



CEO age and stock price synchronicity

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ABSTRACT

We investigate the impact of Chief Executive Officer (CEO) age on stock price synchronicity, which measures the amount of market-wide information relative to firm-specific information reflected in stock prices. Based on a sample of US-listed firms from 1992 to 2020, we find that firms managed by older CEOs tend to exhibit lower stock price synchronicity. In terms of earnings management, an important factor for stock price synchronicity, older CEOs engage less intensively in discretionary accruals. Furthermore, the positive relationship between discretionary accruals and stock price synchronicity is less pronounced in firms managed by older CEOs. We confirm that the effect is more pronounced under weaker governance regimes. We further address concerns about endogeneity problems using instrumental variable (IV) estimation and the entropy balancing approach. Overall, our findings support the prediction of CEO career concern models, where younger CEOs exhibit herding behavior.

1. Introduction

A firm's stock price is a reflection of firm-specific and market-wide information. According to a seminal paper by Roll (1988), the relative amount of firm-specific and market-wide information incorporated into stock prices influences the extent of stock price co-movement. Building on these findings, Morck et al. (2000) find that stock price synchronicity is negatively related to the relative importance of firm-specific information in stock price adjustments. Jin and Myers (2006) propose that increased transparency amplifies the integration of firm-specific information into stock prices, thereby weakening stock price synchronicity. Subsequent studies propose several determinants of stock price synchronicity associated with the firm's disclosure transparency, such as accounting opacity, ownership structure, audit quality, institutional investor horizon, culture, managerial ability, trade secret protection, and media coverage (Barka et al., 2023; Boubaker et al., 2014; Dang et al., 2020; Eun et al., 2015; Fu et al., 2022; Gul et al., 2010; Kim et al., 2021; Neifar & Ajili, 2019; Zhai et al., 2021).

In this study, we investigate whether and how the age of CEOs influences the amount of firm-specific information impounded into stock prices, and, consequently, stock price synchronicity. CEOs, motivated by their reputation and career concerns, may shape the corporate information environment based on their future career horizons and

anticipated labor market beliefs. Scharfstein and Stein (1990) show that reputation concerns may force managers to mimic the behavior of their counterparts while ignoring their own information. The '1987 market crash' serves as a representative episode of this herding behavior, as professional money managers sought comfort in the numbers during the market decline. The CEOs who herd in corporate decisions naturally disclose general market-wide information rather than firm-specific information to justify the similarity in their decisions. We predict that this disclosure pattern creates stock price synchronicity, particularly among younger CEOs who are more concerned about their career and reputation.

We test this prediction using a sample of 21,049 listed firm-year observations in the US. After controlling for the empirical determinants of stock price synchronicity proposed by previous studies, we find that firms with older CEOs tend to exhibit lower stock price synchronicity. The results show that a 1 % increase in CEO age reduces stock price synchronicity by 24.8 %. Our findings suggest that stock prices of firms managed by younger CEOs are less likely to impound firm-specific information, supporting the prediction of career concern models.

As an economic channel, we examine the role of discretionary accruals in the association between CEO age and stock price synchronicity. We first find that older CEOs are less aggressive in discretionary

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accruals. The results are consistent with the negative (positive) association between CEO age and earnings management (accounting conservatism) reported in previous studies (Ameila & Eriandani, 2021; Bouaziz et al., 2020; Le et al., 2020; Neifar & Ajili, 2019; Qawasmeh & Azzam, 2020). Next, we find that discretionary accruals are positively associated with the stock price synchronicity. The result, in conjunction with the previous finding, suggests that the transparent financial reporting of firms led by older CEOs may contribute to their lower price synchronicity. Even after controlling for discretionary accruals, we find a negative relationship between CEO age and stock price synchronicity. Furthermore, the positive relation between discretionary accruals and stock price synchronicity is less pronounced in firms managed by older CEOs. Overall, these results indicate that firms managed by older CEOs provide an information environment where investors can access comprehensible firm-specific information beyond the financial reporting on earnings.

