Lecture 7: Bank regulation 1: deposit insurance and lender of last resort

In this lecture we deal first with the issue of bank runs and contagion, and their link to the optimal characteristics of the deposit contract, before discussing the nature of the “safety net” that has been developed to prevent such occurrences, i.e. deposit insurance and the lender of last resort. We highlight the moral hazard problems that the safety net occasions as well as the benefits it offers. We conclude by looking at the so-called macroprudential indicators of financial instability.

The deposit contract and bank runs

Elaboration of concepts of liquidity insurance (Lecture 2)

Main features of the demand-deposit contract - instant access, debt, not traded and sequential service
Nontraded debt implies bank incentive take risks (invest in risky loans, shirk in monitoring, fraud) - no discipline from market prices

Other features have a role of disciplining bank management and reducing such moral hazard:
- Infinitesimal maturity means that deposits can rapidly disappear, attenuating moral hazard
- Sequential service gives an incentive to monitor as will be first in queue

The issue of runs and contagion

Depositors' monitoring of projects is likely to be prone to errors hence banks vulnerable to "overdiscipline" (runs on solvent banks) leading to socially wasteful liquidation of projects.
Possibility to affect other banks, via balance sheet similarities under uncertainty or counterparty exposures

Theories of bank runs

Diamond and Dybvig -sunspots
Some criticisms of the Diamond-Dybvig model – suggestion bank runs are purely random events
Chari and Jagannathan - adverse information leads to panics - systematic risks inferred from what may be idiosyncratic

Gorton - panics mainly in recessions – confirms adverse information hypothesis as panics close to period when business failures most acute

Policy prior to deposit insurance was to suspend convertibility of deposits into cash. Or certificates from private clearing houses in lieu of currency (where clearing houses monitored banks)

Deposit insurance as a bulwark against runs

Government guarantee of nominal value of deposit claims
Benefits:
- Less likelihood of runs on solvent
- Reduce shock to money supply at macro level.
- Less costly and unnecessary liquidations.
- Duplication of monitoring by depositors avoided

Costs:
- Less monitoring both by depositors and other banks
- Crucially, moral hazard and consequent excessive risk taking. Such moral hazard arises from mispricing of the related insurance (e.g. if dependent on size of deposit base only)

Option value of insurance using Black-Scholes (V value of assets and B size of deposits)

Payoffs:

Shareholders:	Max[0, V – B]
Depositors:	B
Deposit Insurer:	Min[0, V – B], which is either zero (when V > B) or negative (when V < B).

Deposit insurance creates additional cash flow, giving the deposit insurance guarantee the structure of a put option for the bank

