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Economic policy uncertainty and executive turnover

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ABSTRACT

This paper examines whether economic uncertainty increases executive turnover. The negative perception perspective and business change theory suggest that executives are more likely to leave their jobs during periods of corporate distress. However, the additive effects of internal and external risk are thought to prompt firms to carefully consider executive turnover, thereby reducing the likelihood of executive changes. Based on the literature, we propose a check-and-balance hypothesis for the relationship between external uncertainty and executive change, according to which the optimal superposition of the internal and external risks stemming from increased external uncertainty would be to avoid a wave of executive departures. Using a sample of Chinese A-share listed companies from 2010 to 2019 and the China economic policy uncertainty index of Baker et al. (2013), we examine the impact of economic policy uncertainty on executive turnover and our results support the check-and-balance hypothesis. Our findings enhance our understanding of how economic policy uncertainty affects executive turnover, and enrich the literature on corporate risk management and strategic management.

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1. Introduction

Economic policy uncertainty refers to the inability of economic agents to predict with certainty if, when, and how a government will change its economic policies (Gulen and Ion, 2016). Since the financial crisis in 2008, there have been increasing external risks stemming from factors such as the intensification of the trade war between the U.S. and China and the sudden onset of the COVID-19 pandemic. Economic policy uncertainty, as an unavoidable systemic risk, has significant implications for China's political system, macroeconomic performance, and corporate environment. To cope with the changing global economic environment, the Chinese government has introduced numerous macroeconomic policies, such as the “Four-trillion yuan

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economic stimulus plan,” “Industry 4.0 version,” “Supply-side reform,” and the “Belt and road” initiative, and implemented various free trade zones, tax cuts, stock registration system reforms, and other major policy changes.

Changes in the external business environment make it more difficult to assess the future business environment and have a negative impact on short-term operations (Deng, 2019). However, it is often difficult to discern whether these effects are due to the unpredictable circumstances or to economic mismanagement. Corporate accountability and the reduced tolerance of shareholders and directors for poor economic performance reinforce the negative perceptions of such an economic environment, and thus increase the likelihood of corporate departures. Rao and Xu (2017) argue that increased economic policy uncertainty increases the risk of executive changes, and the combined internal and external risks can make companies more prudent when making executive turnover decisions. However, external uncertainties also increase the requirement for comprehensive capabilities of executives, which can increase the risk-taking of corporations (Liu et al., 2017) and the level of corporate innovation (Hao et al., 2016). Moreover, economic policy uncertainty requires firms to engage in strategic positioning and change (Mirza and Ahsan, 2020). In this regard, hiring a new CEO can provide an important opportunity for a company to realign its practices with the changing economic environment. Accordingly, in recent years, firms have been increasingly using executive change as a governance mechanism for corporate development and strategy implementation (Tan and Luo, 2017). However, as the level of policy uncertainty continues to rise, at least two opposing views have emerged on the reasons for changing senior executives, and whether firms should seek to counterbalance these reasons to avoid a wave of redundancies.

In this paper, we use a sample of Chinese A-share listed companies from 2010 to 2019 and the China economic policy uncertainty index developed by Baker et al. (2013) to study the impact of economic policy uncertainty on executive turnover. Our analyses generate a number of empirical findings. First, economic policy uncertainty serves as an overall positive shock that increases the rate of executive turnover. Second, risk-taking reduces the negative perception of uncertainty, and can thus act as a buffer against this positive shock. Third, executives who serve dual director-manager roles are better able to respond to risk and adapt to volatile environments. Thus, companies are more inclined to give weight to the internal consequences of replacing these executives, and tend to implement internal risk hedging measures. Fourth, further analyses reveal that the negative perception of executive turnover is stronger for firms facing high performance pressures, firms in declining industries, and non-SOEs. Thus, although there is a clearly negative perception of executive change, economic uncertainty generates greater executive turnover due to the greater incentives for firms to reposition themselves in the market. In terms of enterprise size, our analysis shows that small-scale enterprises are more likely to be risk-averse and large-scale enterprises are able to mitigate external shocks, whereas medium-sized enterprises tend to accept the risk of replacing senior managers for strategic repositioning purposes. Finally, we find that older and longer tenured executives are more likely to leave the company due to policy uncertainty, indicating a proactive response to the changing economic environment. Thus, the empirical results of this paper confirm our reasoning that although an environment marked by high external economic policy uncertainty will undoubtedly generate numerous shocks, the increasingly negative perceptions of executive turnovers and the strong incentives for reform within firms counterbalance the risk-avoidance effects. Thus, although economic policy uncertainty generates personnel fluctuations, it does not ultimately trigger a wave of executive departures.

The findings of this paper have several implications. First, previous studies of executive change mostly focus on internal and external corporate governance mechanisms, and pays less attention to the impact of the external economic environment. To address this gap, this paper incorporates the macroeconomic environment into the analytical framework to examine how the external environment affects executive turnover.

Second, previous studies have mainly examined executive change in terms of solving the agency problems of the constraint mechanism, and have ignored the fact the executive change decisions are also strategic decisions that can affect the future strategic positioning and development of an enterprise. This paper treats economic policy uncertainty as a risk-related shock to enterprises, and examines how the decision to change executives can serve as a way for enterprises to manage their reactions to the external shock and adjust their strategies to cope with the risk. Moreover, by objectively analyzing the impact of economic policy uncertainty on executive change and the subjective hiring decisions of enterprises, this paper adds to the literature on executive change by showing that economic policy uncertainty is an important factor in corporate executive turnover.

Third, studies have examined the effects of economic policy uncertainty on factors such as macroeconomic development, corporate investment, R&D spending, cash holdings, capital market risk, and the financial decisions of firms. In contrast, this paper examines whether economic policy uncertainty affects high-level personnel changes in enterprises, and finds that economic policy uncertainty influences the decisions to change senior executives, thus making an important contribution to this line of research.

2. Literature review and hypothesis development

2.1. Literature review

According to Gulen (2016), economic policy uncertainty refers to the inability of market participants to accurately predict whether a government will change economic policies or introduce new policies. Economic policy changes are usually implemented to counteract economic recessions caused by external shocks, such as financial crises or terrorist attacks (Bloom, 2009). During recessions, the levels of economic policy uncertainty can increase significantly as policy makers attempt to stabilize the economy and stimulate growth. In contrast, during boom periods, the economy does not require much adjustment or intervention (Pastor and Veronesi, 2013).