Using the Sarbanes-Oxley (SOX) Act, we next investigate whether and how regulatory requirements impact the negative association between CEO age and stock price synchronicity. Following the 2001 Enron scandal, one of the most questionable accounting disasters in history, the SOX Act aims to strengthen the informational environment of firms. By splitting the sample period based on the passage of the Act, we find a significant negative relationship between CEO age and stock price synchronicity only in the pre-SOX period. The relationship remains negative but statistically insignificant after the Act's passage. These findings suggest that more stringent regulatory requirements make it harder for younger CEOs to hide firm-specific information for their career and reputational concerns.

We conduct several robustness checks on the results. First, we use an alternative measure of stock price synchronicity following (Feng et al., 2016). In this robustness check, our main results do not change significantly. Next, we confirm that the negative relationship between CEO age and stock price synchronicity remains evident during market turbulence, such as the COVID-19 period. Third, we find that the result is more pronounced in firms where CEO compensation exhibits lower pay-for-performance sensitivity, indicating that the explicit incentive pay is not a driver for disclosure of firm-specific information for older CEOs. Fourth, we investigate the changes in stock price synchronicity around the CEO turnovers. Our findings indicate that the stock price synchronicity decreases after the CEO turnover, and more so when the incoming CEO is older than the leaving one.

The study also investigates alternative explanations. We test, in line with Andreou et al. (2017), whether the tenure effect of CEOs drives the main findings. Our findings remain statistically significant with the exclusion of CEOs with less than three-year tenure and controlling CEO tenure at different levels. We also test subsamples based on firm characteristics, such as firm size and firm age. All the findings suggest that firms led by older CEOs provide more firm-specific information, resulting in low stock price synchronicity.

Finally, we alleviate the endogeneity concerns using the *instrumental variable (IV) approach* and *entropy balancing* method. We employ the time-varying natural logarithm of the median CEO age for comparable firms within an industry as our instrumental variable (IV) for the CEO age. In the first stage regression, we find that the IV is significantly positively associated with the CEO age. In the second stage regression, we confirm the significantly negative association between the fitted values of the first-stage regression and stock price synchronicity. We further validate our finding by employing the entropy balancing approach in line with (Cepni et al., 2024; Zou et al., 2024). We first disentangle our sample into treatment and control groups based on mean CEO age. The above mean CEO age (Treatment) equals 1; otherwise, it is zero (Control). We use the control variables to balance constraints at the third moment and determine the weights. Using the weighted sample observations to rerun the baseline model reconfirms our main findings.

Our findings contribute to the research on stock price synchronicity

by showing how the CEOs' concerns about their careers and reputations, as reflected by their age, influence the degree of firm-specific information included in stock prices. Prior studies have looked at the relationship between stock price synchronicity and property rights (Morck et al., 2000), controlling shareholders (Boubaker et al., 2014), corporate governance (Jin & Myers, 2006), earnings management and stock crashes (Hutton et al., 2009), and institutional investor horizon (Barka et al., 2023). The primary new finding from this study is the question of how CEO age affects stock price synchronicity. We demonstrate that older CEOs, as a proxy for weaker career and reputation concerns, are an important channel through which CEO age enhances a high-quality information environment by providing a range of firm-specific information that is incorporated into stock prices, resulting in low stock price synchronicity.

The study results enhance the existing body of knowledge on reputational herding. Scharfstein and Stein (1990) found that managers' desire to protect their reputation in the labor market can cause them to engage in herding behavior when making investment decisions. An incentive to avoid sole responsibility for unprofitable decisions drives the herding behavior. Our research demonstrates that herding in decision-making can also arise from the use of similar information, known as "informational herding." This similarity in information leads CEOs to disregard their own information when making decisions, including information disclosure, resulting in increased synchronicity of stock prices.

