

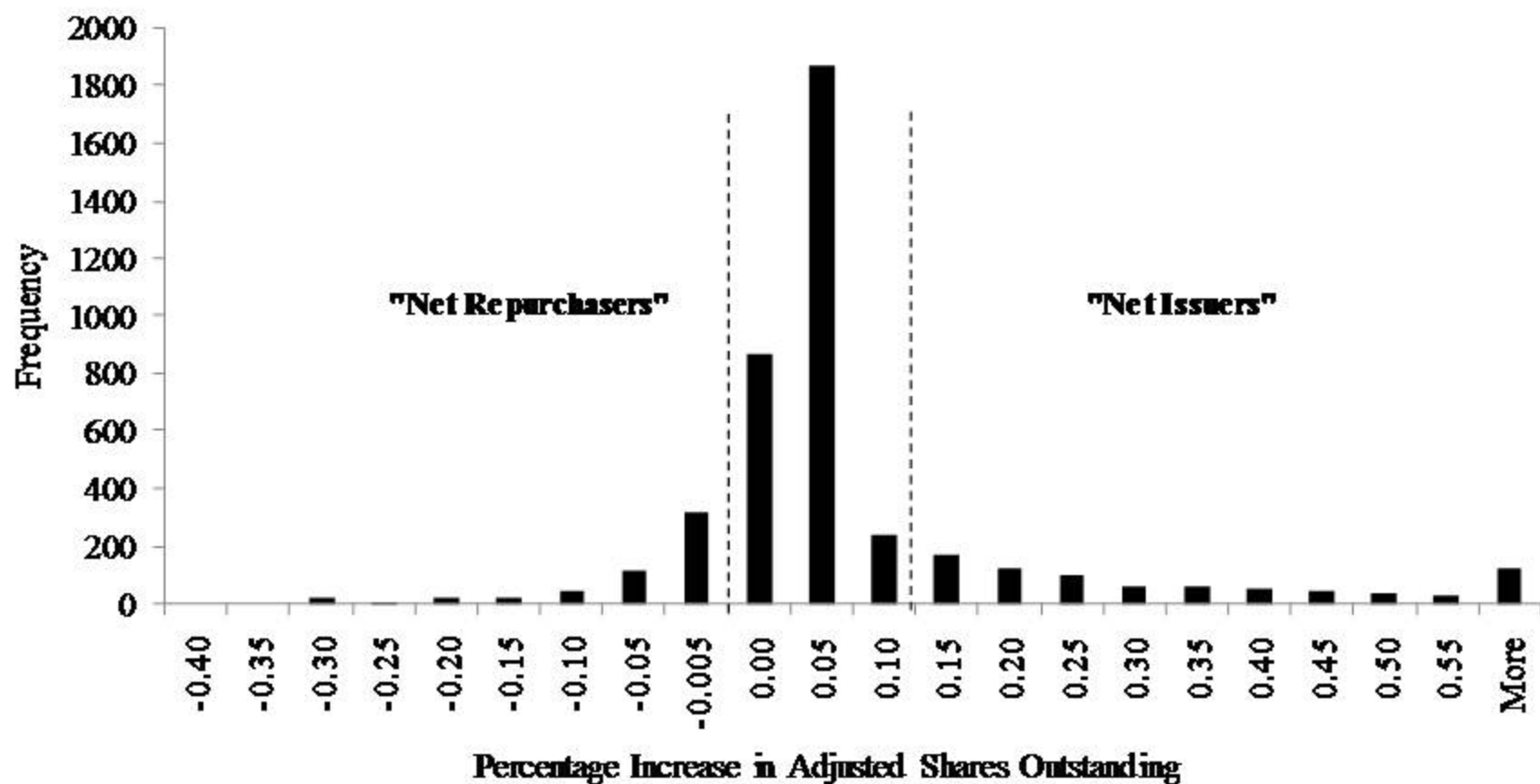
SHARE ISSUANCE AND FACTOR TIMING

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