Monitoring GNMA/GSE Pipeline Liquidity

GSE Liquidity Working Group

Financial Research Advisory Committee

Office of Financial Research

Background on GNMA/GSE pipeline risks

- Secondary mortgage market is heavily federalized.
- GNMA/GSE securitization volume is now dominated by non-depository mortgage originators.
  - CFPB, HUD and state-level oversight – no stress testing.
  - Reliance on short-term bi-lateral repo funding.
  - **Short-run risks** – covenants on repo, slowing of mortgage refis (reduced fee income), underfunding for servicing advances, other balance sheet failures.
  - **Liquidity risk** – changes in forward markets, (hedging costs), repo pricing. **Systemic risk** – Repo runs (short-run triggers and BAPCPA 2005), mortgage fire sales, unfunded rep and warranty guarantees, risk to origination capacity.

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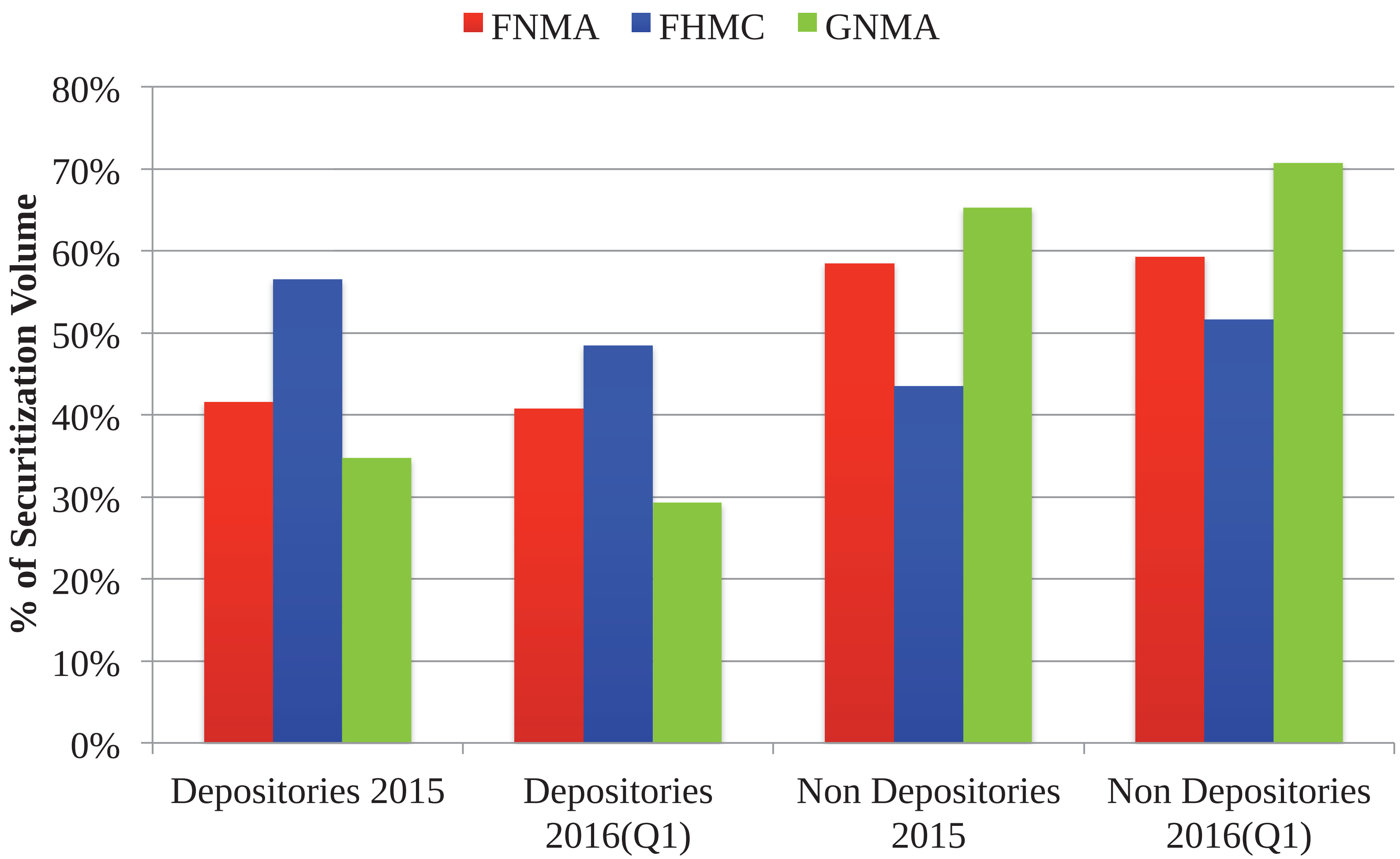
Importance of Non-Depository Origination for GSE and GNMA Securitization



