Online Appendix

1. Addressing Scaling Issues

In this section, we rerun our main test with alternative proxies for the effect of revolving rating analysts. We first address the possibility that our main measure of interest, *Log of Rating Experience*, may mechanically correlate with the size of issuers' structured finance divisions. Note that our main analyses have included an issuer's share in MBS/ABS markets (*Market Share*) in the regression to capture the impact of the size of the issuer's securitization business. To further mitigate the concern that the size effect drives our results, we scale the total rating experience of revolving rating analysts by different size variables, including: 1) the number of deals sold by the issuer in the current quarter (*Log of Rating Experience Scaled by Deal*), and 2) the total principal amount of the deals sold by the issuer in the current quarter (*Log of Rating Experience Scaled by Volume*). We rerun model (1) with these scaled measures and find that both measures are positively associated with subsequent MBS/ABS rating downgrades. We also use the total number of employees of the issuer as a proxy for issuer size. The majority of issuers in our sample report their annual number of employees in *Compustat* (data item: EMP). We rerun model (1) after scaling *Log of Rating Experience* by the issuer's total number of employees (*Log of Rating Experience Scaled by Employees*) and find that this scaled measure is still positively associated with subsequent MBS/ABS rating downgrades.

Second, we exploit the information in revolving rating analysts' individual rating experiences. In an extreme scenario where any time an issuer hires a revolving rating analyst with structured finance rating experience it also hires another specialist with a structured finance background from non-rating agencies. Under this scenario, the number of revolving

rating analysts would perfectly correlate with the number of other structured finance specialists employed by the issuer. To mitigate this concern, we calculate the *average* rating experience of revolving rating analysts for each issuer-quarter (*Log of Average Rating Experience*). This scaled measure should be less correlated with characteristics of other employees hired by the issuer because only revolving rating analysts have rating experience and such experience is idiosyncratic to each analyst.[1] We rerun model (1) with this scaled measure instead of *Log of Rating Experience*. We find that this measure is also positively associated with subsequent MBS/ABS downgrades. Table A1 reports the results and show that our inferences are robust to using various modifications of *Log of Rating Experience*. These tests also mitigate the concern that our findings are confounded by issuer size or issuers' hiring of other specialists who are not revolving rating analysts.

2. Complexity measures and loan-level characteristics

In this section, we report robustness tests that control for additional deal complexity measures and loan-level characteristics. In our main analyses, we include the number of tranches as a proxy for deal complexity following recent literature (He et al. 2012, Efing and Hau 2015, Furfine 2014). Kempf (2016) proposes two new complexity measures, *Low Documentation* and *Absolute Credit Score Skewness*. She argues that a tranche with low documentation or with high absolute credit score skewness is more complex. [2] To see if our results are driven by the potential measurement errors in our original deal complexity measure, we include these new measures of deal complexity and report the results in Table A2. For brevity, we include all the

[1] Ideally, we could more accurately estimate the effect of revolving rating analysts if we know who design which deals. However, such information is not publicly available.

[2] Note that Kempf (2016) uses these complexity measures only to partition deals and does not include them as the control variables in the main regression.

control variables reported in Table 5 but do not tabulate them in the Table A2. We find that the coefficients on *Log of Rating Experience* remains significantly positive in both the AAA and non-AAA subsamples, even though including these two variables significantly reduces our sample size due to missing values.

To mitigate the concern that omitted correlated loan-level characteristics drive our results, we rerun the main test after including loan-to-value ratio and borrowers' average credit scores. Including loan-level variables also significantly reduces our sample size because of missing values in the *Bloomberg* database. It may create an over-controlling problem because revolving rating analysts may help issuers manipulate the structure or the terms of the deals to obtain inflated ratings. Nevertheless, we report the results in Table A2 and the coefficient on average credit score is positively associated with rating downgrade only in the AAA subsample. More importantly, the coefficients on *Log of Rating Experience* remain significantly positive in both subsamples.

