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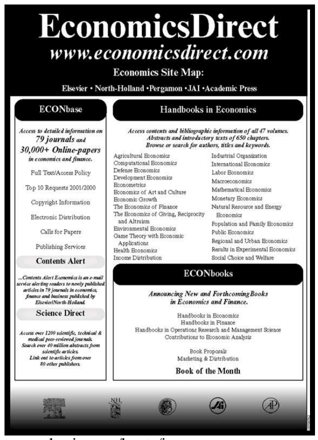

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CEO Turnover in Large Banks: Does Tail Risk Matter?☆

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Abstract

Using a unique international dataset, we show that the CEOs of large banks exhibit an increased probability of forced turnover when their organizations are more exposed to idiosyncratic tail risks. The importance of idiosyncratic tail risk in CEO dismissals is strengthened when there is more competition in the banking industry and when stakeholders have more to lose in the case of distress. Overall, we document that the exposure to idiosyncratic tail risk offers valuable signals to bank boards on the quality of the choices made by CEOs and these signals are different from those provided by accounting and market measures of bank performance and by idiosyncratic volatility. In contrast, systematic tail risk is usually filtered out from the firing decision, only becoming important for forced CEO turnovers in the presence of a major variation in the costs that the exposure to this risk generates for shareholders and the organization.

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1. Introduction

It is widely accepted that the CEOs of large banks have incentives to implement business policies that increase their organizations' exposure to risks (Cohen et al., 2014; Ellul and Yerramilli, 2013; Gandhi and Lustig, 2015). These business policies are motivated by the highly levered nature of banks that provides CEOs with risk-taking incentives given the convexity of their stock and option holdings.

While shareholders are not against executives taking risks, because equity is an out-of-the-money call option whose value is increasing with risk (Acharya and Ryan, 2016; Jensen and Meckling, 1976), they do not have a preference for risks that can be detrimental to the survival of the bank (Stulz, 2015). A bank's growing exposure to tail risks, measuring the possibility of suffering extremely large losses, could be dangerous for the organization (Cordella and Yeyati, 2003; Ellul and Yerramilli, 2013; Hellmann et al., 2000; Keeley, 1990; Park and Peristiani, 2007). While an exposure to tail risks tends to reward shareholders with positive returns in many scenarios, it can also be associated with a small probability of extremely large losses that undermine a bank's longer-term survival (Cohen et al., 2014; Ellul and Yerramilli, 2013; Thanassoulis, 2013).

The purpose of this paper is to understand whether increases in tail risk are associated with an increased likelihood of a forced CEO turnover in large banks. To this end, we present the first cross-country study of CEO turnovers in the banking industry based on a sample of 261 large banks selected from 46 countries for the period 2004-2013.

Whether any link exists between tail risk and the likelihood of a CEO turnover in large banks lacks empirical evidence. This is particularly unfortunate given that dismissal is potentially an important mechanism to discipline CEOs by bank boards and reduce the chances that they overly expose their banks to extreme risks. In fact, dismissal might lead not only to the loss of current employment but also the loss of unvested equity-based compensation (Dahiya and Yermack, 2008) and reduced future career opportunities (Brickley et al., 1999).

Our analysis is guided by conventional theoretical models proposed for non-financial firms where boards employ performance, volatility and other signals to evaluate CEO choices (Bushman et al., 2010; Gibbons and Murphy, 1990; Holmstrom, 1982; Jenter and Kannan, 2015). When these signals indicate bad outcomes for the corporation that are imputable to a lack of CEO ability or effort in the decision making, the dismissal of the CEO is a likely consequence. Along these lines, we argue that tail risk conveys different and additional signals, as compared to stock performance and volatility, of possible bad outcomes for the bank that can be related to CEO choices.

An increasing exposure to tail risks, making a bank more vulnerable to events that can lead to extremely large losses and to a financial distress (Ellul and Yerramilli, 2013), signals that the bank might find it more difficult and costly to conduct its business (Stulz, 2015). For instance, increases in tail risks lead to additional costs for shareholders related to the monitoring role of bank creditors and regulators. Both creditors and regulators do not benefit from the upside gains deriving from bank risk-taking while they bear the cost of the downside. It follows that especially in the presence of a growing tail risk exposure, creditors can significantly increase the risk-premium charged on bank debts and reduce the amount of available funds for the bank (Flannery, 2001; Schaeck et al., 2011; Stulz, 2015). At the same time, regulators might more closely monitor banks and offer negative signals on their financial health with the consequence of reducing share prices and further increasing borrowing costs (Berger and Davies, 1998; DeYoung et al., 2001; Slovin et al., 1999).

In our study we follow Ellul and Yerramilli (2013) and Van Bekkum (2016) and use Expected Shortfall (ES) as our primary measure of bank tail risk. ES quantifies the downside of bank risk in the form of extremely large negative stock returns. ES is, therefore, a particularly appropriate signal that a bank is overly exposed to extreme risks that are detrimental to bank value. Furthermore, following studies that investigate the role of volatility in CEO dismissal in non-financial corporations (Bushman et al., 2010), we build our analysis on the distinction between idiosyncratic and systematic tail risk, with the former being seen as more directly linked to managerial choices.

By focusing on tail risk, our work is related to the stream of research that emphasizes the importance of going beyond the investigations of (average) stock returns and profitability in order to explain forced CEO turnovers in corporations (see, for instance, Brickley, 2003). This type of investigation is the focus of earlier studies on CEO turnovers in the banking industry (see Hubbard and Palia, 1995). Furthermore, our paper extends and complements the analysis conducted on small US community banks by Schaeck et al. (2011) where the authors show that an increase in bank default risk (measured by the accounting Z-score) raises the likelihood of a forced CEO turnover due to the disciplinary role played by shareholders.

Differently from the existing studies, we show the importance of accounting for tail risk in examining the decision to remove a CEO by the boards of large banks. We find a positive relationship between idiosyncratic tail risk and forced (but not voluntary) CEO turnover, and we document that the firing decision is not, in general, related to an exposure to systematic tail risk. Furthermore, we show that our result is not related to idiosyncratic tail risk capturing a poor performance effect or simply an idiosyncratic volatility effect, as in the model proposed by Bushman et al. (2010), and holds under different empirical settings, including changes in the way we compute bank tail risk.

A key consequence of the above results is that the importance of idiosyncratic tail risk for the firing decision should depend on the banking market structure as the evaluation of CEO choices is argued to be more difficult in more concentrated (less competitive) industries (DeFond and Park, 1999; Fee et al., 2013; Yonker 2017). This is because CEOs operating in more concentrated industries are less likely to be subject to similar uncertainties (DeFond and Park, 1999), have less peers (Brickley, 2003; Fee et al., 2013; Yonker, 2017), and their outputs are more likely to be influenced by the actions of other CEOs in the same industry (Holmstrom, 1982). Consistent with the view that the market structure influences the ability of the boards to identify unfit CEOs, we find that the sensitivity of forced CEO turnovers to idiosyncratic tail risk is lower in more concentrated banking markets.

We next evaluate which stakeholders amplify the importance of tail risk for forced CEO turnovers. In doing so, we contribute to the literature on how different bank stakeholders react to downside risks in banks (Gandhi and Lustig, 2015). We show that the sensitivity of CEO dismissals to idiosyncratic tail risk increases with a larger presence of subordinated debtholders (namely debtholders that are liable to incur potentially larger losses in the case of a bank distress) or shareholders with lower diversification opportunities. In other words, there is a stronger relationship between idiosyncratic tail risk and CEO dismissal in the presence of stakeholders that have more to lose in the case of distress.

The final part of our analysis looks more closely at a bank's exposure to systematic tail risk. In the case of large banks, there are specific factors that go against the argument that any exposure to systematic tail risk is completely unrelated to managerial choices. In particular, recent banking studies suggest that bank CEOs have incentives to manufacture non-firm-specific tail risks and to engage in systematic risk-taking (modelled as an endogenous choice) to extract value from the financial safety net (Acharya et al., 2017; Acharya and Yorumazer, 2007; Adrian and Brunnermeier, 2016; Bushman and Williams, 2015; Farhi and Tirole, 2012; Pennacchi, 2006).

To understand how boards perceive systematic tail risk in large banks, we test for the presence of variation in the sensitivity of forced CEO turnover to systematic tail risk when there are changes in the consequences a bank can suffer from being exposed to this risk. By using several alternative empirical settings, we consistently find that there is a stronger relationship between an exposure to systematic tail risk and CEO dismissal when such exposure is deemed to be more costly for a bank. For instance, we find that the sensitivity of CEO forced turnover to systematic tail risk is significantly larger after a bank is included in the list of global systemically important financial institutions by the Financial Stability Board. For these institutions, regulatory costs are linked to the systemic effects they produce (see Bongini et al., 2015) and the removal from the list only occurs when they no longer pose a global systemic threat. All in all, our tests indicate that the specificities of banks play a crucial role in the way bank boards see the exposure to systematic tail risk.

The rest of the paper is organized as follows. Section 2 discusses why tail risks should matter for forced CEO turnovers in large banks. Section 3 describes the sample, econometric methods and variables. Section 4 examines the impact of a bank's idiosyncratic and systematic tail risk exposure on the likelihood of a CEO turnover, while Section 5 offers conclusions.

