



# MANAGERIAL QUALITY MEASUREMENT AND APPLICATIONS

by

Baruch Lev

New York University

[www.baruch-lev.com](http://www.baruch-lev.com)

[blev@stern.nyu.edu](mailto:blev@stern.nyu.edu)

May 2010

© Baruch Lev. All rights reserved



# HISTORICAL PERSPECTIVE

- ✗ Our question:

What's the effect of managerial quality, or talent on corporate performance?

or

Are managers as important as the circumstances:  
Economy and industry factors, firm size, intellectual property (patents, brands)?

- ✗ This is similar to the historical debate: Do people or circumstances affect history?

Think: Napoleon, Hitler, Stalin and Churchill.

But what about Mikhail Gorbachev?



## HISTORICAL PERSPECTIVE - CONTINUED

- ✗ William Shakespeare had the right answer (in *Twelfth Night*, spoken by Malvolio):  
“Some men are born great, some achieve greatness, and some have greatness thrust upon them.”
- ✗ So, like all complex questions- does heredity or the environment shape us?—the answer is **both**.  
Managers are clearly crucial for corporate success (otherwise, why pay them so much?).





## MANAGERS' IMPACT IS SUBSTANTIAL

- ✗ Compare how Citigroup and JPMorgan Chase weathered the 2007-2008 financial crisis.
- ✗ Lou Gerstner saved IBM, starting in 1993 (Share price increased during his tenure from \$12 to \$103)
- ✗ Compare Jack Welch's leadership of General Electric (1981-2001: Share price increased from \$0.50 to \$33.50) with Jeff Immelt's ( 2001- today: share price decreased from \$33.50 to \$13.87)
- ✗ And what about Warren Buffet at Birkshire Hathaway? (1965-2007: EPS rose from \$4.00 to \$4,093).



# ECONOMIC/FINANCE THEORY VS. REALITY

- ✗ Managerial quality is a “big issue” in the business world:
  - + Huge and controversial managerial compensation
  - + Leadership issues in business school courses and books
  - + Managers as celebrities
- ✗ Economic and finance theories all but ignore managerial quality and impact. Emphasis on factors of production: capital, labor, etc.; industrial structure; and supply and demand conditions.



# RECENT, IMPORTANT SHIFTS: MANAGEMENT IS FINALLY RECOGNIZED BY RESEARCHERS

- ✗ The effects of **overconfident** managers: They overinvest in poor projects and M&As. (Malmendier and Tate, *Journal of Finance*, December 2005).
- ✗ CFOs **style** (gender, age, educational background): Older CFOs are more conservative in financial reporting; CFOs with undergraduate degrees are more aggressive (Ge et al., “Do CFOs Have Styles of Their Own?”, 2008, University of Washington).
- ✗ Managers’ **personality** and **ethics** predict fraud (Cohen et al., “The Role of Managers’ Behavior in Corporate Fraud,” 2008, Boston College).





## RECENT RESEARCH CONTINUED

- ✗ Do CEOs matter? Yes. CEOs death (in Denmark at least) negatively affects future firm performance; the death of a board member has no effect on performance (Bennedsen et al., “Do CEOs Matter?” 2006, Copenhagen Business School).
- ✗ Which CEOs skills matter? Execution-type skills (resolve, drive, proactive) more than interpersonal and team-related skills (a good listener). (Kaplan et al., “Which CEO Characteristics and Abilities Matter,” 2009, University of Chicago).

