Disciplining Models of Financial Frictions with Data

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Key Aspects of Financial Frictions Models

- Producers confront collateral constraints

- Agency costs big

- Substantial wedge between internal and external rates of return

Key Aspects of Data

- In the aggregate, available funds far exceeds investment

- In the aggregate, firms have lots of liquid assets

- Reallocation matters: About 16% of investment financed with internal funds

- Is this big? No

Does Typical Firm Use External Funds to Finance Investment?

- Use data from Flow of Funds for all nonfinancial corporations
- Available Funds (AF) = Revenues – Wages – Materials

  – Interest payments – Taxes
- In Flow of Funds, AF = Internal funds + Dividends

  Alternatively, AF = Retained earnings + Dividends

  + Depreciation
- In Flow of Funds use Gross Investment for Capital expenditure

Does Typical Firm Use External Funds to Finance Investment?

- Available Funds – Dividends + Net new debt issue

  + Net new equity issue

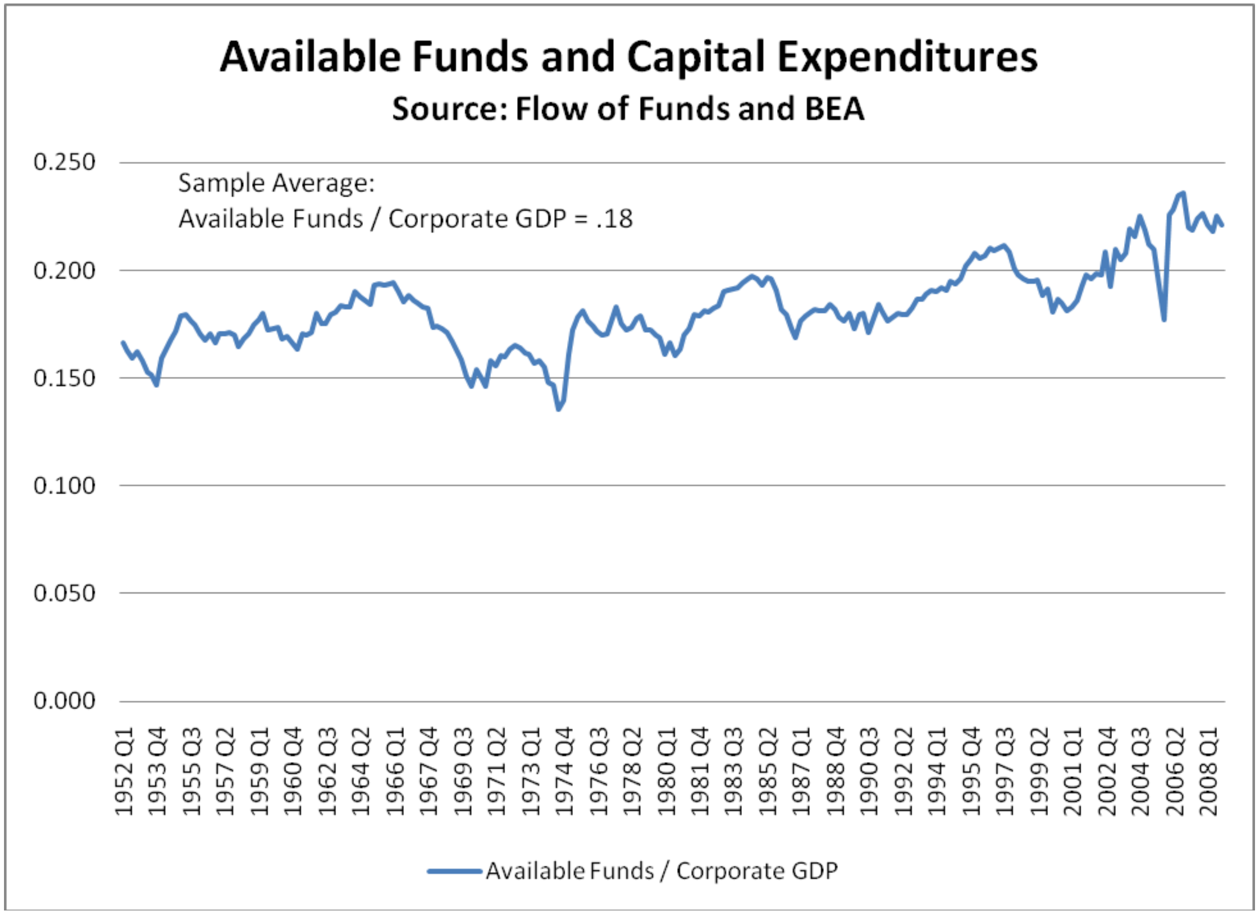
  = Capital expenditure

- Suppose Net new debt issue = 0

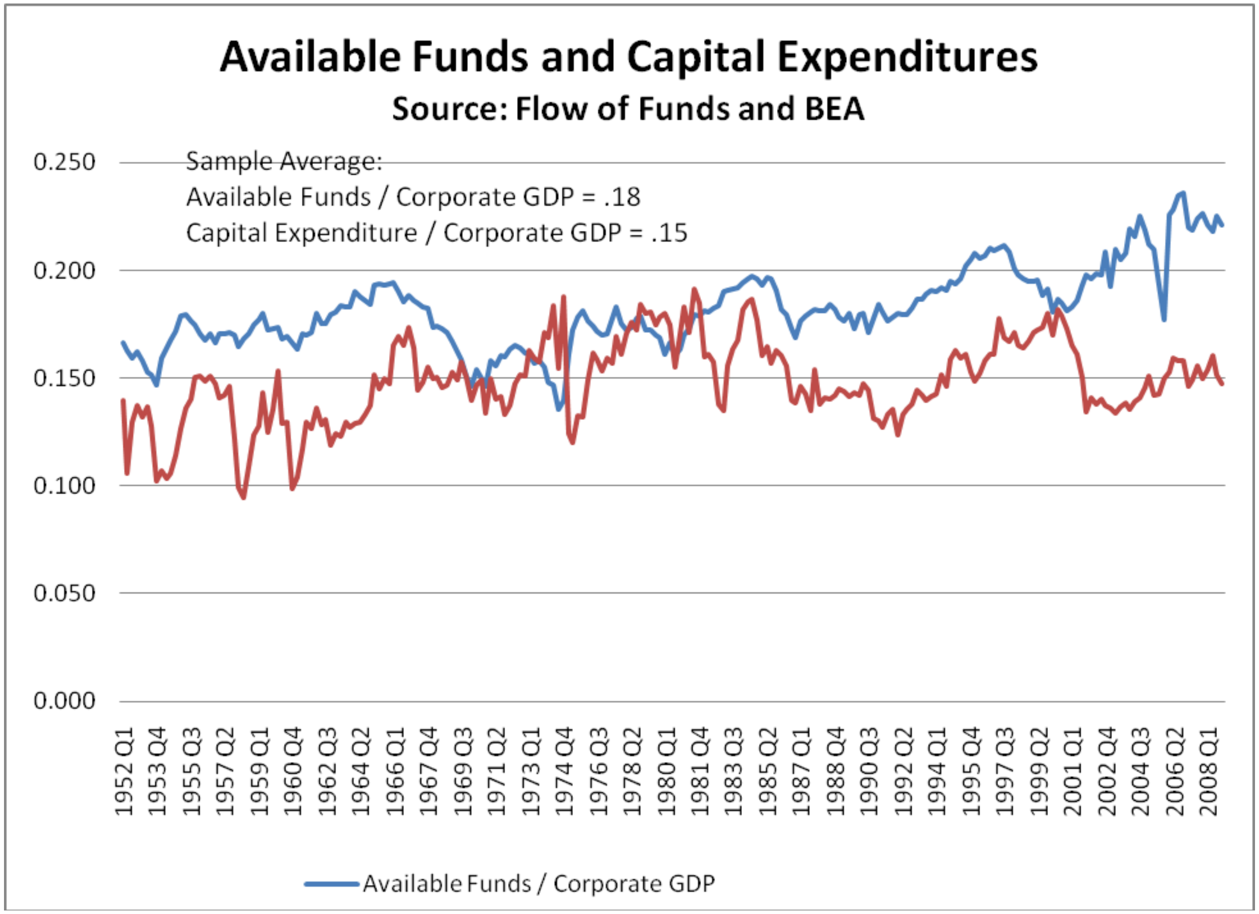
  Net new equity issue = 0

- That is, firms lose access to financial markets

- Can they finance all investment internally?

