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Development of Financial Markets and Institutions

X. Financial Market Regulation and Shadow Banking

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X. FINANCIAL MARKET REGULATION AND SHADOW BANKING

1. What Is Shadow Banking?
2. Shadow Banking in the West
3. Shadow Banking in China
4. Implications of Shadow Banking
5. Literature

1. WHAT IS SHADOW BANKING?

ORIGINS OF SHADOW BANKING

Origins and Definition

- Originated around 2007 to describe the financial system
- Shadow banking is financial intermediation outside the traditional banking system
- Crucially, there is no (official) access to central bank financing
- New official term: non-bank financial institution

Shadow Banking and Banking

- Shadow banking is not hermetically sealed from traditional banking
- Banks can themselves be shadow banks
- Banks can fund shadow banks
- Various historical episodes of banking would fall under this definition

WHAT IS SHADOW BANKING?

The shadow banking system is a web of specialized financial institutions that channel funding from savers to investors through a range of securitization and secured funding techniques. While shadow banks conduct credit and maturity transformation similar to traditional banks, shadow banks do so without the direct and explicit public sources of liquidity and tail risk insurance via the Federal Reserve's discount window and the Federal Deposit Insurance Corporation (FDIC) insurance. Shadow banks are therefore inherently fragile, not unlike the commercial banking system prior to the creation of the public safety net.

Adrian and Ashcraft (2012)

THE PURPOSE OF SHADOW BANKS

To Avoid Regulation

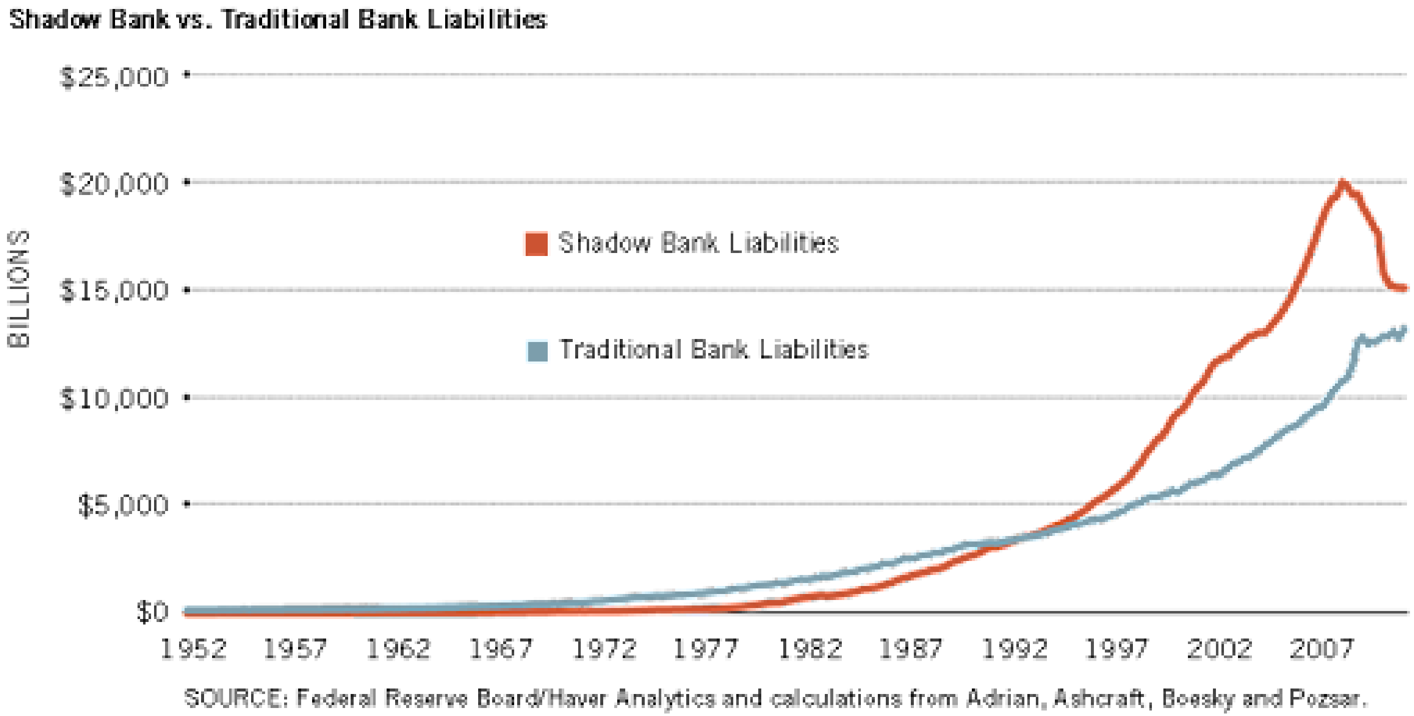
- One purpose is to escape oversight, regulation
- Shadow banks attempt to get around capital and liquidity requirements

Securitization

- Securitization takes place in the shadow banking system
- Securitization: the "packing" of (non-liquid) financial assets into a more liquid form
- Special Investment Vehicles (SIVs) set up by banks to do this
- SIVs are thus the "shadow" arm of normal banks