**Missing: Measurement of Managerial Quality**



## WHY MEASURE MANAGERIAL QUALITY?

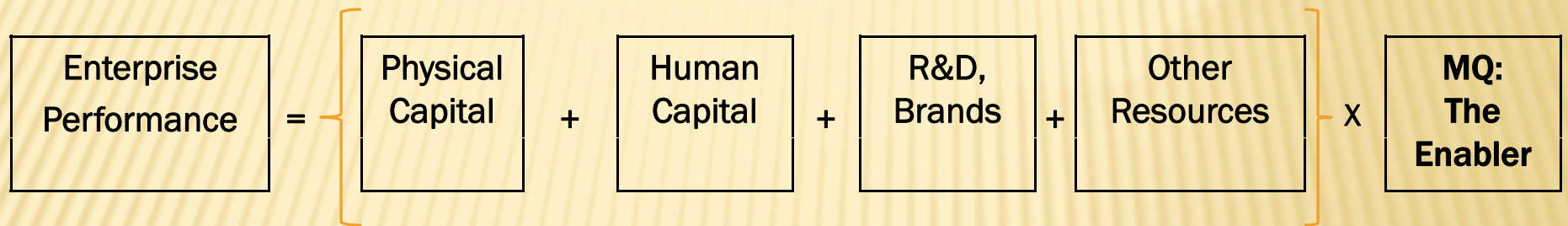
- ✖ Managerial quality is arguably the most important intangible asset of a company.
- ✖ Managerial quality measurement is critical for a fair and effective compensation (pay) of managers.
- ✖ Managerial quality is a major driver of corporate value and, therefore, of considerable interest to investors. Unlike other value-drivers (e.g., oil reserves, commercial property, bank branches), managerial quality is **unique** to the firm and therefore very hard to value.





# THE MEASUREMENT OF MANAGERIAL QUALITY

Companies' Production Function:



## Stylized Example

Companies	Sales Growth	Physical Capital Growth	Labor Growth	Managerial Quality
A	10%	10%	10%	–
B	15%	10%	10%	5%

(An alternative calculation of managerial quality using Data Envelop Analysis (DEA), in P. Demerjian, B. Lev and Sarah McVay, "Quantifying Managerial Ability: A New Measure and Validity Tests," 2009.)



# LEV-RADHAKRISHNAN ESTIMATION OF MANAGERIAL QUALITY (MQ)

Revenue Growth  
(Cost  
Containment)

=  $\beta_1$

Change Physical  
Capital

+  $\beta_2$

Change No.  
Employees

+  $\beta_3$

Change  
R&D

+  $\beta_4$

MQ Proxied  
by SG&A

## Details:

- SG&A (sales, general and administrative expenses) includes most expenditures for MQ: managers' compensation, consultants' fees, IT expenses, advertising, etc.
- Estimation done yearly and within industries
- The form of the estimation model is multiplicative, regression run on logs of variables.

Source: B. Lev and S. Radhakrishnan, "The Valuation of Organization Capital," in Measuring Capital in the New Economy, National Bureau of Economic Research, 2005.



# A FEEL FOR THE ESTIMATES: IBM ILLUSTRATION

(Monetary amounts in \$millions)

**Panel A: Fundamental Data**

Year	SALE	SGA	PPE	EMP	RND
1994	62,716	23,840	17,521	256	14,504
1995	64,052	20,279	16,664	220	12,960
1996	71,940	20,448	16,579	225	13,625
1997	75,947	21,508	17,407	241	12,934
1998	78,508	21,511	18,347	269	12,829
1999	81,667	21,708	19,631	291	13,039
2000	87,548	21,854	17,590	307	13,351

**Panel B: log(Growth)**

Year	$\log(SGA_t/SGA_{t-1})$	$\log(PPE_t/PPE_{t-1})$	$\log(EMP_t/EMP_{t-1})$	$\log(RND_t/RND_{t-1})$
1995	-.1618	-.0501	-.1531	-.1126
1996	.0083	-.0051	.0247	.0500
1997	.0505	.0487	.0656	-.0520
1998	.0001	.0526	.1132	-.0081
1999	.0091	.0676	.0771	.0162
2000	.0067	-.1098	.0546	.0236

**Panel C: Estimates of Expression (4): Industry-wide coefficients**

Year	$B_4$	$B_1$	$B_2$	$B_3$
1995	.30	.10	.39	.08
1996	.31	.10	.34	.08
1997	.24	.09	.36	.07
1998	.25	.10	.33	.08
1999	.31	.12	.34	.09
2000	.27	.09	.32	.11

