



UNIVERSITY OF AMSTERDAM  
Amsterdam Business School

TRR open online course “Research on Corporate Transparency”

# Transparency and Market Efficiency

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# Back to market efficiency

- Conditions for informationally efficient markets:
  - No trading/transaction costs
  - Information is available for all investors at no costs
  - Investors are rational and have homogenous beliefs

# Back to basics: equity valuation

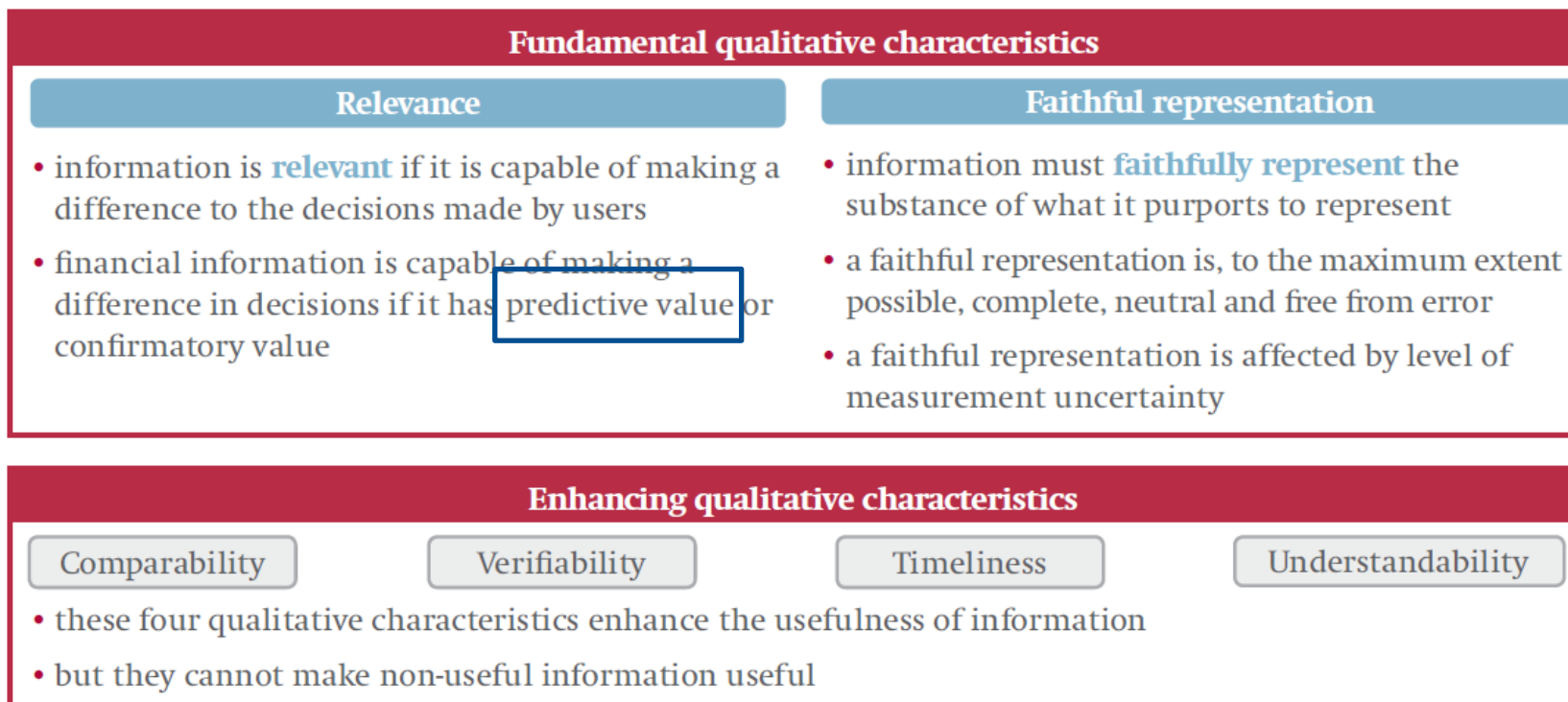
$$V_t^{Equity} = \sum_{\tau=1}^{\infty} \frac{Div_{t+\tau}}{(1+r_e)^\tau} \quad \text{or} \quad V_t^{Equity} = \sum_{\tau=1}^{\infty} \frac{FCF_{t+\tau}}{(1+r_{wacc})^\tau} - V_t^{Net\ debt}$$

