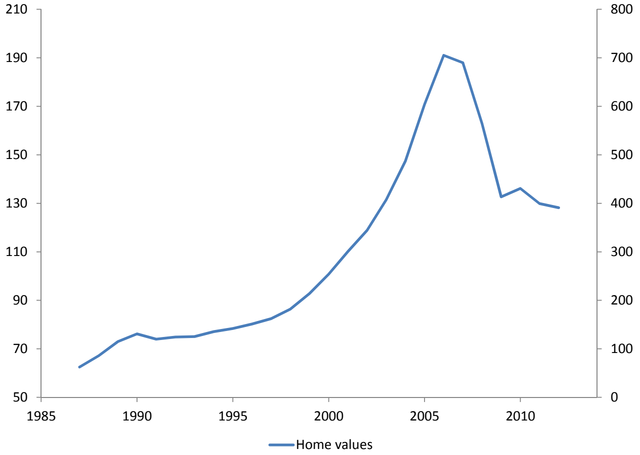
The Rise and Fall of Securitization

Erwan Quintin

Wisconsin School of Business

October 31, 2012

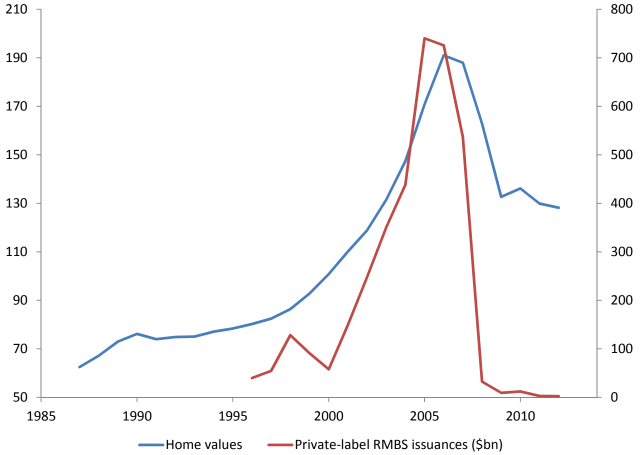
The rise and fall of home values



Source: Case-Shiller US index and SIFMA

Securitization totals

The rise and fall of securitization



Source: Case-Shiller US index and SIFMA

Securitization totals

Outline

1. Securitization: a primer

Outline

1. Securitization: a primer
2. The rise of securitization

Outline

1. Securitization: a primer
2. The rise of securitization
3. How securitization may have fueled the housing boom ...

Outline

1. Securitization: a primer
2. The rise of securitization
3. How securitization may have fueled the housing boom ...
4. ...and compounded the foreclosure crisis

Outline

1. Securitization: a primer
2. The rise of securitization
3. How securitization may have fueled the housing boom . . .
4. . . . and compounded the foreclosure crisis
5. The fall of securitization

Outline

1. Securitization: a primer
2. The rise of securitization
3. How securitization may have fueled the housing boom . . .
4. . . . and compounded the foreclosure crisis
5. The fall of securitization
6. Lessons learned

My recent research with Dean Corbae

1. "The Rise of Securitization: A Recursive Security Design Approach":

My recent research with Dean Corbae

1. "The Rise of Securitization: A Recursive Security Design Approach":
   - Growing demand for safe US assets boosted securitization

My recent research with Dean Corbae

1. "The Rise of Securitization: A Recursive Security Design Approach":
   - Growing demand for safe US assets boosted securitization
   - and contributed to the pre-crisis loosening lending standards

My recent research with Dean Corbae

1. "The Rise of Securitization: A Recursive Security Design Approach":
   - Growing demand for safe US assets boosted securitization
   - and contributed to the pre-crisis loosening lending standards

2. “Mortgage Innovation and the Foreclosure Boom":