As a systemic risk to micro-enterprises, economic policy uncertainty poses general business risks and can have multifaceted effects on corporate decision making. The literature mainly focuses on firms' risk aversion and prospect expectations. With respect to risk aversion, increased economic policy uncertainty can discourage investment, increase the difficulty of raising capital (Ji et al., 2018), reduce the availability of debt financing (Ni and Dong, 2019), and lead firms to abandon investment opportunities to increase their cash holdings (Li et al., 2016). Based on the prospect expectations, economic policy uncertainty may provide an incentive for firms to increase their R&D activities to gain competitive advantage and capture markets (Meng and Shi, 2017; Gu et al., 2018), but it may also reduce the innovation efficiency of firms (Shen et al., 2019).

The literature on economic policy uncertainty focuses more on the investment and financing decisions of firms and less on the management decisions such as executive turnover. Management is the key to resolving firms' agency problems, for which executive motivation, discipline, and turnover serve as the most direct mechanisms of change. The literature focuses on the role of executive change in resolving agency problems. For example, as firms often judge their executives based on the company performance, performance is an important factor in executive change. In their pioneering work in this area, Coughlan and Schmidt (1985) discuss the relationship between executive turnover and a company's share price performance. Weisbach (1988) argues that the share price includes market expectations of the CEO, and the accounting metrics are thus more representative of the executive's personal behavior. Accordingly, he suggests using the return on assets (ROA) to indicate company performance, concluding that the ROA of companies with departing CEOs is significantly lower than the industry average. However, the accounting indicators of company performance are influenced by a variety of factors in addition to the individual efforts of executives such as the external business environment.

As executive turnover can also be constrained by corporate governance mechanisms, studies have also discussed how internal mechanisms, such as executive shareholding, institutional shareholding (Yue et al., 2011), director-manager duality (Miao, 2008), the size of the supervisory board (Hao and Ren, 2010), and the structure of the board of directors (Kang, 1995; Neumann and Voetmann, 2005), affect management change. Scholars have also begun to combine this perspective with research on firms' external governance mechanisms, such as the external controls of companies (Morck et al., 1989; Kato and Long, 2006) and the market competition for products (Achim, 2016). However, the personal traits of individual managers, such as an executive's political relationships (You et al., 2010) and the founder status of the CEO (Qu et al., 2012), can also influence firms' corporate governance mechanisms. Notably, such personal traits can serve as capital for constructing management trenches, weaken the supervisory and restrictive mechanisms of corporate governance, and reduce the likelihood of the CEO being replaced. However, scholars have focused on executive change as a mechanism for solving agency problems, and paid less attention to executive change as a form of strategic decision making.

2.2. Hypothesis development

This paper examines three possible ways in which economic policy uncertainty can affect executive turnover. First, we examine whether economic policy uncertainty affects the role of corporate governance mechanisms. As a social setting, the economic policy environment can affect the survival of all firms. For example, [Deng \(2019\)](#) finds that increased economic policy uncertainty has a negative impact on firms' short-term operations, and [Yang et al. \(2019\)](#) find that economic policy uncertainty is transmitted to capital markets, thus reducing the market value of firms. However, the external environment may also affect people psychologically and change their expectations. For example, when the overall economic situation declines and becomes unstable, enterprises may pay more attention to profit and loss. Moreover, The theory of attribution suggests that although we evaluate the behavior of others based on evidence, we also tend to underestimate the impact of external factors and overestimate the impact of internal or personal factors, and thus make basic attribution errors. Therefore, when the external environment is highly uncertain, the board of directors is likely to be less tolerant and to demand more accountability, and thus to blame management for the firm's distress. At the same time, increased economic policy uncertainty reduces the observability of management's diligence and makes it more difficult for shareholders to supervise management, leading to a greater degree of information asymmetry between shareholders and management ([Liu and Han, 2010](#)). Consistent with this argument, [Jenter and Kannan \(2015\)](#) find that when an industry as a whole is poorly run, executives are more likely to be fired, and this phenomenon is more pronounced during periods of macroeconomic downturn.

Second, we examine whether high economic policy uncertainty is more reflective of individual executives' capabilities. Executive ladder theory suggests that firm strategies are influenced by top management's perception of the economic situation, which means that a firm's performance can be predicted, in part, by the attributes of the firm's top managers. This effect is stronger in high-uncertainty environments, where managers who are better at processing information can more effectively manage the operational complexity and thus mitigate the adverse effects of the economic uncertainty ([Herrmann and Datta, 2002](#); [Hsu et al., 2013](#); [Lester et al., 2006](#); [Nielsen and Nielsen, 2011](#)). In line with this, [Chen et al. \(2020\)](#) find that managers' abilities alleviate the effects of macro uncertainty on analysts' forecasts by reducing the negative impact of macro uncertainty on performance and improving the quality of information. Thus, it can be argued that greater macroeconomic policy uncertainty tests management's capabilities and can have a significant impact on management's overall performance. Alternatively, the greater the competency requirements, the more likely it is that less competent management will be eliminated.

Third, based on prospect expectation theory, we examine whether under high economic policy uncertainty, fluctuations in the economic environment force firms to improve their "hardware" to survive, and thus encourage the long-term development of enterprises ([Deng, 2019](#)). From an industrial organization perspective, studies suggest that the external socio-economic environment of a company can have a significant influence on its market position ([Courtney, Kirkland, and Viguerie, 1997](#); [Kaplan, 2008](#); [Shen, Yu, and Wu, 2012](#)). In terms of strategic management, companies always try to adapt their strategic design to the current operating or economic environment ([Andrews, 1971](#); [Porter, 1980](#); [Scholes et al., 2000](#)). Senior executive turnover provides important opportunities for companies to align with the changing environment and can help companies overcome their organizational inertia ([Ocasio, 1994](#)). The successor executives may implement strategic and organizational changes ([Ocasio, 1994](#)), initiate new strategic adjustment practices ([Miller, 1993](#)), and divest unprofitable units ([Weisbach, 1995](#)). Given the above discussion, we propose the following hypothesis.

H1: The greater the economic policy uncertainty, the greater the likelihood of executive departures.