- These models imply that stock prices should change in response to new information about (a) future dividends/cash flows and/or (b) discount rates
  - The goal of corporate transparency is to provide information relevant to both, but let's focus on (a) for now



# Back to basics: equity valuation

- The IASB Conceptual Framework explains us why/how accounting information should inform capital markets:





# Back to basics: equity valuation



- The accounting system produces information signals that are predictive of future cash flows and, hence, relevant for equity valuation and pricing, *but*:
  - These signals are imperfect and vary in their precision
    - ❖  $x_t = \sum FCF_{t+\tau} + \varepsilon_t = \theta + \varepsilon_t$ , where  $\varepsilon_t \sim N(\mu, \sigma^2)$
    - ❖  $\sigma$  captures the (lack of) precision of signal  $x_t$  and determines the correlation between  $x_t$  and  $\sum FCF_{t+\tau}$
    - ❖ Market should place greater weights on signals that are more precise
    - ❖ If  $x_t^A = \theta + \varepsilon_t^A$ ,  $x_t^B = \theta + \varepsilon_t^B$ , and  $\sigma^A > \sigma^B \rightarrow$  price should react more strongly to signal B
    - ❖ Similarly, given concurrent information sources, market should weight the different information signals provided by the firm and other information providers (journalists, analysts, social media, etc.)

# Earnings response coefficients (ERCs)

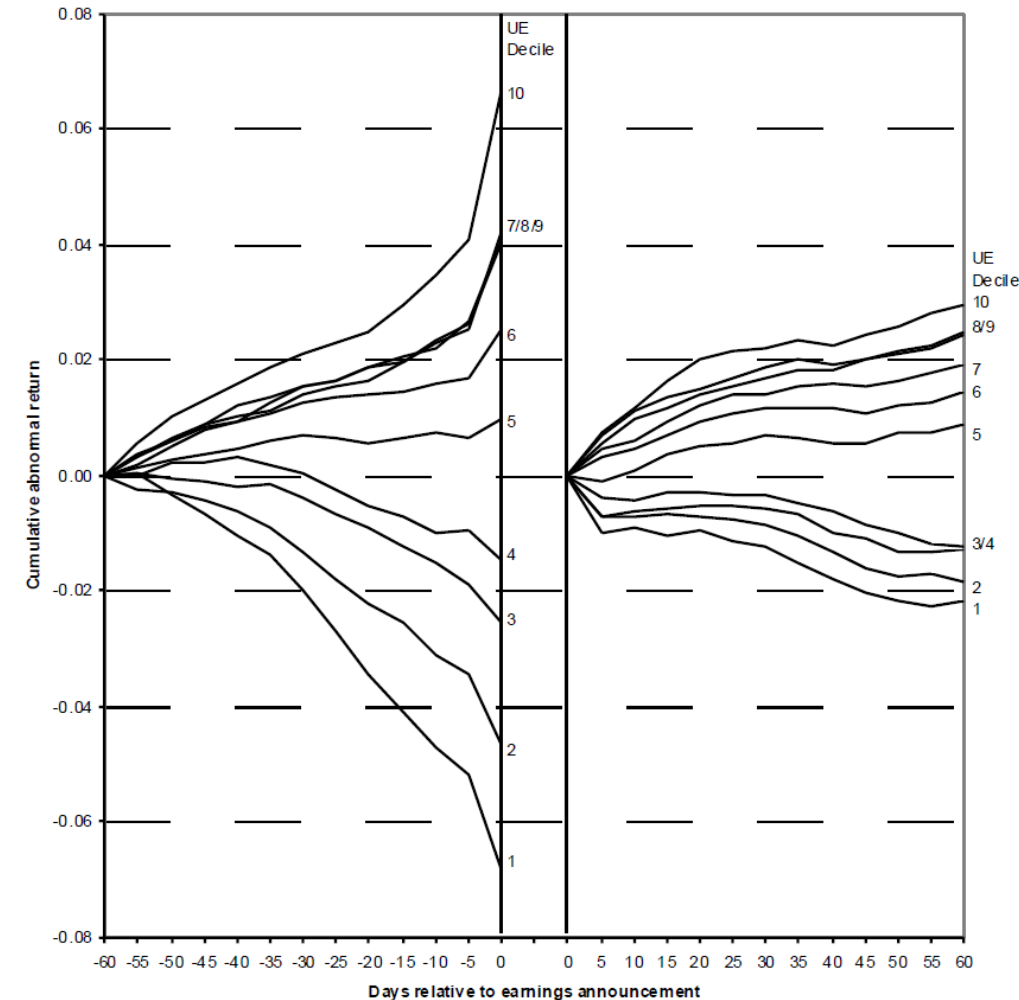
- Following **BB68**, primary focus has been on earnings as the information signal:



