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Investor horizons and corporate policies under uncertainty

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Abstract

In this study, we examine the differences in Investment, Employment, and Share repurchase sensitivities to uncertainty between firms with varying investor horizons. We test for these effects using two macro-based uncertainty measures (Baker et al., 2016; Ahir et al., 2018). The results show that in uncertainty times, greater short-term investor ownership is associated with less investment and hiring, and more net share buybacks. These findings are consistent with the preference of short-horizon investors of seeking to divest in the near future, thus, wanting to maximize current stock prices.

KEYWORDS

corporate policy, investor horizon, uncertainty

JEL CLASSIFICATION

D80; E22; E24; G32; G35

1 | INTRODUCTION

Investors are not a homogeneous group. They comprise a broad spectrum of shareholders who differ, among other things, in terms of their investment horizon. While investors with a short investment horizon want to maximize current stock prices, as they expect to exit their positions soon, long-term investors seek to maximize the present value of future cash flows (e.g., Gaspar et al., 2004; Stein, 1996). In recent decades, researchers have begun focusing on distinguishing between shareholders in this manner, particularly in the context of CEO remuneration (Bolton et al., 2005, 2006; Cadman & Sunder, 2014) and monitoring of managers (Chen et al., 2007; Gaspar et al., 2005).

Another highly debated topic, because of its growing international prominence, is uncertainty. Following major shocks, including the 9/11 terrorist attacks, the 2007/2008 global financial crisis, the Brexit referendum, and most recently, the COVID-19 pandemic, uncertainty tends to rise sharply (see Altig et al., 2020; Bloom, 2014; Hill et al., 2019). Empirical evidence shows that uncertainty can have strong adverse effects on various corporate policies, such as capital expenditures (Gulen & Ion, 2016; Julio & Yook, 2012; Kang et al., 2014; Kim & Kung, 2017), employment growth (Baker et al., 2016; Bloom, 2009; Stein & Stone, 2013), and share repurchases (Pirgaip & Dinçergök, 2019). However, the extant literature does not examine if these uncertainty–corporate policy relationships are a function of shareholder horizons.

This study aims to bridge this gap by focusing on annual firm-level Investment, Employment, and Share repurchase decisions as key corporate policies. Investment rates and employment growth are key indicators of the real economy (Baker et al., 2016), which provide a sensible outlook on future expectations. As with capital-intensive share buybacks, they are similarly dependent on assumptions about future business conditions (Pirgaip & Dinçergök, 2019). We specifically refrain from examining dividend payments because they are considered sticky and thus relatively stable over time (Lintner, 1956), while share repurchases are

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more flexible in nature as they carry less pre-commitments. Therefore, repurchase decisions should be more responsive to increases in uncertainty compared to non-cyclical dividend decisions (see Haw et al., 2011; Pirgaip & Dinçergök, 2019).

The theoretical literature on real options theory predicts that as uncertainty grows, firms' business conditions become increasingly unclear, causing them to anticipate higher future cash flow dispersions (Bernanke, 1983; Dixit & Pindyck, 1994). Biljanovska et al. (2017) argue that this makes corporate decisions less likely to be implemented today, as economic agents fear that uncertainty increases the probability of costly mistakes—for example, by unconsciously accepting projects or by misallocating resources toward purposes that ex post prove to be inefficient or even value-destroying (see Bloom, 2014). Therefore, companies prefer adopting a “wait-and-see” approach and withhold (perhaps even indefinitely) critical business decisions that can be postponed until much of the uncertainty is resolved (Grenadier & Malenko, 2010; Ingersoll & Ross, 1992; McDonald & Siegel, 1986; Schwartz & Trigeorgis, 2004). Consequently, highly irreversible capital expenditure, hiring, and share repurchase decisions tend to experience sharp declines in periods of uncertainty.

Uncertainty also leads to tensions between shareholders with varying investment horizons. These tensions arise because uncertainty shocks do not weigh as heavily on long-term investors, who in principal can wait for the shocks to resolve, as they do on short-term investors. Shareholders with a narrow horizon are forced to sell their stocks amidst the uncertainty and face the risk of liquidating their positions at extremely unfavorable market prices (e.g., Arouri et al., 2016; Luo & Zhang, 2020; Pastor & Veronesi, 2012).

Therefore, short-term investors should have a stronger desire for companies to only pursue a small subset of their most-promising business decisions, that is, those with the highest degree of certainty. This should help reduce the concern that corporate activities, such as capital-intensive investment and employment decisions, will be perceived as mistakes, as is often the case in such times. However, long-term investors should not care as much about how the market initially perceives specific corporate policies. They have the benefit of being able to wait until the uncertainty disappears and the company's investment and hiring decisions reflect in a clear increase in future cash flows. For example, in the realm of M&A, Grossman and Hart (1980) show that short-horizon investors are inferior in holding out in negotiations to long-term investors, who have the ability to stay invested in the firm until all the benefits of the takeover materialize.

In an interview from April 2020, FCLTGlobal and McKinsey question ten long-term investors about their views on how companies should deal with the uncertainty introduced by the COVID-19 pandemic. These long-horizon investors note that “[...] strong companies with good liquidity should continue to pursue their most-promising business opportunities [...]” and that “[...] it may also be a good time to look for ways to bring in new faces”, as they “[...] stress the importance of planning carefully for the eventual easing of the crisis.”¹

As a result, short-term investors, who depend crucially on the near-term reactions of the market, should exert greater pressure than long-term investors on company managers to ensure that, in uncertain times, they pursue only a small part of their investment and employment activities—those with the highest degree of certainty. *Ceteris paribus*, companies in ownership of short-term rather than long-term investors should contemporaneously reduce their investment and recruitment decisions more acutely in periods of uncertainty.

Another avenue to maximize the wealth of the firm's short-term investors, even in periods of uncertainty, is share buybacks. Repurchase trades generally provide price support and can lead to short-term positive market responses (e.g., Keswani et al., 2007; McNally et al., 2006; Zhang, 2005). However, as uncertainty shocks erode the stability of projected cash flows, which is a strong determinant of share repurchase decisions (Brav et al., 2005), managers tend to make less or no repurchases under high levels of uncertainty (Pirgaip & Dinçergök, 2019). In such times, managers have a higher propensity to retain cash more conservatively rather than upholding their payout policies, as they anticipate a deteriorating future financial situation (Buchanan et al., 2017; Chay & Suh, 2009; Walkup, 2016). In the interview conducted by FCLTGlobal and McKinsey, long-term investors express a similar tendency to retain cash more conservatively, advising companies to “[...] proceed with caution” when repurchasing shares in uncertain times.

