

# MISMEASUREMENT OF INTANGIBLES AND ITS CONSEQUENCES

By

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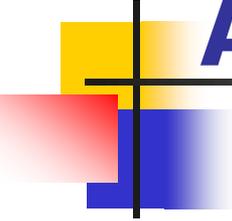
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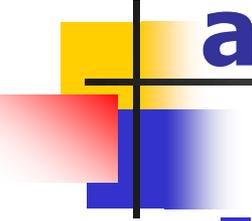


# At A Glance

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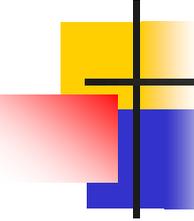
- How Large and Consequential Are the Corporate Sector's Intangible Assets.
- Intangibles are Mismeasured by Corporations and their Reporting Is Seriously Biased.
- So What? Private and Social Consequences of the Reporting Biases.
- Remedies for the Mismeasurements: Enhanced Recognition and Disclosure of Intangibles.
- A Role for Public Policy?

# How Large and Consequential are Intangibles?



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- Nakamura's \$1 Trillion Annual Investment.
- 4:1 Price-to-Book Ratio.
- Macro-Economic Impacts of Intangibles.



## Leonard Nakamura

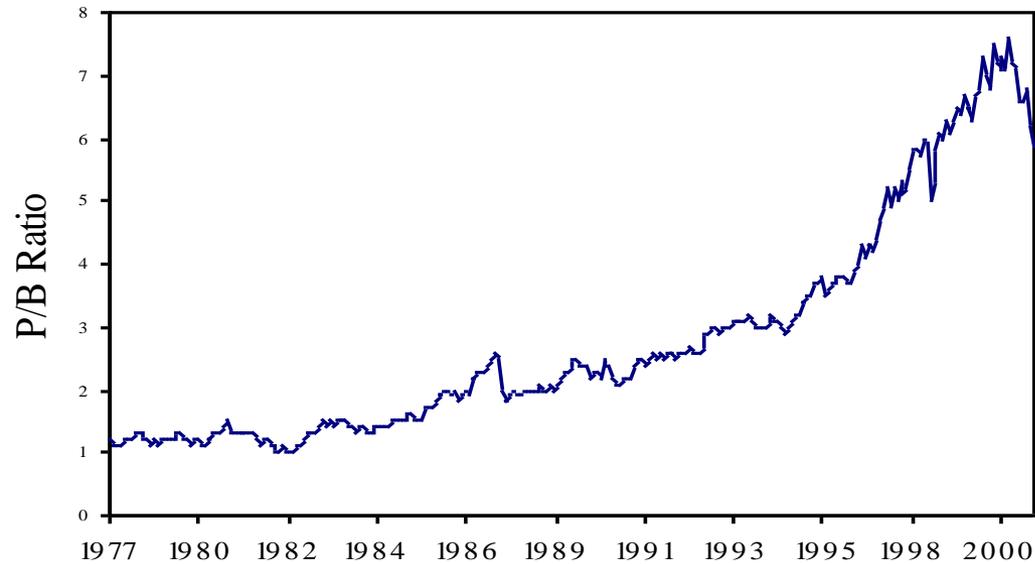
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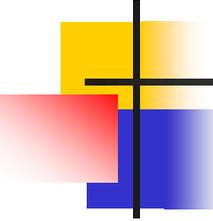
I argue that U.S. private gross investment in intangibles is at least \$1 trillion. Most of this investment goes uncounted. This is not surprising, in that it is new: the rate of investment in intangibles, and its economic value, accelerated significantly beginning around 1980.

An intangibles investment rate of \$1 trillion suggests that U.S. businesses are investing nearly as much in intangibles as they are in plant and equipment.

If we are investing \$1 trillion a year in intangibles...then the long-run equilibrium value of intangibles is \$6 trillion.

# The Average Price-to-Book Ratio of the S&P 500 Companies: December 1977- March 2001





## Alan Greenspan

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From one perspective, the ever-increasing proportion of our GDP that represents conceptual as distinct from physical value added may actually have lessened cyclical volatility. In particular, the fact that concepts cannot be held as inventories means a greater share of GDP is not subject to a type of dynamics that amplifies cyclical swings. But an economy in which concepts form an important share of valuation has its own vulnerabilities.