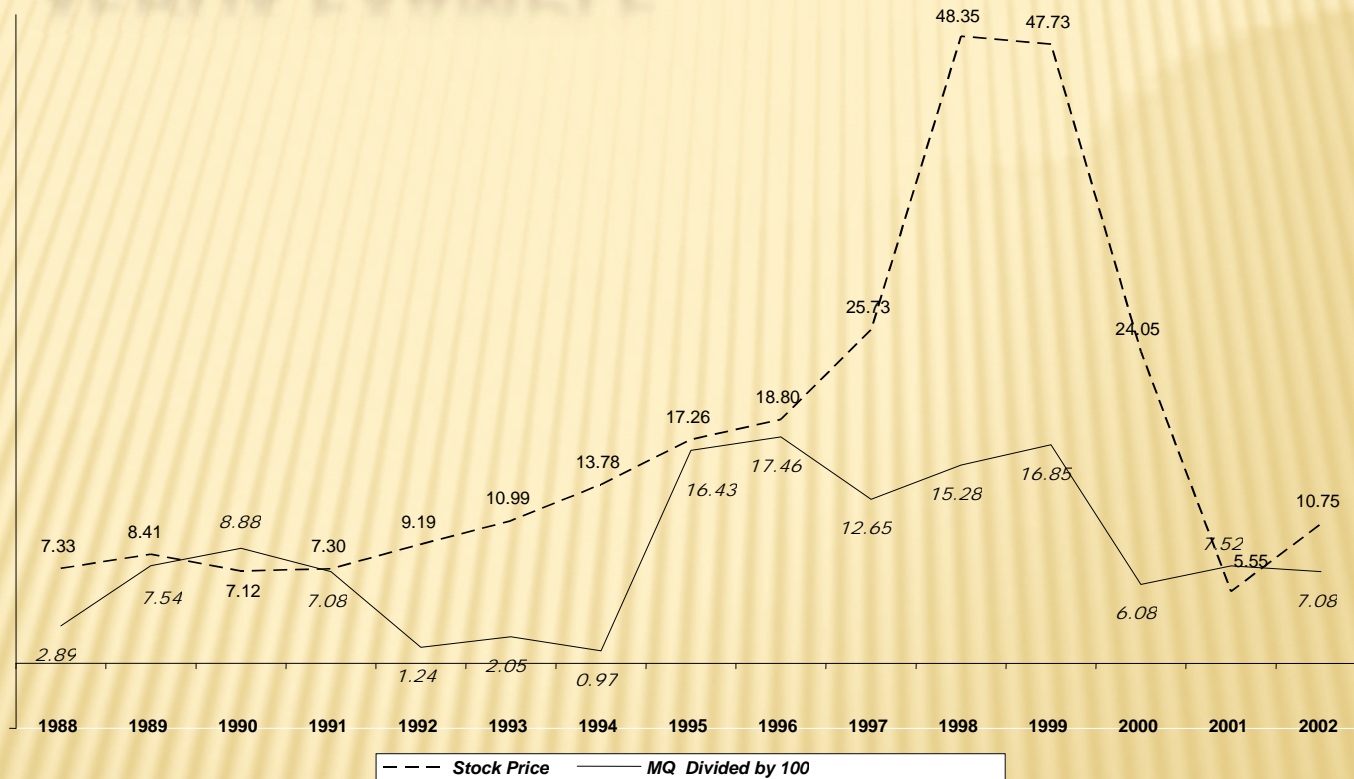
**Panel D: Computations**

Year	SALES	Predicted sales without OC	MQ
1995	64,052	58,899	5,153
1996	71,940	64,447	7,493
1997	75,947	72,872	3,075
1998	78,508	76,301	2,207
1999	81,667	79,476	2,191
2000	87,548	81,221	6,327