How an enterprise perceives external economic policy uncertainty is affected by the heterogeneity of individual characteristics, and how this uncertainty affects the enterprise also depends on the enterprise's attitude towards risk and its ability to resist risk. An enterprise's risk-taking reflects its risk appetite when making investment decisions, such that the higher the level of risk-taking, the more likely it is that the enterprise will take on risky investment projects ([Yu et al., 2013](#)). Therefore, risk taking represents an active willingness to bear risk under certain conditions, and emphasizes an enterprise's active embrace rather than passive accep-

tance of its own risk (Yu and Shan, 2015). However, risk-taking also depends on a firm's resource acquisition capacity, as risk-taking is a resource-consuming activity and can make a firm strongly resource dependent (Xin et al., 2013). For example, an enterprise's social network can help improve its ability to acquire resources, thus increasing its level of risk taking. Therefore, an enterprise's level of risk taking also reflects the enterprise's ability to obtain resources.

In summary, corporate risk-taking reflects the willingness and ability of firms to take risks. Therefore, high economic policy uncertainty can reduce a firm's negative sensitivity to poor performance and thus lessen the censure of executives, while making the firm more resilient to external shocks. On this basis, we propose the following hypothesis.

H2: Corporate risk-taking can reduce the positive impact of economic policy uncertainty on executive turnover.

Director-manager duality is common in China's institutional setting. Director-manager duality can improve the risk coping ability and environmental adaptability of senior executives, and can thus increase the level of risk-taking of senior executives. Uncertain economic policies mean that enterprises face greater risks, and senior executives need to make quick judgments based on a good understanding of the future development of the enterprise and its capital arrangements and finances. Director-manager duality also gives directors greater autonomy, makes the board more tolerant of risk, and induces management to pay more attention to the long-term development and interests of the company. In addition, director-manager duality can help clarify a company's development goals, and increase the board's confidence in the company's long-term interests. More effective leadership and control can also facilitate the effective implementation of executive decisions, and thus enhance a firm's capacity to adapt to an uncertain environment. Director-manager duality is more common in large SOEs and family owned enterprises. In these enterprises, management has a greater internal aversion to the risks posed by external threats, and has more difficulty changing personnel. Furthermore, studies have shown that the agency problems associated with director-manager duality are more likely to emerge in mature markets, whereas director-manager duality is more conducive to business growth in emerging markets. On this basis, we propose our third hypothesis.

H3: Director-manager duality reduces the positive impact of economic policy uncertainty on senior executive turnover and enhances the protection of senior executives.

3. Empirical research design

3.1. Sample selection and data sources

Our research sample is comprised of A-share listed companies on the Shanghai and Shenzhen stock exchanges from 2010 to 2019, and excludes financial enterprises (690), cross-holdings (5855), firms with less than zero shareholder equity (593), and the special treatment samples (2531). All of the non-dummy variables are winsorized at the 1% and 99% levels to alleviate the potential effects of outliers. We obtain each firm's financial accounting information from the China Stock Market and Accounting Research database and construct an economic policy uncertainty index based on the uncertainty indices developed by Baker et al. (2013).

3.2. Definitions of main variables

TURN: Executive turnover. In accordance with the Chinese literature, we define executives as the chairman and general manager. Following Rao and Xu (2017), we do not distinguish between normal and mandatory executive departures. First, Chinese listed companies fully disclose the reasons for executive changes, but often record abnormal separations as normal changes. Second, in our setting, some executive departures may have occurred spontaneously, and this will not be reflected in the companies' disclosures of their reasons for leaving. If a company changes its chairman or managing director during the year, the explained variable takes the value of one, and zero otherwise. In cases where a company reports multiple changes in a year, we only retain the first change.

EPU: Economic policy uncertainty. Following the literature, we use the China economic policy uncertainty index constructed by Baker et al. (2013) to measure policy uncertainty. The index is based on the South China Morning Post, Hong Kong's largest English-language newspaper. The index is compiled based on keyword searches for terms such as “uncertain/uncertainty,” “economic/economy,” “policy,” “tax,” “spending,” “regulation,” “central bank,” and “budget deficit.” A monthly index is then compiled by dividing the number of articles identified in the keyword search each month by the total number of articles published in the South China Morning Post that month. Numerous domestic and international studies have used this economic policy uncertainty index to analyze the impact of economic policy uncertainty on the investments, innovation, and macroeconomic policies of enterprises. As the firm-level data used in this paper are annual, we convert the monthly averages to an annual indicator and use its logarithm as the final explanatory variable to obtain uniform data frequencies.

Risk: Enterprise risk taking. As higher risk-taking increases the uncertainty about the future cash flows of an enterprise, we follow He et al. (2019) and use the volatility of corporate earnings as a measure of risk-taking. The ROA volatility of a firm is used to measure the level of risk-taking, with greater volatility of earnings indicating a higher level of risk-taking and greater tolerance of performance volatility. Following Yu et al. (2013), we subtract the ROA from the annual industry mean to obtain the adjusted ROA, and use every five years as the observation period to calculate the standard deviation and range of the industry-adjusted ROA in a rolling manner. The standard deviation and range are also used to measure an enterprise's risk commitment. The paper uses the SEC's 2001 classification standard, and due to the large number of listed companies in China's manufacturing industry, the classification of manufacturing firms is broken down according to the secondary codes.

$$Risk1_{i,t} = \sqrt{\frac{1}{N-1} \sum_{n=1}^N \left(adj_ROA_{i,t} - \frac{1}{N} \sum_{n=1}^N adj_ROA_{i,t} \right)^2} \quad (1)$$

$$Risk2_{i,t} = \text{Max}(adj_{ROAi}) - \text{Min}(adj_{ROAi}) \quad (2)$$

where $N = 5$. *Risk1* is obtained by calculating the rolling standard deviation of the five-year *adj_ROA*, and *Risk2* is obtained by calculating the range of five-year *adj_ROA*.

Dual: Chairman of the board and general manager. If the chairman and the manager of the enterprise are the same person, the variable takes the value of 1, and 0 otherwise.

3.3. Model specification

To test the relationship between economic policy uncertainty and executive turnover, we construct a number of econometric regression models. As the explained variables are 0–1 dummy variables, the regressions are based on a binary choice model. The random error term of the probit model is subject to the standard normal distribution, whereas the logit model does not require strict assumptions and has a wider range of applications. Therefore, a panel logit model is used for the regressions. In addition, the panel logit model uses two-way fixed effects and controls for individual firm and year fixed effects. To alleviate concerns about the co-collinearity of the time dummy variable with *EPU*, we delete the 2010 dummy variable and construct the following measurement model.

$$TURN_{i,t} = \alpha_0 + \alpha_1 EPU_i + \Sigma Controls1_{i,t} + \varepsilon_{i,t} \quad (3)$$

$$TURN_{i,t} = \beta_0 + \beta_1 EPU_i + \beta_2 EPU_i * Risk_{i,t} + \beta_3 Risk_{i,t} + \Sigma Controls1_{i,t} + \varepsilon_{i,t} \quad (4)$$

$$TURN_{i,t} = \gamma_0 + \gamma_1 EPU_i + \Sigma Controls2_{i,t} + \varepsilon_{i,t} \quad (5)$$

where *TURN* is the executive change dummy variable, which takes the value of one if the firm has a change of chairman or general manager, and zero otherwise. *EPU* is economic policy uncertainty, which is calculated by averaging the economic policy uncertainty index into annual indicators on a monthly basis and then taking the logarithm. *Risk* is the level of corporate risk-taking, which is measured in two ways by Equations (1) and (2).

