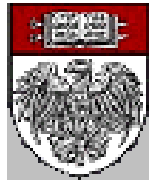
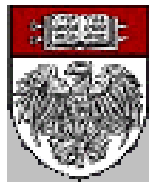


Reassessing the finance and growth nexus

Luigi Zingales



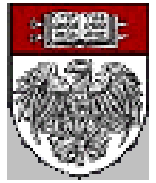
"I believe that the importance of financial matters is very badly over-stressed in popular and even much professional discussion"

Lucas (1988)

"that financial markets contribute to economic growth is a proposition almost too obvious for serious discussion"

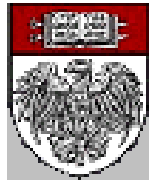
Miller (1998)

Outline



- Frame the question in theoretical and historical context
- Early evidence
- Problems with this evidence
- Some solutions
- The effect of the crisis
- The way forward

What's Finance for?



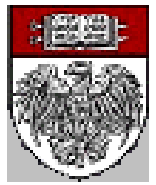
Individual perspective:

1. Transfer of funds
   - Intertemporal
     - young want to buy a house or start a firm
     - old want to support themselves in retirement
   - Spatial
2. Risk sharing
   - business risk
   - idiosyncratic risk

Two major constraints:

- incentives problems
- informational problems

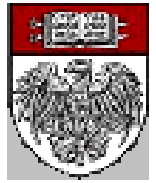
What's Finance for? -2



Societal perspective:

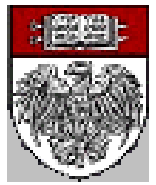
1. Match money and talent
   - Identify the highest value user of funds
   - Induce holder of funds with lower value uses to depart from them
   - Monitor that invested funds are well managed
   - Make sure funds are returned
2. Credible and timely aggregation of information (Hayek, 1945)
   - Difference between functional efficiency and

Alternatives to the financial system



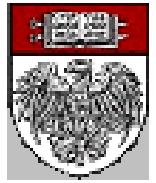
- Family, tribe, ethnic subgroups
  - Based on kinship and societal norms, which alleviate incentive and informational problems
  - Ability to perform
    - » Intergenerational transfer
    - » Risk sharing
  - is severely limited by size
  - So it is its ability to perform the societal tasks
- State:
  - Based on fiat power
  - It has an advantage in performing interg. transfers
  - Huge incentive and informational problems
  - It could do 1) well, but not 2

Financial system



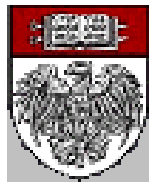
- Key challenge of financing is the inversion of power between the counterparties
  - Ex ante: financier has some power
  - Ex post: financee has the power
- Ability to perform the two key individual functions determined by
  - Rule of law (today and in the future -> political system)
  - Societal norms and trust
  - Technology (from limited liability to ATM)
- These constraints affect also its ability to perform the two societal functions

Tests of the role of finance



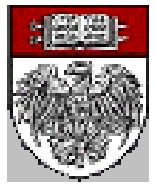
1. Transfer of funds
   - Finance and growth literature
   - Micro literature
2. Aggregation of information
   - Huge literature on informational efficiency
   - Smaller literature on functional efficiency
3. Risk sharing
   - Accounting literature on cost of capital
   - Some macro literature

Measures of financial development



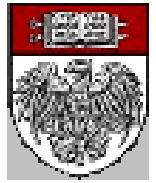
- The literature has mostly relied on the measures that were easily available, with little links to what theory suggests the measure should be.
- 2 problems:
  - Maximize data snooping
  - Misleading from a policy point of view.
- Ex: the proxy of financial market development employed by Levine and Zervos (1998): volume of stock traded relative to their market capitalization.
- There is no question that improvement in liquidity should be beneficial to the economy and that liquidity is positively correlated with trading volume.

Measures -2



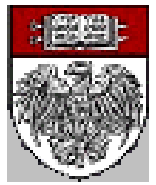
- Nevertheless, more tock trading is not necessarily beneficial.
- More volume can increase stock volatility (French and Roll (1986)).
- And nobody would dare arguing that the diffusion of day trading has been beneficial to the economy.
- Nevertheless, an unsophisticated policy maker, who took the Levine and Zervos (1998) evidence seriously, would conclude that donating a computer and an E*Trade account to every household in Africa would benefit the economic growth of that continent!

Historical perspective



- All the sciences would like to be objective and time-independent.
- When we start to look at them from an historical perspective, we realize that is not true.
- “Search for truth” is very much context specific.
- Economics is not exempt from it
- In fact, it is very much the product of its time
- The relationship between finance and growth is no exception

Finance and Growth: Early Evidence



Goldsmith (1969) compile data on 35 countries over the period 1860 to 1963 on the value of financial intermediary assets as a share of economic output.

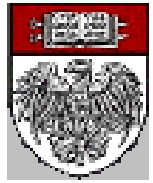
He measures financial development as the size of the financial intermediary sector.

He graphically documented a positively correlations between financial development and the level of economic activity.

He recognizes that he cannot distinguish between correlation and growth

He is unable to provide much cross-country evidence because of the absence of data for a broad range of countries.

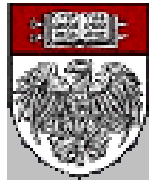
First Modern Approach



- Post hoc ergo propter hoc
- King and Levine (1993): beginning-of-decade measures of a country's financial development
  - the ratio of liquid liabilities of the financial system to GDP
  - the share of domestic credit allocated by banks
  - the ratio of domestic credit to private enterprises to GDP

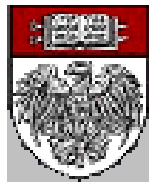
  are strongly related to the country's subsequent economic growth, capital accumulation, and productivity growth.

Problems with first approach



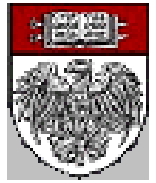
- Omitted Variables: good financial system is correlated with good institutions. How can we tell a part with so few data points?
- Anticipation: Debt to GDP ratios can be seen as macro market-to-book ratios, which are well know to predict (not cause) future growth.
- No direct evidence of the causal link: many mechanisms through which financial development can cause growth, which one is important?

Solutions



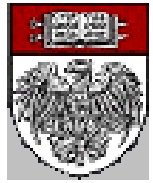
- Omitted Variables:
  - Natural Experiments: Jayaratne and Strahan (1996), Guiso et al. (2002), Bekaert et al.(2001, 2002).
  - Within country evidence: Rajan and Zingales (1998)
- Anticipation:
  - Panel estimation: (Levine 2003)
  - Instrumental Variables" Rajan and Zingales (1998)
- No direct evidence of the causal link:
  - Industry based evidence: Rajan and Zingales (1998), Demirguc Kunt and Maksimovic (1998))
  - Firm-based evidence: Guiso et al. (2004)

Natural Experiment



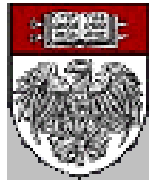
- Jayaratne and Strahan (1996) innovate in three dimensions:
  1) Focus on within country differences (U.S.)
  2) They use a new measure financial development: bank deregulation
  3) The variation in their measure of financial development is “exogenous” (political decision)
- Different states deregulated at different times: perfect from an econometric point of view.
- Annual growth rates increased by 0.51 to 1.19 percent per year in states that de-regulated banking.

