The Global Financial Crisis

Module 8 Panic

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Outline

Module 8

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02 Repo

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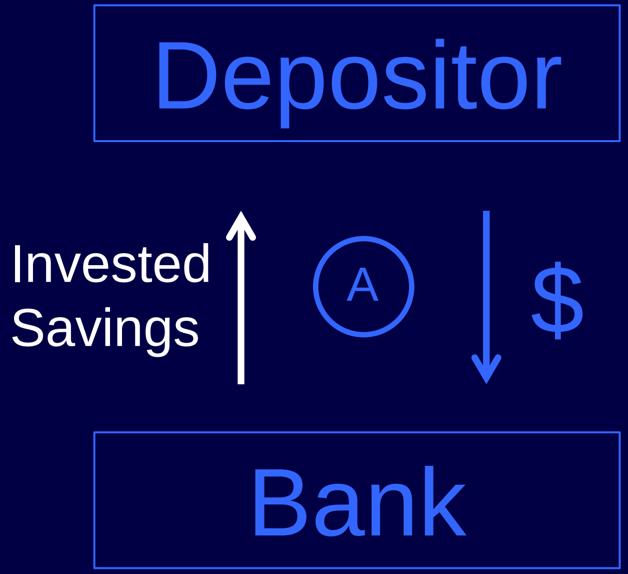
01 Shadow Banking

On-Balance-Sheet Financing

Traditional Banking

On-Balance-Sheet Financing

Traditional Banking



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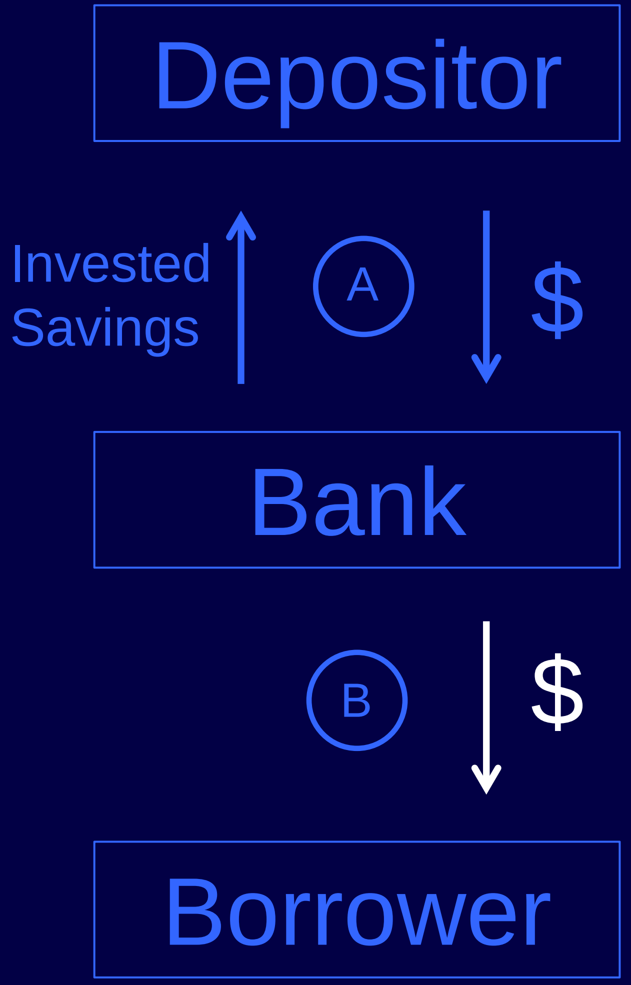

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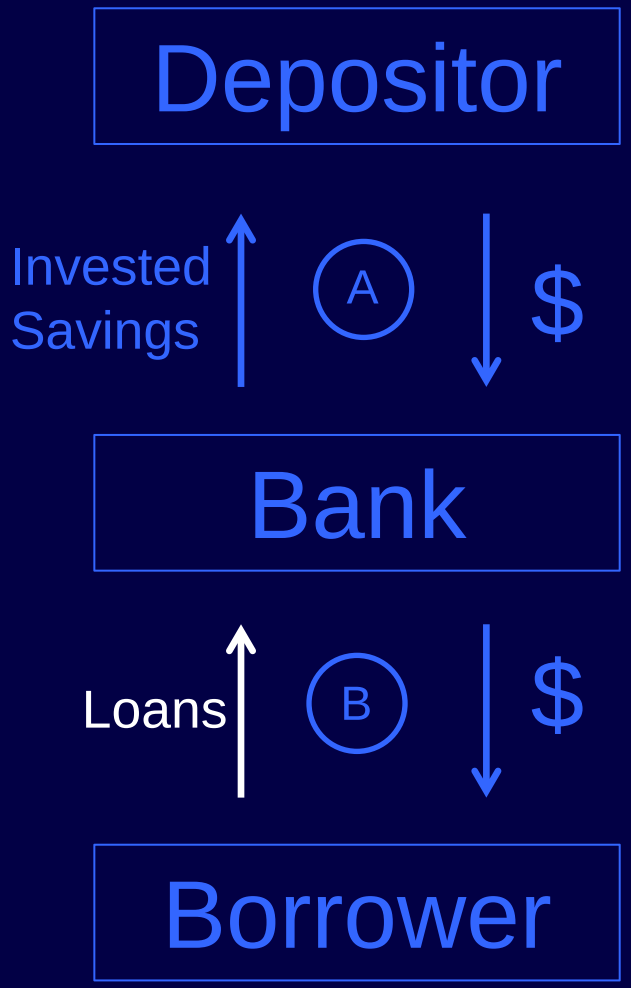

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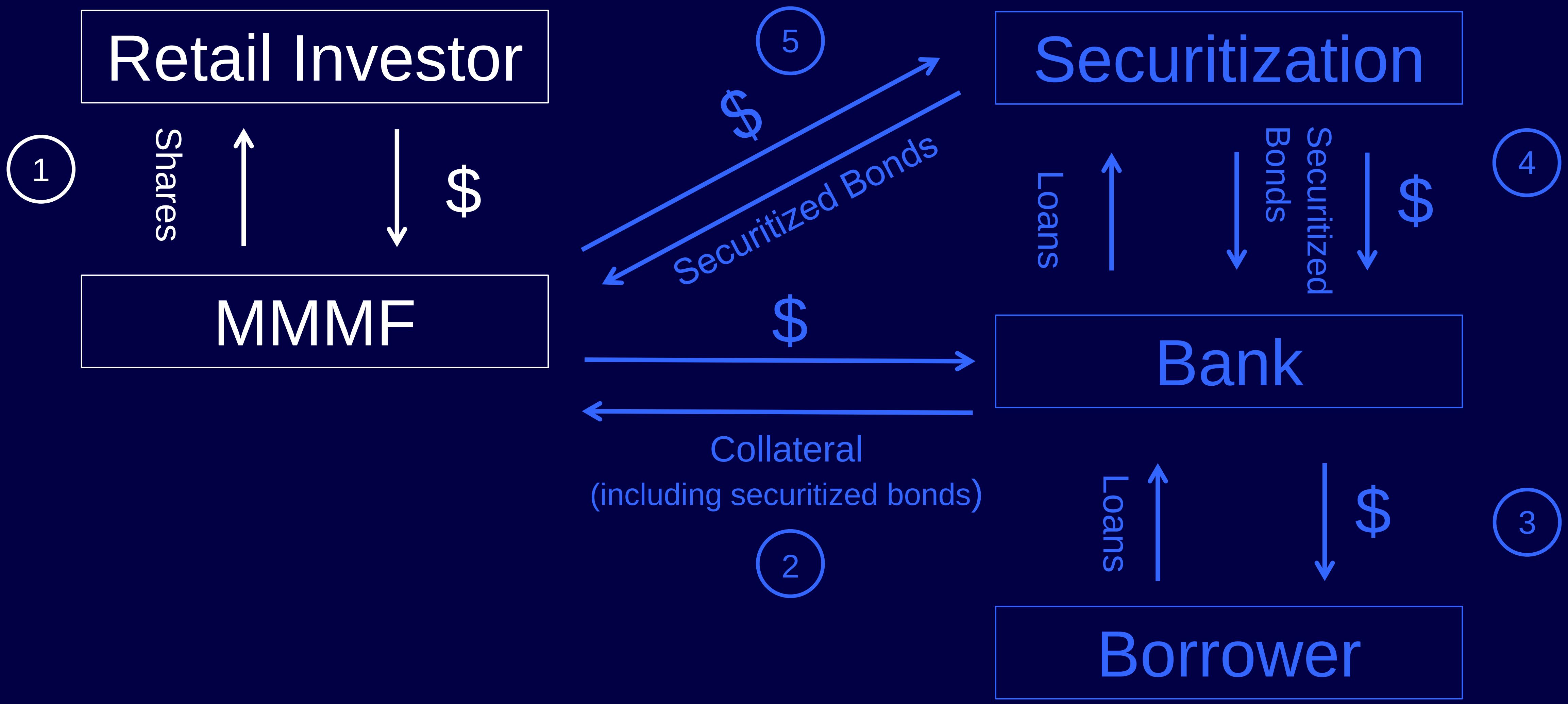