As the recent events surrounding Enron have highlighted, a firm is inherently fragile if its value added emanates more from conceptual as distinct from physical assets. A physical asset, whether an office building or an automotive assembly plant, has the capability of producing goods even if the reputation of the managers of such facilities falls under a cloud. The rapidity of Enron's decline is an effective illustration of the vulnerability of a firm whose market value largely rests on capitalized reputation. The physical assets of such a firm comprise a small proportion of its asset base. Trust and reputation can vanish overnight. A factory cannot.

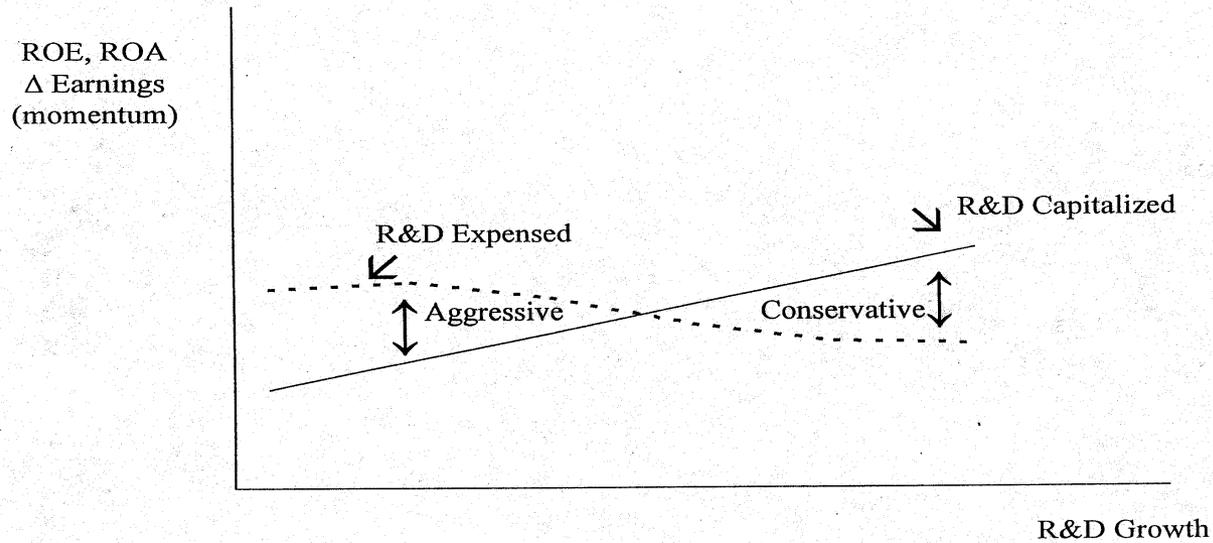
# Mismeasurement and Biased Reporting of Intangibles

- The myth of conservative accounting: Mismeasurements of Assets and Income of Intangibles-Intensive Enterprises.
- Endogenous Software Capitalization: Computer Associates-Yes; Microsoft-No.
- Asymmetric Accounting: Expense Internally-Generated Intangibles, Capitalize Acquired Intangibles.