2. CEO Turnovers and the Tail Risk Exposure of Large Banks

2.1 Tail Risk as a Signal of Bad Managerial Choice

The existing literature offers little guidance on whether risk, and tail risk in particular, matters for the board decision of large banks to fire a CEO. Studies on non-financial corporations have mostly emphasized the importance of corporate performance for CEO turnover (Brickley, 2003; Chakraborty et al., 2007; Engel et al., 2003; Farell and Whidbee, 2003; Fisman et al., 2014; Guo and Masulis, 2015; Hazarika et al., 2012; Jenter and Kannan, 2015). An exception is Bushman et al. (2010) who argue that, for a given level of corporate performance, a higher level of idiosyncratic volatility is associated with an increase in the probability of a forced CEO turnover as it signals uncertainty about CEO talent.

Similarly, with the exception of Schaeck et al. (2011), who focus on the importance of accounting default risk for forced CEO turnovers in US community banks, the limited number of studies on banks has only investigated the influence of performance (Hubbard and Palia, 1995) and the role of regulatory scrutiny on the turnover decision (Palvia, 2011; Webb, 2008).

In general, conventional theoretical models of CEO dismissal are built around the idea that boards assess the quality of CEO choices on the basis of performance, volatility and other signals (Bushman et al., 2010; Gibbons and Murphy, 1990; Holmstrom, 1982; Jenter and Kannan, 2015). These signals lead to the dismissal of the CEO when they indicate bad outcomes for the corporation and when these outcomes are due to a lack of CEO ability or effort in the decision making (bad choices). Using this setting as a starting point, we expect that increasing a bank's tail risk is associated with an increased likelihood of a forced CEO turnover. In other words, we postulate that tail risk offers signals of possible bad outcomes for the corporation that are not contained in measures of performance and volatility and that are the result of CEO (bad) choices.

In respect to the above, the extant literature shows that a bank's exposure to tail risks is conventionally seen as signalling a risk exposure that may be excessive (Cordella and Yeyati, 2003; Ellul and Yerramilli, 2013; Hellmann et al., 2000; Keeley, 1990; Park and Peristiani, 2007). More precisely, shareholders want the CEO to take risks that are not detrimental to the corporation (Stulz, 2015), while an exposure to tail risks signals that a bank can be subject to extremely negative events that might threaten its survival. Furthermore, a growing exposure to tail risks can also affect the short-term value of the bank by leading to funding restrictions by creditors (especially if they are not protected by deposit insurance) and to increases in funding costs (Flannery, 2001; Schaeck et al., 2011; Stulz, 2015).

In addition, and differently from non-financial firms, banks are subject to monitoring by regulators who are concerned with the effects of bank tail risks on financial stability. An increased regulatory scrutiny due to tail risks has the potential to negatively influence shareholder wealth in several ways. Specifically, DeYoung et al. (2001) show that supervisory inspections that convey bad news lead to an increase in the borrowing costs of large commercial banks, while Berger and Davies (1998) and Slovin et al. (1999) find that negative regulatory assessments are associated with a decline in stock prices. Moreover, in the presence of an excessive risk exposure, regulators have the power to prohibit certain bank activities, to dismiss bank managers and even to close down the bank (De Young et al., 2001; Schaeck et al., 2011).[4]

In summary, an increasing exposure to tail risks amplifies bank distress costs and leads to the probability of losses in bank value caused by the monitoring role of bank creditors and regulators. It follows that a board should consider firing the CEO whenever a growing exposure to tail risks is associated with a lack of CEO ability or effort in terms of risk-management.

2.2 Sources of Tail Risks and Forced CEO Turnovers

In understanding the drivers of the decision to fire a CEO, conventional theoretical models of non-financial firms highlight the importance of distinguishing the sources of a firm's risk exposure. CEO choices are normally expected to influence the idiosyncratic component, but not the systematic component of risk. Accordingly, any type of systematic risk (including tail risk) should be seen as a manifestation of an exogenous event and as such not relevant to the firing decision. This is highlighted by models of CEO turnover based on the relative performance evaluation framework (Eisfeldt and Kuhnen, 2013; Jenter and Kannan, 2015; Kaplan and Minton, 2012). Further, using a different theoretical setting, Bushman et al. (2010) argue that, differently from idiosyncratic volatility, an increase in systematic volatility

[4] Regulatory influence is confirmed in a cross-country setting by a 2012 World Bank survey. The survey shows that in the presence of excessively risky policies, regulators might impose costly actions for shareholders such as a stop to dividend payments or the enforcement of a capital restoration plan. Furthermore, around 90% of the national supervisors have the powers to exercise enforcement actions that lead to the removal of bank managers and directors.

reduces the likelihood of a forced turnover as it makes it more problematic for boards to infer indications of CEO talent.

There are, however, some specificities in the case of the tail risk of large banks that suggest some exposures to systematic sources of risk may be related to CEO choices.[5] For instance, the presence of implicit and explicit government guarantees within the banking industry can induce bank CEOs to favor business policies that increase a bank's exposure to systematic tail risks or generate systematic tail risks (see Farhi and Tirole, 2012; Pennacchi, 2006). Specifically, Pennacchi (2006) argues that banks are inclined to favor lending and off-balance sheet activities with high exposure to systematic risks, as these business choices increase the value of their deposit insurance subsidy. In addition, Bushman and Williams (2015) demonstrate that, via their loan loss recognition policy, bank managers generate tail risks that have negative implications for the whole banking industry. Similarly, Acharya et al. (2010) argue that the global financial crisis of 2007-2009 is primarily the consequence of large and complex financial institutions manufacturing systematic tail risks.

Nevertheless, the fact that exposure to systematic tail risk may be related to managerial choices does not necessarily imply that this exposure should matter for bank CEO dismissal. In fact, by increasing the exposure to systematic tail risks, a bank can increase the probability of receiving a government bailout that transfers the bank's losses to taxpayers. This is because these losses materialize in periods when other banks are also in trouble and

[5] A possible endogeneity is, for instance, recognized within the macro-prudential view of banking regulation that has grown in importance post the global financial crisis (Beatty and Liao, 2014). Under this approach large banks are subject to additional rules and discipline motivated by the potential effects of their risk-taking on overall financial stability and not simply on the stability of individual banks.

regulators intend to preserve confidence in the banking industry by avoiding bank failures (Farhi and Tirole, 2012). Furthermore, an increasing exposure to systematic tail risks increases the probability of delaying the closure of a bank in distress, as the distress typically occurs in periods when regulators aim to avoid panic (see e.g. Acharya, 2009; Acharya and Yorulmazer, 2007; Bolton et al., 2015; Brown and Dinc, 2011). It follows that an exposure to systematic tail risks may be perceived by bank boards as being less damaging and dangerous than an exposure to idiosyncratic tail risks.

To summarize, the arguments indicating that bank boards should account for bank tail risk in the CEO firing decision should be primarily valid for the idiosyncratic component of this risk. Differently from systematic tail risk, idiosyncratic tail risk is not only more likely to be seen as a result of a lack of CEO ability or effort in managing risks but might also be seen as more likely to be detrimental for shareholders and the bank.

3. Data, Econometric and Variables

3.1 Data

The analysis is based on a sample of listed, large commercial banks and bank holding companies with accounting data available from BankScope by Bureau van Dijk and market data available from Datastream International. We select the sampled banks from an initial list that included the top 500 listed large commercial banks and bank holding companies in terms of total assets at the end of 2004, as identified by BankScope. Our sample period is from 2004 to 2013. From this initial list we retain only banks for which we are able to collect governance data (including data on CEOs) from annual and governance reports. We also search for governance information from various relevant databases, such as Bloomberg, Business Week, Forbes and S&P Capital IQ. This reduces the sample size to approximately 300 banks.

As explained in the next section, our empirical model employs lagged explanatory variables to estimate the likelihood of a CEO turnover. Therefore, the first CEO turnover event we record occurs in January 2005 and the last turnover occurs in December 2013. This results in an initial sample of 342 turnover events. We then exclude turnovers where a temporary CEO was appointed during a time of transition or turnovers that were associated with mergers occurring over the same period.

Next, we classify the remaining turnovers as forced or voluntary by conducting a manual search of news articles that explain the reason for each outgoing CEO. Our final classification follows Huson et al. (2001) and Parrino (1997).[6] Furthermore, to minimize classification errors, we conduct additional investigations to validate whether the turnover was voluntary; namely, explaining if it was motivated by retirement, resignation for personal reasons or to pursue a new business, or by the outgoing CEO taking up another post in the same firm or a new job elsewhere. Finally, we remove turnovers where no reliable data could be found for the reason behind the CEO's departure.

[6] We classify a CEO turnover as forced if any of the following conditions are met: a) the announcement reports that the departing CEO was fired or dismissed; b) the outgoing CEO left because of poor performance, had a conflict of opinion with the board, or was under pressure from the board due to accounting scandals; c) the outgoing CEO is under the retirement age of 60 years but does not leave the firm for health reasons or to take up another job outside the firm; d) the turnover resulted from re-organization or re-structuring attempts initiated by the board or the government.

After imposing the described selection criteria, our final sample consists of accounting and market data for 1,994 observations (261 unique banks chartered in 46 countries) from 2004 to 2012 and includes 74 forced turnovers and 198 voluntary turnovers for the period 2005-2013. Our sample size is similar to two recent cross-country studies that focus on the cross-sectional relationship between bank governance and performance during the global financial crisis (see Beltratti and Stulz, 2012; Erkens et al., 2012). The proportion of forced turnovers is in line with the figures reported by studies on non-financial firms (Bushman et al., 2010; Jenter and Kannan, 2015).

