

Course title: International financial regulation

Lesson 7. Regulating Shadow Banks

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What is shadow banking?

Shadow banking refers to bank-like financial activities that are conducted outside the traditional commercial banking system, many of which are unregulated or lightly regulated.

Shadow banking includes familiar institutions such as investment banks, money-market mutual funds, and mortgage brokers.

The types of contracts are:

- Repo;
- ABS;
- CDOs;
- ABCP.

The growth of the shadow banking

- The regulatory wick was introduced in Usa promoted the growth of the shadow banking system in three ways:

- 1. Restrictions on bank activities encouraged nonbanks to develop new services:** until 1980 Glass-Steagall act required to Federal Reserve to limit the interest rate that commercial banks could pay savings depositors, creating market opportunity for money mutual funds.
 - With the separation between commercial bank and investment bank, the latter led the rapid growth of market-based forms of borrowing.

The growth of the shadow banking

2. **Capital regulations encouraged banks to transfer assets and activities into off-balance sheet vehicles;**
3. **Government supervision was less intensive for nonbank financial institution:** prudential or safety-and-soundness supervision was introduced in the nonbank financial sector it was not intensive as a bank supervision.
 - Gramm-Leach Bliley act broadened the scope for commercial bank holding companies to participate in securities underwriting and other traditional investment bank companies.
 - Investment bank and other nonbank financial institutions like AIG, GE Capital were not subject to the same framework as were holding bank companies.

Subgroups of the shadow banking

There are three distinct subgroups:

1. The government-sponsored shadow banking sub-system;
2. The “internal” shadow banking sub-system;
3. The “external” shadow banking sub-system.

The government-sponsored shadow banking sub-system

The government-sponsored shadow banking sub-system:

This kind of shadow banking system developed nearly 80 years ago, with the creation of the government-sponsored enterprises (GSE), which are comprised of the Federal Home Loan Bank System (1932), Fannie Mae and Freddie Mac.

The GSE were not funding using deposits, but through capital markets.

The government-sponsored shadow banking sub-system

The GSEs embodied four techniques:

1. Term loans warehousing provided to banks by the FHLBs;
2. Credit risk transfer and transformation through credit insurance provided by Fannie Mae and Freddie Mac;
3. Originate-to-distribute securitization functions provided for banks by Fannie Mae and Freddie Mac;
4. Maturity transformation conducted through the GSE retained portfolios, which essentially operated as quasi-government SIVS.

These entities qualify as shadow banks to the extent that they were involved in the traditional bank activities of credit, maturity, or liquidity transformation, but without being chartered as banks and without having a meaningful access to a lender of last resort and an explicit insurance of their liabilities.

Focus on Fannie Mae e Freddie Mac

- What are the origins of Fannie Mae e Freddie Mac?
- Fannie Mae was created in 1938 as part of Franklin Delano Roosevelt's New Deal.
- The collapse of the national housing market in the wake of the Great Depression discouraged private lenders from investing in home loans.
- Fannie Mae was established in order to provide local banks with federal money to finance home mortgages in an attempt to raise levels of home ownership and the availability of affordable housing.

Focus on Fannie Mae e Freddie Mac

- Initially, Fannie Mae operated like a national savings and loan, allowing local banks to charge low interest rates on mortgages for the benefit of the home buyer.
- This led to the development of what is now known as the secondary mortgage market. Within the secondary mortgage market, companies such as Fannie Mae are able to borrow money from foreign investors at low interest rates because of the financial support that they receive from the U.S. Government. Fannie Mae makes a profit from the difference between the interest rates homeowners pay and foreign lenders charge.
- For the first thirty years following its inception, Fannie Mae held a veritable monopoly over the secondary mortgage market. In the 1970s in order to prevent any further monopolization, after Fannie Mae's privatization, Freddie Mac was created.

The “internal” shadow banking sub-system

In the '80 large banks changed their operation from originate to hold to originate to distribute.

The bank, under pressure on bank's profit margin, starting to acquire the very specialist nonbank entities that were posing a competitive threat, and gradually shift many of their activities related to credit intermediation into these newly acquired.

The change in the nature of banking was initially “inspired” by the securitization process of conforming mortgages through the GSEs, and extended to virtually forms of loans and “perfected” into securitization-based, shadow credit intermediation process over time.