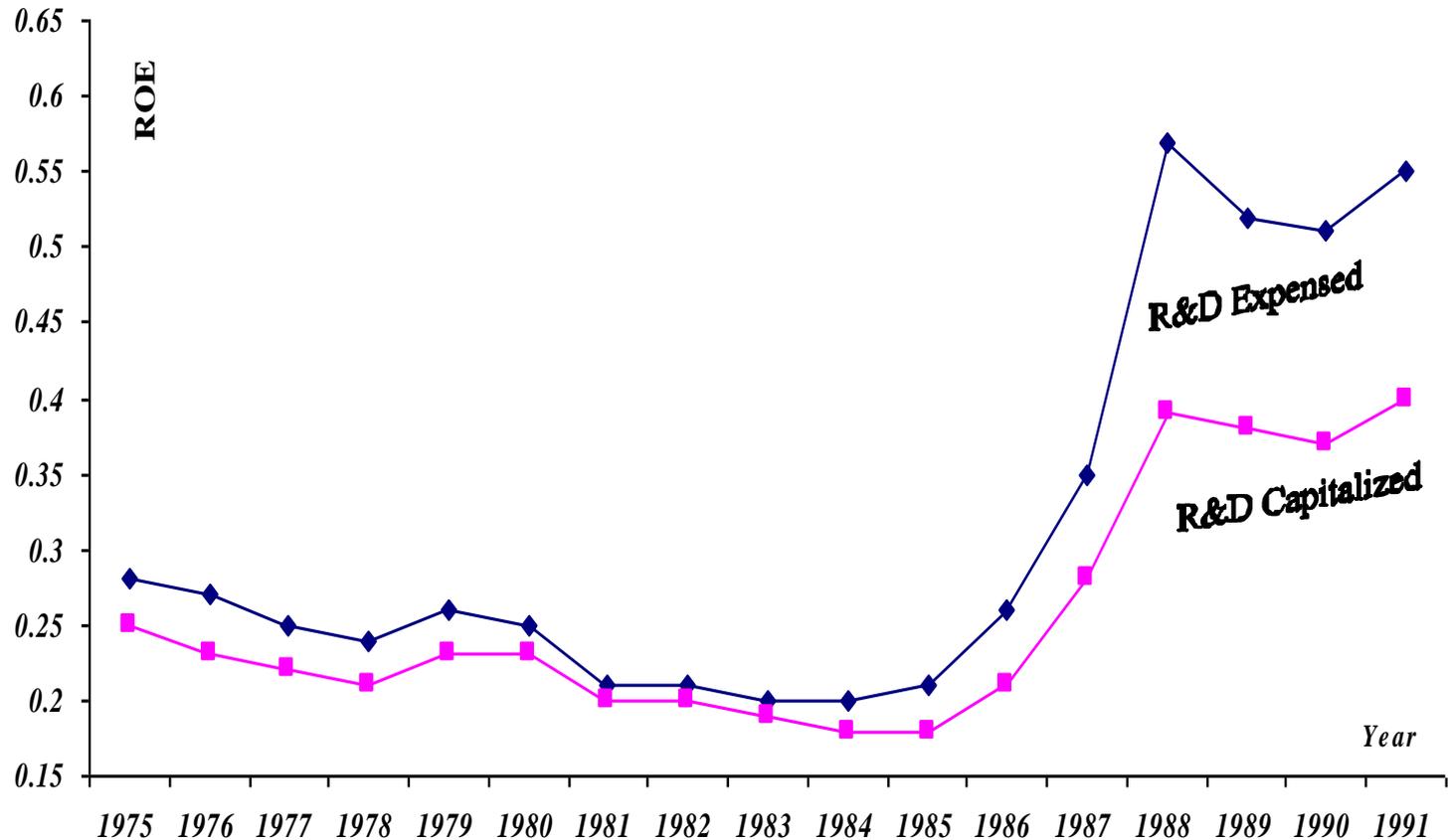
# Mismeasurement and Biased Reporting of Intangibles - *Continued*

- Manipulation with In-Process R&D.
- Manipulation with R&D Expenditures (and Other Intangibles?).
- Reporting Opaqueness: No Information on Employee Training, Brand Enhancement, Software and Technology Acquisitions, R&D Breakdowns, Innovation Revenues, etc., etc.

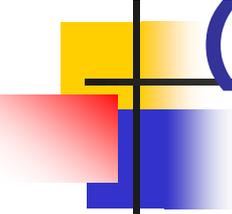
## Reported Profitability and the Accounting Treatment of Intangibles