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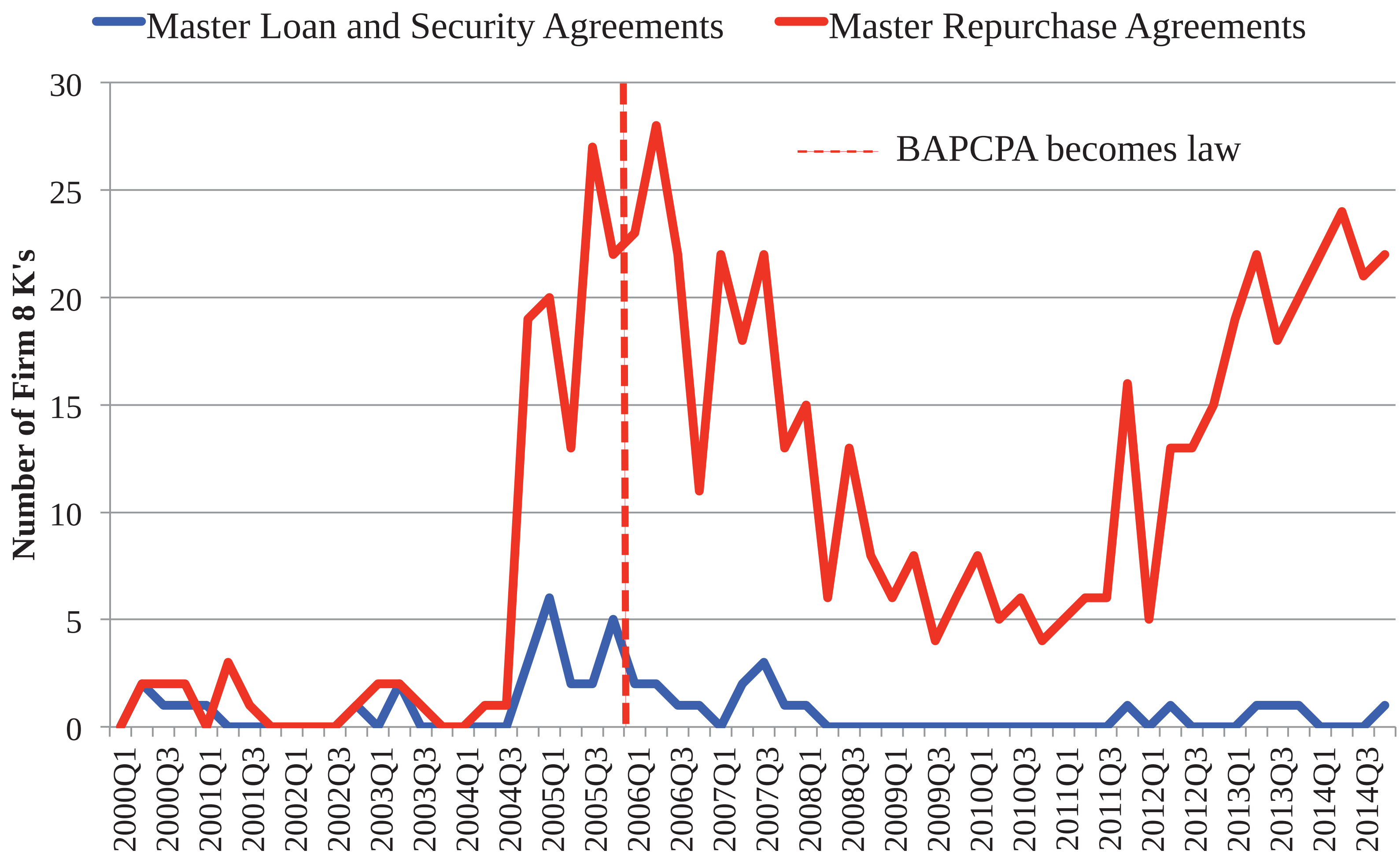
Source: Inside Mortgage Finance