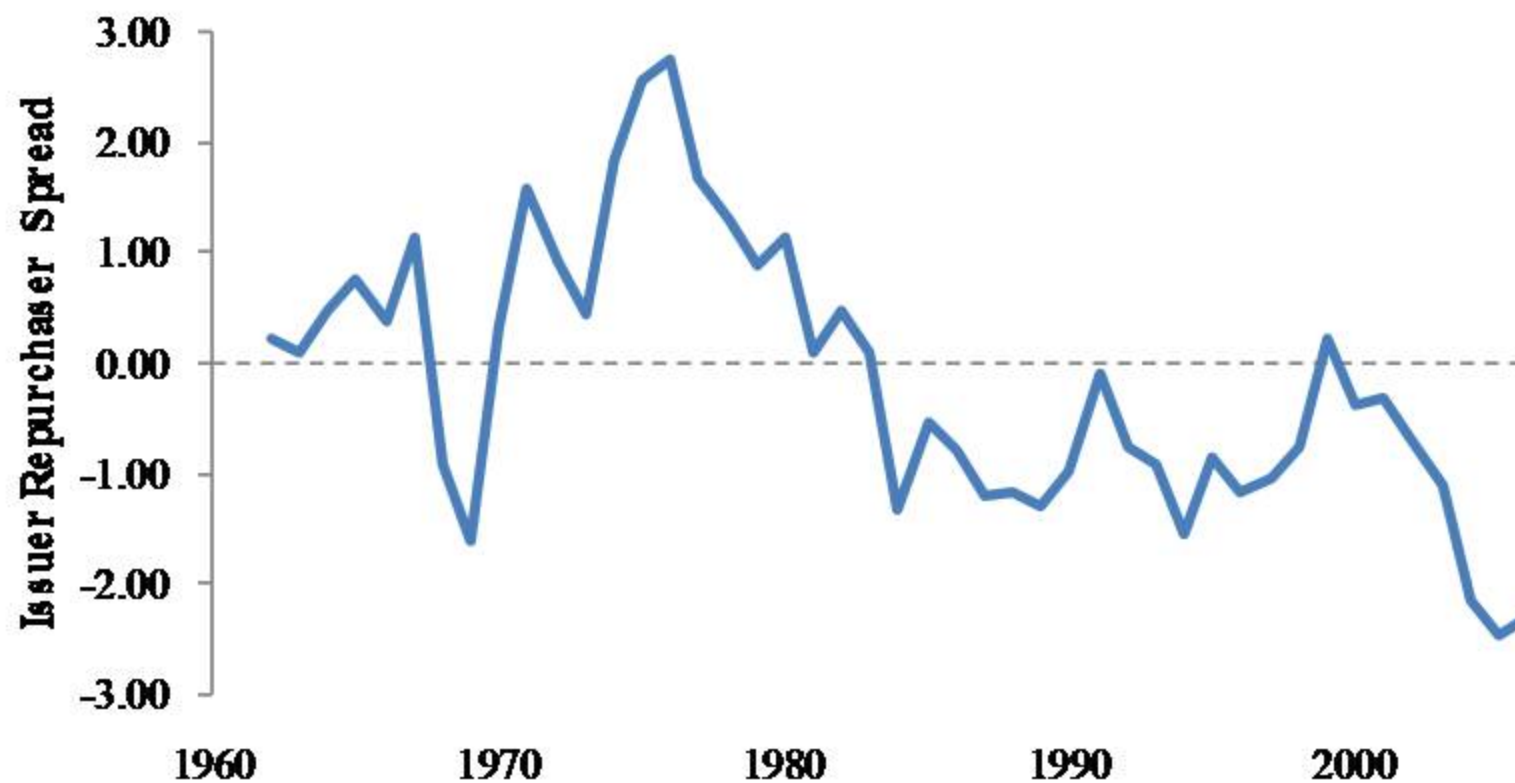
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April 2011**