My recent research with Dean Corbae

1. "The Rise of Securitization: A Recursive Security Design Approach":
    - Growing demand for safe US assets boosted securitization
    - and contributed to the pre-crisis loosening lending standards
2. “Mortgage Innovation and the Foreclosure Boom":
    - The availability of high-leverage loans boosted participation by risky borrowers

My recent research with Dean Corbae

1. "The Rise of Securitization: A Recursive Security Design Approach":
   - Growing demand for safe US assets boosted securitization
   - and contributed to the pre-crisis loosening lending standards
2. “Mortgage Innovation and the Foreclosure Boom":
   - The availability of high-leverage loans boosted participation by risky borrowers
   - ...and, once prices collapsed, magnified the default crisis

Securitization: a Primer

Securitization = Pooling + Tranching

1. An investment bank pools debt claims . . .

Securitization = Pooling + Tranching

1. An investment bank pools debt claims . . .
2. . . . and uses the pool as collateral for various securities

Step 1: Pool ("Special Purpose Vehicles")

Assets	Liabilities
M	

Step 2: Tranche (CMO structure)

Assets	Liabilities
M	AAA

Step 2: Tranche (CMO structure)

Assets	Liabilities
M	AAA AA

Step 2: Tranche (CMO structure)

Assets	Liabilities
	AAA
M	AA
	B

Step 2: Tranche (CMO structure)

Assets	Liabilities
M	AAA AA B E

The Bottom Line

$$\begin{aligned} \text{Bank's profits} &= \text{Market Value of the Securities} \\ &- \text{Cost of Funding/Acquiring the Assets} \\ &- \text{Transaction Costs} \end{aligned}$$

- The bank maximizes profits by:

The Bottom Line

$$
\begin{aligned}
\text{Bank's profits} &= \text{Market Value of the Securities} \\
&- \text{Cost of Funding/Acquiring the Assets} \\
&- \text{Transaction Costs}
\end{aligned}
$$

- The bank maximizes profits by:
  1. selling each security to the highest bidder

The Bottom Line

$$\begin{aligned} \text{Bank's profits} &= \text{Market Value of the Securities} \\ &- \text{Cost of Funding/Acquiring the Assets} \\ &- \text{Transaction Costs} \end{aligned}$$

- The bank maximizes profits by:
  1. selling each security to the highest bidder
  2. issuing the menu of securities with the highest market value

The Bottom Line

$$
\begin{aligned}
\text{Bank's profits} &= \text{Market Value of the Securities} \\
&- \text{Cost of Funding/Acquiring the Assets} \\
&- \text{Transaction Costs}
\end{aligned}
$$

- The bank maximizes profits by:
  1. selling each security to the highest bidder
  2. issuing the menu of securities with the highest market value
- A pool gets created when there is feasible menu of securities whose market value exceeds all costs

How to extract safe securities from risky assets

	Good	OK	Bad
M	3	2	1

How to extract safe securities from risky assets

	Good	OK	Bad
M	3	2	1
AAA	1	1	1

How to extract safe securities from risky assets

	Good	OK	Bad
M	3	2	1
AAA	1	1	1
B	1	1	0

How to extract safe securities from risky assets

	Good	OK	Bad
M	3	2	1
AAA	1	1	1
B	1	1	0
E	1	0	0

It's all about the worst-case scenario

	Good	OK	Bad
M	3	2	$\boxed{1}$
AAA	1	1	1
B	1	1	0
E	1	0	0

How about them CDO's and CDO^2's?

How about them CDO's and CDO^2's?

Deal 1:		Deal 2:		Deal 3:	
Assets	Liabilities	Assets	Liabilities	Assets	Liabilities
M_1	AAA_1	M_2	AAA_2	M_3	AAA_3
	AA_1		AA_2		AA_3
	B_1		B_2		B_3
	E_1		E_2		E_3

How about them CDO's and CDO^2's?