Table 1
Variable definitions.

Dependent variable	Description
<i>TURN</i>	Executive turnover. Takes the value of one if a company changes its chairman or managing director during the year, and zero otherwise
Independent Variable	Description
<i>EPU</i>	The data are from http://www.policyuncertainty.com/ . The variable is the logarithm of the annual targets, which are derived from the monthly averages.
Adjustment variables	Description
<i>Risk1</i>	Risk-taking, calculated by Model (1)
<i>Risk2</i>	Risk-taking, calculated by Model (2)
<i>Dual</i>	Director-manager duality. Takes the value of one if the chairman and the manager of the enterprise are the same person, and zero otherwise
Control variables	Description
<i>ROA</i>	Net profit divided by total assets and adjusted by the industry median
<i>Size</i>	Company size. Logarithm of the company's total assets at the end of the period
<i>Debt</i>	Asset-liability ratio. The ratio of a company's liabilities to its total assets
<i>MB</i>	Company growth. The ratio of total market value to the book equity value
<i>Soe</i>	Takes the value of one if the actual controller is a state-owned enterprise, and zero otherwise
<i>Top1</i>	Shareholding ratio of the largest shareholder
<i>Board</i>	Total number of directors
<i>Independence</i>	Percentage of the number of independent directors in the total number of directors
<i>Dual</i>	Director-manager duality. Takes the value of one if the chairman and the manager of the enterprise are the same person, and zero otherwise
<i>Tenure</i>	Executive tenure; missing values are replaced by the average company tenure
<i>Age</i>	Age of executive at departure; missing values are replaced by the average age of directors and supervisors

Following Xu et al. (2012), we also control the following variables in Models (3) and (4): personal characteristics of the executive, including *duality*, *age*, and *tenure*; financial condition of the firm, including the *size* and *leverage ratio* of the firm; corporate governance characteristics, including *board size* and *board independence*; and equity characteristics, including *equity concentration* and *equity nature*. As the market indicators can be affected by policy changes and political events (Zong et al., 2013), we adjust the company's operating performance *ROA* by the industry averages. Similarly, we also control for individual *firm* and *year* fixed effects. The control variable in Model (5) removes the variable *duality*. Detailed definitions of the variables are provided in Table 1.

Model (3) can be used to validate H1. According to H1, α_1 should be significantly positive.

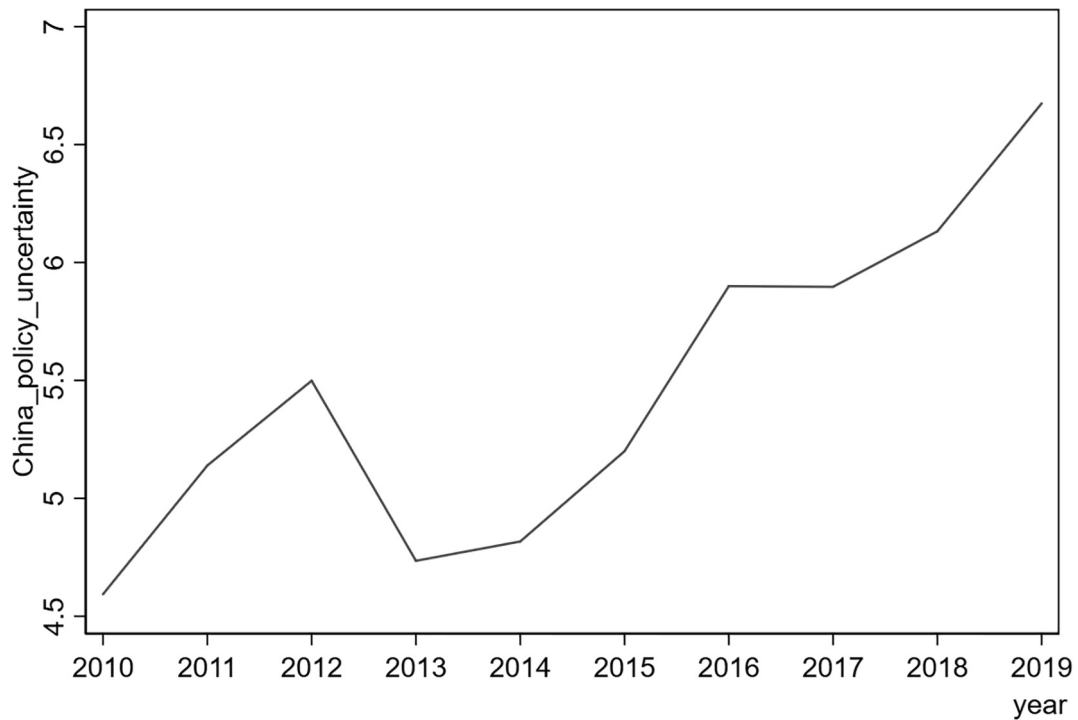
Model (4) can be used to validate H2 by adding the intersection term to examine the moderating role of the level of risk-taking by firms. Here, in the multiplication term, the value of the two variables are decentralized to avoid collinearity. According to H2, β_2 should be significantly negative.

Model (5) can be used to test H3 by dividing the sample into two subsamples according to whether the chairman of the board is also the manager. According to H3, γ_1 in the director-manager duality samples should be significantly smaller than γ_1 in the non-director-manager duality samples.

4. Empirical results

4.1. Descriptive statistics

Fig. 1 (in the attachment) shows the trend of the Chinese economic policy uncertainty index over the sample period. There are significant increases around 2011–2012 and in 2015. In 2011–2012, the central government implemented its “Four-trillion yuan” investment plan and the Eurozone debt crisis peaked; the increased uncertainty in the external environment was transmitted to China's economy. The index peaks again in 2015, when China experienced its lowest growth rate in 25 years, and the volatile stock and currency markets



Source of data : <http://www.policyuncertainty.com/>

Fig. 1. The trend of China's economic policy uncertainty Index (after logarithmic transformation) from 2010 to 2019.

