
Disclosure Regulation and Cost of Capital

Opportunities and Challenges in International Capital Markets Research

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Focus on International Setting

- Link between increase in transparency and cost of capital is well developed in literature.
 - ⇒ Analytical: reduce adverse selection and lower estimation risk (e.g., Verrecchia, 2001; Lambert, Leuz, and Verrecchia, 2007)
 - ⇒ Empirical: e.g., Welker (1995); Botosan (1997); Leuz and Verrecchia (2000); Hail (2002); Francis et al., (2004)
- What should/do we gain from international disclosure studies?
 - ⇒ Larger within country variation compared with countries where disclosure quality is already high (e.g., U.S., U.K.)
 - ⇒ Variation in disclosure regulation across countries
 - ⇒ Higher frequency and larger scale of changes in disclosure regulation over time
- International disclosure research is a multifaceted, complex area, which branches out into finance, accounting and law
- But often: poor data quality/availability, limited generalizability, unobserved heterogeneity, difficult identification of treatment effect

Research Question in Generic Form

- Single country setting

$$COC = \alpha + \beta \text{Disclosure Quality} + \delta \text{Control Variables} + \varepsilon \mid \text{Regulation}_{\text{Ctry } i}$$

- Examples: Botosan (1997); Healy, Hutton, and Palepu (1999); Hail (2002)

- Cross-country setting, levels specification

$$COC = \alpha + \beta \text{Disclosure Regulation}_{\text{Ctry } i} + \delta \text{Control Variables} + \varepsilon$$

- Examples: Doidge, Karolyi, and Stulz (2004); Francis, Khurana, and Pereira (2005); Hail and Leuz (2006a, b)

- Cross-country setting, changes specification

$$\Delta COC_{t,t-1} = \alpha + \beta \Delta \text{Disclosure Regulation}_{\text{Ctry } i,t,t-1} + \delta \Delta \text{Control Variables}_{t,t-1} + \varepsilon$$

- Examples: Jarrell (1981); Errunza and Miller (2000); Bhattacharya and Daouk (2002); Daske et al. (2007, 2008)

Measuring (Implied) Cost of Capital

$$\text{Implied } COC = f(\text{Price, Earnings forecasts, Accounting data})$$

- Based on the residual income valuation model (Ohlson, 1995), or the abnormal earnings growth valuation model (Ohlson and Juettner-Nauroth, 2005)
- Cost of capital = the internal rate of return that equates current stock price with the expected future residual incomes or abnormal earnings
- Example: Claus and Thomas (2001) model

Year	Explicit forecast period					Perpetuity
	+1	+2	+3	+4	+5	RV
Earnings ($x_{t+\tau}$)	53.70	59.50	63.31	67.36	71.67	76.85
Dividends ($d_{t+\tau}$)	15.14	16.78	17.85	19.00	20.21	21.67
Book value (beginning of year)	480.38	518.94	561.66	607.11	655.48	706.94
Effective return on equity	11.18%	11.47%	11.27%	11.10%	10.93%	10.87%
Implied cost of capital	8.54%	8.54%	8.54%	8.54%	8.54%	8.54%
Abnormal return on equity	2.64%	2.93%	2.73%	2.56%	2.40%	2.33%
Residual income (RV)	12.68	15.19	15.35	15.52	15.70	16.49
Present value of residual income	11.69	12.90	12.01	11.18	10.43	309.37
Cumulative present value of RV	367.57					
Implied value (P_t)	847.95					

Limitations of Implied Cost of Capital Measures

- Are prices equally efficient around the world?
 - ⇒ Stock prices move together more in poor economies than in rich economies (Morck, Yeung, and Yu, 2000)
 - ⇒ The accrual anomaly is more likely to occur in common law countries (Pincus, Rajgopal, and Venkatachalam, 2007)
- Do analyst forecasts vary systematically across countries?
 - ⇒ Securities regulation, investor protection and other institutional forces affect analyst coverage and forecast behavior (e.g., Bushman, Piotroski, and Smith, 2005; DeFond and Hung, 2007; Hail, 2007)
- How do legal and societal institutions affect reporting practices?
 - ⇒ Accounting conservatism and earnings management are shaped by countries' institutions (e.g., Ball, Kothari, and Robin, 2000; Bushman and Piotroski, 2006; Burgstahler, Hail, and Leuz, 2006)
- Are there differences in economic growth across countries?