- This has produced to an empirical literature on earnings response coefficients (ERCs), which are the coefficients that relate measures of the new information in earnings disclosures (earnings surprise) to stock returns
  - In an efficient market, ERCs increase in the level of earnings persistence and decrease with the discount rate (e.g., **Easton and Zmijewski 1989**; **Collins and Kothari 1989**; **Kormendi and Lipe 1987**; **Freeman and Tse 1992**)
  - But what if the conditions for market efficiency are violated?
    - ❖ That is, what happens when trading is costly, information acquisition is costly, and/or investors are not perfectly rational and have divergent beliefs?

# PEAD and price discovery

- BB68 showed that price reactions to earnings news are incomplete  
→ post-earnings announcement drift (PEAD)
  - Explanations based on irrationality versus other frictions (transaction and info acquisition costs)
- ERCs are smaller and PEAD is greater when:
  - Transaction costs are higher (e.g., [Bushnan 1994](#); [Mendenhall 2004](#); [Ng et al. 2008](#); [Chordia et al. 2014](#); [Thomas et al. 2021](#))
  - Accounting information signals are less precise (e.g., [Francis et al. 2007](#); [Hung et al. 2015](#))
  - ❖ Consistent with investors placing lower weights on noisier signals (high  $\sigma$ ) and placing more weight on subsequent signals to update their beliefs



# PEAD and price discovery

- The “lagged-ERC” framework provides an alternative way of viewing the price discovery process around EAs (Freeman and Tse 1989; Koch and Sun 2004; Veenman 2012):
  - Assume probability  $p$  that earnings signal  $x_t$  is fully persistent (vs. transitory), then:
    - $Return_{ann} = (pERC^{pers} + (1 - p)ERC^{trans}) \times Surprise$
  - When new information arrives, investors revise their probability estimates ( $\Delta p$ ):
    - $Return_{post} = \Delta p(ERC^{pers} - ERC^{trans}) \times Surprise$ , where  $\Delta p$  is based on subsequent info
  - The updating of beliefs causes post-announcement returns to depend on *Surprise*: prices adjust to value-relevant information in the post-EA period if that helps investors revise their beliefs about the future-cash flow implications of signal  $x_t$
- Returns around earnings announcement not only capture price adjustments to new information, but also capture corrections to investors’ (potentially incorrect) beliefs about information previously disclosed (e.g., Sloan 1996)