Panel A of Table 1 reports the sample distribution by country. As in previous cross-country studies (Beltratti and Stulz, 2012; Erkens et al., 2012), a large number of banks are concentrated in Japan and the US, representing 16.75% and 16.80% of the total number of observations, respectively. For the remaining countries, the share in terms of total observations does not exceed 5%. Panel B of Table 1 reports the distribution of turnovers by year and there is no obvious trend in CEO turnovers.

3.2 Econometric Method

In our sample of CEO turnovers, there are two key CEO exit mechanisms: 1) forced 2) voluntary. The two types of turnovers are mutually exclusive and compete with each other as potential exit mechanisms for managers in a given bank. Therefore, following Gregory-Smith et al. (2009) and Hazarika et al. (2012) and using the complete data about firms with no CEO turnover, forced turnovers and voluntary turnovers, we adopt a competing risks hazard model to account for the fact that forced turnovers are not the only exit mechanism for CEOs.

The dependent variable of the model is CEO tenure (defined as the number of years a CEO held his/her chief executive position) and all independent variables are lagged by one year to reduce simultaneity and endogeneity concerns. Under this empirical setting, the impact of each determinant varies for different types of CEO turnover. We describe the covariates used in our empirical analysis in the following sections.

3.3 Measuring Bank Idiosyncratic and Systematic Tail Risk

Following Ellul and Yerramilli (2013) and Van Bekkum (2016) we use Expected Shortfall (ES) as our primary measure of a bank's tail risk exposure. ES quantifies the downside of bank risk in the form of extreme negative stock returns.

We estimate idiosyncratic and systematic ES using the historical approach based on realized returns. The historical approach relies on the assumption that the realized exposure to extreme risks offers valuable indications on the expected exposure to these risks. In line with this view, Acharya et al. (2017) show that measures of extreme bank risk computed before the crisis predicted stock performance during the global crisis. ES is a common tool used in bank financial risk management (Acharya et al., 2017; Yamai and Yoshiba, 2005) where the historical approach is widely applied. For instance, Perignon and Smith (2010) show that historical simulation is by far the most popular estimation method employed by large banks over the period 1996-2005 to quantify their exposure to extreme market risks.

More formally, for bank i, ES is (minus) the average daily return below the 5^{th} percentile of the yearly distribution (see Ellul and Yerramilli, 2013; Van Bekkum, 2016) and can be expressed as:[7]

[7] For instance, with 200 daily stock returns and a 5^{th} percentile equal to -2%, *ES* is the average daily return in the trading days where the daily stock returns are lower than -2%.

$$ES_i^{\alpha}\text{=-}E\left[R_{i,t}\middle|R_{i,t} < R_{i,t}^{\alpha}\right] \quad (1)$$

where $R_{i,t}$ is the daily stock return for bank i at day t and $R_{i,t}^{\alpha}$ is a bank's daily stock return equal to the α percentile (equal to the 5th percentile in our analysis) of the year t distribution. Conventionally, as shown in (1), to compute ES the average of the daily stock returns in the lower tail of the return distribution is multiplied by minus one such that higher values of ES indicate a higher bank exposure to extreme negative returns.

However, as our predictions depend on the nature of a bank's tail risk exposure, we need to estimate the idiosyncratic and systematic components of ES. To this end, we start by extracting the idiosyncratic component of bank daily stock returns via the residuals of an augmented market model, where daily bank returns are regressed on market returns and industry returns (both based on domestic indexes provided by Datastream) as shown below:

$$R_{i,t}\text{=}\beta_1\text{+ }\beta_2R_{m,t}\text{+}\beta_3R_{b,t}\text{+}\varepsilon_{j,t} \quad (2)$$

where $R_{i,t}$ is the return for stock i at time t, $R_{m,t}$ is the daily return for the market index for each country, $R_{b,t}$ is the daily return for the banking industry index for each country.

We then compute idiosyncratic (systematic) ES using the residuals (the predicted values) obtained from equation (2) that captures the time series of idiosyncratic (systematic) returns. As a result, following equation (1), Idiosyncratic ES is the average idiosyncratic return below the 5th percentile of the yearly distribution of the residuals $\left(\hat{\varepsilon}_{j,t}\right)$ from the market model. Whereas Systematic ES is the average return below the 5th percentile of the yearly distribution of the predicted returns from the market model $\left(i.e., \hat{\beta}_1\text{+ }\hat{\beta}_2\mathrm{R}_{\mathrm{m,t}}\text{+}\hat{\beta}_3\mathrm{R}_{\mathrm{b,t}}\right)$.

Panel A of Table 2 reports summary statistics of our tail risk measures for three different groups of banks: banks with no CEO turnovers, banks with at least one forced CEO turnover, and banks with at least one voluntary CEO turnover. The mean idiosyncratic (systematic) ES for banks that experienced forced turnovers is 2.25% (3.50%), as compared to 2.06% (2.94%) for banks with no turnovers and the difference is statistically significant. By contrast, the mean (median) idiosyncratic ES and systematic ES for banks with voluntary CEO turnovers are not statistically different from those of banks with no CEO turnovers.

3.4 Bank Stock Performance and Volatility

Previous studies show that CEO dismissals are extreme forms of pay-performance sensitivity, where poor performance leads to a greater likelihood of turnover (Huson et al., 2001; Parrino, 1997). As our tail risk measures are based on the yearly stock return distribution, their impact on dismissal might then simply be the result of a poor performance effect.

In our empirical setting we, therefore, account for stock performance. We construct measures of idiosyncratic and systematic stock returns based on the approach followed by Jenter and Kannan (2015). Specifically, we compute idiosyncratic and systematic stock returns by annualizing daily values of predicted and residual stock returns using equation (2).

Despite tail risk and volatility being closely related, Rosenberg and Schuermann (2006) demonstrate that they can be affected differently by bank decisions in terms of business mix and by the degree of correlation among different forms of risk exposure.[8] Nevertheless,

[8] Specifically, for a typical large internationally active bank, Rosenberg and Schuermann (2006) demonstrate that different combinations of market, credit and operational risk exposures lead to a similar degree of bank volatility but

previous studies show that stock volatility matters for the firing decision in non-financial firms (see, for instance, Bushman et al., 2010). Accordingly, we also control for a volatility effect by including in the model idiosyncratic and systematic volatility components that we compute at a yearly frequency for the residual and predicted returns from equation (2).

While Panel B of Table 2 reports summary statistics for our measures of stock performance and volatility, Panel C shows their (Pearson and Spearman) correlation coefficients with tail risk measures. All tail risk measures show a relatively low degree of correlation with measures of idiosyncratic and systematic performance, whereas they are clearly more correlated with volatility components.[9] In general, the correlation analysis confirms that tail risk and volatility, though correlated, capture different features of a bank's risk exposure.

3.5 Other Controls

Panel A of Table 3 shows the other bank fundamentals that are potential determinants of CEO turnover (see Jenter and Kannan, 2015; Parrino, 1997; Schaeck et al., 2011). We control for accounting performance, based on a bank's ROA, since a short-term profit measure is usually a key predictor of CEO dismissal (Fiordelisi and Ricci, 2014; Parrino, 1997). We also include industry ROA since poor industry performance also results in an increasing CEO dismissal risk (Jenter and Kannan, 2015; Schaeck et al., 2011). We measure bank-specific

different exposures to tail risk. This is because, typically, market risk exposures are characterized by higher volatility but shorter fat-tails in their distribution, while credit risk and operational risk exposures show an opposite pattern.

[9] More precisely the Pearson correlation coefficient between idiosyncratic (systematic) ES and idiosyncratic (systematic) returns is -0.34 (-0.37). The Pearson correlation between idiosyncratic (systematic) ES and idiosyncratic (systematic) volatility is approximately 0.81 (0.82).

accounting performance as a bank's ROA minus the mean ROA of the domestic banking sector (Profitability) and include the mean ROA (Industry Profitability) at the country level to account for general (systematic) industry performance.

We control for the size of a bank (Bank Size) by the log of total assets (in thousands of US dollars). Larger banks have a bigger pool of talented executives to replace the existing CEO and this should lead to a larger probability of CEO turnover (Chakraborty et al., 2007). We also include bank size squared, as we find evidence of a non-linearity in the relationship between CEO turnovers and size. Next, we control for the capital strength of a bank (Bank Capital), measured by the ratio between the book value of equity and the book value of bank assets, and a bank's charter value (Charter Value), measured as the sum of the market value of a bank's equity and the total book value of a bank's liabilities all scaled by the book value of a bank's assets. Lower equity capital and charter values (signaling lower growth opportunities) may trigger an increased risk-taking and greater levels of regulatory pressure to replace poorly performing CEOs (Schaeck et al., 2011).

Panel B shows measures of bank internal governance and of external monitoring that can also impact the dismissal risk of CEOs (Laux, 2008; Yermack, 1996). For instance, smaller boards are associated with better performance and a greater threat of CEO dismissal (see, for instance, Yermack, 1996). More independent boards are expected to be more likely to challenge and replace an underperforming CEO (Laux, 2008; Weisbach, 1988), although entrenched CEOs may exert power over the board and reduce the likelihood of termination (Berger et al., 1997; Hermalin and Weisbach, 1998). Accordingly, we control for the log of the number of board members (Board Size) and for the degree of board independence (Independent Directors) measured by the ratio between independent directors and total board members. We include an index of CEO power (CEO Power) based on the sum of two binary variables: a dummy variable equal to one if the CEO was internally promoted and a dummy variable equal to one if the CEO also serves as the chairman of the board. We expect that more powerful CEOs are less likely to be dismissed.