# Merck & Co.: Return on Equity (ROE) Based on Expensing (top curve) and Capitalization (bottom curve of R&D)

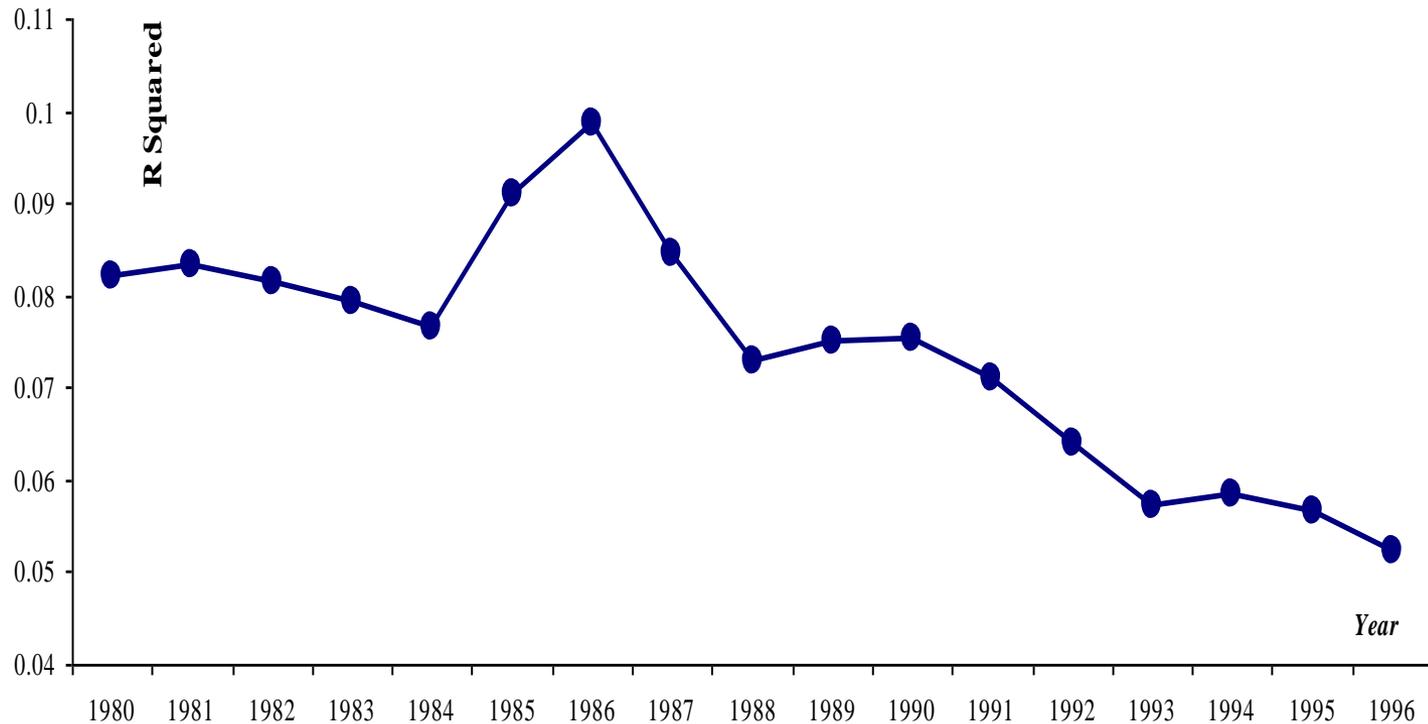


# Private and Social Consequences (Empirically Documented)



- Deteriorating Informativeness of Financial Reports (Managers Voting with their Feet).
- Systematic Undervaluation of Young, Intangibles-Intensive Companies  $\Rightarrow$  Excessive Cost of Capital.
- Under investment in R&D (and by Implication in Other Intangibles).
- Excessive Insider Gains in R&D-Intensive Companies.
- Deficient Monitoring by Capital Markets: Fact and Fiction About Intangibles (Enron, etc.).
- Deficient Macro-Economic Data?