Table 2
Descriptive statistics.

Variables	Obs	Mean	Std	Min	P50	Max
<i>EPU(Original Value)</i>	10	268.71	167.85	98.89	181.29	791.87
<i>EPU</i>	10	5.42	0.58	4.60	5.21	6.68
<i>TURN</i>	18,255	0.26	0.44	0.00	0.00	1.00
<i>Risk1</i>	18,255	3.24	3.67	0.18	2.04	22.91
<i>Risk2</i>	18,255	7.30	8.29	0.28	4.60	51.52
<i>Dual</i>	18,255	0.24	0.42	0.00	0.00	1.00
<i>ROA</i>	18,255	0.00	0.06	−0.22	−0.00	0.17
<i>Size</i>	18,255	22.13	1.22	19.57	22.01	25.70
<i>Debt</i>	18,255	0.44	0.21	0.05	0.43	0.89
<i>MB</i>	18,255	0.04	0.04	0.00	0.03	0.22
<i>Soe</i>	18,255	0.42	0.49	0.00	0.00	1.00
<i>Top1</i>	18,255	34.62	15.04	8.45	32.34	74.96
<i>Board</i>	18,255	8.69	1.73	0.00	9.00	18.00
<i>Independence</i>	18,255	0.37	0.05	0.33	0.33	0.57
<i>Tenure</i>	18,255	5.55	3.47	0.01	5.23	21.79
<i>Age</i>	18,255	51.65	6.48	21.00	51.00	69.00

reinforced concerns about policy uncertainty. China was in severe economic recession during both periods, and the economic policy uncertainty intensified significantly, which is consistent with research showing that economic policy uncertainty increases substantially during recessions (Pastor and Veronesi, 2013).

Table 3
Multicollinearity analysis.

Variables	VIF	1/VIF	VIF	1/VIF
<i>EPU</i>	1.13	0.88	1.14	0.87
<i>Risk1</i>	1.09	0.91		
<i>Risk2</i>			1.09	0.91
<i>Dual</i>	1.10	0.91	1.10	0.91
<i>ROA</i>	1.16	0.86	1.17	0.85
<i>Size</i>	3.32	0.30	3.53	0.28
<i>Debt</i>	2.10	0.48	2.14	0.46
<i>MB</i>	2.41	0.41	2.41	0.41
<i>SOE</i>	1.31	0.76	1.32	0.75
<i>Top1</i>	1.13	0.89	1.15	0.87
<i>Board</i>	1.45	0.69	1.47	0.68
<i>Independence</i>	1.31	0.76	1.31	0.76
<i>Part</i>	1.14	0.88	1.15	0.87
<i>Age</i>	1.17	0.86	1.17	0.86

Descriptive statistics of the variables are presented in Table 2. The results show that the mean value of the economic policy uncertainty index (before logarithm) is 332.75 and the standard deviation is 219.23, indicating relatively high and volatile economic policy uncertainty. The mean value of executive turnover (*TURN*) is 0.24, meaning that overall more than 20% of firms experience executive turnover.

4.2. Regression results

We first test for the presence of multicollinearity among the explanatory variables. Table 3 reports the variance inflation factor (VIF) for each variable. The results show that the VIF values for each explanatory variable are less than 5, indicating that multicollinearity is not a problem in the model.

The hypotheses are next tested and the regression results are presented in Table 4.

In the test for Model (3), the first column of Table 4 includes no other control variables, while the second column adds all of the control variables. The regression results show that the coefficient on *EPU* is always significantly positive, which indicates that economic policy uncertainty is significantly positively related to executive change. That is, the greater the uncertainty in the economic policy environment, the greater the likelihood of executive departures, which supports hypothesis H1.

At the control variable level, there is a negative correlation between performance *ROA* and executive turnover, which is consistent with the findings in the literature, indicating that performance is an important criterion for evaluating executive capabilities. The results are not significant for company size (*Size*), debt ratio (*Debt*), and growth (*MB*). However, at the equity characteristics level, state-owned enterprises (*Soe*) significantly increase the probability of executive turnover. At the governance structure level, a large *Board* means the effectiveness of its decision-making is more likely to be affected, thus reducing the probability of turnover. At the executive characteristics level, *Tenure* enhances an executive's role in the firm's decision making, thus reducing the likelihood that such executives, and older (*Age*) executives, will leave the company.

The results of the test of Model (4) show that regardless of which measurement method is used, the interaction coefficients between *EPU* and *Risk1* and between *EPU* and *Risk2* are always significantly negative. Corporate risk-taking reduces the positive effect of economic policy uncertainty on executive departure rates, thus supporting H2, and indicating that corporate risk-taking can reduce the negative perception of a company's external environment.

In the subsample regression for Model (5), the coefficient on *EPU* is significantly negative in the *Duality* group, while the coefficient in the *Non-Duality* group is positive but not significant. In addition, the seemingly uncorrelated estimation test demonstrates that the *EPU* coefficients are significantly different between the two groups, indicating that director-manager duality reduces the positive impact of uncertainty on executive turn-

Table 4
EPU, risk-taking, and executive turnover.