The “external” shadow banking sub-system

- The external shadow banking sub-system was a global network of balance sheets, with the origination, warehousing and securitization of loans conducted mainly from the Usa, and the funding and maturity transformation of structured credit assets conducted mainly from the UK, Europe and various offshore financial centers.

- Is defined by:

1. The credit intermediation process of diversified broker-dealers;
2. The credit intermediation process of independent, non bank specialist intermediaries;
3. The credit puts provided by private credit risk repositories.

Financial instruments

- Most of the financial instruments trade in the money market.
- **Unsecured commercial paper and asset-backed commercial paper;**
 - Commercial Paper is a debt security that matures in 270 days or less and is a major source of funding in the Usa and abroad.
 - Corporate CP and Financial CP are unsecured, but are not subordinated.
 - Asset-backed commercial paper is collateralized or secured by a claim to specific assets.
 - Usually there are credit or liquidity enhancements by parent firm

Financial instruments

➤ **Repurchase agreements;**

- Through the repo market, investor with large asset holdings can lend idle assets to effectively “borrow” cash on a short-term basis.

➤ **Securities lending;**

- Securities lending refers to the asset lenders lending their securities borrowers in return for cash collateral.

- There are very similar to repo transactions except that there is no standard maturity, securities are loaned rather than purchased, and cash is typically reinvested by the securities lender in cash investment pools.

The shadow banking system's fragility

- **High leverage:** banking holding companies were leveraged at 10-to 20-to1 prior the crisis. Leverage for investment banks was 30-to 40-to 1. Special purpose entities created in the securitization process tended to have slim equity tranches, driving their leverage as high as 100 to 1.
- **Reliance on short-term funding markets:** shadow banks relied for their funding on short-term markets such as repo, ABCP. Wholesale funding markets have a risk because such funds can be withdrawn quickly .
- **Lack of explicit government support:** like depositor insurance and a lender of last resort.

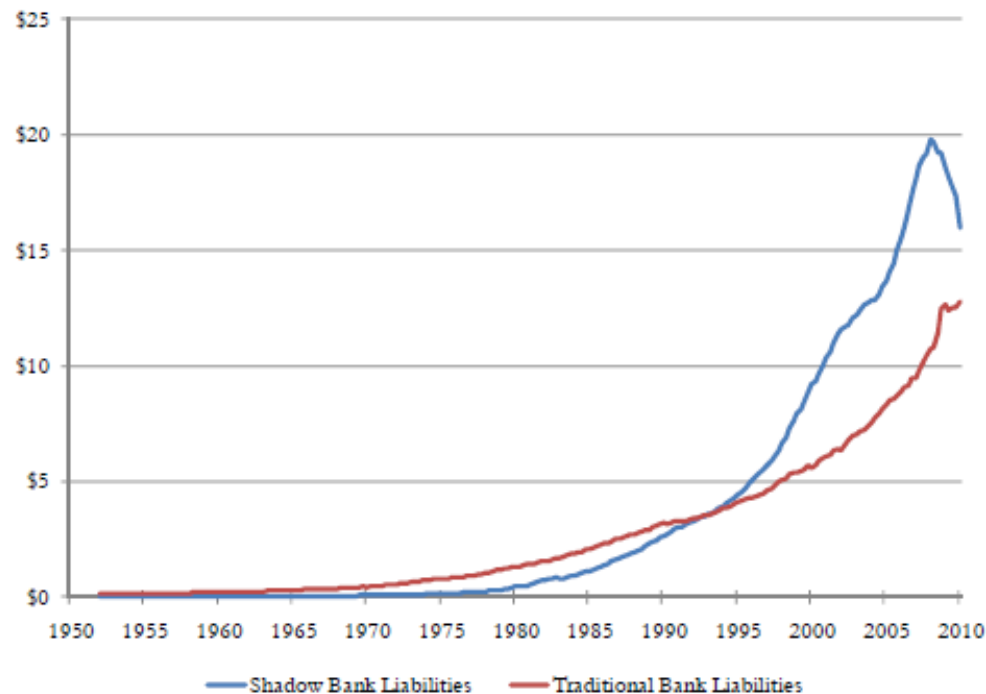
Shadow banking in numbers

Figure 1:
Short Term Liabilities
of the Financial System (2007)¹⁰ **(\$ tn)**

Asset-Backed Commercial Paper	\$1.2
Securities Lending	0.6
Broker-Dealer Repo	2.5
Finance Company Commercial Paper	0.4
Liquidity Puts (TOBs, VRDNs, ARSs) ¹¹	0.7
Uninsured Bank Deposits	2.7
Money Market Mutual Fund Shares ¹²	3.1
Total Shadow Banking Liabilities	\$11.2
Total FDIC-Insured Deposits	\$4.8