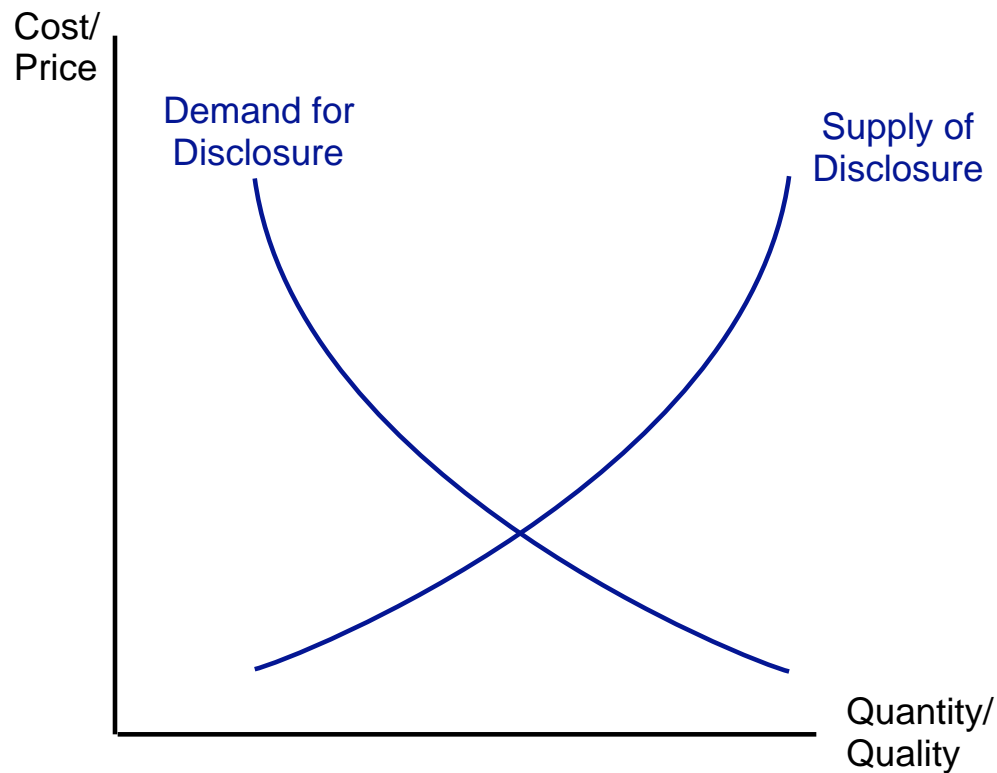
Accounting Differences & Forecast Horizon

- Implied COC models are based on rather short forecasting horizons
 - ⇒ Accounting differences can give rise to growth differences beyond the forecast horizon (Easton et al., 2002)
 - ⇒ For instance, a more conservative accounting system implies that a smaller fraction of firm value is captured in the short run
 - ⇒ Accounting earnings have to “catch up” with economic earnings in the long run, else COC will be too low (Easton, 2004)

Year	<u>Less Conservatism</u>					RV	<u>More Conservatism</u>					RV
	Explicit forecast period						Perpetuity	Explicit forecast period				
	+1	+2	+3	+4	+5		+1	+2	+3	+4	+5	
Earnings (x_{t+t})	53.70	59.50	63.31	67.36	71.67	76.85	23.70	29.50	31.39	33.40	35.53	37.15
Dividends (d_{t+t})	15.14	16.78	17.85	19.00	20.21	21.67	6.68	8.32	8.85	9.42	10.02	10.48
Book value (beginning of year)	480.38	518.94	561.66	607.11	655.48	706.94	480.38	497.40	518.58	541.11	565.09	590.61
Effective return on equity	11.18%	11.47%	11.27%	11.10%	10.93%	10.87%	4.93%	5.93%	6.05%	6.17%	6.29%	6.29%
Implied cost of capital	8.54%	8.54%	8.54%	8.54%	8.54%	8.54%	5.71%	5.71%	5.71%	5.71%	5.71%	5.71%
Abnormal return on equity	2.64%	2.93%	2.73%	2.56%	2.40%	2.33%	-0.78%	0.22%	0.34%	0.46%	0.58%	0.58%
Residual income (RV)	12.68	15.19	15.35	15.52	15.70	16.49	- 3.74	1.09	1.77	2.49	3.26	3.42
Present value of residual income	11.69	12.90	12.01	11.18	10.43	309.37	- 3.54	0.98	1.50	1.99	2.47	364.17
Cumulative present value of RV	367.57						367.57					
Implied value (P_t)	847.95						847.95					