It follows that as the fraction of ownership by short-horizon investors increases, companies should be more reluctant to reduce their buybacks in periods of uncertainty to increase the near-term share prices at which short-term investors want to liquidate their holdings. *Ceteris paribus*, we expect short-term investors to attenuate the effects of uncertainty on share repurchase decisions.

In our empirical analyses, we regress all three key corporate policies on the interaction between uncertainty and shareholder horizon, while controlling for standard firm fundamentals. Similar to Polk and Sapienza (2009) and Dong et al. (2020) among others, we use Share turnover (the average percentage of shares outstanding that change ownership each day during the fiscal year) as a proxy for investor horizon. An increase in its value signifies an expansion in the relative number of a company's shares held by investors with a short investment horizon. To quantify uncertainty, we employ two macro-based indices that use textual frequency counts of keywords related to “uncertainty”. The first is Baker et al.'s (2016) measure of policy uncertainty and the second Ahir et al.'s (2018) world uncertainty index.

To preview our results, we consistently observe that in times of uncertainty, US firms attune their decisions to their shareholders' investment horizon. Specifically, the findings support our argument that when firms deal with increased levels of uncertainty, greater short-term investor ownership is associated with less investment and hiring, and more net share buybacks. Not only are these results statistically significant, but they are also economically meaningful. A doubling of uncertainty stands in association with a reduction in Investment (Employment) by at most 6.9 (7.1) times more when investors are highly short-term oriented in comparison to when they have an average investment horizon. Net share repurchases, in contrast, decrease by a maximum of 5.689% of net income when investors are comparatively long-term oriented. The cut becomes less pronounced and even turns positive when the company's investor base has a relatively high concentration of shareholders with a short investment horizon. This evidence is robust to controlling for macro- and firm-level uncertainty in the same specification, and to addressing endogeneity using propensity score matching (PSM).

Collectively, this study contributes to the extant literature on several fronts. It builds on the early literature on real options theory (Baldwin, 1982; Bernanke, 1983; Brennan & Schwartz, 1985; McDonald & Siegel, 1986; Titman, 1985) and advances the empirical works of Kang et al. (2014), Baker et al. (2016), and Pirgaip and Dinçergök (2019) among others. Specifically, we show that shareholder horizons assume a critical role in explaining cross-sectional heterogeneities in companies' investment, hiring, and share buyback sensitivities to uncertainty.

Our study also relates to the market timing literature, which finds that corporate policy decisions, albeit in times of misvaluation, are similarly contingent on shareholder horizons. Works in this domain equivalently assume that companies mainly try to satisfy long-term or short-term investors, and that managers are expected to act in accordance with the preferences of their shareholders. Derrien et al. (2013) note that under the "capital structure arbitrage" view, companies take advantage of a temporary mispricing of their shares to distribute value to long-term investors, while the "catering" view assumes that companies cater to the time-varying preferences of their short-horizon investors (e.g., Baker & Wurgler, 2004; Kusnadi & Wei, 2017; Polk & Sapienza, 2009; Dong et al., 2020).

The remainder of this paper proceeds as follows. Section 2 describes the sample and data. Section 3 examines whether shareholder horizons moderate the relationships between uncertainty and capital expenditure or employment decisions. Section 4 focuses on share repurchase policies. Section 5 contains robustness tests. Section 6 concludes this paper.

2 | DATA

Our dataset comprises US firm-year observations covered by the CRSP–Compustat universe. The sampling period is limited to the years 1986–2019, which marks the period for which we have values for both uncertainty measures used in this study. We exclude financial firms (SIC codes 6,000–6,999) and (regulated) utility firms (SIC codes 4,900–4,999) from our sample, as is the common practice in the literature on corporate finance. Similar to McLean and Zhao (2014), we exclude firm-year observations with book values of assets less than \$10 million or with non-positive values of sales or book equity.

This study investigates the moderating effect of shareholder horizons on the relationships between uncertainty and our three firm-level policy variables—Investment, Employment, and Share repurchase. Investment is measured as Capital Expenditures (Compustat item capx) scaled by beginning-of-year Book Value of Assets (item at). Employment captures the percentage change in the number of Employees for a given company (item emp). Following Chava (2014), we define Share repurchase as [Purchase of Common and Preferred Stock (item prstk) – Sale of Common and Preferred Stock (item sstk)] scaled by Net Income (item ni). We use data from the CRSP database to calculate our shareholder horizon proxy. While many studies investigating investor horizon effects depend on portfolio turnover rates of institutional investors (e.g., Bushee, 1998; Yan & Zhang, 2009), we rely on more inclusive share turnover rates. This choice is guided by the market timing literature (e.g., Kusnadi & Wei, 2017; Polk & Sapienza, 2009; Dong et al., 2020), which similarly analyzes whether corporate policy decisions, albeit in times of misvaluation, are contingent on shareholder horizons. Share turnover quantifies the average daily ratio of shares traded to shares outstanding during the fiscal year. Intuitively, an increase in its value signifies that the investor base is increasingly composed of shareholders with a short-term investment horizon.

2.1 | Uncertainty measures

In this study, we measure uncertainty by means of two macro-based indices that use textual frequency counts of keywords related to "uncertainty." The first uncertainty measure is the Economic Policy Uncertainty (EPU) index developed by Baker et al. (2016). Monthly data are retrieved from the website www.policyuncertainty.com. To capture policy-related uncertainty,

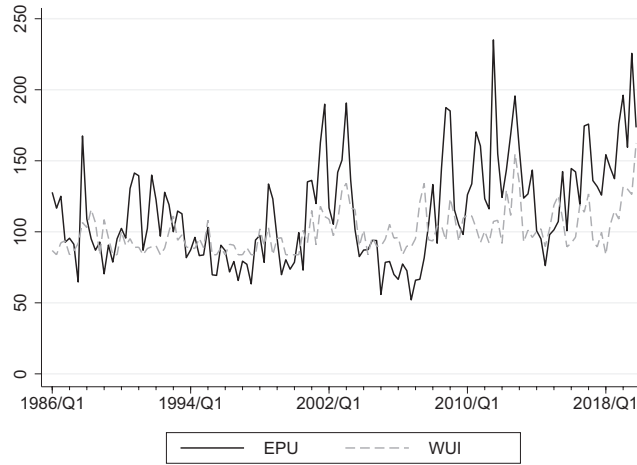


FIGURE 1 Uncertainty measures: EPU and WUI

Note: This figure shows both uncertainty measures—EPU and WUI—on a quarterly basis from 1986/Q1 to 2019/Q4. EPU captures economic policy uncertainty (Baker et al., 2016) and WUI stands for the world uncertainty index (Ahir et al., 2018). For ease of comparability, we modify the WUI time-series by: (1) centering it on its 1986/Q1 to 2019/Q4 mean and (2) rescaling its average value to be equal to 100

articles in the 10 leading US newspapers are counted each month (e.g., *USA Today*, the *Washington Post* or the *Wall Street Journal*), which contain keywords pertaining to policy, economic, and uncertainty.

