

Announcements

Final Exam: Monday, Dec 16th, 6:30-8:30pm

- Room location: Blegen Hall 5
- Review sessions (Hanson 1-104):
 - Wednesday December 11th, 4:00-5:30 pm
 - Wednesday December 11th, 6:30-8:00 pm
- Bring ruler and pencils like before

- Extra office hour tomorrow 10 am

Order of business

- Asymmetric Information
 - Moral Hazard
 - Adverse Selection
 - Screening
 - Signaling
- The Financial Crisis (Application)
 - Moral hazard in subprime lending in the U.S.
 - Moral hazard in sovereign debt in the Euro-zone

Asymmetric Information

“Frontiers of Microeconomics”

Review: we started with

First Welfare theorem:

- Assumed no externalities
- no monopoly
- Then free market efficient

Then we discussed what happens with:

- externalities (role for government)
- market power (potential role for government)

All the while we ignored the issue of asymmetric information.

Market may not be efficient

But government might not have an answer either. (Government probably doesn't have any more information than private sector).

It gets complicated!!

So information is hidden....

.....but what is the information about?

1. Hidden Action

Moral Hazard

2. Hidden Characteristics

Adverse Selection

Moral Hazard

Moral Hazard

Illustrate with Insurance Industry:

Hidden Action:

- People who are covered by an insurance policy can take actions to reduce the probability of an accident happening.

Extreme example:

Business has \$1,000,000 in coverage for a building worth \$500,000 (**over-insured**)

- Might just accidentally leave gasoline around and light a lot of candles....

Over-insurance can lead to a hazard for a person's morals!

Hence the name, moral hazard

Other examples in insurance....

Car insurance

- Examples in employer/employee relationship
 - Fix wage vs comission
- What is the connection between moral hazard and externalities?
 - Like negative externality to insurer

- In an employee relationship, compare incentives when people are paid a flat salary versus commission?
- If paid on a commission, worker bears more risk and has stronger incentives. (But this can cause other problems...)

Adverse Selection

Adverse Selection and home insurance

Hidden Characteristic

Example1: home insurance

- Suppose buying home insurance and deciding whether to get coverage for water damage.
- Homeowner may know more about likelihood of having the problem, than the insurance company (inside information).
- The **selection** of people who purchase the water damage coverage will be **adverse** from the perspective of the insurance company.

Adverse Selection

Hidden Characteristic

Example 2: health insurance

- Agent is buying health insurance from a principal, but the agent knows more about his own chance of getting ill than the insurance company
- The insurance company offers different rates depending on health history
- If the company can't tell who is more likely to get sick it would charge a rate in between.
 - Healthy people won't buy the insurance
 - Only sick people will, (at a low price) ie Adverse selection

Adverse selection and health insurance (Health care reform)

- If government passes a law that insurance companies cannot base price on a given characteristic, then it has the same impact as though hidden.
- If new law makes it illegal to base insurance rates on pre-existing conditions, then we get **adverse selection**.
 - people with cancer: very interested in buying insurance.
 - healthy people: much less interested

In fact, there is such a new law:

Affordable Health Care Act (AKA Obamacare)

Combines:

Ban on basing rates on pre-existing conditions

With

Individual Mandate (so the healthy guys cannot stop buying insurance)

Because can't have one without the other

- To oversimplify, the healthy guys are “subsidizing” the insurance company’s ability to pay for the procedures of unhealthy guys

Big idea: when have adverse selection or **hidden characteristics** there will be incentives to separate the good from the bad

- In the last example this was the healthy vs the unhealthy
- The “bad” typically (but not always) have an incentive to lie about being good; here so they can get lower insurance rates

In general when having hidden characteristics there is a side of the market that is “informed” and one side that is uninformed

- In the insurance example the potential buyers were the informed

Screening

One side of the market: informed

Other side: uninformed

Screening: when uninformed does something to try to separate out the good.

- (An insurer can offer a policy with a very high deductible and make it very cheap. Good risks will tend to buy it.)

The most basic example are job interviews

Signaling

Signaling: when informed do something to **signal** they are one of the good ones.

Example: real estate agent could be successful or not.

- Potential client may not be able to tell.
- Successful real estate agent gets Lexus or BMW



- Unsuccessful agent drives



- Potential client figures out who must be good.
- **Fancy car: a signal of success.**

Moral Hazard application: The financial crisis

Application (moral hazard)

- The Financial Crisis
 - Moral hazard in subprime lending in the U.S.
 - Moral hazard in sovereign debt in the Euro-zone

Moral Hazard in Banking and the Global Financial Crisis

We will discuss the role of moral hazard in

- Subprime mortgages in the United States
 - Lending to countries in the Euro-zone
-
- You may remember, in September 2008, the financial sector was falling off a cliff. To say something about this, we need to take a look at a balance sheet of a bank.