Post BAPCPA(2005): Dominance of Master Repurchase Agreements



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Source: SEC Edgar

Dominant Non-Depository Funding Facility: Mortgage Repurchase Agreements

- **Summary of Contract Structures:**
  - Strict capital and accounting covenants.
  - Significant roll-over risk (short term maturities).
  - Often highly concentrated repo buyer exposure.
  - Risk of haircuts and dynamic margins.
  - **Exempt from automatic stay under BAPCPA 2005 (repo buyer holds perfected mortgage collateral).**
  - Rep and warranty risk resides with originator (repo seller with little capital).
  - Mortgage servicing positions at risk: liquidity needs for advances.

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Source: Bellicha, Stanton, Wallace, 2016.

Pre-Crisis Outcomes for Top Forty Originators in 2006

Firm Type	Originations as % of Total	% of Firm Originations with MRAs	% of Firm Failures[1.]
Commercial banks	38.0%	0.0%	0.0%
Federal Savings Banks	1.9%	60.6%	66.7%
Savings and Loans	29.0%	64.8%	100.0%
Affiliated Mortgage Companies	12.7%	100.0%	89.0%
Independent Mortgage Companies	3.5%	84.0%	66.7%
Real Estate Investment Trusts	10.7%	100.0%	100.0%

1. Supervisory closure, Chapter 11 closure, distressed closure.

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Source: Stanton, Walden, and Wallace, 2014.

Systemic Risks

- **Repo buȳer runs** – rapid loss of mortgage origination capacity, mortgage fire sales.
- **Unfunded rep and warranty guarantees** – risks to GNMA/GSEs.
- **Un-priced liquidity provided by GNMA/GSEs** – repo is a bet on securitization speeds.

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Pipeline Risk Metrics for Systemic and Short Term Risk

1. **Monitor the Y-14 data** for the size of the mortgage warehouse lines and counterparty concentration among bank holding companies.
2. **Work with HUD** to monitor the repo counterparty concentration, covenants, and roll over risk for originators who sell to GNMA.
3. **Work with FHFA/U.S. Treasury** to monitor the repo counterparty concentration, covenants, and roll over risk for originators who sell to the GSEs.
4. **Monitor the haircuts, margins, and coupons** of bilateral mortgage repo (Form PF) for market trends – not directly related to MRAs.
5. **Monitor the Nationwide Mortgage Licensing System, Mortgage Call Report,** data collected under the S.A.F.E. Act by CFPB and state mortgage regulators.

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GNMA/GSE Pipeline Risk Oversight Questions?

1. What is the aggregate counter party funding risk exposure of GNMA and the GSEs?
2. What is the nature of the capital at risk for the reps and warranties on the loans?
3. What are the covenants on the MRAs and how do they compare with the GNMA and GSE covenants?
4. How would the non-depository mortgage originators behave in a stress scenario?
5. How “run-proof” are the GNMA/GSE counterparty funding structures (haircut and margin dynamics)?

