Macro-Modelling

with a focus on the role of financial markets

University of Pennsylvania

ECON 244, Spring 2013

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Course Information

- Instructor: Guillermo Ordonez (ordonez@econ.upenn.edu)
- TA: Vesa-Heikki Soini (soini@sas.upenn.edu)

- Lectures: Mondays and Wednesdays, 10:30 to 12:00. MUSB 101
- My Office Hours: Tuesdays 9:30 to 11:30. 428 McNeil Building.

  (or by appointment).
- Vesa's Office Hours: Thursdays 14:00 to 16:00. 417 McNeil Building.

Objectives

- What is a model?
  - Abstract construct that represents economic processes by a set of variables and a set of logical and/or quantitative relationships between them. A model uncovers economic forces and guides our view of data.
- What is a macro model?
  - This is trickier. These models are designed to examine the dynamics of aggregate quantities. What is aggregate?
  - A good macro model should have micro foundations.
  - Interestingly, macroeconomics is one of the latest field of economics. Highly motivated by the Great Depression.

Objectives

- Main questions in macroeconomics.
  - What determines growth and development?
  - What determines economic fluctuations?
  - How consumption, investments, unemployment, inflation and other aggregate variables behave in the short run and in the long run?
- We will focus in one important aspect...financial markets.

Objectives

- Are financial markets important for development?
- Are financial markets important for economic fluctuations?
- What policies can be implemented to enhance the positive effects and to reduce the negative effects of financial markets?

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- Are financial markets important for development?
- Are financial markets important for economic fluctuations?
- What policies can be implemented to enhance the positive effects and to reduce the negative effects of financial markets?

- To answer these questions we'll work in four steps.

Road Map: Still flexible

- 8 lectures: Microeconomic foundations of financial markets.
- 6 lectures: Macroeconomic implications of financial markets.
- 6 lectures: Empirical evidence on the role of financial markets.
- Last 2 weeks: Country experiences. Recent crisis.

Zooming the Road Map

- Lectures 1 - 8
  - Why financial markets are so different than other markets?
    - TIME!!! In financial markets trade is not for something now, but for the promise of something in the future.
    - Their links touch every element of the economy.

Zooming the Road Map

- Lectures 1 - 8
  - Why financial markets are so different than other markets?
    - TIME!!! In financial markets trade is not for something now, but for the promise of something in the future.
    - Their links touch every element of the economy.
  - Why financial intermediaries exist?
    - Asymmetric Information between borrowers and lenders.
    - Adverse selection and moral hazard.
    - Need for information and monitoring.
    - Need for liquidity and consumption smoothing.

Zooming the Road Map

- Lectures 9-10
  - How do financial markets affect growth and development?
    - Better quality and quantity of information.
    - Lower cost of financing for risky and large investments.
    - Better allocation of resources.
    - Consumption smoothing.
    - Risk diversification.

Zooming the Road Map

- Lectures 11 -14
    - How macroeconomic models have accounted for financial markets?
        - Not much role to financial markets: Classical, Keynes, Debt-Deflation Theories, Keynesian, Monetarism, Neoclassical.
        - Some role to financial markets: New theories generated in 80s and 90s.

Zooming the Road Map

- Lectures 11 -14
  - How macroeconomic models have accounted for financial markets?
    - Not much role to financial markets: Classical, Keynes, Debt-Deflation Theories, Keynesian, Monetarism, Neoclassical.
    - Some role to financial markets: New theories generated in 80s and 90s.
  - Do financial markets **create** economic crises?
    - Few studies about this,.... but nowadays it is critical.
    - Endogenous generation of bubbles and panics.
  - Do financial markets **magnify** economic crises?
    - Financial markets magnify and spread negative shocks in real activity.
    - Balance sheet channel.....but there may be other channels.

Zooming the Road Map

- Lectures 15 - 20.
  - Evidence on the effects of financial development on growth.
  - Evidence on the effects of financial liberalization on growth.
  - Evidence of the effects of financial markets on economic fluctuations.
  - Bubbles, panics and crashes.