Variables	Dependent variable: <i>TURN</i>					
	Model(3)		Model(4)		Model(5)	
	Full sample	Full sample	Full sample	Full sample	Duality sample	Non-duality sample
<i>EPU</i>	0.204*** (4.13)	0.128** (2.31)	0.110* (1.96)	0.090 (1.58)	−0.525** (−2.57)	0.020 (0.32)
<i>EPU* Risk1</i>			−0.023*** (−2.73)			
<i>Risk1</i>			0.022*** (2.90)			
<i>EPU* Risk2</i>				−0.011*** (3.61)		
<i>Risk2</i>				0.010*** (3.08)		
<i>ROA</i>		−1.290*** (−3.02)	−1.163*** (−2.71)	−1.146*** (−2.67)	1.714 (1.36)	−1.552*** (−3.12)
<i>Size</i>		0.070 (1.39)	0.079 (1.54)	0.081 (1.58)	−0.301* (−1.83)	0.053 (0.89)
<i>Debt</i>		0.024 (0.12)	0.012 (0.06)	0.003 (0.02)	1.377** (2.12)	−0.295 (−1.19)
<i>MB</i>		1.004 (0.98)	0.828 (0.81)	0.940 (0.92)	1.796 (0.57)	1.620 (1.35)
<i>Soe</i>		0.195 (1.31)	0.180 (1.21)	0.183 (1.23)	0.322 (0.51)	0.170 (0.98)
<i>Top1</i>		−0.003 (−0.94)	−0.003 (−0.88)	−0.003 (−0.85)	−0.016 (−1.46)	0.003 (1.00)
<i>Board</i>		−0.077*** (−3.22)	−0.077*** (−3.22)	−0.076*** (−3.20)	−0.103 (−1.16)	−0.048* (−1.79)
<i>Independence</i>		0.954 (1.52)	0.938 (1.50)	0.931 (1.48)	−1.174 (−0.59)	1.267* (1.74)
<i>Dual</i>		−0.165*** (−2.66)	−0.168*** (−2.71)	−0.167*** (−2.68)		
<i>Tenure</i>		−0.134*** (−14.54)	−0.133*** (−14.41)	−0.133*** (−14.41)	−0.137*** (−4.85)	−0.133*** (−12.90)
<i>Age</i>		0.007* (1.81)	0.007* (1.79)	0.007* (1.80)	0.010 (0.98)	0.010** (2.12)
<i>Year</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>Firm</i>	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	15,451	15,451	15,451	15,451	1970	12,017
<i>Pseudo R2</i>	0.007	0.029	0.030	0.030	0.062	0.024
<i>Chi2</i>	94.382	370.184	382.916	384.577	84.157	243.759

Notes:

(1) This table shows the results of the panel Logit model regression in which the year and company fixed effects are controlled.

(2) z-values are reported in parentheses. * Statistical significance at the 10% level. ** Statistical significance at the 5% level. *** Statistical significance at the 1% level.

(3) As *Risk1* and *Risk2* are both continuous variables, the tests use the cross multiplication method, whereas the *Dual* variable is used for the test with the stratified regression. In addition, we conduct a seemingly uncorrelated estimation test for the stratified regression results; the test results are $\text{Chi}^2 = 5.78$, $P = 0.016$, which pass the difference test.

over, and even leads enterprises to introduce risk aversion measures to avoid fluctuations in personnel, thus supporting H3. These results demonstrate that director-manager duality can enhance a company's ability to resist risk and adapt to highly uncertain economic environments.

4.3. Robustness test

To ensure the reliability of the findings, the following robustness tests are conducted.

Table 5
Alternate measurement of *EPU*.

Variables	Dependent variable: <i>TURN</i>				
	Model(3)	Model(4)		Model(5)	
	Full sample	Full sample	Full sample	Duality sample	Non-duality sample
<i>DummyEPU</i>	0.267** (2.31)	0.290** (2.39)	0.261** (2.16)	−1.092** (−2.57)	0.042 (0.32)
<i>EPU* Risk1</i>		−0.021* (−1.96)			
<i>Risk1</i>		0.031*** (3.00)			
<i>EPU* Risk2</i>			−0.010** (−2.14)		
<i>Risk2</i>			0.015*** (3.12)		
<i>Controls</i>	Yes	Yes	Yes	Yes	Yes
<i>Industry</i>	Yes	Yes	Yes	Yes	Yes
<i>Firm</i>	Yes	Yes	Yes	Yes	Yes
<i>N</i>	15,451	15,451	15,451	1970	12,017
<i>Pseudo R2</i>	0.029	0.029	0.030	0.062	0.024
<i>Chi2</i>	370.184	379.271	381.796	84.157	243.759

Notes:

(1) This table shows the results of the panel logit model regression in which the year and company fixed effects are controlled.

(2) z-values are reported in parentheses. * Statistical significance at the 10% level. ** Statistical significance at the 5% level. *** Statistical significance at the 1% level.

Table 6
Panel probit regression method.

Variables	Dependent variable: <i>TURN</i>				
	Model(3)	Model(4)		Model(5)	
	Full sample	Full sample	Full sample	Duality sample	Non-duality sample
<i>EPU</i>	0.090*** (3.05)	0.070** (2.38)	0.008 (0.27)	0.112 (1.44)	0.076** (2.37)
<i>EPU* Risk1</i>		−0.005 (−1.12)			
<i>Risk1</i>		0.022*** (7.47)			
<i>EPU* Risk2</i>			−0.008** (−2.57)		
<i>Risk2</i>			0.018*** (8.65)		
<i>constant</i>	−0.978*** (−2.62)	−1.186*** (−3.19)	−0.961*** (−2.58)	−2.088** (−2.05)	−0.677* (−1.69)
<i>Controls</i>	Yes	Yes	Yes	Yes	Yes
<i>Year</i>	Yes	Yes	Yes	Yes	Yes
<i>N</i>	18,255	18,255	18,255	4299	13,956
<i>Chi2</i>	1317.252	1384.524	1403.067	320.082	878.859

Notes:

(1) This table shows the results of the panel probit model regression and the random effect model, which passed the random effect test.

(2) z-values are reported in parentheses. * Statistical significance at the 10% level. ** Statistical significance at the 5% level. *** Statistical significance at the 1% level.

(1) Replace the measurement of the economic policy uncertainty index.

Dummy variables (*DummyEPU*) are used instead of continuous variables (*EPU*). *Dummy EPU* is divided into high uncertainty (*DummyEPU* = 1) and low uncertainty (*DummyEPU* = 0) subsamples according to whether the *EPU* is equal to or greater than the median *EDU*. The regression results are shown in Table 5. The regression coefficient for *DummyEPU* remains significantly positive and the coefficient for the interaction *EPU** *Risk* remains significantly negative, thus supporting the main findings. The control variables are similar to those in Table 4.

(2) Panel probit regression method.

The panel probit regression is further applied to regress the relationship between economic policy uncertainty and executive turnover. The regression results reported in Table 6 show that H1 and H2 are still verified. However, H3, relative to director-manager separation, director-manager duality reduces the impact of uncertainty, but does not protect senior executives. The control variables are consistent with the results in Table 4 and do not change significantly (not reported).

(3) Endogeneity test.

Missing variables at the macro level can cause endogeneity problems. For example, macroeconomic changes can lead to changes in economic policy uncertainty and alter the frequency of executive changes. If the macroeconomic factors are not controlled, they can introduce an endogenous bias into the findings. To mitigate this endogeneity problem, we follow Gulen and Ion (2016) and Li and Yang (2015) and include *GDP growth* as a control variable in the regression model, and also control for *firms' boom index*. Controlling for the effects of these variables, the regression results remain robust and mitigate the endogeneity problem caused by the absence of macro-level variables.