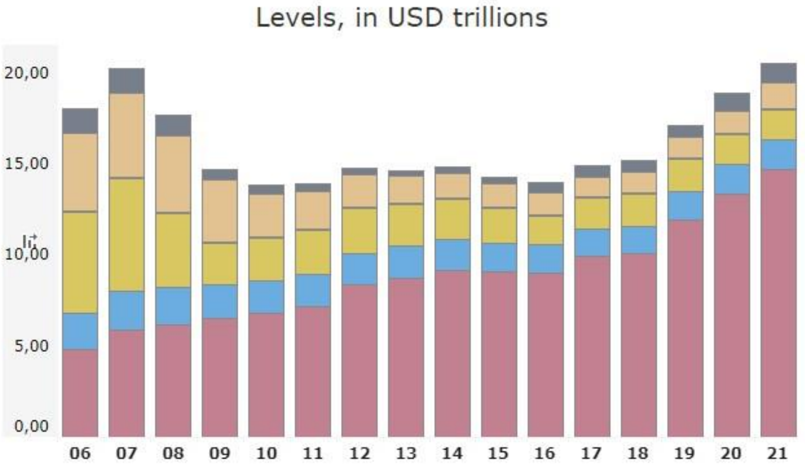
Money or Liquidity Creation

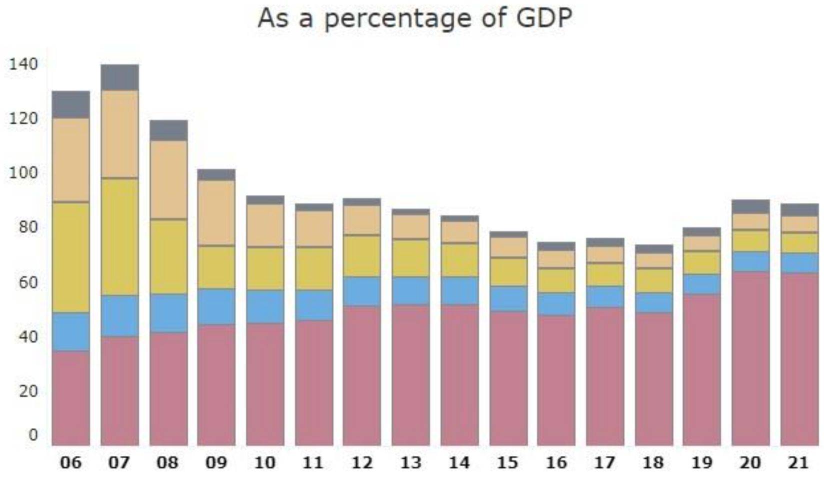
GROWTH OF US SHADOW BANKING



US SHADOW BANKING 2006-2021

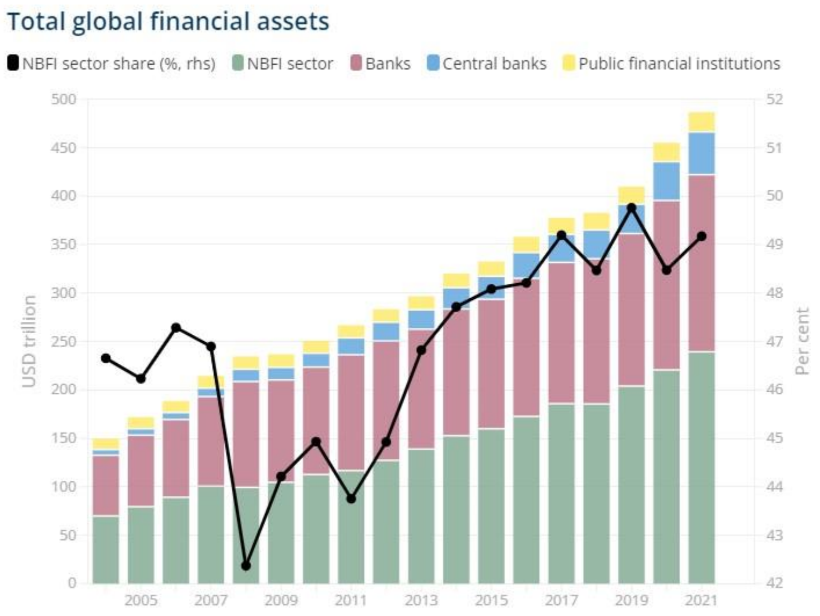
FROM FINANCIAL STABILITY BOARD (2022)





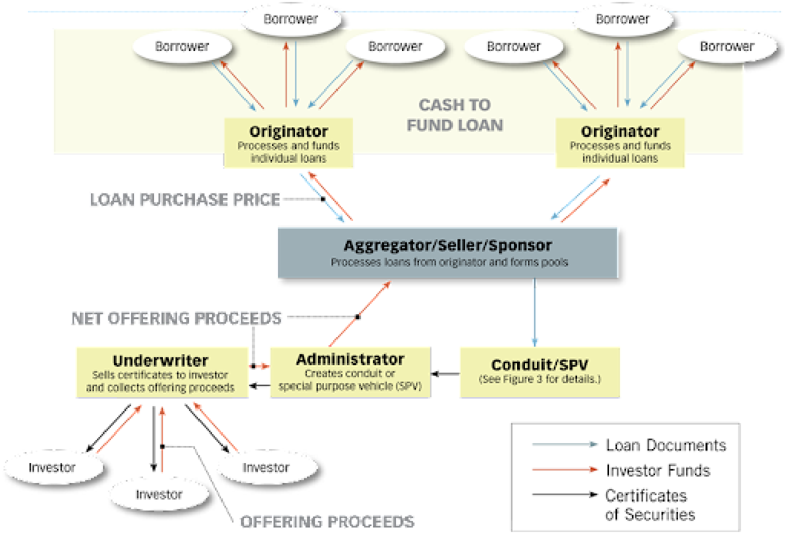
GLOBAL SHADOW BANKING 2004-2021

FROM FINANCIAL STABILITY BOARD (2022)



SECURITIZATION

The Creation of Securities from Loans



The diagram shows a simplified, five-step process for converting loan originations into final securities. **First,** auto loans, student loans, mortgages and other loans are originated by regulated commercial banks and unregulated financial firms. **Second,** a warehouse bank (aggregator) buys loans from one or more originators and pools the loans. **Third,** the pooled loans are sold to an administrator, usually a subsidiary of a large commercial or investment bank; the administrator creates a special purpose vehicle (SPV) to hold the loans; the SPV issues securities against loans held in its portfolio. **Fourth,** the securities created by the SPV are sold by an underwriter, typically an investment bank. **Finally,** the securities are bought by investors.

SHADOW BANKING AND LIQUIDITY

Shadow Banks Create Money

- This happens mainly in the repo market
- Repo: repurchase agreement
  - ➢ You sell an asset and promise to repurchase it at a slightly higher price, mostly the next day
- Ownership of the underlying asset is not transferred in a repo operation
  - ➢ The same asset can be collateral for multiple repo transactions
- Only the repo appears on the balance sheets of the contracting parties

Securitization

- Hides the extent of credit expansion (Gertchev 2009)
- Transforms loans into marketable securities
- Securitization an important element in the 2007-8 crisis

2. SHADOW BANKING IN THE WEST

THE ROLE OF REGULATION

Basel

- Basel I (1988), II (2004) and III (2010) regulate banking
- Only recommendations: implementation is always national
- Coordinated through the Basel Committee on Banking Supervision of the BIS in Basel

The Various Regulations

- Capital requirements for risk-weighted assets (Basel I)
- Core rule: minimum of 8 percent capital against total risk-weighted assets
- Stress tests of too big to fail or global systemically important banks (GSIBs) (Basel III)
- Liquidity requirements (Basel III)