Shadow banking in numbers

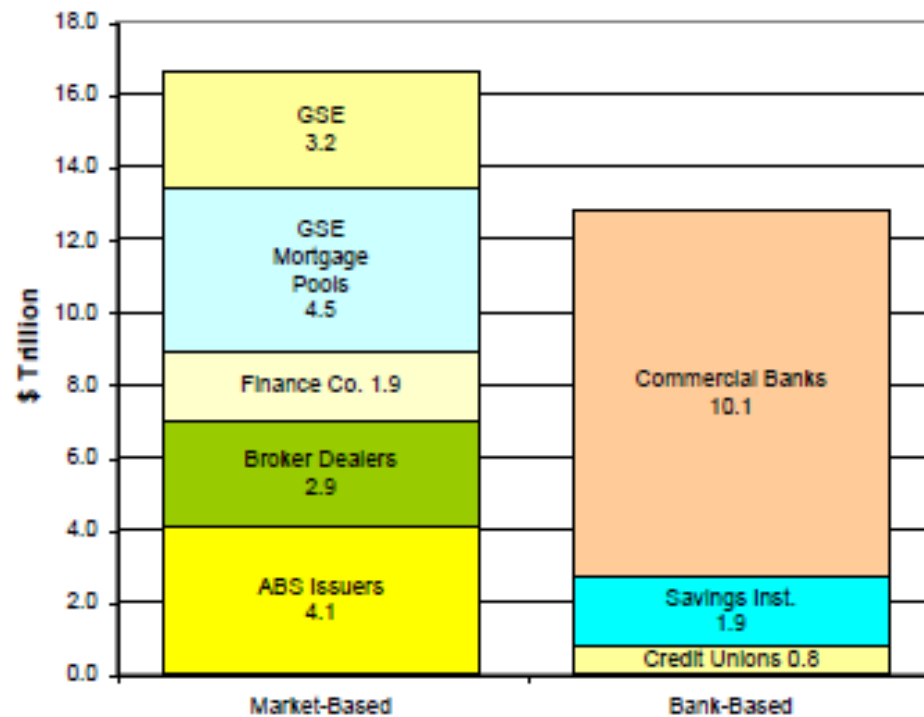
Figure 1: Shadow Bank Liabilities vs. Traditional Bank Liabilities, \$ trillion⁴



Source: Flow of Funds Accounts of the United States as of 2010:Q1 (FRB) and FRBNY.