Natural Experiment –2



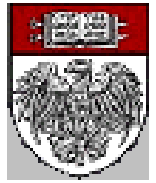
- What caused deregulation?
  - Is expected growth that increases the potential demand for loans and hence the political demand for deregulation?
  - If so, loan to GDP ratio should go up after deregulation.
  - Jayaratne and Strahan (1996) show it does not. It is only the ration of losses to loan that goes down. (improved efficiency)
- Similarly, Bekaert et al. (2001, 2002) use financial liberalization (opening of equity markets to foreign participation) to examine the impact of financial development on economic growth.

Unobserved Heterogeneity



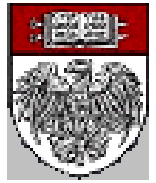
- How comparable are these states before deregulation?
- In a real experiment you randomized. In a natural experiment you do not.
- At the very minimum you need to provide summary statistics of the treated and untreated, which hopefully show no significant difference.
- Even better, you try to create artificial identical twins with
  - Propensity score matching
  - Regression discontinuity

Huang 2008



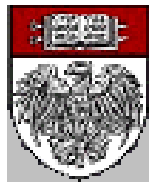
- He revisits the Jayaratne and Strahan (1996) results by using
  - More micro data (counties rather than states)
  - Regression discontinuity (state borders)
- In addition he
  - Corrects for other differences
    - » Change in income gap
    - » Change growth opportunity gap (share of manufacturing)
  - Corrects the standard errors by simulating a “placebo” treatment and plotting the distribution of the estimated treatemnt.

Huang (2008) - 2



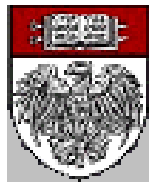
- Of the 23 bank-branching deregulation events:
  - 7 have a negative effects
  - 10 have an insignificant effect
  - 6 positive and significant
- Could he be a spillover effect?
- He checks for noncontiguous counties
- What to make?

Rajan and Zingales (1998):



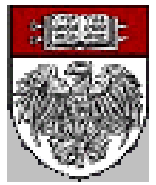
- RZ (98) address all these problems by looking at the micro evidence in a panel of industries-countries.
- They use data on 36 industries across 42 countries.
- Main Idea: Financial sector facilitates the reallocation of funds from agent with an excess of funds to agents with a deficit of funds.
- This function is particularly important when the mismatch between resources and opportunities is large.
- If financial development matters, then it should matter relatively more for those firms with a shortage of internal funds with respect to the profitable investment opportunities.

Measure of Financial Development:



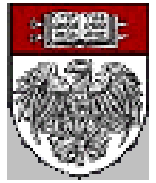
- Consistent with earlier studies in this literature (e.g., King and Levine (1993)) they start using:
  - Ratio of Stock Market Capitalization to Gross Domestic Product
  - Ratio of Domestic Credit To Private Sector to GDP to Gross Domestic Product
- As a basic measure they sum these two measures. This roughly represents the total amount of intermediation of funds to finance an economy.
- They then use Accounting Standards and the also instrument it with legal variables

Methodological Contribution



1) Two steps forward in the causality debate:
   - Using theory to identify the mechanisms through which financial development affects growth
   - Using instrumental variables
2) By controlling for country fixed effects they eliminate the multicollinaerity problem
3) By using the industry variation, expand degrees of freedom, allowing to test more theories and more sophisticated implication of theories.

Effect on Convergence



- Aghion, Howitt, Mayer-Foulkes (2005) assume

1) Technology transfers are costly
2) Global technological frontier advances
3) Agency problems limits an innovator access to external finance to a multiple of his wage

=> Poor country (low productivity) -> low wage -> less access to finance -> offsets the catching up advantage of a technological laggard.

=> Speed of convergence is a function of financial development

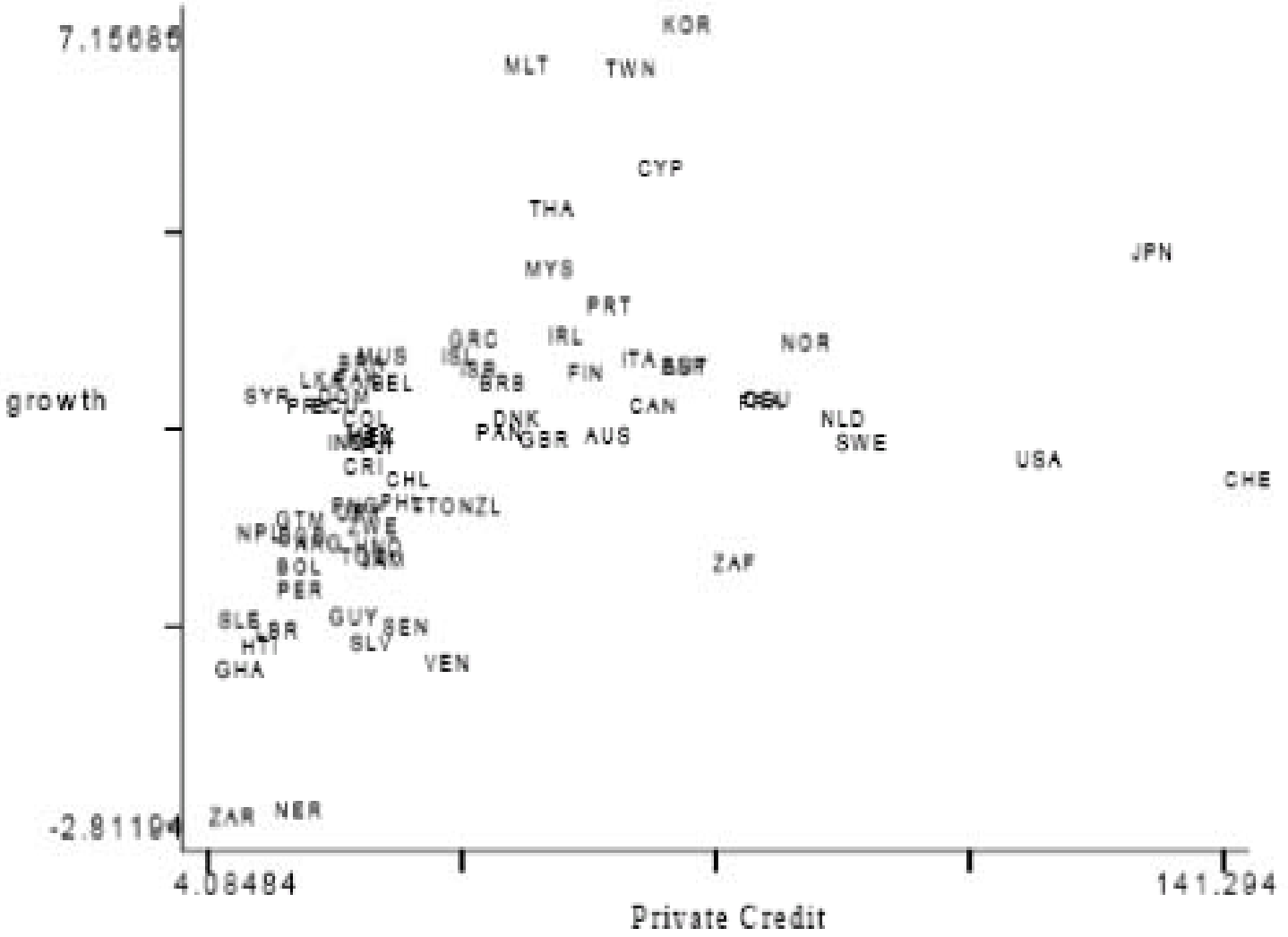
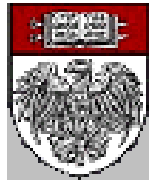