To address the issue of varying numbers of newspaper articles each month, the amount of counted economic policy uncertainty articles are scaled by the total number of articles in the same month. The resulting series for each newspaper is standardized to a unit standard deviation from 1985 to 2009. Finally, the normalized monthly series are added up and the generated multi-paper index is re-normalized to an average of 100 from 1985 to 2009. To match the annual data frequency of our sample, we calculate firm-specific twelve-month arithmetic averages of the EPU index.

The second measure of uncertainty used in this study is the World Uncertainty Index (WUI) developed by Ahir et al. (2018). It aims to capture the broad uncertainty in an economy. The index conducts frequency counts of “uncertainty” (and its variants) in the quarterly country reports of the Economist Intelligence Unit (EIU). The EIU reports are prepared by country-specific teams and examine the political and economic situation in each country. To normalize the index, the raw number of uncertainty counts is divided by the total number of words in each report.

We obtain the quarterly series of the US WUI measure from www.policyuncertainty.com. Again, we compute firm-specific twelve-month averages to conform to the annual data frequency of our sample.

Figure 1 shows the quarterly time-series of our two uncertainty measures—EPU and WUI. The figure illustrates that both time-series follow roughly similar trends. They spike near events that are expected to raise US uncertainty, such as the Gulf Wars I and II, the 9/11 terrorist attacks, the 2007/2008 global financial crisis, the Euro debt crisis, and the Brexit referendum. These observations support the notion that the two measures are reliable indicators of uncertainty.

2.2 | Control variables

We obtain firm-level accounting variables from the CRSP–Compustat database. For consistency, all regressions use the same set of seven control variables. The selection of controls is guided by Polk and Sapienza (2009), Chay and Suh (2009), McLean and Zhao (2014), and Pirgaip and Dinçergök (2019) among others.² They comprise a company's growth opportunities (Tobin's *Q*), annual cash flow (Cash flow), size (Size), return on assets (ROA), leverage ratio (Leverage), cash holdings (Cash), and retained earnings ratio (Retained earnings).

Tobin's *Q* is measured as [Book Value of Assets (item at) + Market Value of Equity (item csho × item prcc_f) – (Book Value of Equity (item ceq) + Deferred Taxes (item txdb))] scaled by Book Value of Assets (item at). Cash flow is captured by [Income before Extraordinary Items (item ib) + Depreciation (item dp)] scaled by beginning-of-year Book Value of Assets (item at). Size is defined as the natural logarithm of the Book Value of Assets (item at). ROA is measured as Earnings Before Interest and Taxes (item ebit) scaled by Book Value of Assets (item at). Leverage is defined as [Long-Term Debt (item dltt) + Debt in Current Liabilities (item dlc)] scaled by [Long-Term Debt (item dltt) + Debt in Current Liabilities (item dlc) + Stockholders'

Equity (item seq)]. Cash is captured by Cash and Short-Term Investments (item che) scaled by Book Value of Assets (item at). Retained earnings are measured as Retained Earnings (item re) scaled by Book Value of Assets (item at).

To reduce the impact of outliers, all firm-level accounting variables are winsorized at the top and bottom 1%.

2.3 | Descriptive statistics

Our final dataset comprises all firm-year observations with non-missing values for the two uncertainty measures—EPU and WUI—and for Share turnover, Tobin's Q , Cash flow, Size, ROA, Leverage, Cash, and Retained earnings. This results in a sample of 95,014 firm-year observations based on 10,674 unique public US companies between 1986 and 2019.

Table 1 shows the summary statistics for all variables used in this study. We have three dependent variables: Investment, Employment, and Share repurchase. Investment represents a firm's capital expenditure. In our sample, the average capital expenditure of a company is 7.1% of its beginning-of-year total assets. Employment measures the percentage change in the number of employees within a given company. The sample average indicates an annual employment growth rate of 9.1%. The average amount spent on the net repurchase of shares is 1.4% of net income. As for our measure of investor horizon, Share turnover, the mean value of 0.007 signifies that 0.7% of the total number of shares outstanding change ownership each day on a fiscal year average.

Table 2 indicates that Investment and Employment are positively correlated (corr. = 0.249), whereas Investment and Employment are both negatively correlated with Share repurchase (corr. = -0.061 and -0.060 , respectively). It appears that

TABLE 1 Summary statistics

Statistic	<i>N</i>	Mean	<i>SD</i>	Pctl(5)	Pctl(50)	Pctl(95)
Dependent variables						
Investment	94,241	0.071	0.084	0.006	0.043	0.235
Employment	93,396	0.091	0.309	-0.260	0.034	0.615
Share repurchase	95,014	0.014	2.412	-1.825	0.000	1.880
Independent variables						
EPU	95,014	109.702	28.364	71.391	107.423	157.352
WUI	95,014	0.144	0.103	0.021	0.110	0.303
Share turnover	95,014	0.007	0.009	0.001	0.004	0.020
Tobin's Q	95,014	1.920	1.436	0.784	1.434	4.868
Cash flow	95,014	0.055	0.170	-0.296	0.085	0.254
Size	95,014	5.599	1.916	2.858	5.378	9.139
ROA	95,014	0.035	0.170	-0.304	0.070	0.221
Leverage	95,014	0.296	0.253	0.000	0.271	0.763
Cash	95,014	0.176	0.207	0.004	0.090	0.650
Retained earnings	95,014	-0.147	1.167	-2.170	0.146	0.673

