Why is the United States in Debt to the World?*

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* Prepared for the Joe Tiao Lecture at Kansas State University. Much of the material is based on "Technology Capital and the U.S. Current Account" written jointly with Ed Prescott

Net International Investment Position (NIIP)

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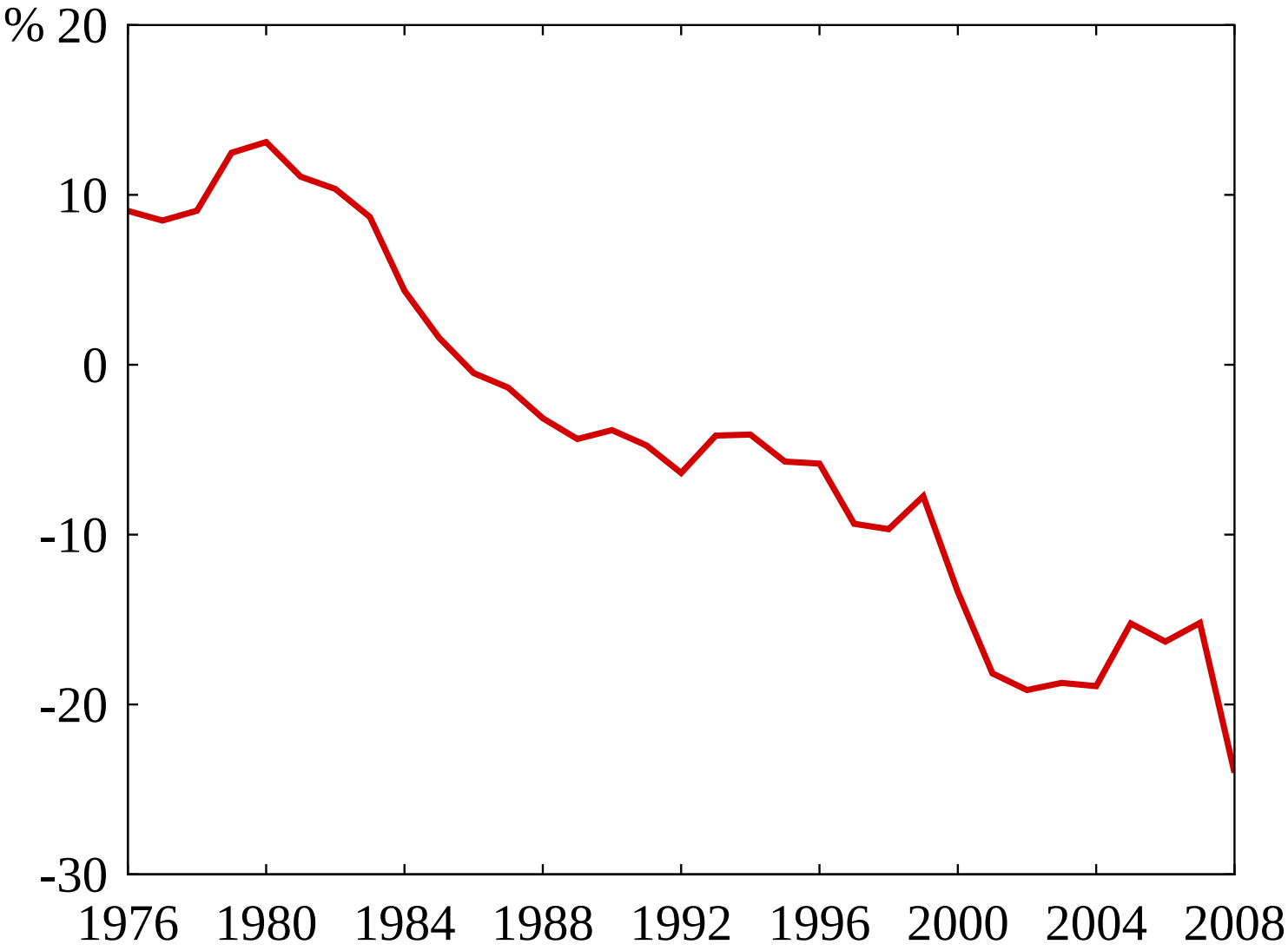
  - or, What US owns abroad less what others own here
- How big is it for the US?
  - −$3.5 trillion at year-end 2008
  - or, −24% of US gross domestic product