3. Additional Tests

In this section, we discuss additional analyses that address miscellaneous issues involving other model and variable specifications. First, we examine whether our main results are robust to using an ordered logit estimation instead of an OLS estimation. Because *Downgrade* measures the difference between the initial rating and current rating (ranging from 0 to 21), it behaves more like a continuous variable. As a result, we transform this variable by grouping securities into bins within each three-notch interval ($Downgrade_{ordered}$) and report the results in Table A3. Columns (1) and (2) show that the coefficients on *Log of Rating Experience* are significantly positive in both the AAA and non-AAA subsamples.

Second, we try excluding tranches that are paid in full or tranches whose ratings are withdrawn, or only use the number (not the collective rating experience) of revolving rating analysts. Columns (3) and (4) of Table A3 report the results when we exclude tranches that are paid in full or with ratings withdrawn. Columns (5) through (8) show the results when we use the logarithm of the number of revolving rating analysts with structured finance experience or assign more weight to those analysts with postgraduate degrees (i.e., MBA or Ph.D.). Our inferences remain the same.

Third, columns (9) and (10) in Table A3 report an analysis inspired by deHaan et al. (2015) to control for the endogeneity of issuers' hiring of revolving rating analysts if issuer characteristics that drive their hiring of revolving rating analysts also affect their MBS/ABS rating inflation. Specifically, we use the residual from the estimation reported in column (6) of Table 3 that analyzes issuers' hiring of revolving rating analysts with structured finance experience. When we replace *Log of Rating Experience* with this residual as the independent variable in our main regression analysis, our inferences based on Columns (9) and (10) in Table A3 are similar to those in Table 5.[3]

4. Rating migration and definitions

Table A4 reports the rating migration from initial ratings to current ratings (as of February 2013 when we first collected our data) for our MBS/ABS sample. We find that about 56-61% of the tranches receive an initial AAA rating from the three rating agencies. In addition, a substantial portion of the tranches experiences subsequent downgrades. For example, 43% of the tranches with an initial AAA rating and 73% of tranches with an initial non-AAA rating

[3] Our results are not sensitive to which estimations we select from Table 3 to generate the residual value of *Log of Rating Experience*.

from Fitch experience downgrade of one or more notches (Panel A, Table 4). 22% to 30% of tranches with non-default initial ratings are eventually downgraded to default (DD, D) across the three rating agencies. Table A5 provides the rating definitions and their numerical translations.

References

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Table A1

Addressing Scaling Issues

This table reports the results of regressing subsequent rating downgrades (*Downgrade*) on four scaled measures of the effect of revolving rating analysts and other issuer-level, deal-level, and tranche-level characteristics. *Log of Rating Experience Scaled by Deal* is constructed as the natural logarithm of [(one plus *Rating Experience*) divided by the number of deals sold by the issuer during the quarter when an MBS/ABS deal is issued]. *Log of Rating Experience Scaled by Volume* is constructed as the natural logarithm of [(one plus *Rating Experience*) divided by the total dollar amount of issuances (in $ billions) sold by the issuer during the quarter when an MBS/ABS deal is issued]. *Log of Rating Experience Scaled by Employee* is constructed as the natural logarithm of [(one plus *Rating Experience*) divided by the number of employees of the issuer (in thousands) during the year when an MBS/ABS deal is issued]. *Log of Average Rating Experience* is constructed as the natural logarithm of (total rating experience of revolving rating analysts divided by the number of analysts), and is assigned zero if the issuer does not have any revolving rating analysts during the quarter when an MBS/ABS deal is issued. For brevity, all the control variables in Table 5 are included in the regression but not tabulated. In parentheses are *t*-statistics based on standard errors clustered by issuer and by issuance year-quarter. ***, **, and * indicate the significance level at 1%, 5%, and 10%.

