



## Do labor markets discipline? Evidence from RMBS bankers<sup>☆</sup>

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### ABSTRACT

This paper examines whether employees involved in residential mortgage-backed security (RMBS) securitization experienced internal and external labor market consequences relative to similar non-RMBS employees in the same banks and why. Senior RMBS bankers experienced similar levels of job retention, promotion, and external job opportunities. Even signers of RMBS deals with high loss and misreporting rates or deals implicated in lawsuits experienced no adverse internal or external labor market outcomes. These findings are likely not explained by targeted or delayed employee discipline, small legal fines, or protection due to pending litigation but are consistent with implicit upper-management approval of RMBS activities.

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### 1. Introduction

Do employees face consequences for corporate misbehavior? Do corporate fines induce career penalties for individual employees? In his American Finance Association presidential address, Luigi Zingales notes that the low reputation of the finance industry among the general public and the large fines paid by financial firms are concerning indicators (Zingales, 2015). In the aftermath of the 2007–2009 financial crisis, banks paid a record-setting \$137+ billion to government agencies for their role in sponsoring and underwriting fraudulent residential mortgage-backed securities (RMBSs).<sup>1</sup> These fines are consistent with an implicit government policy to pursue civil corporate lawsuits as opposed to building cases against individual employees.

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<sup>1</sup> The \$137 billion calculation is based on fines and penalties solely on government actions related to securities with mortgages as reported in the Online Appendix. Nongovernment settlement amounts are often private.

Although this topic is a source of considerable discussion and speculation, our study is the first large-scale investigation of the labor market outcomes of the individuals involved in RMBS securitization during the run-up to the financial crisis. We also examine why labor market discipline occurred or not. To assess these issues, we identify a sample of 715 bankers involved in issuing RMBSs between 2004 and 2006, with a focus on the largest 18 underwriters, which underwrote most RMBSs. Approximately half of the sample (386 bankers) consists of individuals who signed Securities and Exchange Commission (SEC) documents related to 3331 deals. These RMBS signers are generally senior and would have knowledge and control over loan information reported to investors that banks have now acknowledged was knowingly misreported. We identify the remainder of the RMBS banker sample based on information in public profiles on a large professional networking platform, which gives us a wider range of positions, including more junior bankers.

We analyze RMBS bankers for evidence of internal labor discipline in terms of employee retention and promotion as well as external labor market discipline through hiring by other firms from 2007 to 2016. On average, RMBS bankers fared reasonably well. As of 2011, 26% of RMBS bankers remained employed at the same firm, 42% were employed at a top underwriter more generally, and 47% had a more senior job title than they had from 2004 to 2006. We focus on these outcomes both because retention, employment at similar firms, and promotions are highly informative career outcomes and because these are the outcomes we are able to observe. Promotion and external hiring imply that RMBS bankers enjoyed professional success beyond mere retention. Nonetheless, we cannot rule out the possibility that pay was affected along dimensions that we do not observe.

To determine whether these career trajectories are consistent with labor market discipline, we compare RMBS bankers with a control sample of non-RMBS bankers involved in asset-backed security (ABS) deals related to commercial mortgages, auto loans, student loans, and credit card debt. Unlike RMBS deals, little fraud is evident in non-RMBS deals during the run-up to the financial crisis. RMBS bankers and non-RMBS bankers have similar employment and promotion outcomes across a wide range of regression specifications. Standard errors of the estimates are generally small enough to rule out economically meaningful differences in labor market outcomes, indicating that the lack of statistical differences between RMBS and non-RMBS employees is not simply due to lack of statistical power. For example, in our baseline specifications, 95% confidence intervals rule out retention discipline over 1.4 percentage points (ppt) and employment differences at top underwriters more generally of over 4.2 ppt.

We also match RMBS bankers with non-RMBS bankers and use a difference-in-differences framework to control for any historical differences in employment outcomes between RMBS bankers and non-RMBS bankers with similar results, again suggesting no internal or external labor market discipline for RMBS bankers. Given that the RMBS market crashed more dramatically and was much slower to rebound than other securitization markets, the need for RMBS employees was potentially reduced, so it is

particularly striking that we find similar outcomes for RMBS and non-RMBS bankers. Finally, comparing RMBS bankers with investment bankers also yields no evidence of labor market discipline.

Our baseline estimates are similar for junior and senior RMBS bankers, and we consistently find no evidence of diminished career outcomes for senior RMBS bankers. We do find evidence of reduced retention for junior non-signer RMBS bankers in our difference-in-differences specification. Within top underwriters, employees of acquired banks have worse outcomes than employees of surviving banks, but this is true for both RMBS bankers and non-RMBS bankers. We find evidence that RMBS bankers at smaller firms fared worse than non-RMBS bankers at smaller firms, which is consistent with RMBS banker labor market discipline at smaller firms. One interpretation of this evidence is that the large investment banks sheltered their employees from the negative effects of the collapse of the RMBS market by treating RMBS employees similar to those in other areas of structured finance. Consistent with this finding, many RMBS bankers who stayed at top underwriters moved from issuing RMBS to managing mortgage portfolios and overseeing other structured finance activities. Smaller, less diversified banks likely did not have this ability. This highlights that one ramification of the bank bailouts could have been the mitigation of large-scale labor market discipline.

We also examine differences across top banks in hiring practices. No major banks seem to lay off their existing RMBS employees or refrain from hiring RMBS employees from other top banks. However, Bank of America, JP Morgan, and Citibank are particularly aggressive in retaining and hiring RMBS employees from other top banks.

We next consider why RMBS employees at top underwriters did not face career penalties. First, we look at whether outcomes varied with culpability. We find that RMBS signers who were individually sued by the Federal Housing Finance Agency (FHFA) and bankers who signed RMBS deals that had high loss rates, had high misreporting rates, or were implicated in settlements had similar career outcomes compared with other bankers. Also, no evidence exists that senior RMBS bankers or deal signers fared worse than other RMBS bankers. Second, banks could have wished to penalize RMBS employees but retained RMBS employees mainly so that these employees would not be easily used as witnesses in litigation against the banks. We find considerable cross-bank hiring and substantial promotions of RMBS bankers, which is inconsistent with this hypothesis as a complete explanation. Third, banks could have penalized responsible employees only after it became public that RMBS fraud was widespread. However, even by 2016, no evidence existed of internal or external labor market discipline. Fourth, outcomes could have varied with the size of corporate penalties. We find that even banks that paid the largest percentage penalties for RMBS fraud imposed no internal or external labor market discipline on their employees.

The primary remaining explanations for why RMBS bankers did not face labor market discipline are consistent with the Zingales (2015) rent-seeking dimension of finance that upper management does not view their actions as

deviating from firm directives or that upper management is concerned that large-scale consequences for RMBS bankers would implicitly acknowledge widespread wrongdoing and lack of oversight. The acknowledgment of such large mistakes could increase the probability of upper management dismissal.<sup>2</sup> A corollary of this explanation is that the finance industry does not view RMBS bankers as tainted in any meaningful sense. To the extent that these employees created novel securities and their actions followed firm directives to participate in a market that the banks were eager to profit from, the banks could be prone to continue employing these individuals.<sup>3</sup> Labor market discipline could be socially optimal to create incentives to identify and avoid fraud that has negative externalities. But, if willingness to participate in these activities is not viewed negatively by the banks, there is no reason to expect them to penalize their employees. Larger fines could have led to more labor market discipline, but our finding of no labor market discipline even for the banks with the largest percentage fines indicates that even the most sizable penalties the government extracted were insufficient to affect labor market outcomes.

Our findings are consistent with the [Egan et al. \(2017\)](#) conclusion that none of the large financial advisory firms has a zero-tolerance policy against financial advisory misconduct and that, when employees are fired for misconduct, substantial cross-bank hiring mitigates the effects of internal bank discipline. The authors also find that some large banks retain and hire few employees who have engaged in proven misconduct and others specialize in hiring misconduct employees. Many of the banks in their sample that have lower tolerance for financial advisor misconduct exhibit no employee discipline in the RMBS context. Some banks could build their reputations by disciplining smaller dubious activities but are unwilling to do so when the activities are economically large or systematic. [Gao et al. \(2017\)](#) find that loan officers are disciplined for poor performance of syndicated corporate loans. Similarly, executive career outcomes and compensation are heavily tied to firm performance, even when performance is driven mainly by luck ([Bertrand and Mullainathan, 2001](#)).

Our paper also relates to the debate within and between economists ([Elzinga and Breit, 1976; Posner, 1977; Fama, 1980](#)) and the legal literature ([Coffee, 1980; Polinsky and Shavell, 1993](#)) as to the relative effectiveness of corporate and individual penalties in different settings. [Amiram et al. \(2018\)](#) provide a multidisciplinary review of the literature examining the effect of corporate penalties on outcomes for corporations, executives, and board members and find that most executives who engage in financial

misreporting are punished either through the labor market or with criminal charges, but the labor market effects for board members are considerably smaller.<sup>4</sup> Our findings demonstrate that labor market discipline is lacking during important times. This raises concerns regarding labor market incentives and the efficacy of corporate penalties that should be of widespread interest to policy makers, the legal and academic community, finance practitioners, and the general public.

The rest of the paper is organized as follows. **Section 2** discusses background and context related to RMBS activities during the run-up to the financial crisis. **Section 3** discusses the data. **Section 4** presents results on labor market discipline for RMBS bankers. **Section 5** explores why RMBS bankers did not experience labor market discipline. **Section 6** concludes.

## 2. Context and background

The \$137+ billion that banks agreed to pay for their role in sponsoring and underwriting fraudulent RMBSs represents the largest penalty ever paid by the financial industry.<sup>5</sup> As with any policy decision, complex and varied motivations existed for pursuing this particular course of action. Nonetheless, a common thread across the political spectrum is that there ought to be accountability for the financial crisis, both at the corporate and individual levels. For example, the Financial Crisis Inquiry Commission concluded that “there was a systemic breakdown in accountability and ethics” ([Financial Crisis Inquiry Comission, 2011](#), p. xxii). Some also believe that incentives need to be aligned to make sure the financial crisis is not repeated.

### 2.1. Economic and legal context for corporate and individual penalties

The economic literature on crime often argues that financial penalties are more cost-effective than imprisonment ([Becker, 1968; Posner, 1977](#)) and that penalties on organizations are more effective than penalties on individuals ([Elzinga and Breit, 1976; Posner, 1977](#)). [Fama \(1980\)](#) argues that teams and individuals will be disciplined both internally and through the external labor market. [Amiram et al. \(2018](#), p. 54) summarizes this literature by noting that “one potentially important consequence is that a manager who engages in misconduct loses his or her job. Indeed, it is reasonable to conjecture that the threat of job loss is a primary avenue by which the firm’s internal governance deters managers from engaging in misconduct that could be costly for shareholders.” The United States Department of Justice (DOJ) operationally relied on this model of large corporate civil penalties from 1999 to 2015

<sup>2</sup> The 2016 Wells Fargo fake account scandal serves as an interesting recent example of management discipline following employee discipline. Individual employees were fired for opening fake accounts that were seemingly consistent with company directives, and upper management was eventually disciplined after substantial congressional and press scrutiny.

<sup>3</sup> This is also consistent with views from the savings and loan crisis of the 1980s and 1990s that banks had incentives to make bad loans to appear to meet short-term profit motives ([Akerlof and Romer, 1993; Black, 2005](#)). The lack of discipline we observe for RMBS fraud is consistent with rent seeking at the expense of RMBS investors and potentially bank shareholders as well.

<sup>4</sup> For example, [Karpoff and Lott \(1993\)](#) and [Alexander and Cohen \(1999\)](#) find that reputational effects of disciplining firms with corporate civil penalties are large. [Karpoff et al. \(2008\)](#) find that managers associated with financial misrepresentation from 1978 to 2006 experience discipline through employment, shareholdings, and fines.

<sup>5</sup> Nevertheless, who actually bears the cost for some of these penalties is uncertain. A large share of the penalties consists of commitments to loan forgiveness, some of which is borne by RMBS investors as opposed to the sponsoring banks ([The Nation, 2017](#)).

in accordance with guidelines outlined by then deputy attorney general Eric Holder in 1999 and by Deputy Attorney General Larry Thompson in 2003. The number of individual criminal prosecutions for corporate infractions shrunk dramatically and the most important corporate actions by the DOJ were undertaken through the use of deferred and non-prosecution agreements with firms (Garrett, 2015).

The legal literature and some economists are more skeptical and argue that in many circumstances corporate penalties are not an effective deterrent given low rates of detection, the capping of penalties by firm value, agency issues, and the fact that costs are borne by shareholders instead of by individually responsible actors (Coffee, 1980; Arlen and Carney, 1992; Polinsky and Shavell, 1993). Post-financial crisis, this view has been articulated most vocally by Judge Jed Rakoff (*New York Review of Books*, 2014), who criticizes the DOJ's civil settlements against banks without individual prosecutions as having little deterrent value. Similarly, Zingales (2013) notes that corporate settlements halted investigations into mortgage fraud and had little impact on responsible individuals. The lack of criminal penalties in the aftermath of the financial crisis contrasts with the more than one thousand bankers jailed in the aftermath of the 1980s savings and loan (S&L) crisis (*New York Times*, 2011; *Atlantic*, 2015). Voices within the DOJ also seem to be skeptical of the corporate punishment policies. On September 9, 2015, Deputy Attorney General Sally Yates detailed a new policy that mandates a stronger standard of pursuit for individual culpability within organizations. She argues that "such accountability is important for several reasons: it deters future illegal activity, it incentivizes changes in corporate behavior, it ensures that the proper parties are held responsible for their actions, and it promotes the public's confidence in our justice system" (Yates, 2015, p. 1). Congressional inquiries related to Wells Fargo's fake account scandal in 2016 and 2017 also reflect a renewed call for individual accountability across the political spectrum.