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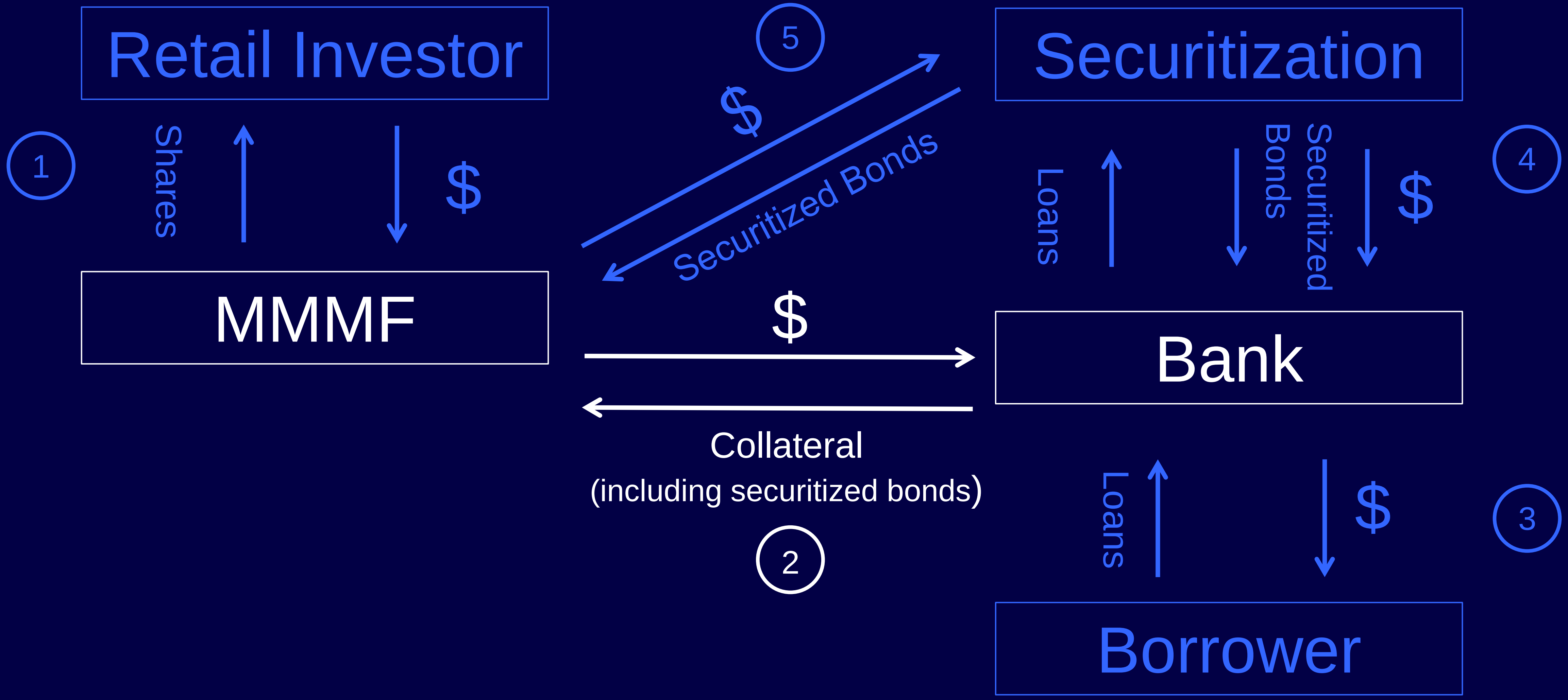

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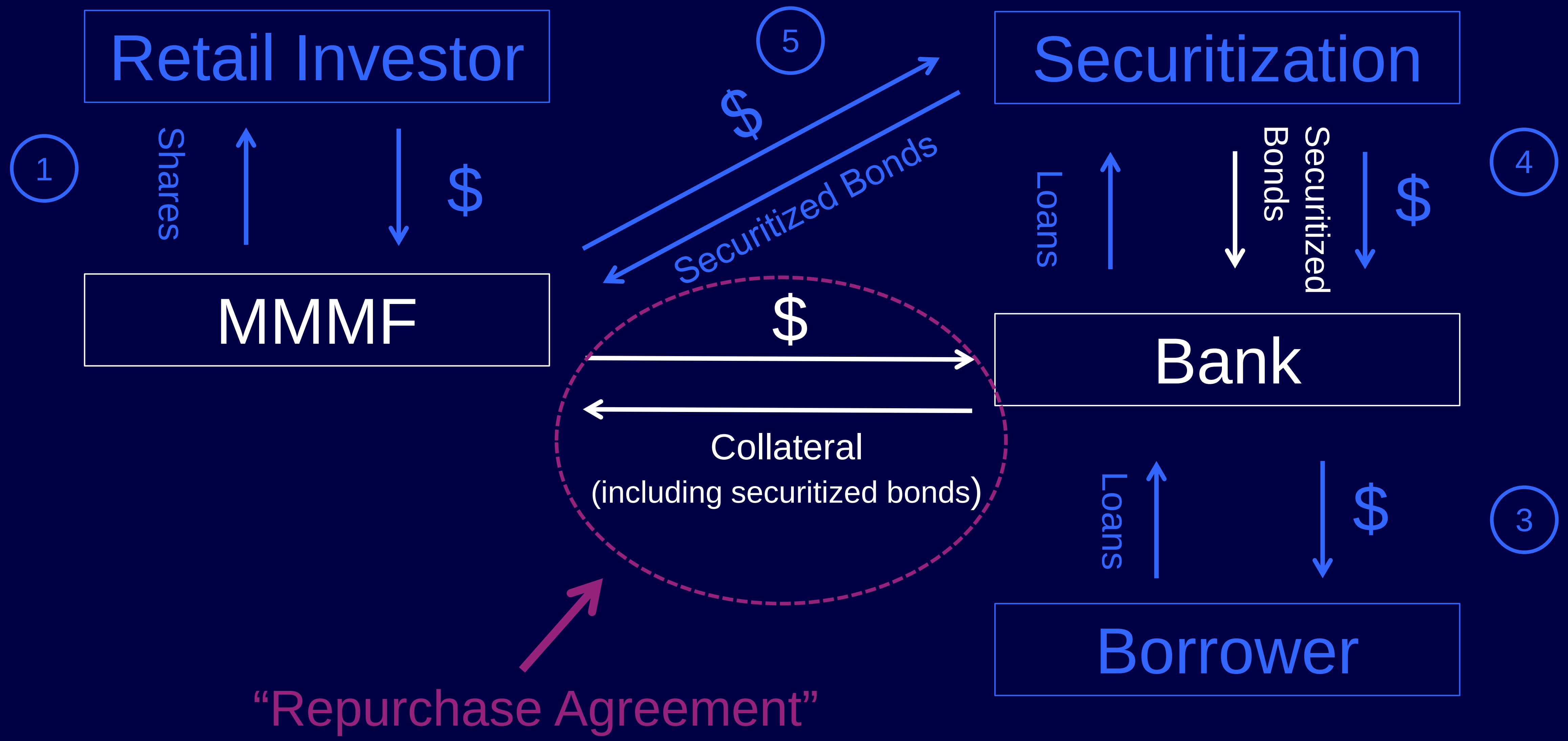