Note: This table contains summary statistics for the sample of 10,674 public US companies during the 1986–2019 period. A detailed description of the construction of the sample is given in Section 2. All variables considered are obtained from the CRSP–Compustat database. We use three different firm-level dependent variables throughout this study. They consist of Investment, Employment, and Share repurchases. Investment is measured as Capital Expenditures (item capx) scaled by beginning-of-year Book Value of Assets (item at). Employment is defined as the percentage change in the number of Employees for a given company (item emp). Share repurchase is calculated as [Purchase of Common and Preferred Stock (item prstk) – Sale of Common and Preferred Stock (item sstk)] scaled by Net Income (item ni). The independent variables of interest are EPU, WUI, and Share turnover. The first two variables are different measures of macro-level uncertainty. EPU captures economic policy uncertainty (Baker et al., 2016) and WUI stands for the world uncertainty index (Ahir et al., 2018). The variable Share turnover measures the average daily ratio of shares traded to shares outstanding during the fiscal year. All regressions control for the same set of seven firm-level control variables. They comprise Tobin's Q , Cash flow, Size, ROA, Leverage, Cash, and Retained earnings. Tobin's Q is measured as [Book Value of Assets (item at) + Market Value of Equity (item cshe × item prcf) – (Book Value of Equity (item ceq) + Deferred Taxes (item txdb))] sc Book Value of Assets (item at). Cash flow is captured by [Income before Extraordinary Items (item ib) + Depreciation (item dp)] scaled by beginning-of-year Book Value of Assets (item at). Size is defined as the natural logarithm of the Book Value of Assets (item at). ROA is measured as Earnings Before Interest and Taxes (item ebit) scaled by Book Value of Assets (item at). Leverage is defined as [Long-Term Debt (item dlte) + Debt in Current Liabilities (item dlc)] scaled by [Long-Term Debt (item dlte) + Debt in Current Liabilities (item dlc) + Stockholders' Equity (item seq)]. Cash is captured by Cash and Short-Term Investments (item che) scaled by Book Value of Assets (item at). Retained earnings are measured as Retained Earnings (item re) scaled by Book Value of Assets (item at). All firm-level accounting variables are winsorized at the top and bottom 1% to reduce the impact of outliers.

TABLE 2 Correlation matrix

	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Investment	1.000												
2 Employment	0.249	1.000											
3 Share repurchase	-0.061	-0.060	1.000										
4 EPU	-0.119	-0.101	0.027	1.000									
5 WUI	-0.146	-0.094	0.040	0.686	1.000								
6 Share turnover	0.044	0.118	0.003	0.091	0.139	1.000							
7 Tobin's Q	0.110	0.246	0.020	-0.033	-0.004	0.234	1.000						
8 Cash flow	0.220	0.086	-0.099	-0.068	-0.078	-0.079	-0.055	1.000					
9 Size	0.021	-0.004	0.032	0.185	0.223	0.179	-0.039	0.241	1.000				
10 ROA	0.119	0.087	-0.047	-0.060	-0.075	-0.076	-0.057	0.867	0.301	1.000			
11 Leverage	0.077	-0.013	0.012	0.009	-0.026	-0.069	-0.269	-0.027	0.275	0.044	1.000		
12 Cash	-0.158	0.035	0.028	0.055	0.099	0.194	0.403	-0.324	-0.231	-0.376	-0.470	1.000	
13 Retained earnings	0.116	0.057	-0.033	-0.065	-0.109	-0.114	-0.159	0.599	0.287	0.672	0.060	-0.386	1.000

Note: This table reports correlations among the main variables used in this study. See Table 1 for variable descriptions.

there is a trade-off between corporate investment and employment decisions and a firm's share buyback policy (see Almeida et al., 2016). If firms invest in projects associated with long-term corporate growth, they tend to return less cash to their investors and vice versa.

The uncertainty indicators, EPU and WUI, are highly positively correlated (corr. = 0.686). As expected, both measures are negatively correlated with Investment and Employment. In contrast, their correlations with Share repurchase are slightly positive.

3 | INVESTOR HORIZONS AND CORPORATE POLICIES UNDER UNCERTAINTY

This section empirically examines whether shareholder horizons moderate the relationships between uncertainty and corporate investment or employment decisions. Biljanovska et al. (2017) note that because economic agents fear that uncertainty heightens the probability of making costly business mistakes, managers prefer adopting a wait-and-see approach and withhold critical decisions until much of the uncertainty is resolved (e.g., Ingersoll & Ross, 1992; McDonald & Siegel, 1986). This behavior should be particularly pronounced for companies with an investor base dominated by short-term shareholders, who are primarily seeking to maximize the current share prices at which they want to sell their positions (Stein, 1996). To achieve the highest possible share prices, short-term investors should increasingly prefer that only a small subset of most-promising business decisions is pursued; those with the highest degree of certainty. This should help mitigate concerns that the market will perceive capital-intensive investment and employment decisions as inefficient or even value-destroying mistakes.

However, long-term investors should not care as much about how the market initially perceives specific corporate policies. They can wait until the uncertainty subsides, and the company's investment and hiring decisions actually translate into a discernible increase in future cash flows. Thus, we expect that firms with an investor base composed of short-term rather than long-term shareholders to reduce their investment and employment decisions more acutely in times of uncertainty. To test these predictions, we estimate the following baseline regression:

$$\text{Corporate Policy}_{i,t} = \alpha_i + \gamma_t + \beta_1 \log(\text{Uncertainty}_{i,t}) + \beta_2 \text{Share turnover}_{i,t} + \beta_3 \log(\text{Uncertainty}_{i,t}) \times \text{Share turnover}_{i,t} + X'_{i,t} + \varepsilon_{i,t}, \quad (1)$$

where the dependent variable, Corporate Policy_{*i,t*}, either stands for Investment or Employment; α_i and γ_t are firm and fiscal year fixed effects, respectively. The independent variables of interest are $\log(\text{Uncertainty}_{i,t})$ and Shareturnover_{*i,t*}. The uncertainty variable is the natural logarithm of the arithmetic average of the EPU or WUI measure in the twelve months of a company's fiscal year t . Note that $\log(\text{Uncertainty}_{i,t})$ even carries a firm index i . As not all firms' fiscal years end in the same month, there is a cross-sectional variation for EPU and WUI for each t . For example, if a company's fiscal year ends in February, the twelve-month arithmetic average is computed from March of the previous year to February. The mean-centered Share turnover variable captures the relative number of a company's shares owned by investors with a short investment horizon. $X'_{i,t}$ is a set of seven firm-level control variables, as outlined in Section 2. They consist of beginning-of-year Tobin's Q , Cash flow, Size, ROA, Leverage, Cash, and Retained earnings. Inferences are always based on standard errors clustered at the firm- and fiscal year-level. According to our hypotheses, we would expect β_3 to be significantly negative for both dependent variables.

Table 3 reports the estimates of Equation (1). Regressions 1 and 2 treat Investment as the dependent variable and differ only in terms of the uncertainty measure used, starting with EPU followed by WUI. Consistent with our argument, all coefficients on the interaction term between $\log(\text{Uncertainty})$ and Share turnover are negative and statistically significant at the 1% level. This suggests that the higher the concentration of a company's shares held by investors with short investment horizons, the greater the inverse relationship between uncertainty and capital expenditures.