Corporate policies promoting individual accountability are an explicitly stated priority under DOJ corporate prosecution guidelines in place from 2003 to 2015 (Thompson, 2003). For example, in assessing corporate compliance programs, prosecutors are to ask "whether the program is adequately designed for maximum effectiveness in preventing and detecting wrongdoing by employees and whether corporate management is enforcing the program or is tacitly encouraging or pressuring employees to engage in misconduct to achieve business objectives" (Thompson, 2003, p. 9). Similarly, assessing restitution and remediation includes evaluating "whether meaningful remedial measures have been taken, including employee discipline and full restitution" (Thompson, 2003, p. 11). In addition to contributing to the overall debate regarding corporate civil penalties, this paper provides a practical evaluation of whether banks met these DOJ compliance and remediation objectives.

## 2.2. Features of RMBSs before the crisis

Mortgage-backed securities were a focal point of the financial crisis, and growing academic evidence

(Piskorski et al., 2015; Griffin and Maturana, 2016b; Mian and Sufi, 2017) demonstrates widespread non-agency mortgage misreporting of second liens, owner occupancy, loan-to-value ratios, and income. Just considering appraisal inflation, unreported second liens, and owner occupancy status misreporting, Griffin and Maturana (2016b) find that over 48% of loans in non-agency RMBSs exhibit some degree of misreporting. Moreover, Piskorski et al. (2015) and Kruger and Maturana (2018) demonstrate from RMBS yield spreads and AAA subordination levels that investors were unaware of this misreporting. Agarwal et al. (2015) show collateral misreporting in agency RMBSs, and Jiang et al. (2014), Garmaise (2013), Ben-David (2011), and Carrillo (2013) report additional detailed evidence of misreporting for specific banks and regions. Agarwal et al. (2016) find that lenders steered borrowers toward less attractive but more profitable loan products. In addition to misleading investors, RMBS misreporting and related practices played a central role in credit expansion (Mian and Sufi, 2017) and house price growth (Griffin and Maturana, 2016a). The growth and subsequent collapse of house prices have also been strongly linked to credit expansion and securitization more generally (Mian and Sufi, 2009; Nadauld and Sherklund, 2013).

Consistent with this evidence, statements of facts included in DOJ settlements signed by major banks contain detailed evidence including e-mails confirming that misreporting came in various forms, was widespread across the banks, and was widely known by mortgage employees within the banks. The statements indicate that banks commonly waived loans and ignored implications from due diligence that demonstrated that many loans violated underwriting guidelines due to inflated appraisals, income misreporting, lack of required documentation, unreported second liens, occupancy status misreporting, and other violations. Most settlements provide detailed evidence and also indicate that these activities were common and pervasive, particularly during the two to three years leading up to the financial crisis. The statements also indicate that many individuals within each bank knew about the violations. Excerpts from the statements of facts showing that these activities were pervasive and widely known are included in Online Appendix C. In our empirical analysis, we separate employees based on their level of association with the fraudulent behavior by restricting our sample to individuals with the most responsibility and by analyzing how outcomes varied in the cross sections with deal outcomes related to misreporting and performance.

## 3. Data selection and variable construction

To assess labor market discipline for RMBS bankers, we identify individuals who were involved in RMBS securitization and follow their career progress over time.

### 3.1. Data selection

We identify RMBS bankers from two sources: (1) 386 people who signed registration statements and 8-K forms for 3331 RMBS deals on behalf of deal sponsors and (2) 329 additional employees of top underwriters who were

involved in RMBSs based on biographical information in public profiles from a large professional networking platform. The 3331 RMBS deals for which we find sponsor signatures represent 83% of US RMBS deals issued between 2004 and 2006 with a value of at least \$100 million. The signer sample is based on information known and publicly disclosed before the end of 2006 for specific RMBS deals. Sixty-nine percent of the RMBS signer sample comes from Form S-3 shelf registration statements, which lay out the primary terms and structure of the deals. The SEC requires shelf registrations to be signed by the principal officers and a majority of the directors of the issuing entity. For ABSs, the issuing entity is typically a subsidiary of the bank that functions as the deal's sponsor or depositor, or both, and the signers are typically senior structured finance executives. Form S-3 signers were routinely named by the FHFA in lawsuits alleging RMBS fraud. The remainder of the RMBS signer sample consists of individuals affiliated with the issuing entity or deal sponsor who signed 8-K statements disclosing major deal information such as pooling and servicing agreements. To be included in the sample, biographical information is needed on the signer's career after 2006 from public networking profiles or other biographical sources. We find this information for 76% of RMBS signers. Additional information on sample selection is included in Online Appendix A.

The nonsigner RMBS banker sample from the professional networking platform increases our sample size and broadens our sample by including more junior bankers. As discussed in Online Appendix A, we identify this sample based on employer and job description keywords from public professional networking profiles. The professional networking platform includes most finance professionals, and our searches exhaustively identify "RMBS" and "mortgage back" in job descriptions associated with top underwriters between 2004 and 2006.<sup>6</sup>

For comparison purposes, we follow the same procedure to construct a control sample of 613 non-RMBS bankers who were involved in issuing commercial mortgage-back securities (CMBSs) and non-mortgage ABSs. The non-RMBS banker sample includes both signers of Form S-3 and 8-K forms for CMBSs and non-mortgage ABS deals (319 individuals) and a more general sample of bankers at top underwriters with CMBS and non-mortgage ABS keywords (294 individuals). These non-RMBS bankers worked for the same firms and have similar positions, backgrounds, and skill sets, but CMBSs and non-mortgage ABSs performed much better than RMBSs and seem to be largely free of fraud and misreporting.

We collect biographical information on individuals in our samples from several online sources including company biographies, press accounts, SEC filings, and Financial Industry Regulatory Authority (FINRA) Brokercheck

regulatory information. The most extensive biographical information usually comes from public professional networking profiles. Nonsigner biographical information is entirely based on public professional networking profiles. The biographical information we collect includes past and future employment and education information. From this information, we are also able to estimate a person's age.

The major selection concern is potential correlation between sample inclusion and career outcomes. This concern is mitigated by the widespread nature of the professional networking platform and the identical approaches we follow for RMBS and non-RMBS bankers. For sample selection to introduce a bias, it would have to be not just correlated with career outcomes but also differentially correlated for RMBS bankers compared with non-RMBS bankers. For the signer samples, selection concerns are further mitigated by the fact that the starting point is signatures that were publicly disclosed prior to 2006. We find relevant biographical information for 76% of RMBS signers and 66% of non-RMBS signers. The high rate at which we find biographical information mitigates sample selection concerns. If missing signers have worse career outcomes, the higher selection rate for RMBS signers will bias our results in favor of finding discipline. Overall weak market conditions for RMBS securitization relative to non-RMBS securitization also push in the direction of finding discipline for RMBS bankers.

**Table 1** presents our primary samples. The full sample of 715 RMBS bankers is described in Column 1. The RMBS sample has an average age of 37. Twenty-one percent of the sample had a master of business administration (MBA) as of 2006 and 24% graduated from a top 25 university (based on the US News and World Report 2006 ranking of undergraduate programs). Their positions range from analyst (13% of the sample) to director and above (61% of the sample). Most of our analysis focuses on top 18 underwriters, which represent 78% (559 / 715) of the RMBS bankers sample.<sup>7</sup> The two subsamples of RMBS bankers (signers and nonsigners) are described in the second and third columns of **Table 1**. The fourth column covers the control sample, and the fifth and sixth columns report on the breakdown of the control sample into signers and nonsigners, respectively. The RMBS and non-RMBS samples are similar across all characteristics. As expected, nonsigners tend to be younger and more junior within both samples.

**Fig. 1** provides a graphical representation of the most common biographical terms used in the RMBS bankers' positions (Panel A) and job descriptions (Panel B) from 2004 to 2006. Common position terms include "Associate," "Director," "President," "SVP," "Vice President," "Officer," and "CEO," reflecting the mix of RMBS banker positions and the high seniority of many individuals in the sample. Within the job descriptions, terms such as "Management," "Mortgaged Backed Security," "Security(ies)," and "Loan" indicate that their activities focused on RMBS.

We also report where people in our RMBS banker sample worked after the financial crisis. Panel A of **Fig. 2** plots

<sup>6</sup> Highlighting the pervasiveness of the platform, we find profiles for 60% of RMBS signers. Usage is likely even higher among more junior professionals. To focus on issuers, we restrict the sample by dropping positions with keywords related to wealth management, investment management, sales and trading, research, legal, accounting, technology, compliance, and operations. We also drop internship and administrative assistant positions.

<sup>7</sup> The 18 underwriters we focus on are those in [Griffin and Maturana \(2016b\)](#) and are listed in Panel A of **Fig. 5**. For details on which underwriters the individuals worked for, see the Online Appendix.

**Table 1**

Data description.

This table describes the main samples of financial professionals. The residential mortgage-backed security (RMBS) signers sample consists of individuals who signed registration statements and 8-K forms associated with RMBSs during 2004–2006. The RMBS nonsigners sample consists of employees of top 18 underwriters with RMBS keywords in their job descriptions during 2004–2006. In addition, the sample requires qualifying positions to not be internship or administrative assistant positions and to not contain keywords associated with wealth management, investment management, sales and trading, research, legal, accounting, technology, compliance, or operations. The non-RMBS signer sample consists of employees who signed registration statements and 8-K forms associated with non-RMBS asset-backed securities during 2004–2006 with the same restrictions as RMBS nonsigners. In addition, the sample requires qualifying positions to not be internship or administrative assistant positions and to not contain keywords associated with wealth management, investment management, sales and trading, research, legal, accounting, technology, compliance, or operations. Both full samples consist of a combination of signers and nonsigners. MBA: master of business administration.

Characteristic	RMBS bankers			Non-RMBS bankers		
	Full sample	Signers	Nonsigners	Full sample	Signers	Nonsigners
Age	37	42	32	39	45	33
MBA	21.3	25.4	16.4	31.0	35.1	26.5
Top 25 alma mater	24.1	25.9	21.9	30.0	26.6	33.7
Director or above	60.9	87.8	20.3	66.1	87.8	39.0
Vice president	18.4	10.4	30.5	17.8	9.7	28.0
Associate	8.1	1.8	17.6	9.2	2.5	17.7
Analyst	12.6	0.0	31.6	6.8	0.0	15.4
Employed at top 18 underwriter (percent)	78.2	59.6	100.0	64.9	32.6	100.0
Number of individuals	715	386	329	613	319	294

the industries in which the RMBS bankers are employed as of 2016. Approximately 85% of them are still employed in the financial industry (financial services, investment banking, banking, capital markets, investment management, and real estate), and the remaining 15% are in nonfinance fields (information technology, computer software, management consulting, and others).

For the networking platform samples, we construct historical samples of RMBS and non-RMBS bankers in earlier time periods using the same methodology for difference-in-differences analysis. We also use the networking platform to identify an alternative control sample of investment bankers, which is described in the Online Appendix.

As a final sample, we analyze individuals who attended the 2006 American Securitization Forum (ASF), which is the sample analyzed by Cheng et al. (2014).<sup>8</sup> The ASF attendance list classifies attendees as either issuers or investors. We focus on the issuer attendees because, like our other samples, these individuals were involved in creating ABSs. The ASF issuer sample comes from a wider range of firms than our primary sample, which allows us to broaden our analysis somewhat. We compare the ASF issuer attendees with investor attendees at the same conference and with equity analysts. All three samples are described in more detail in the Online Appendix.

### 3.2. Employment outcome variables

We use biographical information on what happened to individuals in our sample after 2006 to calculate employment and promotion outcome variables.

#### 3.2.1. Employment

We consider people to be employed at the same firm if they are working for the same firm they worked for

during 2004–2006 or if they are working for the firm that acquired their original firm (e.g., we consider a Country-wide employee to be employed by his or her original firm if he or she is employed by Bank of America in the future). We also analyze employment at any top 18 underwriter as a way to assess whether a person who leaves his original firm finds employment with another top firm. As shown in Panel B of Fig. 2, 42% of RMBS bankers were employed by a top RMBS underwriter in 2011, and 26% were at a top underwriter in 2016. Many RMBS bankers who stayed at top underwriters moved from issuing RMBS to managing mortgage portfolios and overseeing other structured finance activities. The Online Appendix shows the most common terms used in the positions and job descriptions of the RMBS bankers who were still at top underwriters as of 2011.

#### 3.2.2. Promotion

To measure promotions, we first classify job titles based on their seniority, ranging from analyst to chief executive officer (CEO) or chief financial officer (CFO).<sup>9</sup> A promotion is defined as obtaining a higher position with the same company compared with the individual's position level at the end of the 2004–2006 sample period. We define job upgrades as obtaining a higher position at any firm. Promotion and job upgrade are absorbing states in that we consider a person to be promoted or upgraded in a given year if he or she was promoted or upgraded in the current year or any previous year. Because

<sup>8</sup> We thank Wei Xiong for sharing the ASF attendee list. The ASF issuer sample includes both RMBS and non-RMBS bankers.