Next, we control for the percentage of shares held by insiders excluding the CEO (Insider Ownership). Higher levels of insider ownership result in internalizing the costs of bank default (Booth et al., 2002) and are likely to lead to a greater likelihood of CEO dismissal (Huson et al., 2001). However, higher levels of insider ownership could also lead to entrenchment and reduce the level of monitoring and discipline of CEOs (Denis et al., 1997; Goyal and Park, 2002).

CEO turnovers might also depend on the strength of the risk governance within a bank. Risk committees (and the Chief Risk Officer) evaluate and communicate to the board the impact of managerial policies on the risk-profile of the bank (Ellul and Yerramilli, 2013; Keys et al., 2009). We measure the strength of the risk-management function (Risk Governance) as the sum of two binary variables that take a value of one if there is a risk committee and if there is a Chief Risk Officer.

We finally control for two sources of the external monitoring of bank managers. First, we control for the influence of bank regulation (Booth et al., 2002; Schaeck et al., 2011) by including the general strength of the supervisory agency (Supervisory Power) from Barth et al. (2004) and the subsequent surveys conducted by the World Bank.[10] Second, we control for

[10] In the case of banks, another source of monitoring is the presence of subordinated debt-holders. While we do not control for this in our preferred specification, due to the large number of missing values in our dataset, we conduct additional tests in section 4.5 where this disciplinary channel is explicitly taken into account.

the percentage of bank stock owned by institutional investors (Institutional Ownership). Institutional shareholders can discipline firm management by the threat of exit (Admati and Pfleiderer, 2009; Edmans and Manso, 2011) and are likely to show better skills in assessing CEOs relative to their peers.

Finally, Panel C reports additional country controls. The first is the concentration of the banking market (Bank Concentration) measured as the log transformation of the Herfindahl index of bank deposits in each country. In less concentrated markets there could be a higher likelihood of forced CEO turnover, as board members can accurately benchmark CEO performance to peers and identify poorly performing executives (DeFond and Park, 1999; Goyal and Park, 2002; Holmstrom, 1982). Further, a more concentrated market might indicate a lower number of peers in the external market for executives, with a consequent increase in the difficulty of replacing an incumbent CEO (Fee et al., 2013; Yonker, 2017).

We then include a country-level index from the World Bank database on Doing Business (Director Liability Index) that measures the power of shareholders to implicate directors for self-interested behavior. We expect a greater likelihood of CEO turnover in countries where shareholder power is higher. We also control for the degree of regulatory restrictions placed on bank activities (Activity Restrictions) from the World Bank regulatory dataset. In countries with a more complex banking business, bank boards could find it more difficult to understand a bank's business model and the related signals for the firing decision.

Next, the GDP per capita (Development) accounts for the degree of economic development of a country that might affect the monitoring ability of stakeholders and consequently the probability of forced turnovers. We use the ratio between the fiscal balance and country GDP (Fiscal Capacity) to capture the possibility that countries with a larger budget balance are more likely to extend government guarantees to weak banks (Brown and Dinc, 2011). As in Houston et al. (2010), we also control for country size (Size of Economy) through the log of domestic GDP in millions of US dollars to account for the fact that a few large economies may be driving our results and for the inflation rate (Inflation).

4. Tail Risk and CEO Turnover

4.1 Does *a Bank's* Tail Risk Exposure Matter?

We begin our empirical analysis by first estimating a baseline specification for the full sample of CEO turnovers with idiosyncratic and systematic ES as the key explanatory variables and controlling for bank fundamentals (including stock return and volatility components) and country characteristics. We then extend the baseline specification with the addition of measures of internal and external monitoring mechanisms that might affect the firing decision (column (2)).

The results, reported in Table 4, provide consistent evidence that the hazard rate of a forced CEO turnover is positively associated with idiosyncratic bank tail risk: idiosyncratic ES enters all models with a positive coefficient that is significant at customary levels.[11] In contrast, idiosyncratic and systematic ES are not significantly associated with the hazard of a

[11] Our results are not affected by the correlation between the tail risk and volatility components. We achieve similar conclusions when we re-estimate the models without idiosyncratic and systematic volatility as control variables.

voluntary turnover.[12] Hence, a CEO's decision to voluntarily leave a bank is not associated with the bank's exposure to tail risk.

Our results for forced turnovers are also economically significant: a one standard deviation increase in idiosyncratic ES leads to an increase in CEO dismissal risk by approximately 61% using the coefficients obtained from model (2).[13] Moreover, all these tests show that systematic tail risk does not influence CEO forced turnover.

A possible interpretation of our findings is that an increase in the probability of a forced turnover might induce managers to increase idiosyncratic tail risk as an extreme attempt to boost value. However, the existing literature does not generally show that an increasing risk of dismissal increases the risk appetite of CEOs. In fact, Chakraborty (2007) shows the contrasting result that corporate risk-taking increases when CEOs have a higher job security. Furthermore, in the Online Appendix, similarly to Chakraborty (2007), we document that an increase in CEO dismissal risk is not associated with increases in bank tail risk, including idiosyncratic tail risk.

The above test, however, does not rule out another possible interpretation based on Weisbach (1988). He observes that stock returns incorporate the expectations that a CEO will be fired. Accordingly, the returns of a bank managed by a CEO that will be fired are higher

[12] In untabulated tests we find this conclusion also holds when we follow Acharya et al. (2017) and replace our measure of systematic tail risk with the Marginal Expected Shortfall (MES); namely, the expected bank return when the market is under distress conditions. We compute MES as the average bank return in trading days when the market daily return is below the 5th percentile of the yearly distribution.

[13] The coefficients reported in Table 4 reflect the increase/decrease in the log cause-specific hazards ratio. Therefore, we exponentiate the coefficients and then calculate the economic significance.

than they would be otherwise. The anticipation effect embedded in stock returns also influences tail risk and volatility. In essence, when the market anticipates a forced turnover, a bank's return distribution changes leading to tail risk and volatility being informative on CEO dismissal while stock returns are not (as in our analysis). While in section 4.2, we show that our results remain valid when we employ an accounting based measure of tail risk that, as argued by Weisbach (1988), should be less affected by any anticipation effect, we acknowledge the difficulties in fully ruling out an interpretation based on this effect.

Moving onto the analysis of the control variables, we find that numerous variables are significantly related to the likelihood of a CEO turnover in large banks. Consistent with Bushman et al. (2010), we find that idiosyncratic volatility is positively associated with the likelihood of a forced turnover while it is not significantly related to voluntary turnovers. Furthermore, CEOs at large banks are more likely to experience forced turnovers. Moreover, in most of the specifications, CEOs at banks with higher capital ratios are less likely to be fired or to voluntarily leave a bank, while higher charter values (signaling more growth opportunities) are associated with a reduced probability of CEO dismissal. The likelihood of a forced turnover, but not of a voluntary turnover, is also lower in banks with a higher profitability.

In terms of bank governance, as in the literature on non-financial firms (Del Guercio et al., 2008; Guo and Masulis, 2015; Helwege et al., 2012; Parrino et al., 2003), we find that an increase in CEO power is associated with a reduced likelihood of both forced and voluntary turnovers, while higher levels of institutional ownership are more (less) likely to be associated with a CEO being fired (leaving voluntarily). As far as country controls are concerned, similarly to DeFond and Park (1999) and Goyal and Park (2002) for non-financial firms, in most of the specifications we find that the likelihood of a forced turnover is negatively associated with the degree of banking market concentration. Finally, forced turnovers occur more frequently in more shareholder-oriented countries as indicated by higher values of the director liability index.

In general, the results of this section suggest that idiosyncratic tail risk is significantly associated with the likelihood of a forced CEO turnover and offers incremental information as compared to accounting and market measures of performance and, more importantly, idiosyncratic volatility.

4.2 Is the Idiosyncratic Tail Risk Effect Different from a Poor Idiosyncratic Performance Effect?

A possible explanation for our finding still remains that our measures of idiosyncratic ES (based on extreme negative returns) are to some extent capturing an effect due to low idiosyncratic stock returns. We conduct a series of tests to further demonstrate that idiosyncratic tail risk has an effect on forced CEO turnover independently from realized idiosyncratic stock performance.

Specifically, we start by focusing on a sub-sample of banks that excludes low idiosyncratic returns (based on the sample median) and re-estimate the competing risks hazard model for this sub-sample. As shown in column (1) of Table 5, we still find that idiosyncratic tail risk is associated (at the 10% level) with a greater hazard of CEO dismissal, while systematic tail risk does not matter for CEO dismissals. Therefore, the impact of idiosyncratic tail risk on forced turnover is also observable when we exclude poorly performing banks.

We next construct a sub-sample of banks that exclude those institutions with (simultaneously) low idiosyncratic performance (below the sample median) and high idiosyncratic volatility (above the sample median) to control for the possibility that our above finding is motivated by a high volatility effect. Again, we still find that idiosyncratic tail risk is significant (at the 10% level) in our model.