Zooming the Road Map

- Last two weeks.
  - Financial crises and policy responses.
    - 19^{th} century US crises.
    - Great Depression in the US.
    - Latin America.
    - Japan.
    - **Recent US crisis**.

Routine

- Lectures 1 -20,
  - Every week I'll post notes, slides and readings for the following week.
  - Take a look at them before classes!
  - I'll start each topic with the main questions and a summary of answers.
  - Discussion in class will be very important!
- Last two weeks,
  - I'll start each class with the main questions, data and methodology.
  - Short presentations by students.
  - Discussions.

Grading

- 25 % - Midterm 1 (Wednesday, February 13th)
- 25 % - Midterm 2 (Monday, March 18th)
- 25 % - Homework (I'll post it March 25th. Hand in April 1st)
- 25 % - Presentation (Last two weeks)
- 25 % - Final midterm (Monday, April 22nd).

I will drop your worst performance, except the presentation.

Financial Markets

- **Trade** of financial instruments by individuals and institutions.

Financial Markets

- Trade of financial instruments by **individuals and institutions**.
- Who trade?
  - Debtors are individuals or institutions who want to spend more than their current income.
  - Creditors are individuals or institutions who want to spend less than their current income.
  - Financial markets provide a way for the first group to borrow from the second group.

Financial Markets

- Trade of **financial instruments** by individuals and institutions.
- What do they trade?
- Cash instruments:
  - Value determined by the market.
  - Generated by debtors' needs to purchase an asset today (investment) and creditors' needs to accumulate resources for the future (savings).
  - Types
    - Cash: Borrower and lender agree to a transfer (Loans and Deposits).
    - Securities: Readily transferrable instruments (Stocks, Bonds, Commercial Paper, T-Bills).

Financial Markets

- Trade of **financial instruments** by individuals and institutions.
- What do they trade?
- Derivatives.
  - Value determined by the underlying assets.
  - Generated by institutional needs to insure against future bad shocks.
  - Types
    - OTC (over the counter): Contracts traded directly between two parties (Stock Options, Bond Futures, Interest Rate Futures, Forward Rate).
    - Exchange-traded: Standardized contracts traded via specialized future exchanges (Stock Options, Credit Swaps, Exotic Instruments).

Financial Intermediation

- **MOST** of this trade is done by financial intermediaries.
- Financial intermediaries channel funds from creditors to debtors.
- Types
  - **Commercial Banks. (depository institutions)**
    - Institutions whose current operations consist in granting loans and receiving deposits from the public.
  - Mutual funds.
  - Pension funds.
  - Insurance companies.
  - Finance companies.
  - Asset backed security issuers.

Financial Intermediation

- Financial intermediaries channel funds from creditors to debtors.
- Types
  - Commercial Banks. (depository institutions)
  - **Mutual funds.**
    - Pools money from many investors and a manager invests, typically in securities.
    - After deducting managers fees, the gains from investments are distributed to the investors, at least annually.
    - **Hedge funds** invest in riskier alternatives (short selling, derivatives,..)
  - Pension funds.
  - Insurance companies.
  - Finance companies.
  - Asset backed security issuers.

Financial Intermediation

- Financial intermediaries channel funds from creditors to debtors.
- Types
  - Commercial Banks. (depository institutions)
  - Mutual funds.
  - **Pension funds.**
    - Common asset pool meant to generate stable growth, and provide pensions for retirees.
    - Managed by large intermediaries. Largest investors in most countries.
  - Insurance companies.
  - Finance companies.
  - Asset backed security issuers.

Financial Intermediation

- Financial intermediaries channel funds from creditors to debtors.
- Types
  - Commercial Banks. (depository institutions)
  - Mutual funds.
  - Pension funds.
  - **Insurance companies.**
    - Provide insurance policy to individuals and companies to avoid possible bad shocks.
  - Finance companies.
  - Asset backed security issuers.

