

# Rising Intangible Capital and the Decline of Public Firms

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## Introduction

### Research question

1. What *drives* the disappearing listed firms in the U.S.?
2. What is the *macroeconomic impact* of the change?

### What we do

1. Develop a *closed-form GE theory* of firm-level financing decision: **Go public vs. private**
2. *Quantitatively* decompose the driving forces and analyzes the macroeconomic consequences.
3. Analyze the **optimal regulation** of financial disclosure.

## Why Intangible Capital?

- U.S. Private firms can be informationally opaque
- Public firms are subject to disclosure requirements
- Disclosure benefits investors, but may reveal crucial information to competitors

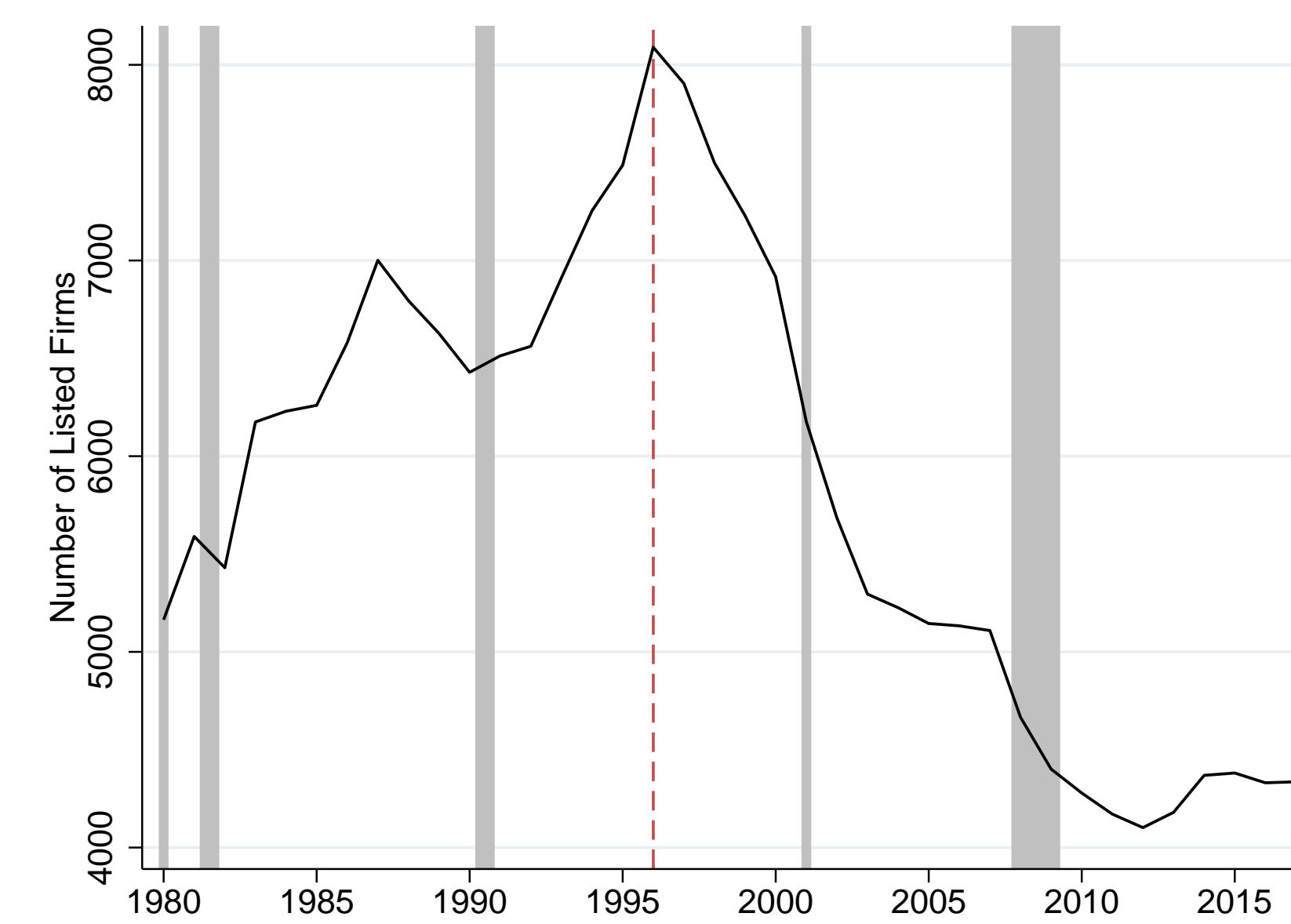
**Intuition:** Investment in intangibles is subject to spillover. As the intangible share rises, stronger incentive to stay private.