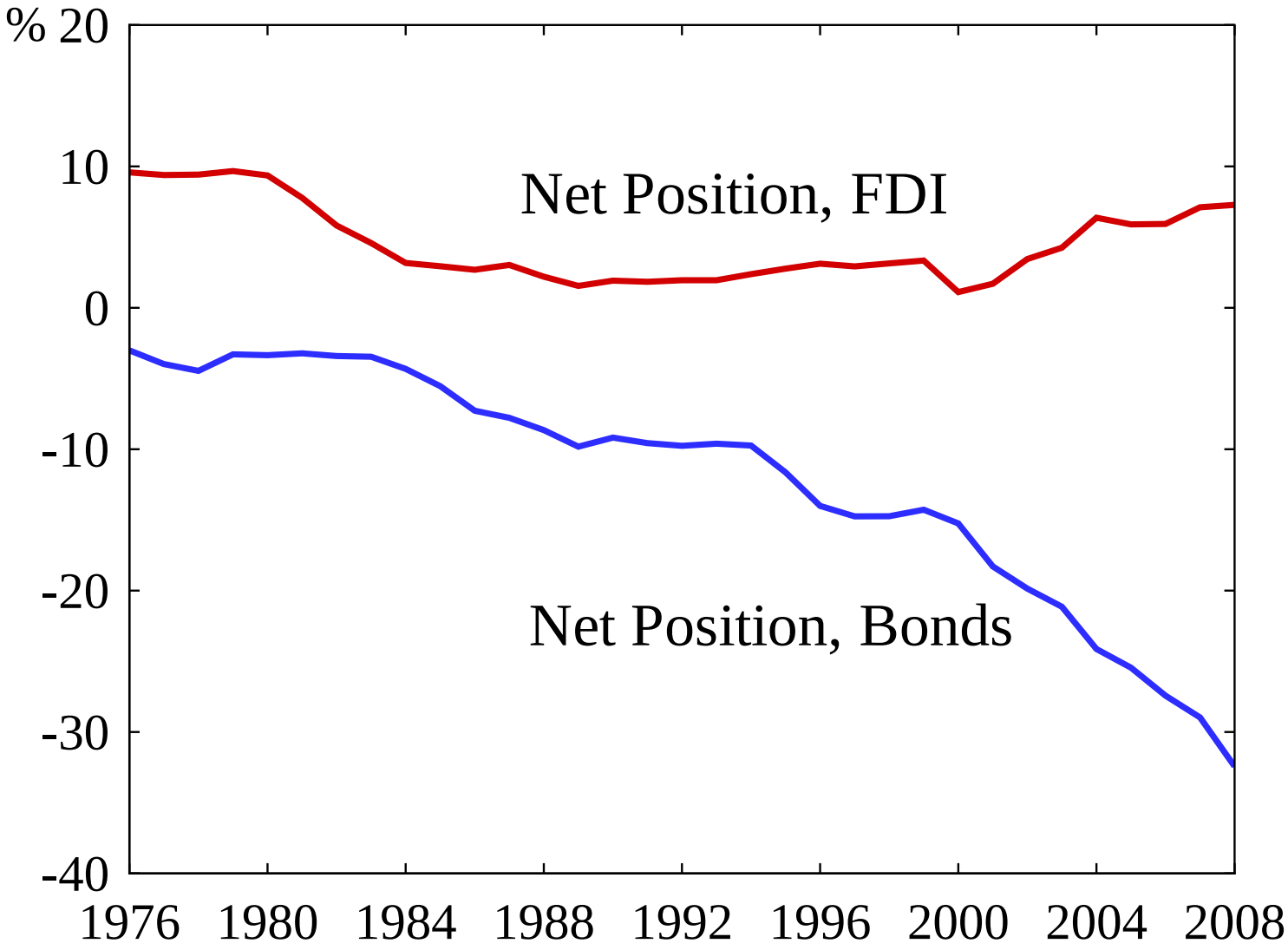
US Net IIP, As a % of GDP



US Net IIP Relative to GDP

- Why is it falling?
  - Foreign holdings of US bonds have risen dramatically
  - Assets from direct investment abroad haven't kept pace

Two Large Components, As a % of GDP



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- Why should we care?
  - Some say its unsustainable and predict future crises
  - Policymakers may intervene with bad policy