As a further robustness check, we repeat our analysis by using alternative extreme risk measures that, as shown in the Online Appendix, have a much lower correlation with measures of realized idiosyncratic stock performance (and volatility). We start by following Bushman and Williams (2015) that employ Skewness as an alternative market-based measure of extreme risk. Next, we employ a risk measure focusing on extreme accounting returns (Accounting Downside Risk). This measure is computed as a dummy variable that takes a value of one if a bank's ROA is below the 5th percentile of the estimated earnings distribution that we assume follows a normal distribution and we build on the basis of a seven year rolling window of accounting returns starting from 2000. Consistent with our main analysis, we then compute the firm-specific (idiosyncratic) and non-firm-specific (systematic) risk measures. We still find that forced CEO turnover is limited to the firm-specific component of tail risk.[14]

4.3 Alternative Model Specifications

We conduct various additional tests to check the robustness of our key findings. We report the results of these additional tests in the Online Appendix. We first address the concern that our results may be sensitive to using a competing risks hazard model. We, therefore, estimate

[14] The literature (see, for instance, Van Bekkum (2016)) often employs directly the negative value of the stock return corresponding to the 5th percentile of the distribution of daily stock returns (defined as a bank's VaR) as a measure of tail risk. In the Online Appendix, we show that our key results remain unchanged also when VaR is used as a tail risk measure.

a multinomial logit model that is commonly employed by the prior literature on the determinants of executive turnovers (Huson et al., 2001). Second, we use a simple Cox hazard model whereby we focus only on forced CEO turnovers and treat all voluntary turnovers as censored observations, as in Brookman and Thistle (2009) and Jenter and Kannan (2015). The results of these tests confirm that our primary findings still hold.

Next, we stipulate that a CEO should be in charge for at least two consecutive years before experiencing a turnover event. Hence, we exclude all observations where CEO turnovers took place less than two years after a new CEO was appointed. Again, we do not find any change in our findings.

In our sample period numerous countries experienced a systemic crisis as identified by Laeven and Valencia (2013). It is often argued that CEO dismissals during crises may be a response by boards to increasing public vitriol and regulatory scrutiny into holding executives responsible for mismanagement.[15] To control for the influence of systemic banking crises on our results, we include a dummy (Crisis) variable that takes the value of one for every year-country combination identifying a systemic banking crisis. Our primary findings remain similar as regards the positive relationship between idiosyncratic tail risk and the likelihood of CEO dismissals.

[15] See for example, 'Bank chiefs in the firing line', The Independent, 30 Oct 2007; 'Royal Bank of Scotland chiefs to be forced out under bailout deal', The Telegraph, 8 Oct 2008; '5% Of Latest Bank Of America Bailout Used To Pay Merrill Lynch Bonuses (BAC)', Business Insider, 22 Jan 2009; 'US watchdog calls for bank executives to be sacked', The Guardian, 5 April 2009.

4.4 Does the Importance of Idiosyncratic Tail Risk on Forced Turnovers depend on the Banking Market Structure?

Our results are consistent with the view that a bank board learns about the CEO's decision making via the exposure to idiosyncratic tail risk. A key implication deriving from such a result is that the importance assigned to idiosyncratic tail risk should depend on the market structure within which the bank operates.

Specifically, previous studies on non-financial firms argue that the importance assigned to signals related to CEO choices becomes lower when the industry concentration is higher (Brickley, 2003; DeFond and Park, 1999; Goyal and Park, 2002) as the assessment of CEO decision making is better facilitated in competitive environments. Furthermore, more concentrated markets tend to be characterized by greater difficulties in replacing an incumbent CEO because of the lower number of peers in the external market for executives (Brickley, 2003; Fee et al., 2013; Yonker, 2017).

While the existing empirical evidence focuses on the interplay between performance and market structure, a similar argument should hold for idiosyncratic tail risk. In this section, we test this conjecture by extending our baseline specification with interaction terms between idiosyncratic and systematic ES and our measure of banking market concentration.

The results reported in column (1) of Table 6 show that the coefficient of Idiosyncratic ES * Bank Concentration is negative and statistically significant. This indicates that in more concentrated banking markets, large banks are less likely to dismiss CEOs when idiosyncratic tail risk increases. The results also appear economically relevant: an increase in the degree of bank concentration from the lowest quartile (i.e. countries with low concentration) to the highest quartile (i.e. countries with high concentration) is associated with a reduction in the sensitivity of forced turnovers to idiosyncratic tail risk by 54% for a one standard deviation increase in idiosyncratic tail risk for model (1). Furthermore, as shown in column (2), we achieve a similar result when we employ the (log of) market share in the deposit market of the four largest banks in a given country as an alternative measure of banking market concentration.

Overall, in line with the prior evidence that indicates concentration reduces the sensitivity of forced CEO turnovers to relative performance in non-financial firms (DeFond and Park, 1999; Goyal and Park, 2002), we show that in the case of the banking industry, market concentration is also associated with a reduced sensitivity of CEO dismissals to idiosyncratic tail risk.

4.5 Which Bank Stakeholders Care More about Idiosyncratic Tail Risk?

In this section we evaluate which bank stakeholders are associated with an increased sensitivity of CEO turnovers to idiosyncratic tail risk. We look at the role played by bank uninsured creditors, inside shareholders, regulators and institutional investors. To capture the influence of uninsured creditors, we focus on subordinated debtholders since they are subject to a larger risk of suffering losses than other bank creditors and are a key source of discipline for bank executives (Ashcraft, 2008; Goyal, 2005; Nier and Baumann, 2006).

Insiders might have a lower tolerance for idiosyncratic tail risk since they have limited diversification opportunities (Gao, 2010). Consequently, a higher level of insider ownership might result in internalizing the costs of a bank default (Booth et al., 2002) and lead to a decline in the expected utility of pursuing risky policies (Faccio et al., 2011). In short, bank insiders might fear the costs associated with idiosyncratic tail risk more than other types of bank shareholders.

Under the micro-prudential view of banking regulation, increased supervisory power should be associated with a larger sensitivity of CEO turnover to idiosyncratic tail risk. More controversial is the possible role of institutional investors. While they might have better skills in monitoring bank management than other shareholders, the fact that institutional investors usually hold diversified portfolios might reduce the importance assigned to idiosyncratic tail risk when assessing CEO performance.

To conduct the empirical tests, we estimate models with interaction terms between the selected variables and tail risk measures. The results, reported in Table 7, suggest that some types of bank stakeholders might be more important than others in exercising discipline in terms of idiosyncratic tail risk. Specifically, an increase in the share of subordinated debt in a bank's capital structure or in inside ownership is associated with an increased sensitivity of CEO turnover to idiosyncratic tail risk but this sensitivity does not vary with the strength of supervisory power or the importance of institutional shareholders.

Overall, the results discussed in this section are not surprising when compared to US-based studies on non-financial firms (Del Guercio et al., 2008; Guo and Masulis, 2015; Kaplan and Minton, 2012; Parrino et al., 2003). Nevertheless, we caution drawing conclusions from the reported findings given the cross-country heterogeneity in bank governance structures in our sample.

4.6 Do Bank Boards See Systematic Tail Risk as Fully Unrelated to CEO Choices?

We next evaluate when systematic tail risk is important for the firing decision. This additional analysis is motivated by a growing body of banking research showing that systematic tail risks are not necessarily exogenous to bank behavior (see, for instance, Acharya et al., 2010; Farhi and Tirole, 2012; Pennacchi, 2006).

Our approach is to test for the presence of variation in the sensitivity of forced CEO turnover to systematic tail risk when there are changes in the consequences a bank can suffer from being exposed to such risks. A variation in the sensitivity of forced turnover to systematic tail risks in the presence of these changes would suggest that an exposure to systematic tail risk is related, at least in part, to CEO choices.

To conduct this additional analysis, we consider three different settings. The first two settings identify contexts where shareholders might see being exposed to systematic tail risk as more costly. We start by focusing on the period post 2010 when there was greater regulatory and policy attention to systemic matters related to large financial institutions However, it can be argued that the post 2010 environment also witnessed other broader economic changes that may result in a weaker identification. In an attempt to provide a more refined test, we next focus on the institutions in our sample included in the list of global systemically important financial institutions by the Financial Stability Board since 2010. For these institutions regulatory costs are closely related to systemic effects. The inclusion in this list is seen negatively by shareholders (see Bongini et al., 2015) and banks can be removed only when they do not pose a global systemic threat.

Accordingly, our expectation is that if CEO choices are seen as influencing a bank's exposure to systematic tail risk, we should observe an increase in the sensitivity of CEO turnover to systematic tail risk post-2010 and, more importantly, for banks that are identified as globally systemically important. To conduct our analysis, we first interact our measures of tail risk with a dummy equal to one for the years after 2010. Next, we repeat a similar test using a dummy (SIFI) equal to one for global systemically important financial institutions.

In a third test, we use the cross-country variation in the adoption of blanket guarantees by governments on banks debts. Under a blanket guarantee, a government offers protection against a bank default to creditors that are not conventionally protected by deposit insurance. The purpose is to prevent negative externalities arising from correlated bank defaults (Laeven and Valencia, 2012). Under a blanket guarantee, the mispricing of government guarantees is more pronounced and banks have more possibilities to extract value from the financial safety net via their risk-taking. To extract value, however, banks have to avoid closure by regulators and, thereby, benefit from forbearance (Allen and Saunders, 1993; Ronn and Verma, 1986). This is more likely when banks increase their exposure to non-firm-specific risks (Acharya and Yorulmazer, 2007; Brown and Dinç, 2011). In the presence of a blanket guarantee, we should, therefore, observe a decrease in the sensitivity of a forced CEO turnover to systematic tail risk if CEO choices can influence the exposure to this risk. To conduct this third test, we employ a dummy (Blanket Guarantee) that equals one for the time period over which bank liabilities in each country were insured.[16] We then include this dummy and its interaction with the tail risk measures as additional explanatory variables in our models.