Deal 1:

Assets	Liabilities
M_1	AAA_1
	AA_1
	B_1
	E_1

Deal 2:

Assets	Liabilities
M_2	AAA_2
	AA_2
	B_2
	E_2

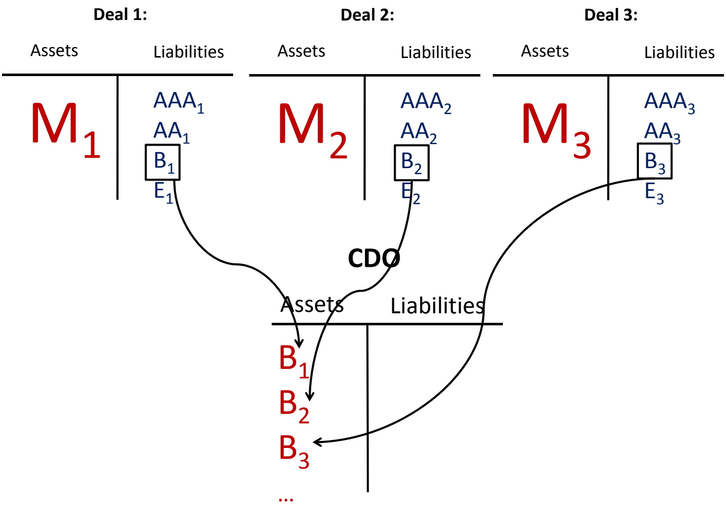
Deal 3:

Assets	Liabilities
M_3	AAA_3
	AA_3
	B_3
	E_3

CDO

Assets	Liabilities

How about them CDO's and CDO^2's?



How about them CDO's and CDO^2's?

Deal 1:

Assets	Liabilities
M_1	AAA_1
	AA_1
	B_1
	E_1

Deal 2:

Assets	Liabilities
M_2	AAA_2
	AA_2
	B_2
	E_2

Deal 3:

Assets	Liabilities
M_3	AAA_3
	AA_3
	B_3
	E_3

CDO

Assets	Liabilities
B_1	AAA
B_2	AA
B_3	B
...	E

The CDO idea

	State 1	State 2	State 3
B_1	1	2	0
B_2	2	0	1
$B_1 + B_2$	3	2	1

The CDO idea

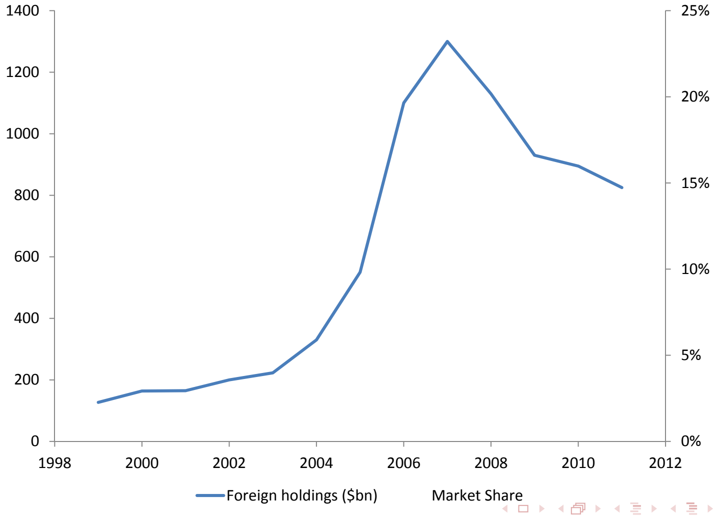
	State 1	State 2	State 3
B_1	1	2	0
B_2	2	0	1
$B_1 + B_2$	3	2	1
AAA	1	1	1
B	1	1	0
E	1	0	0