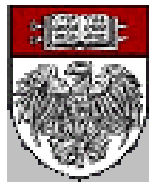
Figure 4: Financial intermediation and long-run growth of per-capita GDP

Effect on Export Trade



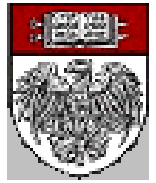
- One activity that requires a lot of up front investment is exporting.
- These investments are not easy to collateralize
- Is there a correlation between financial development and ability to export?
- Becker and Greenberg, 2004 says yes.
- In three ways:
  1) More FD more trade
  2) Effect stronger when cost of the up front inv. is bigger
  3) Strong effect of FD after a devaluation (Argentina)

Are more developed financial markets more subject to crises?



- Kaminsky and Reinhart (1999): in 18 of 26 banking crises in the last two decades, the financial sector was liberalized in preceding 5 years
- But economies often liberalize when they are in a dire way and have no alternative:
- What other institutions are necessary to make a financial liberalization fly?

Understanding more the aggregate effect

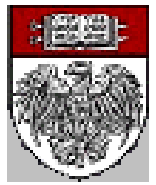


1) Measures of financial development

2) Mechanism through which it works

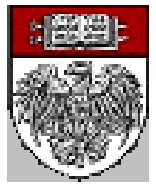
3) Does domestic financial development matter?

1) Measures of financial development



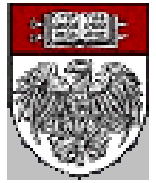
- Major improvements in how financial development is measured
- Still quite far from what theory would suggest and not obviously correlated with that.
- JS (1996) document no increase in loans after deregulation of the banking sector
- But a decrease in the non performing loans
- Did financial development increase?

Measures of financial development



- Guiso, Sapienza, and Zingales (GSP) (2004) address this issue.
- They measure FD as the local variability in access to credit per given characteristics
- What about systematic overlanding?
- They control for local level of loan losses
- Thus, they measure not just the access to credit, but also the “right” access to credit.

Measures of financial development



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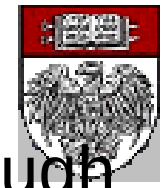
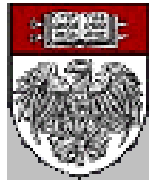
2) Mechanism



- We still have to learn about the mechanism through which finance work.
- Is by stimulating savings, reducing the cost of capital, improving allocation, reducing wastes or all the above?
- Rajan and Zingales (1998): improvement in allocation is important
- So suggest Jayaratne and Strahan (1996)
- Need to look more at the microeconomic evidence

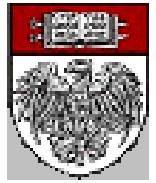
Mechanism -2



GSZ (2004) traces the effect from the micro evidence to the macro evidence

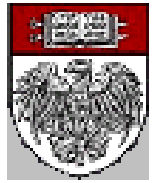
- Effect on entrepreneurship -> effect on firm entry ->effect on competition
- Effect on firm growth -> effect on local growth

3) Domestic *FD? - 1*



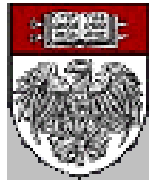
- All the evidence comes from a period when cross-border capital movements were very limited.
- In the last decade, international capital mobility has exploded.
- Does *domestic* financial development matters when there is capital mobility?
- Levine's survey is silent on this important point.

Domestic *FD? - 2*



- This is not an easy issue.
- No matter how updated the time period is, the skeptic can always claim that we are in a transitional phase and when capital is perfectly mobile across countries, domestic financial development will be irrelevant
- Guiso et al. (2004) try an alternative approach
- Study the effect of *local* financial development within a single country.
- If this matters, a fortiori domestic financial development will matters.
- We find it does.

Summary before the crisis



1) Does financial development affect aggregate growth?

Very little doubt now.

2) How does it do it?