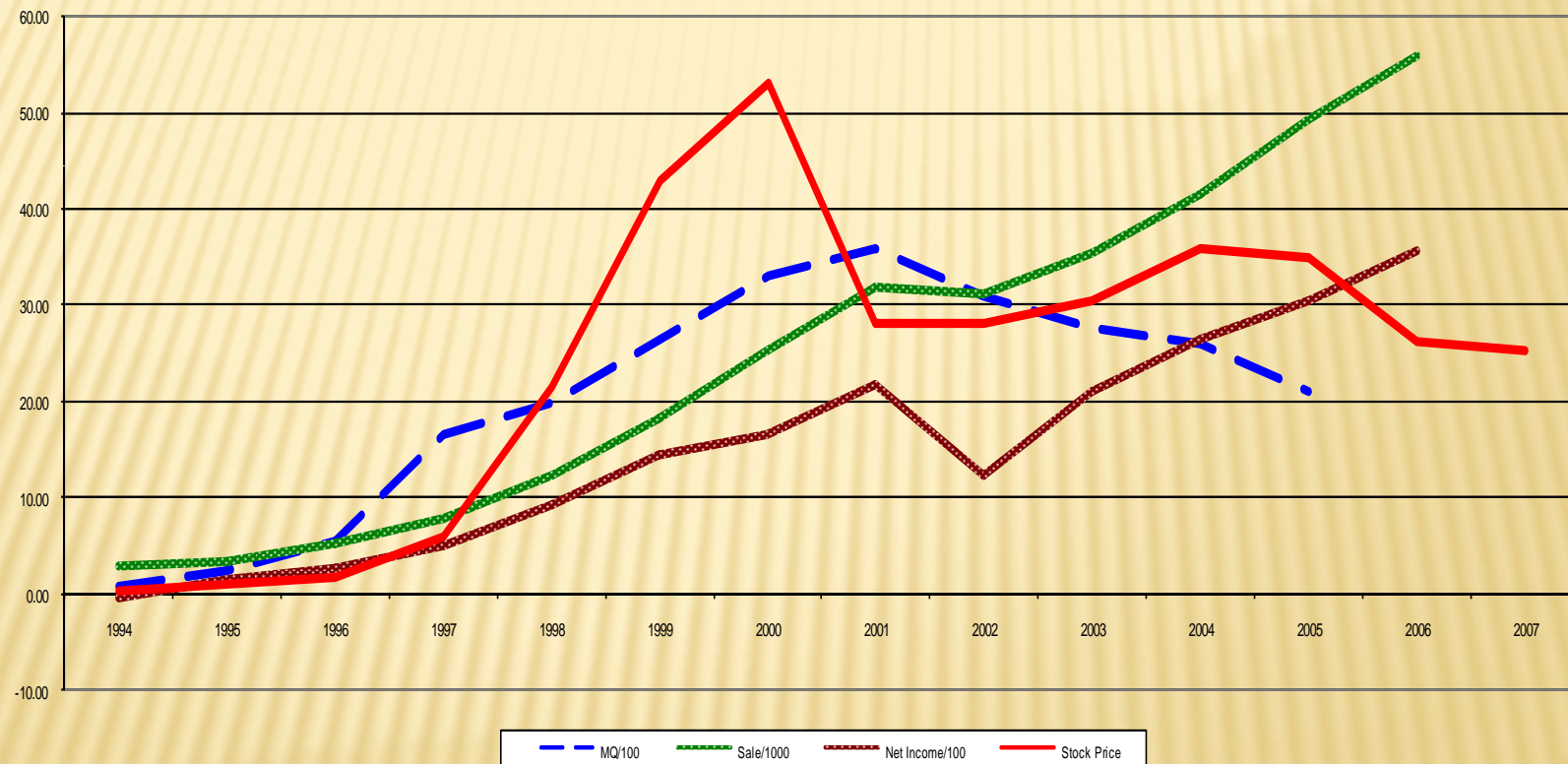


# THE PREDICTIVE POWER OF MANAGERIAL QUALITY XEROX EXAMPLE





# Dell: Managerial Quality Leading Earnings, Sales and Stock Prices





# PROOF OF CONCEPT: DOES MANAGERIAL QUALITY AFFECT SHAREHOLDER VALUE?

Equity Valuation Model

$$\boxed{\text{Enterprise Value}} = \boxed{\text{Assets In Place}} + \boxed{\text{Growth Potential}}$$

$$\boxed{\text{Growth Potential}} = \boxed{\text{Present Value Abnormal Earnings}} = \boxed{\text{Expected Earnings* Minus Cost of Equity}} + \boxed{\text{Terminal Enterprise Value}}$$

Inserting our estimate of organization capital:

$$\boxed{\text{Enterprise Value}} = \boxed{\text{Assets In Place}} + \boxed{\text{Growth Potential}} + \boxed{\text{Managerial Quality}}$$