RISK-WEIGHTED ASSETS AND CAPITAL

Regulatory Risk Classes

- No risk: cash, gold, OECD governments' bonds
- 20 percent risk weight: triple-A and double-A rated asset-backed securities, claims on OECD banks, public sector entities and agencies of OECD governments
- 50 percent risk weight: mortgage loans
- 100 percent risk weight: claims on private sector, loans to non-OECD governments, all investments rated less than double-A

Bank Behaviour

- Less risky assets preferred to riskier
- Incentive to transform balance sheet, engage in securitization
- Growth of shadow banking the result

TRANSFORMING BALANCE SHEETS (MERTON 1995, 468-69)

If a bank were managing and holding mortgages on houses, it would have to maintain a capital requirement of 4 percent. If, instead, it were to continue to operate in the mortgage market in terms of origination and servicing, but sells the mortgages and uses the proceeds to buy U.S. government bonds, then under the BIS rules, U.S. government bonds produce no capital requirement and the bank would thus have no capital maintenance. However, the bank could receive the economic equivalent of holding mortgages by entering into an amortizing swap in which the bank receives the total return on mortgages, including the amortization features and prepayments, and pays the returns on U.S. Treasury bonds to the swap counterparty. The net of that series of transactions is that the bank receives the return on mortgages as if it had invested in them directly. However, the BIS capital calculation, instead of being 4 percent, appears to produce a capital requirement using the swap route of about 0.5 percent.

BASEL REGULATIONS AND LIQUIDITY (BIS 2013)

Liquidity Coverage Ratio (LCR)

- Proportion of high-quality liquid assets to anticipated short term cash flow (30 days)
- 100 percent required since 2019
- Liquid assets are not the same as reserves, money
- Reserves are only one kind of liquid assets according to Basel

Kinds of Liquidity

- Level 1: 0 percent discount for LCR
- Level 2A: 15 percent discount for LCR
- Level 2B: 25-50 percent discount for LCR

BASEL LIQUIDITY REGULATIONS

Level 1

- Cash, reserves at central bank
- Securities of high-rated governments and institutions

Level 2A

- Securities of less highly rated governments
- Non-financial corporate debt securities with high rating and liquid markets

Level 2B

- Residential mortgage-backed securities with high rating
- Nonfinancial corporate securities, equity shares

SHADOW BANKING AND MONEY CREATION

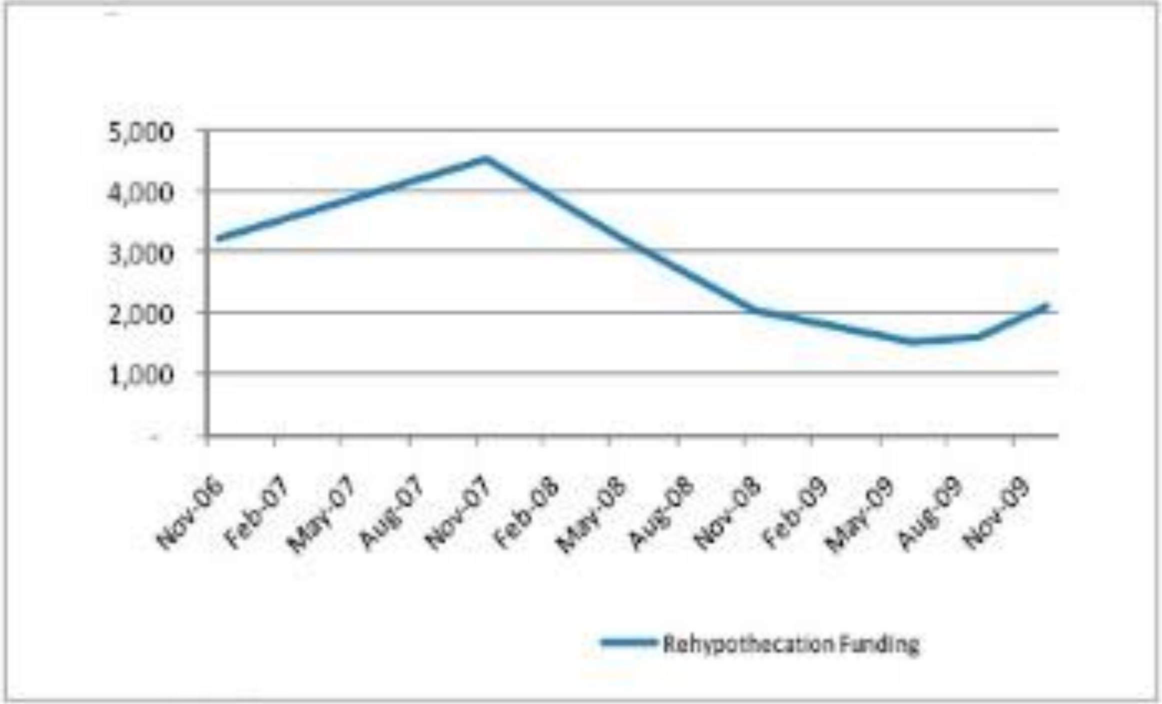
Shadow Bank Money Creation – how?

- Eurodollars are an early example of shadow bank money creation
- In modern times the repo market is crucial - repos are money substitutes
- "Perfectly safe" assets a prerequisite – mostly government securities
- Issuing repos expand the money supply, add liquidity in financial markets

