I.1. INTRODUCTION AND OVERVIEW

Goals of the course:

- Expand your knowledge of macroeconomics, building on material covered in the first year course
- Enable you to understand and analyze recent economic events

We will illustrate the topics of the course with a story of the Great Recession

- Most important macroeconomic development in the last 70 years
- Likely to have consequences for a long time; in particular, when you graduate and hit the job market.

1. THE GREAT RECESSION.

Started around 1am Sep 15, 2008 - Lehman Brothers filed for Chapter 11 bankruptcy protection

At that time fourth largest investment bank in the US

1.1. LEHMAN BROTHERS BANKRUPTCY.

Lehman Brothers - in trouble for some time.

Bad investments in real estate; rapidly deteriorating assets

September 13-14: a high-level meeting in New York.

- Henry Poulson, then the Treasury Secretary,
- Ben Bernanke, the chairman of the Federal Reserve (Fed)
- Timothy Geithner, then the president of the Federal Reserve Bank of New York and the current Treasury Secretary.

The general expectation was that the government and the Fed will step in and find a buyer who will save the firm from bankruptcy

- March 2008 Fed arranged a purchase of Bear Sterns by JP Morgan
- September 8, 2008 – rescue of Fannie Mae and Freddie Mac - private companies created by the US government to improve the liquidity in the housing market and availability of mortgages.

Why was Lehman Brothers allowed to fail?

- Concern about moral hazard.

Moral hazard arises when a company (or an individual) does not have to bear all consequences of its actions.

- Treasury and Fed officials concerned that, if they save another failing investment bank, the pattern of government intervention will be established and moral hazard will be a big problem

- Largest bankruptcy: $700 bln in assets.
- The largest previous bankruptcy was Worldcom, 2002, $100bln in assets
- Investment banks borrow large amounts; little capital; owed lenders $650bln.

Markets - caught unprepared.

1.2. CREDIT PANIC

- tangled web of financial obligations between financial institutions
- derivatives, credit default swaps
- obligations not traded on organized exchanges

→ creditworthiness of potential borrowers difficult to assess

→ banking system froze – very difficult to obtain credit

George Soros: **"the economy fell off the cliff".**

Recession - usually defined as two consecutive quarters of falling output. *We will describe how output is measured in part I.3 of the course: "The Data of Macroeconomics – how output is measured".*

NBER (National Bureau of Economic Research): the recession started in December 2007.

In September 2008 it got much worse

Most economic activities require credit. Without credit:

- decline in investment
- decline in output
- rapid rise of unemployment
- consumer pessimism – decline in consumption

How bad did it look: Bernanke: "the worst financial crisis in global history, including the Great Depression" All but one of the largest US financial institutions were a week or two from collapse.

Why call it the Great Recession? To distinguish from lesser (ordinary) recessions and from the Great Depression

1.3. THE POLICY RESPONSE

In the end – not as bad as feared.

Unemployment peaked at 8.8% in Canada, 10.6% in the US (in the Great Depression it was over 20%).

We will talk about factors affecting unemployment in part II.7 of the course: "Unemployment".

Active macroeconomic policies to counteract the Great Recession: expansionary monetary and fiscal policies.

- used lessons from the Great Depression.

Main **monetary** policy: reduce short-term nominal interest rates. Central bank has direct control of those rates.

But nominal interest rate cannot be lower than zero.

Question: why?

So: employed alternative policies called quantitative easing.

- purchases of assets of longer maturity,
- affecting expectations by promising to keep interest rates low for extended periods

We will describe both the traditional and new approaches to monetary policy in part IV. 10 of the course: "Monetary policy: inflation targeting, rules and discretion"

Fiscal policies: discretionary and automatic

- Discretionary: raise government purchases and transfers, cut taxes
- Automatic: changes in spending and taxation that take place without government action: higher unemployment and welfare payments, lower income taxes as income falls.

We will talk about the theory behind these simulative policies in part III. 9. Of the course: "IS-LM: the basic framework to understand macroeconomic policy"

Both active and automatic fiscal policies raise deficit and debt → concerns about debt level and drive to reduce spending in several countries.

We will talk about fiscal policy issues in part IV.11 of the course" Fiscal policy, government debt, deficits".

1.4 HOW THE MORTGAGE CRISIS DEVELOPED

- 2001 recession – low interest rates
- Low interest rates – encourage house buying
- Low inflation subsequently – the Fed kept interest rates low

Fed goal: "to promote effectively the goals of maximum employment, stable prices, and moderate long-term interest rates

Bank of Canada – targets inflation between 1% and 3%

We will talk about problems brought about by inflation and why central banks are concerned about it in part II.6. of the course: "Inflation"

1.4.1 DEVELOPMENTS IN THE FINANCIAL SECTOR

LOAN SECURITIZATION.