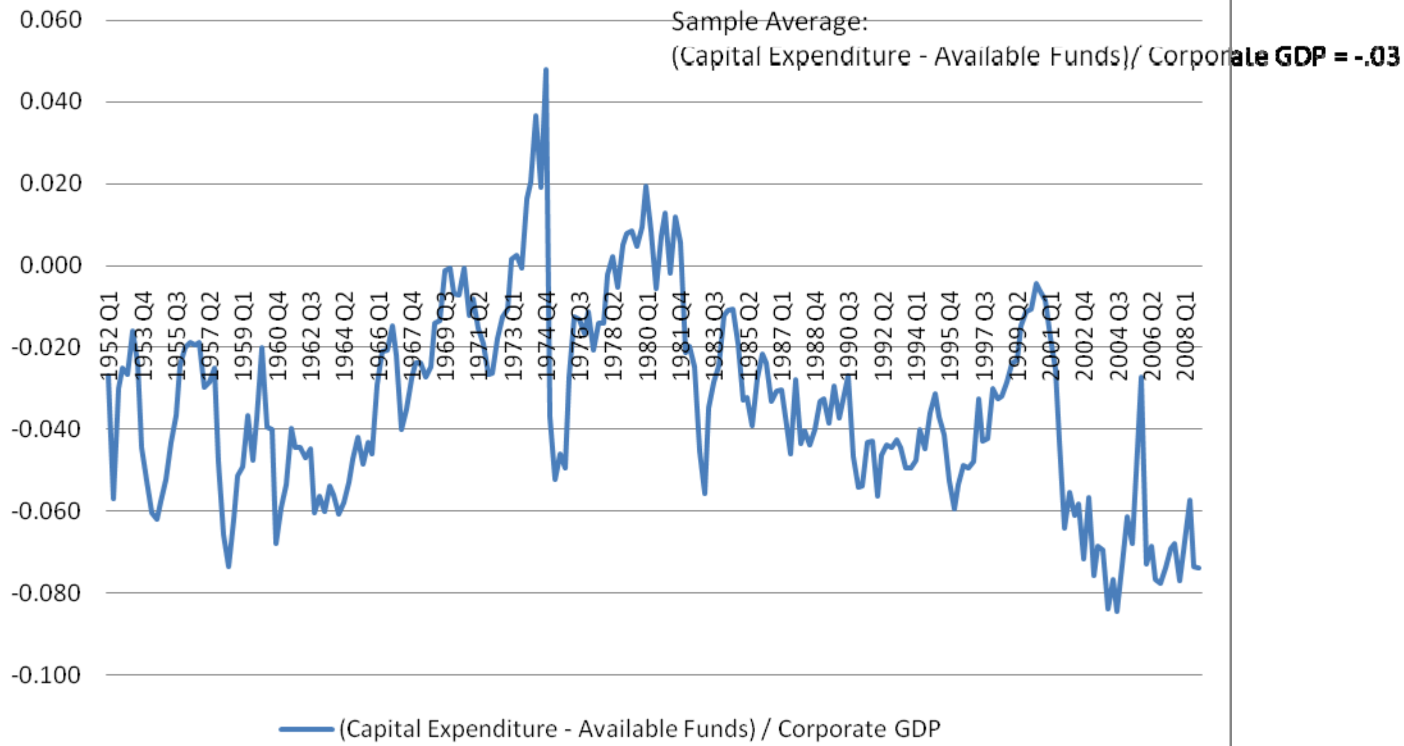


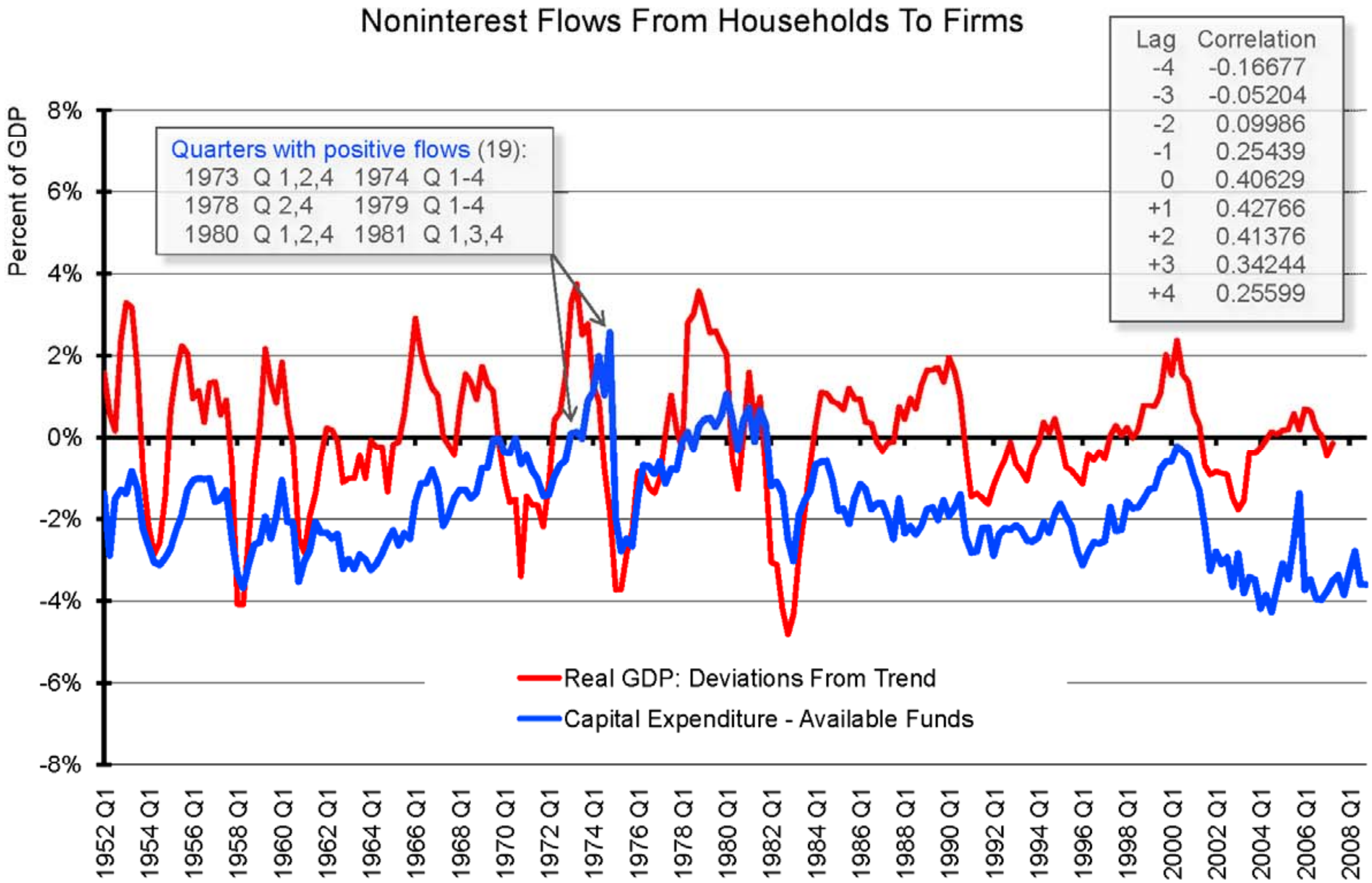
Data for U.S. Nonfinancial Corporations



Data for U.S. Nonfinancial Corporations

Noninterest Flow from Households to Firms,
Source: Flow of Funds and BEA.





Source: Federal Reserve Board, http://www.federalreserve.gov/releases/z1/

Does Typical Firm Use External Funds to Finance Investment?

- No, for aggregate of U.S. corporations

- Financial markets may play a big role in reallocating funds from cash-rich, project-poor firms to cash-poor, project-rich firms

- Use disaggregated data to analyze reallocation

Does Typical Firm Use External Funds to Finance Investment?

