

# Risk Layering

## GSE Credit Risk Transfer Securities - Part II

April 2017

Recently, we discussed the superior credit profile and performance of the Credit Risk Sharing deals' ("CRT") reference pools. We used FBC's Housing Credit Index to illustrate the fact that the quality of mortgage origination remains extremely high, despite the marginal increase in credit availability.

To provide a comprehensive risk assessment, we have also looked into the prevalence of combining several higher risk features on a single loan (i.e. low FICO score, low down payment, and high DTI), also known as "risk layering". Understanding risk layering trends in CRT deals allows us to better understand the tail risk profile of the underlying collateral and project potential collateral losses more accurately. It's worth noting however, that Agencies heavily scrutinize high risk loans and require the lenders to offer mitigating factors to support their underwriting decisions, possibly diminishing the threat to credit underperformance.

### Recent Trends

As one possible measure, FBC identified a combination of three loan features that, based on historical default performance (please reference Appendix A), are considered to be high risk.

Loans in Low LTV CRT deals, for instance, are considered to have risk layering if they have the following characteristics:

- **LTV  $\geq$ 75%, FICO below 680 and DTI above 43%.**

The share of low LTV loans that exhibit characteristics with risk layering in CRT deals has minimally increased over the past two years. The overall level remains extremely low (as depicted in Figures 1 and 2) at around 1% of reference pools.

Figure 1. 2016-2017 Low LTV Fannie Mae deals (CAS)

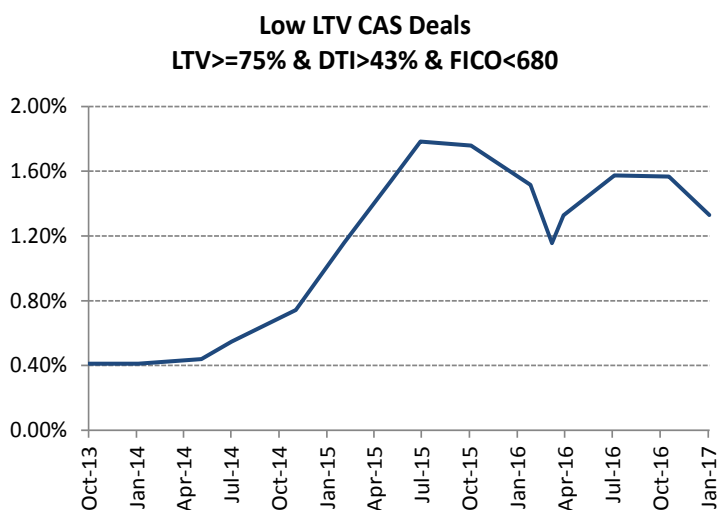
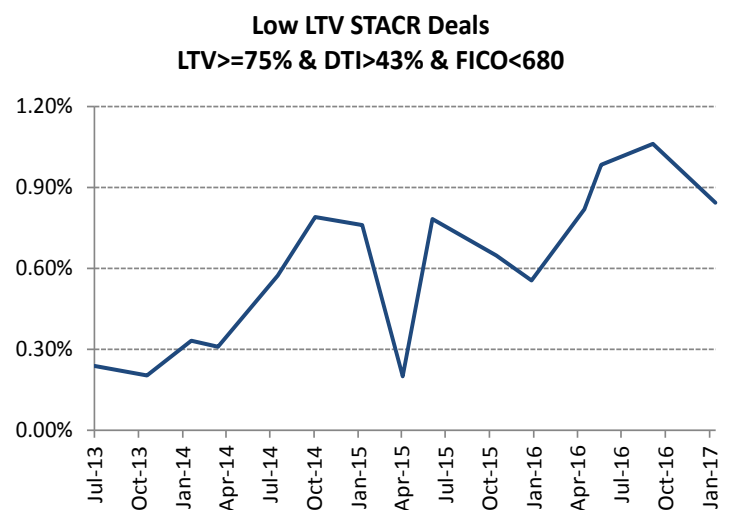


Figure 2. 2016-2017 Low LTV Freddie Mac deals (STACR)



Similarly, loans in High LTV CRT deals are deemed to have risk layering if they have the following characteristics:

- **LTV >=87.5%, FICO below 680 and DTI above 43%.**

Again, as illustrated by Figures 3 and 4, loans with the identified high risk features are rarely present in the new production, averaging 1% in 2016-2017 issuance. Deal level exposure to risk layering can be found in Appendix B.