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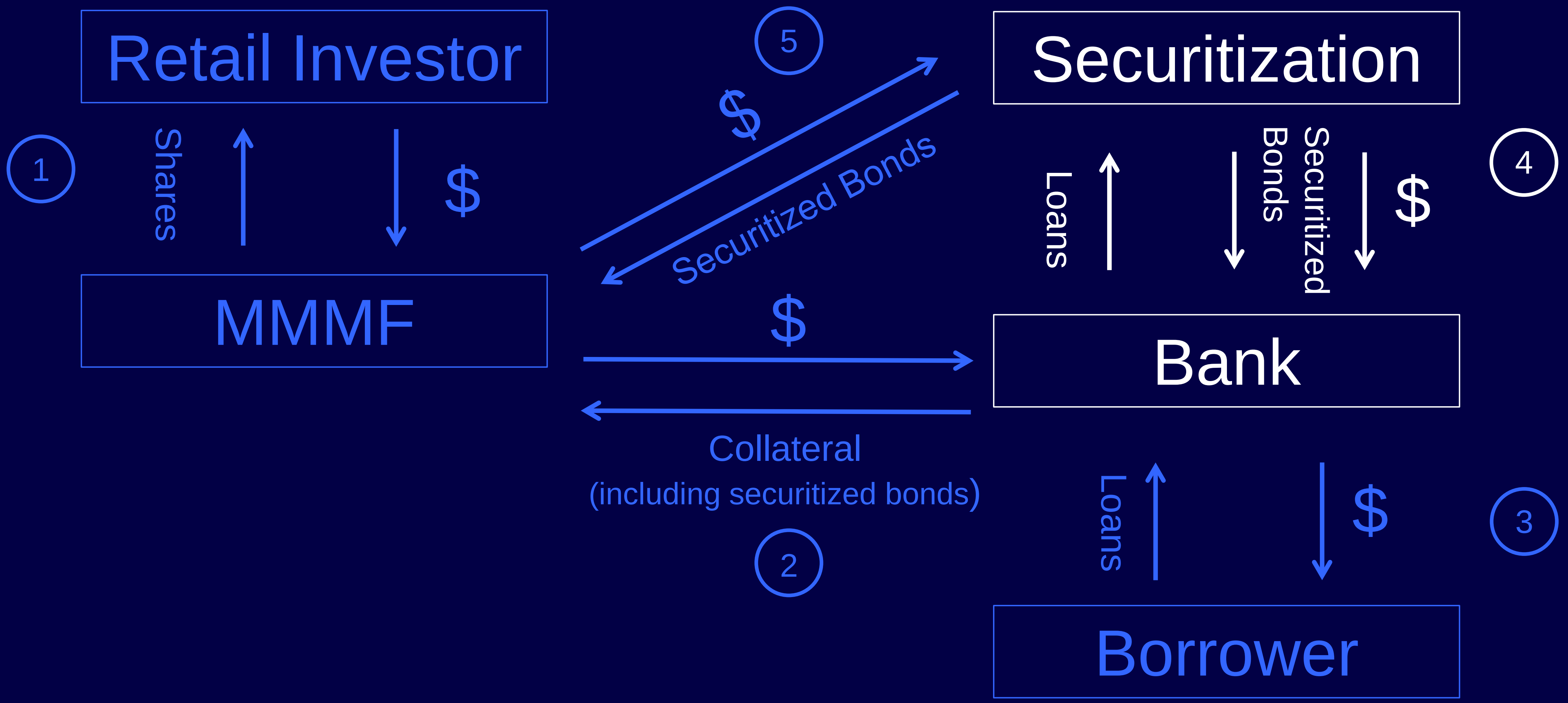

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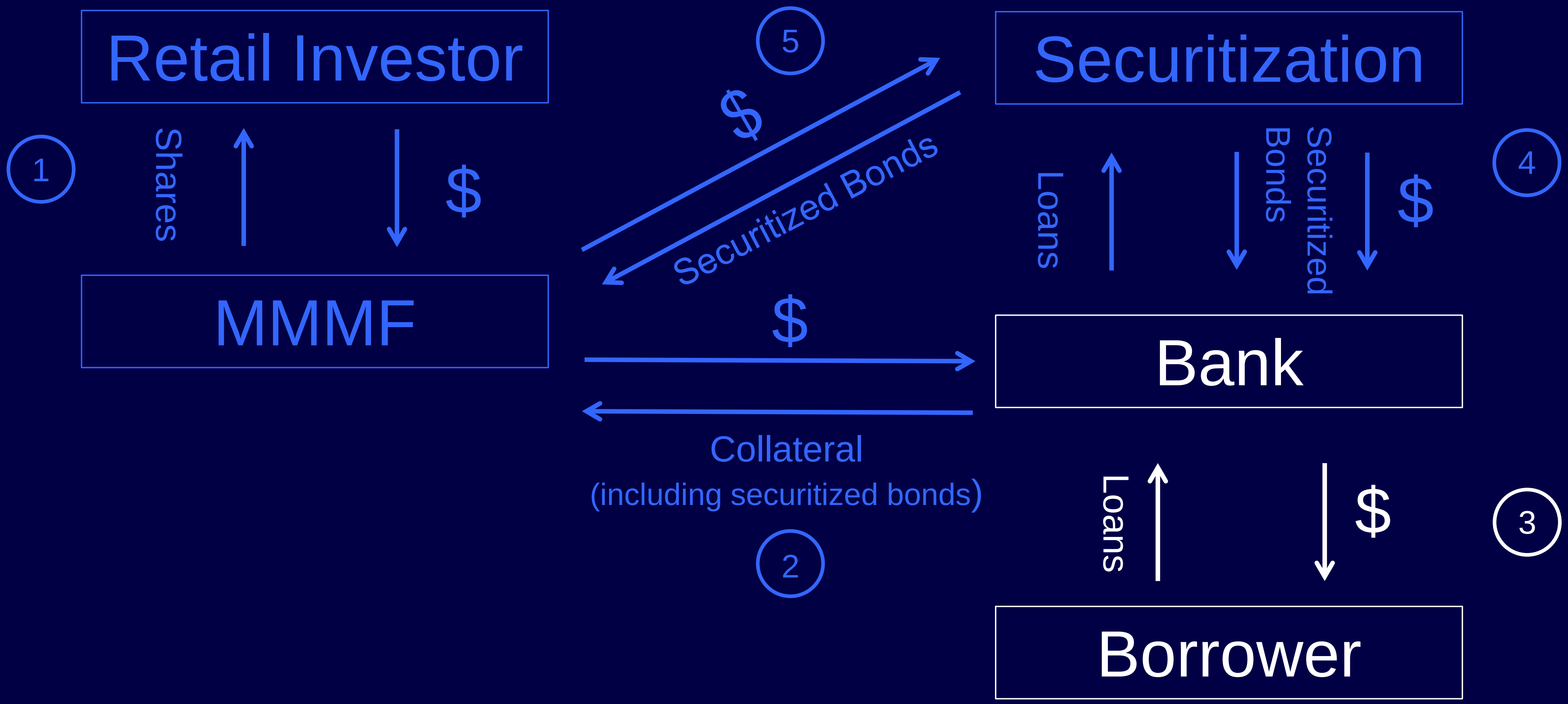

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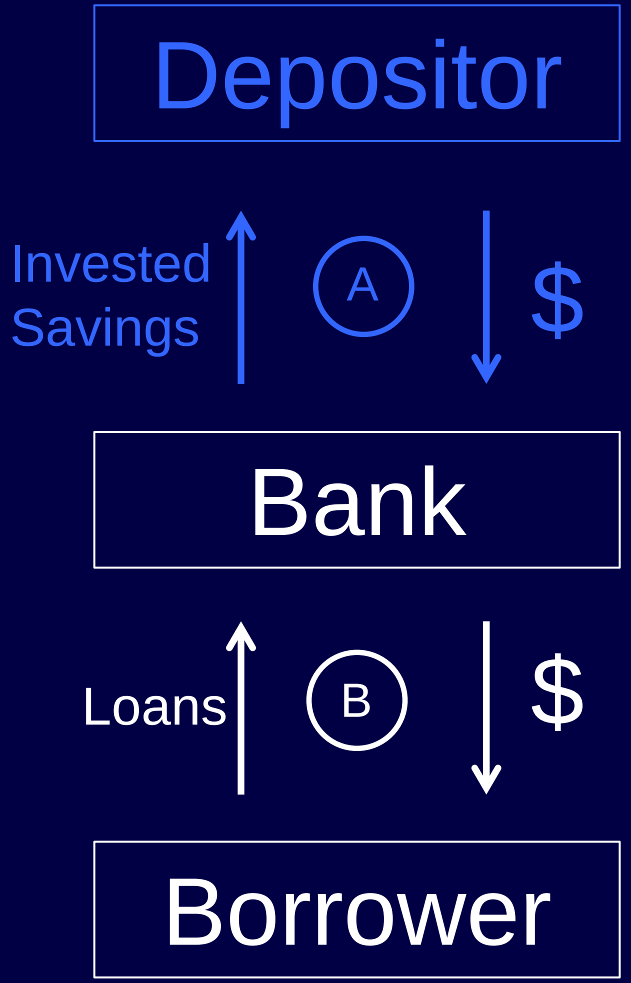