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Proposed Metrics for TBA Market Liquidity

- **Trading Volume:** Trade frequency, Transaction volume.
- **Turnover Rate:** (\$ Volume of trades)/(Stock of Securities×Average price of all trades).
- **Bid-Ask spreads.**
- **Price Impact:** Amihud type measures (absolute value of daily returns/daily volume).
- **Duration, OAS.**
- **Dollar roll specialness:** Implied financing rate relative to the prevailing interest rate

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TBA Oversight Questions

- What are the apparent reasons for the decline in TBA liquidity?
  - Importance of shifts in ownership pattern (“buy and hold” due to QE and increased bank holdings)?
  - Reduced dealer willingness to make markets – effect of Dodd-Frank and Basel III?
  - Reductions in GSE retained portfolio?
  - What are the economic factors associated with TBA dollar roll specialness?

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Conclusions

- Significant pipeline risk exposure for GNMA and GSEs.
  - Dominance of imperfectly monitored bi-lateral repo funding.
  - Importance of risk segmentation between repo buyers and sellers.
- Need to monitor the pipeline risks: aggregate funding positions, MRA (haircuts, margins covenants), funding for reps and warranties and servicing advances, run-risk of repo buyers.
- Need to monitor the liquidity of the forward markets: hedging and trading.

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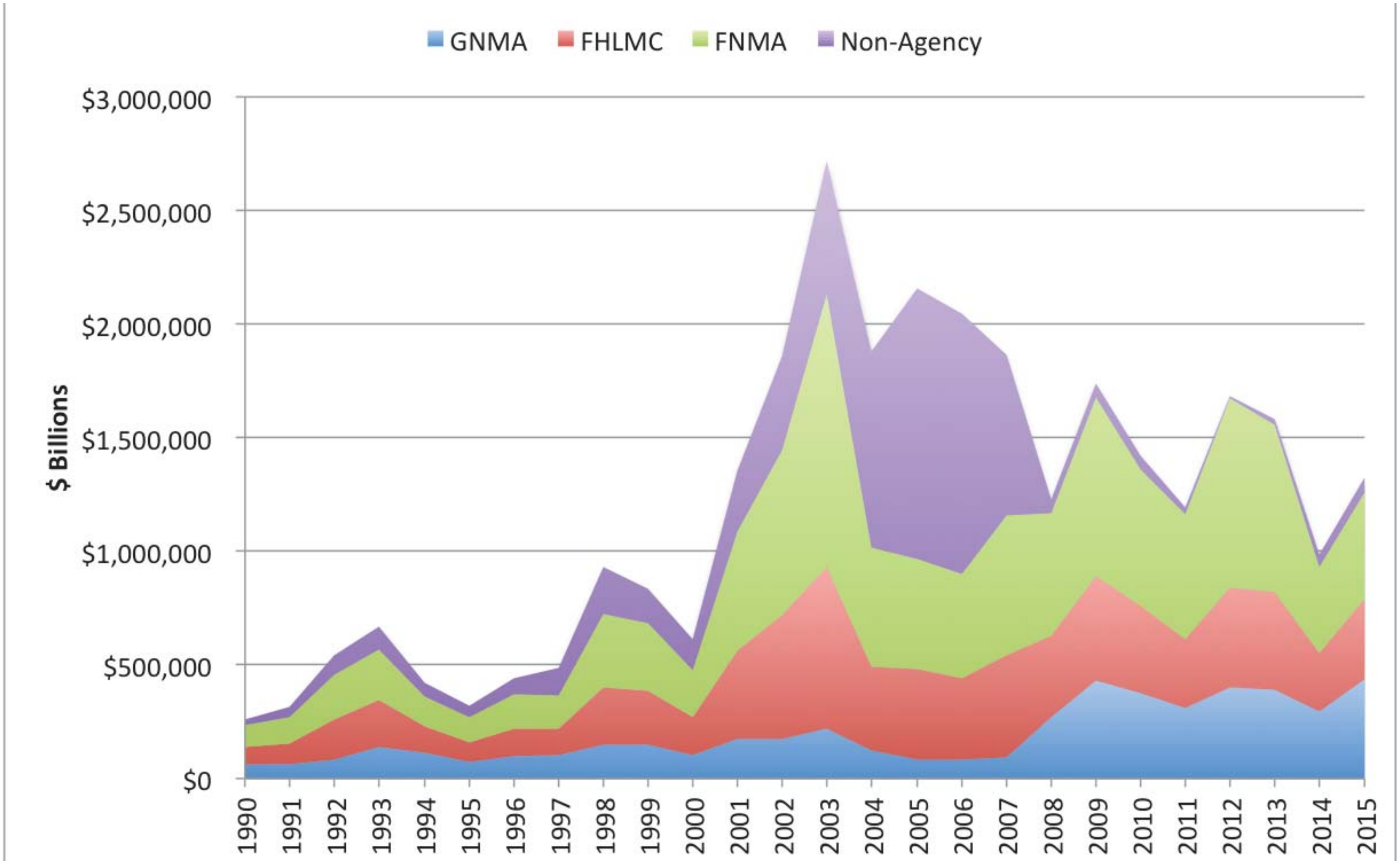
Background Data