To quantify the total impact of uncertainty on corporate investment, we need to aggregate the coefficients on $\log(\text{Uncertainty})$ and on the $\log(\text{Uncertainty}) \times \text{Share turnover}$ interaction term, multiplied by the fraction of short-term investors holding the company's shares. Notice that Share turnover is centered on the mean, resulting in the 95th percentile being set to a value of $0.020 - 0.007 = 0.013$. Investment has a mean value of 0.071. Thus, the coefficients in regressions 1 and 2 imply that a doubling of EPU or WUI is associated with contemporaneously reducing Investment by $(-0.003 - 0.677 \times 0.013) / 0.071 = 16.621\%$ or 9.758% of the sample mean for companies in the 95th percentile of the turnover rate. This compares to a reduction in Investment by only 4.225% or 1.408% of the sample mean if the firms had an average turnover rate of zero. Thus, capital expenditures decrease between 3.9 and 6.9 times more when shareholders are highly short-term oriented.

TABLE 3 Capital expenditures and employment growth

	Dependent variable: Investment		Dependent variable: Employment	
	EPU	WUI	EPU	WUI
	(1)	(2)	(3)	(4)
Uncertainty	-0.003 (-1.022)	-0.001 (-1.453)	-0.066*** (-3.860)	-0.005 (-1.423)
Share turnover	3.482*** (3.013)	2.557*** (4.838)	17.483*** (2.678)	13.114*** (5.068)
Unc. × Share turnover	-0.677*** (-2.907)	-0.456*** (-4.826)	-3.401** (-2.547)	-2.349*** (-5.098)
Tobin's Q	0.013*** (17.218)	0.013*** (17.286)	0.052*** (14.112)	0.051*** (14.641)
Cash flow	0.069*** (6.903)	0.069*** (6.917)	0.195*** (4.388)	0.196*** (4.404)
Size	-0.002*** (-2.331)	-0.002** (-2.204)	0.017*** (4.052)	0.018*** (4.219)
ROA	-0.014* (-1.818)	-0.014* (-1.807)	0.108*** (3.403)	0.109*** (3.413)
Leverage	-0.002 (-0.731)	-0.002 (-0.609)	0.070*** (4.504)	0.072*** (4.633)
Cash	-0.048*** (-12.772)	-0.048*** (-12.624)	-0.141*** (-8.037)	-0.140*** (-7.987)
Retained earnings	0.003*** (4.905)	0.003*** (4.579)	0.039*** (8.001)	0.038*** (8.064)
Firm fixed effects	Yes	Yes	Yes	Yes
Fiscal year dummies	Yes	Yes	Yes	Yes
Adjusted R^2	0.153	0.154	0.108	0.109
Observations	94,241	94,241	93,396	93,396

Note: This table reports regression estimates of Equation (1). The firm-level dependent variable in regressions 1 and 2 is Investment and in regressions 3 and 4 Employment. The independent variables of interest are Uncertainty and Share turnover. Uncertainty is the natural logarithm of: economic policy uncertainty (EPU) or 1 plus the world uncertainty index multiplied by 1,000 ($1 + WUI \times 1,000$). Share turnover is a mean-centered measure that quantifies the average daily ratio of shares traded to shares outstanding during the fiscal year. An increase in its value signifies that the investor base is increasingly composed of shareholders with a short-term investment horizon. See Table 1 for further variable definitions. All regressions include firm and year fixed effects. Standard errors are clustered on both firm and year. Robust t -statistics are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Regressions 3 and 4 consider Employment as the dependent variable. We observe negative and highly significant coefficients on the interaction term in both specifications. They show that the relation between uncertainty and employment growth is not uniform in the cross section. Specifically, companies with an investor base dominated by short-term rather than long-term shareholders have a more pronounced negative relationship between uncertainty and the percentage change in the number of employees. Employment growth has a mean value of 0.091. Hence, when uncertainty assumes a level twice as high of what it used to be, Employment stands in association to fall by 121.113% or 39.052% of the sample mean, for companies with a Share turnover rate exceeding 95% of all sample observations. However, if companies had a mean turnover rate, Employment would be associated to decrease by only 72.527% or 5.495% relative to the sample mean. This implies a difference in the drop of between 1.7 and 7.1 times more when investors with short investment horizons hold a high concentration of a company's shares.

Overall, the results in Table 3 are consistent with the argument that the investment and employment sensitivities to uncertainty are a function of shareholder horizons. In particular, the estimates indicate that a 100% increase in uncertainty stands in association with a reduction in Investment (Employment) by 3.9–6.9 (1.7–7.1) times more when a company's investor base has relatively high composition of shareholders with a short rather than an average investment horizon.

4 | SHARE REPURCHASES

In this section, we assess whether the relationship between uncertainty and share repurchases is a function of investor horizons. Brav et al. (2005) observe in their survey of North American CFOs that more than two-thirds of stock repurchasing firms regard the stability of future cash flows as a key element influencing their buyback decisions. As uncertainty erodes the stability of projected cash flows, Pirgaip and Dinçergök (2019) empirically find that managers tend to make less or no repurchases under high levels of uncertainty. They argue that the greater the level of uncertainty, the more conservatively managers choose to retain cash in the anticipation of a deteriorating future financial situation.

This inverse relationship should intuitively be mitigated by an investor base dominated by short-term shareholders. This is because share repurchases help to support and even increase the near-term share prices (Keswani et al., 2007; McNally et al., 2006; Zhang, 2005) at which short-term investors want to liquidate their holdings. *Ceteris paribus*, we expect that companies with an investor base composed of short-term rather than long-term shareholders reduce their share buyback programs to a lesser extent in times of heightened uncertainty. To test this prediction, Table 4 presents estimates of Equation (1) using Share repurchase as the dependent variable.

According to our argumentation, we expect the coefficients on the interaction term between $\log(\text{Uncertainty})$ and the mean-centered Share turnover variable to be significantly positive in both specifications—which they are. Thus, the relationship between uncertainty and repurchase trades is systematically moderated by investor horizons.