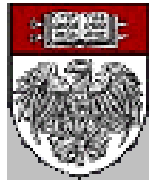
Clear evidence of the role in

i) intermediating funds

ii) Improvement in the efficiency of the allocation of funds

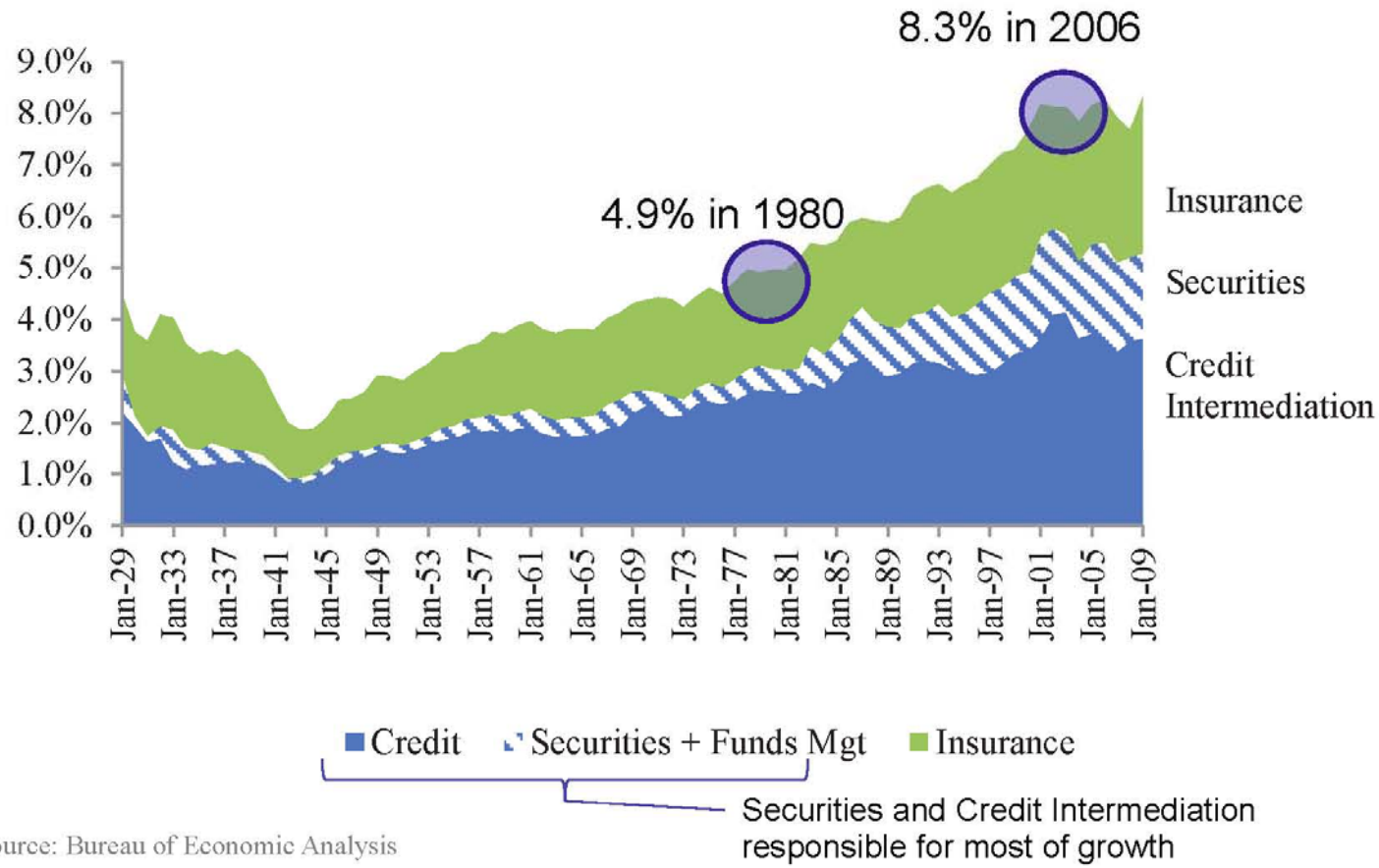
3) Does it affect other dimensions we care about?

The Effect of the Crisis



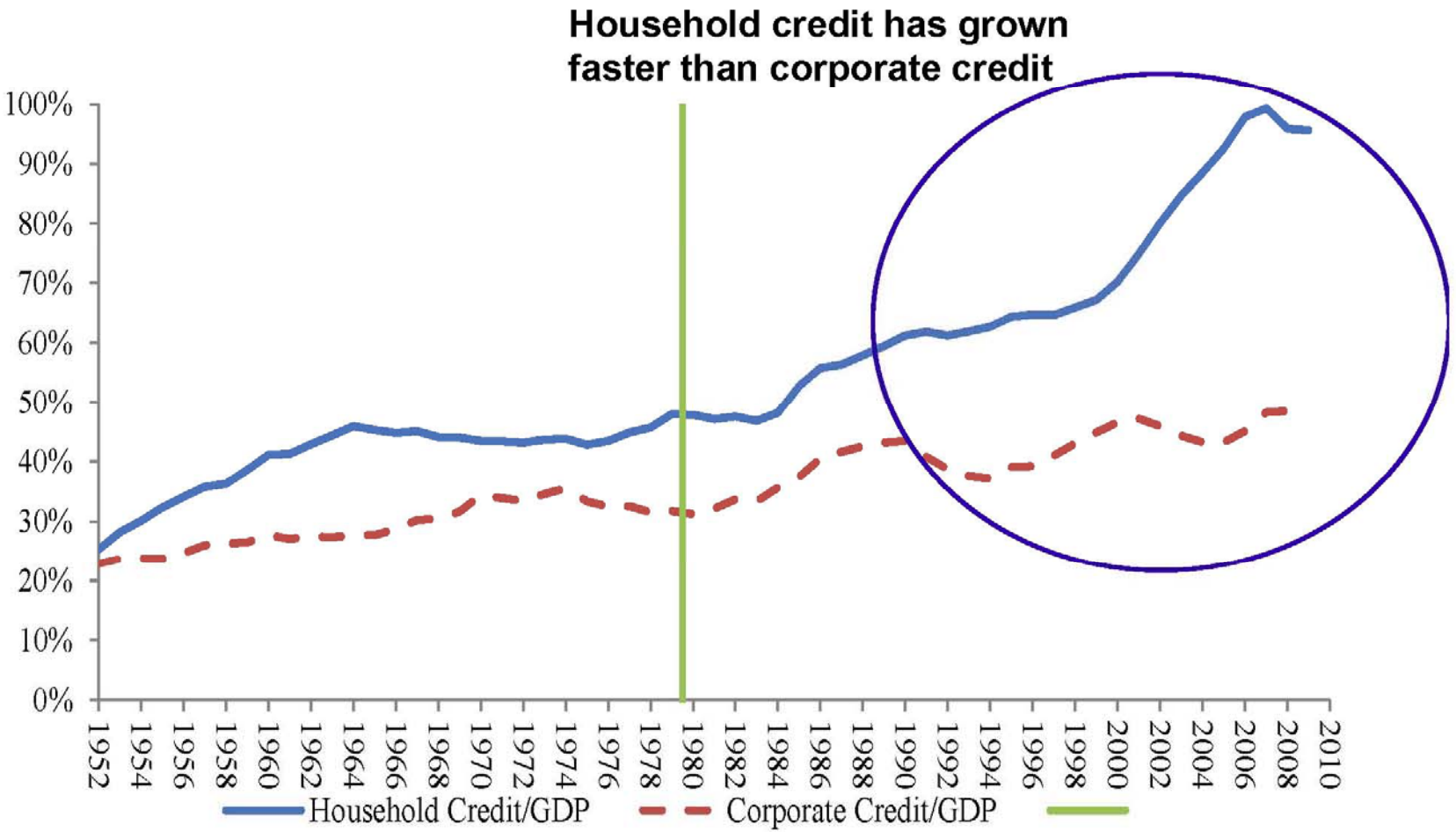
- Even if some finance is good, is all finance good? Is there too much of a good thing?
- Is “the thing” good to begin with? Can there bee too much finance? And why?