- In line with recent empirical evidence on disclosure and tech IPOs Dambra, Casares Field, Gustafson (2015)

## A Model of Investment and Disclosure

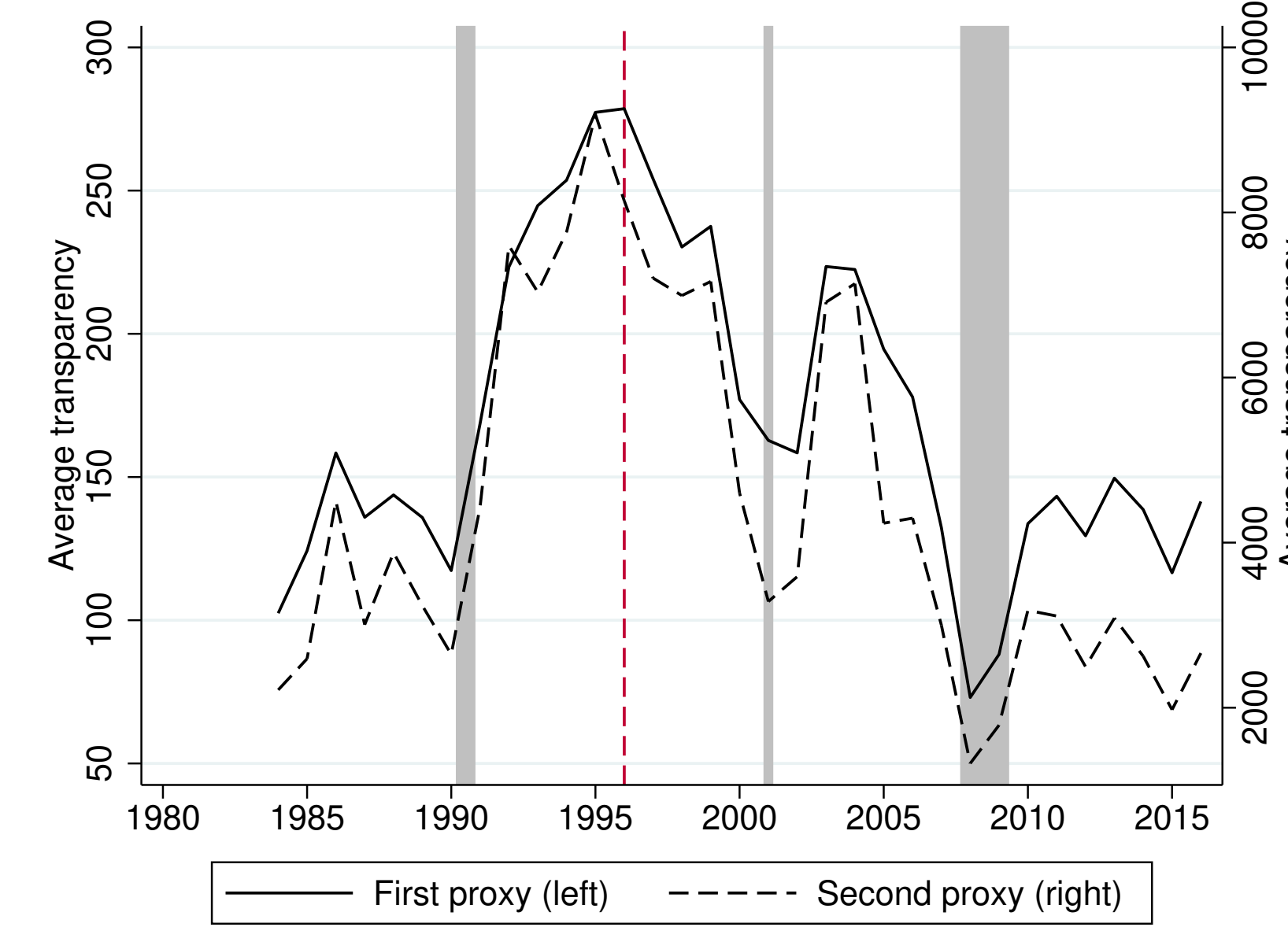
- **Investor:** Risk-averse representative household
- **Firms:** Ex-ante homogeneous firms
  - Choose to be public → higher funding, transparency choice
  - or private → possibly lower funding
  - Disclosed intangible shared as positive externality
- **Regulator:** Imposes a minimum level of disclosure for public firms
- **Strategy:** Estimate the model on U.S. firm data separately in 1992-96 and 2012-16
  - Quantify mechanism importance and analyze optimal regulation