**Finding:** MQ accounts for 24% of companies' differences in market-over-book value.

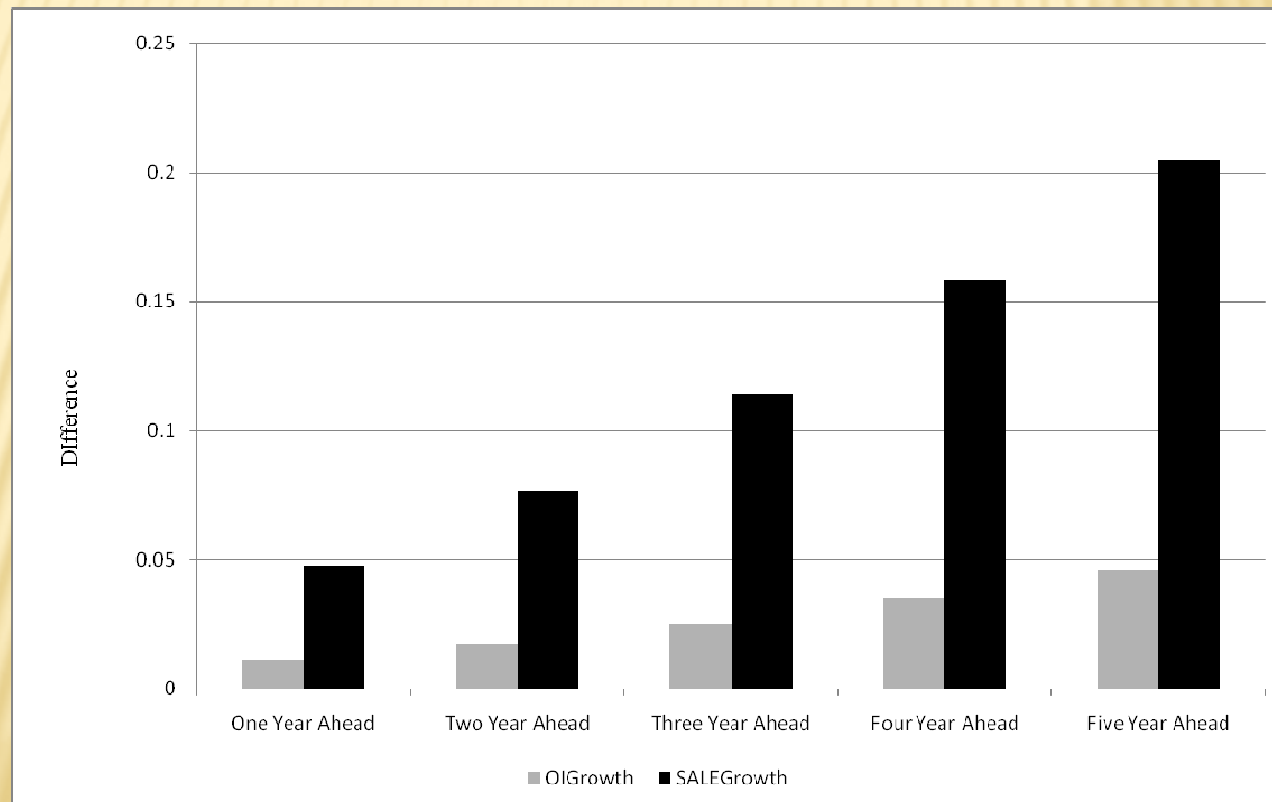
\*Expected corporate earnings are derived from consensus analyst forecasts.