Valuation

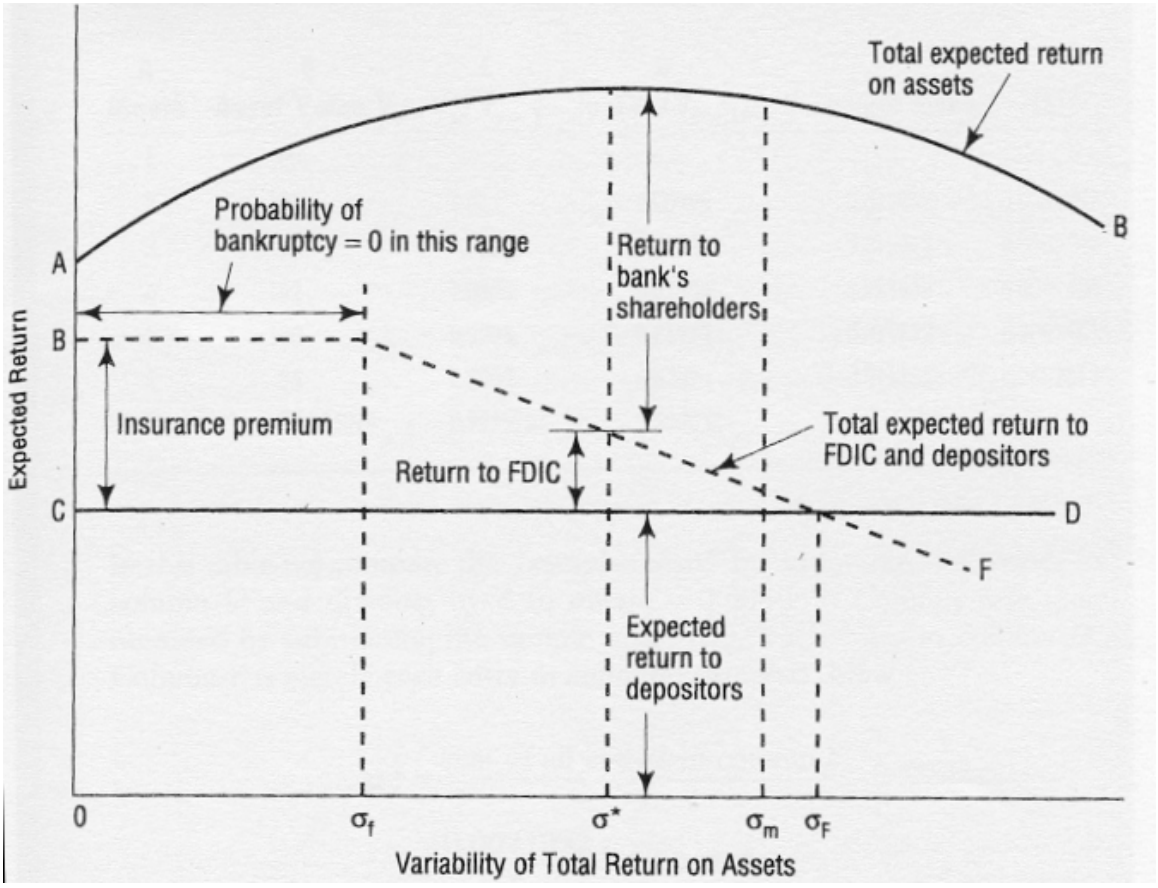
$$G(T) = Be^{-rT}\Phi(x_2) - V\Phi(x_1)$$

$$x_1 \equiv \frac{\log(B/V) - \left[r + \frac{\sigma^2}{2}\right]T}{\sigma\sqrt{T}}$$

$$x_2 \equiv x_1 + \sigma\sqrt{T}.$$

Equity holders' incentives - costs passed to taxpayers – bank can raise value of option by reducing capital and raising asset volatility.

Relation between risk and return for insured bank and its shareholders



Implications of Black-Scholes for risk based pricing – premia need to be sensitive to volatility of assets and deposit to assets ratio

Empirical evidence of moral hazard:

- credit unions, after there was deposit insurance, capital ratios fell 12% to 8%
- charter values, despite deposit insurance, banks did not take risks when had market power as charters were capital asset. Deregulation devalued charter and led to risk taking
- thrifts crisis stimulated by deposit insurance (also lax monitoring)

Further issues arising from deposit insurance

Private insurance versus formal deposit insurer – former may be better suited to monitoring – but less resources?

A “club” of banks – legal obligation to help recapitalise banks e.g. France – but may not be sustainable in competitive and international financial system

Monetary policy issues – macro – implies high level of protection also for large deposits as most runs are “wholesale”

Consumer protection – micro – as e.g. required by EC only requires low level of protection for small deposits, leaving wholesale depositors incentive to monitor

The lender of last resort

Features – institution, such as the Central Bank, which has the ability to produce at its discretion currency or "high powered money" to support institutions (or payments system) facing liquidity difficulties, to create enough base money to offset public desire to switch into money during a crisis, and to delay legal insolvency of an institution, preventing fire sales and calling of loans

Costs:
Reduces need for banks to hold liquidity as risk passed to central bank
Increases moral hazard/risk taking
Liquidity assistance may lead to support for insolvent
Difficulty of too-big-to-fail

May need direct lending not just open market operations

Comparing LOLR and DI

- Operation of LOLR is discretionary which may attenuate moral hazard
- In principle, LOLR covers liquidity and DI solvency
- Monetary policy implications of LOLR – generates high powered money which may affect monetary stance at a macro level
- (Limited) deposit insurance better suited to consumer protection?