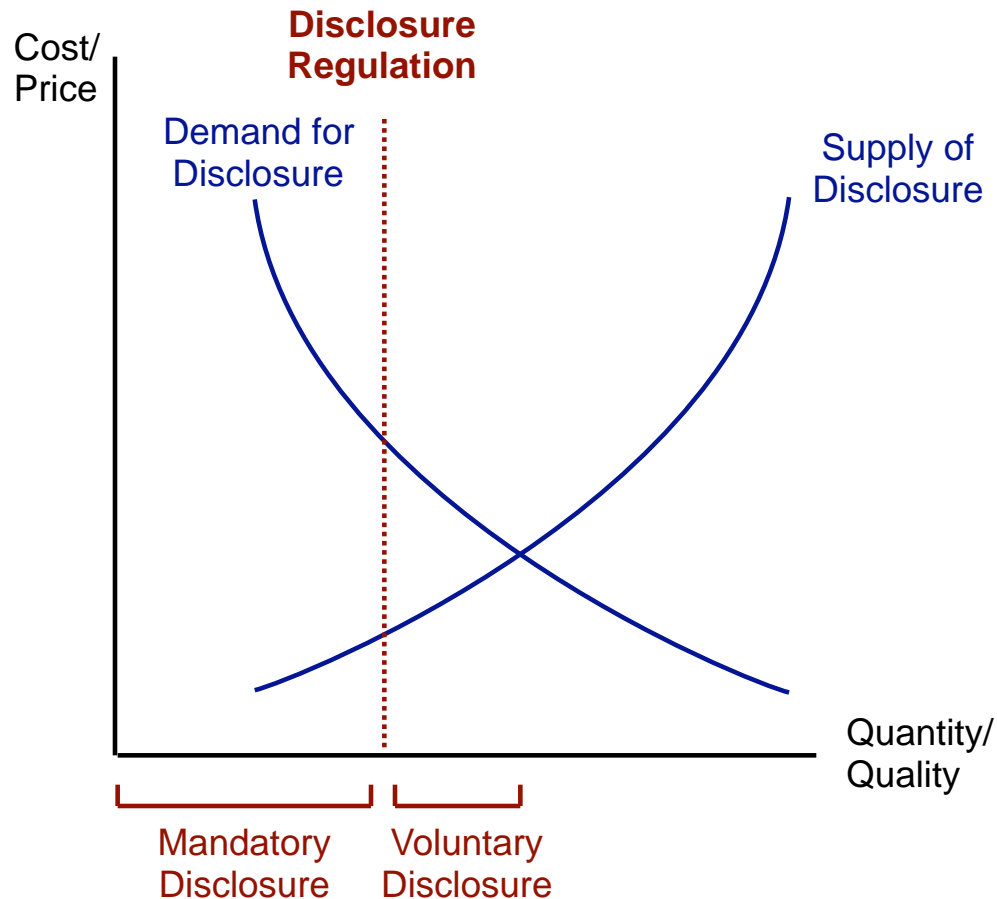
A Simple Framework of Disclosure Regulation

- Disclosure practices result from a trade-off between the costs and benefits of providing information
- Disclosure regulation may serve as an efficient commitment device
- Mandating disclosures may convey positive externalities



A Simple Framework of Disclosure Regulation

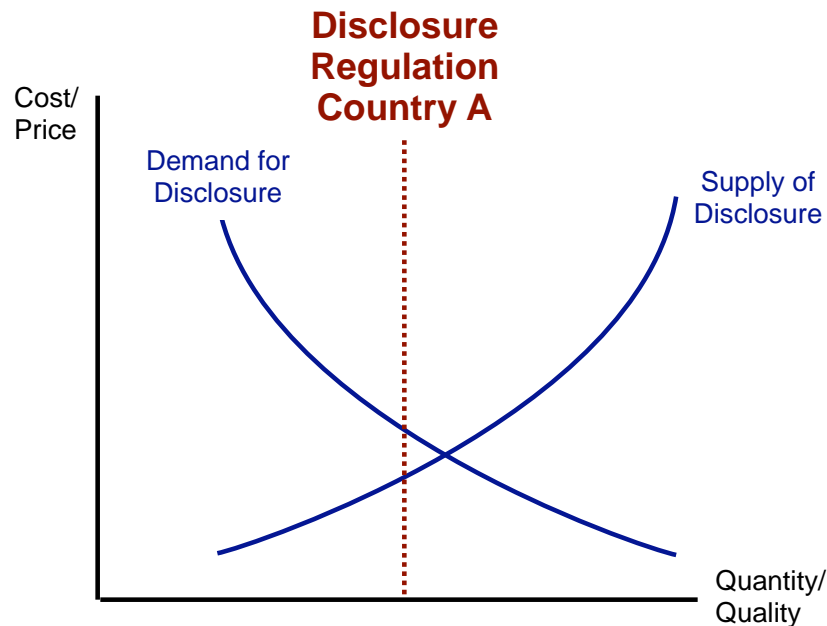
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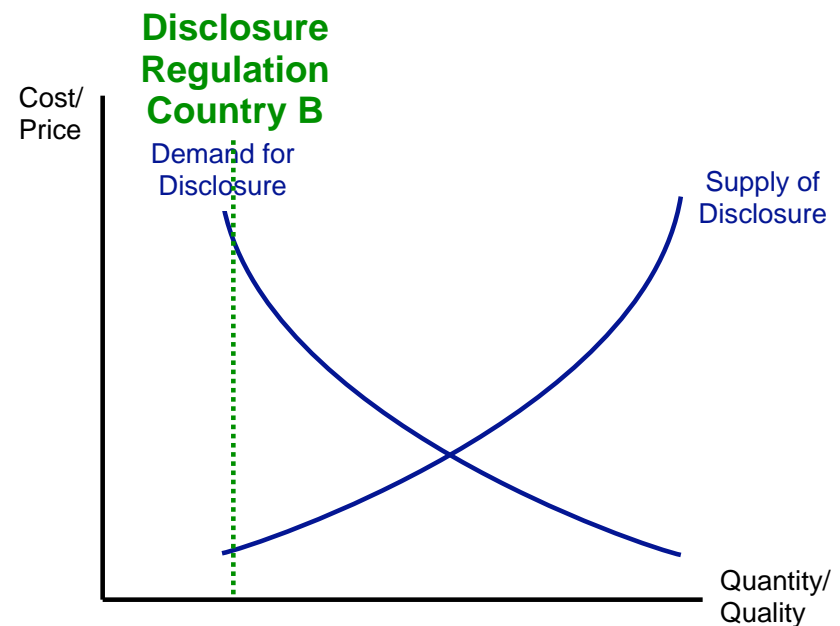
Securities Regulation & Market Integration (1)