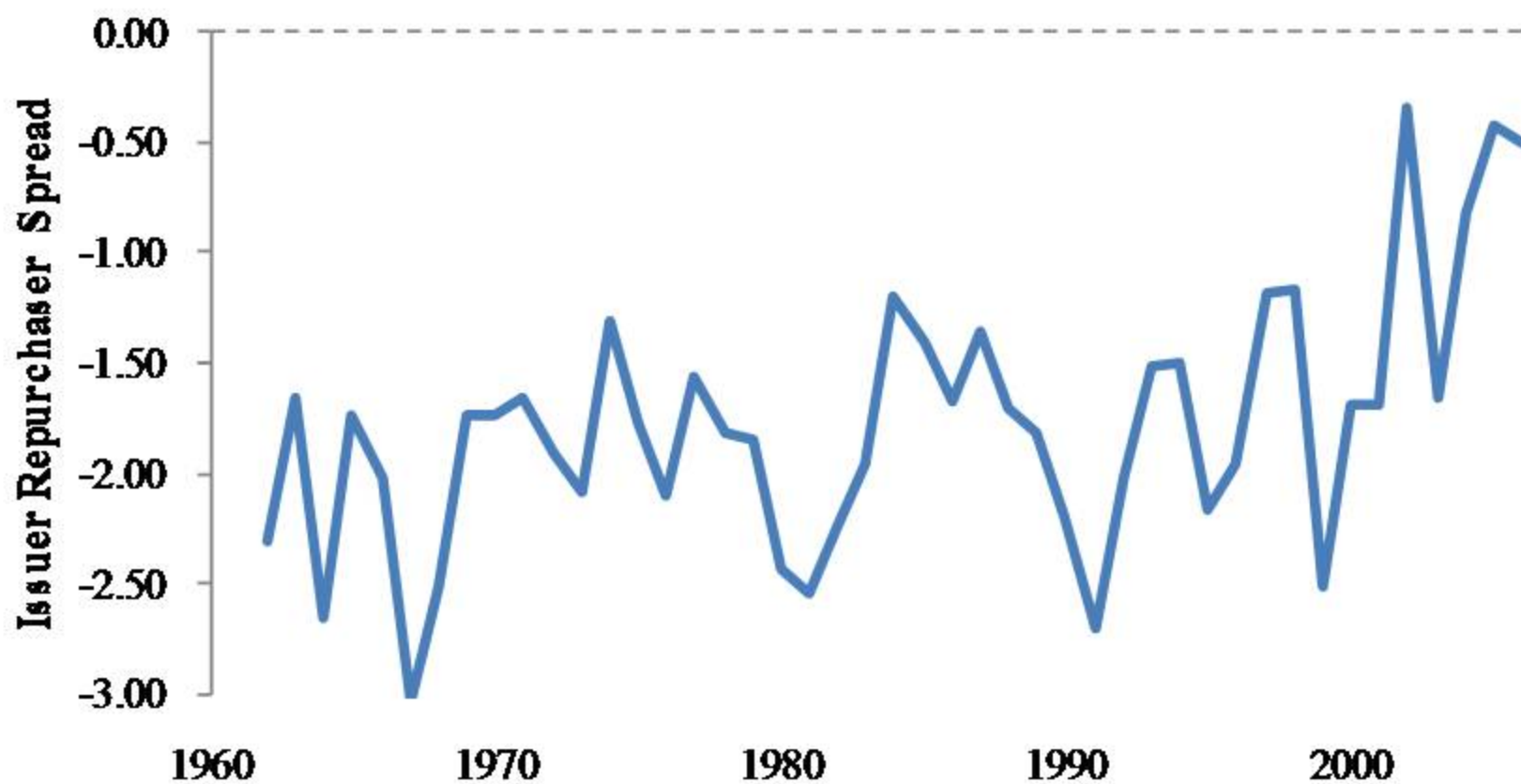
DISTRIBUTION OF NET STOCK ISSUANCE (NS)



ISSUER-REPURCHASER SPREADS: SIZE



ISSUER-REPURCHASER SPREADS: B/M



CORRELATIONS

- **Not surprisingly, issuer repurchaser spreads tend to correlate across characteristics**
- **Factor structure**
 - **Prudence: Size, Price, Age, Beta, Distress, Dividend policy**
 - **Growth: B/M, Accruals, Sales growth**

FORECASTING FACTORS

TABLE 4: UNIVARIATE

$$R_t^X = a + b \cdot ISSREP_{t-1}^X + u_t$$

	Panel A: Univariate			
	1963-2007		1973-2007	
	b	[t]	b	[t]
Value & Size:				
<i>B/M</i>	-0.713	[-2.69]	-0.815	[-2.29]
<i>ME</i>	-0.214	[-1.60]	-0.316	[-3.65]
Size-related:				
<i>P</i>	-0.260	[-3.18]	-0.336	[-4.03]
<i>Age</i>	-0.134	[-0.95]	-0.113	[-0.78]
<i>β</i>	-0.270	[-0.96]	-0.401	[-1.24]
<i>σ</i>	-0.078	[-0.51]	-0.127	[-0.96]
<i>SHUM</i>	-0.381	[-1.68]	-0.624	[-2.93]
<i>Div</i>	-1.407	[-1.13]	-2.332	[-2.27]
Other characteristics:				
<i>ΔS/S_{t-1}</i>	0.075	[0.59]	-0.198	[-0.79]
<i>Acc/A</i>	-0.021	[-0.23]	-0.088	[-0.64]
<i>E/B</i>	-0.133	[-1.69]	-0.224	[-1.86]

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TABLE 4: MULTIVARIATE

$$R_t^X = a + b \cdot ISSREP_{t-1}^X + c \cdot MKTRF_t + d \cdot HML_t + e \cdot SMB_t + f \cdot UMD_t + u_t$$