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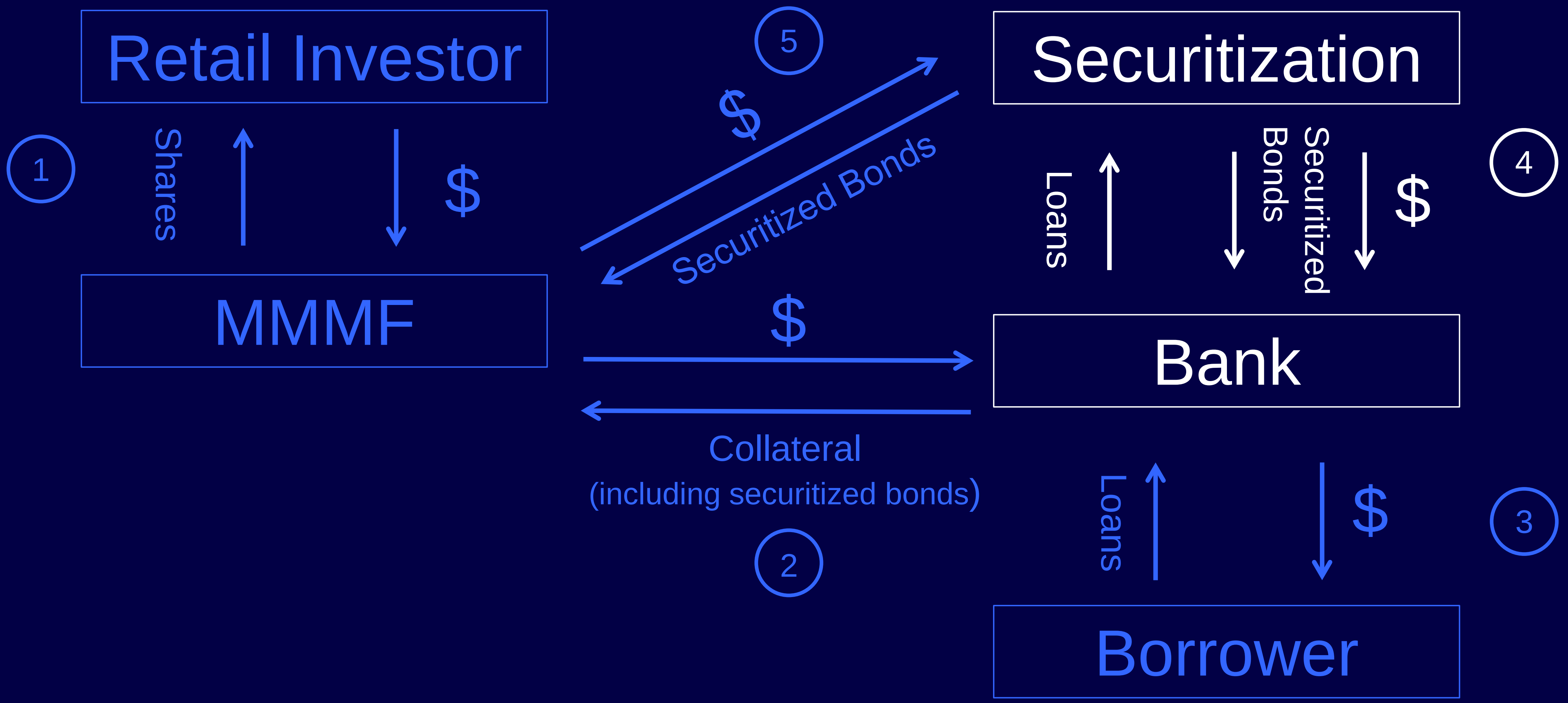

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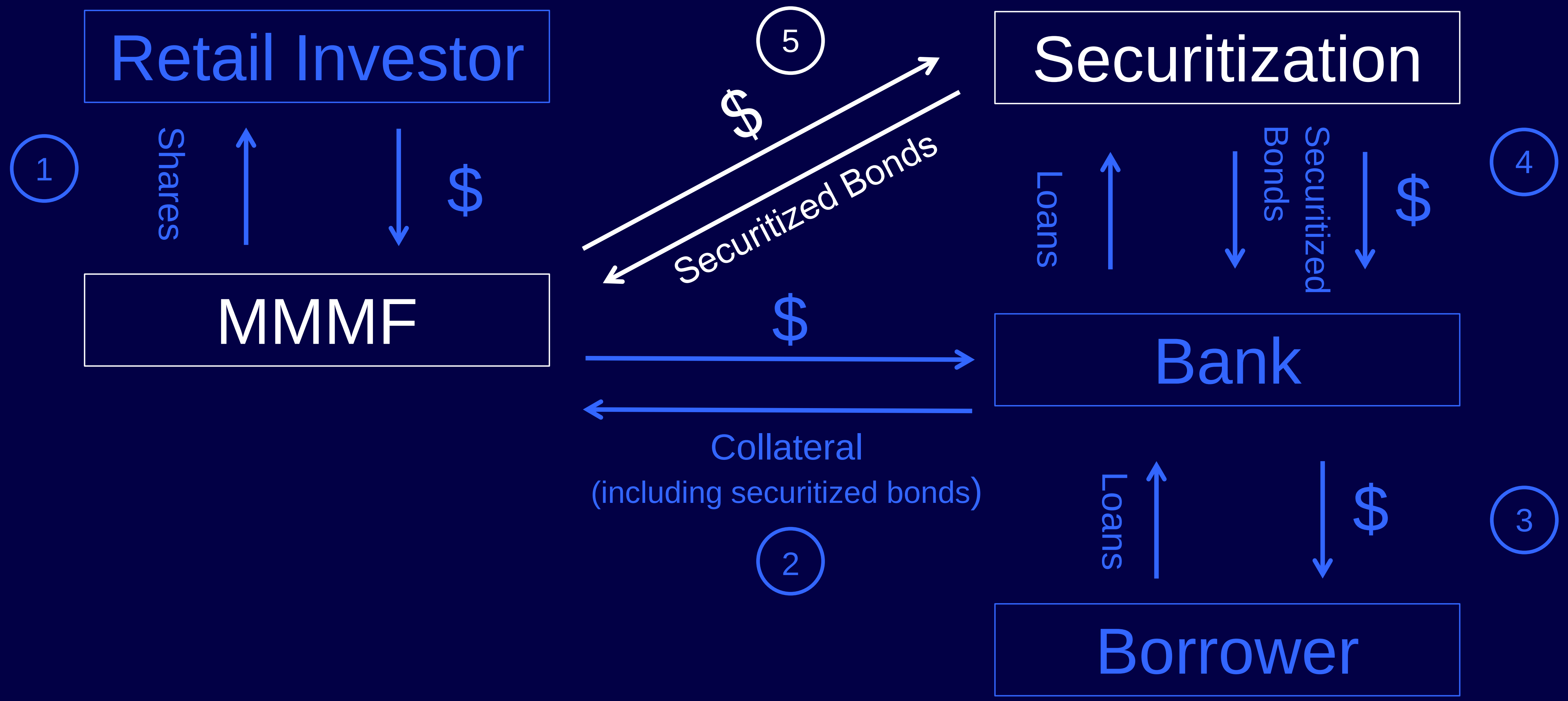