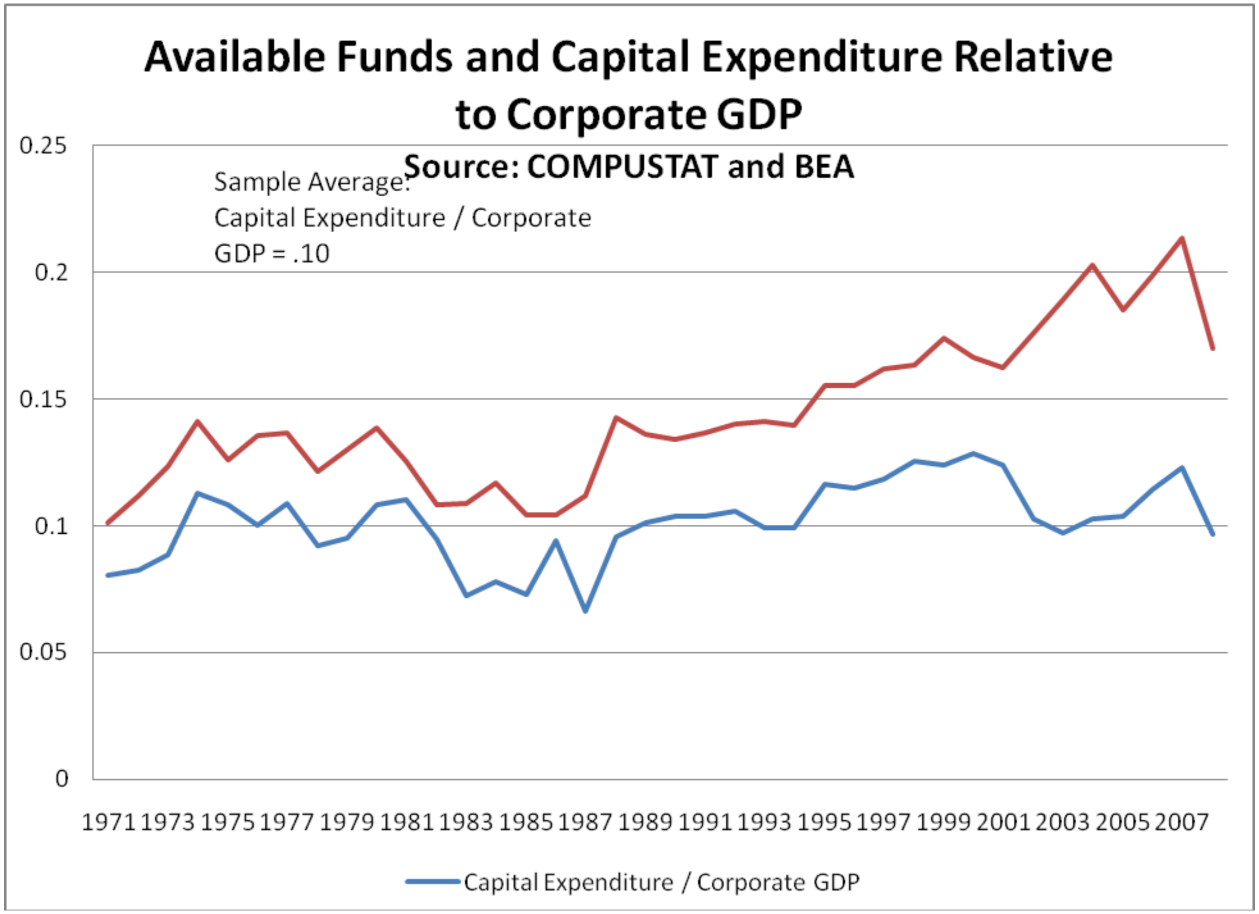
- Use data from Compustat

- Compute available funds for each firm, each time period

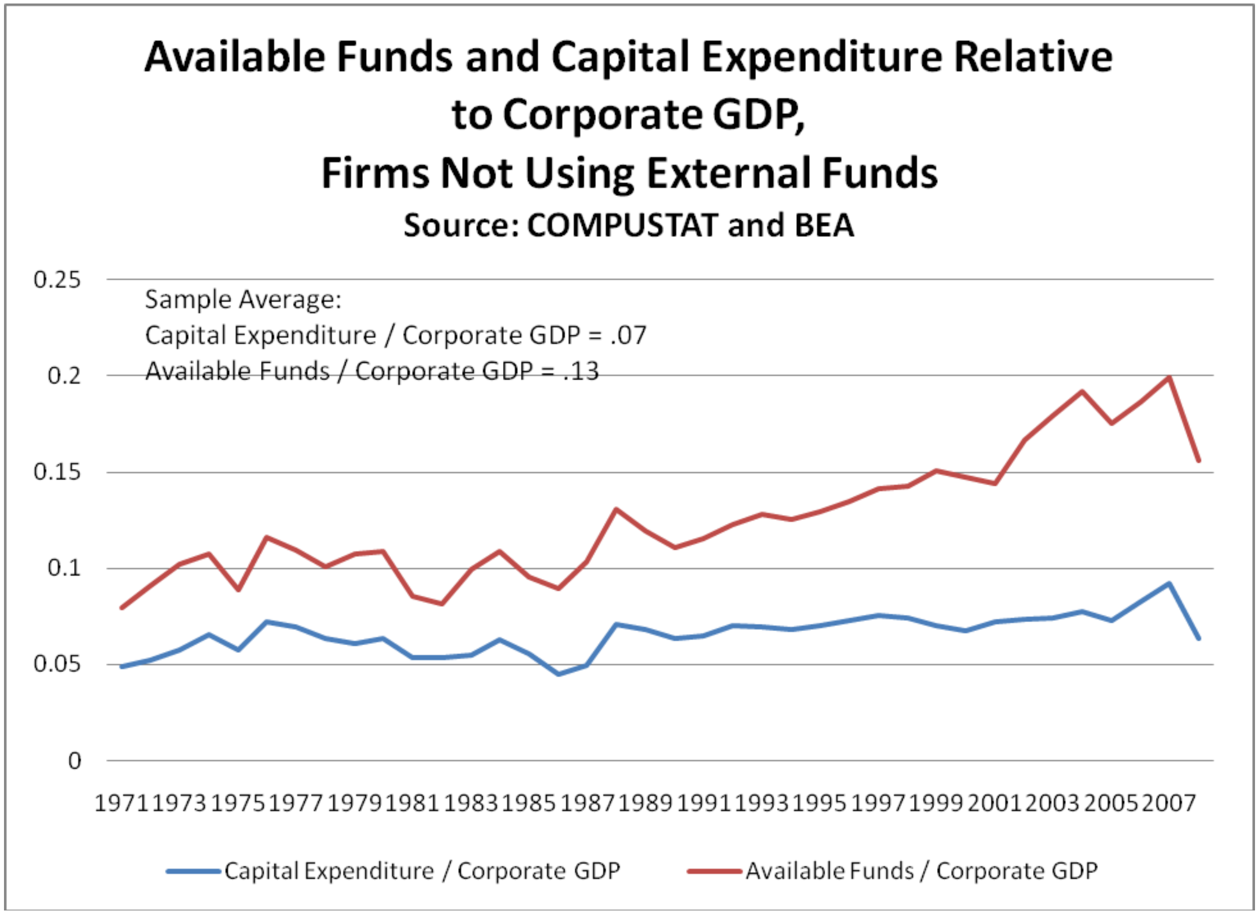
- AF_{it} = Available funds for firm i in period t