These findings also have implications for information disclosure and sound corporate governance. We demonstrate that firms can reduce stock price synchronicity by utilizing older CEOs as a key conduit. According to the study, the CEO's age is a critical personal characteristic that creates a high-quality information environment, which is essential for investors when evaluating firms. This study suggests that, given the same discretionary accruals for younger and older CEOs, the older CEOs are likely to have lower stock price synchronicity. Thus, the study adds to the body of research on information disclosure and sound corporate governance by demonstrating the importance of older CEOs in fostering an environment of high-quality information that reduces stock price synchronicity (An & Zhang, 2013; Fu et al., 2022; Kim et al., 2021; Kim & Cheong, 2015; Zhai et al., 2021).

In the following section, we review the literature on CEO age and stock price synchronicity, which form the backdrop of this study, and develop the hypotheses. Section 3 looks at research methodology; Section 4 provides empirical analysis, robustness tests, and alternative explanations; and Section 5 summarizes and concludes the study.

2. Literature and hypothesis development

2.1. CEO age and stock price synchronicity

Li et al. (2017) argue that the career concerns of CEOs affect their corporate investment decisions. Their findings confirm that younger CEOs have greater concerns over their future careers, which influences the corporate investment decisions they make. Relatedly, Fama (1980) notes that career concerns may influence corporate performance. Fama's study shows that the labor market may discipline poor performance through reduced wages and early dismissals. This finding is consistent with Gibbons and Murphy (1992), who contend that career concerns are stronger for younger CEOs as they increase their returns through future compensation increases. Hazarika et al. (2012) research suggests that younger CEOs' stronger career concerns make them reluctant to engage in earnings management as it increases the likelihood and frequency of forced CEO replacement. However, according to Ali and Zhang (2015); Andreou et al. (2017), career concern is more problematic in the early years of a CEO than the later years, leading to an exaggeration of earnings. Therefore, younger CEOs face greater career incentives to enhance the labor market's confidence in their abilities by either retaining or revealing firm-specific information that influences

stock prices.

According to Yang et al. (2021), a CEO's reputation is a valuable intangible resource for a firm and a signal about the CEO's effectiveness. Dai et al. (2013) suggest that young and female CEOs voluntarily issue more earnings forecasts to create a favorable reputation. This reduces the uncertainty about their effectiveness in managing the firm (Li et al., 2017). Scharfstein and Stein (1990) demonstrate that managers often disregard their own information and adopt the same information signals as their peers when making investment decisions in an attempt to enhance their reputation, a phenomenon known as "reputational herding". This suggests that CEOs might disregard their firm-specific information and instead provide generic market updates, mimicking their peers, thereby restricting the integration of firm-specific information into stock prices. Since younger CEOs have higher career and reputation concerns, they are more likely to follow a herd and ignore their own information. Thus, we formulate the first hypothesis as follows:

H1. CEO age is negatively related to stock price synchronicity.

2.2. Discretionary accruals, CEO age, and stock price synchronicity

Previous studies document that earnings management increases stock price synchronicity (Hutton et al., 2009; Neifar & Ajili, 2019). These studies suggest that earnings management opacity is the driving force behind this relationship. However, other studies indicate that younger CEOs are more likely than older CEOs to engage in earnings management (Belot & Serve, 2018; Le et al., 2020). They speculate that older CEOs' less assertive accounting style may cause this relationship. Besides, compared to younger CEOs, older CEOs are more ethical and conservative, as confirmed by (Malm et al., 2021). Other studies such as Liao et al. (2023); Los and Yu (2008), have validated discretionary accruals as an indicator of the information environment. Since managers and CEOs have discretion over the disclosure of accounting information, CEOs may use their discretionary rights to affect the quality of the information environment. Moreover, Xu et al. (2018) argue that older CEOs have the ability to reduce intentional ambiguity and intricacy in financial reporting, which could increase the dissemination of specific information about a company.