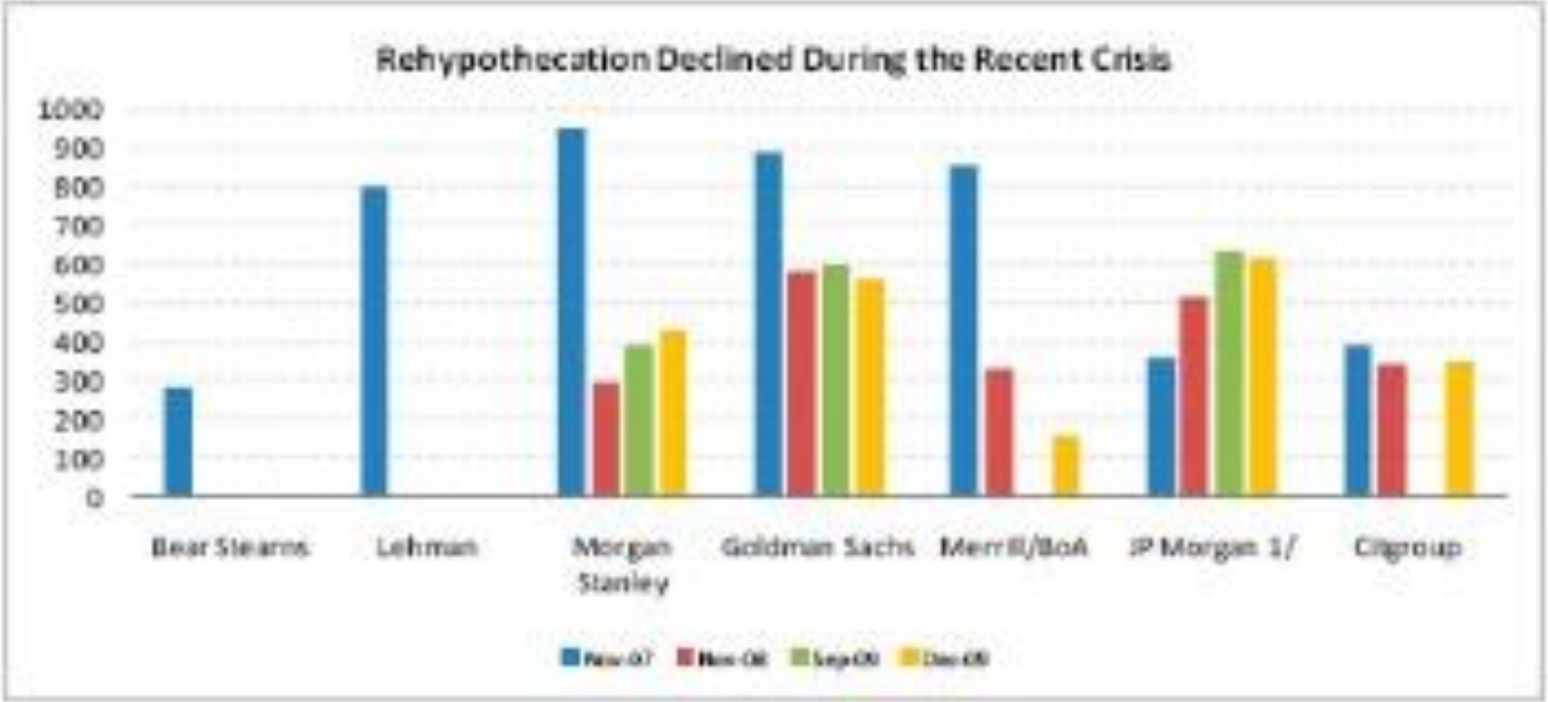
Rehypothecation

- The same asset is used multiple times as collateral for repos
- Regulatory limit in the US, no limit on rehypothecation in the UK, EU
- Velocity of collateral ("churn factor"): how often the same asset is pledged as collateral
- Reached 4 at the end of 2007 (Singh and Aitken 2010)