Financial Intermediation

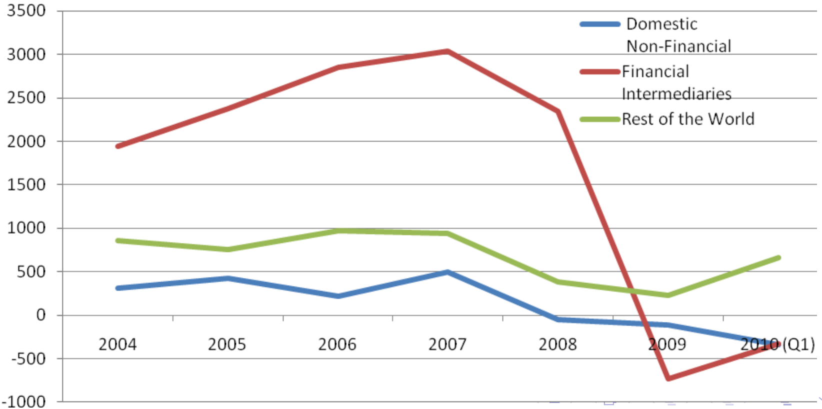
- Financial intermediaries channel funds from creditors to debtors.
- Types
  - Commercial Banks. (depository institutions)
  - Mutual funds.
  - Pension funds.
  - Insurance companies.
  - **Finance companies.**
    - Make loans to individuals or businesses, obtains its financing from banks and other money market sources, not deposits.
  - Asset backed security issuers.

Financial Intermediation

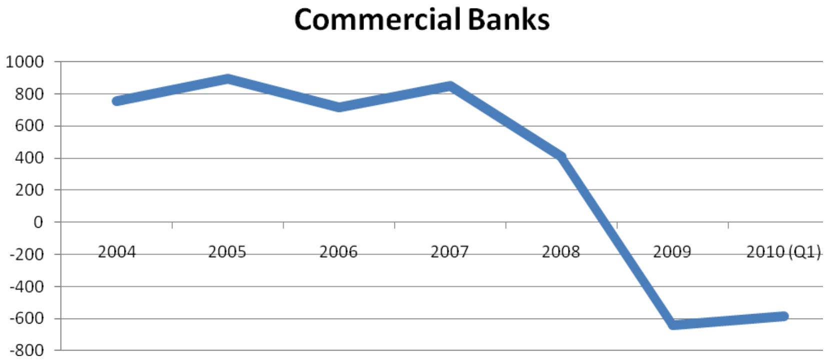
- Financial intermediaries channel funds from creditors to debtors.
- Types
  - Commercial Banks. (depository institutions)
  - Mutual funds.
  - Pension funds.
  - Insurance companies.
  - Finance companies.
  - **Asset backed security issuers.**
    - An asset-backed security is a security whose value and income payments are "backed" by a specified pool of underlying assets.
    - Special purpose vehicles are remote companies (with a sponsor) that create and sell these ABSs (like CDOs, CLOs, etc).

Financial Intermediaries are Key

- Net Lending in Billions of Dollars (Fed Flow of Funds)