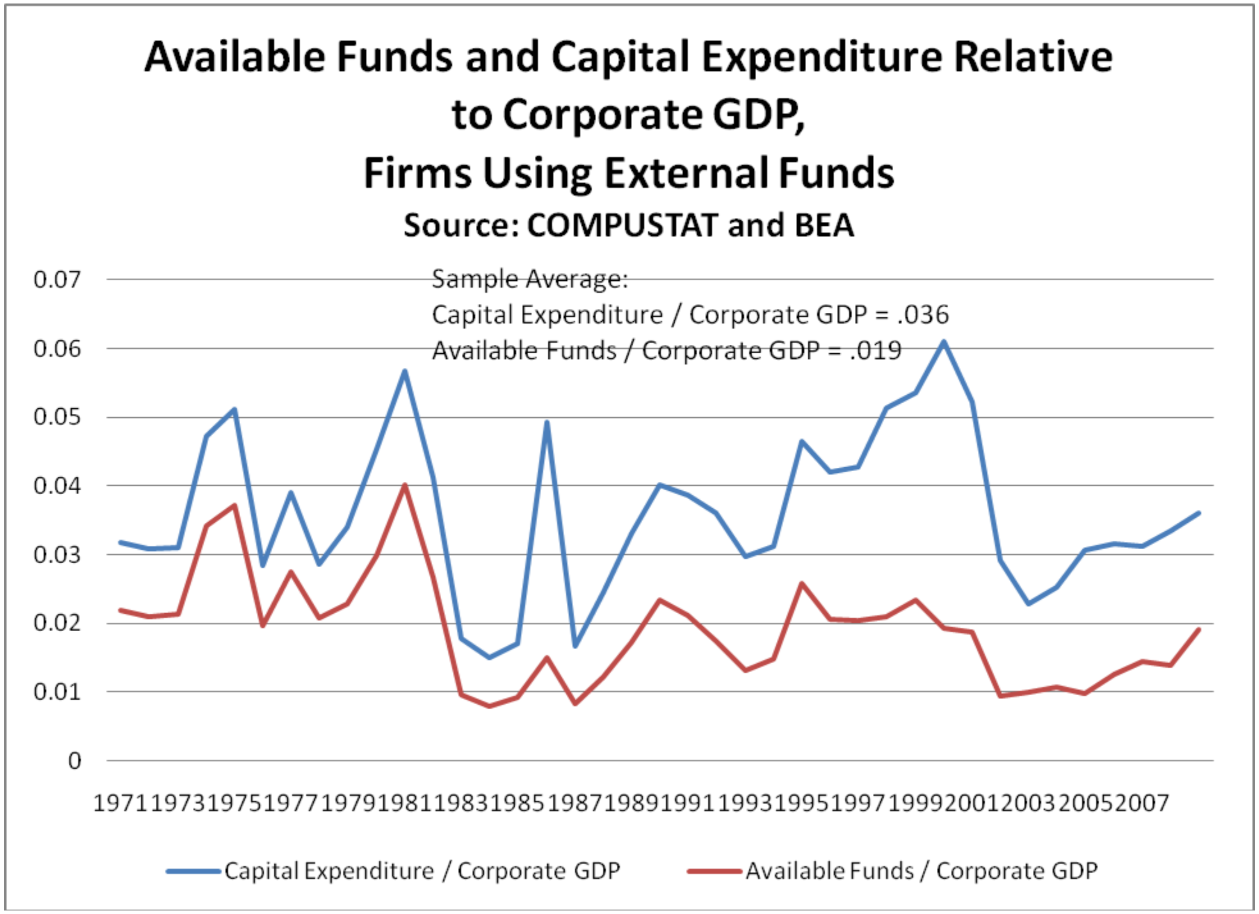
- I_{it} = Gross investment by firm i in period t