The estimates in regressions 1 and 2 suggest that a doubling of EPU or WUI is associated with a decline in net share repurchases equivalent to 1.304% or 5.689% of net income for companies in the 5th percentile of the turnover rate (i.e., companies with comparatively high ownership by long-term investors). This cut becomes less pronounced and even turns positive when the company's investor base has a relatively high concentration of shareholders with a short investment horizon. In particular, when companies have a turnover rate greater than 95% of all sample observations, net share repurchases contemporaneously increase by 22.775% or 12% relative to net income.³

These findings are consistent with Brav et al. (2005) and Pirgaip and Dinçergök (2019), in that uncertainty shocks generally assume a determining role in explaining changes in share buyback decisions. Moreover, our results indicate that the magnitude of this relationship, or even its overall direction, is not uniform in the cross section. It critically depends on the investment horizon of the shareholders who own the company's stocks.

5 | ROBUSTNESS

5.1 | Distinguishing between macro-based and firm-level uncertainty

In this subsection, we distinguish between the influence of macro-level (EPU and WUI) and firm-level uncertainty. Up to this point, our analyses have only considered macro-level uncertainty measures. This leaves open the possibility that firm-level uncertainty, rather than macroeconomic uncertainty, actually drives our results. In such a case, the investment horizon of shareholders misleadingly moderates the relationship between EPU or WUI and corporate policies. To address this issue, we control for both types of uncertainty in the same specification. If our concerns are unwarranted, we expect to observe significant coefficients on both interaction terms in each regression.

In constructing our firm-level uncertainty variable, we follow, among others, Leahy and Whited (1996), Chay and Suh (2009), and Alfaro et al. (2018) and measure the volatility of daily stock returns (SRVOL) for each company in each fiscal year. This measure is predicated on the assumption that stock returns tend to be more volatile when cash flows are difficult to predict. We obtain daily stock return data from the CRSP database. SRVOL is a forward-looking indicator that aggregates a wide range of factors—such as regulation, exchange rates, or technological changes—all of which can affect a company's cash flow uncertainty.

The results are presented in Table 5, which is divided into six regressions. The dependent variable for regressions 1 and 2 is Investment, for regressions 3 and 4 Employment, and for regressions 5 and 6 Share repurchase. All specifications include the interaction between $\log(\text{SRVOL})$ and Share turnover, while alternating between additionally controlling for $\log(\text{EPU}) \times \text{Share turnover}$ or $\log(\text{WUI}) \times \text{Share turnover}$. The coefficients on each interaction term in regressions 1–4 are negative and statistically significant, irrespective of the type of uncertainty measure used. These findings are consistent with our baseline results. The higher the fraction of short-term investors, the more pronounced the inverse relationship between uncertainty and Investment or Employment. In regressions 5 and 6, we again observe estimates in accordance with previous results. In times of uncertainty, companies do not reduce, if at all, their share buybacks as acutely when a relatively high concentration of short-horizon investors owns their stocks.

TABLE 4 Net share repurchases

	Dependent variable: Share repurchase	
	EPU	WUI
	(1)	(2)
Uncertainty	0.063 (0.504)	−0.001 (−0.039)
Share turnover	−64.951** (−2.076)	−51.424*** (−3.417)
Unc. × Share turnover	12.673** (1.997)	9.308*** (3.487)
Tobin's Q	−0.017 (−1.098)	−0.013 (−0.872)
Cash flow	−3.486*** (−13.575)	−3.485*** (−13.542)
Size	0.017 (0.727)	0.014 (0.615)
ROA	2.378*** (12.095)	2.375*** (12.105)
Leverage	0.088 (1.080)	0.081 (1.000)
Cash	−0.231* (−1.840)	−0.233* (−1.847)
Retained Earnings	0.043** (2.289)	0.047** (2.465)
Firm fixed effects	Yes	Yes
Fiscal year dummies	Yes	Yes
Adjusted R^2	0.017	0.017
Observations	95,014	95,014

Note: This table reports regression estimates of Equation (1). The firm-level dependent variable in all specifications is Share repurchase. The independent variables of interest are Uncertainty and Share turnover. Uncertainty is the natural logarithm of: economic policy uncertainty (EPU) or 1 plus the world uncertainty index multiplied by 1,000 ($1 + WUI \times 1,000$). Share turnover is a mean-centered measure that quantifies the average daily ratio of shares traded to shares outstanding during the fiscal year. An increase in its value signifies that the investor base is increasingly composed of shareholders with a short-term investment horizon. See Table 1 for further variable definitions. All regressions include firm and year fixed effects. Standard errors are clustered on both firm and year. Robust t -statistics are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

Intriguingly, the magnitudes of the coefficients remain quantitatively similar when compared to the baseline results. For example, regressions 1 and 4 show that the coefficients on $\log(\text{EPU}) \times \text{Share turnover}$ and $\log(\text{WUI}) \times \text{Share turnover}$ are -0.630 and -2.405 , respectively. Their counterparts in regressions 1 and 4 of Table 1 are almost equivalent in size (-0.677 and -2.349). Thus, our results are truly sensitive to macro-based uncertainty and show that SRVOL mostly captures ambiguity that is not picked up by EPU nor by WUI.

5.2 | Causal inference: Propensity score matching

This subsection explores whether our measure of investor horizon—that is, Share turnover—is fundamentally a function of other observable firm characteristics that are truly driving our results. To address this concern, we rely on several propensity score matching tests that feature differing calibrations.

One alternative explanation for our results is that firms with high market-to-book ratios (Tobin's Q), also called growth companies (Solt & Statman, 1989), might simply attract a larger proportion of short-term investors. Growth companies have