	AAA Tranches				Non-AAA Tranches			
Log of Rating Experience Scaled by Deal	0.43***				0.39***			
	(2.64)				(3.52)			
Log of Rating Experience Scaled by Volume		0.40***				0.39***		
		(2.60)				(4.14)		
Log of Rating Experience Scaled by Employee			0.46***				0.40***	
			(2.91)				(3.94)	
Log of Average Rating Experience				0.62***				0.46***
				(3.74)				(2.71)
Initial Rating Fixed Effects					✓	✓	✓	✓
Issuer Fixed Effects	✓	✓	✓	✓	✓	✓	✓	✓
Issuance Year × Quarter Fixed Effects	✓	✓	✓	✓	✓	✓	✓	✓
N	52,672	52,672	50,839	52,672	30,409	30,409	29,638	30,409
adj. R^2	0.62	0.62	0.62	0.62	0.55	0.55	0.55	0.55

Table A2

Including More Complexity Measures and Loan-level Variables

This table reports the results of our main test (Table 5) when we include more complexity measures and loan-level variables in the regression. The new complexity measures include *Low Documentation* and *Absolute Credit Score Skewness*; both are from Kempf (2016). *Low Documentation* is defined as the average percentage of loans with no or only partial documentation (on the borrower's income, assets, occupation, etc.) in the underlying collaterals. *Absolute Credit Score Skewness* is defined as the absolute value of the credit score skewness of the underlying collaterals. Other loan-level variables we include are *Loan-to-value* and *Credit Score*. *Loan-to-value* is defined as the average loan-to-value ratio of the underlying collaterals. *Credit Score* is defined as the average FICO score of the borrowers. For brevity, all the control variables in Table 5 are included in the regression but not tabulated. In parentheses are *t*-statistics based on standard errors clustered by issuer and by issuance year-quarter. ***, **, and * indicate the significance level at 1%, 5%, and 10%.

	AAA Tranches			Non-AAA Tranches		
Log of Rating Experience	0.69***	0.48**	0.66***	0.61***	0.41***	0.56***
	(3.32)	(2.14)	(3.14)	(4.60)	(2.67)	(3.65)
Low Documentation	0.04***		0.03***	0.001		0.003
	(6.09)		(6.47)	(0.26)		(0.51)
Absolute Credit Score Skewness	1.80***		1.37**	-2.47***		-2.67***
	(2.95)		(2.20)	(-3.39)		(-3.54)
Loan-to-value		0.01	0.02		-0.019	0.005
		(0.87)	(1.47)		(-1.10)	(0.44)
Credit Score		0.03***	0.03***		-0.007	-0.004
		(3.01)	(3.66)		(-1.21)	(-0.76)
Other Control Variables	✓	✓	✓	✓	✓	✓
Initial Rating Fixed Effects				✓	✓	✓
Issuer Fixed Effects	✓	✓	✓	✓	✓	✓
Issuance Year × Quarter Fixed Effects	✓	✓	✓	✓	✓	✓
N	29,101	34,302	26,988	17,005	17,597	15,418
adj. R^2	0.58	0.65	0.59	0.36	0.58	0.37