- Basic idea: Well-functioning legal systems protect outside investors, which should improve firms' ability to raise external finance and to exploit growth opportunities (e.g., La Porta, Lopez-de-Silanes, and Shleifer, 2006)
 - ⇒ Regulation mandating and enforcing disclosure limits expropriation by insiders, and lowers risk premium demanded by outside investors
 - ⇒ Reduction in information asymmetry may lower firms' cost of capital
- Effect of local regulation should be decreasing in capital market integration

Strict Securities Regulation



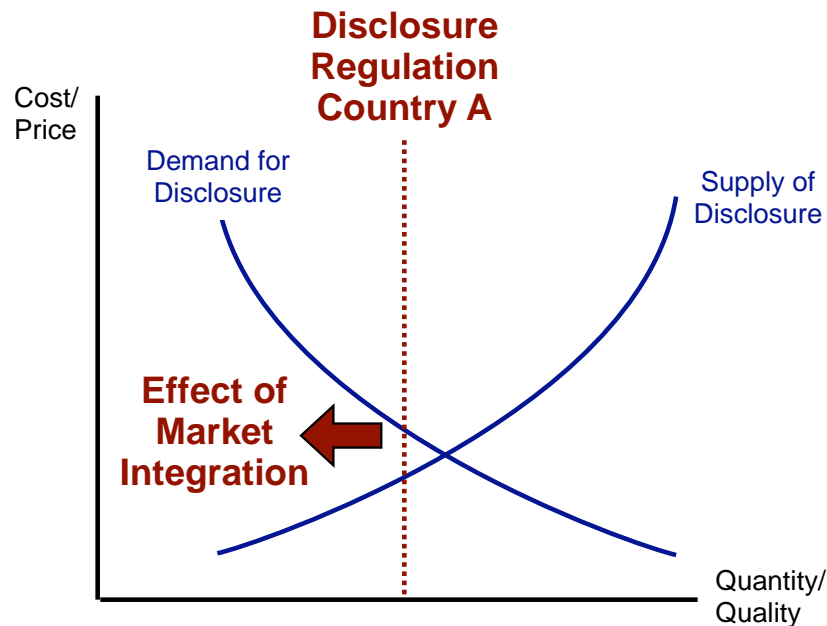
Lax Securities Regulation



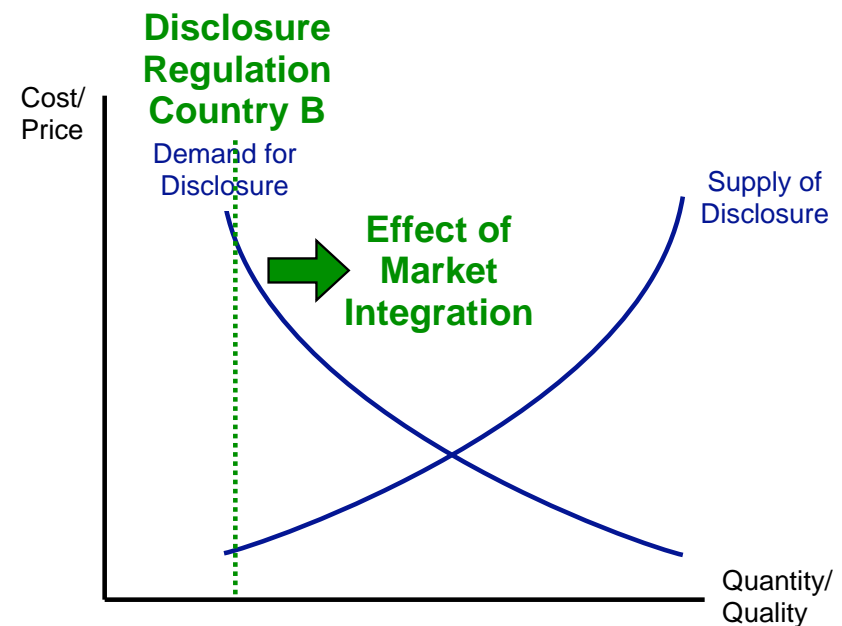
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Strict Securities Regulation