Growth of the US Financial Sector Relative to GDP



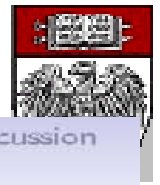
Source: Bureau of Economic Analysis

Credit Growth

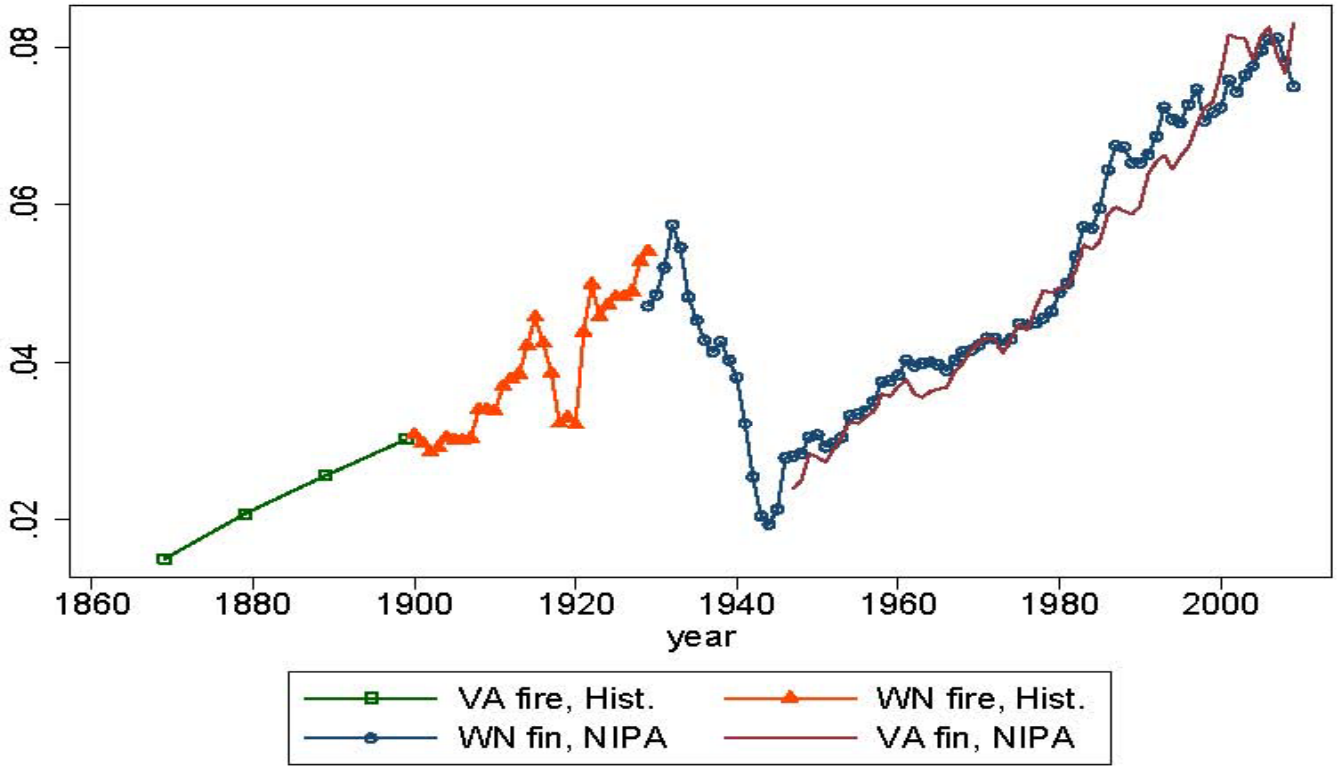


Source: Flow of Funds

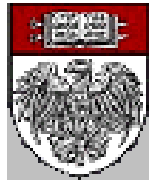
Philippon (2012)



Income Share of Finance Industry

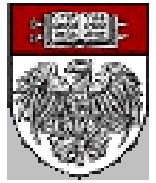


Not everything that shines is made of gold



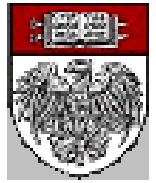
- Is all the value added created by the financial sector good?
- Market for potatoes:
  - Supply adjusts to demand
  - No reason why quantity of potatoes produced is excessive or too little
  - Value added produced in the potato sector is a measure of welfare produced
- The same is not true for finance

Divergence between social and private optimality



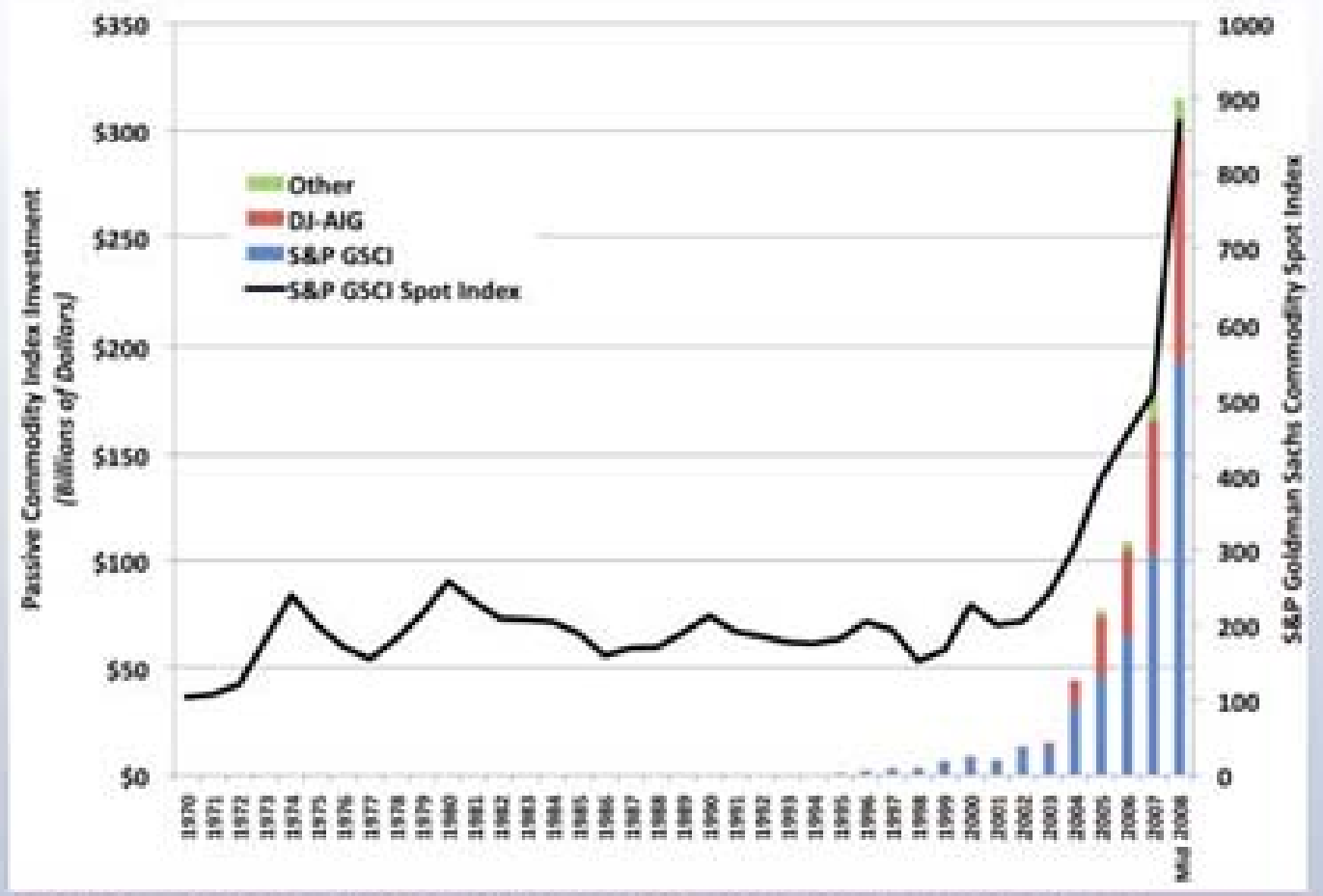
1. Search externalities
2. Traditional information externalities
   - Positive
   - Negative
3. Incomplete markets
   - Hart example
   - Pecuniary externality
4. Naïve exploitation