Figure 3. 2016-2017 High LTV Fannie Mae deals (CAS)

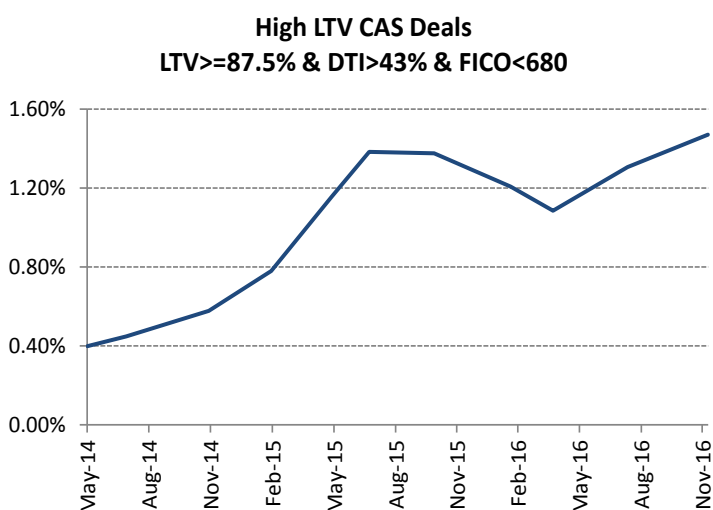
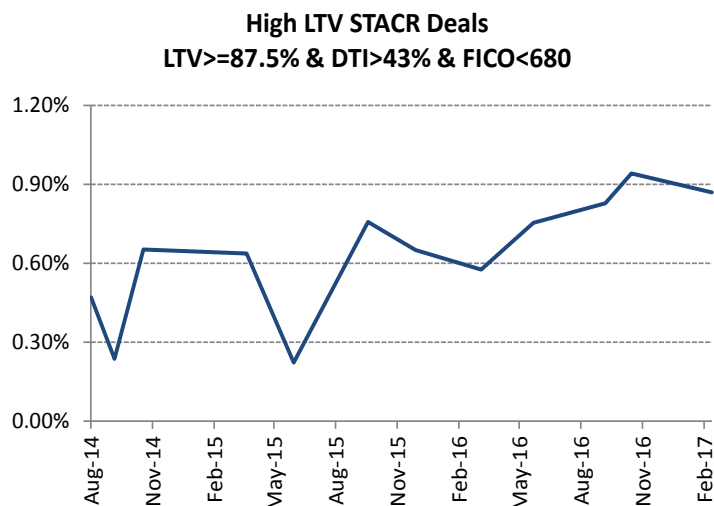


Figure 4. 2016-2017 High LTV Freddie Mac deals (STACR)



### Historical Perspective

Currently observed risk layering is negligible when compared to historical norms. The share of Fannie Mae originated loans, highlighted in the tables below, with LTVs above 70% and FICOs below 680 totaled 22% between 2000 and 2004, while deals recently issued (2016-2017) have only 6% exposure to this type of collateral. See Figures 5 and 6.

Figure 5. The below table illustrates the percentage of Fannie Mae's loans originated between 2000 and 2004 that fall within the specified FICO and LTV ranges. These vintages represent normal housing based on their credit quality and performance.

#### 2000 - 2004 Origination: FNMA 30 year

FICO Range	LTV Range			
	<70	=>70 <80	=>80 <90	=>90 <100
<620	1.34%	1.52%	1.37%	1.09%
=>620 <640	1.05%	1.34%	1.47%	1.26%
=>640 <660	1.46%	1.84%	2.26%	1.82%
=>660 <680	1.94%	2.40%	3.03%	2.23%
=>680 <700	2.48%	2.75%	3.45%	2.45%
=>700 <720	3.00%	2.99%	3.59%	2.40%
=>720 <740	3.37%	3.16%	3.73%	2.33%
=>740 <760	4.28%	3.48%	3.90%	2.18%
=>760 <780	5.25%	3.37%	3.44%	1.54%
=>780	4.65%	2.15%	1.96%	0.69%

Source: Fannie Mae

Figure 6. The narrow credit box of 2016-2017 Fannie Mae's issuance (CAS) relative to the 2000-2004 origination suggests today's borrowers are still subject to tight lending standards of unprecedented levels.