Lax Securities Regulation



Securities Regulation & Market Integration (2)

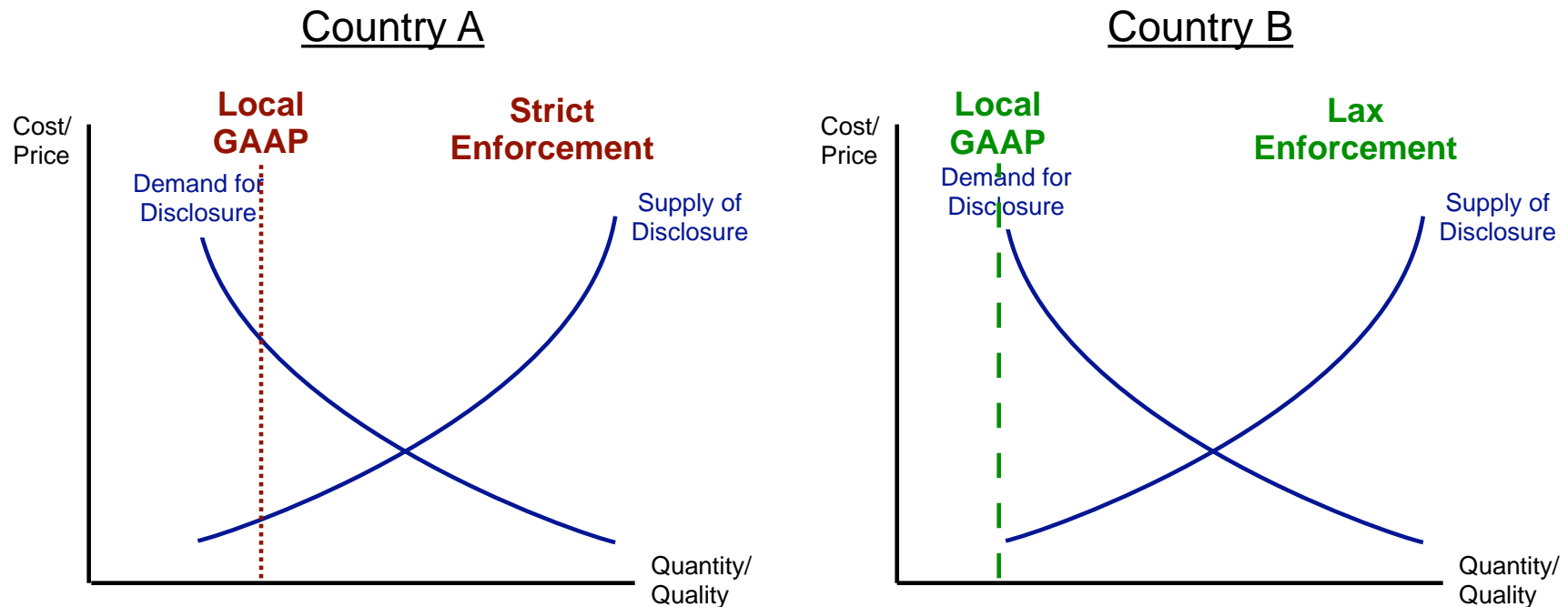
$$\begin{aligned}
 r_{AVG_{it}} = & \alpha_0 + \alpha_1 \text{Securities Regulation}_i + \alpha_2 \text{Securities Regulation}_i * \text{Integration}_{it} + \alpha_3 \text{Integration}_{it} \\
 & + \alpha_4 \text{LAW}_i + \alpha_5 \text{INFL}_{it} + \alpha_6 \text{SIZE}_{it} + \alpha_7 \text{RETVAR}_{it} + \alpha_8 \text{BMR}_{it} + \alpha_9 \text{MACVAR}_{it} \\
 & + \alpha_{10} \text{FBIAS}_{it} + \sum \alpha_j \text{Industry Controls}_{it} + \sum \alpha_k \text{Year Controls}_t + \varepsilon_{it}
 \end{aligned}$$