TABLE 5 Distinguishing between macro-based and firm-level uncertainty

	Dependent variable: Investment		Dependent variable: Employment		Dependent variable: Share repurchase	
	EPU	WUI	EPU	WUI	EPU	WUI
	(1)	(2)	(3)	(4)	(5)	(6)
SRVOL	−0.015*** (−8.167)	−0.016*** (−8.176)	−0.054*** (−6.720)	−0.056*** (−7.526)	−0.089** (−2.254)	−0.079** (−2.055)
SRVOL × Share turnover	−0.343*** (−3.809)	−0.375*** (−3.889)	−1.175** (−2.541)	−1.363*** (−3.035)	4.547* (1.721)	5.197* (1.960)
Macro-uncertainty	0.005 (1.439)	−0.001 (−1.138)	−0.039** (−2.247)	−0.004 (−1.107)	0.111 (0.853)	0.000 (0.012)
Macro-unc. × Share turnover	−0.630** (−2.526)	−0.471*** (−4.940)	−3.243** (−2.282)	−2.405*** (−4.927)	11.508* (1.927)	9.148*** (3.631)
Share turnover	2.517** (1.988)	1.801*** (2.911)	14.198* (1.915)	10.377*** (3.325)	−46.222 (−1.593)	−35.769** (−2.364)
Tobin's <i>Q</i>	0.013*** (17.388)	0.013*** (17.498)	0.051*** (13.156)	0.050*** (13.641)	−0.015 (−1.027)	−0.012 (−0.783)
Cash flow	0.066*** (6.765)	0.066*** (6.733)	0.186*** (4.252)	0.185*** (4.214)	−3.485*** (−13.781)	−3.481*** (−13.758)
Size	−0.004*** (−4.570)	−0.004*** (−4.516)	0.009** (1.979)	0.009** (2.073)	0.009 (0.376)	0.008 (0.334)
ROA	−0.019** (−2.420)	−0.019** (−2.411)	0.090*** (2.937)	0.090*** (2.925)	2.347*** (11.752)	2.347*** (11.763)
Leverage	0.001 (0.429)	0.002 (0.545)	0.082*** (5.147)	0.084*** (5.322)	0.119 (1.510)	0.112 (1.418)
Cash	−0.050*** (−13.038)	−0.050*** (−12.916)	−0.146*** (−8.569)	−0.146*** (−8.514)	−0.232* (−1.871)	−0.233* (−1.868)
Retained earnings	0.003*** (4.726)	0.003*** (4.380)	0.038*** (7.652)	0.037*** (7.721)	0.043** (2.280)	0.047** (2.469)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Fiscal year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted <i>R</i> ²	0.157	0.159	0.11	0.112	0.017	0.018
Observations	94,241	94,241	93,396	93,396	95,014	95,014

Note: This table reports estimates that allow distinguishing between the impact of uncertainty at the macro- and firm-level. The firm-level dependent variables are Investment, Employment, and Share repurchase. The independent variables of interest are SRVOL, Macro-uncertainty, and Share turnover. SRVOL is our firm-level measure of uncertainty, capturing the volatility of stock returns. Macro-uncertainty is the natural logarithm of: economic policy uncertainty (EPU) or 1 plus the world uncertainty index multiplied by 1,000 ($1 + WUI \times 1,000$). Share turnover is a mean-centered measure that quantifies the average daily ratio of shares traded to shares outstanding during the fiscal year. See Table 1 for further variable definitions. All regressions include firm and year fixed effects. Standard errors are clustered on both firm and year. Robust *t*-statistics are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

excellent investment opportunities—chances to invest in positive NPV projects. As investment announcements are, on average, associated with immediate positive stock market reactions (e.g., McConnell & Muscarella, 1985; Woolridge & Snow, 1990), this could be an attribute in great demand by short-horizon shareholders. If this were indeed the case, then the results observed in Tables 3 and 4 could actually be a function of Tobin's *Q* and only appear to be driven by investor horizons. The positive correlation of 0.234 between Share turnover and Tobin's *Q* shows that it is necessary to address this issue.

Another possible explanation is related to the idea that large companies should be better known to the average investor, as they receive, among other things, more (media) attention. Therefore, short-term investors could be disproportionately drawn to those companies—that because of their large size might also be part of an index (e.g., S&P 500)—instead to smaller and lesser-known stocks for which they would have to conduct more cumbersome due diligence.

TABLE 6 PSM sample: capital expenditures, employment growth, and net share repurchases

	Dependent variable: Investment		Dependent variable: Employment		Dependent variable: Share repurchase	
	EPU	WUI	EPU	WUI	EPU	WUI
	(1)	(2)	(3)	(4)	(5)	(6)
Uncertainty	−0.003 (−0.634)	0.001 (0.932)	−0.135*** (−3.518)	−0.004 (−0.783)	0.172 (0.701)	0.036 (0.987)
Share turnover	3.751** (2.413)	2.488*** (4.018)	14.870* (1.865)	9.754*** (3.701)	−105.601*** (−2.862)	−54.533*** (−3.003)
Unc. × Share turnover	−0.720** (−2.291)	−0.426*** (−3.842)	−2.744* (−1.683)	−1.565*** (−3.250)	20.286*** (2.775)	9.011*** (2.745)
Tobin's Q	0.010*** (12.643)	0.010*** (12.568)	0.043*** (11.930)	0.043*** (12.015)	0.008 (0.484)	0.008 (0.528)
Cash flow	0.044*** (4.936)	0.044*** (4.933)	0.055 (1.184)	0.055 (1.185)	−3.556*** (−13.930)	−3.558*** (−13.882)
Size	−0.001 (−0.413)	−0.001 (−0.425)	0.029*** (3.449)	0.029*** (3.471)	−0.023 (−0.464)	−0.023 (−0.469)
ROA	0.003 (0.417)	0.004 (0.431)	0.229*** (5.494)	0.230*** (5.507)	2.209*** (10.177)	2.208*** (10.114)
Leverage	−0.001 (−0.141)	−0.000 (−0.046)	0.044** (2.002)	0.045** (2.084)	0.192 (1.097)	0.181 (1.029)
Cash	−0.041*** (−9.261)	−0.041*** (−9.312)	−0.169*** (−7.064)	−0.168*** (−7.009)	−0.037 (−0.213)	−0.040 (−0.226)
Retained Earnings	0.002* (1.766)	0.001* (1.714)	0.031*** (4.476)	0.030*** (4.498)	0.067* (1.779)	0.067* (1.777)
Firm fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Fiscal year dummies	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R^2	0.137	0.138	0.104	0.104	0.019	0.019
Observations	24,736	24,736	24,736	24,736	24,736	24,736

Note: This table reports regression estimates of Equation (1) based on the matched sample (controls = beginning-of-year Tobin's Q , Size, and SRVOL; exact match = SIC3 codes and fiscal year; caliper = 0.05). The firm-level dependent variable in regressions 1 and 2 is Investment, in regressions 3 and 4 Employment, and in regressions 5 and 6 Share repurchase. The independent variables of interest are Uncertainty and Share turnover. Uncertainty is the natural logarithm of: economic policy uncertainty (EPU) or 1 plus the world uncertainty index multiplied by 1,000 ($1 + WUI \times 1,000$). Share turnover is a mean-centered measure that quantifies the average daily ratio of shares traded to shares outstanding during the fiscal year. An increase in its value signifies that the investor base is increasingly composed of shareholders with a short-term investment horizon. See Table 1 for further variable definitions. All regressions include firm and year fixed effects. Standard errors are clustered on both firm and year. Robust t -statistics are reported in parentheses. *, **, and *** indicate statistical significance at the 10%, 5%, and 1% level, respectively.