	1963-2007		1973-2007	
	b	[t]	b	[t]
Value & Size:				
<i>B/M</i>	-0.631	[-2.65]	-0.761	[-2.50]
<i>ME</i>	-0.312	[-2.72]	-0.404	[-5.04]
Size-related:				
<i>P</i>	-0.099	[-1.30]	-0.082	[-1.21]
<i>Age</i>	-0.119	[-1.39]	-0.081	[-0.99]
<i>β</i>	-0.261	[-1.83]	-0.303	[-1.80]
<i>σ</i>	-0.066	[-0.76]	-0.043	[-0.50]
<i>SHUM</i>	-0.170	[-1.29]	-0.218	[-1.79]
<i>Div</i>	-0.795	[-1.17]	-1.301	[-1.92]
Other characteristics:				
<i>ΔS/S_{t-1}</i>	0.170	[1.30]	0.058	[0.32]
<i>Acc/A</i>	-0.031	[-0.38]	-0.079	[-0.53]
<i>E/B</i>	-0.110	[-1.12]	-0.163	[-1.12]

A POSSIBLE CONCERN...

- **Instead of time-varying mispricing of characteristic X , results simply reflect time-varying loading on the net-issuance anomaly itself.**
 - Suppose that *ISSREP* is particularly negative (e.g. issuers are particularly “growthy”).
 - Short-side of *B/M* portfolio (*HML*) at time t is likely to contain a higher than usual number of issuers, so we should expect above average *HML* returns.
 - **Solution:** Following Loughran and Ritter (2000), forecast returns on “purged” factors computed using only non-issuers.

TABLE 5: FORECASTING “PURGED” RETURNS

$$R_t^{X, \text{Purged}} = a + b \cdot \text{ISSREP}_{t-1}^X + u_t$$

	1963-2007		1973-2007	
	b	[t]	b	[t]
Value & Size:				
<i>B/M</i>	-0.607	[-2.42]	-0.678	[-2.02]
<i>ME</i>	-0.223	[-1.61]	-0.338	[-3.71]
Size-related:				
<i>P</i>	-0.233	[-2.71]	-0.325	[-3.53]
<i>Age</i>	-0.034	[-0.29]	-0.004	[-0.03]
<i>β</i>	-0.187	[-0.70]	-0.317	[-1.04]
<i>σ</i>	-0.007	[-0.05]	-0.053	[-0.45]
<i>SHUM</i>	-0.372	[-1.56]	-0.669	[-2.65]
<i>Div</i>	-0.667	[-0.54]	-1.494	[-1.50]
Other characteristics:				
<i>ΔS/S_{t-1}</i>	0.162	[1.25]	0.009	[0.03]
<i>Acc/A</i>	0.040	[0.44]	0.023	[0.15]
<i>E/B</i>	-0.003	[-0.05]	-0.064	[-0.71]

• *Exclude issuers and repurchasers from Return measures.*

• *Avoids mechanically picking up a net issuance effect*

• *Overly conservative, because some of the effect among issuers and repurchasers driven by characteristics*

INDUSTRY RETURNS (TABLE 6)

$$R_{It,Purged} = a + b \cdot NS_{It-1} + Controls + u_{It}$$

- **R = Industry Return, purged of issuers & repurchasers**
- **Categorical rather than continuous approach**

	1973-2007			
b	-0.015	-0.015	-0.020	-0.017
[t]	[1.57]	[1.66]	[1.93]	[1.68]
Year Effects:	Yes	Yes	Yes	Yes
Industry Effects:	No	No	Yes	Yes
Controls:	No	Yes	No	Yes
R-squared:	0.491	0.493	0.492	0.494

MOTIVATION

- **Firms that issue shares (IPOs and SEOs) tend to subsequently underperform.**
 - Loughran and Ritter (1995), Speiss and Affleck-Graves (1995).
- **Firms that repurchase shares have high future returns.**
 - Ikenberry, Lakonishok and Vermaelen (1995).
- **Acquirers in stock-financed mergers underperform.**
 - Loughran and Vijh (1997).
- **All 3 are captured by composite measures of net issuance.**
 - Daniel and Titman (2006), Pontiff and Woodgate (2008), Fama and French (2008).
- **A common interpretation: Firms use private information about whether they are under or overvalued to issue equity opportunistically. Loughran and Ritter (2000): “Firms take advantage of transitory windows of opportunity”**