# MOST IMPORTANTLY: MQ PREDICT FUTURE COMPANY AND STOCK PERFORMANCE

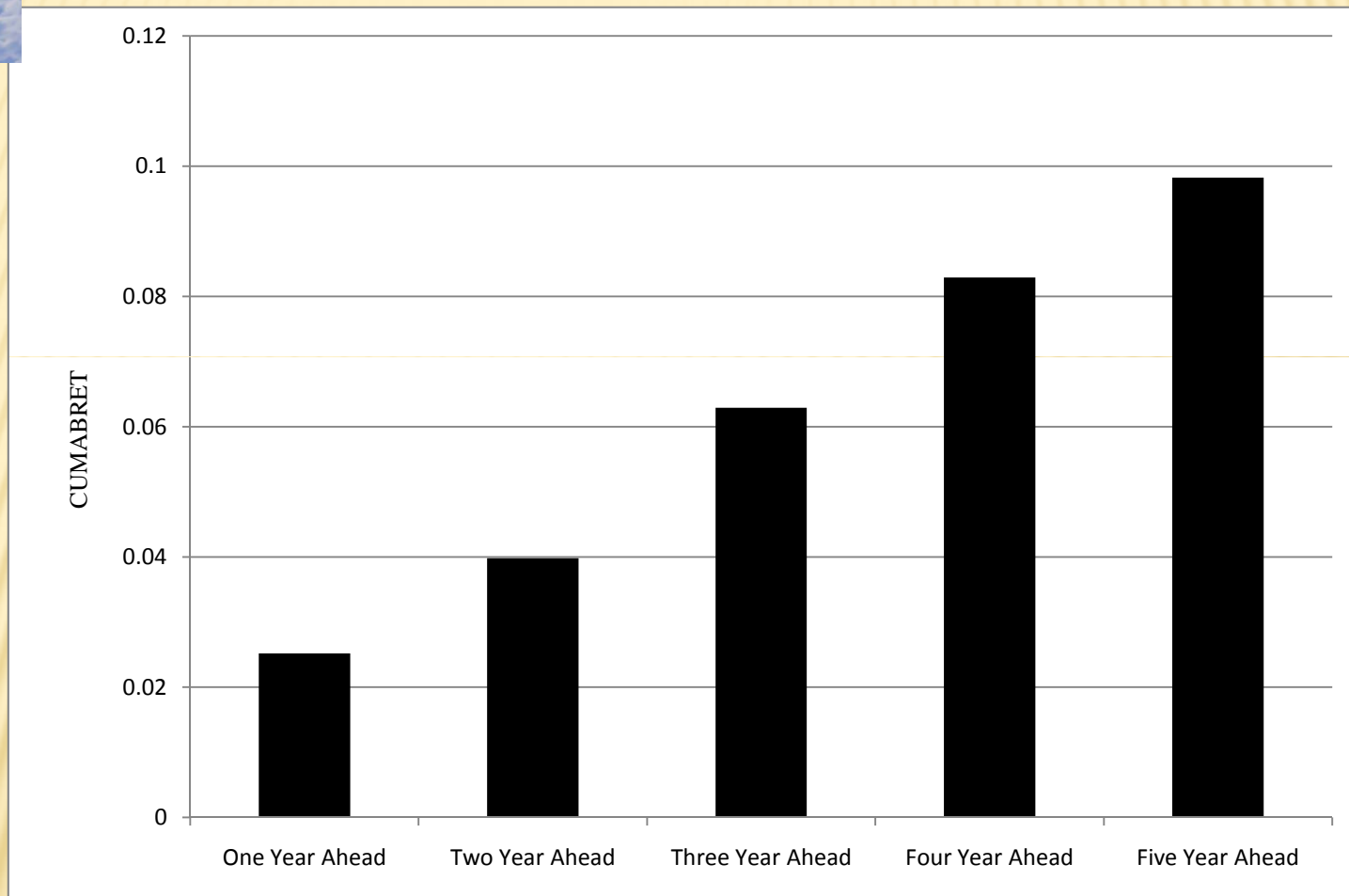
Figure 2: Difference in Future Operating Performance across the Top and Bottom MQ Firms



Source: B. Lev, S. Radhakrishnan and W. Zhang, "Organization Capital," 2009, *Abacus*, forthcoming.



**Figure 3: Difference in Future Excess Returns across the Top and Bottom MQ Firms**



Source: B. Lev, S. Radhakrishnan and W. Zhang, "Organization Capital," 2009, *Abacus*, forthcoming.



## TAKEAWAY



- ✘ Managerial quality is crucial for company performance and shareholder value.
- ✘ Managerial quality can be reliably measured, offering important applications:
  - + Investment analysis and securities valuation.
  - + Managerial compensation.
  - + Corporate governance (tracking changes in MQ).