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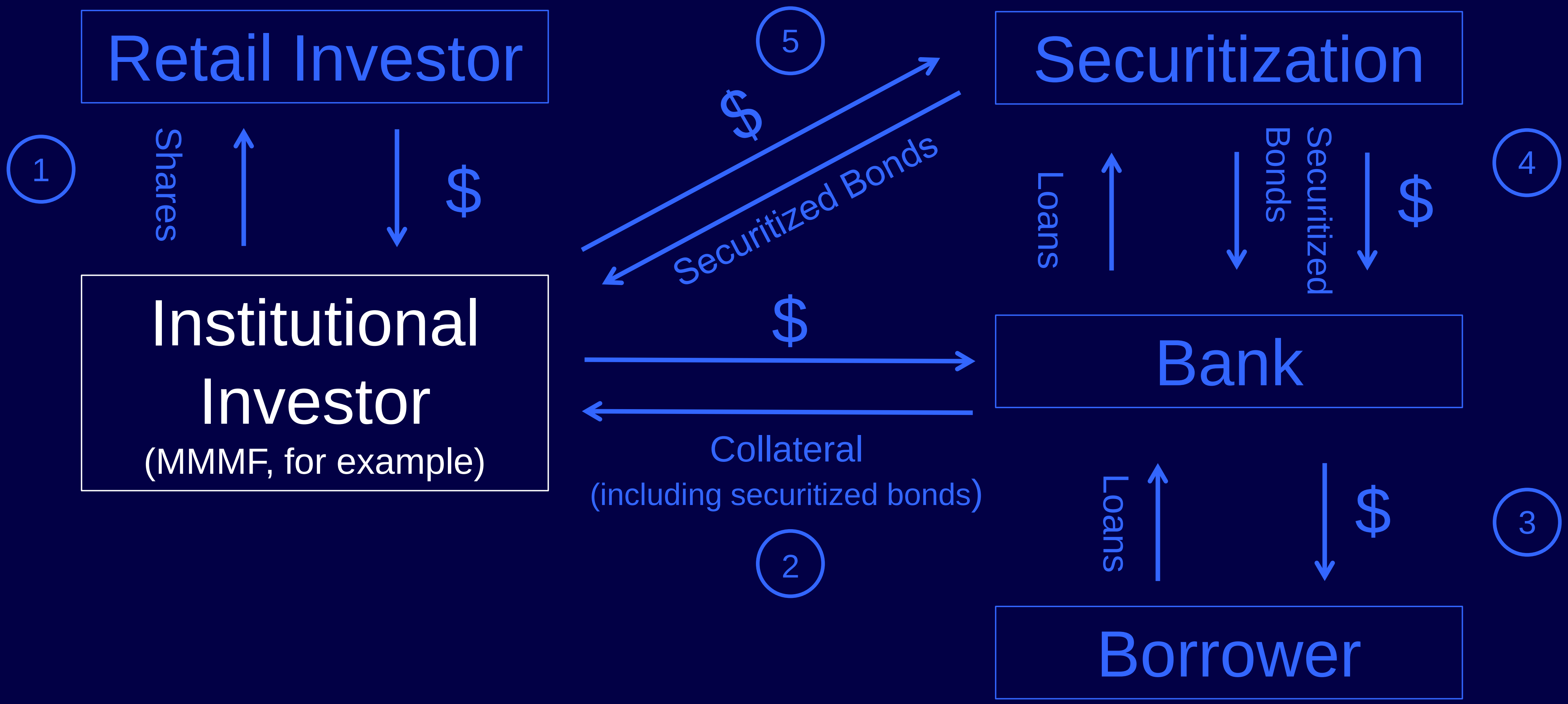

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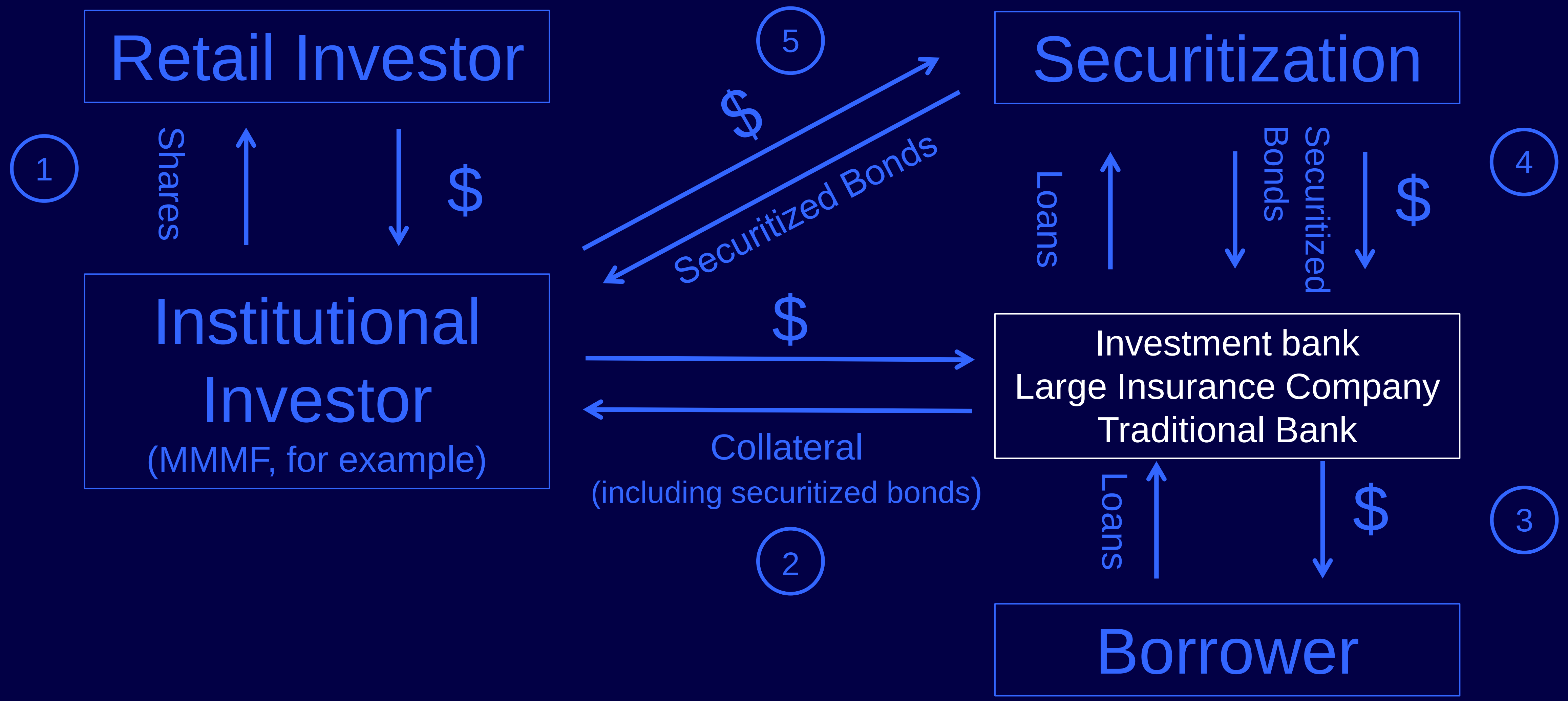


02 Repo

Repo

A New Type of Banking

A sale and repurchase agreement ("repo") is a deposit of cash at a "bank" which is short-term, receives interest, and is backed by collateral. Depositor takes legal ownership of the collateral.

Carved out of Bankruptcy Code; unilateral termination by non-defaulting party.

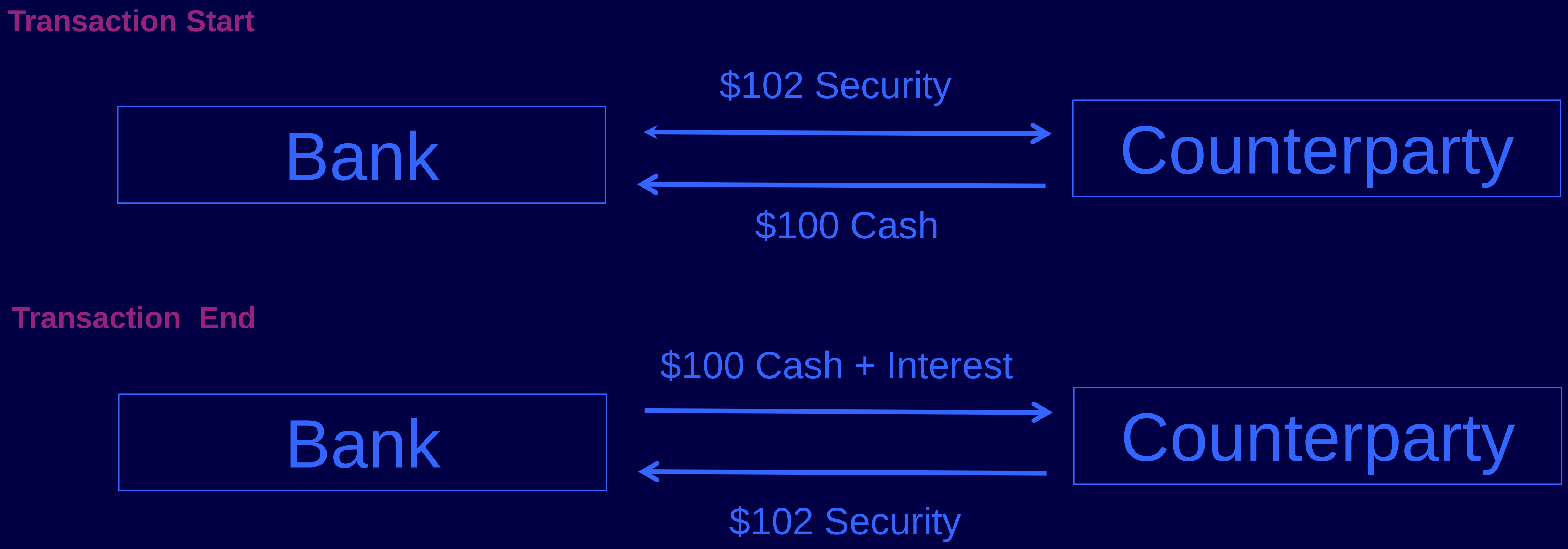
Two types of repo: bilateral and tri-party. Both types caused trouble in the crisis.