PANEL ESTIMATION

- Stage 1: Regress Net Issuance on Characteristic

$$NS_{i,t-1} = \theta_{t-1} + \delta_{t-1} X_{i,t-1} + \varepsilon_{i,t-1}$$

- Stage 2: Regress returns on characteristics, net issuance, and conditional mispricing (ie, $\beta_1 \text{Characteristic}_{i,t-1} + \beta_2 \text{Mispricing}_{i,t-1} + cNS_{i,t-1} + v_{i,t}$)

Comments:

- Stage 1 δ 's are highly correlated with issuer-repurchaser spreads.
- Include year fixed effect: Stage 2 is essentially a cross-sectional regression.
- Cluster standard errors by year
- Expanded version: also control for beta, BE/ME, Size, and Momentum.
- Panel equal-weights firm-years. Thus, 1963-2006 and 1973-2006 sample results are quite similar now.

ROBUSTNESS

- ◉ **Different measures of issuance tilt:**
 - Use raw characteristics instead of deciles.
 - Difference in *NS* between low *X* and high *X* firms.
- ◉ **Alternate specifications:**
 - Time-varying factor loadings on *MKT*, *HML*, *SMB*, *UMD*.
 - Adjust for Stambaugh bias (“pseudo market-timing”).
- ◉ **Horse race with measures of *aggregate* sentiment.**
 - *ISSREP* and *SENT* have independent forecasting power.
 - Suggests that sentiment is multi-dimensional.

ECONOMIC RELEVANCE OF CHARACTERISTIC TIMING

- **DGTW-like decomposition of returns to long-short net issuance portfolio**
- **CS = Characteristic Selectivity**
- **AS = Average Style**
- **CT = Characteristic Timing**

1973-2007							
% per annum							
	R	=	CS	+	AS	+ CT	CT/R
VW	9.05		7.26		-0.09	1.89	0.209
	[3.73]		[3.78]		[0.32]	[2.04]	
EW	12.14		7.90		2.27	1.97	0.162
	[5.06]		[4.42]		[3.64]	[3.13]	

EXPLANATIONS

○ Firms respond to time-varying investor required returns

- Cost of capital falls → Investment rises → Equity issuance grows
- Prediction: Investment “spreads” should also forecast returns

$$INVNONINV_{t-1}^X = \frac{1}{N_{t-1}^{HighInvest}} \sum_{i \in HighInvest} X_{i,t-1} - \frac{1}{N_{t-1}^{LowInvest}} \sum_{i \in LowInvest} X_{i,t-1}$$

- Intuition: Investment should be a better summary statistic for required returns than issuance