Shadow banking in numbers

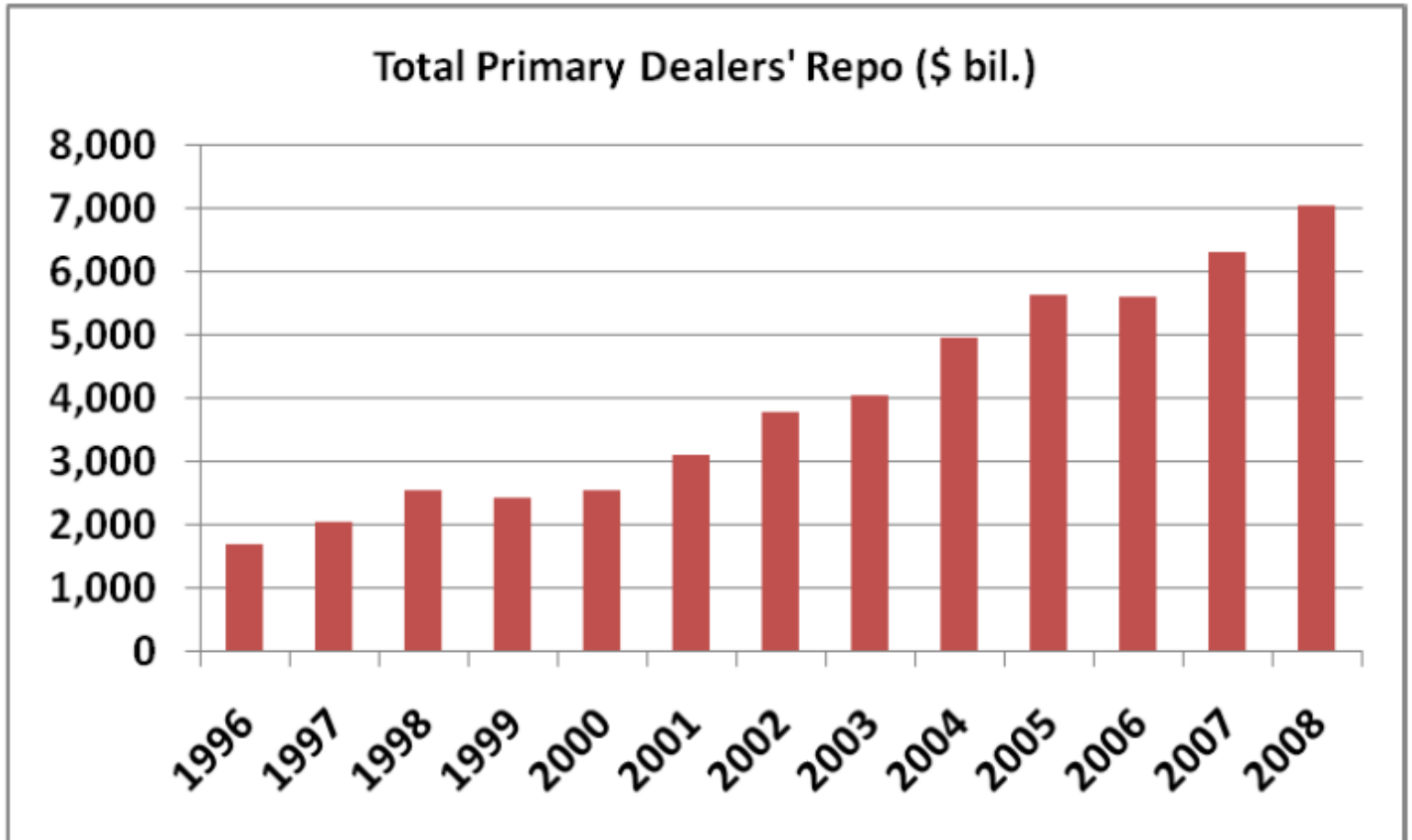
Figure 1. Total Assets at 2007Q2 (Source: US Flow of Funds, Federal Reserve)



Repo market

- Repo and securitization are correlated.
- The rise of securitization coincided with the increased demands for collateral.
- The repo market traditionally was confined to U.S. Treasury securities, but in the last 25 years it has grown to accept a broad range of securitized bonds as collateral.
- Asset classes that came to be eligible for repo included all manner of securitized products, as well as tranches of structured products like collateral debt obligations.

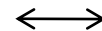
Repo market



Source: Federal Reserve.

Repo market

- For large depositors, repo can act as a substitute for insured demand deposits because repo agreements are explicitly excluded from Chapter 11.
- The repo, like derivatives, has a special status under the U.S. Bankruptcy Code: the contract allows a party to a repurchase agreement to unilaterally enforce the termination provisions of the agreement as a result of a bankruptcy filing by the other party.
- Repo collateral can be rehypothecated, that is, the collateral received in from a repo deposit can be freely re-used in another transaction, with an unrelated third party. “high levels of velocity in repo markets”
- Repo market is an important mechanism for obtaining leverage, especially for hedge funds.



“Run on repo”

- The panic occurred when depositors in repo banks feared that one or more banks might fail and they would have to sell the collateral in the market to recover their money.

Table 9. Haircuts on Repo Agreements (percent)