Commercial Banks are the Most Important

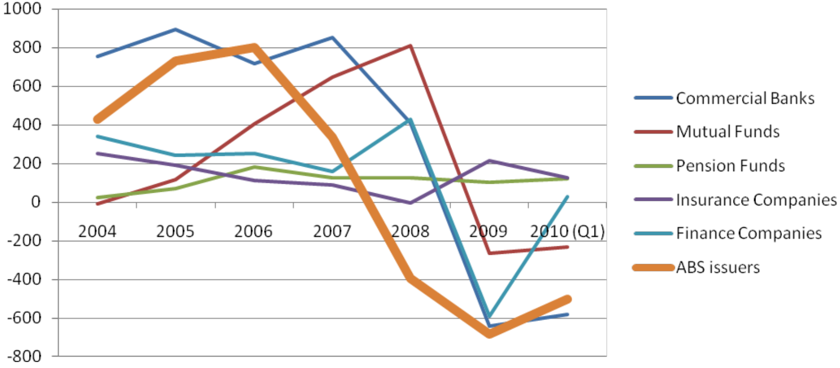


Mutual Funds Have Increased in Importance

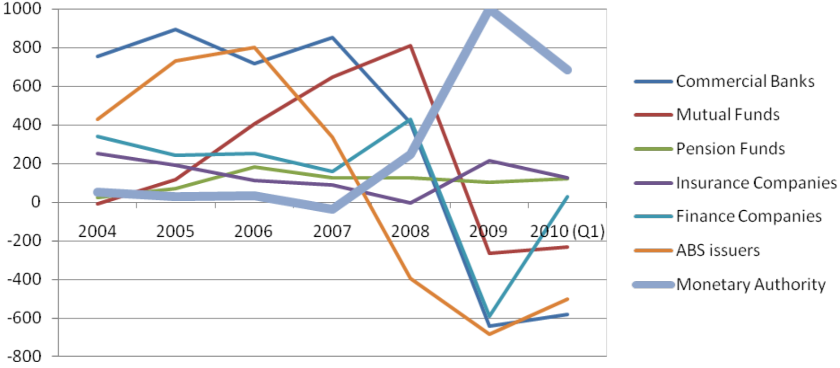
Pension Funds and Insurance Companies are Stable

Finance Companies also Collapsed

ABS Issues Collapsed Before the Rest



Intervention of the Federal Reserve Bank



Banks Are the Most Important Source of Finance

- A lot of external finance comes from banks (25%).
- What are banks unique characteristics?
  - Banks borrow from a group of agents that save (households) and lend to another group of agents that invest (firms).
  - Banks' borrowing and lending groups are large. Diversification.
  - Banks borrow short-term and lend long-term. Maturity mismatch.

Banks' Balance Sheet

- **Total Assets = Total Liabilities**
- Composition is from the Fed (July 2010)
- Assets.
  - Cash. (10%)
  - Securities. (20%)
  - Loans. (57%)
  - Other Assets. (13%)
- Liabilities.
  - Deposits. (75%)
  - Borrowings. (20%)
  - Equity (Bank capital or Net Worth). (5%)

Banks' Important Functions

- What are banks' main functions?
  - Offering liquidity and payment services.
  - Transforming assets.
  - Managing risks.
  - Processing information and monitoring borrowers.

Banks' Important Functions

- What are banks' main functions?
  - **Offering liquidity and payment services.**
    - Money changing and safekeeping of deposits.
    - Payment services and clearinghouses.
  - Transforming assets.
  - Managing risks.
  - Processing information and monitoring borrowers.

Banks' Important Functions

- What are banks' main functions?
  - Offering liquidity and payment services.
  - **Transforming assets.**
    - Convenience of denomination.
    - Quality transformation.
    - Maturity transformation.
  - Managing risks.
  - Processing information and monitoring borrowers.

Banks' Important Functions

- What are banks' main functions?
  - Offering liquidity and payment services.
  - Transforming assets.
  - **Managing risks.**
    - Credit risks.
    - Market risks.
    - Off-balance sheet operations.
  - Processing information and monitoring borrowers.

Banks' Important Functions

- What are banks' main functions?
  - Offering liquidity and payment services.
  - Transforming assets.
  - Managing risks.
  - **Processing information and monitoring borrowers.**
    - Ex-ante information about the prospects of investment.
    - Ex-post information about the results of investment.

But Banks are Also Fragile

- Between 1980-95, 35 countries experienced banking crises (banks stopped functioning).
- Banking crises are typically accompanied by economic crises.
- It is not clear which one leads and which one follows.

Worst Banking Crises since 1980

Country	Crises Dates	Estimated Cost of Bailout (as percentage of GDP)
Argentina (+1)	1980-1982	55
Indonesia (+1)	1997-1998	55
China	1990s	47
Jamaica (+1)	1994	44
Chile (+1)	1981-1983	42
Thailand (+1)	1997	35
Macedonia	1993-1994	32
Israel	1977-1983	30
Turkey (+1)	2000	30
Uruguay	1981-1984	29
Korea	1998	28
Cote d'Ivoire	1988-1991	25
Japan	1990s	24
Uruguay	1981-1984	24
Malaysia (+1)	1997-1998	20

Source: Caprio and Klingbiel (2003)