Main Costs of Finance



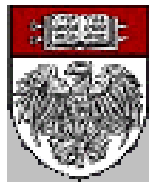
1. Excess speculation
   - Traditional Hirshleifer (1971) arguments
   - Inefficient creation of markets (Hart, 1975)
2. Excess volatility
   - Style investing
   - Instability in derivatives (Rajan, 2006)
   - Commodities markets
3. Exploiting the weak
   - Weyl (2008), Melzer (2012)
4. Excessive political power
   - Johnson (2009), Zingales (2012)

Passive Commodity Index Investment



Source: Goldman Sachs, Standard & Poor's, Dow Jones, calculations based upon Commodities Futures Trading Commission (CFTC) Commodity Index Trader (CIT) Supplement. Mid 2008 figure is as of July 1.

Facts



1. Non-commercial participants start to dominate the future markets in most commodites

2. Large increase in volatility of all commodities

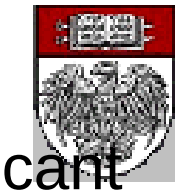
3. Persistent states of contango in the forward curves of many commodities futures prices

4. WTI crude oil trades at a discount vis-à-vis the inferior European Brent crude oil.

   this happened precisely when the GSCI index reweighted significantly from WTI crude into Brent crude

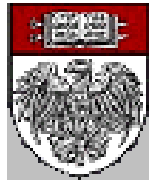
5. Prices increased 71% from January 2006 through June of 2008 and declined almost equally dramatically from June 2008 through early 2009.

Most Convincing Evidence



- Singleton (2011): economically and statistically significant effect of investor flows on futures prices, after controlling for
  - returns in US and EM stock markets,
  - a measure of the balance-sheet flexibility of large financial institutions,
  - open interest
  - the futures/spot basis,
  - lagged returns on oil futures.
- Tang and Xiong (2010): commodities futures prices more correlated with each other, especially if belongs to an index.
  - Commodity price comovements absent in China

Costs

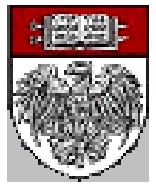


- Volatility in futures prices pushes up costs for hedgers, which changes physical supply and demand curves

  -> Less ability to hedge

- Futures prices influence
  - expectations, which in turn affect prices in physical markets
  - Prices directly through contractual links
- Excess storage
- Distortion in allocation of resources
- Political backlash?

Exploiting the weak -1



- Is access to finance always good, not matter what the price is?
  - Micro-finance in developing countries
  - Pay-day loans in the States (400% per year)
- Two views:

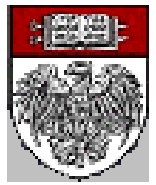
1) Consumer borrowing is welfare improving

» Consumption smoothing in response to income shocks

2) Consumer borrowing is welfare destroying

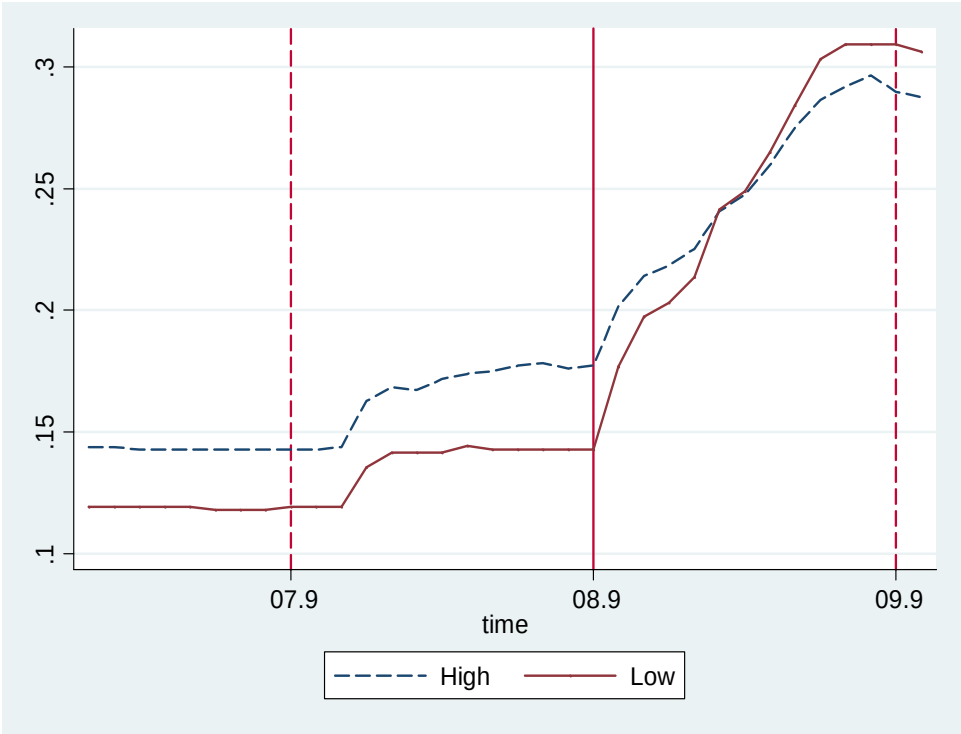
- Self-control problems: hyperbolic discounting
  - » Individuals can benefit from forced savings – Laibson (1997)
  - » Likewise, individuals can benefit from credit constraints.

Melzer (2012):

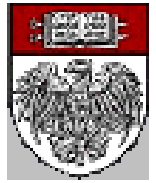


- Exploit variation in household location relative to lending outlets (state that prohibit pay day loans)
- He finds an effect of access to credit on
  - Delay of health care due to lack of money
  - Reported difficulty in paying mortgage, rent or utilities
  - Moved out of home or apartment due to trouble paying bills
- Effect more concentrated on the “near to the poor”, who have access to paydayloans.