Collateral may be "rehypothecated".

Collateral value typically exceeds the amount of cash deposited, this is called a haircut

> **For example, deposit $98, receive a bond worth $100—a 2% haircut.**

Repo Process



Financing of Broker-Dealer Financial Instruments

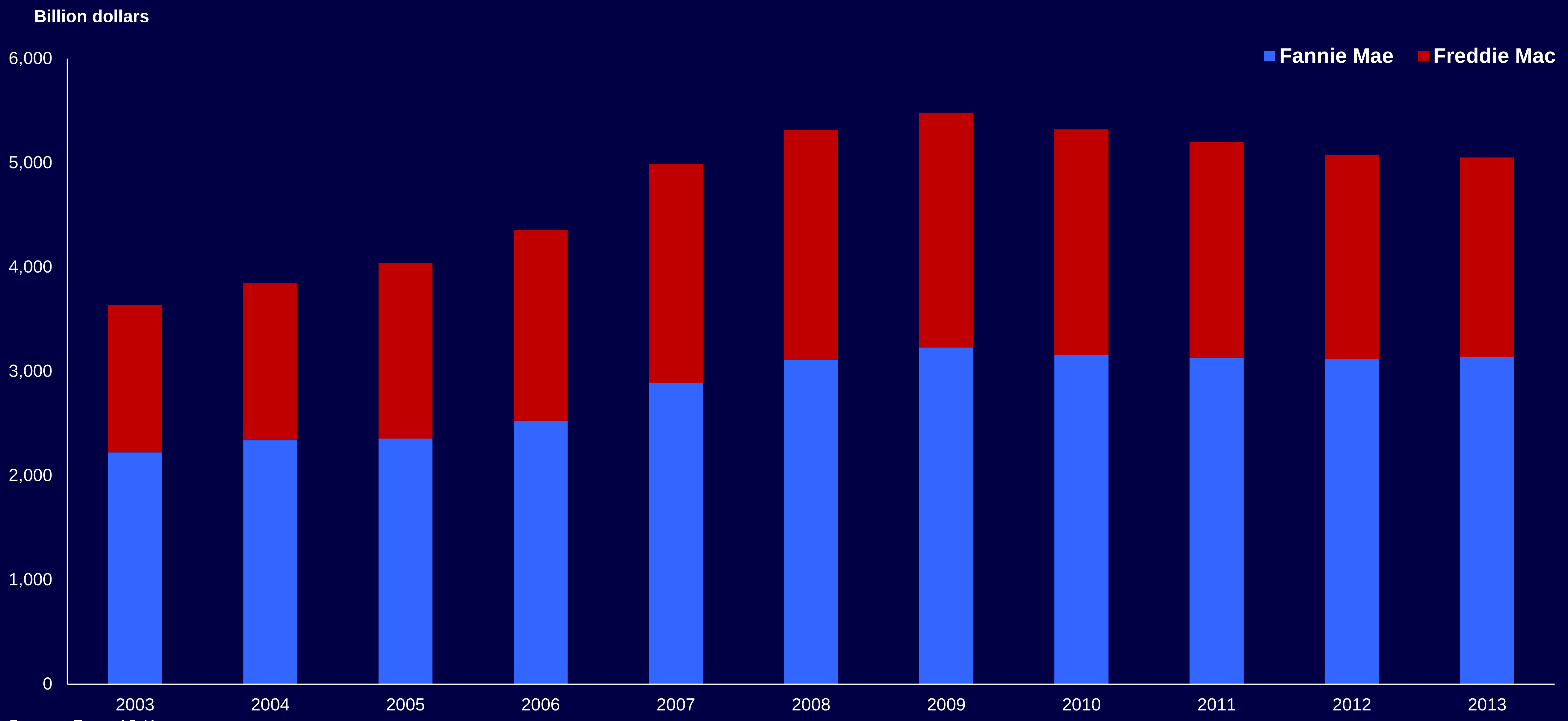
A New Type of Banking

Million Dollars	*May 31, 2008*	*May 31, 2008*	*May 31, 2008*	*June 27, 2008*	*Feb. 29, 2008*	*2nd Quarter Total*
	Morgan Stanley	**Goldman Sachs**	**Lehman**	**Merrill Lynch**	**Bear Stearns**	**Total**
Financial Instruments Owned	390,393	411,194	269,409	288,925	141,104	1,501,025
of which pledged	194,492	158,363	123,031	80,537	76,903	633,326
% owned financial instruments pledged	**50%**	**39%**	**46%**	**28%**	**55%**	**42%**

03 The GSEs

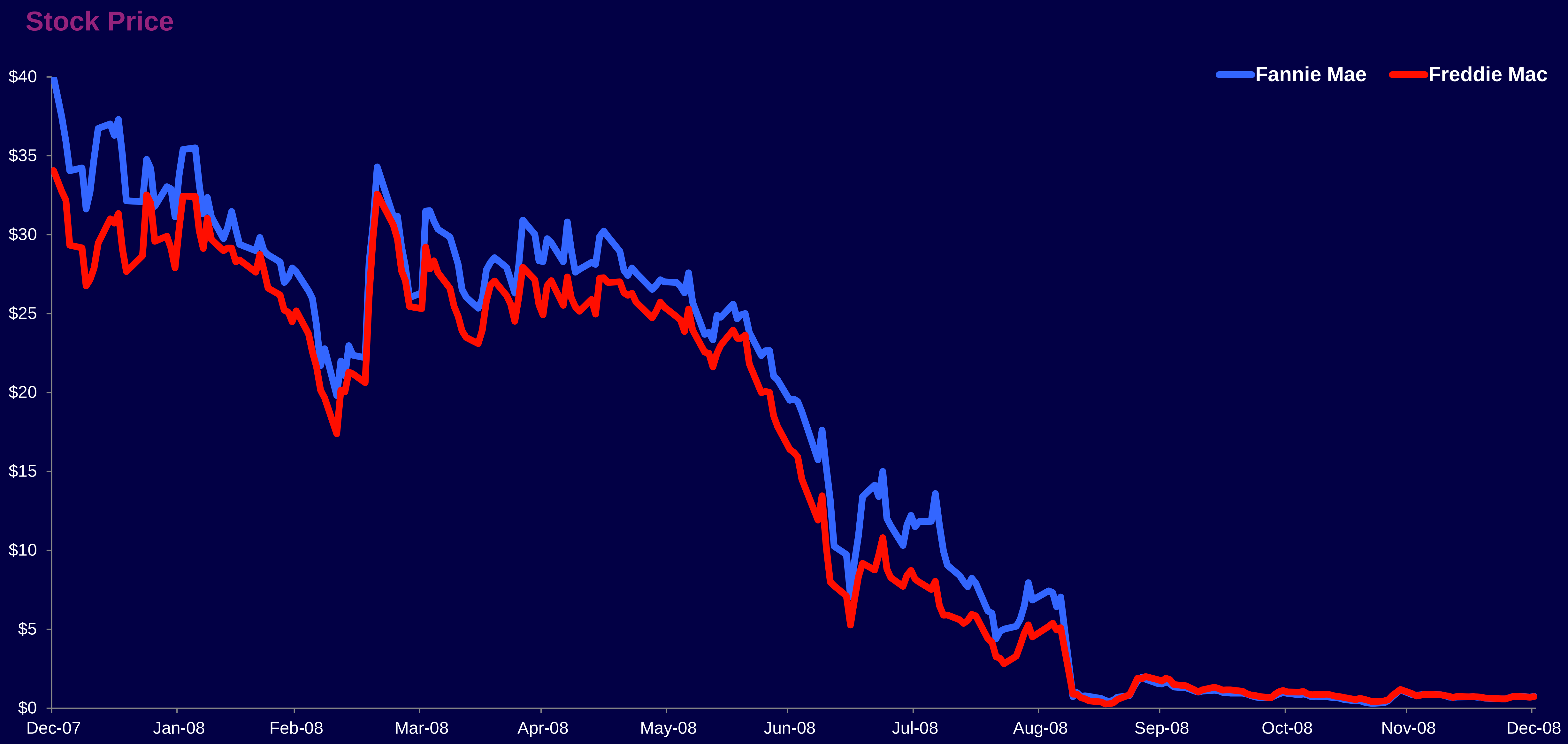
Freddie Mac and Fannie Mae Guaranteed or Owned Half of the Mortgage Market in 2008