A Puzzle

- Income of US residents (GNP)

  $=$ US gross domestic product (GDP)

  $+$ Income from abroad

  $+$ Income to foreigners

  $\approx$ GDP (because net income from abroad $\approx$ zero)

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  + Income from abroad (mostly corporate profits)

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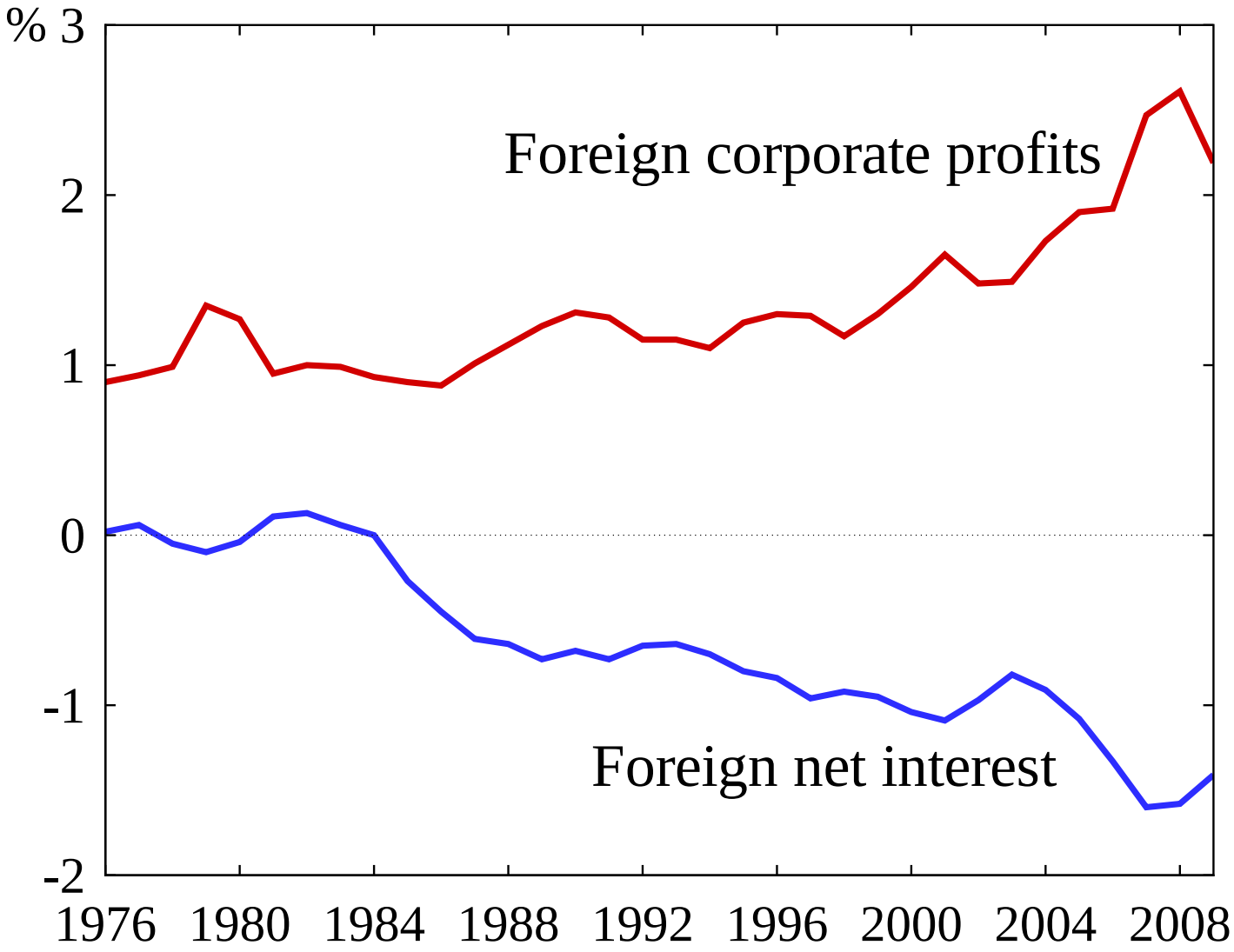
Foreign Incomes, As a % of GDP



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  = US gross domestic product (GDP)

  + Income from abroad (mostly corporate profits)

  + Income to foreigners (mostly interest on bonds)

  ≈ GDP (because net income from abroad ≈ zero)

- **If incomes offset, why don't assets and liabilities?**

A Clue: Strange Patterns in FDI

What is FDI?