#### 2016 - 2017 CAS Deals

FICO Range	LTV Range			
	<70	=>70 <80	=>80 <90	=>90 <100
<620	0.01%	0.02%	0.00%	0.01%
=>620 <640	0.23%	0.56%	0.12%	0.17%
=>640 <660	0.40%	1.08%	0.28%	0.40%
=>660 <680	0.61%	2.03%	0.52%	0.82%
=>680 <700	0.92%	3.15%	1.12%	1.76%
=>700 <720	1.19%	4.63%	1.47%	2.21%
=>720 <740	1.47%	5.44%	1.89%	2.98%
=>740 <760	1.85%	7.04%	2.38%	3.46%
=>760 <780	2.66%	9.48%	2.81%	3.66%
=>780	5.35%	17.36%	4.06%	4.34%

Source: CoreLogic

It is important to note, however, that there are subtle changes to the loan programs provided by the Agencies that may require ongoing monitoring. For instance, the newly released Fannie Mae program, HomeReady, allows LTVs up to 97% for a specific subset of low-to-moderate income borrowers and allows for lower Mortgage Insurance (MI) coverage to improve affordability. Based on the information offered by Fannie Mae, they typically require MI coverage of 25% for 90-97% LTV loans in this program, lower than the standard coverage of 30-35%. This may result in higher realized losses and thus adversely affect credit securities. At this time, the exposure to these types of loans is insignificant. Additionally, the MI coverage on loans with 90-97% LTV has been stable since 2014, see Figure 7.

*Figure 7. MI Coverage on loans with the highest LTVs (90-97%) remains unchanged, suggesting that changes to select mortgage offerings are affecting only a handful of loans.*

<b>Mortgage Insurance Coverage</b>	
<b>Deal</b>	<b>WA MI%</b>
CAS-2014-C2-P2	28.5%
CAS-2014-C3-P2	28.8%
CAS-2014-C4-P2	28.8%
CAS-2015-C1-P2	28.9%
CAS-2015-C2-P2	28.7%
CAS-2015-C3-P2	28.4%
CAS-2015-C4-P2	28.4%
CAS-2016-C1-P2	28.3%
CAS-2016-C3-P2	28.4%
CAS-2016-C5	28.3%
CAS-2016-C7	28.3%
CAS-2017-C2	28.2%

## **Conclusion**

The additional analysis of the prevalence of risk layering confirms that recent mortgage production is superior and definitely less risky than previous originations. This reinforces the notion that the reference pools of the CRT deals continue to be underwritten to historically tight standards and pose limited credit risk. FBC continues to extensively monitor various measures of risk layering to differentiate pool risk as well as determine bond pricing and security selection.

The below matrix illustrates the actual Default Rate (%) for Agency mortgage loans originated between 2001 and 2002 across DTI, LTV and FICO cohorts.

DTI	LTV	FICO					
		>740	(700-740]	(660-700]	(620-660]	(580-620]	<=580
(0-30)	(0-68]	0	0	1	3	5	11
(0-30)	(68-78]	0	1	2	3	7	12
(0-30)	(78-82)	0	1	2	3	6	10
(0-30)	[82-90]	1	1	2	5	9	13
(0-30)	(90-95]	1	2	4	8	12	16
(0-30)	above 95	3	5	9	17	31	43
[30-40)	(0-68]	0	1	1	3	5	9
[30-40)	(68-78]	0	1	2	4	7	12
[30-40)	(78-82)	0	1	2	4	6	11
[30-40)	[82-90]	1	1	3	5	9	14
[30-40)	(90-95]	1	2	4	7	11	14
[30-40)	above 95	3	5	8	17	29	43
[40-50)	(0-68]	0	1	2	3	4	8
[40-50)	(68-78]	1	1	2	4	7	12
[40-50)	(78-82)	1	1	2	4	7	12
[40-50)	[82-90]	1	2	3	5	10	15
[40-50)	(90-95]	2	2	4	8	12	15
[40-50)	above 95	3	5	9	18	29	44
50 & above	(0-68]	0	1	1	3	5	8
50 & above	(68-78]	1	1	2	3	6	12
50 & above	(78-82)	1	1	2	4	6	8
50 & above	[82-90]	1	2	4	6	9	14
50 & above	(90-95]	2	3	5	8	14	17
50 & above	above 95	4	6	8	15	20	20