Columns (1) and (2) of Table 8 show the key findings of the first and the second tests, while column (3) reports the results of the third test. In general, the results suggest that an exposure to systematic tail risk is, at least, partially related to CEO choices.[17] The interaction terms between our measures of systematic tail risk and the post 2010 or the SIFI dummy (the blanket guarantee dummy) are positive (negative) and statistically significant at customary levels.[18]

[16] In our sample 15 countries used blanket guarantees. Data on blanket guarantees are from Laeven and Valencia (2012) and IADI (2005, 2008). We complement these data sources with data from national deposit insurance funds. There is considerable heterogeneity in terms of the time-period over which such guarantees were extended. For instance, various countries (e.g. Malaysia, Taiwan, Thailand and Turkey) extended blanket guarantees during 2004-05. Similarly, some countries (e.g. Australia, Hungary, and Portugal) extended the support beyond the 2007-2009 crisis to cover 2010 and 2011.

[17] The post-2010 coefficient is subsumed in year dummies and hence is not reported in the table.

[18] An alternative explanation of our finding on blanket guarantees could be panic. Blanket guarantees are often associated with systemic crises where regulators might provide incentives to banks to retain CEOs to avoid exacerbating panic conditions in the system. In the Online Appendix, we employ an alternative blanket guarantee dummy that takes a value equal to one only when the guarantee covers bank debt in non-systemic crisis periods. The test shows a decline in the sensitivity of forced CEO turnover to systematic tail risk in non-crisis periods covered by blanket guarantees.

In summary, the findings discussed in this section suggest that bank boards assign importance to systematic tail risk for forced CEO turnovers when there is a major variation in the costs that the exposure to this risk generates for shareholders and the bank.

5. Conclusions

Our analysis shows that the likelihood of a forced CEO turnover (but not of a voluntary turnover) is positively associated with idiosyncratic tail risk. Thus, large bank CEOs do seem to bear some costs of increasing the idiosyncratic tail risk of their banks. Furthermore, the relation with idiosyncratic tail risk is stronger in less concentrated banking industries and in the presence of stakeholders that have more to lose from an increase in this risk. In general, we document that idiosyncratic tail risk offers information to assess CEOs' decision making that is different from what can be inferred from accounting and market measures of performance and idiosyncratic volatility.

Finally, we show that the lack of importance of systematic tail risk that we observe over the full sample period for CEO dismissal does not imply this risk is fully independent from CEO choices. Our analysis documents that how bank boards see the exposure to systematic tail risk, and the role of this risk in the firing decision, depends on the benefits and costs that such exposure might generate for the bank.

APPENDIX

Table A.1 Variable Definitions.

This Table shows variable definitions. Risk measures and country characteristics are measured at the calendar year-end and bank financials and governance characteristics are measured at the fiscal year-end.

Variable	Definition
Idiosyncratic ES	Average residual returns below the 5th percentile of the yearly distribution (%) using the specified market model in equation (2), multiplied by -1.
Systematic ES	Average predicted returns below the 5th percentile of the yearly distribution (%) using the specified market model in equation (2), multiplied by -1.
Idiosyncratic Returns	% Annualized daily values of residual stock returns using the specified market model in equation (2) computed at yearly intervals.
Systematic Returns	% Annualized daily values of predicted stock returns using the specified market model in equation (2) computed at yearly intervals.
Idiosyncratic Volatility	Standard deviation of residual stock returns using the specified market model in equation (2) computed at yearly intervals.
Systematic Volatility	Standard deviation of predicted stock returns using the specified market model in equation (2) computed at yearly intervals.

Profitability	ROA – mean ROA of the banking industry, expressed in percentages.
Industry Profitability	Mean ROA of the banking industry, expressed in percentages.
Bank Size	Natural log of total assets.
Bank Capital	Book value of Equity/Book value of Assets, expressed in percentages.
Charter Value	Market value of Assets/Book value of Assets, where market value is the sum of market value of equity and book value of liabilities
Board Size	Natural log of the number of board members.
Independent Directors	% of independent directors on the board.
CEO Power	Yearly index computed as the sum of two indicator variables: CEO also serves as the Chairman and presence of an internal CEO. Yes = 1 and No = 0.
Insider Ownership	% of shares owned by insiders, excluding the CEO, in the bank, as defined by S&P Capital IQ.
Risk Governance	Yearly index computed as the sum of two indicator variables: presence of a Chief Risk Officer and presence of Risk Committee. Yes = 1 and No = 0.
Bank Concentration	Log of Herfindahl Index for bank deposits in each country.
Supervisory Power	Extent of supervisory power to correct problems. As used in Barth et al. (2004) and constructed from the World Bank Survey of Bank Regulation and Supervision.
Institutional Ownership	% of shares owned by institutional investors, as defined by S&P Capital IQ.
Crisis	Indicator variable that equals one for each country-year combination that had a systemic banking crisis.
Post-2010	Indicator variable that equals one for the post-2010 period, and zero otherwise.
SIFI	Indicator variable that equals one for banks present in the list of global systemically important financial institutions by the Financial Stability Board post 2010
Blanket Guarantee	Indicator variable that equals one for the time period over which bank liabilities in each country were insured.
Activity Restrictions	Extent of regulatory restrictions placed on bank activities. As used in Barth et al. (2004) and constructed from the World Bank Survey of Bank Regulation and Supervision.
Development	GDP per capita (million US$).
Fiscal Capacity	Government revenues minus expenditures scaled by GDP.
Size of Economy	Natural log of GDP (million US$).
Inflation	% inflation rate.

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Table 1 Sample Distribution.

This Table presents the distribution of our sample of 261 banks across 46 countries from 2005-2013. Panel A presents the sample by country and Panel B by year.

	Observations		Banks	
	Number	**Percentage**	**Number**	**Percentage**
Panel A: Sample Distribution by Country				
Australia	40	2.01	5	1.92
Austria	31	1.55	4	1.53
Bahrain	9	0.45	1	0.38
Belgium	22	1.10	3	1.15
Brazil	17	0.85	2	0.77
Canada	57	2.86	7	2.68
Chile	14	0.70	2	0.77
China	73	3.66	11	4.21
Cyprus	7	0.35	1	0.38
Czech Republic	9	0.45	1	0.38
Denmark	25	1.25	3	1.15
Finland	9	0.45	1	0.38
France	34	1.71	4	1.53
Germany	56	2.81	7	2.68
Greece	49	2.46	6	2.30
Hong Kong	27	1.35	3	1.15
Hungary	9	0.45	1	0.38
Iceland	2	0.10	1	0.38
India	56	2.81	8	3.07
Indonesia	27	1.35	3	1.15
Ireland	23	1.15	3	1.15
Israel	31	1.55	4	1.53
Italy	53	2.66	6	2.30
Japan	334	16.75	47	18.01
Jordan	7	0.35	1	0.38
Korea	39	1.96	6	2.30
Luxembourg	9	0.45	1	0.38
Malaysia	53	2.66	6	2.30
Mexico	18	0.90	2	0.77
Netherlands	18	1.00	3	1.15
Norway	20	0.45	1	0.38
Poland	17	0.85	2	0.77

Portugal	27	1.35	3	1.15
Russia	6	0.30	1	0.38
Saudi Arabia	26	1.30	5	1.92
Singapore	27	1.35	3	1.15
South Africa	44	2.21	5	1.92
Spain	48	2.41	6	2.30
Sweden	27	1.35	3	1.15
Switzerland	30	1.50	4	1.53
Taiwan	85	4.26	12	4.60
Thailand	51	2.56	6	2.30
Turkey	34	1.71	5	1.92
UAE	9	0.45	1	0.38
United Kingdom	59	2.96	8	3.07
United States	335	16.80	43	16.48
Total	**1994**	**100%**	**261**	**100%**

Panel B: Sample Distribution by Year

Year	**Observations**	**Turnovers**		**Forced Turnovers**	
		Number	**Percentage**	**Number**	**Percentage**
2005	186	24	8.82	7	9.46
2006	207	22	8.09	4	5.40
2007	220	27	9.93	6	8.11
2008	236	28	10.29	13	17.57
2009	239	44	16.18	11	14.86
2010	241	35	12.87	7	9.46
2011	228	25	9.19	4	5.41
2012	216	29	10.66	10	13.51
2013	221	38	13.97	12	16.22
Total	**1994**	**272**	**100%**	**74**	**100%**

Table 2 Descriptive Statistics and Correlation Matrix: Tail Risk, Return and Volatility Measures.