- FDI = Foreign direct investment

  = Investment in business abroad if ownership over 10%

  $\approx$ Investment of multinationals abroad

Strange Patterns in FDI

- US Multinationals
  - Make large after-tax profits abroad
  - Relative to the assets abroad

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- Why do US subsidiaries do so much better than parents?

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  - Estimates of cheating not high enough to resolve puzzle
- What else is there?

Why do Subsidiaries do Better?

- "Intangible" capital is not counted
  - R&D
  - Brands
  - Organizational know-how
- Multinationals
  - Have a lot of intangible capital
  - Expense most of it at home

Examples

- General Motors uses American patents to produce in Europe
- Starbucks builds brand in America but uses it worldwide
- Citigroup has headquarters in NYC for global operations

Subsidiaries vs. Parents

- If a US multinational does its R&D in US
  - US and foreign operations get profits from it
  - Only from US profits is investment subtracted
  - Neither region records R&D capital

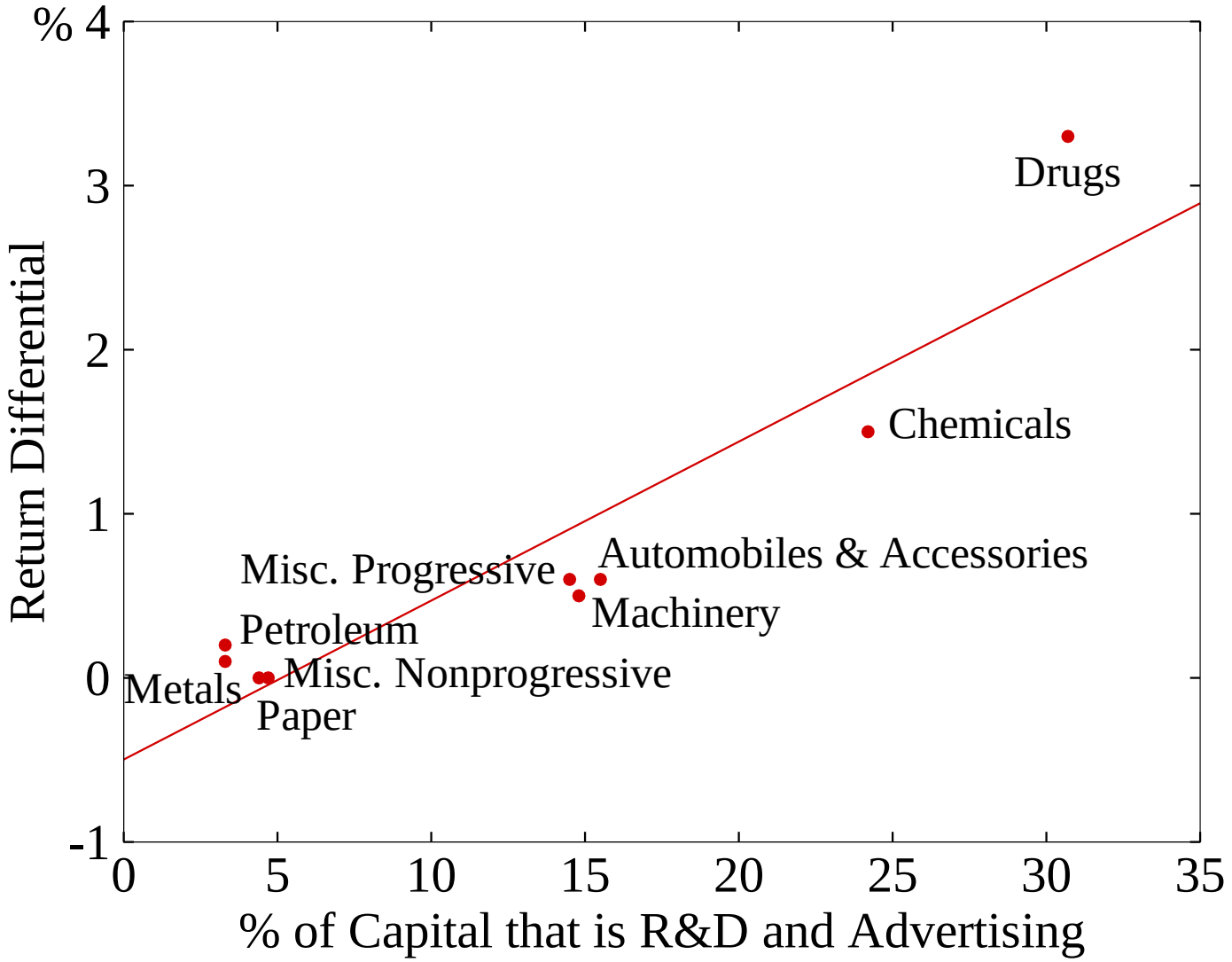
$\Rightarrow$ Both returns mismeasured, but foreign is higher