<sup>9</sup> We consider six position level classifications: (1) analyst (including senior analyst); (2) associate (including senior associate, manager, and consultant); (3) vice president (including associate director); (4) director (including senior vice president, executive vice president, and principal); (5) managing director (including partner and C-level executive other than CEO and CFO); and (6) CEO and CFO (including president, chairman, and vice chairman at the firm or division level). Supplementing these data with information on financial outcomes would be even better, but such data are not publicly available.

### *Panel A: Job position keywords*



### *Panel B: Description keywords*

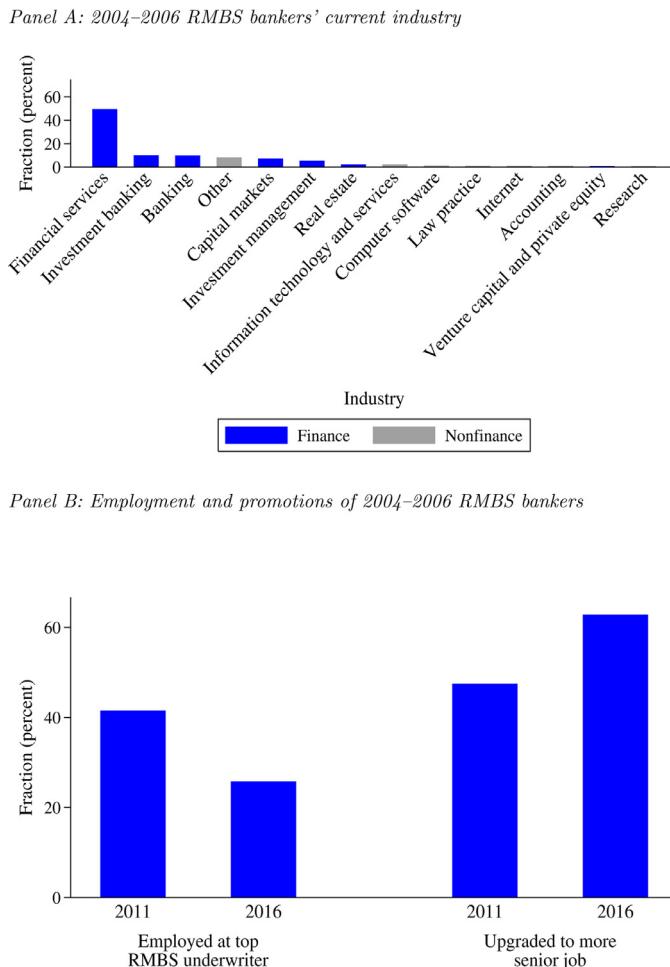


**Fig. 1.** Biographical keyword frequency. This figure shows the most frequent words contained in the bankers' biographies. A larger font size represents a higher frequency. Panel A considers words in the reported job titles, and Panel B considers words in the job descriptions.

senior executives have little room for promotion, we exclude individuals with initial positions of managing director or higher from all promotion and upgrade analysis. As shown in Panel B of Fig. 2, 47% of RMBS bankers obtained position upgrades by 2011, and 63% were upgraded by 2016.

#### 4 Did the labor market discipline RMBS bankers?

Workers can be disciplined internally and through external labor markets. We consider both mechanisms by analyzing job retention at the banker's original firm and employment at a top underwriter more generally. We also



**Fig. 2.** Employment outcomes of residential mortgage-backed security (RMBS) bankers. Panel A shows the distribution of the 2004–2006 RMBS bankers' industry of employment as of 2016. The blue bars denote finance-related industries, and the gray bars denote nonfinance-related industries. Panel B shows the fraction of 2004–2006 RMBS bankers employed at a top 18 RMBS underwriter in 2011 and 2016, as well as the fraction of 2004–2006 RMBS bankers who obtained more senior jobs by those same years. Because their seniority leaves little room for promotion, people with initial positions of managing director or higher are not considered in the upgrade estimations. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

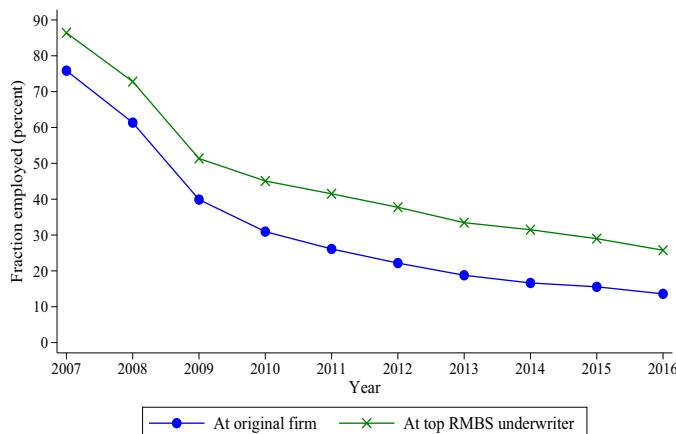
examine how discipline varies by firm and employee characteristics. Our richest analysis focuses on bankers at top underwriters, which represent the majority (63%) of non-agency RMBS issuance. A major challenge in this analysis is establishing the right counterfactual for assessing employment outcomes. We start by looking at absolute employment levels and then compare RMBS bankers with bankers involved in CMBSs and non-mortgage ABSs. We consider alternative control groups, including investment bankers and earlier samples of RMBS and non-RMBS bankers.

#### 4.1. What happened to RMBS bankers?

We start by assessing absolute levels of employment. The most extreme version of labor market discipline would be job losses for all RMBS bankers. Any labor market discipline clearly fell well short of this. Fig. 3 plots employment by year for RMBS bankers who worked for a top underwriter during 2004–2006. Five years later, 26% of these

bankers were still working for the same firm. Even those who left frequently went to another top firm. As a result, 42% were still employed at a top underwriter in 2011. Standard errors for all yearly mean outcomes are less than 2.1 ppt. This results in 95% confidence intervals of 22.5%–29.8% for 2011 employment at the same firm and 37.4%–45.6% for 2011 employment at a top underwriter.

In Panel A of Table 2, we compare job retention at top underwriters with retention of RMBS bankers at smaller firms. RMBS bankers at smaller firms fared even better. Thirty-seven percent remained employed by the same firm in 2011. Panel A also compares junior bankers (analysts and associates) with more senior employees. We find that retention is significantly higher for senior bankers (31% are employed at the same firm in 2011, compared with 20% for junior bankers). Finally, Panel B of Table 2 compares junior bankers and senior bankers who originally worked at top underwriters in terms of their likelihood of employment at any top underwriter in 2011. We do not find



**Fig. 3.** Residential mortgage-backed security (RMBS) banker employment by year. This figure shows the fraction of RMBS bankers employed by their original employer and by top 18 underwriters overall by year. An individual is considered employed by the same underwriter if he or she is employed by the firm that acquired his or her original employer.

**Table 2**

Difference in means tests.

This table shows the differences between the means of the indicators for employment status across bank size and banker seniority. In Panel A, the analyzed variable is an indicator for employment at the original firm five years after the sample period. The sample consists of all residential mortgage-backed security (RMBS) bankers. For the comparison between junior and senior bankers, we drop observations for which we do not observe position level. In Panel B, the variable analyzed is an indicator for employment at a top underwriter. The sample consists of RMBS bankers originally employed at a top underwriter. Sample means are based in the full sample. Robust standard errors are in parentheses. \* represents 10% significance, \*\* represents 5% significance, and \*\*\* represents 1% significance.

*Panel A: Employment at the original firm*

Sample mean	N = 715			N = 642		
	Top RMBS underwriter	Small RMBS underwriter	Difference	Junior bankers	Senior bankers	Difference
0.284	0.261	0.365	-0.104** (0.043)	0.196	0.307	-0.111*** (0.040)

*Panel B: Employment at a top underwriter*

Sample mean	N = 486		
	Junior bankers	Senior bankers	Difference
0.415	0.385	0.413	-0.028 (0.050)

significant differences between the two groups.<sup>10</sup> This suggests that junior bankers who left their original employers readily moved to other top underwriters.

#### 4.2. How did RMBS bankers fare relative to non-RMBS bankers?

To assess whether employment outcomes reflect discipline, we need to estimate a counterfactual for what the outcomes would be without discipline. This is inherently challenging because we see only one outcome, and the financial crisis was a unique historical event. Fortunately,

we have a control group of bankers involved in CMBSs and non-mortgage ABSs such as credit card, auto, and student loan securities. Bankers in the control group work for the same firms and have similar positions, backgrounds, and skill sets. CMBSs and non-mortgage ABSs performed much better than RMBSs and seem to be largely free of fraud and misreporting. For example, Stanton and Wallace (2018) find no evidence of fraud or deteriorating loan quality in CMBSs during the run-up to the financial crisis in contrast to clear deterioration in RMBS quality. Moreover, even if there was some fraud in non-RMBS structured finance, it has not been identified, publicized, and punished at the corporate level like RMBS fraud has been. Thus, non-RMBS bankers should be free of discipline.

The main drawback to using non-RMBS bankers as a control group is that market forces could have differentially impacted RMBS and non-RMBS bankers. Whereas

<sup>10</sup> The difference between junior and senior banker 2011 employment rates at top underwriters is -2.8 ppt with a 95% confidence interval of -12.7–7.1 ppt, relative to the mean top underwriter employment rate of 42%.

**Table 3**

Employment outcomes of residential mortgage-backed security (RMBS) bankers versus non-RMBS bankers at top underwriters. The dependent variables are indicators for employment status in 2011 (i.e., five years after the sample period). Employees are considered working for their original firm if they are employed by a bank that acquired their original firm. All regressions are ordinary least squares. RMBS is an indicator for being an RMBS banker. Senior is an indicator for being a senior banker (i.e., having a position of vice president or higher) during the sample period. The regressions analyze all RMBS and non-RMBS bankers who were originally employed by top 18 underwriters in 2004–2006. Clustered (by underwriter) standard errors are in parentheses. \* represents 10% significance, \*\* represents 5% significance, and \*\*\* represents 1% significance.

Variable	Employed at original firm		Employed at top underwriter	
	(1)	(2)	(3)	(4)
Mean	0.266	0.267	0.409	0.403
RMBS	0.026	0.037	0.043	0.077
	(0.019)	(0.055)	(0.040)	(0.078)
RMBS × Senior		-0.025		-0.053
		(0.068)		(0.087)
Age	-0.009***	-0.009***	-0.006*	-0.008**
	(0.003)	(0.003)	(0.003)	(0.003)
MBA	-0.009	-0.009	-0.034	-0.027
	(0.053)	(0.055)	(0.047)	(0.048)
Top 25 Alma Mater	-0.069**	-0.060**	-0.069**	-0.065*
	(0.026)	(0.026)	(0.031)	(0.033)
Bank fixed effects	Yes	Yes	Yes	Yes
Position level fixed effects	Yes	Yes	Yes	Yes
Number of observations	957	844	957	844
Adjusted R-squared	0.085	0.089	0.057	0.064

non-agency RMBS issuance froze in 2007 and reemerged only slowly, CMBS and non-mortgage ABS issuance rebounded quickly after the financial crisis. If RMBS and non-RMBS bankers can be redeployed in similar areas, these differential market forces will have little impact on employment outcomes. If RMBS bankers have skills that are specific to residential mortgages, market forces could lead to worse outcomes even without discipline. To the extent that this matters, it will bias our results toward finding evidence of discipline.

The top underwriters represent 63% of RMBS issuance and have both RMBS and non-RMBS securitization businesses. Thus, we can control for firm fixed effects in our employment regressions. Smaller firms frequently focus on only one type of securitization. Hence, we focus on RMBS and non-RMBS bankers at top 18 underwriters for this analysis and throughout the rest of the paper unless otherwise noted.

To test whether RMBS bankers were disciplined, we compare employment outcomes for RMBS bankers and non-RMBS bankers in a regression framework with age and education control variables, as well as bank and position fixed effects. We consider two employment outcomes: (1) continued employment at the same firm (internal discipline) and (2) employment at any top underwriter (external discipline). Both outcomes are analyzed as of 2011, which is five years after the sample formation. The regressions estimate linear probability models with ordinary least squares. Standard errors are clustered by underwriter. In the Online Appendix, we report standard errors and confidence intervals with different types of variance calculations, including different cluster definitions and bootstrap, jackknife, and Cameron et al. (2008) block bootstrap procedures with equivalent results.

Table 3 reports results for our baseline regression specifications. In Column 1, the dependent variable is

employment at the same firm in 2011. The RMBS coefficient estimates measure discipline for RMBS bankers relative to non-RMBS bankers. If there is discipline, the RMBS coefficient should be negative. Instead, it is a slightly positive 2.6 ppt, indicating that there was no discipline for RMBS bankers. The 95% confidence interval is -1.4 ppt–6.6 ppt. This amounts to a zero effect that is precise enough to rule out economically meaningful discipline relative to the mean retention rate of 27%. Standard errors are small enough to identify effects as small as 3–4 ppt. More data would allow us to estimate the RMBS coefficient with additional statistical precision, but this would not change the economic interpretation.