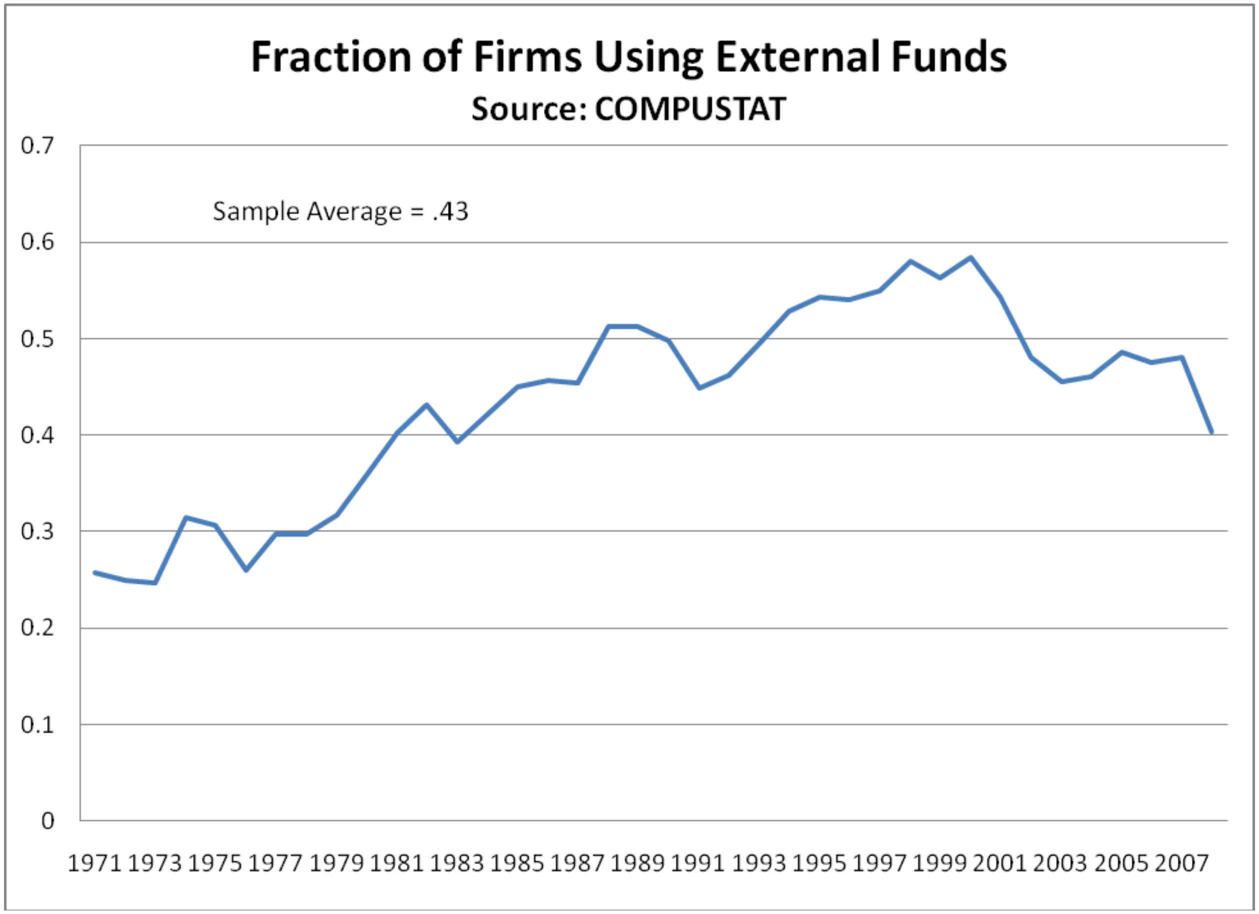
- How much would I_{it} fall if no firm can invest more than AF_{it}