Evidence from Industry-level and Firm-level Data

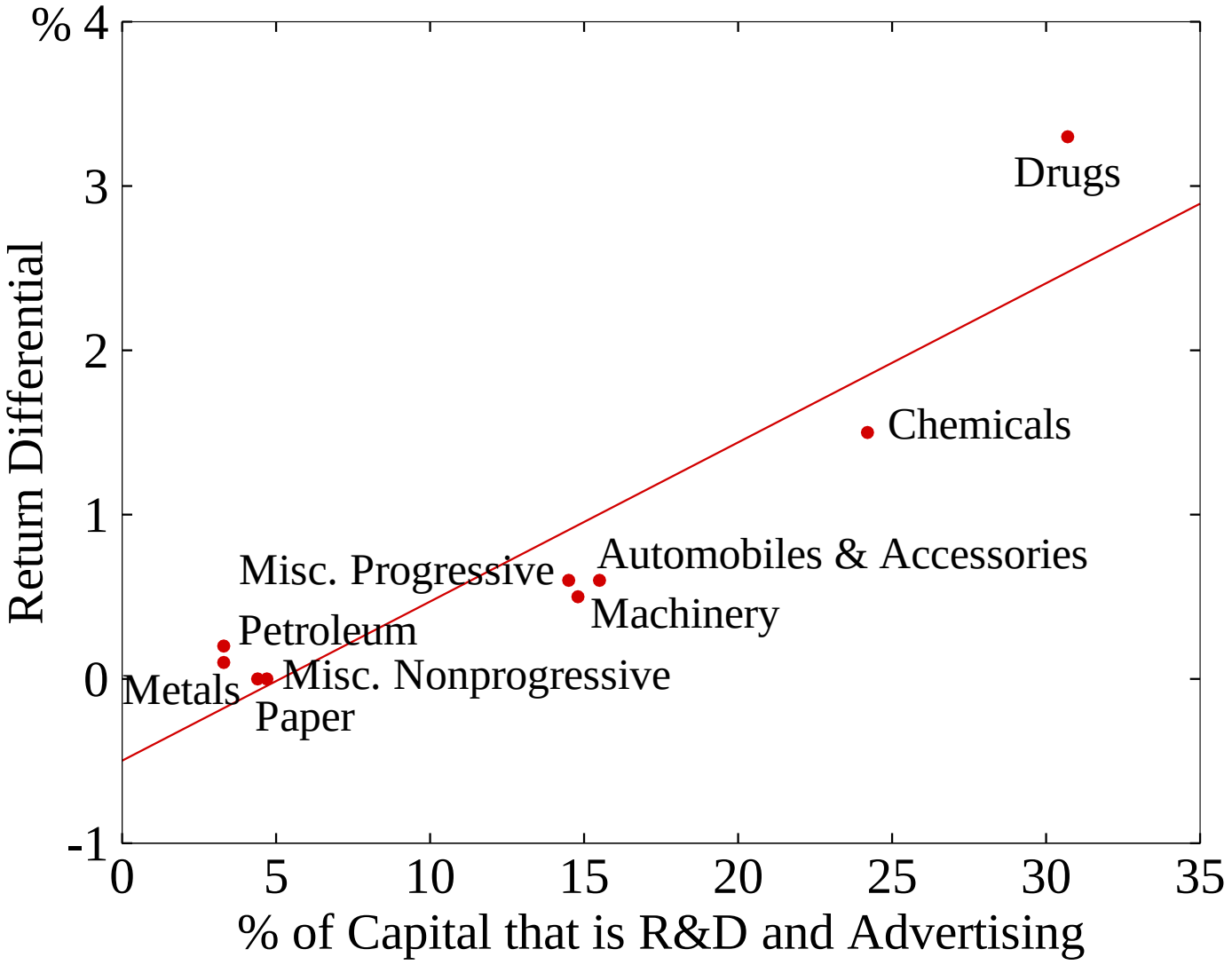
Returns Higher with Advertising and R&D

- Early studies of advertising
  - Found strong relation between returns and spending
  - Attributed relation to market power
  - Resulted in anti-competitive suits by the FTC
- Later studies of advertising and R&D
  - Corrected for fact that these intangibles are expensed
  - Found significantly reduced differential in returns