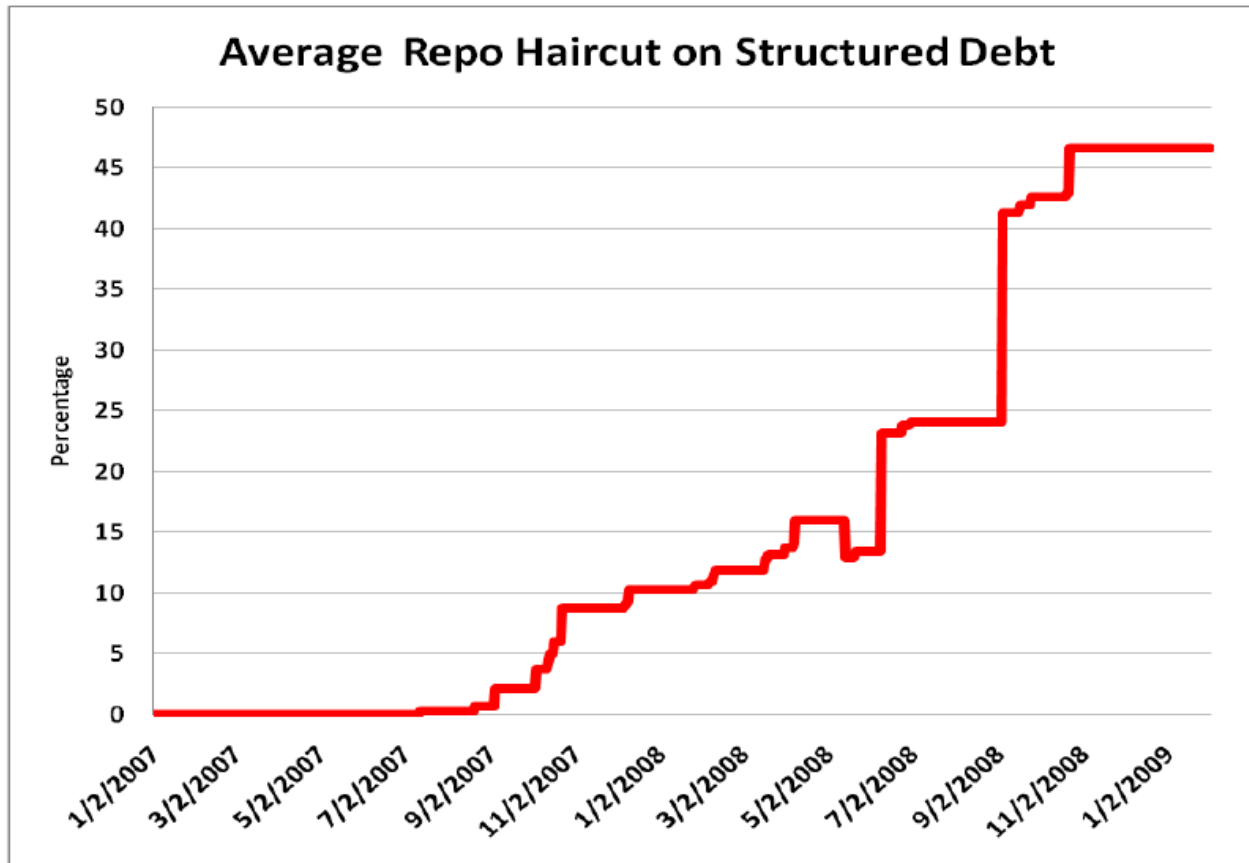
(Source: IMF Global Financial Stability Report, October 2008)

Securities	April-07	August-08
U.S. treasuries	0.25	3
Investment-grade bonds	0–3	8–12
High-yield bonds	10–15	25–40
Equities	15	20
Senior leveraged loans	10–12	15–20
Mezzanine leveraged loans	18–25	35+
Prime MBS	2–4	10–20
ABS	3–5	50–60

- There was a sharp increase in the value of collateral

collateral
destructor

“Run on repo”



Source: See Gorton and Metrick (2009).

“Run on repo”

- The increase in haircuts means that there is a shortage of collateral.
- There is an excess demand for U.S. Treasuries because of the flight to quality generally.
- After Lehman Brothers failure, the haircuts continued to increase and some assets became unacceptable in repo.
- The interbank market was paralyzed.

Some proposal

➤ **Securitization: Narrow funding banks (Gorton & Metricks)**

- The basic idea of Narrow Funding Banks is to bring securitization under the regulatory umbrella.
- Narrow Funding Banks would be genuine banks with charters, capital requirements, periodic examinations, and discount-window access.
- All securitized product must be sold to NFBs; no other entity is allowed to buy ABS. NFBs would be new entities located between securitizations and final investors.
- NFBs would become "the entities that transform asset-backed securities into government-overseen collateral", thereby seeking to ensure (through the more rigorous oversight) that repos are backed by higher quality collateral

Some proposal

➤ Repo: licenses, eligible collateral, minimum haircuts

- Any regulation of repo must make repo safe for depositors allowing for the use repo for other purposes.
- Non banks entities can engage in repo, but this requires a license.
- Eligible collateral for banks is restricted (a.g. US Treasury securities).
- Nonbank entities can use any types of collateral but this is subject to minimum haircuts and position limited. In fact position on gross notional amounts are to be set by regulator as a function of firm size and the collateral used.