Freddie Mac Total Mortgage Portfolio and Fannie Mae Mortgage Credit Book of Business



Source: Form 10-K

Trouble at Fannie and Freddie leads to conservatorship



Source: Bloomberg.

04 Lehman Brothers

Lehman Brothers

As of March 2008, the situation at Lehman Brothers was just as precarious as it was at Bear Stearns, and perhaps Lehman only survived longer than Bear because some shady accounting made them look better than reality.

After the government-supported rescue of Bear Stearns in March 2008, the Federal Reserve created the Primary Dealer Credit Facility (PDCF) to provide liquidity to non-bank dealers like Lehman.

The PDCF was critical to Lehman’s survival over the next six months, as they tried to get rid of their worst assets and improve their capital and liquidity position.

Lehman Weekend

September 2008

On September 10, 2008, Lehman reported $28 billion in shareholder equity, $4 billion higher than a year earlier. But it was simply impossible to know if this equity cushion was accurate.

For one thing, Lehman reported $54 billion in real estate assets. Some market participants thought the true value was closer to half of that, which would effectively wipe out Lehman’s equity.

At the same time, Lehman’s counterparties in derivatives, commercial paper, and repo were pulling back, shortening terms, and demanding more collateral.

Most notably, JP Morgan, Lehman’s clearing bank in the tri-party repo market, demanded $5 billion and received $3.6 billion on 9/9, and demanded and received $5 billion on 9/12.

Lehman Weekend

September 12-14, 2008

Over the weekend of 9/12 – 9/14, the U.S. government tried unsuccessfully to arrange a private rescue for Lehman.

The government insisted there would be no public money spent on the rescue.

Bank of America chose to buy Merrill Lynch instead of Lehman.

On Saturday, Barclays agreed to buy Lehman, but by Sunday the deal was effectively blocked by UK regulators.

Without sufficient liquidity to operate the next day, and otherwise out of options, Lehman filed for bankruptcy early in the morning on September 15.

05 MMMFs

MMMFs

Money-Market Mutual Funds (MMMFs) are a specific type of investment company that is only permitted to own a narrow range of securities. In return for accepting this narrow investment range, they had the right (at this time) to report “stable values” for their share prices.

On September 16, 2008, Reserve Primary Fund “broke the buck” due to exposure to Lehman Brothers commercial paper. This led to a run on many MMMFs – mostly by institutional investors – and then quickly to an explicit guarantee from the U.S. government.

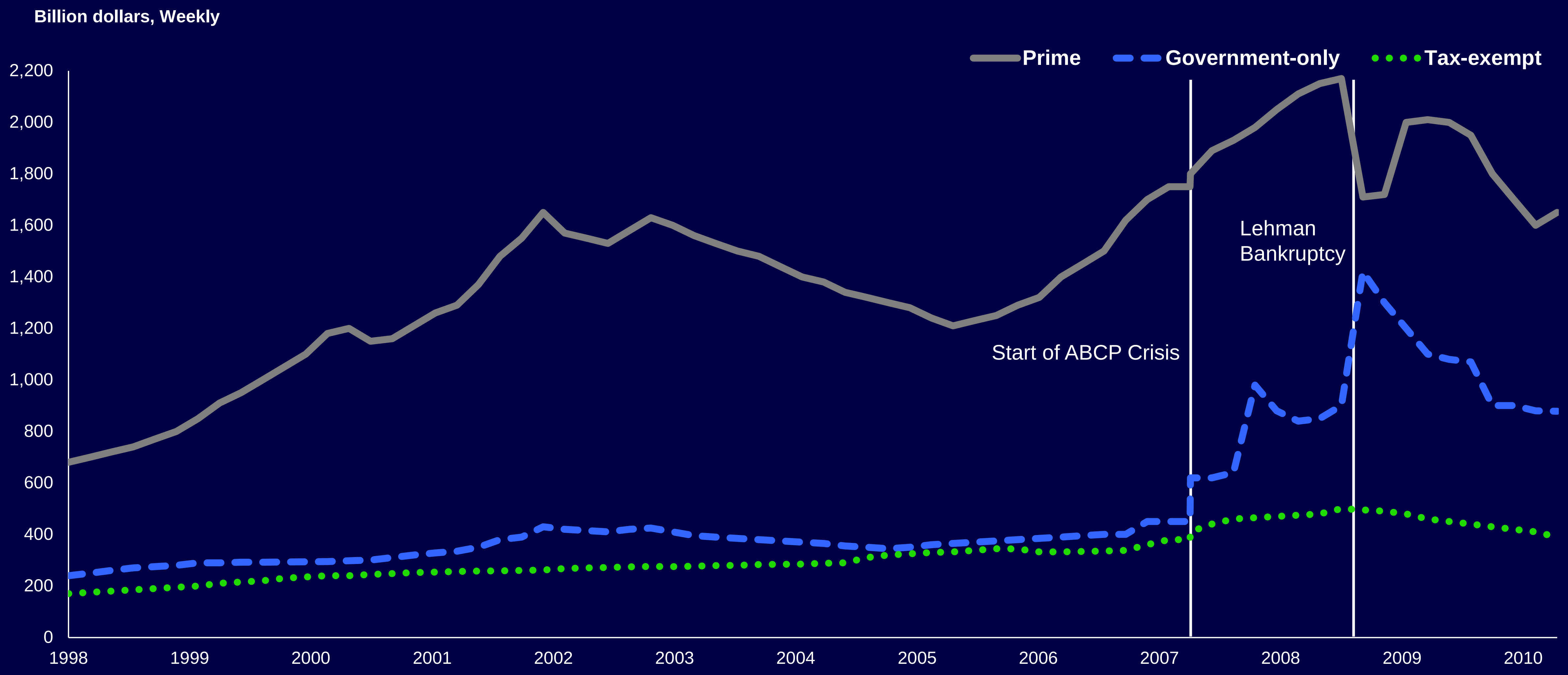
We really should have seen this coming – but we did not. Because MMMFs had significant problems in August 2007 as a result of the Asset-Backed Commercial Paper (ABCP) runs.

MMMFs

McCabe (2010) shows that MMMFs assets under management grew during the ABCP runs of 2007, but that is because the implicit promises of many sponsors were honored: 43 MMMFs were bailed out by their sponsors/fund-families. This level of support was unprecedented.

In September 2008, this support was not possible, and the resulting runs transferred more than $400 billion from prime MMMFs (which support many components of private finance) to government-only MMMFs (which do not).

Assets under management in money market funds by investment objective



Source: McCabe, P. (2010). “The cross section of money market fund risks and financial crises.”

06 AIG

AIG

Main weaknesses:

- Credit-default-swap (CDS) mark-to-market losses and collateral calls.
- Cash collateral investment losses in securities lending business.
- Funding pressure in CP and repo.
- Ratings downgrade triggers additional collateral calls.
- Liquidity puts on CDOs.

After Lehman, markets are in turmoil and no private rescue is possible.

Fed led rescue of $85 billion, later supplemented by more from Fed and TARP.