Table 7
Second stage results of the instrumental regression.

Variables	Dependent variable: <i>TURN</i>				
	Model(3)	Model(4)		Model(5)	
	Full sample	Full sample	Full sample	Duality sample	Non-duality sample
<i>EPU</i>	0.340*** (5.11)	0.313*** (4.62)	0.239*** (3.30)	0.313*** (4.62)	0.301*** (4.40)
<i>EPU</i> * <i>Risk1</i>	–	–0.016 (–0.68)			
<i>Risk1</i>	–	0.021*** (3.73)			
<i>EPU</i> * <i>Risk2</i>	–		–0.022** (–2.13)		
<i>Risk2</i>	–		0.017*** (5.59)		
<i>constant</i>	–1.620*** (–3.76)	–1.796*** (–4.18)	–1.797*** (–4.21)	–1.796*** (–4.18)	–1.796*** (–4.20)
<i>Controls</i>	Yes	Yes	Yes	Yes	Yes
<i>Industry</i>	Yes	Yes	Yes	Yes	Yes
<i>Firm</i>	Yes	Yes	Yes	Yes	Yes
<i>N</i>	15,570	15,570	15,570	15,570	15,570
<i>Chi2</i>	1107.432	1148.272	1167.026	1148.272	1152.100

Notes:

(1) This table shows the results of the iv probit model regression in which the year and industry dummy variables are controlled.

(2) z-values are reported in parentheses. * Statistical significance at the 10% level. ** Statistical significance at the 5% level. *** Statistical significance at the 1% level.

An instrumental variables approach is also used to prevent the endogeneity problem arising from omitting variables that may change over time. Drawing on Wang and Song (2014), we use a lagged one-period index of U.S. economic policy uncertainty and include its logarithm as an instrumental variable for the Chinese economic policy uncertainty indicator in a two-stage ivprobit regression. The results are shown in Table 7. As can be seen from the regressions, hypotheses H1 and H2 are still confirmed. However, in the subsample regressions, director-manager duality does not play a role in mitigating the impact of economic policy uncertainty.

5. Further analysis

According to the preceding analysis, economic policy uncertainty can lead to increased executive turnover because the uncertainty affects the performance and strategic stability of enterprises. To further clarify the impact of economic policy uncertainty on executive turnover, in this section we focus on the impact of economic policy uncertainty on the performance and strategic stability of enterprises. Internal factors at the firm level, such as performance pressure, the nature of ownership, and the size of the firm, determine the extent of the shock to a firm. Executive traits are also analyzed to determine which executives are more likely to be fired in a highly uncertain environment.

5.1. What kinds of firms are more affected by the shock?

(1) Industry prosperity

The industry environment, as a *meso*-environment, can alter the impact of the macro-environment on micro-enterprises. Different industries are affected to different degrees by economic uncertainty, while the prosperity of an industry can also affect an enterprise's perception of the external macro environment. Jenter and Kannan (2015) find that when an industry as a whole is poorly managed, executives are more likely to be fired, and this phenomenon is more pronounced during recessions. Therefore, in a highly uncertain economic environment, if a company is operating in an industry that is not doing well, it will face more risk and have a greater need for internal consolidation and strategic adjustment. Following Deng and Zeng (2019), we use the sample firms' 2010–2019 annual ROA, and calculate the median value (MROA) for each year by industry, and then calculate the industry median value (MMROA). When an MROA of a firm's industry in year t is greater than the MMROA, this indicates the industry is operating well during that year. Thus, we divide the total sample into two subsamples consisting of higher and lower MROA values and test Model (3). The regression results are shown in Table 8. The coefficients of *EPU* are significantly and positively correlated at the 10% confidence level in the industry *depression* group, whereas the results for *EPU* in the industry *boom* group are not significant, which indicates that the industry prosperity affects the impact of economic

Table 8
Types of firms that are more affected by economic uncertainty.

Variables	Dependent variable: <i>TURN</i>								
	Depression	Boom	Higher pressure	Lower pressure	Non-SOEs	SOEs	Size: Small	Size: Median	Size: Large
<i>EPU</i>	0.304* (1.82)	−0.042 (−0.34)	0.677** (2.17)	0.125* (1.88)	0.190** (2.12)	0.018 (0.24)	−0.069 (−0.66)	0.375*** (2.99)	0.129 (1.17)
<i>Controls</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Year</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>Firm</i>	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
<i>N</i>	5328	6884	3201	9665	8065	7172	4425	4287	4927
<i>Pseudo R2</i>	0.017	0.042	0.035	0.031	0.036	0.028	0.039	0.023	0.030
<i>Chi2</i>	71.614	222.042	82.748	243.591	225.617	178.499	137.780	78.338	121.498
<i>Test of the difference in the coefficients of EPU</i>									
<i>Chi2</i>			2.81*		3.18*		2.33		8.20**
<i>p-value</i>			0.0935		0.0744		0.1271		0.0166

policy uncertainty on executive turnover, with companies in recession industries being more likely to be affected by the uncertainty.

(2) Performance pressure

Modern enterprises usually implement executive compensation plans and job assessment mechanisms that are closely related to corporate profits, which thus reduces the personal income of managers when the company's profit declines and increases their performance pressure and even threatens their position. By increasing managers' performance pressure, uncertainty poses a further threat to business operations and makes it difficult for enterprises to meet their business performance targets. A declining share price due to substandard performance or failure to achieve a firm's equity incentive plans may result in executive dismissals or the voluntary departure of executives. Therefore, following, we use each firm's total profit plus the total asset impairment provision to obtain the "total profit adjusted for impairment." If a company's "total profit adjusted for impairment" for the current year is less than its total profit for the previous year, this indicates that managers are under pressure to perform in the current year. Accordingly, the total sample is divided into two groups of higher performance pressure and low performance pressure firms to test Model (3). The grouped regression results are shown in Table 8. The coefficient of *EPU* for the group with higher performance pressure is significantly higher than that for the group with lower performance pressure, which indicates that performance pressure leads to increased executive departures in uncertain economic environments.

(3) SOEs and non-SOEs

Enterprises with different property rights react differently to economic policy uncertainty. SOEs have better institutions, more stable bank loans, more government subsidies, and more social and economic incentives than non-SOEs. However, the appointment and dismissal of executives in SOEs are subject to government intervention (SASAC), which can weaken the impact of the changing market conditions on firms. Thus, different firms face different levels of economic policy uncertainty and respond in different ways, with SOEs being more resistant to external risks and more motivated to maintain business stability. Therefore, we divide the whole sample into SOEs and non-SOEs and perform a test on Model (3). The regression results show that *EPU* is significantly positive only for non-SOEs, indicating that non-SOEs have more difficulty bearing external risks.