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Executive Summary 1 – Setting & Model

A simple micro-based model in competitive general equilibrium is used to exposit how the design of deposit insurance affects the structure of financial system in risk neutral economy.

At $t=0$, agents are assumed to allocate all their endowment – riskless & risky assets to either insured commercial or uninsured shadow banks.

At $t=1$, after productivity shocks and deposit insurance premium (DIP) paid, banks trade risky asset among themselves for optimal return.

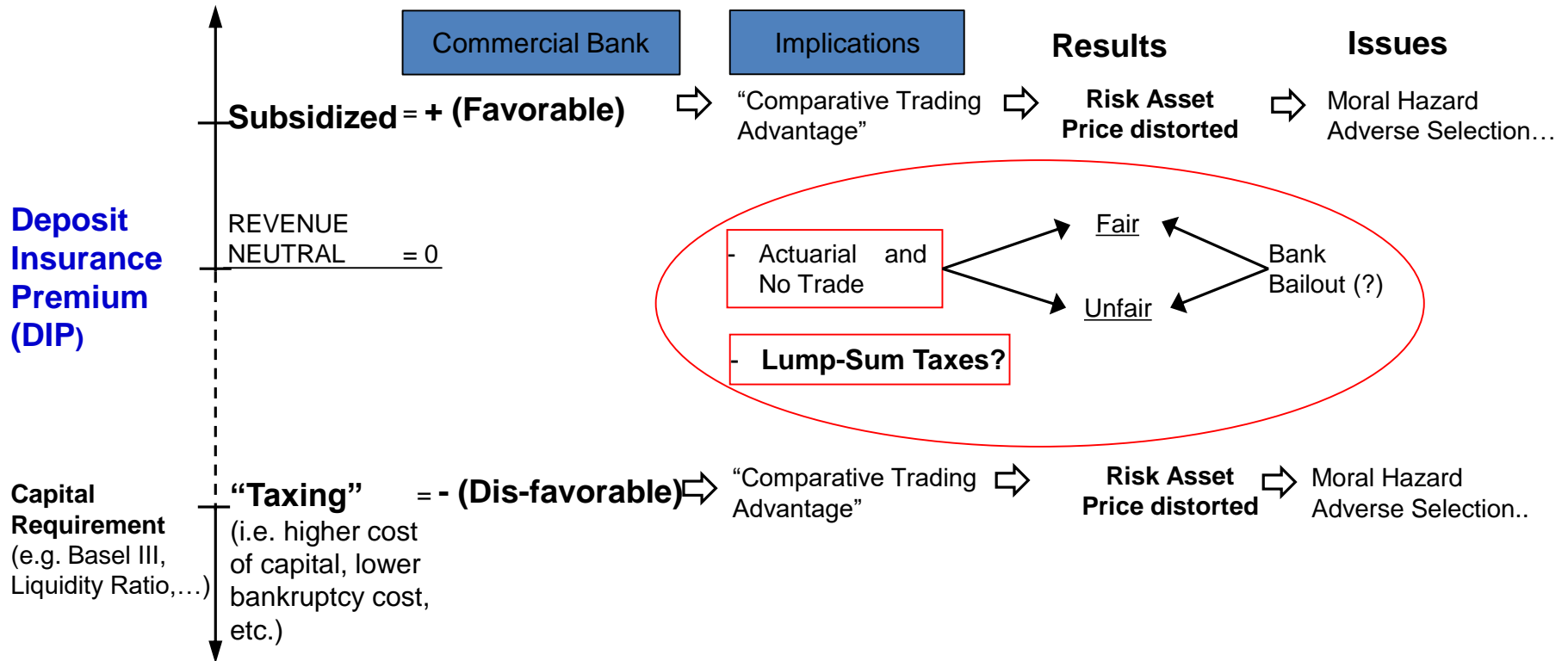
At $t=2$, after second productive shocks, all banks are liquidated and all agents receive their claims at possible maximum allowance.