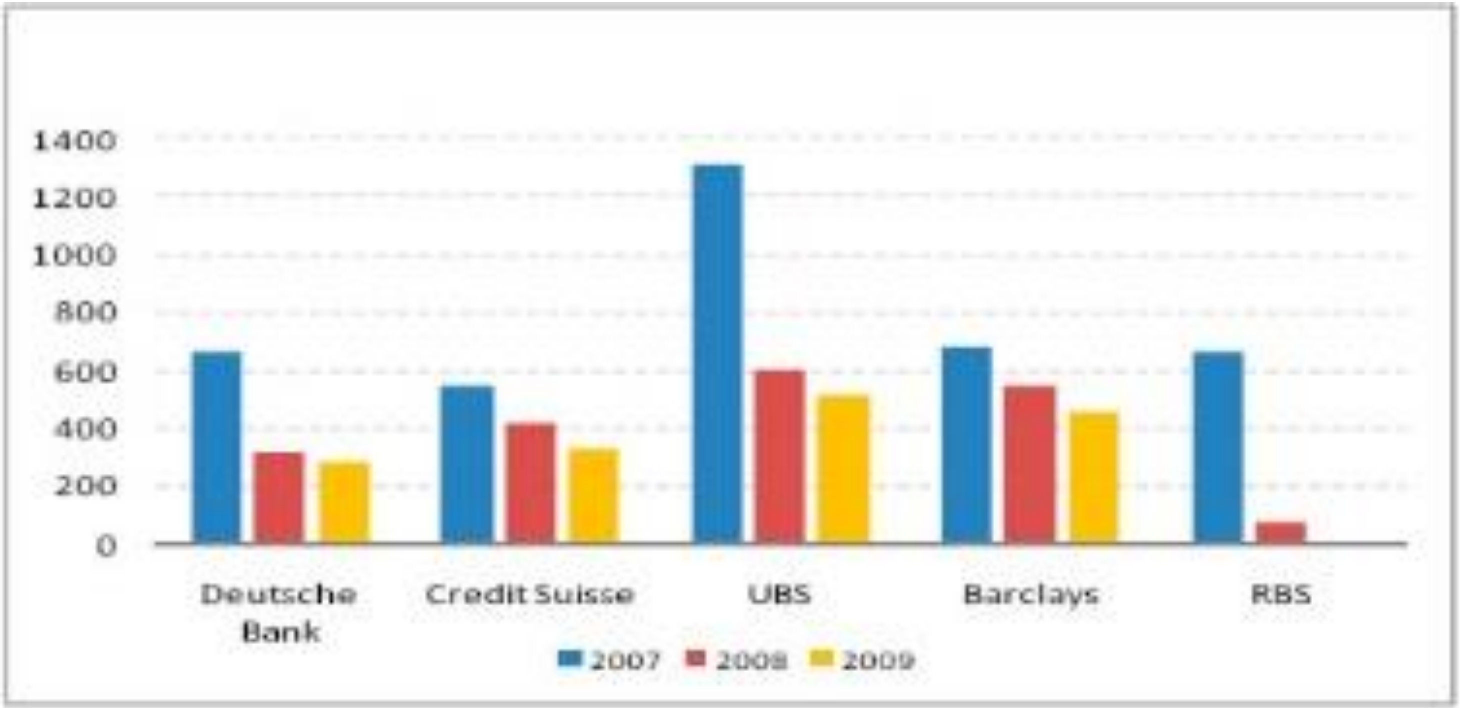
US REHYPOTHECATION FUNDING



COLLATERAL IN US BANKS 2007-2009



COLLATERAL RECEIVED AT LARGE EU BANKS



SHADOW BANKS AND CENTRAL BANKS

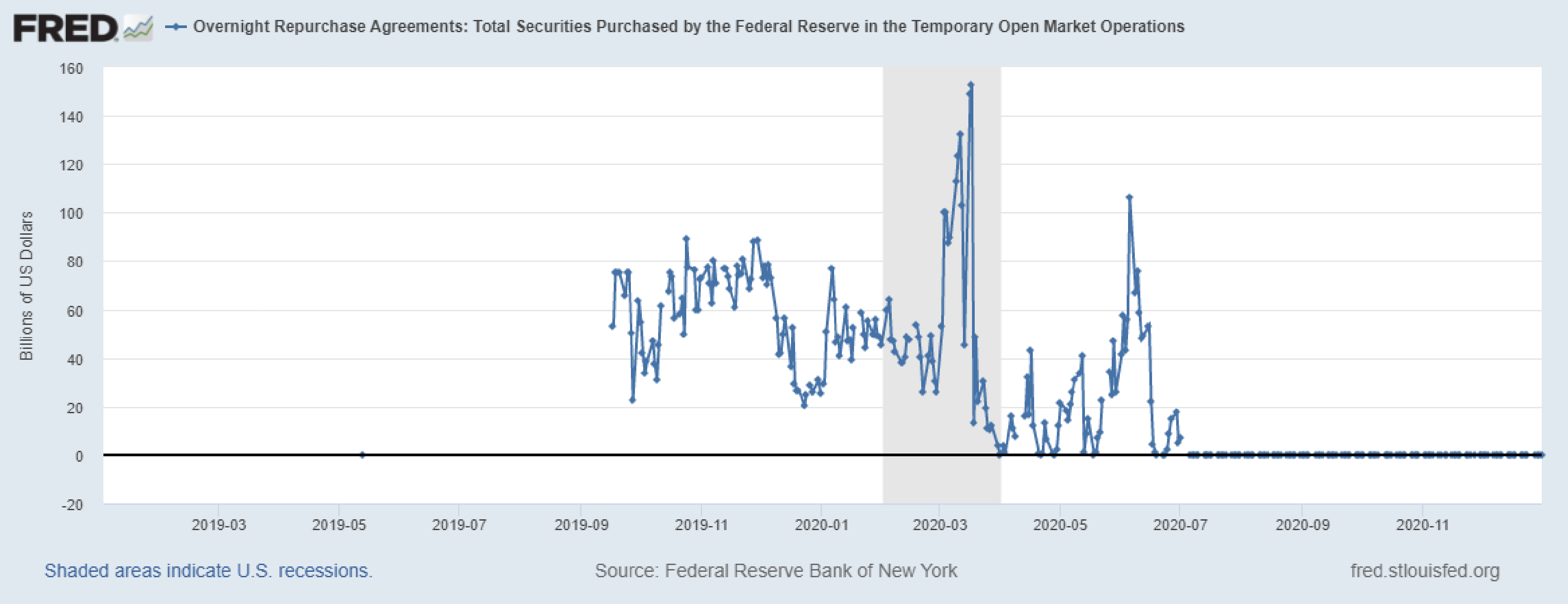
Shadow Banks Depend on CB Support

- Implicit guarantee: the "Greenspan put", CBs will provide cheap liquidity in a crisis
- Central banks are "market-maker of last resort" (Gimenez-Roche and Janson 2019)

Central Banks and Financial Markets

- Central bank reserves are not (directly) that important for shadow banks
- Financial asset prices are of crucial importance for their business, liquidity
- If prices of financial assets fall, there is less collateral for use in the repo market
- Central bank action is therefore "needed" to ensure asset prices, liquid markets
- Otherwise, the shadow banking system would collapse in a crisis

REPO MARKET INTERVENTION, SEPTEMBER 2019



FED AND REPOS

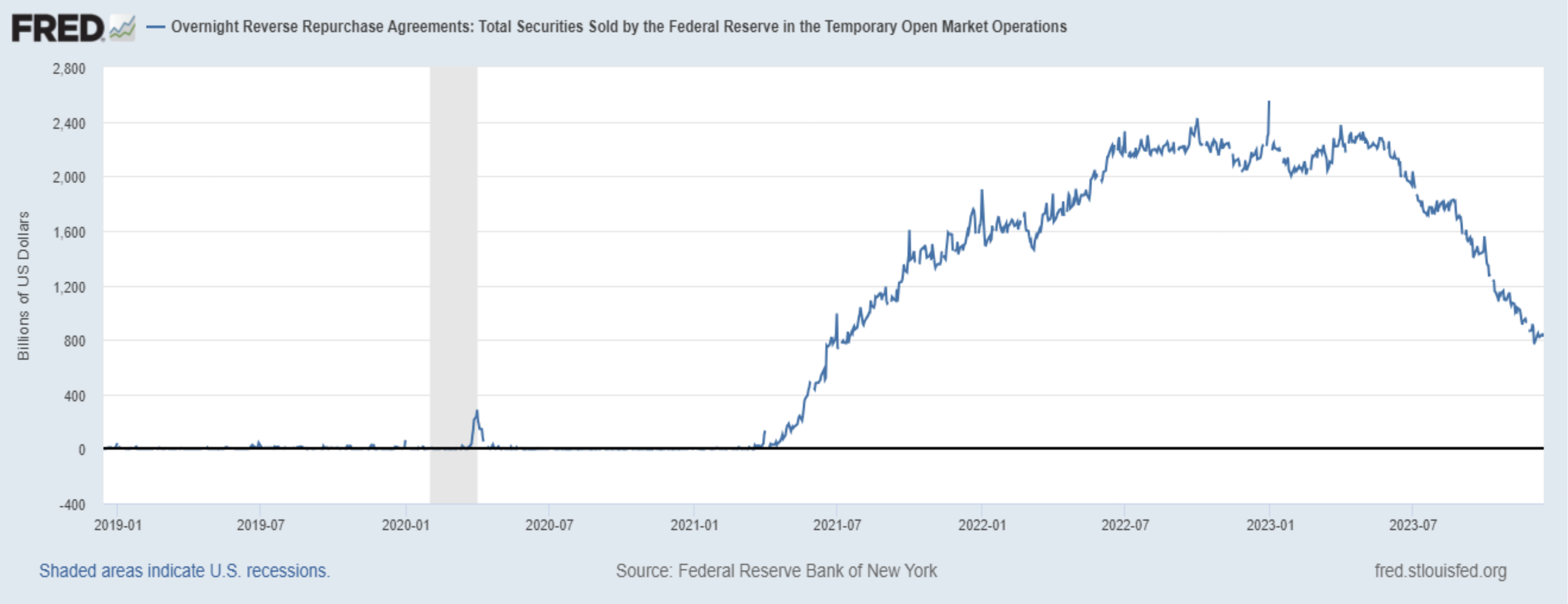
Central Bank Liquidity Management

- The Federal Reserve engage in repo transactions to manage liquidity in the system
- Fed repo transaction: the Fed “buys” an asset overnight, this adds liquidity
- Fed reverse repo: the Fed “sells” an asset overnight, this reduces liquidity