Federalization of Secondary Residential Mortgage Market



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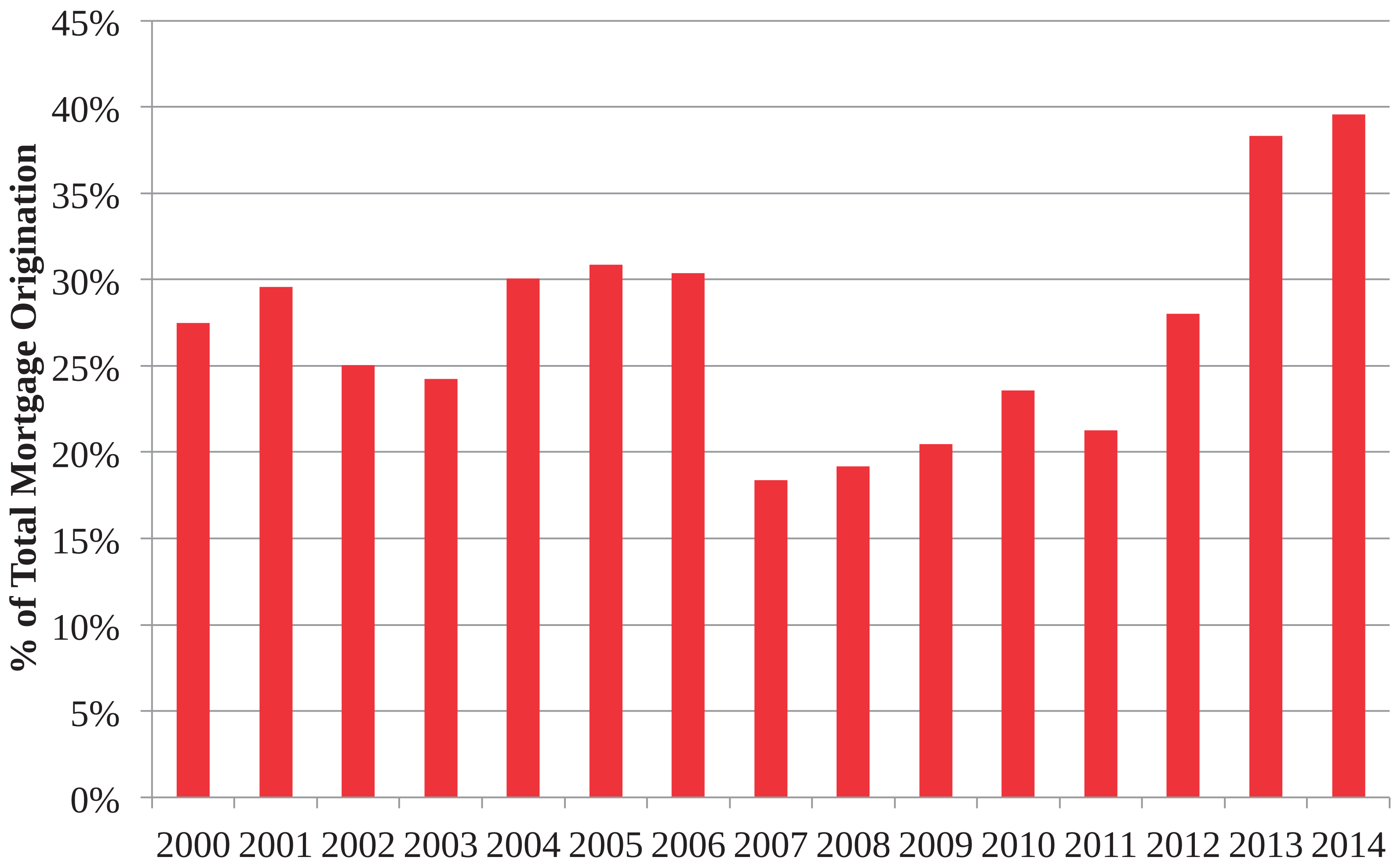
Source: Inside Mortgage Finance, 2016