Table A3

Robustness Tests Based on Alternative Models and Variable Specifications

The table reports the results of other robustness tests. In columns (1) and (2), we rerun our main test (originally reported in Table 5) with the ordered logit model. The dependent variable is *Downgrade* $_{ordered}$, a categorical variable constructed by grouping securities into bins with a 3-notch interval, ranging from 0 to 7. Specifically, *Downgrade* $_{ordered}$ is coded as 0 if *Downgrade* equals 0, 1 if *Downgrade* is between 1 and 3, 2 if *Downgrade* is between 4 and 6, and so on. Column (3) to (4) report the results after excluding securities that have been paid in full or whose ratings have been withdrawn. Columns (5) through (8) report the regression results using the total number of revolving analysts (*Log of Number of Analysts*) or the total number of revolving analysts weighted by their education levels *(Log of Number of Analysts* $_{Education}$). *Log of Number of Analysts* is defined as the natural logarithm of (one plus the number of revolving rating analysts with structured finance experience who work for the issuer during the quarter of MBS/ABS issuances). *Log of Number of Analysts* $_{Education}$ is defined as the natural logarithm of (one plus the number of revolving rating analysts with structured finance experience who work for the issuer during the quarter of MBS/ABS issuances), where an analyst with only a bachelor degree is counted as 1 and an analyst with a graduate degree (e.g., MBA or Ph.D.) is counted as 2. Columns (9) and (10) report the results when we replace *Log of Rating Experience* with the residual from the estimation reported in column (6) of Table 3 that analyzes issuers' hiring of revolving rating analysts with structured finance experience. For brevity, all control variables report in Table 5 are included in the regressions below but are not tabulated. In parentheses are t-statistics based on standard errors clustered by issuer and by issuance year-quarter. ***, **, and * indicate the significance level at 1%, 5%, and 10%.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Dependent Variable:	*Downgrade* $_{ordered}$		*Downgrade*		*Downgrade*		*Downgrade*		*Downgrade*	
	AAA	Non-AAA	AAA	Non-AAA	AAA	Non-AAA	AAA	Non-AAA	AAA	Non-AAA
Log of Rating Experience	0.18***	0.25***	0.57***	0.23*						
	(2.74)	(3.29)	(3.32)	(1.68)						
Log of Analyst Number					1.11**	1.23***				
					(2.02)	(2.78)				
Log of Analyst Number $_{Education}$							1.10**	1.22***		
							(2.31)	(3.04)		
Log of Rating Experience $_{Residual}$									0.54***	0.43***
									(3.38)	(3.82)
Initial Rating Fixed Effects		✓		✓		✓		✓		✓
Issuer Fixed Effects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Issuance Year × Quarter Fixed Effects	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
N	52,672	30,409	40,133	25,868	52,672	30,409	52,672	30,409	52,672	30,409
adj. R^2	0.30	0.25	0.68	0.54	0.62	0.55	0.62	0.55	0.62	0.55

Table A4
Rating Migrations

This table reports the distributions of initial ratings and current ratings of MBS and ABS (as of February 2013). For brevity, we omit the + and – qualifiers. PIF stands for paid in full, and WR stands for withdrawn. Panel A, B and C present rating migrations on ratings assigned by Fitch, Moody's and S&P, respectively. We report the percent of tranches with a current rating lower than its initial rating (downgrade) in the last column.

Panel A. Fitch

Initial Ratings	No.	(%)	*Current Ratings* (as of February 2013)											Downgrades (%)
			AAA	AA	A	BBB	BB	B	CCC	CC	C	DD, D	PIF	
AAA	44,221	61%	5,167	1,085	1,198	1,362	941	1,516	1,337	1,351	3,694	6,592	19,978	43%
AA	6,875	9%	161	277	150	174	200	411	1,007	660	559	1,950	1,326	74%
A	7,628	11%	129	111	424	73	94	189	373	879	1,291	2,500	1,565	71%
BBB	8,110	11%	59	42	73	333	55	101	218	323	1,384	3,816	1,706	73%
BB	3,249	4%	27	12	26	38	111	40	86	79	331	1,954	545	77%
B	2,238	3%	0	1	5	8	15	97	41	41	215	1,455	360	78%
CCC	63	0%	0	0	0	0	0	0	5	3	5	42	8	79%
CC	25	0%	0	0	0	0	0	0	0	7	4	12	2	64%
C	53	0%	0	0	0	0	0	0	0	0	18	32	3	60%
DD, D	8	0%	0	0	0	0	0	0	0	0	0	5	3	--
Total	72,470	100%	5,543	1,528	1,876	1,988	1,416	2,354	3,067	3,343	7,501	18,358	25,496	55%

Table A4 (Continued)