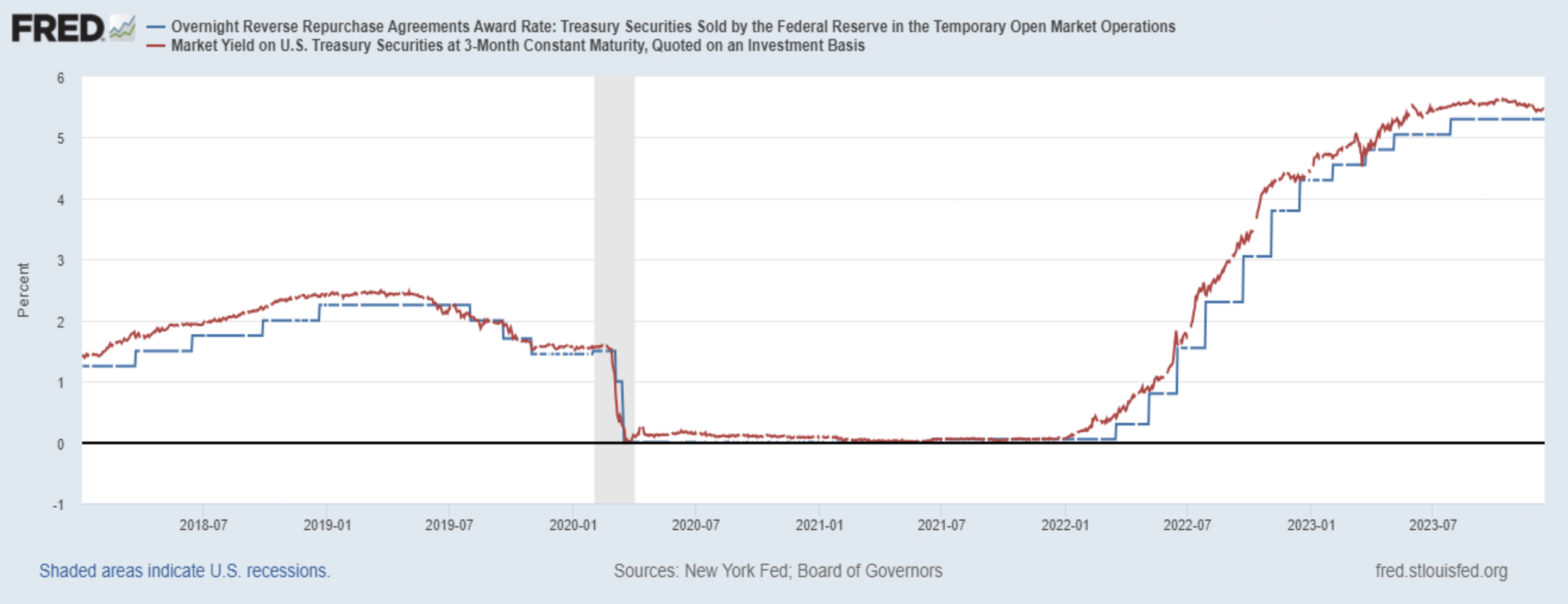
Non-Traditional Central Bank Action

- Repos is a way for the Fed to manage liquidity beyond the banking system
- In the institutions and markets that don’t have access to Fed reserves – or cannot earn interest on reserves (Ihrig and Wolla 2020)
- This means, effectively, the major nonbank institutions in the financial system

FED REVERSE REPOS, 2018-2023



FED REVERSE REPO RATE AND YIELD ON TRESURYS, 2018-2023



3. SHADOW BANKING IN CHINA

ORIGINS

A Young Financial System (Allen and Gu 2020)

- Basic institutions from 1979
- Shadow banking system especially grew from late 2000s

Banks and State Dominance

- The official financial system in China is dominated by the state
- Directly through state-owned banks that favour state-owned enterprises
- Indirectly through regulations on banking