Variable	Predicted Sign	Integration Measured by			
		MSCI Developed Markets Index (<i>DEV</i>)		Portfolio In- and Outflows in Percent of GDP (<i>FLOW</i>)	
		<i>DISREQ</i>	<i>SECREG</i>	<i>DISREQ</i>	<i>SECREG</i>
Panel A: Country-year regressions (N = 358)					
Securities regulation	–	–0.050*** (–2.80)	–0.100*** (–4.06)	–0.053** (–2.38)	–0.091*** (–3.70)
Securities regulation * Integration	+	0.029 (1.39)	0.102*** (3.90)	0.034 (1.20)	0.093*** (3.44)
Integration	–	–0.027 (–1.53)	–0.063*** (–3.69)	–0.022 (–0.86)	–0.052*** (–2.65)
Legal quality	–	–0.018 (–1.03)	–0.022 (–1.32)	–0.028 (–1.37)	–0.026* (–1.64)
Risk, industry, and year controls		included	included	included	included
$H_0 : \alpha_1 + \alpha_2 = 0$ (<i>p</i> -value)		0.056	0.821	0.128	0.850

Source: Hail and Leuz (2006a)

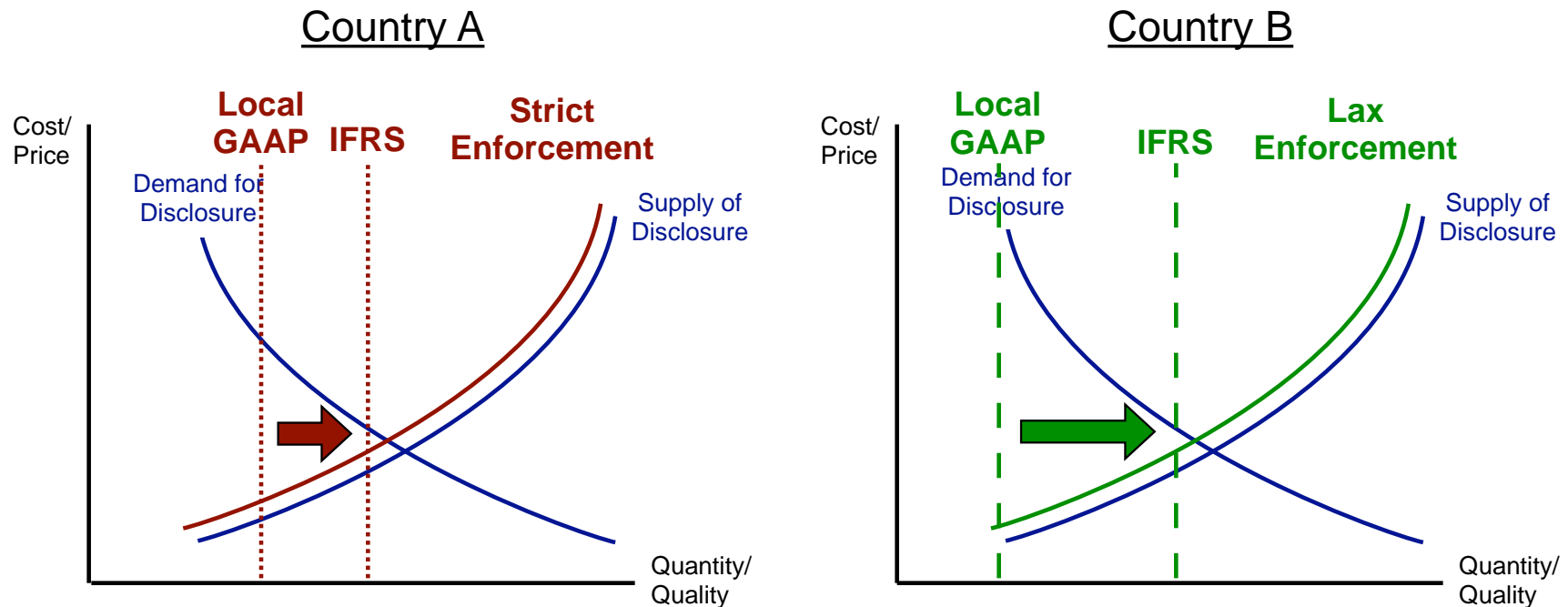
Mandatory Adoption of IFRS (1)

- Basic idea: Mandatory adoption of IFRS may increase transparency and make firm comparisons across markets and countries less costly
 - ⇒ Reduce information asymmetries and lower estimation risk (Armstrong et al., 2007; Covrig, DeFond, and Hung, 2007)
 - ⇒ Ease cross-border investment (Bradshaw, Bushee, and Miller, 2004), and grant access to new investor base (Merton, 1987)
- But: Accounting standards grant substantial discretion, and how this discretion is used depends largely on firms' reporting incentives