(4) Size of the enterprise

In terms of risk resilience, large companies have well-developed development profiles and risk management mechanisms that enable them to deal with the changing economic environment, and thereby reduce the rate of executive turnover. With respect to resources and capabilities, the resources available to an enterprise can ensure a smooth strategic transformation and help companies to quickly adapt to the changing external environment. Zhou and Luo (2005) and Nie et al. (2008) find that while large-scale firms are more willing to proactively innovate, and are also more likely to proactively choose to replace executives in times of uncertainty, small-scale firms are more likely to survive in uncertain environments and are therefore more likely to avoid personnel changes. Accordingly, we compare the sizes of firms to the median size of the same industry in the same year, and divide the sample into three groups: small, medium, and large. The regression results for our test of Model (3) show that *EPU* is significantly positive for medium-sized firms, negative but not significant for small-sized firms, and positive but not significant among larger firms. In this case, smaller firms, being extremely sensitive to risk, are more likely to respond with risk-averse measures, whereas large-scale enterprises, while resilient to risk, may also need to implement strategic changes and proactively decide to change executives. Our findings indicate that only medium-sized firms have some need for change, and thus in an environment of uncertainty, such firms are more prone to executive turnover.

Table 9
Types of executives that firms are more likely to fire.

Variables	Dependent variable: <i>TURN</i>			
	50 < Age < 60	Age ≤ 50	Tenure: Long	Tenure: Short
<i>EPU</i>	0.473*** (4.86)	0.234** (2.37)	1.059*** (9.04)	0.092 (1.22)
<i>Controls</i>	Yes	Yes	Yes	Yes
<i>Year</i>	Yes	Yes	Yes	Yes
<i>Firm</i>	Yes	Yes	Yes	Yes
<i>N</i>	6043	5566	6756	8077
<i>Pseudo R2</i>	0.070	0.049	0.119	0.063
<i>Chi2</i>	320.873	216.988	516.250	441.139
<i>Test of the differences in the coefficients of EPU</i>				
<i>Chi 2</i>		3.11*		41.93***
<i>p-value</i>		0.0776		0.000

5.2. Types of executives that firms are more likely to fire

(1) Age

Li et al. (2015) argue that older executives are likely to have political capital and therefore have more bargaining power when negotiating pay contracts. However, research also suggests that older executives tend to be more conservative, less likely to engage in risk-taking (Li and Cao, 2020), and less able to adapt to the changing external environment. Thus, while age may enhance an executive's standing in the company and defensive capabilities, he or she may be more likely to leave the company because he or she cannot adapt to the changing external environment. (see Table 9)

Accordingly, we divide the executives into two subsamples based on their average age, namely those younger than 50 and those older than 50 but younger than 60 (retirement age). The regression results of a group test on Model (3) show that the coefficients and significance of *EPU* are greater in the older executive group than in the younger group, indicating that older executives who are less likely to be replaced are usually more affected by these shocks. This is consistent with studies showing that with increasing age, corporate executives become progressively less adaptable to changes in the external environment, possess inadequate analytical skills for making business decisions, and too often rely on past successes when making strategic business decisions. Thus, companies have greater incentives to replace older executives during periods of economic uncertainty.

(2) Tenure

The longer an executive's tenure, the more corporate experience and social resources he or she accumulates, and the more secure his or her position becomes. Moreover, the longer an executive remains in office, the more likely he or she will form interest groups and increase his or her control over the company, thereby reducing the likelihood that he or she will be replaced. However, longer tenure may also result in an executive becoming more averse to risk, less willing to implement strategic changes, and less likely to invest in technological innovation.

Accordingly, we divide the sample into two subsamples with longer tenure and shorter tenure based on the average tenure of executives to the industry median. The regression results of a group test of Model (3) show that *EPU* is significantly positive only for the long tenure group. Thus, longer tenure may generate an executive entrenchment effect. Nonetheless, in an uncertain environment, as longer tenure can delay or hinder a firm's pace of adapting to change, the firm is more likely to take the opportunity to engage in internal reorganization.

6. Conclusion

We use the Chinese economic policy uncertainty index of Baker et al. (2013) to examine the impact of economic policy uncertainty on executive turnover. Our results suggest that economic policy uncertainty can influence the turnover of senior executives, and that the extent and direction of the impact depends on whether firms can tolerate such shocks. The mechanism of non-inclusiveness is that economic policy uncertainty reinforces the negative perceptions of firms and encourages strategic corporate change, thus increasing the probability of executive departures. Thus, corporate risk-taking partly reduces the negative perceptions of external uncertainty and helps companies endure periods of economic difficulty. The mechanism of inclusiveness is that during periods of economic policy uncertainty, companies avoid internal and external risks and make more conservative turnover decisions, thereby reducing the rate of executive turnover. Therefore, dual director-manager executives are better able to adapt to volatile environments and reduce the impact of uncertainty by ensuring the tenure of executives. These mechanisms moderate the effect of uncertainty in triggering executive departures. Further analysis reveals that when facing industry downturns and performance pressure, non-SOEs and medium sized firms are more vulnerable to external uncertainty because their negative perceptions of the environment are stronger and they need to engage in strategic repositioning. Moreover, the analysis of executive traits shows that to adapt to the changing environment, enterprises are more likely to dismiss older senior executives and those with longer tenure. Our main implications are as follows.

First, by including economic policy uncertainty in the framework of executive change, we empirically demonstrate that executive turnover is indeed influenced by the external environment. Thus, we show that the external environment is an important factor that cannot be ignored in analyses of business behavior and decision making.

Second, external uncertainty not only affects a company's social environment, but can also have psychological effects on employees, thereby increasing the need to strengthen firms' corporate performance evaluation systems and the consistency of their implementation.

Third, departing from the studies that treat executive turnover only as a constraint mechanism, we examine executive turnover as a strategic decision and show that it can profoundly affect the strategic positioning and transformation of companies. The departure of executives from their functions also gives companies opportunities to make strategic changes and the flexibility to adapt to changes in the environment. However, firms also need to pay attention to the impact of economic uncertainty on internal personnel arrangements, attach greater importance to the management of succeeding senior executives, and improve their emergency management systems to enhance their ability to cope with external changes.

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