Importance of Non-depository Mortgage Origination

(% Non-depository Origination to Total U.S. Origination)



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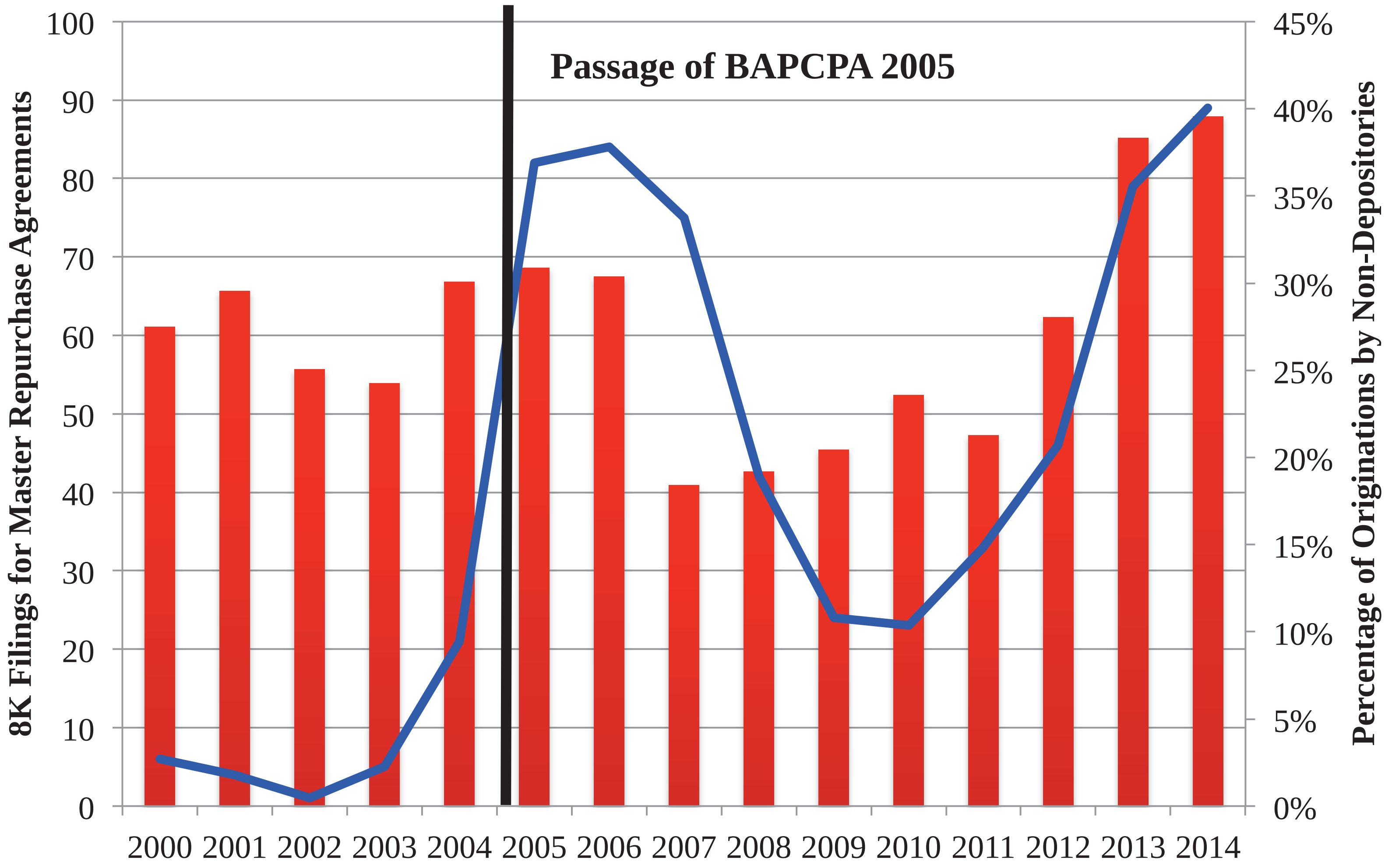
Source: HMDA

