables that affect DLOM is open to dispute as well and models that estimate firm specific DLOM have serious weaknesses, too.

Conclusion

- Restricted stock studies are supported by practitioner's literature and cited in reports.

- Academic literature studies private placements but not much interested in estimating discount in restricted stocks. So, there is limited evidence in the academic literature.

- There is not a consensus about the proper model to estimate DLOM but there is solid empirical evidence reporting discounts in all private placements and the following stock price increase.

- Private placement theories need to be considered if DLOM is estimated using restricted stocks.