## Listed Firms in the U.S.



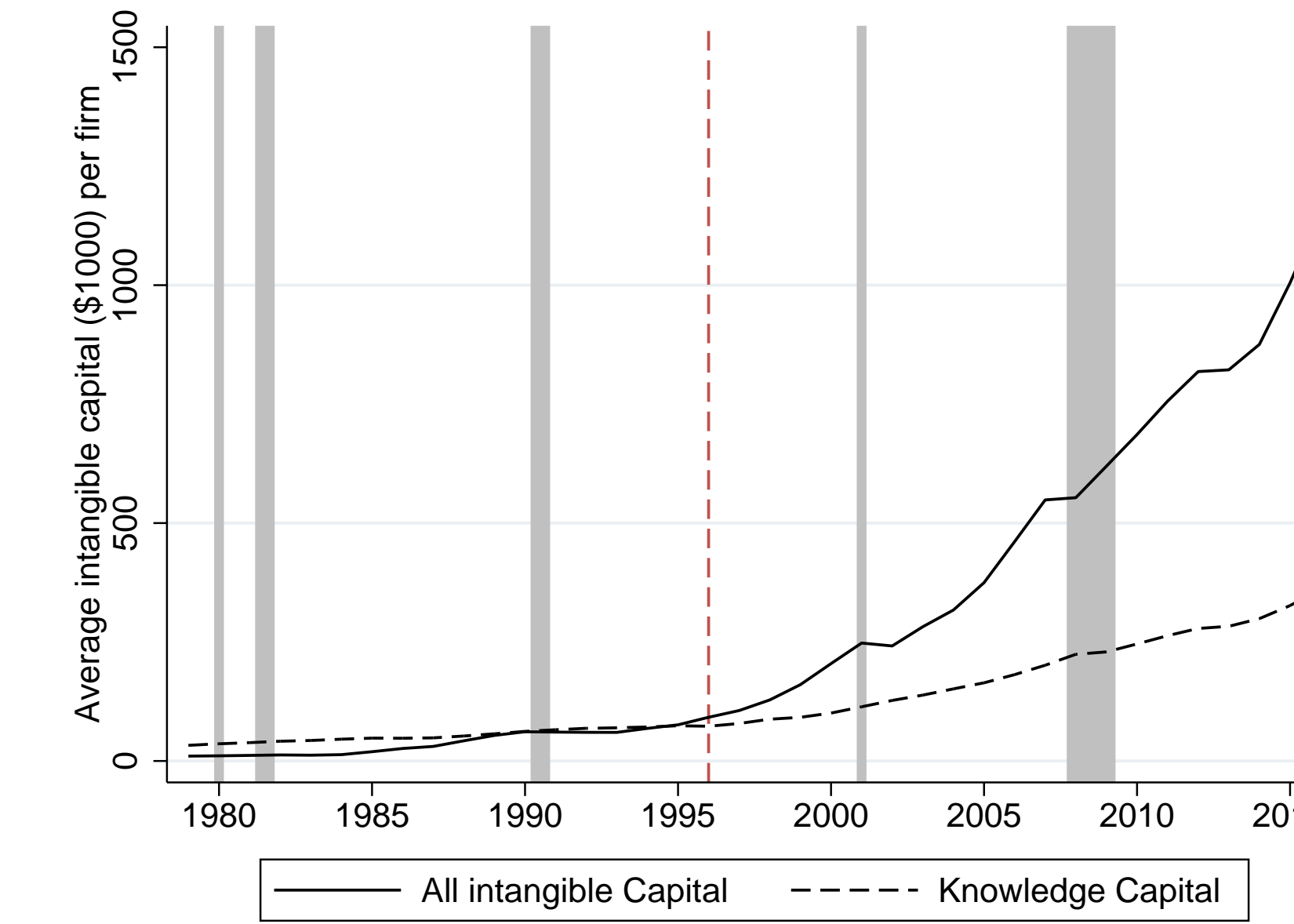
Number of public firms in the U.S. has decreased by half since 1996.