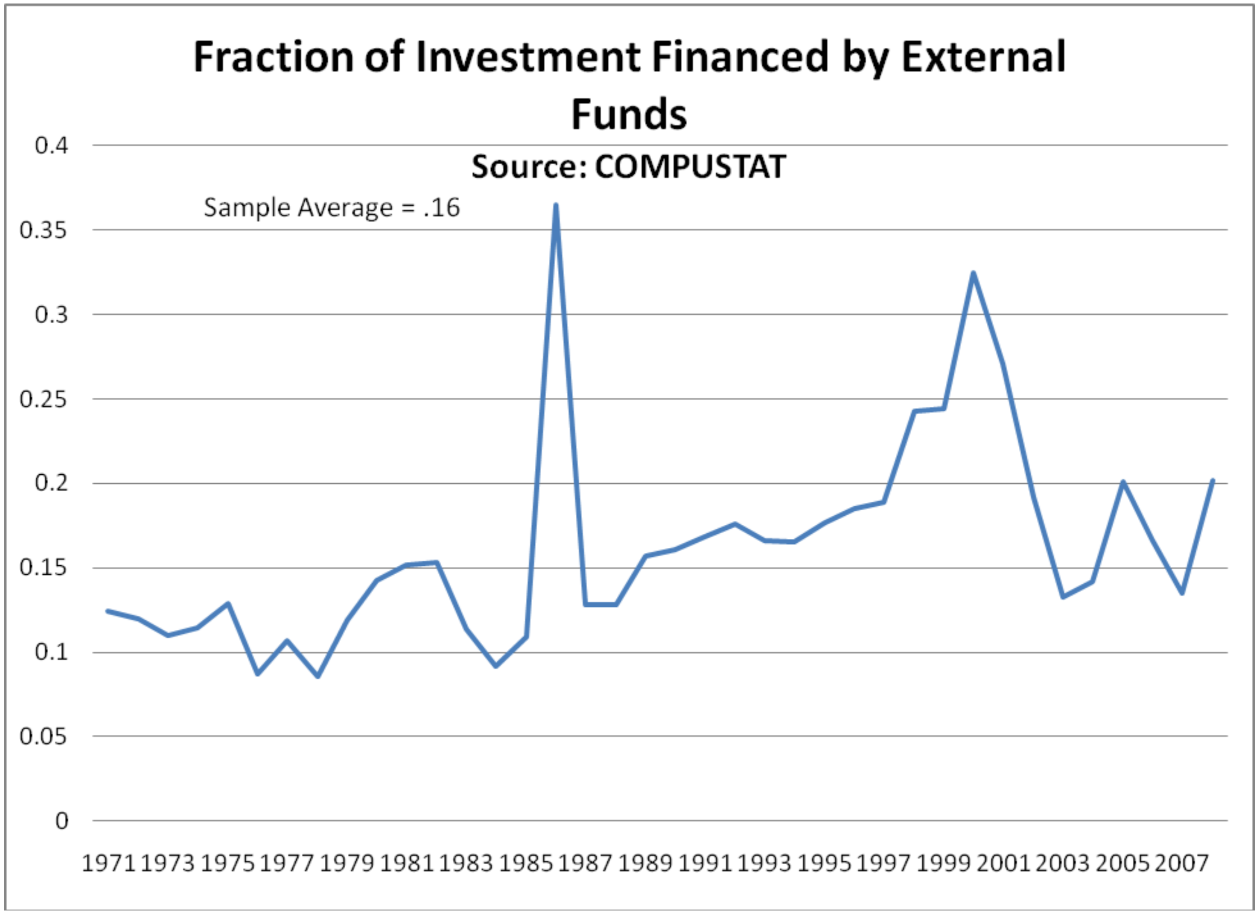
Available Funds and Capital Expenditure Relative to Corporate GDP
Source: COMPUSTAT and BEA
Sample Average: Capital Expenditure / Corporate GDP = .10
0.25
0.2
0.15
0.1
0.05
0
1971 1973 1975 1977 1979 1981 1983 1985 1987 1989 1991 1993 1995 1997 1999 2001 2003 2005 2007
Capital Expenditure / Corporate GDP


Available Funds and Capital Expenditure Relative to Corporate GDP,
Firms Not Using External Funds
Source: COMPUSTAT and BEA
Sample Average:
Capital Expenditure / Corporate GDP = .07
Available Funds / Corporate GDP = .13
0.25
0.2
0.15
0.1
0.05
0
1971 1973 1975 1977 1979 1981 1983 1985 1987 1989 1991 1993 1995 1997 1999 2001 2003 2005 2007
Capital Expenditure / Corporate GDP
Available Funds / Corporate GDP


Available Funds and Capital Expenditure Relative to Corporate GDP,
Firms Using External Funds
Source: COMPUSTAT and BEA
Sample Average:
Capital Expenditure / Corporate GDP = .036
Available Funds / Corporate GDP = .019
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0
1971 1973 1975 1977 1979 1981 1983 1985 1987 1989 1991 1993 1995 1997 1999 2001 2003 2005 2007
Capital Expenditure / Corporate GDP
Available Funds / Corporate GDP



Fraction of Firms Using External Funds
Source: COMPUSTAT
Sample Average = .43
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1971 1973 1975 1977 1979 1981 1983 1985 1987 1989 1991 1993 1995 1997 1999 2001 2003 2005 2007


Fraction of Investment Financed by External Funds
Source: COMPUSTAT
Sample Average = .16
0.4
0.35
0.3
0.25
0.2
0.15
0.1
0.05
0
1971 1973 1975 1977 1979 1981 1983 1985 1987 1989 1991 1993 1995 1997 1999 2001 2003 2005 2007

Does Typical Firm Use External Funds to Finance Investment?

- Use of external funds to finance investment

$$\frac{1}{T}\sum_{t=1}^{T}\frac{\sum_i \left((I_{it}-AF_{it}) \mid I_{it} > AF_{it}\right)}{\sum_i I_{it}}$$

- In data, financial market constraints = 16% of investment financed by external funds

- Interpretation: If firms had <u>no</u> access to financial markets, investment would have fallen by 16%

- This is exceptionally extreme exercise

Morals to be Drawn

- Reallocation margin may be key

- Idea is financial markets' role to get assets into best managers' hands

- New investment in physical capital may be secondary