Mortgages from many properties are put together (pooled) into a security (called a Mortgage-Backed Security) which is then sold to investors

- removes the risk of nonperforming loans from the bank that gave the mortgage → moral hazard
- provides the bank with funds to give more mortgages

Profitable process:

- individual mortgages pay high interest rates
- risk appears diversified – it is unlikely that many mortgages in a pool default at the same time
- pools of mortgages appear less risky, so a mortgage- backed security has high yield and perceived low risk

Decline in lending standards due to moral hazard

SUB-PRIME LOANS.

Demand exceeded supply – banks increased loans to riskiest borrowers

Sub-prime: loan to borrower who does not qualify for a regular (prime) loan

- higher default risk and pay higher interest rates

Pooling sub-prime loans with prime loans created securities with high yield and relatively low risk

Adjustable rate mortgages (ARM).

- the initial interest rate is low
- it increases significantly after 2 or 3 years
- borrower expects to take advantage of house appreciation and refinance

LEVERAGE.

Leverage - based on using borrowed money to acquire assets.

Definition: Leverage is equal to the ratio of assets to the difference between assets and liabilities (excluding capital).

- Multiplies gains and losses
- Financial institutions around the world were very heavily leveraged. Leverage of 33 was not uncommon; some institutions had leverage of 50.
- Extent of leverage – hidden by accounting tricks.

1.4.2. RISING HOUSE PRICES

Sub-prime and ARM mortgages - ok in a rising market:

- when the value of the house increases, the borrower can refinance
- the proceeds from refinancing can be used to make mortgage payments.

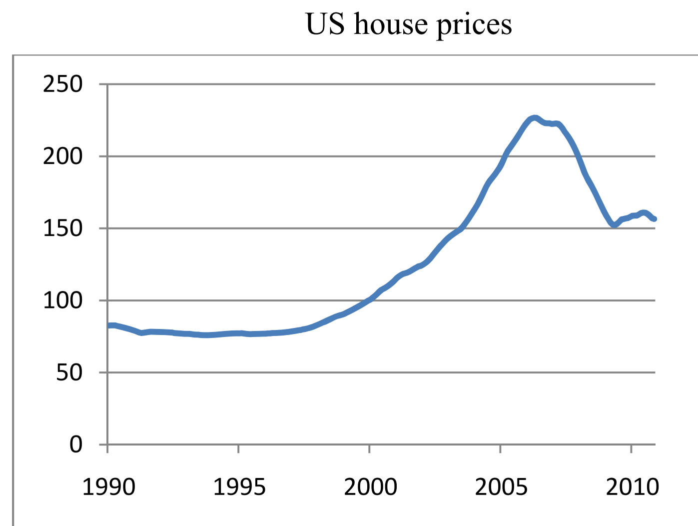
So even borrowers with weak credit history are expected to be able to service their mortgage

Too much sub-prime loans:

Loan securitization → moral hazard → sub-prime loans profitable → easy to obtain

Self-reinforcing process:

- higher house prices →lower risk of default→ higher demand and supply of mortgages →more house purchases → higher house prices



WEALTH EFFECT OF HIGHER HOUSE PRICES

The increase in house prices makes homeowners feel wealthier. *As we will discuss in part II.4.: "Consumption", higher wealth means higher consumption demand*

When households feel wealthier, they increase spending.

So; Higher house prices → higher consumption, lower savings

Favourable business conditions:

Consumption – 2/3 of GDP. When consumption rises, so does investment and output. Higher output leads to higher demand for housing, higher house prices and higher consumption.

WAS IT A BUBBLE?

A bubble is a situation when the asset is overvalued (relative to fundamentals) but people continue to buy it in the expectation that its price will increase even more.

- In retrospect, yes.
- Bubbles - easy to identify after the fact: a rapid increase in prices is followed by a rapid decrease. - Difficult to identify contemporaneously

Fundamentals may have changed:

- financial deregulation reduced the cost of financing.

Securitization reduced the risk of sub-prime lending.

So the increase in house prices could be viewed at the time as justified by changed fundamentals

1.5 THE FINANCIAL CRASH

THE DECLINE IN HOUSE PRICES.

- large, speculative supply of housing (overbuilding)
- Fed raises interest rates → demand falls

High supply, low demand → prices start falling (in the second half of 2006).

MORTGAGE DEFAULTS

- No longer possible to refinance – homeowners "under water"
- Non-recourse loans → limited penalty for defaulting

FORECLOSURES AND FURTHER DECREASE IN HOUSE PRICES.

If the house owner does not pay interest on the loan, the mortgage owner can foreclose

Vicious circle:

House prices fall →owners are unable to refinance and default on loans → bank forecloses →bank sells the property → with the extra supply prices fell further

FINANCIAL INSTITUTION LOSSES.