8-K Recorded MRA filings and Non-Depository Origination Share



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Source: HMDA, SEC Edgar

Current: Top public independent mortgage companies are heavily reliant MRAs (< 364 day roll overs)

Firm	Moody's Credit Rating	Secured Debt/Gross Tangible Assets Q12016
PHH Mortgage, Inc.	Ba3	22.5%
Provident	B1	33%
PNMAC	B1	37.9%
New Resi	B1	73%
PMT	B1	62%
Walter	B3	85%
Ocwen	B3	75%

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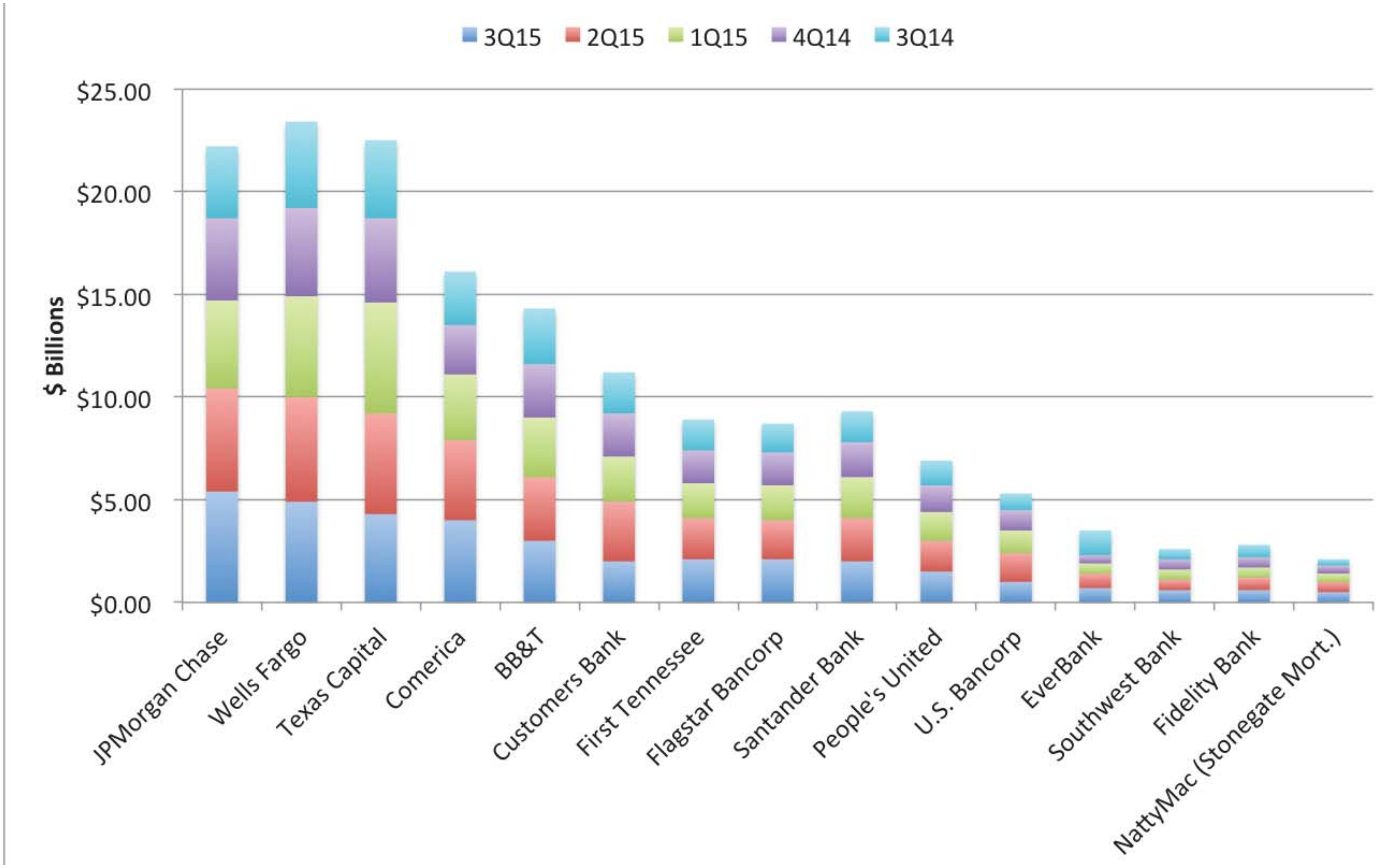
Source: Moody's Investment Services

Current: Concentrated Repo Commitment Market – Excluding Private Equity/Hedge Funds



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Source: Inside Mortgage Finance

<u>Pre-crisis:</u> New Century Committed MRAs (December 2005)

- **Warehouse Lenders (MRAs) -- TOTAL $14.35B**
  - Bank of America, N.A. - $3B
  - Barclays Bank, PLC - $1B
  - Bear Stearns Mortgage Capital - $800M
  - Citigroup Global Markets Reality Corporation -$1.2B
  - Credit Suisse First Boston Capital, LLC - $1.5B
  - Deutsche Bank - $1B