This study investigates whether the relationship between CEO's age and stock price synchronicity is enhanced by earnings management (discretionary accruals), or whether older CEOs simply offer a wider range of firm-specific information in a more comprehensive way than just obfuscated accounting data. If discretionary accruals moderate the relationship between CEO age and stock price synchronicity, then CEO age would diminish stock price synchronicity due to lower discretionary accruals associated with older CEOs. However, investors might not just value stocks based on accounting information but also take into account the age of the CEOs in the firm, given that older CEOs refrain from endeavoring to deliberately obfuscate accounting statements and are capable of explaining operational complexities and keeping ethical in their reporting. As a result, older CEOs are likely to exhibit lower stock price synchronicity for the same level of discretionary accruals as younger CEOs. Consequently, since older CEOs are more likely to disclose firm-specific information, investors seeking investment opportunities may need to consider not only the accounting data but also the CEO traits, such as their age. From the above discussion, the study proposes the following hypothesis:

H2. The negative relationship between CEO age and stock price synchronicity is enhanced by discretionary accruals.

2.3. The regulatory requirements; Sarbanes Oxley (SOX) act

After the Enron scandal, lawmakers passed several laws, such as the Sarbanes-Oxley (SOX) Act, to protect shareholder interests from executive discretion and enhance the quality of the information environment. Since the SOX Act's enactment in 2002, the literature has widely

acknowledged its impact. According to Hutton et al. (2009), the SOX Act's enactment resulted in less earnings management. They suggest that with the new regulatory environment, firms hoard less firm-specific information, leading to low stock price synchronicity. Meanwhile, Malm et al. (2021) find a negative relationship between CEO age and firm litigation. According to their research, older CEOs follow post-SOX standards more strictly, which lowers the risk of litigation for their companies. However, new research by Fan et al. (2021) indicates that even with the SOX Act imposing more stringent regulations, the overall earnings management fails to experience an obvious reduction. Our study suggests a novel mechanism—the CEOs' concerns about their careers and reputations—that could explain the contradictory results surrounding the SOX Act of 2002's enactment. This study explores whether concerns about CEOs' careers and reputations, rather than regulatory requirements, drive their decisions to provide a range of firm-specific information incorporated into stock prices. Based on the discussion above, we propose the following hypothesis:

H3. The negative relationship between CEO age and stock price synchronicity is more pronounced in the pre-SOX period than in the post-SOX period.

3. Research methodology

Under this section, we describe the sample selection criteria from the main three databases, the variable construction, and empirical specifications.

3.1. Sample selection

For US-listed firms, this study draws daily market- and firm-level stock return data from the Center for Research on Security Prices (CRSP) for a period ranging from 1992 to 2020. We only include common stocks with share codes 10 or 11. We exclude financial firms with the standard industrial classification code (SIC 6000–6999) and utility firms (SIC code 4900–4999) due to their stringent regulations. Following Gul et al. (2010), the sample includes firms with at least 200 days of observations in a given fiscal year. We use annual data from COMPUSTAT on accounting variables and only include firms with positive total assets, book value, net cashflows from operations, and net income before extraordinary items. This is in line with the studies of (An & Zhang, 2013; Yu, 2008). We obtain data on CEO characteristics from EXECUCOMP, such as tenure, experience, retirement, and age. We limit the EXECUCOMP sample to CEOs that have the period of when one became a CEO. After screening and merging, the final sample yields 21,049 firm-year observations from 2294 firms. These observations form the central part of the empirical analysis.

3.2. Variable construction and empirical models

The main dependent variable is *stock price synchronicity*, which is the transformed R^2 estimated from the market model following (Boubaker et al., 2014; Gul et al., 2010). Each year, we estimate the R^2 for each firm using the market model in Eq. (1).

The model includes lagged industry and market returns so as to alleviate concerns driven by non-synchronous trading biases likely to arise from using daily returns in estimating the market model. The industry classification is based on the first two SIC digits in the CRSP dataset. We compute the logistic transformed R^2 , which measures the variation between firm-specific returns and market-wide stock returns, as in Eq. (2).

The R^2 is confined between zero and unit and is significantly skewed. According to Morck et al. (2000), a variable that is almost normally distributed can be obtained by using a logistic transformation. We use the transformed R^2 to measure the firm's yearly *stock price synchronicity* ($SYNCH_{it}$). A high value of synchronicity indicates that the stock price

Table 1
Summary statistics.