Column 2 includes an interaction between RMBS and seniority, defined as having an original position of director or higher. The RMBS and interaction coefficients are both close to zero and statistically insignificant, suggesting that junior and senior employees both avoided discipline. The sample size limits our statistical power to differentiate between subsamples such as junior and senior bankers. While the point estimate of RMBS × Senior is an economically small -2.5 ppt, its confidence interval of -16.8–11.8 ppt cannot rule out economically meaningful differences. More data would be helpful in this specification but unfortunately are not available. In the Online Appendix, we include analogous specifications controlling for gender and analyzing the interaction between gender and RMBS with no significant differences between men and women.

Columns 3 and 4 report results with employment at any top underwriter as the dependent variable. Once again, the RMBS coefficient estimate in Column 3 is slightly positive (4.3 ppt) with a confidence interval (-4.2–12.7 ppt) that rules out meaningful discipline. Also, no significant difference exists between junior and senior banker discipline (Column 4), but this again comes with the caveat that the 95% confidence interval (-23.7–13.1 ppt) is wide

**Table 4**

Residential mortgage-backed security (RMBS) banker matched sample analysis.

In Panel A, RMBS bankers are matched to non-RMBS bankers based on original underwriter and original job position. A minimum age difference of five years is also required (matched pairs are selected to minimize age differences). The panel compares the employment outcomes of both groups in 2011. In Panel B, RMBS bankers are matched to investment bankers using the same methodology. Clustered (by underwriter) standard errors are reported. \* represents 10% significance, \*\* represents 5% significance, and \*\*\* represents 1% significance.

*Panel A: Employment outcomes differences between RMBS bankers and non-RMBS bankers*

Employment outcome	RMBS bankers	non-RMBS bankers	Difference	Standard error
Employment at original underwriter	0.268	0.255	0.012	0.077
Employment at top 18 underwriter	0.426	0.356	0.070	0.071
RMBS bankers matched	329			

*Panel B: Employment outcomes differences between RMBS bankers and investment bankers*

Employment outcome	RMBS bankers	Investment bankers	Difference	Standard error
Employment at original underwriter	0.250	0.284	-0.034	0.056
Employment at top 18 underwriter	0.423	0.406	0.017	0.078
RMBS bankers matched	352			

compared with the 40% mean of employment at any top underwriter.

Across both outcomes, RMBS bankers fared at least as well as non-RMBS bankers. This is strong evidence that RMBS bankers were not disciplined, especially given that RMBS market headwinds would bias these regressions toward overestimating discipline. In the Online Appendix, we repeat this analysis using investment bankers as the control group instead of non-RMBS bankers with similar results.<sup>11</sup> The Online Appendix also includes results from regressions limited to outcome variables based on FINRA's Brokercheck data with similar results.

As a complement to the regression analysis in Table 3, we consider two matched sample analyses. We match RMBS bankers to non-RMBS bankers and investment bankers based on underwriter and initial position level. In addition, matched individuals are required to have an age difference of five years or fewer.<sup>12</sup> Panel A of Table 4 shows that RMBS bankers and non-RMBS bankers have a similar probability of remaining employed at their original firm and at a top underwriter in 2011. RMBS banker employment outcomes are also similar to investment banker outcomes in Panel B. Differences are all statistically insignificant and similar to the regression estimates.

While non-RMBS bankers are similar to RMBS bankers on observable characteristics, they could have career path differences that are unrelated to discipline. To assess this possibility, we compare RMBS bankers with non-RMBS bankers in a difference-in-differences framework. For this

analysis, we need samples of RMBS and non-RMBS bankers from an earlier time period. Thus, we restrict the analysis to the professional networking platform nonsigner sample. We start by comparing 2004–2006 RMBS bankers with non-RMBS bankers during the same time period. Then, to assess the possibility that RMBS banker turnover could be structurally different from non-RMBS banker turnover, we compare both samples with RMBS and non-RMBS bankers during 1998–2000.<sup>13</sup> Fig. 4 plots rates of continued employment at the same firm for RMBS bankers and non-RMBS bankers in 2004–2006 and 1998–2000. Both types of bankers fared similarly from 2007 to 2011 and 2001 to 2005, indicating similar patterns after both sample periods. This similarity suggests that RMBS bankers were not differentially disciplined after the financial crisis.<sup>14</sup>

To more formally control for any structural differences between RMBS and non-RMBS bankers, we estimate:

$$Y_i = \alpha_0 + \alpha_1 RMBS_i \times Post_i + \alpha_2 RMBS_i + \alpha_3 Post_i + X_i' \Gamma + \epsilon_i, \quad (1)$$

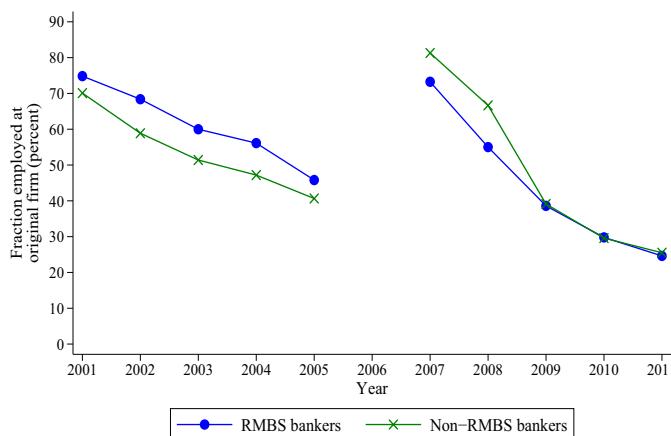
where  $Y_i$  is an indicator for employment status five years after the sample period (2011 for the samples of 2004–2006 bank employees and 2005 for the samples of 1998–2000 bank employees).  $RMBS_i$  is an indicator for being an RMBS banker (as opposed to a CMBS or non-mortgage ABS banker), and  $Post_i$  is an indicator for being in the 2004–2006 sample (as opposed to the 1998–2000 sample).  $RMBS_i \times Post_i$  is the interaction between  $RMBS_i$  and  $Post_i$ , which captures the differential change from 1998–2000 to 2004–2006 employment outcomes for RMBS bankers compared with CMBS and non-mortgage ABS bankers. Finally,  $X_i$  represents a set of controls including the individual's age, an indicator for whether he or she has an MBA degree, an indicator for whether he or she attended

<sup>11</sup> Compared with investment bankers, junior RMBS bankers have better employment outcomes and senior RMBS bankers have similar outcomes.

<sup>12</sup> There are 486 RMBS bankers from the top 18 underwriters for whom we also have initial job positions. Of those, we match 329 with a non-RMBS banker. We match 352 RMBS bankers with an investment banker based on the same criteria. The Online Appendix provides a description of the matched samples. As expected, the RMBS bankers have similar characteristics compared with the non-RMBS bankers. RMBS bankers resemble the investment bankers in age, but the matched investment bankers are more likely to hold an MBA and have a degree from a top 25 university. The Online Appendix shows that the matching results are not affected by these differences.

<sup>13</sup> For this analysis, we restrict our attention to the nonsigner RMBS and non-RMBS samples because we have equivalent historical samples from public profiles on the professional networking platform based on keywords in 1998–2000 positions.

<sup>14</sup> The Online Appendix shows a similar pattern for employment at a top RMBS underwriter.



**Fig. 4.** Difference-in-differences representation. This figure compares the employment status of residential mortgage-backed security (RMBS) bankers with that of commercial mortgage-backed security (CMBS) and non-mortgage asset-backed security (ABS) bankers over time. Signers are not included in the sample. The lines on the left represent the fraction of 1998–2000 RMBS bankers and 1998–2000 CMBS and non-mortgage ABS bankers who remained employed at their firm during 2001–2005. The lines on the right represent the fraction of 2004–2006 RMBS bankers and 2004–2006 CMBS and non-mortgage ABS bankers who remained employed at their firm during 2007–2011.

a top 25 university, and bank and job position fixed effects. This difference-in-differences regression specification controls for any structural differences between RMBS and non-RMBS bankers that are constant over time. Like the baseline regression specification, it does not control for different market conditions over time in the two markets. Because non-agency RMBS securitization grew substantially after 2000 and all but disappeared after 2006 while non-RMBS securitization was more stable across both time periods, market differences would bias these estimates toward finding evidence of discipline to the extent that RMBS banker human capital is specific to the RMBS market.

Panel A of Table 5 reports the results. Column 1 regresses continued employment in 2011 at the same firm on the RMBS indicator within the sample of all 2004–2006 RMBS and non-RMBS bankers. The coefficient on RMBS is 4.1 ppt, which is statistically insignificant and small relative to the mean rate of continued employment of 25%. In Column 2, we assess employment rates compared with historical employment rates by regressing continued employment five years after the sample period on Post within the sample of RMBS bankers from both periods. Consistent with the financial crisis hurting RMBS bankers relative to historical outcomes, the coefficient on Post is –20.6 ppt. To assess whether this difference is due to discipline or more general shocks to the structured finance labor market, we estimate the difference-in-differences specification in Column 3. The coefficient on RMBS × Post is a statistically insignificant –4.9 ppt. Columns 4 through 6 of Table 5 repeat the previous analysis with an indicator for employment at a top 18 underwriter instead of just at the banker's original firm with similar results. Confidence intervals for RMBS × Post are –16.3–6.4 ppt for retention at the same firm (Column (3)) and –13.8 ppt–13.0 ppt for continued employment at a top underwriter (Column (6)). Consistent with our baseline regressions, both results suggest that

discipline was limited, but, because this analysis includes nonsigners, it has less statistical power.

In Panel B of Table 5, we repeat the previous regressions separately for junior bankers. The coefficient on RMBS × Post in Column 3 is large and significantly negative (–25.5 ppt), consistent with internal discipline for junior bankers. We interpret this result cautiously because there was no evidence on discipline for junior bankers in our previous results. For employment at a top underwriter more generally, the coefficient on RMBS × Post is less than half as large and statistically insignificant, suggesting that the external labor market reverses some of this discipline.<sup>15</sup>

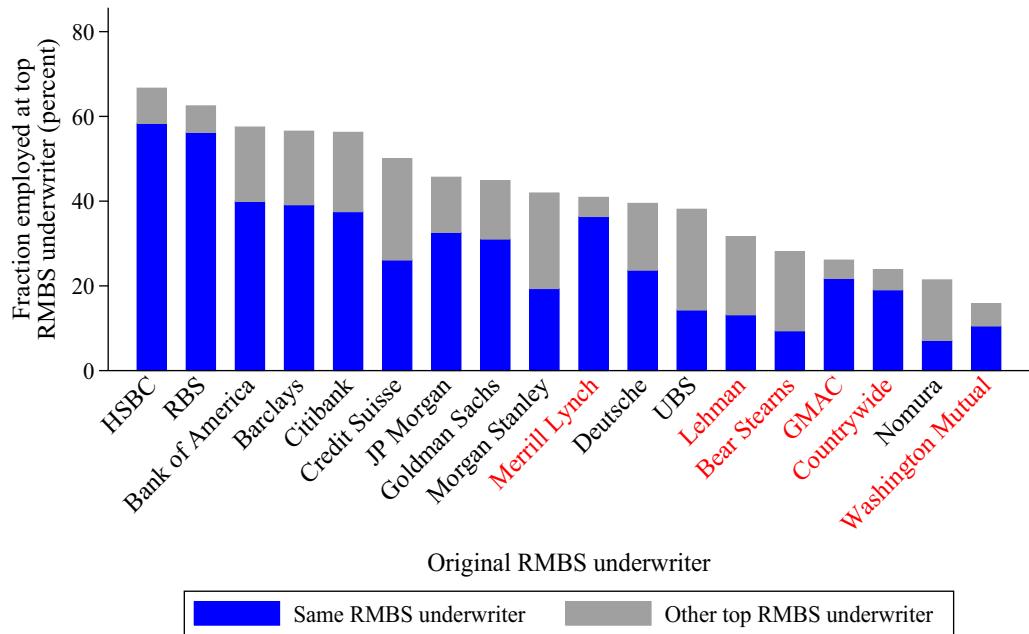
#### 4.3. Did discipline vary across banks?