The Rise

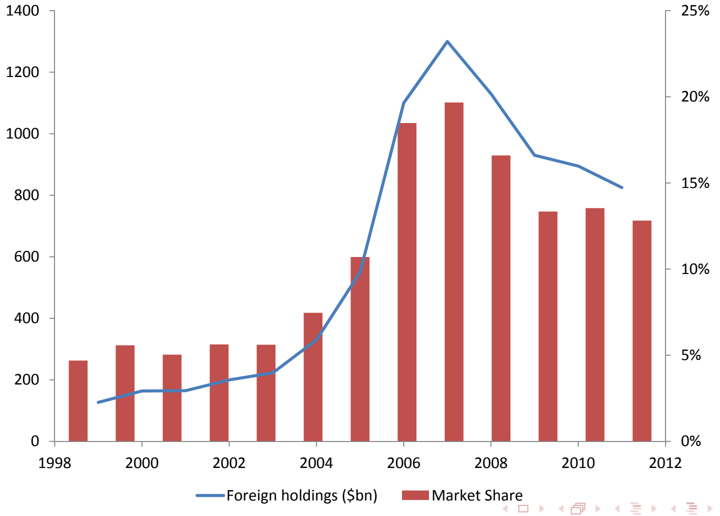
“*Given the strength of demand for safe U.S. assets, it would have been surprising had there not been a corresponding increase in their supply.*”

Ben Bernanke et al. (2011)

Foreign capital flows into MBS market



Foreign capital flows into MBS market



The Saving Glut

- Foreign demand for safe US assets rose in the 90s

The Saving Glut

- Foreign demand for safe US assets rose in the 90s
- How would supply respond?

The Saving Glut

- Foreign demand for safe US assets rose in the 90s
- How would supply respond?
- Housing boom created endless supply of mortgages

The Saving Glut

- Foreign demand for safe US assets rose in the 90s
- How would supply respond?
- Housing boom created endless supply of mortgages
- How to issue safe bonds backed by unsafe assets?

The Saving Glut

- Foreign demand for safe US assets rose in the 90s
- How would supply respond?
- Housing boom created endless supply of mortgages
- How to issue safe bonds backed by unsafe assets?
- Answer: CMOs and CDOs

A model of innovation

- Corbae-Quintin (2012) describe a model where:

$\Longrightarrow$ A macroeconomic model where the available menu of securities responds endogenously to changes in fundamentals

A model of innovation

- Corbae-Quintin (2012) describe a model where:
  1. Banks pool assets and tranche the resulting cash-flows

$\Longrightarrow$ A macroeconomic model where the available menu of securities responds endogenously to changes in fundamentals

A model of innovation

- Corbae-Quintin (2012) describe a model where:
  1. Banks pool assets and tranche the resulting cash-flows
  2. Investors spread their wealth across available securities

$\Longrightarrow$ A macroeconomic model where the available menu of securities responds endogenously to changes in fundamentals

A model of innovation

- Corbae-Quintin (2012) describe a model where:
    1. Banks pool assets and tranche the resulting cash-flows
    2. Investors spread their wealth across available securities
    3. When demand for safe assets rise, investment banks respond by pooling and tranching more assets

$\Longrightarrow$ A macroeconomic model where the available menu of securities responds endogenously to changes in fundamentals

The challenge

- Taking current and expected future menus of securities as given, investors choose optimal saving and portfolios

The challenge

- Taking current and expected future menus of securities as given, investors choose optimal saving and portfolios
- These choices, in turn, pins down their willingness to pay for various securities

The challenge

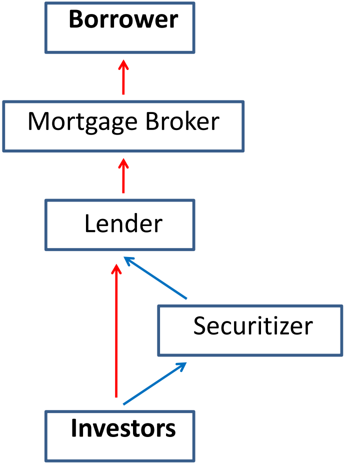
- Taking current and expected future menus of securities as given, investors choose optimal saving and portfolios
- These choices, in turn, pins down their willingness to pay for various securities
- Taking this willingness to pay as given, financial intermediaries issue menus of securities that maximize their profits