PRIVATE CREDIT IN CHINA

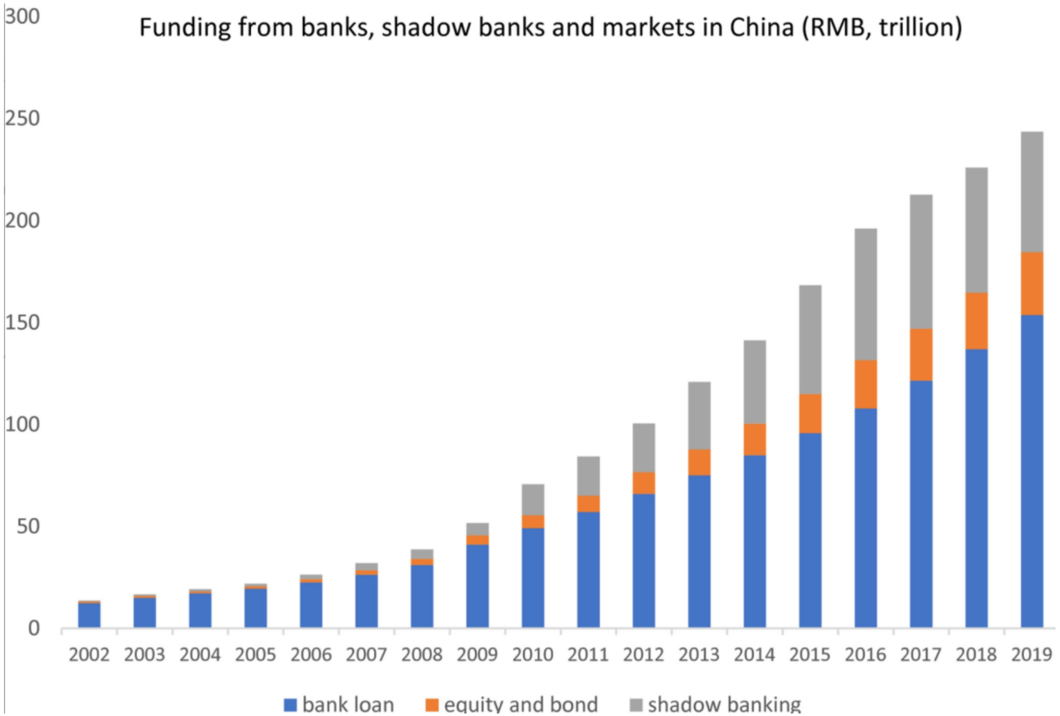
Plenty of Private Credit in China

- Informal financing ("peer-to-peer")
- Through markets

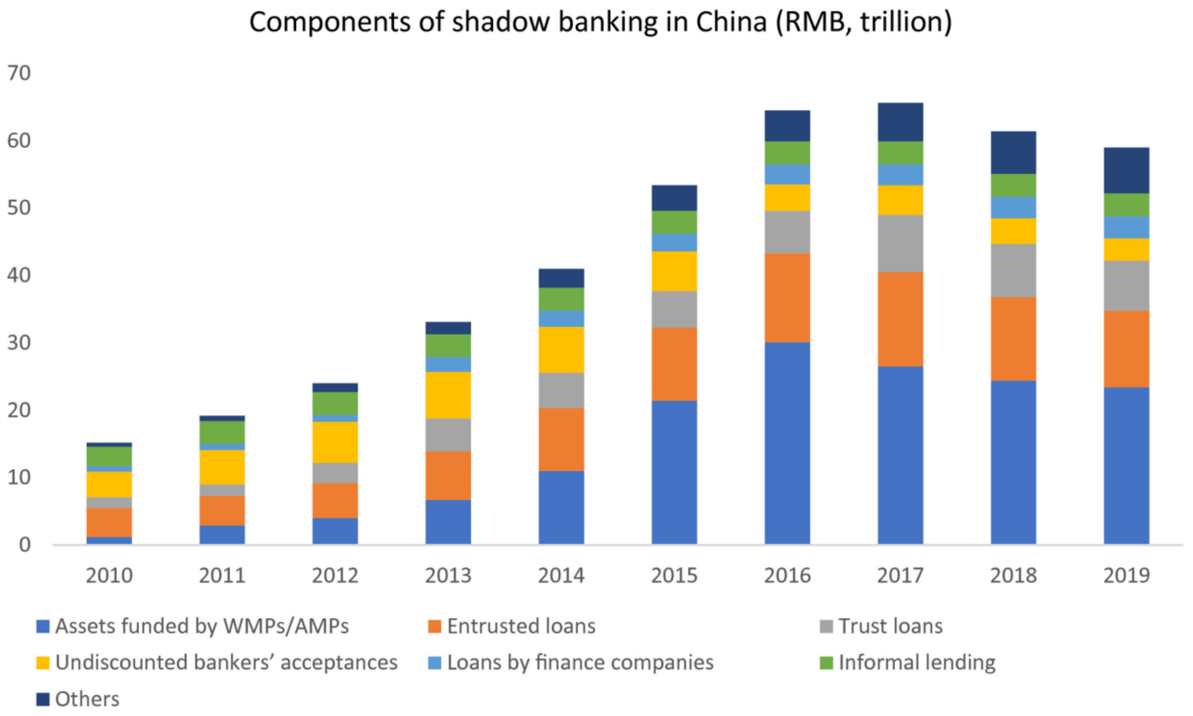
Through Nonbank Financial Institutions

- Wealth management products (WMPs)
- Asset management products (AMPs)
- Entrusted loans
- Trust loans
- Undiscounted bankers' acceptances
- Finance company loans

GROWTH OF CHINESE SHADOW BANKING



COMPOSITION OF CHINESE SHADOW BANKING



THE CAUSES OF SHADOW BANKING GROWTH

Fiscal Stimulus Plan 2008

- In response to the global crisis
- Triggered high financing demand in some industries, higher aggregate demand

Regulatory Arbitrage

- Increased regulations of financial industry
- Led to increased desire for ways to get around regulations

Increased Liquidity

- Credit expansion stimulated the financial system
- M2 growth of ~10 percent

THE EFFECTS OF CHINESE SHADOW BANKING

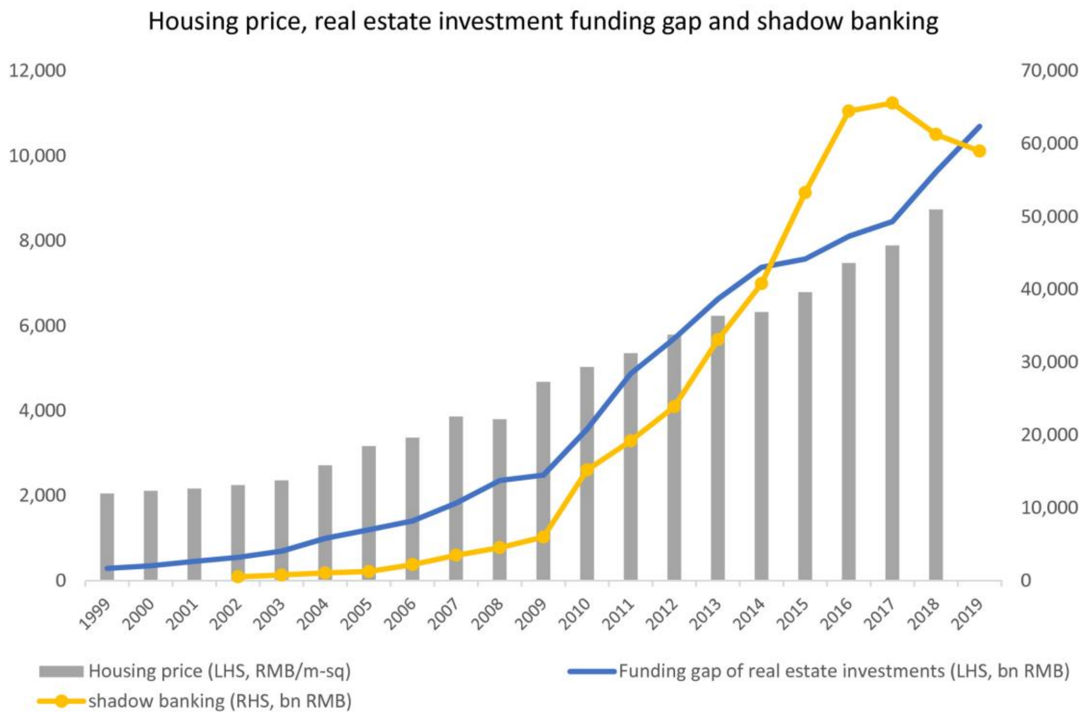
Efficient Capital Allocation

- Channels fund to capital-deprived, highly productive private sector firms
- Around or outside the state-controlled banks

Boom (?)