Executive Summary 2 – Key Insights

Under rational expectation and optimization by all agents, commercial and shadow banks, competitive price equilibrium is derived in micro- efficient manner with some key insights:

1. Endogenizing subsidized DIP onto commercial banks economy, there exists coexistence of insured commercial and uninsured shadow banks within a range of DIP. (Proposition 4 and 5)
2. The size (and type) of DIP determine the structure of the financial system - equilibrium mix between commercial and shadow banks. (proposition 5 and pp 27-33)
3. Deposit based DIP is recommended over risky asset based DIP.
4. Like DIP, increasing capital requirement reduce the DIP subsidy to commercial banks & reduce the price distortion.

Illustration I : How The Structure of the Financial System Is Determined by The Size of The Deposit Insurance Premium (DIP) in the Micro based Model of LeRoy and Singhania (2017)



Source: Pongsak Hoontrakul (June 2017)

Discussion 1: why Shadow Banks Exist ?

Both commercial and shadow banks do intermediary and credit/ liquidity/ maturity **risks transformation** business. Drivers for shadow banks are

1. **Regulatory Arbitrage:** This paper by LeRoy and Singhania (LS) “first” proves this theoretically by endogenously testing various parameters of DIPs and capital requirements in **competitive market**. (QED ?)
2. **Demand for Functional and Franchise Value: Complimentary**
 - Pozsar et al (Dec 2013, NY FRB): “**internal**” shadow banking vs “**external**” shadow banking subsystem
 - Stijn Claessens and Lev Ratnovski (2014, IMF): The differences between commercial & shadow bank are in risk *re-packaging* and *re-distribution* – on its single balance sheet & diversify away to the market respectively.

Discussion 2a: What are Shadow Banks ?

In Europe (post Lewis Turning Point), lending by **insurance** firms...

In China (~LTP), **“Wealth Management Products”** offered by banks.

In India (pre LTP), like Thailand pre-1997, bank-affiliated **finance** firms.

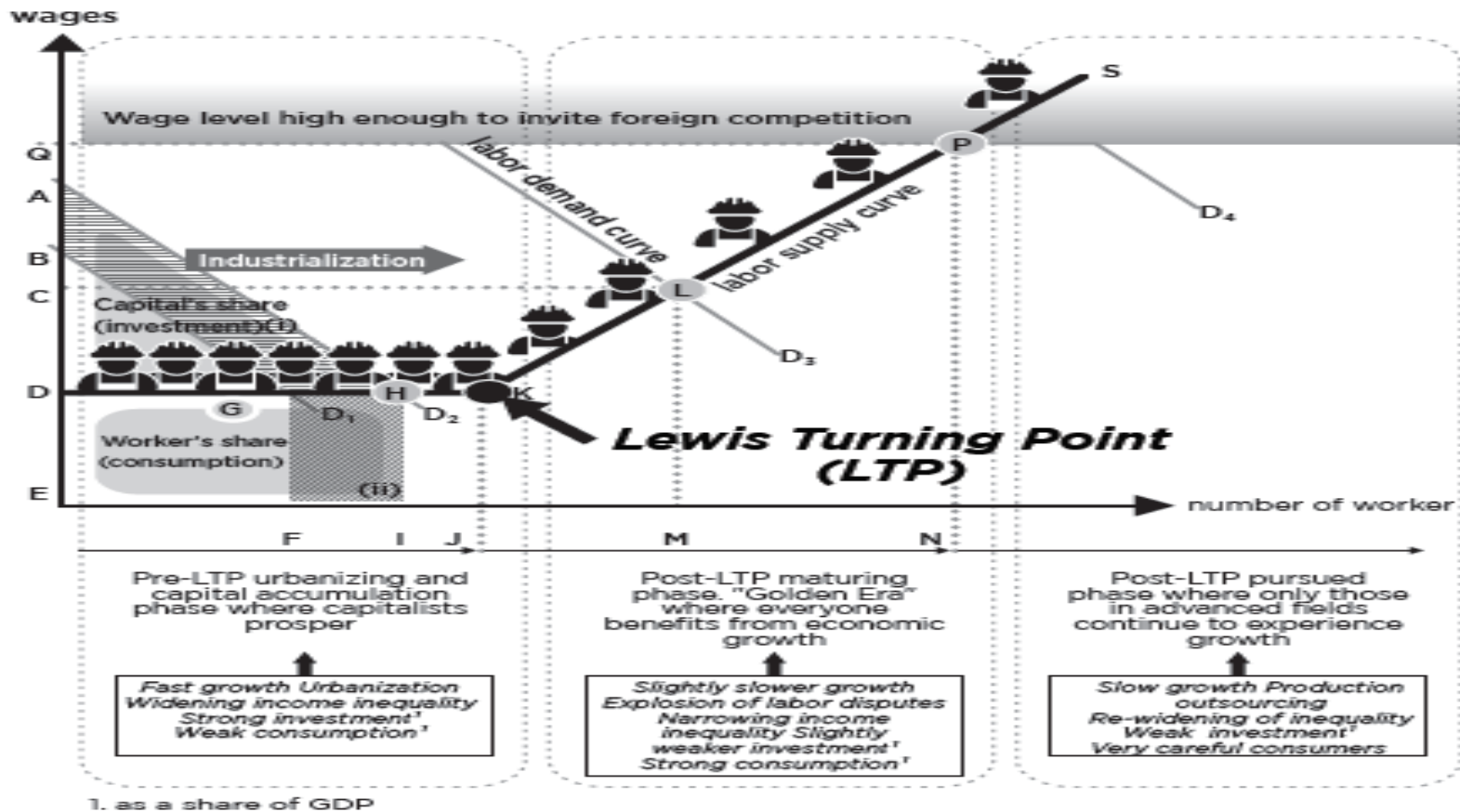
Figure 1. Spectrum of Financial Activities