The challenge

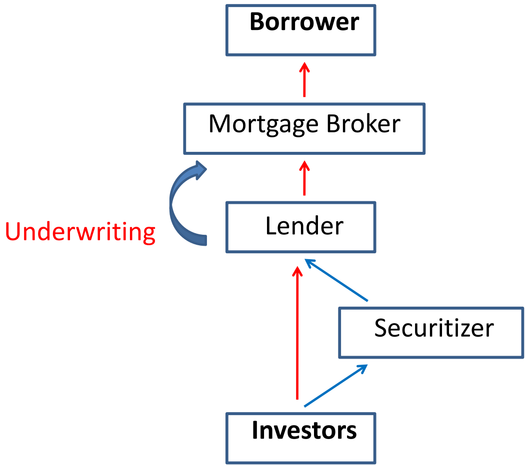
- Taking current and expected future menus of securities as given, investors choose optimal saving and portfolios
- These choices, in turn, pins down their willingness to pay for various securities
- Taking this willingness to pay as given, financial intermediaries issue menus of securities that maximize their profits
- The resulting menu must coincide with what investors expected in the first place

How Securitization May Have Fueled the Housing Boom

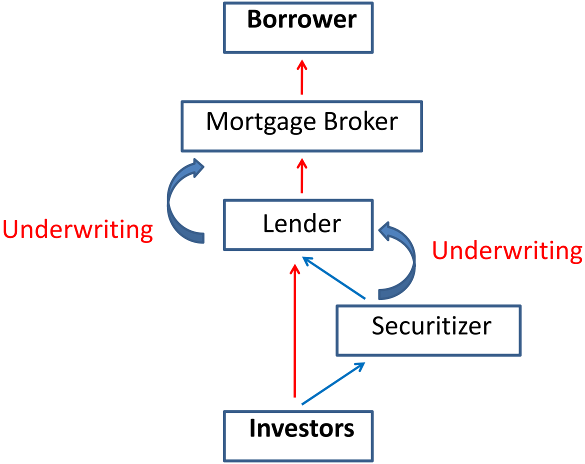
Mortgage underwriting in the US



Mortgage underwriting in the US



Mortgage underwriting in the US



The pull from securitization

- As the value of AAA rises, more pools become profitable

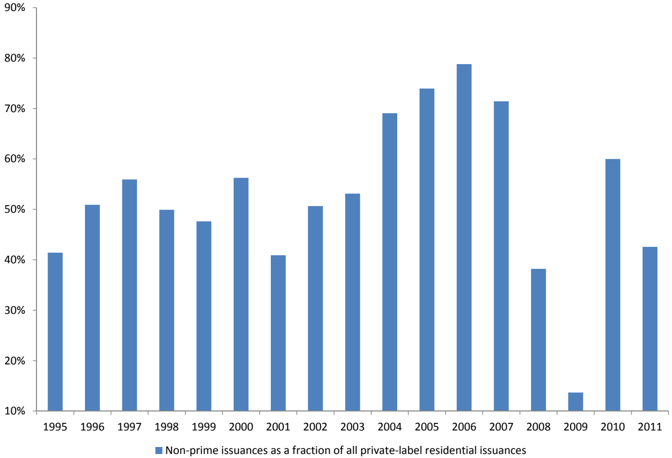
The pull from securitization

- As the value of AAA rises, more pools become profitable
- It becomes profitable, in particular, to fund mortgages that were not funded before