	N	Mean	Median	SD	P.1	P.99
SYNCH _t	21,049	2.084	1.787	2.187	−1.893	9.979
SIZE _{t-1}	21,049	7.221	7.062	1.599	4.030	11.561
BTM _{t-1}	21,049	0.486	0.393	0.390	0.041	2.073
ROA _{t-1}	21,049	0.046	0.056	0.106	−0.425	0.267
LEV _{t-1}	21,049	0.479	0.491	0.200	0.081	0.924
RD _{t-1}	21,049	0.038	0.010	0.059	0.000	0.260
GOODWILL _{t-1}	21,049	0.124	0.070	0.147	0.000	0.578
Firm Age _{t-1}	21,049	22.594	24.000	7.853	5.000	32.000
NCSKEW _{t-1}	21,049	−0.147	−0.173	1.151	−3.630	3.686
RETURN _{t-1}	21,049	0.066	0.066	0.168	−0.391	0.570
Competitiveness _{t-1}	21,049	0.156	0.143	0.152	−0.364	0.611
CEO Tenure _{t-1}	21,049	5.027	4.000	3.940	1.000	19.000
CEO Experience _{t-1}	21,049	15.064	13.000	9.813	1.000	46.000
CEO Retirement _{t-1}	21,049	0.046	0.000	0.209	0.000	1.000
YOUNG CEO _{t-1}	21,049	0.449	0.000	0.497	0.000	1.000
CEO AGE _{t-1}	21,049	55.469	55.000	7.452	39.000	76.000
Audit Opinion _{t-1}	21,049	0.671	1.000	0.470	0.000	1.000
Foreign Presence _{t-1}	21,049	0.669	1.000	0.470	0.000	1.000

Notes: This table presents the descriptive statistics for the 21,049 firm-year observations for the sample period 1992–2020. We used daily data from the Center for Research on Security Prices (CRSP), EXECUCOMP for CEO variables, and COMPUSTAT for firm financial variables. SYNCH_t is the stock price synchronicity measured as the transformed R², which is the main dependent variable, and the CEO age is the main independent variable. All continuous variables are winsorized at 0.5 and 99.5. The variable description is detailed in Table 1A.

contains less firm-specific information about the firm, indicating poor information efficiency.

Following Feng et al. (2016), we estimate an alternative measure of stock price synchronicity by incorporating the leads and lags of market and industry returns into the market model as presented in Eq. (3).

We use the logistic transformation of R² from the above equation as our alternative measure of stock price synchronicity (MSYNCH_{it}). This measure is used for robustness tests.

The main independent variable is the CEO's age. We construct this variable from the EXECUCOMP dataset. The CEO age is defined as the age of the CEO, just like in previous studies such as (Andreou et al., 2017; Neifar & Ajili, 2019). We follow Andreou et al. (2017) to further compute other measures of CEO age. (1) For CEOs under 55 years old (young CEOs), we create a dummy variable equal to 1; otherwise, it is zero. (2) We subdivide CEO age into four categories: (a) CEO_AGEGroup1 as CEOs with less than 51 years, (b) CEO_AGEGroup2 as CEOs between 51 and 55 years old, (c) CEO_AGEGroup3 as CEOs between 56 and 60 years old, and (d) CEO_AGEGroup4 as CEOs above 60 years old. This classification enables us to test the monotonic increase in age and its effect on stock price synchronicity. This CEO age measure precisely distinguishes the young and old CEOs and shows the effect of varying CEO age levels on stock price synchronicity. The estimates can reveal CEOs' concerns about career and reputation at different age levels, as well as the resulting decisions to disclose or withhold firm-specific information.

The study uses discretionary accruals as a moderating variable in

explaining the association between CEO age and stock price synchronicity. We use discretionary accrual as a proxy for earnings management. To quantify earnings management, we employ a variety of accrual-based models, in line with (Dechow et al., 1995; Kothari et al., 2005). In this study, total accruals are computed as the net income minus cash flow from operations, and then discretionary accruals are generated following Dechow et al. (1995), which is termed as DAccruals Kothari et al. (2005), which is termed as KDaccruals.