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Mandatory Adoption of IFRS (2)

*(Liquidity Factor as
Dependent Variable)*

*Country-Level Institutions
as Conditional Variables*

<i>Independent Variables</i>	<i>Model 1: Rule of Law (1 = Stricter Enforcement)</i>	<i>Model 2: Membership in the European Union (1 = Yes)</i>	<i>Model 3: Aggregate Earnings Management (1 = More Trans- parent Earnings)</i>	<i>Model 4: Difference Between Local GAAP and IFRS (1 = More Discrepancies)</i>
	IFRS Adopter Types:			
(1) Voluntary	-2.98 (-0.93)	11.74 (1.42)	-1.97 (-0.50)	10.53 (1.25)
(2) Voluntary*Conditional Variable	-2.71 (-0.58)	-17.92** (-2.09)	-2.92 (-0.59)	-15.70* (-1.79)
Test of (1) + (2) = 0 [p-Value]	[0.10]	[0.01]	[0.11]	[0.04]
(3) Voluntary*Mandatory	2.16 (0.90)	-4.66 (-1.36)	-1.26 (-0.55)	2.62 (0.51)
(4) Voluntary*Mandatory* Conditional Variable	-8.94*** (-3.21)	-0.78 (-0.21)	-9.01*** (-3.24)	-8.60 (-1.64)
Test of (3) + (4) = 0 [p-Value]	[0.00]	[0.00]	[0.00]	[0.00]
(5) First-Time Mandatory	0.99 (0.63)	2.83* (1.69)	-0.32 (-0.20)	-2.45* (-1.65)
(6) First-Time Mandatory* Conditional Variable	-8.67*** (-4.74)	-13.47*** (-6.90)	-9.13*** (-4.74)	-5.56*** (-2.98)
Test of (5) + (6) = 0 [p-Value]	[0.00]	[0.00]	[0.00]	[0.00]
Control Variables, Firm-Fixed and Industry-Year-Fixed Effects	Included	Included	Included	Included

Source: Daske et al. (2008)

Concluding Remarks

- Studies on disclosure regulation generally do not quantify the overall net benefit to the economy and overlook the costs of regulation.
- Disclosure regulation cannot be considered in isolation from other institutional forces in a given country as well as other countries.
- The globalization of financial markets limits the impact of local regulation.
- Costs and benefits of disclosure regulation differ widely across firms and it is unlikely that a uniform regulation and enforcement system meets the needs of all firms.
- Disclosure regulation and accounting standards afford significant discretion to managers and controlling insiders. It is therefore likely that other factors affect these insiders' reporting incentives and, hence, largely determine the quality of financial reporting.

(See also Leuz and Wysocki, 2006)

Final Caveat

**“The only possible conclusion
the social sciences can draw is:
some do, some don’t.”**

Ernest Rutherford (1871-1937)
New Zealand physicist,
Nobel Prize winner in 1908

References (1)

- Armstrong, C., M. Barth, A. Jagolinzer, and E. Riedl, 2007, Market Reaction to Events Surrounding the Adoption of IFRS in Europe, Working paper, Harvard Business School and Stanford University.
- Ball, R., S. P. Kothari, and A. Robin, 2000, The Effect of International Institutional Factors on Properties of Accounting Earnings, *Journal of Accounting & Economics* 29, 1–51.
- Bhattacharya, U., and H. Daouk, 2002, The World Price of Insider Trading, *Journal of Finance* 57, 75–108.
- Botosan, C., 1997, Disclosure Level and the Cost of Equity Capital, *The Accounting Review* 72, 323–349.
- Bradshaw, M., B. Bushee, and G. Miller, 2004, Accounting Choice, Home Bias, and U.S. Investment in Non-U.S. Firms, *Journal of Accounting Research* 42, 795–841.
- Burgstahler, D., L. Hail, and C. Leuz, 2006, The Importance of Reporting Incentives: Earnings Management in European Private and Public Firms, *The Accounting Review* 81, 983–1017.
- Bushman, R., and J. Piotroski, 2006, Financial Reporting Incentives for Conservative Accounting: The Influence of Legal and Political Institutions, *Journal of Accounting & Economics* 42, 107–148.
- Bushman, R., J. Piotroski, and A. Smith, 2005, Insider Trading Restrictions and Analysts' Incentives to Follow Firms, *Journal of Finance* 60, 35–66.
- Claus, J., and J. Thomas, 2001, Equity Premia as Low as Three Percent? Evidence from Analysts' Earnings Forecasts for Domestic and International Stock Markets, *Journal of Finance* 56, 1629–1666.
- Covrig, V., M. DeFond and M. Hung, 2007, Home Bias, Foreign Mutual Fund Holdings, and the Voluntary Adoption of International Accounting Standards, *Journal of Accounting Research* 45, 41–70.
- Daske, H., L. Hail, C. Leuz, and R. Verdi, 2007, Adopting a Label: Heterogeneity in the Economic Consequences of IFRS Adoptions, Working paper, University of Pennsylvania and University of Chicago.
- Daske, H., L. Hail, C. Leuz, and R. Verdi, 2008, Mandatory IFRS Reporting Around the World: Early Evidence on the Economic Consequences, *Journal of Accounting Research*, forthcoming.
- DeFond, M., and M. Hung, 2007, Investor Protection and Analysts' Cash Flow Forecasts Around the World, *Review of Accounting Studies* 12, 377–419.
- Doidge, C., G. Karolyi, and R. Stulz, 2004, Why are Foreign Firms Listed in the U.S. Worth More?, *Journal of Financial Economics* 71, 205–238.
- Easton, P., 2004, PE Ratios, PEG Ratios, and Estimating the Implied Expected Rate of Return on Equity Capital, *The Accounting Review* 79, 79–95.
- Easton, P., G. Taylor, P. Shroff, and T. Sougiannis, 2002, Using Forecasts of Earnings to Simultaneously Estimate Growth and the Rate of Return on Equity Investment, *Journal of Accounting Research* 40, 657–676.
- Errunza, V., and D. Miller, 2000, Market Segmentation and the Cost of Capital in International Equity Markets, *Journal of Financial and Quantitative Analysis* 35, 577–600.
- Francis, J., I. Khurana, and R. Pereira, 2005, Disclosure Incentives and Effects on Cost of Capital Around the World, *The Accounting Review* 80, 1125–1162.