○ Characteristic timing

- Firms arbitrage time-varying demand for characteristics

TABLE 8: FORECASTING RETURNS USING INVESTMENT SPREADS

$$R_t^X = a + c \cdot INVNONINV_{t-1}^X + u_t, \text{ or}$$

$$R_t^X = a + b \cdot ISSREP_{t-1}^X + c \cdot INVNONINV_{t-1}^X + u_t$$

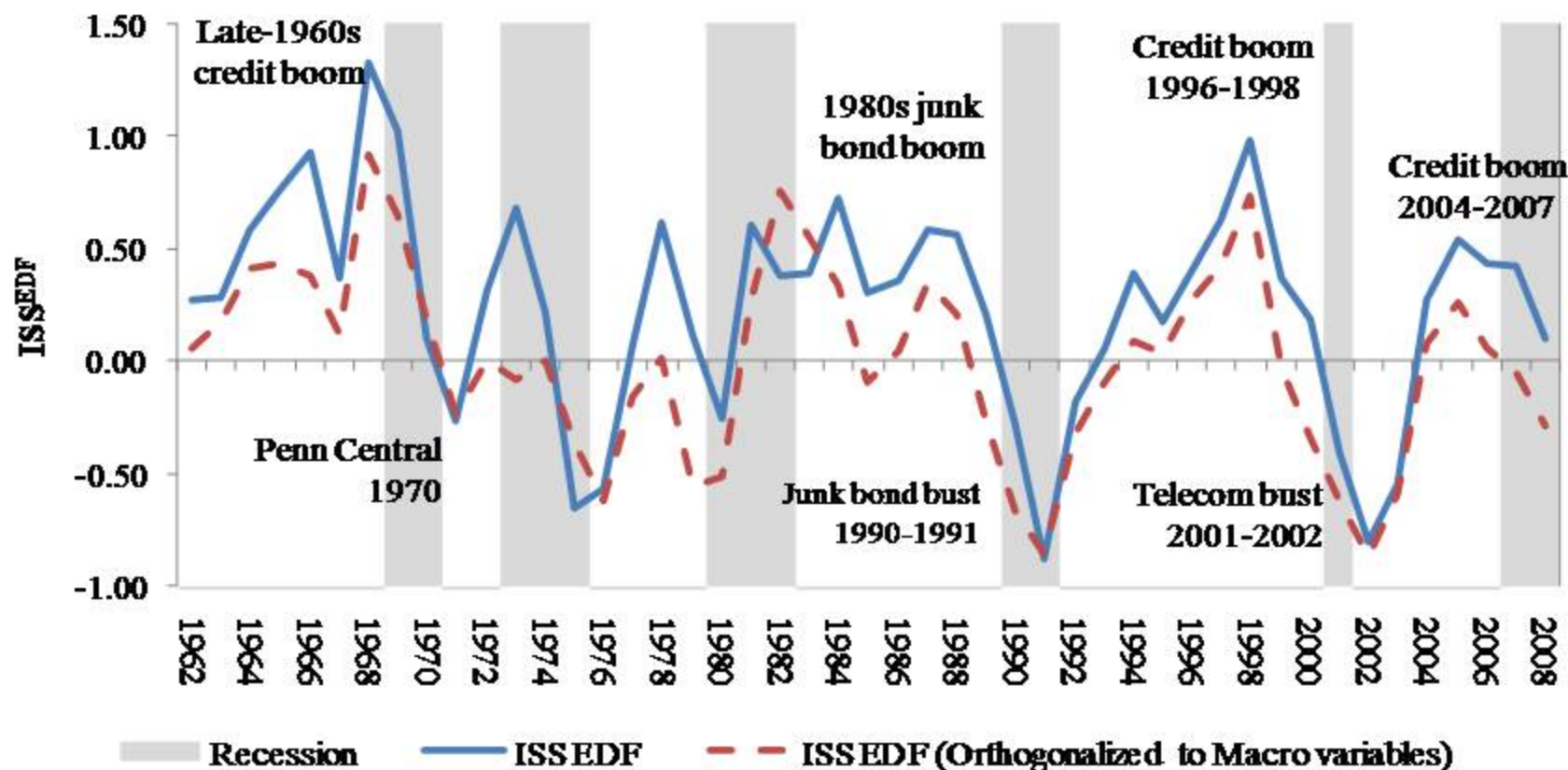
	Univariate (<i>INVNONINV</i> only)		Multivariate (<i>ISSREP</i> and <i>INVNONINV</i>)			
	c	[t]	b	[t]	c	[t]
Value & Size:						
<i>B/M</i>	0.053	[0.13]	-0.837	[-2.32]	0.162	[0.43]
<i>ME</i>	-0.708	[-2.01]	-0.332	[-3.19]	0.063	[0.16]
Size-related:						
<i>P</i>	-0.769	[-3.27]	-0.254	[-1.47]	-0.272	[-0.57]
<i>Age</i>	-0.292	[-1.02]	-0.136	[-0.93]	-0.322	[-1.13]
<i>β</i>	0.227	[0.72]	-0.465	[-1.48]	0.375	[1.12]
<i>σ</i>	0.056	[0.35]	-0.189	[-1.12]	0.276	[1.12]
<i>SHUM</i>	0.379	[1.17]	-0.597	[-3.00]	0.259	[0.90]
<i>Div</i>	-1.501	[-0.90]	-2.393	[-2.06]	0.328	[0.18]
Other characteristics:						
<i>ΔS/S_{t-1}</i>	0.056	[0.32]	-0.204	[-0.78]	0.066	[0.36]
<i>Acc/A</i>	-0.140	[-1.02]	-0.032	[-0.22]	-0.122	[-0.83]
<i>E/B</i>	-0.448	[-1.47]	-0.170	[-1.10]	-0.177	[-0.46]

SUMMARY

- **Use patterns of corporate issuance to infer when particular characteristics are mispriced.**
 - **Issuer-repurchaser characteristic “spreads” forecast characteristic returns.**
 - **Contain information beyond B/M and have forecasting power for non-issuing firms.**
 - **Consistent with role of corporations as macro liquidity providers.**
- **Required returns or mispricing?**
 - **Evidence points to mispricing**

EXTENSION: CREDIT MARKET SENTIMENT

- Greenwood and Hanson (2011): “Issuer Quality and Corporate Bond Returns”
- Similar methodology to measure credit market sentiment
- Key measure: Difference in debt issuance between



FACTOR TIMING

- **Our view: Firms arbitrage time-varying demand for *characteristics***
 - **Demand for characteristics is time-varying**
 - **Investor sentiment revolves around “themes” or “narratives” for which characteristics serve as a proxy**
 - **Firms arbitrage this demand by issuing stock**
 - **Similar logic: Firms going public first time; Venture capital; M&A**
 - **Closed end nature of operating firms**
 - **Stein (2005)**
 - **MM indifference logic (Greenwood, Hanson, Stein (2009))**
 - **Firms need not be knowingly opportunistic; may use rules of thumb**
- **This logic suggests that issuance may be useful for forecasting returns to characteristic-based factors**

AN EXAMPLE: WHAT IS GOOGLE'S $E(R)$?