  - IXIS Real Estate Capital, Inc - $850M
  - Morgan Stanley Mortgage Capital Inc. - $3B
  - UBS Real Estate Securities Inc. - $2B
- **Off-Balance Sheet (SIV) Borrowing -- TOTAL $2B**
  - Von Karman Funding Trust - $2B

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Source: SEC Edgar, New Century 10-Q, Q4

<u>Current:</u> MRA Structure for Third Largest Lender – Penny Mac Mortgage Investment Trust

	Commited	Net Capacity
• Credit Suisse First Boston	$858,021,000	$752,000
• Citibank	$824,003,000	0
• Bank of America, NA	$568,850,000	0
• JPMorgan Chase & Co	$543,313,000	$136,000
• Morgan Stanley Bank, NA	$252,082,000	$462,000
• Daiwa Capital Markets	$178,994,000	$80,000
• Barclays Capital	$12,379,000	$239,000
• BNP Paribas	$10,122,000	0
• Fannie Mae Capital Markets	$5,863,000	$5,863,000
• Deutsche Bank	$784,000	$784,000
• Goldman Sachs	$262,000	$262,000
• Other	$656,000	$655,000
• Unamortized debt issuance costs	($1,081,000)	
Total	**$3,258,502,000**	**$13,488,000**

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Source: PNMC 10-Q 2016:Q1