The pull from securitization

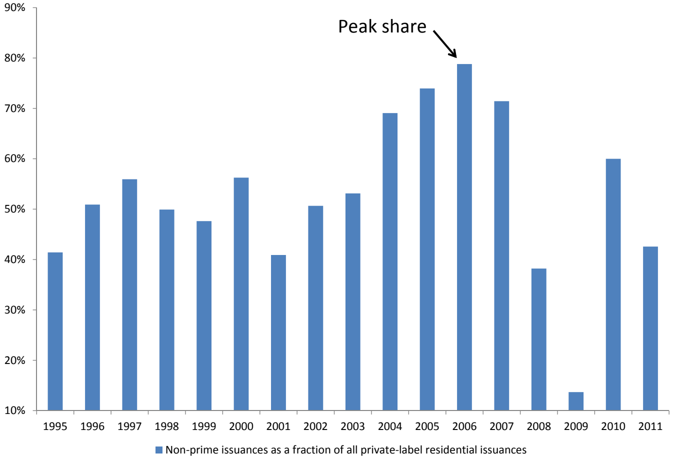
- As the value of AAA rises, more pools become profitable
- It becomes profitable, in particular, to fund mortgages that were not funded before
- Lending standards become relaxed

Private-label securitization relies on non-prime loans



Source: Inside Mortgage Finance

Private-label securitization relies on non-prime loans



Source: Inside Mortgage Finance

How Securitization Compounded the Foreclosure Crisis

Things people say

Securitization:

1. Reduces incentives for originators to do their homework

Things people say

Securitization:

1. Reduces incentives for originators to do their homework
2. Obfuscates risk

Things people say

Securitization:

1. Reduces incentives for originators to do their homework
2. Obfuscates risk
3. Gives investment banks the opportunity to mix bad loans into large pools

Things people say

Securitization:

1. Reduces incentives for originators to do their homework
2. Obfuscates risk
3. Gives investment banks the opportunity to mix bad loans into large pools
4. Is fraught with perverse incentives

What Dean Corbae and I say

- The rise of securitization caused/required a loosening of underwriting standards

What Dean Corbae and I say

- The rise of securitization caused/required a loosening of underwriting standards
- Loans with riskier features were extended to inherently riskier borrowers

What Dean Corbae and I say

- The rise of securitization caused/required a loosening of underwriting standards
- Loans with riskier features were extended to inherently riskier borrowers
- It boosted participation during the boom and boosted default rates during the bust

The experiment (Corbae-Quintin, 2010)

We describe and calibrate a model of housing and mortgage choice that captures key features of US housing markets

- A lowering of down-payment requirements:

The experiment (Corbae-Quintin, 2010)

We describe and calibrate a model of housing and mortgage choice that captures key features of US housing markets

- A lowering of down-payment requirements:
  1. enable riskier borrowers to get loans (the ***selection effect***)

The experiment (Corbae-Quintin, 2010)

We describe and calibrate a model of housing and mortgage choice that captures key features of US housing markets

- A lowering of down-payment requirements:
  1. enable riskier borrowers to get loans (the ***selection effect***)
  2. causes more loans to be upside-down after a price shock (the ***equity effect***)

The experiment (Corbae-Quintin, 2010)

We describe and calibrate a model of housing and mortgage choice that captures key features of US housing markets

- A lowering of down-payment requirements:
  1. enable riskier borrowers to get loans (the ***selection effect***)
  2. causes more loans to be upside-down after a price shock (the ***equity effect***)
- A price shock of 06-08 size causes default rates to double

The experiment (Corbae-Quintin, 2010)

We describe and calibrate a model of housing and mortgage choice that captures key features of US housing markets

- A lowering of down-payment requirements:
  1. enable riskier borrowers to get loans (the ***selection effect***)
  2. causes more loans to be upside-down after a price shock (the ***equity effect***)
- A price shock of 06-08 size causes default rates to double
- Holding lending standards the same, the spike falls by 42%

The Fall

Why did securitization collapse?

- With fewer residential mortgages around, mortgage-backed securitization was bound to shrink

To do for Corbae-Quintin (2012): model the possibility that securitizers wrongly forecast the worst-case scenario

Why did securitization collapse?

- With fewer residential mortgages around, mortgage-backed securitization was bound to shrink
- Private-sector mortgage securitization has all but vanished

To do for Corbae-Quintin (2012): model the possibility that securitizers wrongly forecast the worst-case scenario

Why did securitization collapse?