A third alternative interpretation is based on the notion that a high Share turnover rate simply reflects a high level of uncertainty at the corporate level. When a company faces uncertainties unique to its operations, investors might over-liquidate this particular stock, resulting in a higher Share turnover rate. Consequently, the interaction of EPU or WUI with Share turnover would only pick up the combined effects of macro- and firm-level uncertainty.⁴

Thus, to ensure that high Share turnover firms are not simply a proxy for firms that (a) have good investment opportunities, (b) require low due diligence costs to invest in, or (c) are confronted with uncertainties specific to their operations, PSM is used to reduce systematic market-to-book, size, and firm-level uncertainty differences between companies owned by a relatively high or low fraction of short-term investors. This allows us to explore whether high-turnover firms still react in the same manner as described in Sections 3 and 4 when facing macro-based uncertainty, although low turnover firms are now forced to have similar Tobin's Q , Size, and SRVOL values. Such an approach would remove the concern of Share turnover being a mere reflection of market-to-book, firm size, and firm-level uncertainty differences.

Consequently, we distinguish between firms owned by short-horizon and long-horizon investors. A firm is identified as controlled by short-term investors when its Share turnover rate is in the top-30% quantile in a given fiscal year t and owned by

long-term investors otherwise. For each high-turnover firm (top-30%), we try to find a low turnover firm (bottom-70%) that is closest in SRVOL, Size, and beginning-of-year Tobin's Q in the same three-digit SIC industry and fiscal year. Therefore, we first estimate a pooled logit regression to obtain the likelihood of a firm being principally owned by shareholders with short investment horizons, while controlling for beginning-of-year Tobin's Q , Size, and SRVOL. Using the predicted values from this model, the control observations of the bottom-70% turnover firms are then matched with the top-30% turnover firm-years. This matching process is based on a caliper of 0.05, with allowing for replacements, forcing an exact match on three-digit SIC codes and fiscal year.⁵ Matched pairs remain part of the sample as long as the high-turnover firm persists. If a matched low turnover firm ceases to exist or turns into a high-turnover firm, we aim to find a new match for the high-turnover firm within the same fiscal year so that it can remain part of the matched sample. This allows us to consider within-firm effects in our regressions.

Table 6 presents estimates of Equation (1) based on the PSM sample. The dependent variable in regressions 1 and 2 is Investment, in regressions 3 and 4 Employment, and in regressions 5 and 6 Share repurchase. In all specifications reported, the coefficients do not exhibit salient deviations from the baseline results. Critically, the $\log(\text{Uncertainty}) \times \text{Share turnover}$ interaction term remains significantly negative in the first four regressions and significantly positive in the last two regressions. This supports our argument that the Investment, Employment, and Share turnover sensitivities to uncertainty are a function of shareholder horizons.

Regressions 1 through 4 indicate that the higher the concentration of short-term investors owning the company's shares, the more pronounced the reductions in capital expenditures and hiring in periods of macro-based uncertainty. Hence, the relationship between uncertainty and both dependent variables is in fact systematically a function of investor horizons, which cannot simply be attributed to cross-sectional Tobin's Q , Size, and SRVOL differences.

In line with the results of Table 4, we observe significantly positive coefficients on the interaction term in regressions 5 and 6. The findings show that while uncertainty shocks generally assume a determining role in explaining changes in the amount of share buybacks, the magnitude of this relationship, or even its overall direction, is not uniform in the cross section. Companies with investor bases that have a comparatively high composition of short-horizon investors increase rather than decrease their net share repurchases in periods of elevated uncertainty. This leads us to believe that the relationship between macro-based uncertainty and share buybacks is indeed fundamentally moderated by shareholders' investment horizons.

Overall, Table 6 permits the conclusion that our initial results are not simply driven by differences in Tobin's Q , Size, and SRVOL, but are attributable to the moderation effect of our investor horizon measure, that is, Share turnover.

6 | CONCLUSION

In this study, we examine the differences in Investment, Employment, and Share repurchase sensitivities to uncertainty between firms with varying investor horizons. We test for these effects using two macro-based uncertainty measures. Our analyses are conducted in a sample of 10,674 public US companies between 1986 and 2019. We consistently observe that in times of heightened uncertainty, US firms attune their decisions to their shareholders' investment horizon. Specifically, the findings show that when firms are confronted with increased levels of uncertainty, greater short-term investor ownership is associated with less investment and hiring, and more net share buybacks. These results are robust to controlling for macro- and firm-level uncertainty in the same specification, and to addressing endogeneity using PSM.

We attribute our findings to the fact that uncertainty shocks do not weigh as heavily on long-term investors, who can wait for the shocks to resolve, as they do on short-term investors. Short-horizon investors are forced to sell their stocks amidst the uncertainty and face the risk of liquidating their positions at extremely unfavorable market prices. Consequently, they are primarily seeking to maximize current share prices.

As uncertainty increases the fear of costly business mistakes, short-term investors should rationally want only a small subset of value-enhancing investment and recruitment decision to be pursued, that is, those with the highest degree of certainty. This should help mitigate concerns that the market will perceive these capital-intensive investment and employment decisions as inefficient or even value-destroying mistakes in such times. However, long-term investors should not care as much about how the market initially perceives specific corporate policies. They have the benefit of being able to wait until the uncertainty subsides and the company's investment and hiring decisions reflect in a discernible increase in future cash flows.

Another avenue to maximize the wealth of the firm's short-term investors, even in periods of uncertainty, is share buybacks. Given that cuts in share repurchases—which are a function of increasing uncertainty—lead to relatively lower share prices, short-term investors should intuitively exert greater pressure in uncertain times to avoid share buyback reductions.

Collectively, our results provide strong empirical support for the importance of distinguishing between firms in terms of the investment horizon of their shareholders when analyzing the relationships between uncertainty and various corporate policies.

Nevertheless, there are ample opportunities for future research. For example, while we use a broad measure of Share turnover, it would be interesting to examine whether our results hold when using alternative measures of investor horizon based on institutional investor data (e.g., Bushee, 1998; Yan & Zhang, 2009).

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ENDNOTES

- ¹ <https://www.mckinsey.com/business-functions/strategy-and-corporate-finance/our-insights/navigating-covid-19-advice-from-long-term-investors>
- ² For a detailed explanation of the control variables, please refer to the studies mentioned above.
- ³ In unreported robustness checks, we show that these results are not compromised by only considering Share repurchase observations with non-zero values.
- ⁴ We are grateful to an anonymous reviewer for bringing this potential concern to our attention.
- ⁵ In unreported robustness checks, we demonstrate that these results are robust to alternative caliper specifications (± 0.04).

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