○ Usual approach:

- Collect Google's characteristics:
 - β , size, Book-to-Market, profitability, dividend yield, etc.
- Each characteristic is associated with some average return in cross-section.

○ Our approach:

- Collect data on other firms that have the same characteristics as Google.
- Use net issuance of similar firms to back-out when these characteristics are mispriced. This information can be used improve our forecast of Google's returns.

○ Implicit in our approach:

- Firms act as arbitrageurs or liquidity providers vis-à-vis time-varying characteristic mispricing.
 - To find forecasting power, firms must only partially accommodate demand shocks
- However, they do so in a noisy fashion.
 - Market-timing may not be the primary determinant of net issuance.
 - Limitations on ability to act opportunistically

○ Key Insight: Conditioning on behavior of other firms may provide more information than simply looking at Google's own issuance and repurchases decisions.

ROADMAP

1. **Use pattern of corporate issuance to back-out time-variation in expected returns to characteristics.**
 - **Our measure: difference in characteristics between issuers and repurchasers**
 - **Use these issuer-repurchaser characteristic spreads to forecast returns on long-short characteristic portfolios**
 - **Forecast the following characteristics: B/M, Size, Price, Distress, Payout policy. Occasional forecasting power for: Age, Beta, Profitability**
 - **Same methodology can help explain industry returns**

2. **Do these patterns reflect time-varying required returns, or mispricing?**
 - **Use investment patterns to distinguish between competing explanations**

EMPIRICAL STRATEGY

- Assume expected returns are described by a *conditional characteristics* model:

$$E_t[R_{i,t+1}] = a_t + b \cdot (X_{i,t} \times T_t)$$

- $X_{i,t}$ is a characteristic and a_t is time-varying mispricing of that characteristic.

- Assume firms issue opportunistically:

$$NS_{i,t} = -\delta \cdot E_t[R_{i,t+1}] + \varepsilon_{i,t}$$

- $\varepsilon_{i,t}$ is component of net issuance not driven by market-timing.

- Run cross-sectional regression of issuance on characteristics:

$$NS_{i,t} = \tilde{c}_t + d_t \cdot X_{i,t} + v_{i,t}$$

$$d_t = -\delta b \cdot T_t.$$

- We get
- Cross-sectional regression of issuance on characteristics, reveals conditional expected returns associated with characteristics.
- Intuition: If issuance is noisy, then d_t may contain information about expected returns beyond that in a firm's own issuance.