The Global Financial Crisis

Module 8 Panic

07 The Run on Repo

The Run on Repo

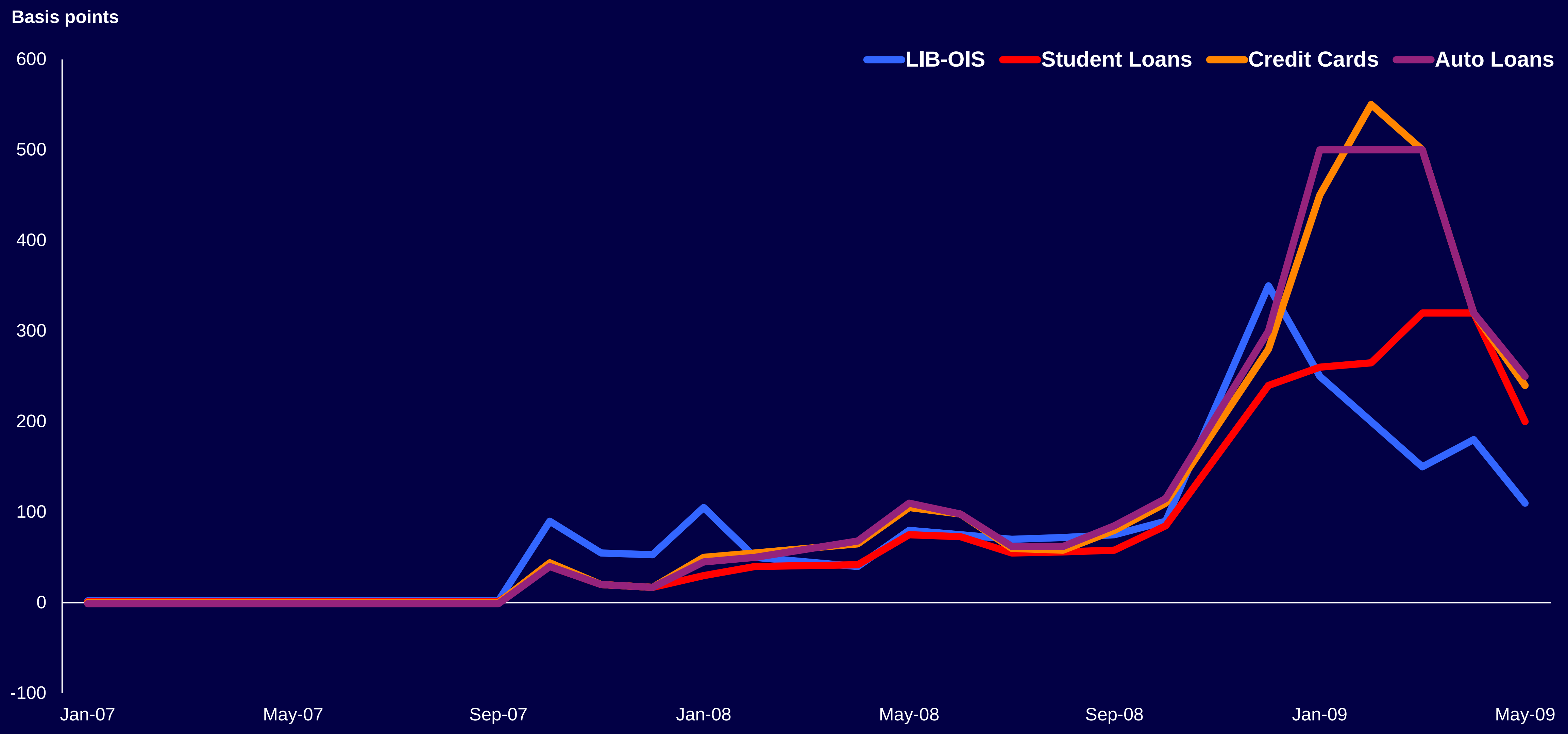
$350 billion of short-term funding ran away from ABCP.

From MMMFs, about the same amount.

Combine these drains with uncertainty about the subprime exposure on balance sheets, and there is massive pressure on repo markets.

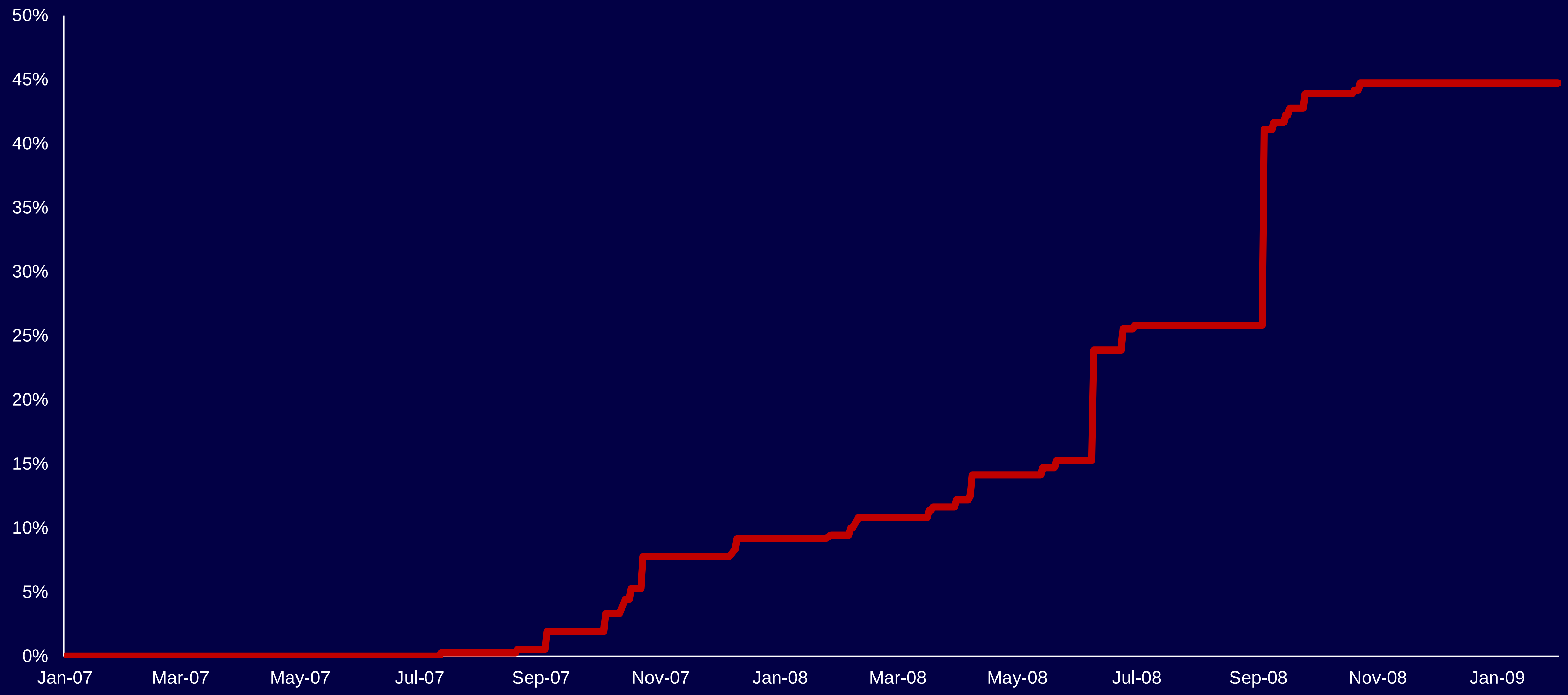
This pressure manifests in spreads (on underlying ABS), repo rates, and haircuts.

LIBOR-OIS and Non-Subprime AAA Assets



Source: Gorton and Metrick (2012).

Average Repo Haircut on Structured Debt



Source: Gorton and Metrick (2012).

The Run on Repo

The statistical evidence in Gorton and Metrick (2012) confirms a significant relationship between LIBOR-OIS and ABS spreads.

Regression evidence also suggests that the main driver of haircuts was uncertainty about future spreads on the ABS collateral.

08 Summary

Summary: A Partial List of Transmission Mechanisms in the Panic

Module 8

01 Rising spreads and runs on unsecured debt

02 Fire sales of assets in liquidation

03 Uncertainty about values on balance sheets

04 Rising haircuts on bilateral repo

04 Risk at clearing banks for tri-party repo

05 Collateral calls in derivative transactions

Notice how many of these mechanisms are “new” to this crisis. We were not prepared, and in some cases did not have the tools necessary to fix things.