Panel A presents the descriptive statistics of tail risk measures while Panel B shows summary statistics for return and volatility. All variables are defined in Table A1 provided in the Appendix. Panel C provides Spearman (above) and Pearson (below) correlations between the risk and return measures. We represent descriptive statistics for our original sample consisting of 1994 observations. The t-statistics provided here are obtained using tests of differences in means and the z-statistics correspond to the tests of differences in medians using the Wilcoxon rank-sum test. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	No Turnovers				**Forced Turnovers**						**Voluntary Turnovers**					
	N	**Mean (1)**	**Median (2)**	**Std. Dev. (3)**	**N**	**Mean (4)**	**Median (5)**	**Std. Dev. (6)**	**t-stat (4) – (1)**	**z-stat (5) – (2)**	**N**	**Mean (7)**	**Median (8)**	**Std. Dev. (9)**	**t-stat (7) – (1)**	**z-stat (8) – (2)**
Panel A: Tail Risk Measures																
Idiosyncratic ES	1722	2.062	2.185	0.616	74	2.253	2.463	0.576	2.775***	2.877***	198	2.107	2.309	0.630	0.942	1.092
Systematic ES	1722	2.944	3.060	1.006	74	3.503	3.928	0.842	5.545***	5.033***	198	3.018	3.267	1.013	0.974	0.983
Panel B: Return and Volatility Measures																
Idiosyncratic Returns	1722	-0.045	-0.039	0.166	74	-0.106	-0.089	0.202	-2.594**	-2.590**	198	-0.053	-0.053	0.166	-0.648	-0.755
Systematic Returns	1722	0.135	0.130	0.315	74	0.061	0.079	0.350	-1.775*	-1.559	198	0.111	0.129	0.333	-0.948	-0.761
Idiosyncratic Volatility	1722	0.205	0.189	0.091	74	0.245	0.224	0.104	3.272***	3.295***	198	0.211	0.208	0.095	0.904	0.991
Systematic Volatility	1722	0.256	0.234	0.106	74	0.294	0.276	0.111	2.864***	2.996***	198	0.266	0.244	0.111	1.198	1.088

Panel C: Correlation	(1)	(2)	(3)	(4)	(5)	(6)
(1) Idiosyncratic ES	1	0.405	-0.315	-0.167	0.894	0.489
(2) Systematic ES	0.350	1	-0.048	-0.324	0.414	0.834
(3) Idiosyncratic Return	-0.337	-0.086	1	-0.172	-0.353	-0.117
(4) Systematic Return	-0.110	-0.366	-0.199	1	-0.177	-0.301
(5) Idiosyncratic Volatility	0.805	0.522	-0.415	-0.166	1	0.587
(6) Systematic Volatility	0.434	0.815	-0.140	-0.297	0.616	1

Table 3 Descriptive Statistics: Bank Fundamentals, Governance and Country Characteristics.

This Table presents the descriptive statistics of all other variables which have been defined in Table A1 provided in the Appendix. The t-statistics provided here are obtained using tests of differences in means and the z-statistics correspond to the tests of differences in medians using the Wilcoxon rank-sum test. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	No Turnovers				**Forced Turnovers**						**Voluntary Turnovers**					
	N	**Mean (1)**	**Median (2)**	**Std. Dev. (3)**	**N**	**Mean (4)**	**Median (5)**	**Std. Dev. (6)**	**t-stat (4) – (1)**	**z-stat (5) – (2)**	**N**	**Mean (7)**	**Median (8)**	**Std. Dev. (9)**	**t-stat (7) – (1)**	**z-stat (8) – (2)**
Panel A: Bank Fundamentals																
Profitability	1722	-0.110	-0.004	0.782	74	-0.505	-0.458	0.902	-3.708***	-4.182***	198	-0.203	-0.104	0.820	-1.519	-1.730*
Industry Profitability	1722	0.009	0.009	0.009	74	0.009	0.006	0.009	-0.690	-0.541	198	0.010	0.009	0.010	0.652	0.603
Bank Size	1722	18.362	18.070	1.286	74	19.131	19.056	1.503	4.335***	4.390***	198	18.342	18.136	1.162	-0.222	0.327
Bank Capital	1722	7.117	6.547	2.625	72	5.912	5.609	2.510	-3.984***	-3.988***	198	7.000	6.193	2.679	-0.587	-0.825
Charter Value	1722	1.026	1.013	0.055	74	1.004	1.002	0.035	-5.056***	-2.984***	198	1.024	1.010	0.056	-0.301	-0.645
Panel B: Governance Characteristics																
Board Size	1722	2.537	2.565	0.334	74	2.550	2.565	0.384	0.296	0.549	198	2.529	2.565	0.316	-0.331	-0.179
Independent Directors	1722	0.477	0.500	0.293	74	0.564	0.542	0.225	3.204***	2.401**	198	0.462	0.500	0.277	-0.706	-0.784
CEO Power	1719	1.119	1.000	0.635	74	0.851	1.000	0.589	-3.815***	-3.557***	197	1.030	1.000	0.614	-1.916*	-1.901*
Insider Ownership	1581	30.162	22.995	27.688	68	33.001	28.414	31.754	0.725	0.107	186	36.816	30.095	29.014	2.972***	3.022***
Risk Governance	1722	1.447	2.000	0.732	74	1.676	2.000	0.552	3.444***	2.496**	198	1.460	2.000	0.717	0.241	0.144
Supervisory Power	1672	11.175	12.000	1.873	73	10.712	11.000	2.038	-1.906*	-1.882*	192	11.172	12.000	1.696	-0.025	-0.726
Institutional Ownership	1660	31.256	24.880	23.010	69	33.027	28.930	22.790	0.631	0.737	191	26.653	20.540	22.199	-2.703***	-2.890***
Panel C: Country Characteristics																
Bank Concentration	1722	-2.582	-2.717	0.702	74	-2.466	-2.436	0.741	1.321	1.307	198	-2.540	-2.715	0.658	0.852	1.000
Director Liability Index	1722	6.020	6.000	2.268	74	5.838	5.000	2.021	-0.754	-0.885	198	5.682	6.000	2.141	-2.090**	-2.018**
Activity Restrictions	1722	11.904	13.000	3.302	74	11.095	11.000	3.150	-2.160**	-2.882**	198	11.965	13.000	3.304	0.243	0.293
Development	1722	35.153	35.455	19.732	74	37.622	44.195	20.851	0.999	1.093	198	31.552	34.973	19.441	-2.464**	-2.257**
Fiscal Capacity	1722	-3.720	-3.586	4.058	74	-3.600	-3.021	3.870	0.260	0.607	198	-3.997	-3.618	4.159	-0.890	-0.599
Size of Economy	1722	14.264	14.348	1.572	74	13.985	13.974	1.338	-1.743*	-1.764*	198	14.137	14.073	1.518	-1.110	-0.946
Inflation	1722	2.454	2.200	2.384	74	2.954	2.650	2.392	1.762*	2.240**	198	2.722	2.300	2.775	1.304	0.765

Table 4 CEO Turnover and Idiosyncratic and Systematic Expected Shortfall (ES).

This Table reports the estimates from competing-risks hazard regressions that examine the likelihood of forced and voluntary CEO turnovers. The model is estimated with a CEO's turnover risk measured as the CEO's tenure that is right censored as of December 31, 2013. A positive coefficient indicates that the covariate increases the hazard rate for a CEO to be replaced and hence shortens the expected tenure. Idiosyncratic ES is the expected return below the 5th percentile of residual returns from the market model and the systematic ES is the expected return below the 5th percentile of predicted returns from the market model, as specified in equation (2). For consistency, the systematic and idiosyncratic returns have also been estimated following Jenter and Kannan (2015). All other variables have been defined in Table A1 provided in the Appendix. The z-statistics are shown in parenthesis and are based on robust standard errors clustered at the country level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	(1)		**(2)**	
	Forced	**Voluntary**	**Forced**	**Voluntary**
Idiosyncratic ES	0.785***	0.080	0.684**	-0.133
	(2.915)	(0.286)	(2.408)	(-0.376)
Systematic ES	0.029	0.101	0.019	0.099
	(0.263)	(1.548)	(0.129)	(1.145)
Idiosyncratic Returns	0.695	0.257	-0.570	0.797
	(0.565)	(0.229)	(-0.372)	(0.661)
Systematic Returns	-0.622	0.107	-0.881	0.271
	(-1.458)	(0.428)	(-1.541)	(0.800)
Idiosyncratic Volatility	6.008***	-1.340	5.087**	-0.365
	(3.327)	(-0.581)	(1.960)	(-0.142)
Systematic Volatility	-1.287	-4.191**	-0.731	-3.316
	(-0.428)	(-2.239)	(-0.192)	(-1.284)
Profitability	-0.725***	-0.210	-0.534***	-0.193
	(-3.076)	(-1.288)	(-2.947)	(-0.983)
Industry Profitability	-0.431**	-0.044	-0.292*	-0.018
	(-2.522)	(-0.216)	(-1.662)	(-0.074)
Bank Size	0.760***	0.022	0.571***	0.105
	(4.846)	(0.150)	(5.277)	(0.785)
Bank Size^2	0.089	-0.080*	0.144**	-0.125***
	(1.182)	(-1.744)	(2.254)	(-2.937)
Bank Capital	-0.111	-0.099*	-0.158**	-0.101*
	(-1.538)	(-1.770)	(-2.072)	(-1.666)
Charter Value	-5.111	0.866	-5.131*	-1.185
	(-1.613)	(0.295)	(-1.829)	(-0.374)
Board Size			-0.498	-0.573*
			(-1.628)	(-1.757)
Independent Directors			0.794	0.697
			(0.824)	(1.081)
CEO Power			-0.785***	-0.590**
			(-4.257)	(-2.316)
Insider Ownership			0.005	0.006
			(0.999)	(1.224)
Risk Governance			-0.288	-0.006
			(-1.301)	(-0.043)
Supervisory Power			0.103	0.075
			(0.879)	(1.089)
Institutional Ownership			0.012**	-0.014**
			(2.430)	(-1.971)
Bank Concentration	-0.392	0.024	-0.585*	-0.120
	(-1.306)	(0.111)	(-1.741)	(-0.539)
Director Liability Index	0.188***	-0.111**	0.183**	-0.048
	(3.328)	(-2.509)	(2.134)	(-0.978)
Activity Restrictions	0.075	-0.016	0.040	-0.001
	(1.595)	(-0.496)	(0.821)	(-0.010)
Development	0.004	-0.018**	0.005	-0.025**
	(0.335)	(-2.014)	(0.392)	(-2.291)
Fiscal Capacity	0.002	-0.058	-0.010	-0.073
	(0.053)	(-1.597)	(-0.242)	(-1.278)
Size of Economy	-0.692***	0.064	-0.754***	0.165
	(-4.230)	(0.603)	(-3.724)	(1.324)
Inflation	0.217***	0.014	0.214***	-0.036
	(3.609)	(0.164)	(3.101)	(-0.469)
Time Dummies	YES	YES	YES	YES
Observations	1,994	1,994	1,722	1,722
Log-likelihood	-420.1	-1257	-343.8	-1045

Table 5 Forced CEO Turnover and Expected Shortfall (ES): Is the Impact of Idiosyncratic Expected Shortfall (ES) due to a Poor Performance Effect?