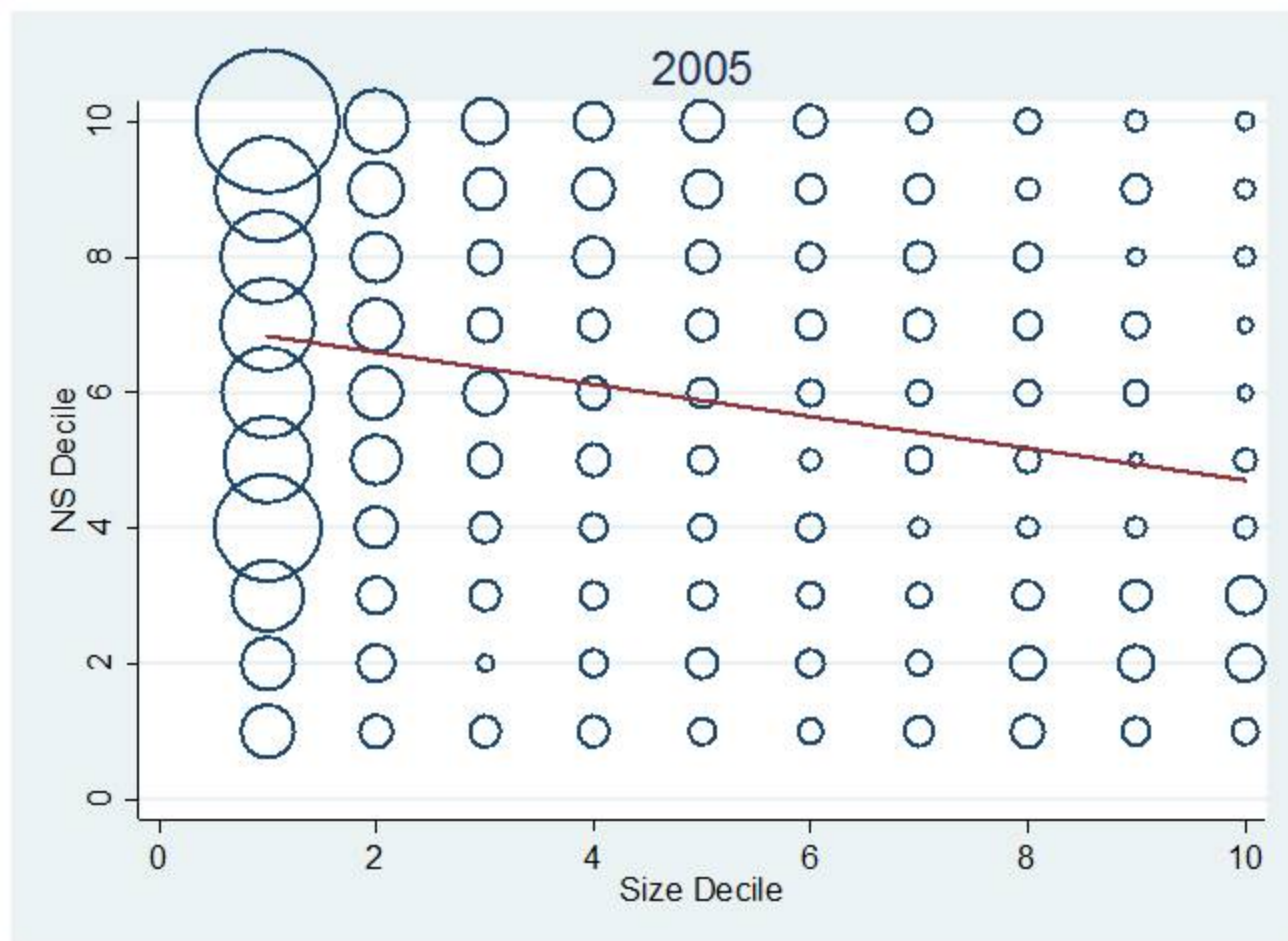
CHARACTERISTICS

- **Data: CRSP-Compustat merged database. 1962-2006.**
 - **Used to forecast returns July 1963-June 2008**

- **Characteristics:**
 - “Value & Size”**
 - **Book-to-Market (B/M)**
 - **Size (ME)**
 - “Size related”**
 - **Nominal Share Price**
 - **Age: Years on CRSP.**
 - **β : from 24-month trailing CAPM regression.**
 - **σ : residual volatility from CAPM regression.**
 - **Distress ($SHUM$): Shumway (2001) bankruptcy hazard rate.**
 - **Dividend policy (Div): binary indicator for firms that pay dividends.**
 - “Other”**
 - **Sales growth ($\Delta S/S$): year-over-year sales growth.**
 - **Accruals (Acc/A)**
 - **Profitability (E/B)**

- **Allow data to tell us which characteristics are important**

THE ISSUANCE CHARACTERISTIC TILT



CONSTRUCTING ISSUER-REPURCHASE SPREADS

- Net stock issuance (*NS*) is 1-year %-change in split-adjusted shares outstanding from Compustat.
- Use *NS* and *Age* to categorize firms:
 - New lists: less than 1-year old in December of *t*.
 - Issuers*: $NS_{i,t} > 10\%$, *Repurchasers*: $NS_{i,t} < -0.5\%$, *Others*: $-0.5\% \leq NS_{i,t} \leq 10\%$
- Issuer-repurchaser characteristic spread:

$$ISSREP_t^X = \frac{\sum_{Iss} X_{i,t}}{N_t^{Iss}} - \frac{\sum_{Rep} X_{i,t}}{N_t^{Rep}}$$

- For baseline measures use average characteristic deciles (NYSE breakpoints).
- Similar results using raw characteristics or with different *NS* cut-offs.
- Construction of long-short portfolio returns for characteristic *X*, $ISSREP_{t-1}^X$, follows Fama-French (1993) procedure for computing *HML*.
 - Timing convention: $ISSREP_{t-1}^X$ is based on fiscal years ending in year *t-1* and is used to forecast monthly returns from July *t* until June *t+1*.