Internal discipline is a bank-level decision, so some banks could have disciplined RMBS bankers, even though we do not see discipline for RMBS bankers in general. External labor markets could also discipline former employees of some banks more than others. To assess variance in discipline across banks, we plot 2011 rates of employment at employees' original firms and 2011 rates of employment at top underwriters more generally by firm in Panel A of Fig. 5. The figure distinguishes between employees who continued working at their original employer and employees who transitioned to a different top underwriter. Retention rates (in blue) range from 58% for HSBC to 7% for Nomura. In general, banks that failed and were acquired (highlighted in red) show lower rates of employment at the same firm and lower rates of employment at top underwriters more generally.<sup>16</sup>

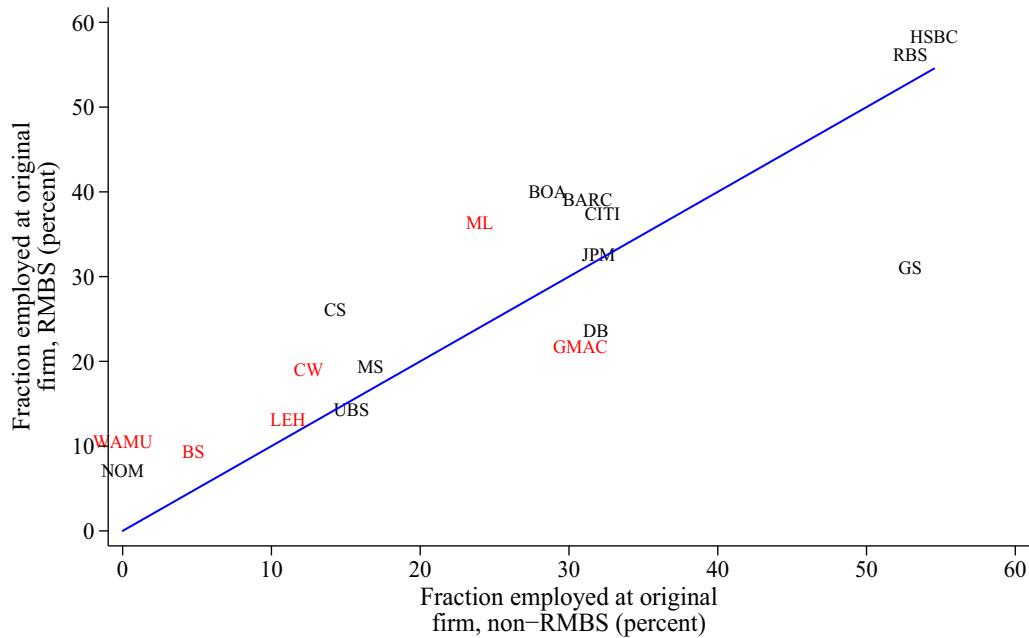
<sup>15</sup> In the Online Appendix, we reestimate the regressions in the sample of senior bankers and find no evidence of internal or external discipline.

<sup>16</sup> The acquired underwriters are Merrill Lynch, Lehman Brothers, Countrywide, GMAC, Bear Stearns, and Washington Mutual. We consider some-

*Panel A: RMBS bankers' employment by original firm*



*Panel B: Fraction employed at original firm: RMBS bankers versus non-RMBS bankers*



**Fig. 5.** Residential mortgage-backed security (RMBS) banker employment by original employer. Panel A shows the fraction of 2004–2006 RMBS bankers employed by a top 18 RMBS underwriter in 2011, by original RMBS underwriter. The blue area represents individuals who remained at their original firm, and the gray area represents individuals who were hired by a different top 18 RMBS underwriter. The underwriters highlighted in red are those that were acquired during the financial crisis. Panel B shows a scatter plot of the fraction of RMBS bankers employed by their original employer in 2011 (y-axis) and the fraction of non-RMBS bankers employed by their original employer in 2011 (x-axis). The blue line represents the 45 degree line. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

**Table 5**

Difference-in-differences employment outcome regressions.

The dependent variables are indicators for employment status five years after the sample period (2011 for the samples of 2004–2006 bank employees and 2005 for the 1998–2000 samples of bank employees). Employees are considered working for their original firm if they are employed by a bank that acquired their original employer. All regressions are ordinary least squares. RMBS is an indicator for being a residential mortgage-backed security (RMBS) banker as opposed to a non-RMBS banker as of the sample period. Post is an indicator for being in the 2004–2006 sample. RMBS × Post is the interaction of RMBS and Post, which captures the differential change from 1998–2000 to 2004–2006 employment trajectories for RMBS bankers compared with commercial mortgage-backed security and non-mortgage asset-backed security (ABS) bankers. The regressions analyze RMBS and non-RMBS nonsigner samples from 2004–2006 and 1998–2000 (signers are not included). Panel A considers all bankers, and Panel B shows the regression results in the subsample of junior bankers (i.e., analysts and associates). Clustered (by underwriter) standard errors are in parentheses. \* represents 10% significance, \*\* represents 5% significance, and \*\*\* represents 1% significance.

Variable	Employed at original firm			Employed at top underwriter		
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Panel A: All bankers</i>						
Mean	0.250	0.314	0.317	0.424	0.525	0.507
RMBS × Post			−0.049 (0.054)			−0.004 (0.063)
RMBS	0.041 (0.029)		0.099*** (0.032)	0.088 (0.056)		0.098*** (0.034)
Post		−0.207*** (0.054)	−0.147*** (0.040)		−0.226*** (0.057)	−0.220*** (0.044)
Age	−0.008** (0.003)	−0.002 (0.003)	−0.009*** (0.002)	−0.004 (0.004)	−0.002 (0.003)	−0.006*** (0.002)
MBA	0.062 (0.047)	−0.125** (0.055)	−0.001 (0.042)	0.037 (0.040)	−0.068 (0.044)	−0.008 (0.037)
Top 25 Alma Mater	−0.137*** (0.041)	−0.212*** (0.050)	−0.150*** (0.035)	−0.125*** (0.038)	−0.157*** (0.045)	−0.118*** (0.036)
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Position level fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Include ABS sample	Yes	No	Yes	Yes	No	Yes
Include 1998–2000 sample	No	Yes	Yes	No	Yes	Yes
Number of observations	623	484	992	623	484	992
Adjusted R-squared	0.067	0.102	0.102	0.061	0.093	0.095
<i>Panel B: Junior bankers</i>						
Mean	0.200	0.247	0.220	0.381	0.460	0.428
RMBS × Post			−0.255*** (0.073)			−0.104 (0.114)
RMBS	0.023 (0.058)		0.276*** (0.046)	0.091 (0.083)		0.228*** (0.070)
Post		−0.219*** (0.061)	0.064 (0.067)		−0.213*** (0.068)	−0.101 (0.108)
Age	−0.005 (0.005)	0.003 (0.005)	−0.001 (0.005)	−0.001 (0.007)	0.000 (0.005)	−0.002 (0.005)
MBA	0.083 (0.108)	−0.068 (0.099)	−0.025 (0.082)	0.054 (0.094)	−0.030 (0.089)	−0.014 (0.090)
Top 25 Alma Mater	−0.080** (0.039)	−0.145** (0.058)	−0.064* (0.036)	−0.102 (0.073)	−0.064 (0.102)	−0.008 (0.057)
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Position level fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Include ABS sample	Yes	No	Yes	Yes	No	Yes
Include 1998–2000 sample	No	Yes	Yes	No	Yes	Yes
Number of observations	210	174	313	210	174	313
Adjusted R-squared	0.004	0.122	0.054	0.028	0.095	0.063

The lower employment rates for RMBS employees of acquired firms could be due to discipline or lower outcomes for all employees at these firms. To differentiate these two possibilities, Panel B of Fig. 5 plots RMBS employment rates versus non-RMBS employment rates in 2011. Firms located below the blue 45 degree line had lower retention rates for RMBS bankers than for non-RMBS bankers, consistent with discipline. Most of the banks are close to the 45 degree line, and no evidence exists of differential

discipline at acquired banks. They have low retention for both RMBS and non-RMBS bankers.<sup>17</sup>

To formally test whether discipline varies across banks, we replicate our baseline regressions with interactions between our RMBS indicator and bank characteristics. Table 6 reports the results. In Column 1, we repeat our regressions in the full sample with an interaction between RMBS and an indicator for small underwriters (i.e., those out-

one to be employed at the original firm if he remains employed by the firm that acquired the original employer.

<sup>17</sup> Goldman Sachs is the only bank with a noticeably lower RMBS retention relative to non-RMBS retention, and even this difference is not statistically significant.

**Table 6**

Employment outcomes of residential mortgage-backed security (RMBS) bankers by type of underwriter.

The dependent variables are indicators for employment status in 2011 (i.e., five years after the sample period). Employees are considered working for their original firm if they are employed by a bank that acquired their original firm. All regressions are ordinary least squares. RMBS is an indicator for being an RMBS banker. *Small* is a dummy for underwriters outside the top 18. *Acquired* is an indicator for underwriters that were acquired after the crisis (Merrill Lynch, Lehman Brothers, Countrywide, GMAC, Bear Stearns, and Washington Mutual). *I-Bank* is an indicator for the underwriter being an investment bank (we consider Bear Stearns, Lehman Brothers, Merrill Lynch, Goldman Sachs, Morgan Stanley, Deutsche Bank, UBS, and Credit Suisse to be investment banks). The regressions analyze all RMBS and non-RMBS bankers who were originally employed by top 18 underwriters in 2004–2006. Clustered (by underwriter) standard errors are in parentheses. \* represents 10% significance, \*\* represents 5% significance, and \*\*\* represents 1% significance.

Variable	Employed at original firm			Employed at top underwriter	
	(1)	(2)	(3)	(4)	(5)
Mean	0.320	0.266	0.266	0.409	0.409
RMBS	-0.011 (0.029)	0.022 (0.023)	0.043** (0.018)	0.071 (0.048)	0.069* (0.042)
RMBS × Small	-0.152** (0.060)				
RMBS × Acquired		0.014 (0.037)		-0.112* (0.058)	
RMBS × I-Bank			-0.037 (0.042)		-0.056 (0.078)
Age	0.259*** (0.045)	-0.009*** (0.003)	-0.009** (0.003)	-0.006* (0.003)	-0.006* (0.003)
MBA	-0.005*** (0.002)	-0.008 (0.053)	-0.009 (0.053)	-0.037 (0.046)	-0.033 (0.047)
Top 25 Alma Mater	-0.001 (0.030)	-0.069*** (0.026)	-0.069*** (0.026)	-0.069** (0.030)	-0.070** (0.030)
Small Underwriter	-0.021 (0.028)				
Sample	Full sample	Top underwriters	Top underwriters	Top underwriters	Top underwriters
Bank fixed effects	No	Yes	Yes	Yes	Yes
Position level fixed effects	Yes	Yes	Yes	Yes	Yes
Number of observations	1328	957	957	957	957
Adjusted R-squared	0.047	0.084	0.085	0.058	0.057

side of the top 18). In this regression, we drop the bank fixed effects because we do not have good variation in RMBS outside of the top underwriters. The coefficient on RMBS is close to zero, indicating that there is no discipline at top banks, consistent with what we have shown already. The coefficient on RMBS × Small is a highly significant –15.2 ppt. This suggests that RMBS bankers were disciplined at smaller underwriters but not at the top banks. Because this regression does not have firm fixed effects, smaller RMBS firms such as mortgage companies could have had higher turnover than non-RMBS firms such as credit card and auto finance firms due to structural differences or financial performance as opposed to intentional discipline. Unfortunately, we do not have a good empirical setting to disentangle these explanations for smaller underwriters. In the Online Appendix, we further investigate smaller firms by analyzing employment outcomes for attendees of the 2006 American Securitization Forum (ASF), most of whom were employed by smaller firms. In contrast to the small underwriter results in Table 6, ASF issuer attendees had similar employment outcomes compared with ASF investor attendees and outperformed equity analysts.<sup>18</sup>

We next turn to comparing acquired banks with surviving banks with an RMBS × Acquired interaction term in Column 2. Here and in the remainder of Table 6,

we return to the top underwriter sample and include bank fixed effects. The coefficients on RMBS and RMBS × Acquired are both close to zero and statistically insignificant, indicating that RMBS bankers were not disciplined at acquired or surviving banks.<sup>19</sup> In Column 3, we repeat the same exercise with an interaction between RMBS and an indicator for investment bank.<sup>20</sup> The coefficient on RMBS is slightly positive (4.3 ppt) and significant for commercial banks, but the insignificant coefficient on RMBS × I – Bank indicates no meaningful difference between discipline at commercial banks and investment banks.<sup>21</sup> In Columns 4 and 5, we repeat the RMBS × Acquired and RMBS × I – Bank regressions with 2011 employment at a top underwriter as the outcome variable. RMBS × Acquired has a coefficient of –11.2 ppt (significant at the 10% level), indicating more discipline at acquired banks, but discipline at both types of banks is still close to zero. The coefficient on RMBS × I – Bank is again insignificant.<sup>22</sup>

<sup>18</sup> RMBS has a point estimate of 2.2 ppt with a 95% confidence interval of –2.6–7.1 ppt. RMBS × Acquired has a point estimate of 1.4 ppt with a 95% confidence interval of –6.4–9.2 ppt.

<sup>19</sup> We consider Bear Stearns, Lehman Brothers, Merrill Lynch, Goldman Sachs, Morgan Stanley, Deutsche Bank, UBS, and Credit Suisse to be investment banks.

<sup>20</sup> RMBS × I – Bank has a point estimate of –3.7 ppt with a 95% confidence interval of –12.5–5.0 ppt.

<sup>21</sup> We do not analyze top underwriter employment for small banks because these RMBS bankers were not at top underwriters to begin with.

<sup>18</sup> The structure of the ASF data does not allow us to distinguish between RMBS and non-RMBS issuers or to control for firm fixed effects.

## 5. Why did RMBS bankers not face labor market discipline?

Our evidence indicates that RMBS bankers at top banks did not experience labor market discipline. We now use employee and bank characteristics to investigate four possible explanations for this finding. First, examining RMBS bankers as a whole could be too broad if discipline was limited to a smaller set of those most directly culpable for RMBS fraud. Second, banks could have retained RMBS employees mainly so that they would not be easily used as witnesses in litigation against the banks. Third, banks could have disciplined responsible employees only after it became public that RMBS fraud was widespread. Fourth, labor market discipline could have varied with civil penalties. Banks that paid the largest penalties could have disciplined RMBS employees while other banks did not. We find evidence that these hypotheses all fail as complete explanations and conclude by discussing remaining possibilities for why banks did not punish employees for RMBS fraud.