Safety net has succeeded in preventing bank runs and hence panics in most OECD countries

Ultimate backup is fiscal policy. Government may need to recapitalise insolvent banks (Sweden, Finland)

The need for macroprudential surveillance and indicators (MPIs)

‘Macroprudential surveillance’ - monitoring of conjunctural and structural trends in financial markets so as to give warning of the approach of financial instability - is immensely important given that financial crises can have huge costs in terms of GDP, fiscal costs, job losses in financial sector etc.

There is hence an immense premium on timely warnings regarding systemic risks as an input to policy decisions as well as to strategies and market behaviour of financial institutions

What sorts of data have proven to be good predictors?

Debt accumulation
Asset price booms
Concentration of risk on the part of financial
institutions
Unanticipated regime shifts towards laxity and later towards stringency
New entry of intermediaries
Financial innovation
Monetary tightening
Declining capital adequacy of financial institutions

Notes on use of MPIs

The importance of economy in the number of variables to tell a coherent story
Derivation of data needs from theory and experience
Qualitative aspects – cannot be purely numerical
The need for benchmarks and norms
Observation of overall patterns in the light of past occurrences of financial instability, both at home and abroad
Judgmental approach
Conceptual framework derived from theory
The use of econometrics to complement judgement but not to replace it
MPIs can show either shocks (e.g. triggering boom or crisis) and propagation mechanisms (show boom is underway)

Features of selected episodes of financial instability (1989-98)

	Australian banking problems (1989)	Swedish CP crisis (1990)	Norwegian banking crisis (1990)	Finnish banking crisis (1991)	Swedish banking crisis (1991)	Japanese banking crisis (1992)	ECU bond market collapse (1992)	ERM crisis (1992)	Bond market reversal (1994)	Mexican crisis (1994)	Asian crisis (1997)	Russia and LTCM (1998)
Debt accumulation	●	●	●	●	●	●	●		●	●	●	●
Asset price boom	●	●	●	●	●	●			●		●	●
Concentration of risk	●	●	●	●	●	●			●		●	●
Regime shift			●	●	●	●	●	●	●	●	●	●
New entry of intermediaries	●	●	●	●	●	●	●				●	●
Innovation		●					●	●	●			●
Monetary tightening	●		●	●	●	●		●	●	●	●	
Declining capital adequacy of financial institutions			●	●	●	●					●	●
Credit rationing/liquidity failure/bank runs	●	●	●	●	●	●	●				●	●
Contagion between markets									●		●	●
International transmission							●	●	●	●	●	●
Action by the authorities	●		●	●	●	●				●	●	●
Severe macroeconomic impact	●	●	●	●	●	●		●	●	●	●	
Dysfunction of financial system/economic collapse						**?**					**?**	

Framework for MP analysis

Generic patterns of financial instability

Phase of crisis	**Nature**	**Example of features**
Primary (favourable) shock	Diverse	Deregulation, monetary or fiscal easing, invention, change in market sentiment
Propagation - buildup of vulnerability	Common – main subject of macroprudential surveillance	New entry to financial markets, Debt accumulation, Asset price booms, Innovation in financial markets, Underpricing of risk, risk concentration and lower capital adequacy for banks, Unsustainable macro policy
Secondary (adverse) shock	Diverse	Monetary, fiscal or regulatory tightening, asymmetric trade shock
Propagation - crisis	Common	Failure of institution or market leading to failure of others via direct links or uncertainty in presence of asymmetric information – or generalised failure due to common shock
Policy action	Common – main subject of crisis resolution	Deposit insurance, lender of last resort, general monetary easing
Economic consequences	Common – scope depends on severity and policy action	Credit rationing leading to fall in GDP, notably investment

Components of surveillance reporting

- Structural macroeconomic aspects (e.g. vulnerability to asymmetric shocks owing to industry/trade structure)
- Conjunctural macroeconomic aspects (sustainability of monetary and fiscal policy, growth and inflation)
- Non financial sectors (balance sheets, borrowing, asset prices)
- Financial sector - structural aspects (banking structure, entry, deregulation, safety net, quality of regulation, codes)
- Financial sector – conjunctural aspects (banks' profitability, balance sheets)
- Risks arising from the above, seen in the light of theory, patterns preceding past crises, and norms for the economy
- Possible future threats
- Countervailing aspects of resilience
- Stress tests – qualitative or quantitative – derived from perceived risks
- Conclusions and policy issues