## Average transparency



Inverse forecast errors (transparency) have significantly decreased

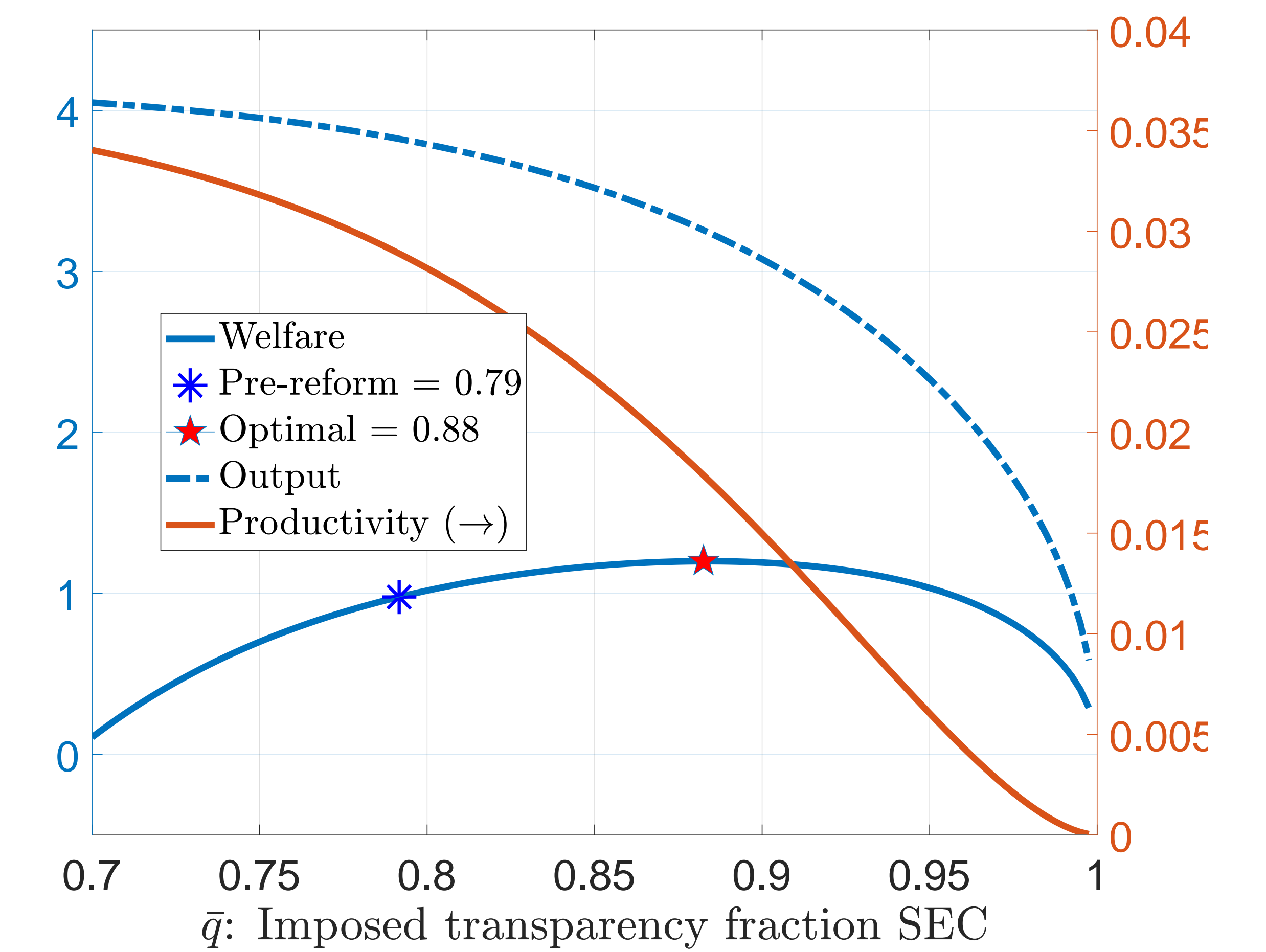
## Intangible Capital



We highlight the role of the rising importance of intangibles for these changes.

## Optimal Regulation

- Disclosure policy leads to inverted-U shaped macro targets.
- Trade-off between maximizing output and welfare.



## Conclusions

- **Rise in intangible capital substantially contributed to:**
  - disappearing public firms.
  - declining average transparency, sluggish productivity.
- **Macroeconomic outcomes nonlinearly respond to disclosure policy:**
  - policy maker's dilemma between productivity and welfare.

## Disclaimer

The views expressed in this paper are solely the responsibility of the author and should not be interpreted as reflecting the views of the Board of Governors of the Federal Reserve System or of any other person associated with the Federal Reserve System.