### 5.1. Were the most culpable disciplined?

The widespread nature of RMBS misreporting and other abuses shown in the academic evidence and DOJ settlements described in Section 2 strongly suggests that a large set of people knew that RMBS investors were being misled. Nonetheless, culpability almost certainly varies across RMBS bankers, and our full sample analysis could miss discipline of the most responsible individuals by grouping them with less culpable RMBS bankers. To assess whether discipline was related to culpability, we analyze subsamples of RMBS bankers with higher responsibility and test how discipline varies with deal characteristics.

We have already seen one piece of evidence that discipline is unrelated to responsibility in that discipline is similarly nonexistent for both junior and senior RMBS bankers. Perhaps our vice president (VP) and above definition for senior bankers is too broad. In Column 1 of Panel A of Table 7, we limit our regression analysis to bankers with a position of managing director or higher. These are the senior-most bankers heading up MBS and ABS groups at major banks with ultimate responsibility for the securities their firms issue and underwrite. Even in this highly senior subsample, RMBS has a negligible coefficient of -2.2 ppt, albeit with a larger standard error (5.0 ppt) and wider 95% confidence interval (-12.9–8.4 ppt) than before due to the smaller sample size.

We also restrict the sample to bankers who signed SEC filings related to RMBS and non-RMBS deals and then further restrict the sample to signers of Form S-3 prospectus statements. The Form S-3 signers have the highest level of documentable responsibility because the SEC requires prospectuses to be signed by the principal officers and directors of the security issuer, typically a subsidiary of the bank focused on sponsoring the deals. Moreover, Form S-3 signers were frequently named in lawsuits alleging mortgage fraud.<sup>23</sup> Within the signer and Form S-3 signer

subsamples, we once again find negligible coefficients on RMBS (reported in Columns 2 and 3 of Panel A of Table 7). Due to restricted sample sizes, 95% confidence intervals for RMBS are -13.1–11.7 ppt for signers and -16.0–15.9 ppt for Form S-3 signers.

In FHFA lawsuits, certain signers were personally named as individual defendants for their role in RMBS securitization. If anyone was disciplined, we would expect to see evidence of it for this group. In Column 4 we further restrict the Form S-3 signer sample by retaining only RMBS Form S-3 signers who were named in FHFA lawsuits. The resulting coefficient is a moderately positive (though statistically insignificant) 12.9 ppt, with a 95% confidence interval of -7.1–32.9 ppt, indicating no evidence of discipline even for the most visibly responsible subset of RMBS bankers. In Panel B of Table 7, we repeat our subsample regressions with 2011 employment at any top underwriter as the outcome variable with similar results. Once again, there is no evidence of discipline.

We further investigate whether RMBS bankers who were named in lawsuits brought by the FHFA were disciplined by comparing the 74 FHFA defendants in our sample with other RMBS signers. Column 1 of Table 8 reports results for regressions of employment outcomes on an indicator for FHFA defendants. With the caveat that sample size limits the power of this analysis, the results indicate that FHFA defendants had similar employment outcomes at their original firm (Panel A) and at top underwriters more generally (Panel B) compared with other RMBS signers, consistent with no discipline even for individuals who were personally sued by the FHFA.

Finally, we assess whether RMBS banker discipline was correlated with deal performance. Given that fraudulent and poorly performing RMBS deals cost banks significantly in terms of fines and reputation, one would expect banks to discipline employees linked to the worst deals. We begin by calculating deal loss rates as of 2012.<sup>24</sup> High Loss Rate is an indicator that takes a value of one if the average loss rate for deals the person signed is above the median, which is 13%. We then calculate misreporting at the deal level using data from Griffin and Maturana (2016b) for deals with at least 20% of loans matched to property records.<sup>25</sup> High Misreporting is an indicator that takes a value of one if the RMBS deals a person signed have an average misreporting rate above the median, which is 46%. Finally, we consider whether the deals a person signed were implicated in legal settlements. We construct a list of 3257 RMBS securities issued between 2004 and 2006 that were part of DOJ settlements involving 11 banks [Bank of America (including Merrill Lynch and Countrywide), JP Morgan (including Bear Stearns and Washington Mutual), Citigroup, Goldman Sachs, Morgan Stanley, Credit Suisse, and Deutsche Bank], which represents 76% of the RMBS deals in our sample. For each RMBS signer, we calculate

<sup>24</sup> We use data from Lewtan's ABSNet, which provides loan-level performance data as of September 2012.

<sup>25</sup> Griffin and Maturana (2016b) identify second lien misreporting, owner-occupancy misreporting, and appraisal inflation by comparing loan-level data reported by deal sponsors with property-level data on liens, ownership, and property characteristics in county deeds records.

<sup>23</sup> For example, 51% of RMBS Form S-3 signers at large underwriters were named in FHFA lawsuits.

the percent of their RMBS deals that were implicated in settlements. We define high settlement RMBS signers as those with settlement rates above 50%, which corresponds to the 28th percentile of RMBS signers (the median settlement rate is 99.8%).

Columns 2–4 of Table 8 reports results for regressions of employment outcomes on the indicators for high loss, misreporting, and settlement rates within the sample of RMBS signers who worked at top underwriters. Discipline based on deal quality and performance implies that coefficients on *High Loss Rate*, *High Misreporting*, and *High Settlement* should be negative. Instead, we find no significant relation between settlement, misreporting, and loss rates and employment at the original firm (Columns 2–4 of Panel A). Similarly, there is no significant relationship between deal performance and continued employment at a top underwriter more generally (Columns (2)–(4) of Panel B). The statistical power of these tests is limited, but consistency across specifications and the frequency with which we find positive coefficients suggests that discipline is unrelated to deal performance. More formally, 95% confidence intervals for *High Loss Rate* (−9.2–24.9 ppt in Panel A and −15.66–28.2 ppt in Panel B) rule out large negative coefficients, whereas *High Misreporting* and *High Settlement* standard errors are too large to have meaningful power. In the Online Appendix, we report results from regressions of employment outcomes on continuous performance measures and

again find no evidence of differential discipline for RMBS bankers associated with lower quality deals.

### 5.2. Reducing legal liability?

Dyck et al. (2010) show how insiders expose fraud. Perhaps banks retained RMBS employees so they would not be easily used as witnesses in litigation against the banks. This could explain our employment retention results, but it is inconsistent with banks hiring RMBS bankers from other banks in the external labor market. Moreover, RMBS bankers were frequently promoted, which is also inconsistent with retaining employees merely to keep them from testifying.

Many RMBS bankers left their original firms for jobs at other top underwriters. Which underwriters hired them? Is there any evidence that certain banks sought out or systematically avoided these bankers? Fig. 6 displays the hiring relations between banks for the 2004–2006 RMBS bankers who remained employed at top underwriters in 2011. The green bubbles represent underwriters that survived as stand-alone entities, and the red bubbles represent underwriters that were acquired. The size of the bubbles represents the number of RMBS bankers in our 2004–2006 sample who worked at each underwriter, ranging from 48 employees at Citibank to 12 at HSBC. The arrows represent employees who moved from one underwriter to

**Table 7**

Employment outcomes of residential mortgage-backed security (RMBS) bankers: subsample regressions.

The dependent variables are indicators for employment status in 2011 (i.e., five years after the sample period). In Panel A, the dependent variable is an indicator for employment at the employee's original firm. In Panel B, the dependent variable is an indicator for employment at a top 18 underwriter. Employees are considered working for their original firm if they are employed by a bank that acquired their original firm. All regressions are ordinary least squares. RMBS is an indicator for being an RMBS banker. The regressions analyze RMBS and non-RMBS bankers who were originally employed by top 18 underwriters in 2004–2006. Column 1 considers those bankers with job positions of managing director or higher during the sample period. Column 2 considers those bankers who signed legal documents associated with RMBS, commercial mortgage-backed security, and non-mortgage asset-backed security deals from 2004 to 2006. Column 3 considers the subset of signers who signed shelf registration statement (Form S-3) documents. Column 4 compares the subset of RMBS Form S-3 signers who were named in Federal Housing Finance Agency (FHFA) lawsuits with non-RMBS signers. Clustered (by underwriter) standard errors are in parentheses. \* represents 10% significance, \*\* represents 5% significance, and \*\*\* represents 1% significance. MD: Managing Director.

Variable	MD and above (1)	Signers (2)	Form S-3 signers (3)	FHFA defendants (4)
<i>Panel A: Employed at same underwriter</i>				
Mean	0.297	0.296	0.281	0.293
RMBS	−0.022 (0.050)	−0.007 (0.059)	−0.001 (0.076)	0.129 (0.094)
Control variables	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes
Position level fixed effects	Yes	Yes	Yes	Yes
Number of observations	236	334	217	150
Adjusted R-squared	0.114	0.139	0.118	0.194
<i>Panel B: Employed at top underwriter</i>				
Mean	0.377	0.380	0.332	0.353
RMBS	−0.046 (0.085)	−0.026 (0.064)	0.003 (0.074)	0.164 (0.105)
Control variables	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes
Position level fixed effects	Yes	Yes	Yes	Yes
Number of observations	236	334	217	150
Adjusted R-squared	0.066	0.082	0.111	0.147

**Table 8**

Employment outcomes of residential mortgage-backed security (RMBS) signers by lawsuit and deal characteristics.

The dependent variables are indicators for employment status in 2011 (i.e., five years after the sample period). In Panel A, the dependent variable is an indicator for employment at the employee's original firm. In Panel B, the dependent variable is an indicator for employment at a top 18 underwriter. Employees are considered working for their original firm if they are employed by a bank that acquired their original firm. All regressions are ordinary least squares. The sample is restricted to RMBS signers with professional networking profiles who were originally employed at top 18 underwriters and who primarily signed RMBS deals. *FHFA Defendant* is an indicator that takes the value of one if the signer was named in a Federal Housing Finance Agency (FHFA) lawsuit. *High Loss Rate* is an indicator that takes a value of one if average loss rate as of September 2012 for deals the person signed is above the median, which is 13%. Misreporting is calculated at the deal level using data from Griffin and Maturana (2016b) for deals with at least 20% of loans matched to loan-level property records data. *High Misreporting* is an indicator that takes a value of one if the RMBS deals a person signed have an average misreporting rate above the median rate, which is 45%. *High Settlement* captures the extent to which RMBS deals a person signed were specifically implicated in settlements above 50%. *High Settlement* is an indicator that takes a value of one if the percent of deals a person signed that were implicated in settlements is above the median settlement rate of 80%. Clustered (by underwriter) standard errors are in parentheses. \* represents 10% significance, \*\* represents 5% significance, and \*\*\* represents 1% significance.

Variable	(1)	(2)	(3)	(4)
<i>Panel A: Employed at same underwriter</i>				
Mean	0.283	0.279	0.286	0.283
<i>FHFA Defendant</i>	-0.018 (0.103)			
<i>High Loss Rate</i>		0.079 (0.081)		
<i>High Misreporting</i>			0.009 (0.113)	
<i>High Settlement</i>				0.030 (0.196)
Control variables	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes
Position level fixed effects	Yes	Yes	Yes	Yes
Number of observations	230	226	168	230
Adjusted R-squared	0.121	0.140	0.154	0.121
<i>Panel B: Employed at top underwriter</i>				
Mean	0.370	0.367	0.363	0.370
<i>FHFA Defendant</i>	-0.018 (0.106)			
<i>High Loss Rate</i>		0.062 (0.104)		
<i>High Misreporting</i>			-0.060 (0.144)	
<i>High Settlement</i>				0.107 (0.177)
Control variables	Yes	Yes	Yes	Yes
Bank fixed effects	Yes	Yes	Yes	Yes
Position level fixed effects	Yes	Yes	Yes	Yes
Number of observations	230	226	168	230
Adjusted R-squared	0.110	0.127	0.176	0.112

another by 2011, and the thickness of the arrow represents the number of employees making the move. The largest move consists of eight employees who went from Merrill Lynch to Bank of America due to Bank of America's acquisition of Merrill Lynch. The next largest move is five employees who went from Lehman Brothers to Barclays, which acquired Lehman Brothers' US investment banking operations.

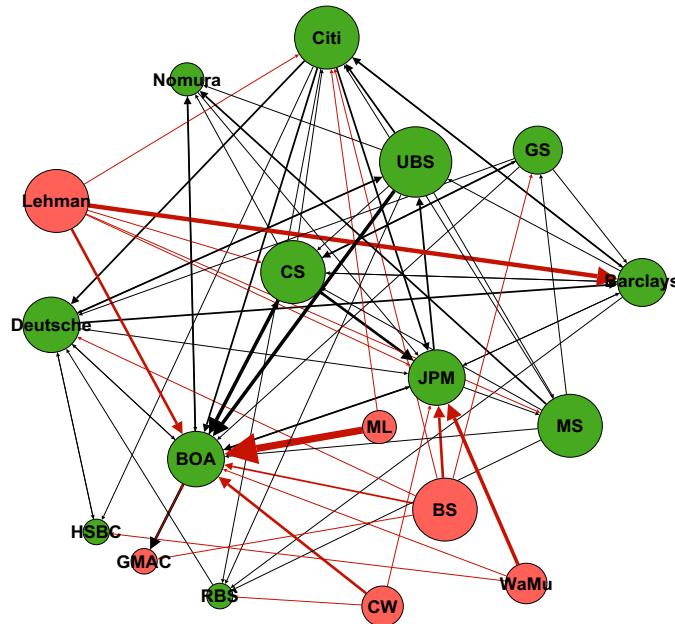
Several patterns emerge from Fig. 6. First, even for acquired banks, many sample employees are still working at top underwriters. Second, considerable cross-hiring is evident across most banks. Third, Bank of America, JP Morgan, and Citibank were particularly active in acquiring and externally hiring RMBS bankers from other top banks. This cross-pollination across the banking industry could have a large effect on corporate culture.