“Traditional ” intermediation by institutions	Activities commonly referred to as forms of “shadow banking”	“Traditional ” intermediation by market entities
<p>Traditional banking (deposit taking and lending)</p> <p>Traditional insurance</p>	<p><i>Securitization</i>, including: tranching of claims, maturity transformation, liquidity “puts” from banks to SIVs, support to par value money funds.</p> <p><i>Collateral services</i>, primarily through dealer banks, including: supporting the efficient re-use of collateral in repo transactions, for OTC derivatives and in prime brokerage; securities lending.</p> <p><i>Bank wholesale funding arrangement</i>, including the use of collateral in repos and the operations of the tri-party repo market</p> <p><i>Deposit-taking and/or lending by non-banks</i>, including that by insurance companies (e.g., France) and bank-affiliated companies (e.g., India and China).</p>	<p><i>In capital markets:</i> Hedge funds Investment companies Underwriters Market-makers Custodians Brokers</p> <p><i>In non-bank sector:</i> Leasing and finance companies Corporate tax vehicles</p>

Source: Stijn Claessens and Lev Ratnovski (2014, IMF). See also appendix I with Pozsar et al (Dec 2013) p2, Hoontrakul (2017), chapter 2 and Lewis (1954).

(D2b) A LTP and Three Phases of Industrialization:

The distribution of resources between financial sector and real economy depends on the level of financial innovation and financial regulation. (p 32)



Source: Hoontrakul (forthcoming 2017) and Lewis (1954).

D3: No short sale and incomplete market

On p 8, the RS model prohibits short sale (for mathematic convenience).

The corollary is this market is not a complete market in Arrow and Debreu (1954) sense.

Thus, the RS market is not perfect because there is not always a price for every asset in every possible state of the world.

No derivative market can not be performed effectively.

In sum, the major implication is to be careful to apply new insights derived from very restrictive market model (e.g. no short sale, only competitive shadow banks, etc.) into the real world, particularly in advance economy.

D4: Shadow Banks improving social welfare ?

One implicit assumption is all agents, regulators and bankers have *equally* access to the same information about risky asset investment opportunities.

Ordenez (2017): Shadow banking improves social welfare because it is an escape channel and *spanning* efficient investment opportunities in *excessive* regulations.

The RS paper's proposition 1: No deposit insurance means no commercial bank and no trade.

Asymmetry in institutional setting works well. Shadow banks improves social welfare, even in symmetric equilibria (p35).

D5: Deposit Based or Risky Asset Based DIP ?

The RS paper advocates deposit based DIP over risky asset based DIP (p 27) derived from its micro based model insights.

1 In deposit based DIP, shadow banks sell the risky asset at prices that exceed its expected payoff. Hence, risky assets are more in the hand of commercial banks.

2. In risky asset based DIP, shadow banks buy the risky asset at prices that are lower than expected payoff. Hence, risky assets are more in the hand of shadow banks.

This deposit based policy advocate may be over-extended in the real world.

-Commercial banking can **macro-economically** create large financial instability and systemic risk when the (tail) risk is ***underestimated***.

-Without loss capacity absorption, shadow banks may be riskier during financial instability, but these are known **ex ante** unlike commercial banks.

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