References (2)

- Francis, J., R. LaFond, P. Olsson, and K. Schipper, 2004, Cost of Capital and Earnings Attributes, *The Accounting Review* 79, 967–1010.
- Hail, L., 2002, The Impact of Voluntary Corporate Disclosures on the Ex-Ante Cost of Capital for Swiss Firms, *European Accounting Review* 11, 741–773.
- Hail, L., 2007, Discussion of Investor Protection and Analysts' Cash Flow Forecasts Around the World, *Review of Accounting Studies* 12, 421–441.
- Hail, L., and C. Leuz, 2006a, International Differences in the Cost of Equity Capital: Do Legal Institutions and Securities Regulation Matter?, *Journal of Accounting Research* 44, 485–531.
- Hail, L., and C. Leuz, 2006b, Cost of Capital Effects and Changes in Growth Expectations around U.S. Cross-Listings, Working paper, University of Pennsylvania and University of Chicago.
- Healy, P., A. Hutton, and K. Palepu, 1999, Stock Performance and Intermediation Changes Surrounding Sustained Increases in Disclosure, *Contemporary Accounting Research* 16, 485–520.
- Jarrell, G., 1981, The Economic Effects of Federal Regulation of the Market for New Security Issues, *Journal of Law and Economics* 24, 613–675.
- Lambert, R., C. Leuz, and R. Verrecchia, 2007, Accounting Information, Disclosure, and the Cost of Capital, *Journal of Accounting Research* 45, 385–420.
- La Porta, R., F. Lopez-de-Silanes, and A. Shleifer, 2006, What Works in Securities Laws?, *Journal of Finance* 61, 1–32.
- Leuz, C., and R. Verrecchia, 2000, The Economic Consequences of Increased Disclosure, *Journal of Accounting Research* 38, 91–124.
- Leuz, C., and P. Wysocki, 2006, Capital-Market Effects of Corporate Disclosures and Disclosure Regulation, Research Study on behalf of the Task Force to Modernize Securities Legislation in Canada.
- Merton, R., 1987, A Simple Model of Capital Market Equilibrium with Incomplete Information, *Journal of Finance* 42, 483–510.
- Morck, R., B. Yeung, and W. Yu, 2000, The Information Content of Stock Markets: Why Do Emerging Markets Have Synchronous Stock Price Movements?, *Journal of Financial Economics* 58, 215–260.
- Ohlson, J., 1995, Earnings, Book Values, and Dividends in Equity Valuation, *Contemporary Accounting Research* 11, 661–687.
- Ohlson, J., and B. Juettner-Nauroth, 2005, Expected EPS and EPS Growth as Determinants of Value, *Review of Accounting Studies* 10, 349–365.
- Pincus, M., S. Rajgopal, and M. Venkatachalam, 2007, The Accrual Anomaly: International Evidence, *The Accounting Review* 82, 169–203.
- Verrecchia, R., 2001, Essays on Disclosure, *Journal of Accounting & Economics* 32, 91–180.
- Welker, M., 1995, Disclosure Policy, Information Asymmetry, and Liquidity in Equity Markets, *Contemporary Accounting Research* 11, 801–827.