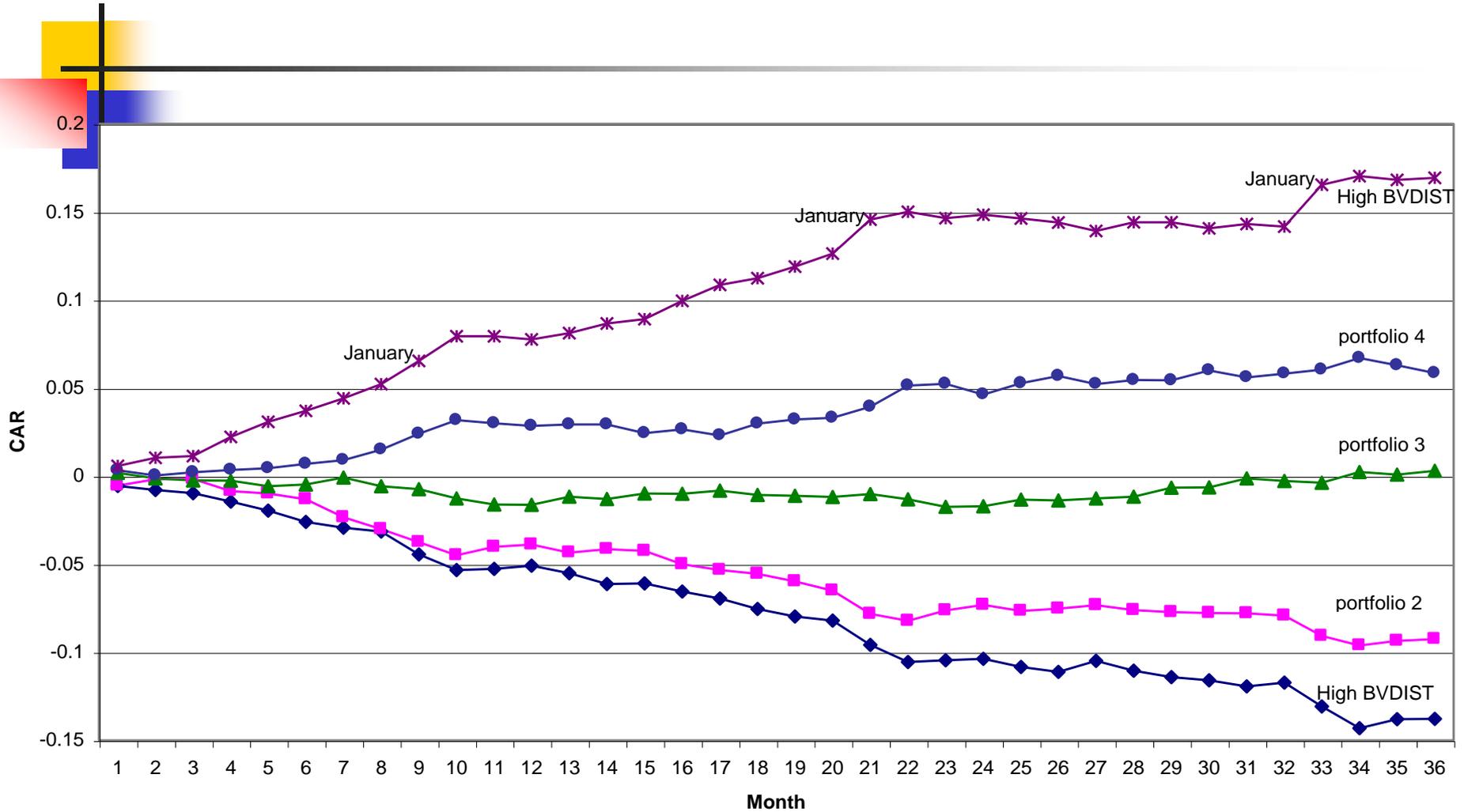
# The Association Between Annual Earnings and Stock Returns



# Remedies (Empirically Supported)

1. Accounting Recognition:  
The Comprehensive Balance Sheet (Proof: Software Capitalization).
2. Enhanced Disclosure:
  - The Biotech Disclosure Index.
  - Quantitative Information About Trademarks.
  - The Valuation-Relevance of “Innovation Revenues.”
  - The Information Content of Patent Citations and Royalty Income.
3. The Value-Chain Blueprint.

# 36-month CAR for BVDIST quintiles



# THE VALUE CHAIN BLUEPRINT™

## **DISCOVERY & LEARNING**

1

### **INTERNAL RENEWAL**

- Research and development
- Work force training and development
- Organizational capital, processes

2

### **ACQUIRED CAPABILITIES**

- Technology purchase
- Spillover utilization
- Capital expenditures

3

### **NETWORKING**

- R&D alliances and joint ventures
- Supplier and customer integration
- Communities of practice

## **IMPLEMENTATION**

4

### **INTELLECTUAL PROPERTY**

- Patents, trademarks, and copyrights
- Licensing agreements
- Coded know-how

5

### **TECHNOLOGICAL FEASIBILITY**

- Clinical tests, Food and Drug Administration approvals
- Beta tests, working pilots
- First Mover

6

### **INTERNET**

- Threshold Traffic
- Online Purchases
- Major Internet Alliances

## **COMMERCIALIZATION**

7

### **CUSTOMERS**

- Marketing Alliances
- Brand values
- Customer churn and value
- Online sales

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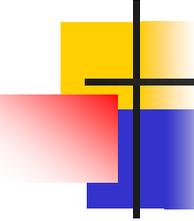
### **PERFORMANCE**

- Revenues, earnings, and market share
- Innovation revenues
- Patent and know-how royalties
- Knowledge earnings and assets

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### **GROWTH PROSPECTS**

- Product pipeline and launch dates
- Expected efficiencies and savings
- Planned initiatives
- Expected breakeven and cash burn rate



# A Role for Policymaking

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- Create a Language—Standardized Reporting for Intangibles.
- Decrease Information Asymmetry (e.g., Instantaneous Reporting of Insider Trading).
- Collect Relevant Data (e.g., “Innovation Revenues”).
- Get Involved in GAAP.