- Defaults and foreclosures → the value of mortgage-based securities falls.
- Financial institutions incur losses.
- Many institutions in difficult position – had to sell securities, reducing prices further

As mentioned at beginning: complex web of interrelationships – uncertainty about solvency of the potential borrower → credit market freezes

So the credit market dried up – much harder than before to obtain a loan.

1.6. EFFECT ON THE REAL ECONOMY.

Financial crisis →

- reduced the availability of credit
- lower consumer confidence

Decline in house prices →

- lower household wealth

So:

- lower consumption
- big drop in demand for things bought on credit (cars, large ticket items)

Big decline in investment - , typical in recessions.

Main reasons: lower demand, uncertainty about the future

- business fixed investment – falls as firms postpone projects
- inventory investment falls since demand is lower and firms reduce operational costs
- residential construction falls as people stop buying new homes

We will discuss factors affecting investment in part II.5 of the course: "Investment".

1.7. THE CRISIS SPREADS ABROAD.

US – about 20% of the world economy; world's biggest importer.

Typical effect of a recession in the US - through international trade.

- US output falls → US imports fall.
- Recession in the US need not cause a recession in other countries (for example 2001 – did not even cause a recession in Canada).
- Other countries – less affected as have weaker trade links

CHANNELS OF TRANSMISSION IN THE GREAT RECESSION.

1. Through financial markets

The most important channel

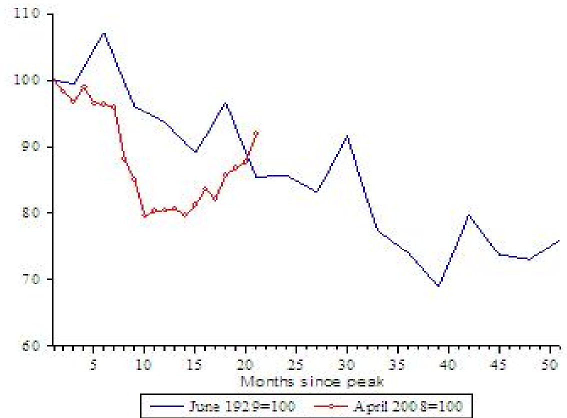
- Mortgage-based securities - sold around the world (to German banks, Spanish pension funds, Argentinean insurance companies etc).
- Derivative exposure – unknown and so creditworthiness of financial institutions – suspect.
- High leverage in European institutions.

2. International trade and interconnected supply chains

Unprecedented trade decline: world trade fell by over 20%; in Taiwan, they fell over 40%.

The decline, initially, much more rapid than during the Great Depression

Red line: Great Recession, blue line: Great Depression



- Complex goods - rarely produced in a single country.
- Production - organized through international, interconnected supply chains: components are made in many different countries, final assembly somewhere else.

Manufacturer	Component	Cost
Toshiba (Japan)	Flash Memory	US$24.00
	Display Module	US$19.25
	Touch Screen	US$16.00
Samsung (Korea)	Application Processor	US$14.46
	SDRAM-Mobile DDR	US$8.50
Infineon (Germany)	Baseband	US$13.00
	Camera Module	US$9.55
	RF Transceiver	US$2.80
	GPS Receiver	US$2.25
	Power IC RF Function	US$1.25
Broadcom (US)	Bluetooth/FM/WLAN	US$5.95
Numonyx (US)	Memory MCP	US$3.65
Murata (Japan)	FEM	US$1.35
Dialog Semiconductor (Germany_	Power IC Application Processor Function	US$1.30
Cirrus Logic (US)	Audio Codec	US$1.15
Rest of Bill of Materials		**US$48.00**
Total Bill of Materials		**US$172.46**
Manufacturing costs		**US$6.50**
Grand Total		**US$178.96**

Different recording of output and international trade:

- output – computed as value added (value of final product minus intermediate inputs)
- trade – computed as value of sale – involves double counting

This – important to account for decline in Canadian exports.

3. The effect of the crash in the US on business and consumer attitudes in other countries.

1.8 THE CRISIS IN CANADA

Before the Great Recession, the Canadian economy was in good shape.

- low unemployment
- fast growth
- government budget surpluses, both federal and provincial
- high resource prices.

1. Limited effect on financial markets

Solid banking system

- Lower leverage
- High capital ratios
- Less securitization of mortgages
- Few high – ratio mortgages; need to be insured

World Economic Forum – called Canadian banks the best in the world

We will discuss the Canadian banking system at some length in part IV.12: "Experience from the Great Recession".

2. Export channel - particularly strong in Canada.

- The US economy is our largest trading partner, by far.
- US: 75% of Canadian exports
- Britain: 3% of exports
- Especially hard hit: the car industry - Canadian automobile exports fell 40%.