This study includes firm-specific attributes as control variables. These variables include return on asset (ROA), book-to-market (BTM), research and development expenses (RD), firm size (SIZE), leverage (LEV), firm age (Firm Age), negative conditional skewness (NCSKEW), stock return (RETURN), goodwill (GOODWILL), and competitiveness just like in prior studies (An & Zhang, 2013; Andreou et al., 2017; Dechow et al., 1995; Gul et al., 2010; Hutton et al., 2009; Li et al., 2017; Slavov, 2022). We also employ the personal characteristics of the CEO, such as CEO tenure (number of years in the position of a CEO in a particular firm), CEO experience (cumulative number of years since one became a CEO and left the CEO position) and CEO retirement (CEOs between 64 and 65 years) as controls. All continuous variables are winsorized at (0.5 % and .95 %) to avoid any outlier effects. The details of all variables are provided in the appendix, Table 1A.

The econometric model implemented is a linear regression model with high-dimensional fixed effects. The model clusters and absorbs industry and year-fixed effects. The standard errors are robust to heteroscedasticity. We use the lagged variables in all regressions to enhance

Table 2
Correlation matrix.

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1. SYNCH _t	1.000											
2. SIZE _{t-1}	0.010	1.000										
3. BTM _{t-1}	0.165	−0.070	1.000									
4. ROA _{t-1}	−0.047	0.113	−0.317	1.000								
5. LEV _{t-1}	0.061	0.438	−0.044	−0.124	1.000							
6. R&D _{t-1}	−0.181	−0.202	−0.153	−0.234	−0.275	1.000						
7. GOODWILL _{t-1}	−0.039	0.211	−0.038	0.009	0.091	−0.086	1.000					
8. CEO Tenure _{t-1}	0.097	0.177	0.007	0.046	0.008	−0.018	0.112	1.000				
9. CEO Experience _{t-1}	−0.057	−0.180	−0.007	0.058	−0.147	0.006	−0.094	0.254	1.000			
10. CEO Retirement _{t-1}	0.006	0.019	0.015	0.014	−0.002	−0.023	−0.013	0.092	0.023	1.000		
11. YOUNG CEO _{t-1}	−0.020	−0.133	−0.021	−0.045	−0.070	0.109	0.000	−0.247	−0.066	−0.198	1.000	
12. CEO AGE _{t-1}	0.030	0.122	0.042	0.054	0.054	−0.124	−0.004	0.297	0.154	0.264	−0.786	1.000

Notes: This table presents a correlation matrix for key variables. All of the variables are defined in Table 1A of the Variable Description.

Table 3
CEO age and stock price synchronicity.