To better understand retention, acquisition, and external hiring by bank, Fig. 7 plots the number of RMBS bankers employed by each top underwriter in 2011. Employees are categorized as retained if they worked for the same bank in 2004–2006. Similarly, they are categorized as acquired if they previously worked for a bank that the underwriter acquired after 2006. The remaining employees are external hires from other top banks. All of the surviving banks both retained and hired RMBS bankers, suggesting that none of them attempted to avoid these individuals. Bank of America, JP Morgan, and Citibank stand out as employing the most 2004–2006 RMBS bankers. This is in line with their acquisitions and large employment share during 2004–2006 (see the Online Appendix for sample employment by bank during 2004–2006) and suggests that they treated RMBS bankers much like any other financial services professionals when considering them for employment.

Promoting RMBS bankers to more senior positions is also inconsistent with merely minimizing legal liabilities. Panel A of Fig. 8 plots promotion and job upgrade rates by year for all RMBS bankers (i.e., signers and nonsigners) except those who were already managing directors or higher in 2004–2006. By 2016, 61% of the sample had upgraded their position levels compared with their 2004–2006 sample positions. Moreover, 24% were upgraded at top underwriters, and 11% were promoted at their original employer. In Panel B of Fig. 8, we focus on individuals who were analysts or associates in 2004–2006 and track their progress toward becoming vice president or higher. By 2016, 22% of these analysts and 37% of these associates had obtained a position of VP or higher somewhere.

To assess whether RMBS bankers were disciplined with lower promotion and job upgrade rates compared with non-RMBS bankers, we employ the same regression framework introduced in Section 4. As before, we compare RMBS bankers with non-RMBS bankers. Table 9 reports the results. Compared with non-RMBS bankers, RMBS bankers have similar promotion and job upgrade trajectories at their original firms (Column 1) and top underwriters more generally (Column 3). In Column 1, The 9.4% mean promotion rate combined with a standard error of 2.6 ppt gives the regression little power. In Column 3, the 95% confidence interval for RMBS of -6.1–11.3 ppt relative to a mean job upgrade rate of 19.4% rules out large negative effects.

With respect to job upgrades at any company, RMBS bankers fare moderately worse compared with non-RMBS bankers as shown by the RMBS coefficient of -7.9 ppt (significant at the 10% level) relative to a mean upgrade rate at any company of 50.2% (Column 5). Tests for differences by seniority level in Columns 2, 4, and 6 indicate that promotion and upgrade discipline was similar for junior and



**Fig. 6.** Residential mortgage-backed security (RMBS) banker movement between top underwriters, 2006–2011. This figure shows the network structure of employee movements across top underwriters. The size of the bubbles represents the number of RMBS bankers in our 2004–2006 sample who worked at each underwriter. The green bubbles represent underwriters that survived as stand-alone entities, and the red bubbles represent underwriters that were acquired. The arrows represent employees who moved from one underwriter to another by 2011, and the thickness of the arrow represents the number of employees making the move. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

senior RMBS bankers, with the caveat that these regressions have limited power.

### 5.3. Delayed discipline?

Perhaps banks took action to discipline RMBS bankers only after the extent of RMBS fraud became publicly known. Although accusations of mortgage fraud were made before 2011 and subsequent acknowledgments indicate wide awareness within the banks, limited public information was available to assess the magnitude of the fraud and the extent to which banks were aware of and participated in it. If discipline did not occur until public revelations after 2011, we would not detect it with our 2011 employment outcomes.

By 2016, many major banks acknowledged wrongdoing and paid over \$137 billion in settlements with the federal and state governments. To assess whether discipline was delayed until closer to 2016, we repeat our regressions for 2016 outcomes (Panel A of Table 10). Across all employment, promotion, and job upgrade outcomes, no evidence exists of RMBS banker discipline. For employment at the original firm and employment at top underwriters more generally (Columns 1 and 2), RMBS bankers fared better than non-RMBS bankers (by 5.4 ppt at the original firm and 7.8 ppt at any top underwriter, both of which are statistically significant). In Panel B, we restrict our attention to underwriters that settled with the US Department of Justice by mid-2016, namely, Bank of America (including Merrill Lynch and Countrywide), JP Morgan (including Bear Stearns and Washington Mutual), Citibank, Goldman

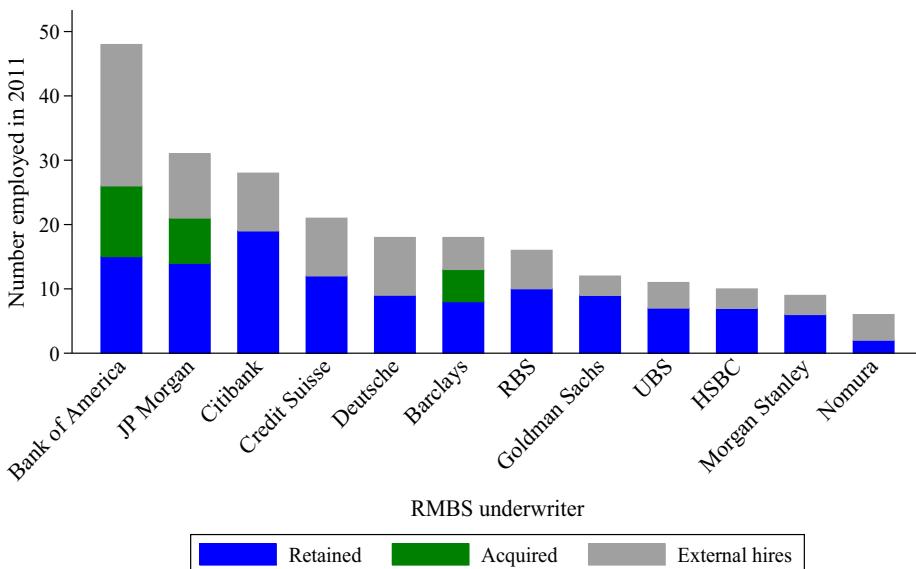
Sachs, and Morgan Stanley.<sup>26</sup> Once again, there is no evidence of significant discipline, and RMBS bankers fared better than non-RMBS bankers on employment at a top underwriter.

### 5.4. Insufficient penalties?

While the \$137 billion in settlements with the banks broke all previous bank records, penalties varied across banks. Perhaps penalties at some banks were too small to incentivize banks to discipline employees. To assess whether discipline was related to penalties, we examine the relation between settlement values and discipline at the bank level. Because settlements were global agreements, we group surviving banks with the firms they acquired for this analysis. We scale settlements by 2000–2008 non-agency mortgage-backed security issuance volume, as reported by *Inside Mortgage Finance* (2009). For example, the largest settlement was Bank of America's \$16.65 billion, which represents a settlement cost of 1.8% relative to the \$930 billion of non-agency RMBS issued by Bank of America, Merrill Lynch, and Countrywide between 2000 and 2008.

Fig. 9 plots 2016 top underwriter employment rates and scaled settlement costs by bank. Employment rates vary from 19% for Morgan Stanley to 44% for Citibank, and

<sup>26</sup> Credit Suisse and Deutsche Bank, which settled with the DOJ at the very end of 2016, are excluded from this analysis because their settlements could have been too late to impact 2016 employment outcomes.



**Fig. 7.** Residential mortgage-backed security (RMBS) banker 2011 employment by bank. This figure shows the number of RMBS bankers in the sample employed by each top underwriter in 2011. The blue area represents those employees who worked at the underwriter and were retained by it. The green area represents those employees who became employed at the underwriter through an acquisition. The gray are represents external hires. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

**Table 9**

Promotions and job upgrades of residential mortgage-backed security (RMBS) bankers.

The dependent variables are indicators promotion status in 2011 (i.e., five years after the sample period). Employees are considered working for their original firm if they are employed by a bank that acquired their original firm. All regressions are ordinary least squares. RMBS is an indicator for being an RMBS banker. Senior is an indicator for being a senior banker (i.e., having a position of vice president or higher) during the sample period. The regressions analyze the sample of RMBS bankers and commercial mortgage-backed security and non-mortgage asset-backed security bankers with professional networking profiles who were originally employed at top 18 underwriters. Bankers with job positions during the sample period of managing director or higher are excluded from the sample. Clustered (by underwriter) standard errors are in parentheses. \* represents 10% significance, \*\* represents 5% significance, and \*\*\* represents 1% significance.

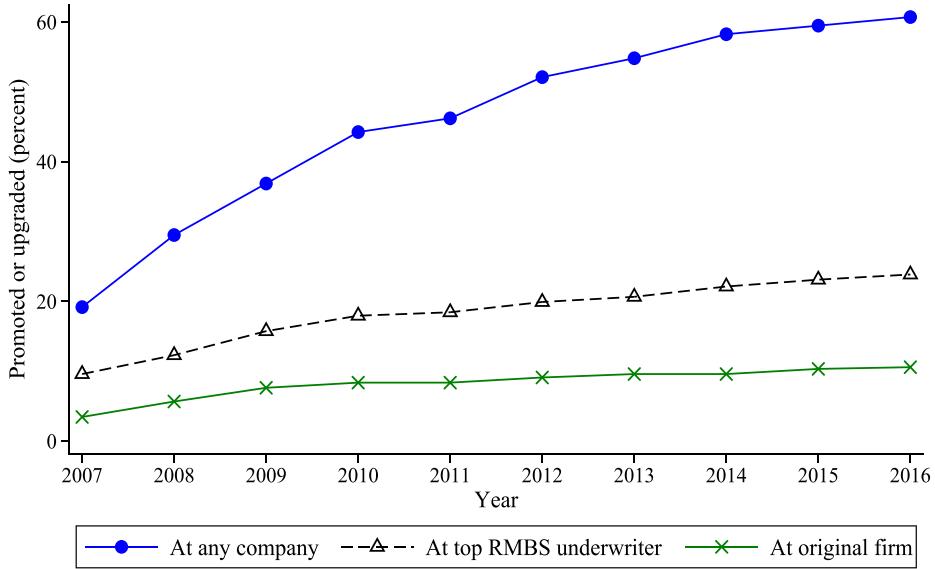
Variable	Promoted		Job upgrade at top underwriter		Job upgrade at any company	
	(1)	(2)	(3)	(4)	(5)	(6)
Mean	0.094	0.094	0.194	0.194	0.502	0.502
RMBS	-0.020	-0.033	0.026	0.021	-0.079*	-0.105
	(0.026)	(0.070)	(0.041)	(0.103)	(0.043)	(0.082)
RMBS × Senior	0.019	0.019	0.007	0.007	0.039	(0.103)
	(0.074)	(0.074)	(0.102)	(0.102)		
Age	-0.002	-0.002	-0.002*	-0.002*	0.001	0.001
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)	(0.002)
MBA	0.006	0.007	0.027	0.027	0.061	0.063
	(0.026)	(0.024)	(0.033)	(0.031)	(0.065)	(0.064)
Top 25 Alma Mater	0.004	0.004	0.039	0.039	0.091**	0.090**
	(0.041)	(0.041)	(0.051)	(0.050)	(0.037)	(0.037)
Bank fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Position level fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	608	608	608	608	608	608
Adjusted R-squared	0.085	0.083	0.086	0.084	0.071	0.070

settlement costs vary from 1.8% for Bank of America to 9.3% for Deutsche Bank. Contrary to penalties driving discipline, no meaningful relation exists between settlement costs and employment rates. If anything, the relation is slightly positive, which is the opposite of what we would predict.