Introduction to Banking

- Banks have **assets** and **liabilities**; the former are debts owed to the bank and the latter the debts the bank has with others
- Loans are considered assets of the banks
- Deposits are liabilities (the bank owes me the money I have deposited there)
- $\text{Equity} = \text{assets} - \text{liabilities}$
- and $\text{assets} = \text{liabilities} + \text{equity}$

Banking Sheet

Balance Sheet: First Bank of EconLand

- The \$200 in loans might be from a home mortgage
- This loan is paying liabilities and equity

| | |
|--------------------------|------------|
| Assets | |
| Loans (mortgages) | 200 |

| | |
|---|------------|
| Liabilities & Equity | |
| Liabilities (deposits, short-term credit...) | 170 |
| Equity | 30 |
| Total Liabilities & Equity | 200 |

Let's say the bank makes a mortgage loan of 200. Put that down as an asset of the bank. On the other side of the ledger, this money is coming from:

- Liabilities of the bank
- Equity in the bank (or capital)

Suppose

- Housing prices stable
- Borrower puts 20% down (50k down payment, out of a 250k house)
- The bank sees the borrower has good job and can pay mortgage payments without a problem.

Bank is in good shape. The borrower should be able to pay.

- If the borrower has bad luck loses his or her job, and can't make the mortgage payment, the borrower can sell the 250k house and should clear at least 225k (after paying real estate agents 6% and other costs) to pay off the 200k mortgage.
- If borrower just walks away, the bank can foreclose on the home and recover the bank's investment.

Foundations of a Crisis

This is all under the assumption that house prices do not fall which, they really had not in recent enough memory

But that's not the reality of the housing market before the 2008 crisis.

The housing bubble in the 2000s was a period when housing prices rose far too quickly to be sustainable

- prices kept going up a lot faster than overall inflation and people acted as though this was going to happen forever.

Subprime Loans

- Banks were giving out **loans with no down payment required to people who may not have income (subprime loans)**
- As crazy as it is, banks figured it's still a good deal since they could sell back the foreclosed home later for a profit

Why do something crazy like that? If next year the borrower can't pay, no problem. House will be worth 250k. Bank can sell it and make a profit.

- That logic broke down when the housing bubble burst. Instead of going up, home prices started going down.
- Suppose house price goes down go 170k. Homeowner is “**under water**. ” Better for homeowner to walk and let bank have the house.



Insolvency

- Suppose the bank lent out \$200k for a house, the value fell to \$170k and the owner walked away.
- Suppose the bank can actually sell the house for 170k. How is that going to change the balance sheet of the bank?
- **Bank has 170 in liabilities and 170 in assets so equity must fall to 0**

| | |
|---|--------------------|
| Assets | |
| Loans (mortgages) | 200 170 |
| Liabilities & Equity | |
| Liabilities (deposits, short-term credit...) | 170 |
| Equity | 30 0 |
| Total Liabilities & Equity | 200 170 |

Insolvency

- What can we say now about the equity position of the bank?

Zero: worse than before!!!

- Now, more realistically, take into account that the bank won't net \$170k from the repossessed home. Let say \$150k is all they can get. What can we say about the equity position of the bank now?
 - Equity will be negative with 170 of liabilities and 150 of assets equity is -20
- What happens next is **insolvency**: a bank with negative equity is insolvent

Insolvency and bank runs

- When bank is insolvent and the creditors do not have insurance, there is an incentive for a "run" on the bank. If there are assets of 150 to go around and there are creditor claims worth 170, you don't want to be the last one trying to get your money back!
- There is a famous scene of a bank run in the movie, "Its a Wonderful Life." This scene is from the banking crisis of 1932.
 - A banking reform after that crisis was to set up the Federal Deposit Insurance Corporation (FDIC). With this system, all deposits up to \$100,000 are insured to prevent bank runs.
- For a description of the financial crisis can look at:
<http://www.youtube.com/watch?v=qu2uJWSZkck>

- **As the recent crisis began, some bank creditors were insured (deposit < 100k) but others were not.**
 - **To prevent a bank run by the uninsured creditors, at least for the big banks, the government stepped in and basically said it was going to back the banks up.**

Moral Hazard

Too Big to Fail (TBTF)

Bankruptcy process: GM, Chrysler bankruptcies not disruptive (in a relative sense).

Many argue banking is different

- 1) trust is what they do
- 2) greases the wheels of macroeconomy

- So, there is an incentive for government to step in and not let huge banks go into bankruptcy.

Moral Hazard

Too Big to Fail (TBTF) Banking

- So where does asymmetric information come into this discussion?
- The government putatively has an incentive to step in and prevent the biggest banks from going into bankruptcy because of their role in making the macroeconomy work
- If a small bank is insolvent and must declare bankruptcy the harm it causes is small scale (only a few creditors do not get all their money back)
- If a huge bank fails, the risk is **systemic**; the loss affects the entire economy

Suppose a bank is insolvent...