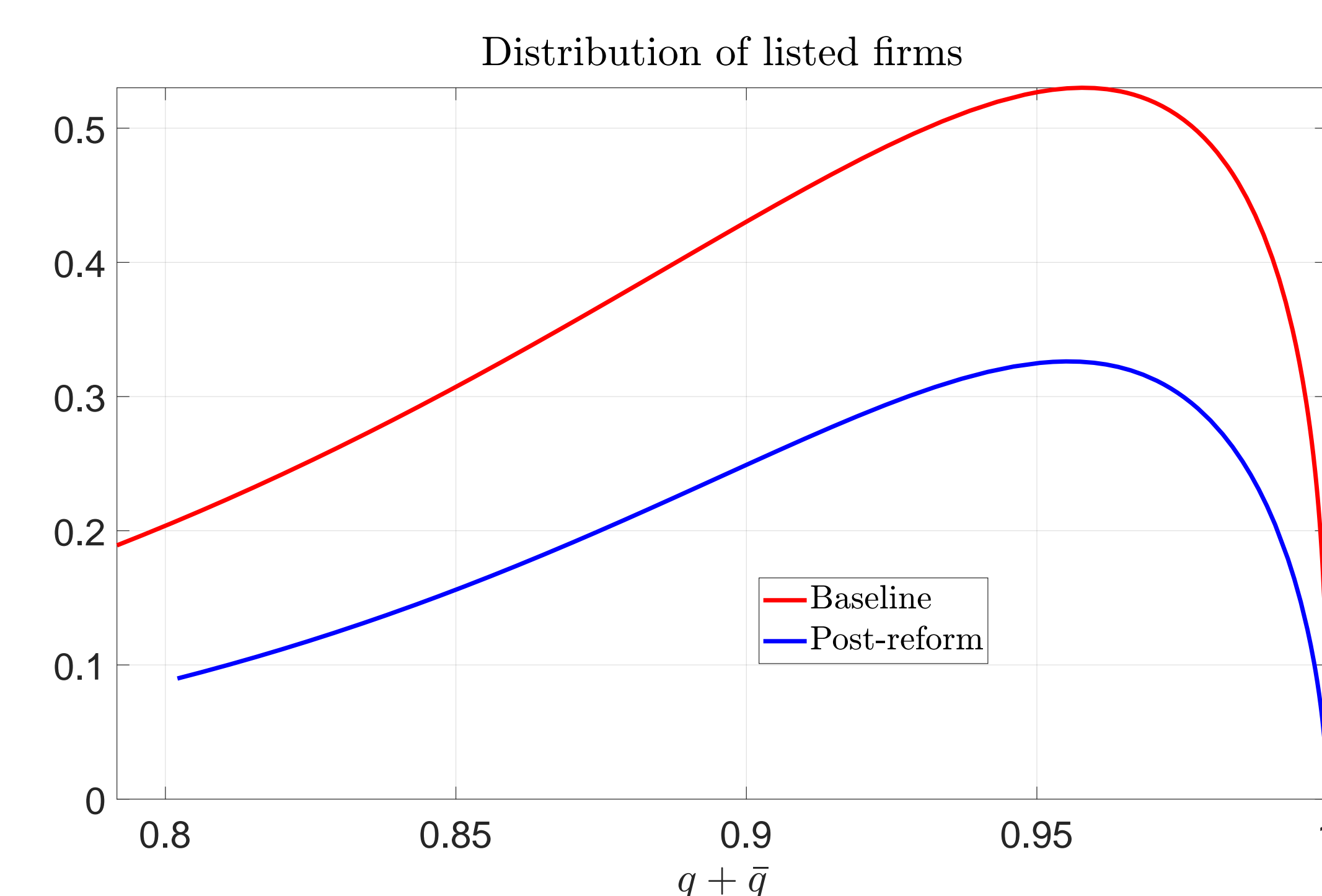
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## Punchline

As the share of intangible capital goes up firms increasingly value confidentiality.  
 This makes regulation on public disclosure implicitly more costly over time.  
 We find this mechanism substantially contributed to decline of public firms and transparency.

## Quantitative Results



Channel	Contribution to the change in (%):		
	listed firms	transparency	productivity
Total change (p.a.)	-2.3	-0.9	-1.5
$\theta$ Rising intangible share	-1.9	-0.4	-1.3
$\chi$ Stock return dispersion	-1.2	-0.6	-0.5
$\nu_N$ PE market improvement	-0.3	0	-0.1
$\bar{q}$ SEC regulation	-0.1	0.1	-0.1
$\xi$ Opacity of private firms	1.2	0	0.4

- Listed firms decline by 45%. Estimated transparency distribution has shifted towards left and shrank (less mass).
- Higher *intangible capital share* main driver. Increased *riskiness of public firms* and *improvement of private equity market* also important.
- Sluggish productivity growths in the U.S. partly accounted for by these changes. (-1.5%, annually)