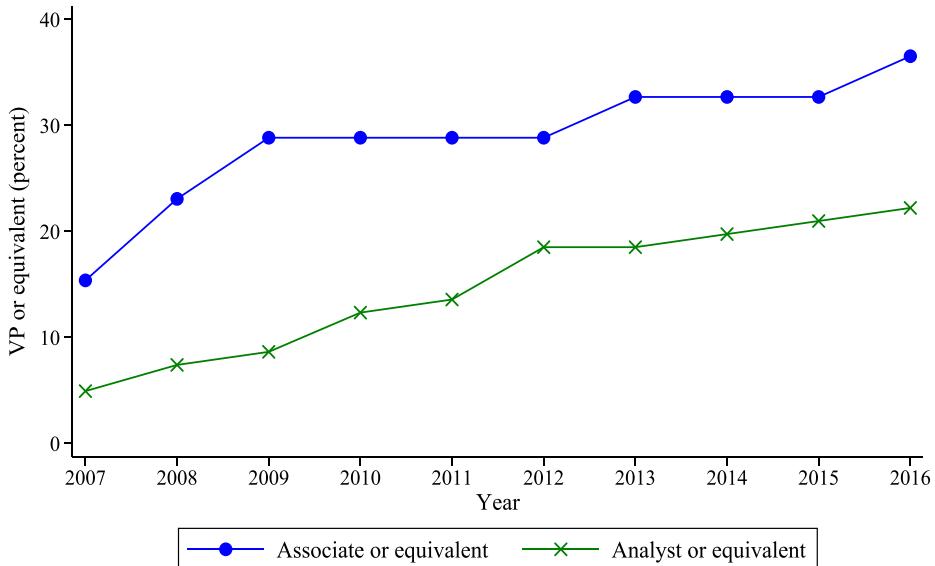
### 5.5. Graduate school

Perhaps an exodus to graduate school diminished discipline. Anyone who taught in a business or economics graduate program around the time of the financial crisis knows stories of students who went back to school in the

Panel A: Fraction of 2004–2006 RMBS bankers promoted or upgraded



Panel B: Fraction of 2004–2006 RMBS junior bankers that became VP or higher



**Fig. 8.** Promotions and job upgrades of residential mortgage-backed security (RMBS) bankers by year. Panel A shows the fraction of 2004–2006 RMBS bankers promoted by year, by type of firm. Bankers with positions of managing director or higher are excluded from the sample. Panel B shows the fraction of junior 2004–2006 RMBS bankers who achieved the job position of vice president (VP) or equivalent, by year. The blue solid circles represent those bankers who were an associate or equivalent (e.g., manager, consultant, trader), and the green crosses represent those bankers who were an analyst or senior analyst. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

aftermath of the financial crisis. As RMBS markets disappeared, did RMBS bankers react by going back to school for MBAs or other degrees and training?

Fig. 10 plots the fraction of junior RMBS bankers who went back to school by year and type of educational program. We consider an individual as having gone back to

school if he started a new educational experience after 2006 and before or during the year being considered. By 2016, approximately 16% of the sample pursued an MBA, and another 10% pursued some other form of education.

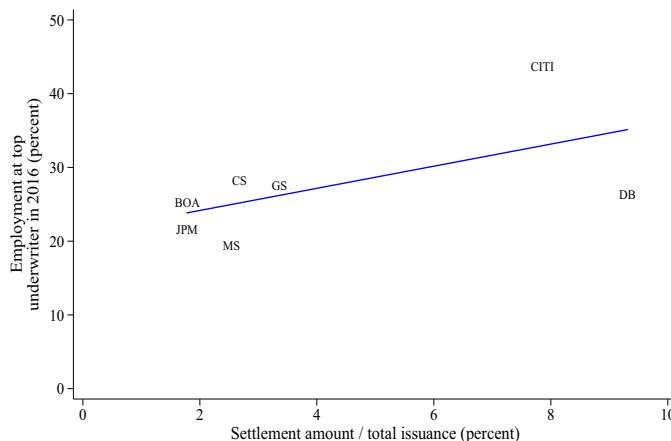
In the Online Appendix, we report regression results testing whether junior RMBS banker back-to-school rates

**Table 10**

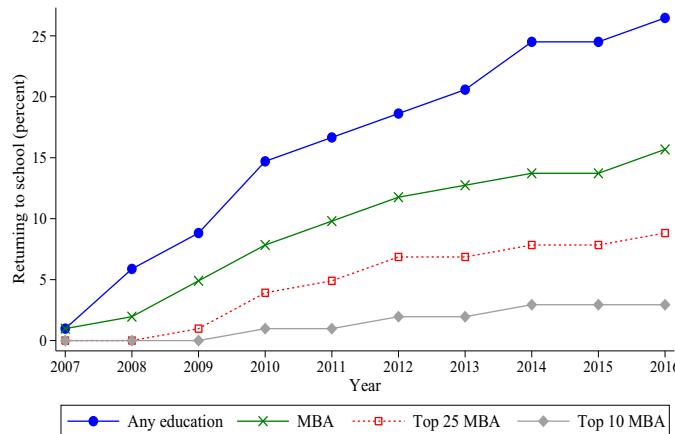
Employment and promotion outcomes in 2016.

The dependent variables are indicators for employment or promotion status in 2016 (i.e., ten years after the sample period). Employees are considered working for their original firm if they are employed by a bank that acquired their original firm. All regressions are ordinary least squares. *RMBS* is an indicator for being a residential mortgage-backed security (RMBS) banker. In Panel A, all top underwriters are included in the regressions. In Panel B, only those banks that had settled with the US Department of Justice (DOJ) by mid-2016 are considered. Clustered (by underwriter) standard errors are in parentheses. \* represents 10% significance, \*\* represents 5% significance, and \*\*\* represents 1% significance.

Variable	Employed original firm (1)	Employed top underwriter (2)	Promoted original firm (3)	Job upgrade top underwriter (4)	Job upgrade anywhere (5)
<i>Panel A: All top underwriters</i>					
Mean	0.125	0.236	0.113	0.248	0.638
<i>RMBS</i>	0.054** (0.024)	0.078*** (0.025)	-0.016 (0.027)	0.042 (0.040)	-0.038 (0.035)
Age	-0.006* (0.003)	-0.006** (0.003)	-0.003** (0.001)	-0.006*** (0.002)	-0.003 (0.003)
MBA	-0.021 (0.017)	-0.050 (0.033)	0.013 (0.028)	0.028 (0.045)	0.098 (0.085)
<i>Top 25 Alma Mater</i>	-0.020 (0.015)	0.021 (0.031)	-0.008 (0.040)	0.020 (0.058)	0.059 (0.041)
Bank fixed effects	Yes	Yes	Yes	Yes	Yes
Position level fixed effects	Yes	Yes	Yes	Yes	Yes
Number of observations	957	957	608	608	608
Adjusted R-squared	0.048	0.032	0.110	0.137	0.067
<i>Panel B: Underwriters that settled with DOJ by 2016</i>					
Mean	0.145	0.239	0.135	0.259	0.635
<i>RMBS</i>	0.060 (0.041)	0.090*** (0.030)	-0.038 (0.046)	0.037 (0.049)	-0.067 (0.054)
Age	-0.007** (0.004)	-0.008** (0.004)	-0.003*** (0.001)	-0.008*** (0.002)	-0.002 (0.004)
MBA	-0.020 (0.025)	-0.056 (0.050)	0.007 (0.040)	0.030 (0.065)	0.062 (0.144)
<i>Top 25 Alma Mater</i>	-0.004 (0.021)	0.046 (0.054)	0.047 (0.058)	0.104 (0.080)	0.079 (0.057)
Bank fixed effects	Yes	Yes	Yes	Yes	Yes
Position level fixed effects	Yes	Yes	Yes	Yes	Yes
Number of observations	557	557	348	348	348
Adjusted R-squared	0.052	0.051	0.144	0.179	0.081



**Fig. 9.** Employment at top underwriters and settlement size. This figure shows the fraction of bankers employed at a top underwriter in 2016 by original underwriter, by settlement size. Employees are considered working for their original employer if they are employed by a bank that acquired their original employer. The blue line fits a linear regression. Settlement amounts come from US Department of Justice press releases and total private-label residential mortgage-backed security issuance comes from Inside Mortgage Finance. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)



**Fig. 10.** Residential mortgage-backed security (RMBS) bankers returning to school. This figure shows the fraction of junior 2004–2006 RMBS bankers (i.e., analysts and associates) who returned to school, by year. The blue circles represent the fraction of bankers who pursued any type of education. The green crosses represent the fraction of bankers who went to business school. The red hollow squares and the gray diamonds distinguish among those bankers who went to business school at a top 25 university and a top 10 university (based on the *US News and World Report* 2006 university rankings), respectively. MBA: master of business administration. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)

were high compared with non-RMBS bankers using the difference-in-differences framework. A moderate uptick is evident in returning to school relative to the 1998–2000 sample, but this trend was similar for RMBS and non-RMBS bankers.

### 5.6. Discussion of explanations

Our findings show no support for the hypotheses that banks punished employees who were most culpable or directly responsible, kept RMBS employees only to avoid having them testify in litigation against the banks, punished RMBS employees after the fraud was publicly disclosed, or punished employees only when corporate penalties were relatively larger.

This leads to the conclusion that upper bank management decided not to punish employees for RMBS fraud. Managers could have decided that discipline is not in the bank's best interest, potentially because RMBS activities were consistent with bank directives, or they could have concluded that discipline was not in their personal best interest, perhaps because acknowledging widespread RMBS deficiencies could put their own careers in jeopardy. We briefly discuss three variants of these explanations, as well as why discipline in this context could have differed from other situations.

First, upper management could have concluded that RMBS fraud should not be disciplined because it was in the best interest of shareholders, at least ex ante. Bank profits were at record highs from 2005 to 2007, and firms could have expected the profits from dubious RMBS activity to be greater than expected penalties (Becker, 1968). Fig. 9 shows that the actual penalties were moderate in comparison with the size of the RMBS market, so the expected profits could have been high enough for the

bank to ignore the possible penalties and the reputational loss.<sup>27</sup>

The poor performance of banks during the financial crisis strongly suggests that RMBS activities were costly for shareholders ex post, but ex ante banks perhaps did not fully anticipate the negative spillovers caused by the combined effects of structured finance activities or the speed with which the market would collapse, which would be consistent with the evidence in Fahlenbrach and Stulz (2011) that most bank executives did not sell shares prior to the crisis. More generally, the empirical literature finds that fraud is costly to shareholders (Dyck et al., 2014), firm culture (Guiso et al., 2015), and the economic and financial system (Guiso et al., 2006; Gurun et al., 2017). Also, discipline could be costly to administer either because banks do not want to lose skilled employees or because banks fear wrongful termination lawsuits. Even if banks want employees to fear discipline ex ante, they perhaps are not able to commit to discipline ex post, particularly for widespread conduct that would require firing large groups of people.

Second, agency conflicts could have caused managers to forgo disciplining RMBS bankers. For example, misaligned incentives and a focus on short-term compensation could have led managers to engage in questionable activities to benefit themselves at the expense of losses to long-term shareholders. Consistent with this premise, Kolasinski and Yang (2018) find that financial firms with shorter chief executive officer (CEO) vesting schedules had poorer perfor-

<sup>27</sup> Griffin et al. (2014) show theoretically that the disciplining effects of reputation perhaps do not hold with complex securities because a firm could find it more profitable to burn its reputation through the creation of complex securities if the profits from doing so are large enough and removed in time from the future lost revenue. Managers paid partially based on revenue to the division would amplify the mechanism.

mance in the crisis, more subprime exposure, and larger fraud settlements. Using large stock holdings and cash bonuses by CEOs prior to the crisis, Fahlenbrach and Stulz (2011) do not find support for the short-term compensation view. A different agency channel is that upper-level managers could prefer not to penalize RMBS employees due to personal relations or out of fear that disciplining RMBS employees could lead to their own ousting. This behavior could be reinforced by collective group thinking or the rationalization of actions within the bank.

Third, it is important to consider why banks did not discipline RMBS employees while managers and directors associated with corporate misrepresentation are frequently disciplined (Karpoff et al., 2008; Fich and Shivdasani, 2007) and many of the same banks routinely dismiss employees with FINRA violations (Egan et al., 2017).<sup>28</sup> An important difference is that the RMBS behavior was widespread.<sup>29</sup> This likely implies that upper management was either aware of questionable activities or improperly monitored them. Managers could be reluctant to administer discipline that would reflect poorly on themselves even though they are quick to discipline smaller actions not tied to themselves that could negatively affect bank reputation. The size of the RMBS market and large profits from the fraudulent activities also could have influenced the lack of discipline. Banks could follow Becker's model and permit fraud when positive expected net profits but forbid fraud where the expected fines and loss of future business through bad reputation exceed the profit. In addition, the explicit identification of specific employees amplifies the reputational cost of retaining employees who engage in fraud. This contrasts with the opaqueness of the RMBS market and suggests that additional transparency could incentivize firms to engage in more discipline.

## 6. Conclusion

Abuses in mortgage securitization were central to the financial crisis and resulted in sizable legal settlements from large banks. Did individual employees involved in creating mortgage-backed securities experience labor market discipline? Our evidence strongly suggests that the answer is no, particularly for senior bankers at top underwriters.

Employment outcomes for RMBS bankers are similar to outcomes for employees associated with non-RMBS deals, and senior bankers and signers of poorly performing RMBS deals did as well as or better than other RMBS bankers. Some evidence shows internal discipline for junior RMBS bankers and employees of small underwriters, but we find no evidence that senior bankers at top underwriters were disciplined. We examine potential explanations for the lack of discipline and find that the evidence is consistent with

the hypotheses that RMBS bankers were not disciplined because they followed upper management directives or because widespread discipline is costly, particularly for upper managers who would thereby implicitly acknowledge their own poor oversight.

One of the most concerning implications of these findings is that these employment outcomes send a message to current and future finance professionals that there is little, if any, price to pay for participating in fraudulent and abusive practices. This lack of repercussions reinforces cultural norms that allow and can even encourage employees to ignore warning signs of fraud and abuse.

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<sup>28</sup> Nonetheless, many of our findings are consistent with Egan et al. (2017) in that they find widespread misconduct in the financial industry across all firms, and that cross-bank hiring means low labor market penalties for those engaged in misconduct.

<sup>29</sup> Fraud is often cyclical in that it increases during boom cycles and is discovered during busts (Povel et al., 2007; Wang et al., 2010; Benmelech et al., 2010).

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