- Channels funds to real estate and construction
- Housing and building boom in China
- *Evergrande* the second-largest property developer in China, collapsed 2021-23
  - Mid-2021 got into liquidity problems, almost 2 trillion renminbi (€250 billion) in debt
  - August 2023 filed for bankruptcy

SHADOW BANKING AND REAL ESTATE



IMPLICIT GUARANTEES AND GOVERNMENT

- Shadow banking is separate from the official sector

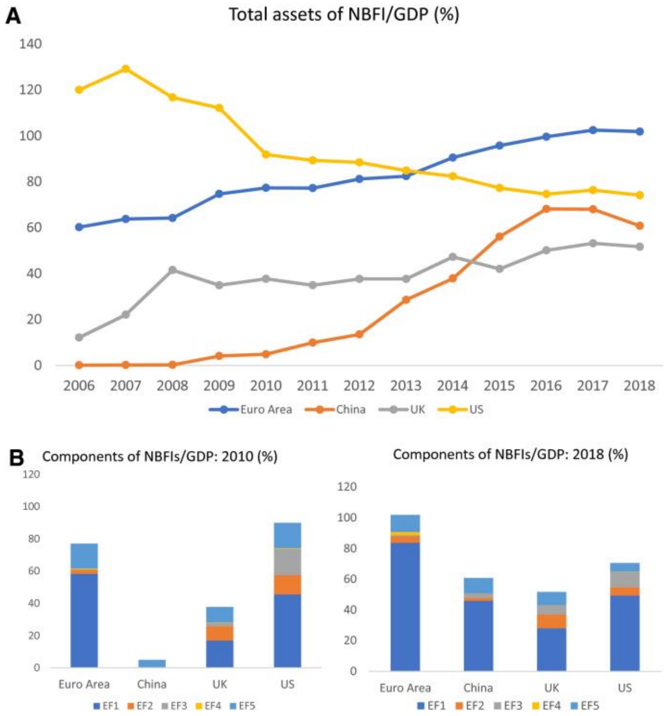
But Implicit Guarantees From

- (Other) nonbank financial institutions
- Banks – guaranteeing WMPs
- Chinese government

Problems of Moral Hazard

- This may guard against ideosyncratic risk
- But what about systemic risk?
- E.g., Baoshang bank May 2019 bailed out by PBOC, declared bankrupt August 2020

CHINA COMPARED



4. IMPLICATIONS OF SHADOW BANKING

IMPLICATIONS OF SHADOW BANKING

Three Major Results

- Shadow banks escape regulation → more efficient credit allocation
- Exploits regulations (Basel) → credit risk hidden, minimized
- Money creation through financial markets

Money Creation

- Arguably the key consequence of shadow banking
- Only possible – in the long term – through implicit central bank assistance

MONEY CREATION AND SHADOW BANKING

Shadow Banks and Market-Based Money Creation

- Eurodollars an early example – and still ongoing
- Repo market now the main vehicle for money creation
- Collateral, very liquid financial assets of key importance

Consequences

- A very flexible money supply – both increasing and potentially drastically decreasing
- Credit creation closely linked to money creation
  - Repos and other money substitute increase liquidity in financial markets
- Supply of (appreciating) financial assets important for repo creation

HAYEK ON DEPOSITS (1931)

[I]t is necessary to take account of certain forms of credit not connected with banks which help, as is commonly said, to economize money, or to do the work for which, if they did not exist, money in the narrower sense of the word would be required. **The criterion by which we may distinguish these circulating credits from other forms of credit which do not act as substitutes for money is that they give to somebody the means of purchasing goods without at the same time diminishing the money spending power of somebody else.** This is most obviously the case when the creditor receives a bill of exchange which he may pass on in payment for other goods. It applies also to a number of other forms of commercial credit, as, for example, when book credit is simultaneously introduced in a number of successive stages of production in the place of cash payments, and so on. **The characteristic peculiarity of these forms of credit is that they spring up without being subject to any central control, but once they have come into existence their convertibility into other forms of money must be possible if a collapse of credit is to be avoided.**

(Bold added)

SHADOW BANKING, SEIGNIORAGE AND CANTILLON

Seigniorage: the Profit From Money Creation

- Under commodity standard: profit from minting bullion into coins
- In the present system: interest revenues from credits/money created out of nothing
- Shadow banks, like normal banks, profit from money creation and lending

From Banker's Viewpoint

- There is no clear seigniorage income
- He always only receives revenues from interest on loans
- Liquidity creation supports appreciating financial asset prices → book profits for banks

SHADOW BANKS AND THE CANTILLON EFFECT

Two Groups Especially Profit

- Borrowers profit, they can borrow at a lower rate
- Lenders profit, their ability to grant loans and receive interest is unconstrained by availability of savings

A Tendency for Financial Dependence

- Because borrowing is so cheap, self-financing comparatively too costly
- Borrowing to buy appreciating assets (e.g., housing) a winning strategy

The Cantillon effect thus favours

- The financial sector
- Firms with good financial connections
- Those possessing good collateral

SECURITIZATION – ONCE MORE

Securitization and the Cantillon Effect

- Growing asset prices necessary for securitization
- Securitization frees up bank balance sheets for more expansion

Securitization allows fractional reserve banks to grant more loans, while keeping total deposits, i.e., the money supply in the broad sense, constant in the economy.

…

Securitization allows FRBs to withdraw from the market the liquidities they have created and lent out. It reduces the money supply by the amount of liquid assets used to purchase the asset-backed securities. Therefore, it hides the reverse side of bank credit—the increase in the money supply, i.e., inflation. It makes the economic environment appear less inflationary than it should be, given individuals' growing indebtedness to banks.

-Gertchev (2009, 296, 297)

SHADOW BANKING AND THE BUSINESS CYCLE

- Sieron (2016) finds that shadow banking contributes to the business cycle
- Securitization expands supply of good collateral
- Securities used as collateral for central bank funding
- Credit expansion through securitization and shadow banking follows a pattern different from "classic" credit expansion
- Some loans especially favoured: mortgages, collateralized debt obligations
- Also consumer credit: credit card, student loan, automobile loans
- These borrowers especially benefit from the Cantillon effect
- More consumer focused expansion in the boom the result(?)

5. LITERATURE

LITERATURE

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