Source: Urban Institute, November 2014

## Deal level (2016-2017 issuance) exposure to low and high LTV loans with risk layering.

Low LTV Deals: Risk Layering Exposure			High LTV Deals: Risk Layering Exposure		
Deal	Date	LTV>=75% & DTI>43% & FICO<680	Deal	Date	LTV>=87.5% & DTI>43% & FICO<680
CAS 2014-C01	Jan 2014	0.4%	CAS 2014-C02 2	May 2014	0.4%
STACR 2014-DN1	Feb 2014	0.3%	CAS 2014-C03 2	Jul 2014	0.4%
STACR 2014-DN2	Apr 2014	0.3%	STACR 2014-HQ1	Aug 2014	0.5%
CAS 2014-C02 1	May 2014	0.4%	STACR 2014-HQ2	Sep 2014	0.2%
CAS 2014-C03 1	Jul 2014	0.5%	STACR 2014-HQ3	Oct 2014	0.7%
STACR 2014-DN3	Aug 2014	0.6%	CAS 2014-C04 2	Nov 2014	0.6%
STACR 2014-DN4	Oct 2014	0.8%	CAS 2015-C01 2	Feb 2015	0.8%
CAS 2014-C04 1	Nov 2014	0.7%	STACR 2015-HQ1	Mar 2015	0.6%
STACR 2015-DN1	Feb 2015	0.8%	CAS 2015-C02 2	May 2015	1.2%
CAS 2015-C01 1	Feb 2015	1.2%	STACR 2015-HQ2	Jun 2015	0.2%
STACR 2015-DNA1	Apr 2015	0.2%	CAS 2015-C03 2	Jul 2015	1.4%
CAS 2015-C02 1	May 2015	1.5%	STACR 2015-HQA1	Sep 2015	0.8%
STACR 2015-DNA2	Jun 2015	0.8%	CAS 2015-C04 2	Oct 2015	1.4%
CAS 2015-C03 1	Jul 2015	1.8%	STACR 2015-HQA2	Dec 2015	0.7%
CAS 2015-C04 1	Oct 2015	1.8%	CAS 2016-C01 2	Feb 2016	1.2%
STACR 2015-DNA3	Nov 2015	0.6%	STACR 2016-HQA1	Mar 2016	0.6%
STACR 2016-DNA1	Jan 2016	0.6%	CAS 2016-C03 2	Apr 2016	1.1%
CAS 2016-C01 1	Feb 2016	1.5%	STACR 2016-HQA2	Jun 2016	0.8%
CAS 2016-C02 1	Mar 2016	1.2%	CAS 2016-C05 2	Aug 2016	1.3%
CAS 2016-C03 1	Apr 2016	1.3%	STACR 2016-HQA3	Sep 2016	0.8%
STACR 2016-DNA2	May 2016	0.8%	STACR 2016-HQA4	Oct 2016	0.9%
STACR 2016-DNA3	Jun 2016	1.0%	CAS 2016-C07 2	Dec 2016	1.5%
CAS 2016-C04 1	Jul 2016	1.6%	STACR 2017-HQA1	Feb 2017	0.9%
STACR 2016-DNA4	Sep 2016	1.1%			
CAS 2016-C06 1	Nov 2016	1.6%			
CAS 2017-C01 1	Jan 2017	1.3%			
STACR 2017-DNA1	Feb 2017	0.8%			

**For questions or additional information, please contact:**

Sunil Chowdry, CFA

schowdry@falconbridgecapital.com

(925) 979-4280

Ricky Patel

rpatel@falconbridgecapital.com

(925) 979-4290

Aga Linsky

alinsky@falconbridgecapital.com

(925) 979-4291

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