This Table reports sub-sample tests on the relationship between forced CEO Turnover and ES. Column (1) reports the estimates from the competing-risks hazard regression after excluding from the sample banks with idiosyncratic return below the sample median. Column (2) reports the estimates after excluding banks with (simultaneously) low idiosyncratic performance (below the sample median) and high idiosyncratic volatility (above the sample median). The z-statistics are shown in parenthesis and are based on robust standard errors clustered at the country level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	Excluding Low Returns (1)	**Excluding Low Returns + High Volatility (2)**
Idiosyncratic ES	1.347*	1.214*
	(1.797)	(1.736)
Systematic ES	0.076	0.031
	(0.279)	(0.123)
Idiosyncratic Returns	2.244	3.013
	(0.294)	(0.512)
Systematic Returns	-0.638	-0.363
	(-0.624)	(-0.383)
Idiosyncratic Volatility	2.748	6.473
	(0.441)	(1.109)
Systematic Volatility	10.399	7.659
	(1.236)	(1.094)
Other Controls	YES	YES
Time Dummies	YES	YES
Observations	872	1,143
Log-likelihood	-123.3	-145.3

Table 6 Forced CEO Turnover and Expected Shortfall (ES): Impact of Bank Market Concentration.

This Table estimates competing-risks hazard regressions that examine the likelihood of forced CEO turnovers. The model is estimated with a CEO's turnover risk measured as the CEO's tenure that is right censored as of December 31, 2013. Bank Concentration is measured as the log of the Herfindahl index of bank deposits in each country in column (1) and as the log of the market share of bank deposits held by top-4 banks in each country in column (2). A positive coefficient on the interaction term indicates that the covariate increases the sensitivity of CEO turnovers to changes in idiosyncratic and systematic ES. All other variables have been defined in Table A1 provided in the Appendix. The z-statistics are shown in parenthesis and are based on robust standard errors clustered at the country level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	HHI of bank deposits (1)	**% Market share of Top 4 Banks (2)**
Idiosyncratic ES	1.054***	1.067***
	(3.080)	(2.796)
Systematic ES	0.017	-0.024
	(0.108)	(-0.140)
Idiosyncratic ES * Bank Concentration	-1.112**	-3.521***
	(-2.408)	(-3.938)
Systematic ES * Bank Concentration	0.084	0.207
	(1.210)	(1.365)
Bank Concentration	-0.752**	-1.266**
	(-2.521)	(-2.520)
Idiosyncratic Returns	-0.484	-0.090
	(-0.323)	(-0.050)
Systematic Returns	-0.951	-0.833*
	(-1.638)	(-1.700)
Idiosyncratic Volatility	4.458*	7.774***
	(1.784)	(2.642)
Systematic Volatility	-0.619	0.613
	(-0.162)	(0.136)
Other Controls	YES	YES
Time Dummies	YES	YES
Observations	1,722	1,722
Log-likelihood	-339.4	-337.1

Table 7 Forced CEO Turnover and Expected Shortfall (ES): Which Bank Stakeholders Care More About Tail Risks?

This Table reports the estimates from competing-risks hazard regressions that examine the likelihood of forced CEO turnovers. The model is estimated with a CEO's turnover risk measured as the CEO's tenure that is right censored as of December 31, 2013. A positive coefficient on the interaction term indicates that the covariate increases the sensitivity of CEO turnovers to changes in idiosyncratic and systematic ES. All other variables have been defined in Table A1 provided in the Appendix. For brevity, only relevant covariates are shown in each Panel. The z-statistics are shown in parenthesis and are based on robust standard errors clustered at the country level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	(1)	**(2)**	**(3)**	**(4)**
Idiosyncratic ES	0.692**	0.852***	0.693*	0.637**
	(2.197)	(2.723)	(1.858)	(2.122)
Systematic ES	0.087	0.051	0.075	0.012
	(0.656)	(0.322)	(0.485)	(0.082)
Idiosyncratic ES * Subordinated Debt	0.588*			
	(1.799)			
Systematic ES * Subordinated Debt	0.021			
	(0.385)			
Idiosyncratic ES * Insider Ownership		0.020*		
		(1.746)		
Systematic ES * Insider Ownership		0.001		
		(0.756)		
Idiosyncratic ES * Supervisory Power			-0.073	
			(-0.356)	
Systematic ES * Supervisory Power			0.035	
			(1.518)	
Idiosyncratic ES * Institutional Ownership				0.003
				(0.262)
Systematic ES * Institutional Ownership				-0.002
				(-1.275)
Subordinated Debt	-1.413			
	(-0.084)			
Insider Ownership		0.003		
		(0.727)		
Supervisory Power			0.066	
			(0.563)	
Institutional Ownership				0.014**
				(2.444)
Idiosyncratic Returns	-0.654	-1.352	-0.585	-0.708
	(-0.378)	(-0.847)	(-0.356)	(-0.455)
Systematic Returns	-1.199**	-0.862	-0.962	-0.828
	(-2.201)	(-1.456)	(-1.577)	(-1.326)
Idiosyncratic Volatility	5.145*	5.490*	5.498**	5.830**
	(1.780)	(1.910)	(2.047)	(2.236)
Systematic Volatility	-1.365	-1.606	-2.237	-1.081
	(-0.447)	(-0.380)	(-0.527)	(-0.269)
Other Controls	YES	YES	YES	YES
Time Dummies	YES	YES	YES	YES
Observations	1,449	1,722	1,722	1,722
Log-likelihood	-318	-343.1	-344.9	-344.1

Table 8 Forced CEO Turnover and Expected Shortfall (ES): Is Systematic Tail Risk Exogenous?

This Table reports the estimates from competing-risks hazard regressions that examine the likelihood of forced CEO turnovers. The model is estimated with a CEO's turnover risk measured as the CEO's tenure that is right censored as of December 31, 2013. Column (1) uses a post 2010 dummy that equals one for the post-2010 period and zero otherwise. Column (2) uses SIFI as an indicator variable that equals one for banks that are systemically important financial institutions. Column (3) uses Blanket Guarantee as an indicator variable that equals one for the time period over which bank liabilities in each country were insured. A positive coefficient on the interaction term indicates that the covariate increases the sensitivity of CEO turnovers to changes in idiosyncratic and systematic ES. All other variables have been defined in Table A1 provided in the Appendix. The z-statistics are shown in parenthesis and are based on robust standard errors clustered at the country level. ***, **, and * indicate statistical significance at the 1%, 5%, and 10% levels.

	(1)	**(2)**	**(3)**
Idiosyncratic ES	1.184***	0.899**	0.533*
	(2.719)	(2.211)	(1.832)
Systematic ES	0.016	0.030	0.038
	(0.089)	(0.172)	(0.353)
Idiosyncratic ES * Post-2010	-0.776		
	(-1.634)		
Systematic ES * Post-2010	0.201*		
	(1.768)		
Idiosyncratic ES * SIFI		-1.869	
		(-1.620)	
Systematic ES * SIFI		0.312*	

		(1.960)	
Idiosyncratic ES * Blanket Guarantee			4.674
			(1.434)
Systematic ES * Blanket Guarantee			-0.236*
			(-1.686)
SIFI		-0.512	
		(-0.523)	
Blanket Guarantee			-1.489
			(-0.752)
Idiosyncratic Returns	-0.899	-0.603	-1.130
	(-0.594)	(-0.345)	(-0.713)
Systematic Returns	-0.840	-0.889	-0.755
	(-1.421)	(-1.638)	(-1.433)
Idiosyncratic Volatility	4.775*	-2.599	5.131*
	(1.662)	(-0.524)	(1.711)
Systematic Volatility	-2.537	5.512*	-1.516
	(-0.543)	(1.923)	(-0.447)
Other Controls	YES	YES	YES
Time Dummies	YES	YES	YES
Observations	1,722	1,722	1,722
Log-likelihood	-345.7	-344.6	-340.2

Highlights

1. An increase in idiosyncratic tail risk raises the likelihood of a forced CEO turnover in large banks.
2. The importance of idiosyncratic tail risk is lower in more concentrated banking markets.
3. The importance of idiosyncratic tail risk is higher when stakeholders have more to lose from the risk exposure.
4. Systematic tail risk tends to be filtered out from the firing decision, apart from when there is a major variation in the costs that the exposure to this risk might generate.