# PEAD, price discovery, and learning

- Why should we care about market anomalies?
  - Finance / asset pricing perspective: trading opportunities and improvements to market models
  - Accounting perspective: understanding how to resolve frictions that prevent prices from fully reflecting information and to level the playing field
- Example: in [Veenman and Verwijmeren \(2018, 2021\)](#), we uncovered substantial predictability of earnings announcement returns based on ex-ante information signals related to the “earnings surprise game”
  - Return predictability suggests an anomaly
  - Returns spread of  $\sim 1\%$  are substantial, but unlikely sufficient for well-informed arbitrageurs to exploit
    - ❖ Why then do we care? Because uninformed investors lose against the sophisticated market participants involved in this game  $\rightarrow$  unlevel playing field

# Non-GAAP earnings disclosure

- Globally, firms are more and more frequently reporting supplemental disclosures of earnings that deviate from the prescriptions in generally accepted accounting principles (IFRS, US GAAP, etc.)
  - Known as “non-GAAP” earnings numbers
  - Typically exclude transitory items like goodwill impairments
  - But also commonly exclude recurring expenses like stock-based compensation or intangible amortization
  - Why do firm managers do this? Why do analysts and the media typically follow in making these exclusions?

- Example from Salesforce Inc. (CRM) in May 2021




	<b>Three Months Ended April 30,</b>	
	<b>2021</b>	<b>2020</b>
<b><u>Non-GAAP diluted net income per share</u></b>		
GAAP diluted net income per share	\$ 0.50	\$ 0.11
Plus:		
Amortization of purchased intangibles	0.31	0.30
Stock-based expense	0.60	0.55
Income tax effects and adjustments	(0.20)	(0.26)
Non-GAAP diluted net income per share	<u>\$ 1.21</u>	<u>\$ 0.70</u>
Shares used in computing Non-GAAP diluted net income per share	940	913

# Non-GAAP earnings disclosure



- Goodwill impairments are more transitory than other (“core”) earnings components
  - This increases the noise in  $x_t$  (higher  $\sigma$ ) and reduces correlation of  $x_t$  with  $\sum FCF_{t+\tau}$
- Some managers and analysts argue that some accounting standards introduce noise into the accounting numbers
  - Accounting for stock-based compensation
  - Accounting for intangibles (e.g., Warren Buffett)
  - If indeed this induces noise in  $x_t$  (higher  $\sigma$ ), it reduces correlation of  $x_t$  with  $\sum FCF_{t+\tau}$

# Non-GAAP earnings disclosure

- In **LV 2018**, we examined these issues for loss-making US firms
  - Motivation:
    - ❖ Many firms reported losses on a US-GAAP basis, but profits on a non-GAAP basis
    - ❖ Many of these did so by excluding recurring expense items (as opposed to impairments etc.)
  - Why loss-making firms?
    - ❖ Losses less persistent than profits
    - ❖ Great uncertainty
    - ❖ Poorer information environments

Lower ERCs, greater need for additional signals
- RQ: how precise are the GAAP versus non-GAAP earnings signals about future cash flows?
  - Empirically, we test the (cor)relation between the signals and future performance outcomes

# Non-GAAP earnings disclosure

- Tests indicate that non-GAAP earnings substantially more predictive than GAAP earnings:

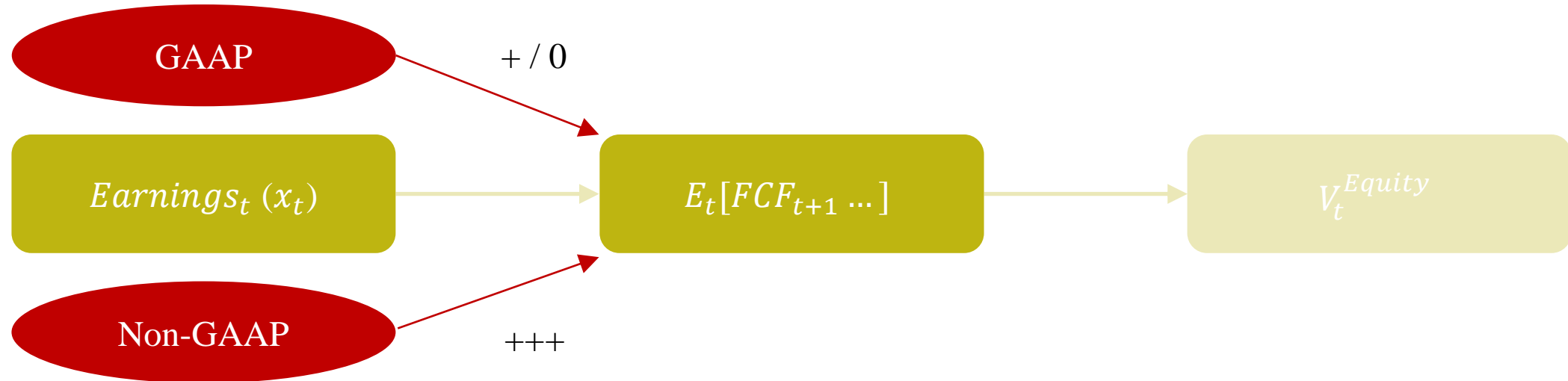
## Dependent variable: Future cash flows

Sample:	Benchmark	Loss-firm observations with non-GAAP earnings			
	GAAP-only loss firms	Non-GAAP loss firms	Loss converters	Non-GAAP loss firms	Loss converters
	(1)	(2)	(3)	(4)	(5)
GAAP earnings	1.515 (14.44)***	0.639 (5.35)***	0.005 (0.11)		
Non-GAAP earnings				2.470 (10.28)***	2.465 (5.45)***
Exclusions				0.023 (0.43)	0.035 (0.79)
Test of difference in coefficient on GAAP earnings compared to GAAP-only loss firms (column 1):					
Coefficient difference:		-0.876	-1.510		
t-statistic:		(-7.43)***	(-14.87)***		
Test of incremental information in Non-GAAP earnings versus GAAP earnings:					
Coefficient difference:				1.830	2.460
t-statistic:				(8.82)***	(5.39)***
n	7,443	2,608	1,816	2,608	1,816
Adjusted R <sup>2</sup>	0.541	0.356	0.132	0.460	0.177



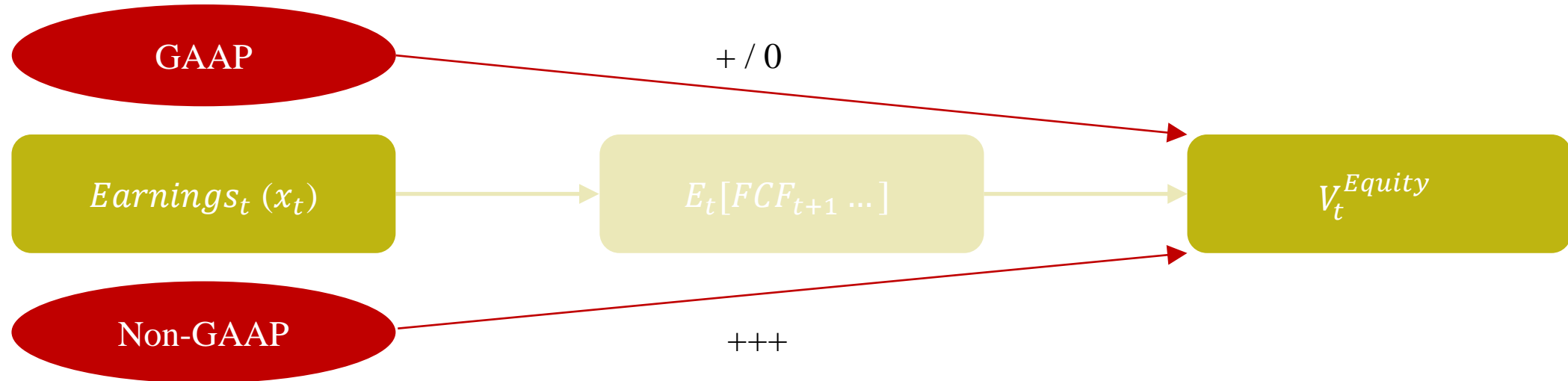
# Non-GAAP earnings disclosure

- Tests indicate that non-GAAP earnings substantially more predictive than GAAP earnings:



# Non-GAAP earnings disclosure

- How about market valuations (ERCs)? We find investors price the signals based on their precision:



# Non-GAAP earnings disclosure

- The results suggest that accounting standards might not be perfect, and earnings signals vary in their precision
  - Additional financial analysis and disaggregation can improve the information set available in the market
    - ❖ Confirms that information acquisition costs are nonzero
  - Firms respond by providing supplemental, more precise, value-relevant information signals to reduce information acquisition costs
- Recent insights:
  - [Chen et al. \(2021\)](#) examine the prominence of disclosures in press releases
  - Studies on non-EPS non-GAAP numbers: non-GAAP revenues ([Campbell et al. 2021](#)), free cash flow disclosures ([Adame et al. 2020](#)), and other KPIs ([Givoly et al. 2019](#); [Hand et al. 2021](#))
  - Evidence from other (non-US) settings very limited ([Marques 2017](#))

# Investor types and responses to earnings news

- Investors vary in their information endowments (e.g., **Grossman and Stiglitz 1980**; **O'Hara 2003**)
- Large institutional investors typically assumed more sophisticated and better informed than retail investors
- Some examples of recent insights on specific types of investor trading around EAs:
  - **Ben-Rephael et al. (2017)**: institutional investor attention, but not retail investor attention facilitates price discovery and reduces underreaction to EAs
  - **Friedman and Zeng (2021)** and **Michels (2021)** examine retail holdings on Robinhood
  - **Guest (2021)** uses the method of **Boehmer et al. (2021)** to identify retail investor trading around EAs
  - **Lee and Zhu (2021)** examine the role of active mutual funds in price discovery around EAs

# Corporate transparency and liquidity

- Recognition of the existence of differently-informed investors also led to important insights on how information affects market prices through liquidity and the discount rate (i.e., expected returns)
  - When information is asymmetric, uniformed investors demand compensation for portfolio-induced risks they cannot diversify (O'Hara 2003)
- From O'Hara (2003, p. 1350): "Incorporating this price discovery role also explains why diverse factors, such as the microstructure of where a stock trades, **or the firm's accounting treatment of earnings and other operating information**, ..., will affect the return investors want in equilibrium. And it also provides an explanation for why the **disclosure policy** a firm adopts is not irrelevant for its valuation."





# Corporate transparency and liquidity

- Can managers influence their firms' stock prices by “shaping” stock liquidity?
  - Balakrishnan et al. (2014) conclude they can, by increasing voluntary disclosure
  - The empirical challenge: disclosure is an endogenous choice by managers
- The setting: sample firms experience an (exogenous) shock to their information environment
  - Loss of coverage by an analyst
    - ❖ Information asymmetry among investors increases
    - ❖ Stock price drops
    - ❖ RQ: what happens subsequent to this shock? And what is the role of disclosure?

# Corporate transparency and liquidity

- The results:
  - After one quarter, the liquidity shock reverses
    - ❖ Only for firms with a history of providing guidance: these firms increase the quantity and quality of their disclosures
    - ❖ Non-guiders suffer permanent reduction in liquidity: for these firms, the costs of initiating guidance outweigh the liquidity benefits of doing so
  - Based on the type of lost analyst coverage, they also conclude that “voluntary disclosure is primarily aimed at reducing information asymmetries between retail and institutional investors” (Balakrishnan et al. 2014, p. 2241)
- Broader conclusion: disclosure can have a causal effect on liquidity and cost of capital by leveling the playing field and reducing information asymmetry

# Back to market efficiency

- Accounting and transparency matter for market efficiency, because they:
  - Help investors make more precise predictions of future cash flows and better assess firm value
  - Reduce information acquisition costs and speed up the price discovery process
  - Improve liquidity by reducing information asymmetry among investors

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