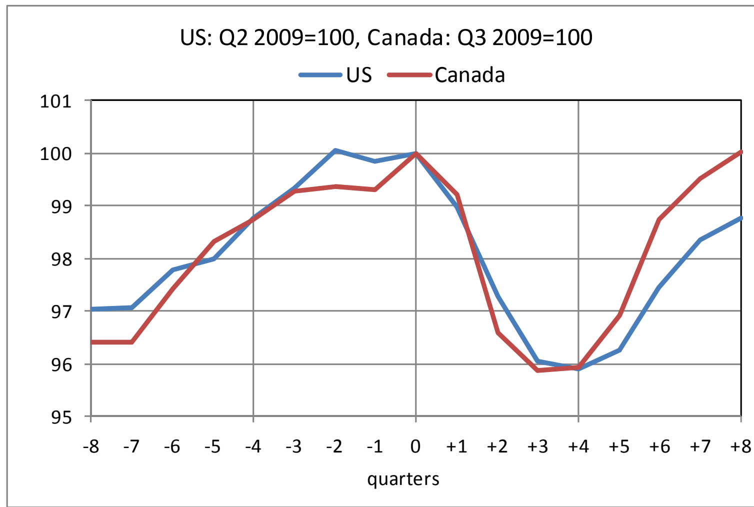
3. Effect on business and consumer attitudes: important.

- Canadian households became concerned about the severe recession in the US and reduced spending.
- Investment fell as firms took a "wait and see" approach and delayed projects.

1.9 COMPARISON OF MACRO PERFORMANCE IN THE GREAT RECESSION

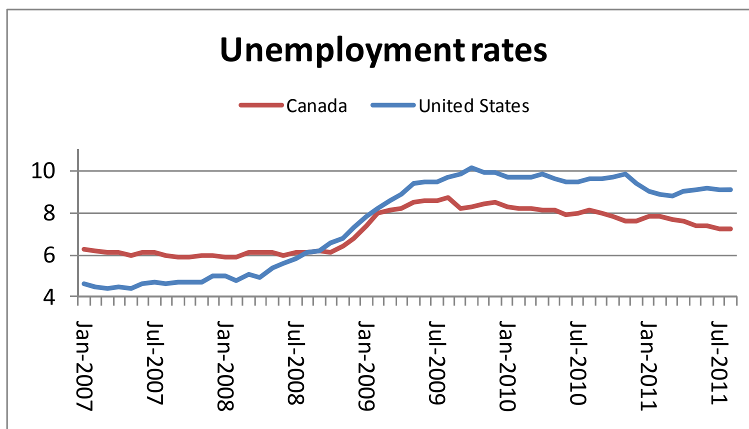
OUTPUT

- output decline in Canada
- started a quarter later
- about as deep
- the economy rebounded faster



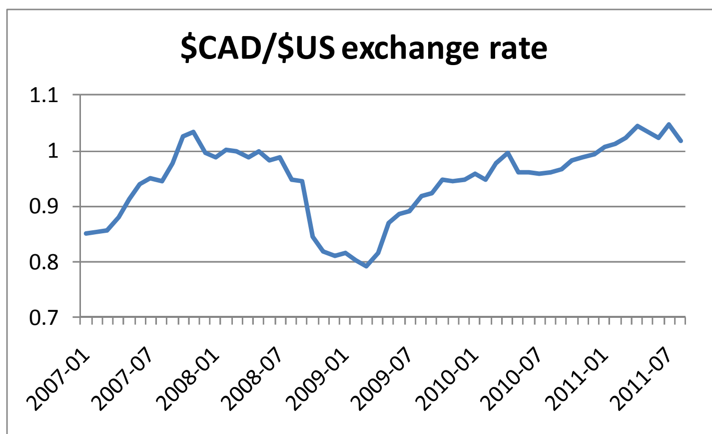
UNEMPLOYMENT

- Historically – US unemployment lower (around 2% lower)
- just prior to the Great Recession – similar rates (around 6%)
- increase in Canada – smaller (to 8.8%; in the US to 10.6%)
- declines to 7% in Canada, to 9% in the US



EXCHANGE RATE

- reached parity in October 2007
- stayed close to parity till the beginning of the Great Recession
- depreciated 20% during the recession as there was flight to US bonds – biggest and most liquid market
- has appreciated back to parity



SUMMARY

- Described the Great Recession to illustrate the macroeconomic topics in the course
- During the course (between now and December) many new developments likely:
  - The US economy weakens, stock market declines and a double-dip recession is announced
  - The Canadian economy grows very slowly
  - There is a banking crisis in Europe
  - European countries move towards fiscal integration
  - Greece leaves the Euro

We will be discussing current events as they happen and in the last part of the course: Part VI. "Major policy issues"