Panel B. Moody's

Initial Ratings	No.	(%)	*Current Ratings* (as of February 2013)										Downgrade (%)
			Aaa	Aa	A	Baa	Ba	B	Caa	Ca	C	WR	
Aaa	53,684	56%	10,420	994	1,645	1,782	2,605	2,958	10,822	3,787	3,105	15,566	52%
Aa	12,441	13%	234	717	357	355	624	741	978	561	5,053	2,821	70%
A	11,891	12%	127	166	632	179	181	288	696	816	4,787	4,019	58%
Baa	12,605	13%	60	42	92	605	144	181	292	631	5,831	4,727	56%
Ba	3,359	4%	20	6	16	32	162	97	96	55	1,511	1,364	52%
B	1,184	1%	4	3	2	3	6	89	93	37	420	527	46%
Caa	85	0%	0	0	0	0	0	0	16	7	33	29	47%
Ca	58	0%	0	0	0	0	0	0	0	3	40	15	69%
C	75	0%	0	0	0	2	0	0	1	0	48	24	--
Total	95,382	100%	10,865	1,928	2,744	2,958	3,722	4,354	12,994	5,897	20,828	29,092	55%

Panel C. S&P

Initial Ratings	No.	(%)	*Current Ratings* (as of February 2013)										Downgrade (%)
			AAA	AA	A	BBB	BB	B	CCC	CC	DDD, DD, D	WR	
AAA	68,210	56%	16,865	3,631	2,575	2,349	1,268	1,452	6,027	3,039	8,381	22,623	42%
AA	14,574	12%	372	1,114	333	587	924	978	1,735	1,144	5,601	1,786	78%
A	14,268	12%	210	233	997	175	376	598	1,790	1,572	6,469	1,848	77%
BBB	14,730	12%	72	95	111	903	147	238	833	1,696	8,397	2,238	77%
BB	5,780	5%	5	8	23	26	272	68	200	413	3,982	783	81%
B	3,937	3%	0	0	1	2	19	163	92	235	3,109	316	87%
CCC	55	0%	0	0	0	0	0	0	2	2	46	5	87%
CC	7	0%	0	0	0	0	0	0	0	0	2	5	29%
DDD, DD, D	23	0%	0	0	0	0	0	1	0	0	18	4	--
Total	121,584	100%	17,524	5,081	4,040	4,042	3,006	3,498	10,679	8,101	36,005	29,608	58%

Appendix A5. Rating Definitions and Numerical Translations

This table describes rating letters and numerical translations. Multiple numerical values for a single rating letter (from left to right) represent the numbers assigned to the rating with a + qualifier, no qualifier, and a - qualifier, respectively.

Rating Agency		Numerical Value Assigned	Rating Letter Definitions*
Moody's	S&P, Fitch		
Aaa	AAA	1	**Highest credit quality.** The lowest expectation of default risk. They are assigned only in cases of exceptionally strong capacity for payment of financial commitments. This capacity is highly unlikely to be adversely affected by foreseeable events.
Aa	AA	2, 3, 4	**Very high credit quality.** Expectations of very low default risk. They indicate very strong capacity for payment of financial commitments. This capacity is not significantly vulnerable to foreseeable events.
A	A	5, 6, 7	**High credit quality.** Expectations of low default risk. The capacity for payment of financial commitments is considered strong. This capacity may, nevertheless, be more vulnerable to adverse business or economic conditions than is the case for higher ratings.
Baa	BBB	8, 9, 10	**Good credit quality.** Expectations of default risk are currently low. The capacity for payment of financial commitments is considered adequate but adverse business or economic conditions are more likely to impair this capacity.
Ba	BB	11, 12, 13	**Speculative.** An elevated vulnerability to default risk, particularly in the event of adverse changes in business or economic conditions over time.
B	B	14, 15, 16	**Highly speculative.** Material default risk is present, but a limited margin of safety remains. Financial commitments are currently being met; however, capacity for continued payment is vulnerable to deterioration in the business and economic environment.
Caa	CCC	17, 18, 19	**Substantial credit risk.** Default is a real possibility.
Ca	CC	20	**Very high levels of credit risk.** Default of some kind appears probable.
	C	21	**Exceptionally high levels of credit risk.** Default appears imminent or inevitable.
C	DDD, DD, D	22	**Default.**

*Rating letter definitions are obtained from Fitch's website. See details at
https://www.fitchratings.com/web_content/ratings/fitch_ratings_definitions_and_scales.pdf