Probability of Owning Bonds of the Bank By Financial Literacy



Excess political power



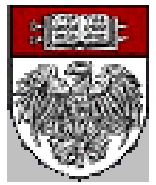
- The “real estate agent” model:
  - Rents + free entry lead not to too much profits, but too big a sector.
- Too big to fail subsidy

+

- Oligopolistic rents in the derivative markets

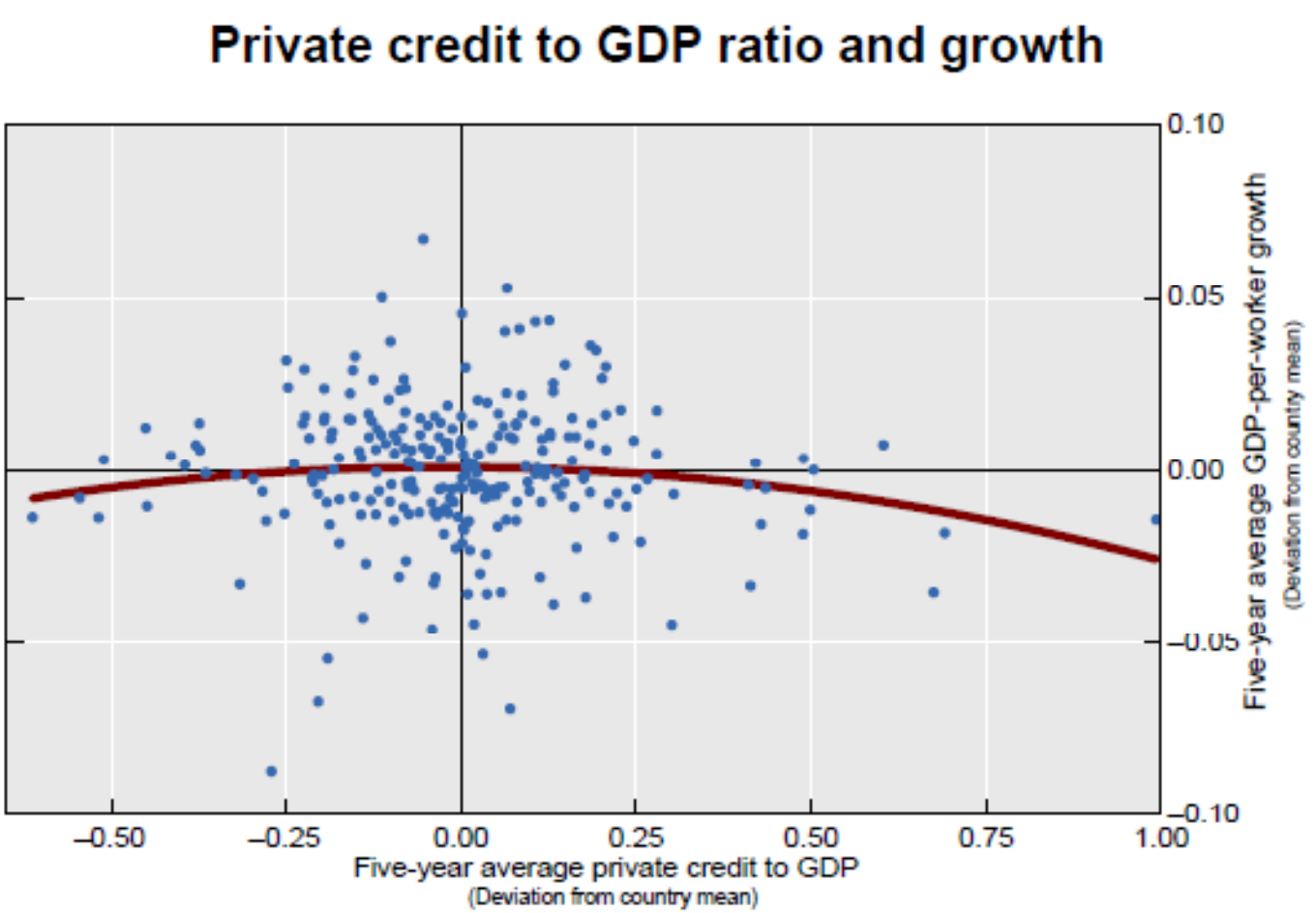
=> Too much finance

Is there any evidence of too much finance?