Small Bank

- Depositors (with less than 100k) are insured by FDIC
- Other creditors may not get all of their money back.
- Does not pose **systemic risk** or bringing entire economy down

Large Bank

- There is a concern that failure poses a **systemic risk** (risk to entire financial system)
- **Incentive to government to bail out even the uninsured creditors of large banks**

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TARP (Troubled Assets Relief Program)

- Bank Bailout of Fall 2008
- The government has an incentive to bail out huge banks like through TARP (Troubled Assets Relief Program) of 2008
- But this introduces a problem of **moral hazard**:
 - Big banks now believe that if they are at risk of bankruptcy, a bailout is waiting
 - This big banks have an incentive to take risks that are too big because the government, not them, will take on the losses
 - Also creditors lending money to the bank won't be as careful with their money (where it is invested) because it essentially insured

Moral Hazard and Too Big to Fail

So the moral hazard is..

- 1) Big banks have incentive to take risks that are too big.
- 2) Moral Hazard on the part of creditors lending to the bank.
Won't be careful with the money.

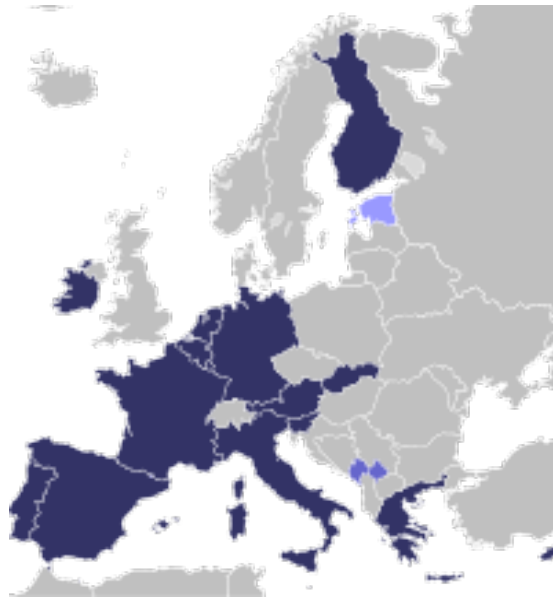
- Since the bailout, big banks can borrow at relatively lower rates than small banks.
- Before could borrow at .3 percentage points less
- Now with TBTF firmly established, can borrow at .8 percentage points cheaper.

- Go back to “Tails the government loses”
 - Interesting that the government didn’t do too bad.
 - Banks paid back government in full
 - But losses on the auto bailout
 - A.I.G. bailout was considered the most outrageous because it indirectly was bailing out Goldman Sachs, which remained a very profitable company. But it is interesting that the U.S. Gov’t actually made some money on this. Sold its final stake last year and the gov’t cleared \$22.7 Billion.

- Global Perspectives: Let’s turn attention to the Euro-zone. In terms of moral hazard, there is an analogy between subprime loans for houses in the U.S. and loans to Greece

EUROZONE DEBT CRISIS

The countries in the Euro-zone are in navy blue:



- Common currency among sovereign nations. (Countries in the European Union not equivalent to states in the U.S. federal system.)

- A number of the countries have been running up unsustainable debt, denominated in Euros. Greece in particular.
- If a country runs up debt denominated in its own currency (like the US), it doesn't have to default. It can just print boxes of money and say "Here." (at a huge inflation cost)
- This is not an option for countries like Greece, the European Central Bank (and basically Germany) run the monetary system

Eurozone Debt

Greece has run up a bigger debt than it can pay back. So what to do?

- Greece can't print Euro-notes because Germany won't let them
- As it is a sovereign nation, banks can't "foreclose" on Greece and take the keys to Athens
- What if Greece just defaults? Countries in the Euro-zone are worried about the contagion effects that would cause catastrophe elsewhere in the EU

Upshot: **Bailout. Germany stepping** in and writes checks.

- Not just Greece getting bailed out.
- Banks lending to Greece getting bailed out.

There is an issue of **moral hazard**:

- **If less wealthy countries can just run up their debt and consume like crazy and know that someone will step in to pay the check, why not do it?!**
- As these countries are **too big to fail**, there was **moral hazard** in the banks lending. They were too eager to lend, overlooking problems, rationally anticipating that these countries (and the banks lending to them) would be bailed out in the end.
- (And could perhaps argue that there is moral hazard at the country level. Greece went on a binge, perhaps thinking that its big brother Germany would pay the bill.)

One key difference between Eurocrisis and U.S. subprime crisis.

- The U.S. government seems like it was more keen to bail out Citibank, than Germany was to bail out Greece.

The EU has been changing institutions to reduce the moral hazard. They are working on a fiscal pact that would impose budget rules on the members (limits their ability to go into debt). The treaty would take away some of each country's sovereignty to reduce moral hazard.

- As an analogy, suppose 27 people go out to dinner and agree to split the bill 27 ways. There is a moral hazard problem here, and people will tend to order steak, expensive wine, fancy desserts...
- To limit moral hazard, the group may decide on a pact before dinner that no one can order dessert, no one can order steak, etc.

The end! Thanks for your interest in this class. I wish you the best on your final and in your future studies 😊