Results of Grabowski and Mueller (1978)



Shows Adding Expensed Capital Important



Regressing Return Differentials on % of Capital

Return differential

$$= \text{Return if intangibles expensed} - \text{return if capitalized}$$

$$= .5 + .097 \times \text{Fraction of capital in intangible}$$
$$(.017)$$

$\Rightarrow$ Return on Drugs with 30% intangible looks 3.4% higher

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  ... should be higher if parents do lots of R&D

Returns Increase with R&D Intensity of Parents

- Regression: $r = \alpha + \beta x$, 1999-2005
  - r = avg. net income/total assets of subsidiaries
  - x = avg. R&D spending/value added of parents

	$x \geq 0\%$	$x \geq 1\%$	3 dropped[†]
α	3.34	3.81	2.43
	(.75)	(.54)	(.68)
β	.142	.114	.193
	(.079)	(.046)	(.069)
#Industries	34	22	31

[†] Oil & gas, beverages & tobacco, motion pictures

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- Need to know if missing capital is large...

Measures of Intangible Investment

- Some direct measures (Corrado-Hulten-Sichel):

  2.0% GDP: Scientific R&D

  2.4% GDP: Nonscientific R&D

  2.5% GDP: Advertising

  4.4% GDP: Firm-specific human capital

  1.7% GDP: Software

  = 13% GDP in Total

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= 11.3% GDP if software not included

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$\approx$ business tangible investment

Issues with Direct Measures

- Want:
  - Intangible capital *stocks*
  - Comprehensive measures of *all* expensed investments
- And, therefore, need:
  - Measures of depreciation rates
  - Detailed breakdowns of operating costs

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- Want:
  - Intangible capital *stocks*
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- And, therefore, need:
  - Measures of depreciation rates
  - Detailed breakdowns of operating costs
- We don't have these, but we can use economic theory...

Measuring Intangible Capital with Theory

- Applying basic principles:
  - Investments in intangibles lead to future profits
  - Optimality implies returns to different capitals equated
- To an accounting relation

$$\underbrace{\Pi}_{\text{profits}} = \underbrace{r_T K_T + r_I K_I}_{\text{rents to capital}} - \underbrace{\delta K_T}_{\text{tangible depreciation}} - \underbrace{X_I}_{\text{intangible investment}}$$

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Caveat: Have abstracted from taxes to keep algebra simple

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Measuring Intangible Capital with Theory

- Applying basic principles:
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- Find $K_I \approx 3/4\ K_T$

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- Can we simply add the estimates to the NIIP? No

Adding the Estimates to NIIP

- Is not quite right because some capital is used
  - Exclusively in one location (Ellen's desk)
  - Simultaneously in many (the Starbucks brand)
- With global markets,
  - How should capital be assigned?
  - Does the NIIP concept make sense?

Assignment of Capital

- Is difficult and should probably be avoided
- Why let politicians fool with the numbers

Does the NIIP Concept Make Sense?

- NIIP is an *accounting* measure of net wealth
- Therefore,
  - Economists should distinguish true and accounting wealth
  - Policymakers should be advised there is a difference
- Ultimately, we need theory to guide us

A View of Data through Lens of Theory

- With Prescott, develop model with
  - Both tangible and intangible capital
  - Time-varying *openness* to FDI
- Assume all investments earn same economic return
- Compute BEA statistics for the model economy

What We Find

- Use model where each investment earns 4.6% on average
- Choose parameters consistent with US accounts
- Find average *BEA* returns on DI, 1982–2006:
  - of US = 7.1% .... BEA reports 9.4%
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$\Rightarrow$ Mismeasurement accounts for over 60% of return gap

Not everything that counts can be counted, and not everything that can be counted counts.

— Albert Einstein