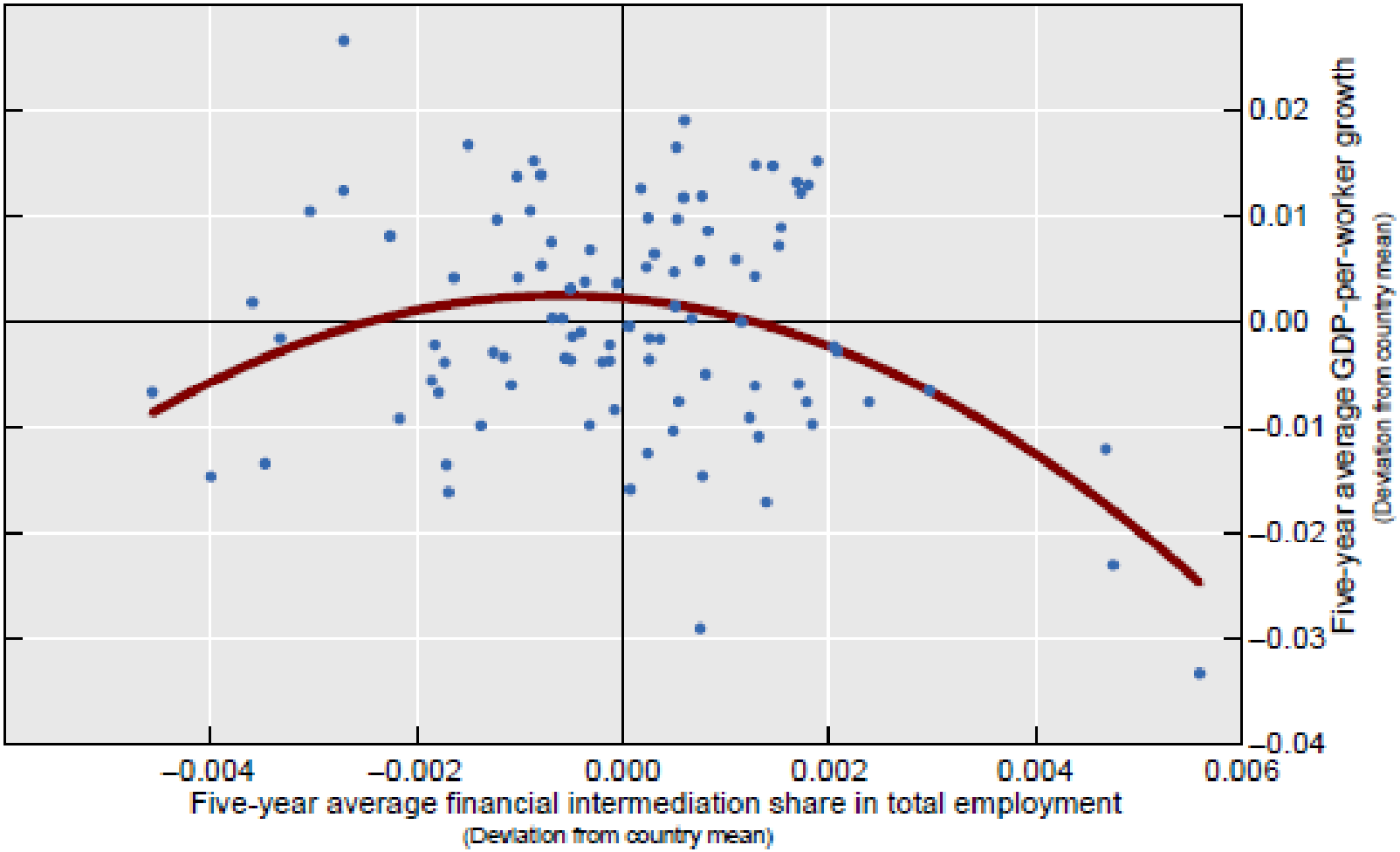


- Cecchetti and Karroubi (2012) look at 50 between developed and emerging economies over the period 1980 and 2009.
- They measure the financial sector as both private credit to GDP and employment share of finance on GDP.
- They find a peak at 100% private credit and GDP.

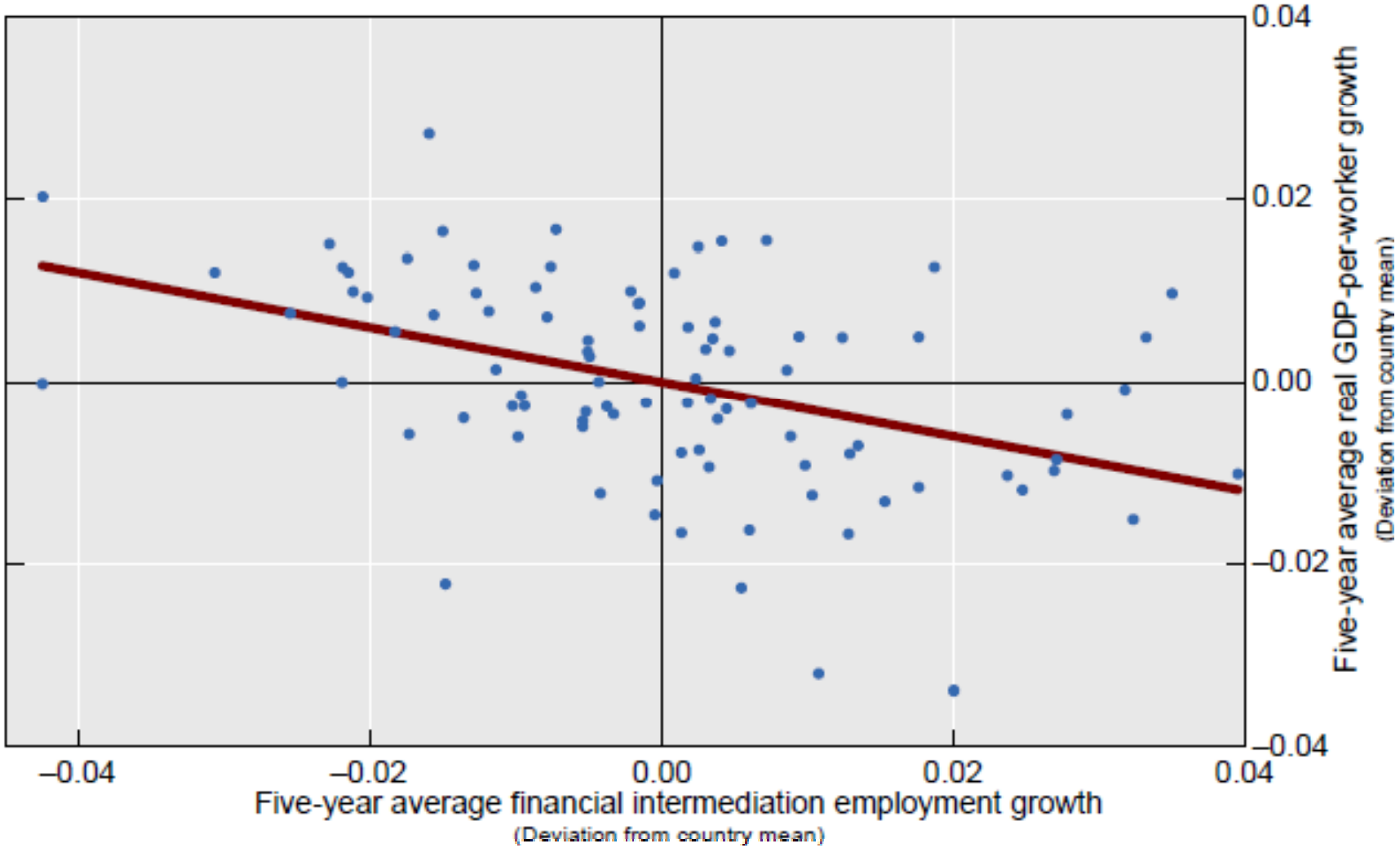
Cecchetti and Karroubi (2012)



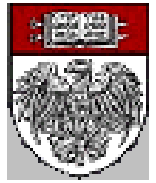
Financial sector share in employment and growth[1]



Financial sector growth and productivity growth[1]

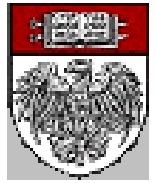


Should we believe this evidence?



- Economic and productivity growth slows in more developed countries
- More developed countries need more sophisticated forms of finance
- The correlation can easily be spurious

New Directions



I) <u>Not all finance is created equal</u>

1) Financing

   i) Entrepreneurial finance

   – VC

   – Trade credit

   ii) Corporate finance

   – Long term corporate investments

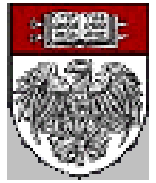
   iii) Households finance

2) Trading services

3) Assets management

4) Insurance

New Directions -2



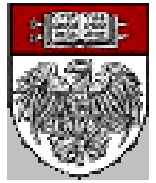
II. Need for theoretical-based measures

- Efficiency of the financial system (from input to output)
- Effectiveness of the financial system from financial sector to real sector

III. Need to go macro

- Financial functions are necessary.
- What are the alternative ways to supply them?
- Compare different financial systems
  - » More bank-based
  - » More relationship based , etc.

New Directions -3



IV) Need to go micro

- Crucial questions cannot be addressed with macro data
- Need for micro analysis
- Ex: evidence on microcredit

V) National Development?

- Can we use stock markets in other countries?
- Can we use banks in other countries?

VI) Financial stability

- Peso problem with crises
- What is the time horizon?