- With fewer residential mortgages around, mortgage-backed securitization was bound to shrink
- Private-sector mortgage securitization has all but vanished
- In part this is because the technology failed:

To do for Corbae-Quintin (2012): model the possibility that securitizers wrongly forecast the worst-case scenario

Why did securitization collapse?

- With fewer residential mortgages around, mortgage-backed securitization was bound to shrink
- Private-sector mortgage securitization has all but vanished
- In part this is because the technology failed:
  - Pools under-performed beyond worst-case expectations

To do for Corbae-Quintin (2012): model the possibility that securitizers wrongly forecast the worst-case scenario

Why did securitization collapse?

- With fewer residential mortgages around, mortgage-backed securitization was bound to shrink
- Private-sector mortgage securitization has all but vanished
- In part this is because the technology failed:
  - Pools under-performed beyond worst-case expectations
  - AAA, it turns out, was not AAA

To do for Corbae-Quintin (2012): model the possibility that securitizers wrongly forecast the worst-case scenario

Why did securitization collapse?

- With fewer residential mortgages around, mortgage-backed securitization was bound to shrink
- Private-sector mortgage securitization has all but vanished
- In part this is because the technology failed:
  - Pools under-performed beyond worst-case expectations
  - AAA, it turns out, was not AAA
  - Rating agencies misjudged the worst-case scenario

To do for Corbae-Quintin (2012): model the possibility that securitizers wrongly forecast the worst-case scenario

Lessons Learned

The new securitization model

- When securitization returns, the new model will (should?):

The new securitization model

- When securitization returns, the new model will (should?):
  1. align the incentives of the investment bank and investors (Overcollateralization + skin-in-the-game)

The new securitization model

- When securitization returns, the new model will (should?):
  1. align the incentives of the investment bank and investors (Overcollateralization + skin-in-the-game)
  2. align the incentives of rating agencies and investors

The new securitization model

- When securitization returns, the new model will (should?):
  1. align the incentives of the investment bank and investors (Overcollateralization + skin-in-the-game)
  2. align the incentives of rating agencies and investors
- The model will be more conservative for a while, so that AAA does mean AAA

Should we go farther?

- Some nations are considering curbing securitization activities

Should we go farther?

- Some nations are considering curbing securitization activities
- Securitization creates value by increasing the supply of securities in scarce supply and by tayloring cash-flows to the needs of heterogenous investors

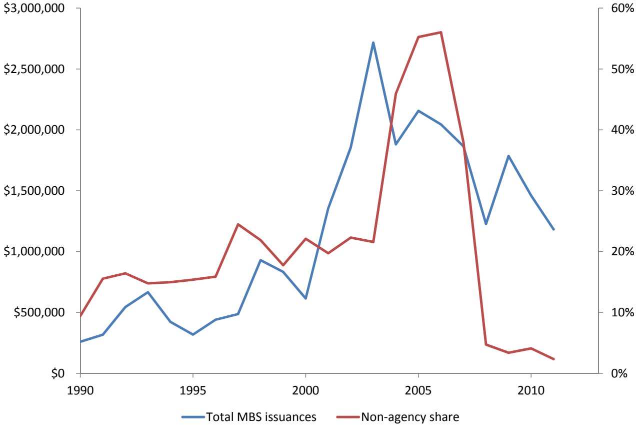
Should we go farther?

- Some nations are considering curbing securitization activities
- Securitization creates value by increasing the supply of securities in scarce supply and by tayloring cash-flows to the needs of heterogenous investors
- In principle, securitization also helps channel capital inflows to their most productive use

Should we go farther?

- Some nations are considering curbing securitization activities
- Securitization creates value by increasing the supply of securities in scarce supply and by tayloring cash-flows to the needs of heterogenous investors
- In principle, securitization also helps channel capital inflows to their most productive use
- Getting it right should be our goal

The rise and fall of securitization



Source: Inside Mortgage Finance

back