	(1)	(2)	(3)	(4)
	Model 1	Model 2	Model 3	Model 4
	SYNCH _{it}	SYNCH _{it}	SYNCH _{it}	SYNCH _{it}
Log (CEO_AGE _{t-1})	−0.248** (−2.057)	−0.353*** (−3.214)		
CEO_AGEGroup4(>60)			−0.131*** (−3.065)	
CEO_AGEGroup3(56–60)			−0.068* (−1.741)	
CEO_AGEGroup2(51–55)			−0.021 (−0.579)	
YOUNG_CEO _{t-1} (<55)				0.067* (1.928)
Log (SIZE _{t-1})	−0.120*** (−5.738)	−0.120*** (−5.749)	−0.120*** (−5.728)	−0.120*** (−5.711)
BTM _{t-1}	0.390*** (5.117)	0.391*** (5.151)	0.389*** (5.098)	0.387*** (5.025)
ROA _{t-1}	−0.373* (−1.934)	−0.396* (−2.032)	−0.400* (−2.054)	−0.399* (−2.046)
LEV _{t-1}	0.385** (2.237)	0.402** (2.292)	0.398** (2.261)	0.400** (2.251)
R&D _{t-1}	0.590* (1.783)	0.564 (1.680)	0.569* (1.708)	0.596* (1.768)
NCSkew _{t-1}	−0.003 (−0.299)	−0.003 (−0.296)	−0.004 (−0.326)	−0.004 (−0.342)
Log (FirmAge _{t-1})	0.177** (2.073)	0.175** (2.070)	0.174* (2.043)	0.171* (2.009)
RETURN _{t-1}	−0.507** (−2.370)	−0.510** (−2.371)	−0.507** (−2.356)	−0.505** (−2.339)
GOODWILL _{t-1}	−0.297* (−1.718)	−0.294 (−1.694)	−0.296* (−1.731)	−0.293* (−1.721)
Competitiveness _{t-1}	−0.131 (−0.855)	−0.129 (−0.843)	−0.131 (−0.851)	−0.130 (−0.840)
Foreign Presence _t	−0.068* (−2.036)	−0.067* (−2.054)	−0.068** (−2.076)	−0.069** (−2.116)
Audit Opinion _t	−0.013 (−0.468)	−0.013 (−0.464)	−0.012 (−0.438)	−0.013 (−0.466)
Log (CEO_Tenure _{t-1})		0.037* (2.041)	0.037* (2.011)	0.031 (1.670)
CEO Experience _{t-1}		0.003 (1.333)	0.002 (1.246)	0.002 (1.108)
CEO Retirement _{t-1}		0.019 (0.381)	0.041 (0.844)	−0.005 (−0.097)
_cons	3.175*** (5.438)	3.503*** (6.478)	2.154*** (7.454)	2.090*** (7.201)
N	21,049	21,049	21,049	21,049
Adj. R ²	0.446	0.446	0.446	0.446
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Notes: This table regresses the stock price synchronicity on the CEO's age, the main independent variable of interest. In model 3, CEO-grouped age levels are the main independent variables, while in model 4, a dummy variable equals 1 for CEOs less than 55 years old; otherwise, zero is used. We include year- and industry-fixed effects in all regressions. Standard errors are clustered at the industry and year level and are robust to heteroscedasticity, as shown in parentheses. *, **, and *** designate the statistical significance levels at 10 %, 5 %, and 1 %.

the model's robustness and account for potential endogeneity. The general model is presented in Eq. (4).

We include industry and year fixed effects to control for idiosyncratic differences among industries that can make it less or more difficult for CEOs to hide bad news and capture the unit-invariant heterogeneity due to time. The industry classification is based on a 2-digit SIC in the CRSP database. In examining the moderation role of discretionary accruals, the interaction between discretionary accruals and CEO age ($KDaccruals_{i,t-1} * CEOAge_{k,t-1}$), is introduced in Eq. (5).

3.3. Summary statistics

Table 1 displays the summary statistics for the variables utilized in

the regression analysis. The minimum stock price synchronicity is −1.893. A lower stock price synchronicity means that the stock movements is driven by firm-specific information rather than market-wide information. The standard deviation of *stock price synchronicity* is 2.187 spread around the mean of 2.084. An average CEO has 55.469 years, with the youngest at 39 years and the oldest at 76 years. This provides sufficient variation among the CEO's ages to test its effect on stock price synchronicity. This is consistent with Andreou et al. (2017), who find the average CEO to be 55.05 years old. The CEO's tenure ranges from 1 to 19 years, while their experience ranges from 1 to 49 years. This variation in CEO tenure and experience provides sufficient attributes to control for their impact on CEO age and stock price synchronicity.

Table 2 presents the correlation matrix of the main variables for this study. We demonstrate a positive relationship between stock price synchronicity (SYNCH), leverage (LEV), book-to-market (BTM), and firm size (SIZE). The negative correlation is between SYNCH and GOODWILL, return on asset (ROA), and research and development (R&D). Generally, all correlations do not show any sign of multicollinearity because they are not sufficiently high. In the untabulated results, the variance inflation factor (VIF) test confirms no multicollinearity concerns between variables.

4. Empirical results and analysis

In this section, we present the regression model results and discussion of the findings.

4.1. CEO age and stock price synchronicity

Table 3 displays the computed coefficients and t-statistics that shed light on the relationship between CEO age and stock price synchronicity.

Model 1 of Table 3 starts by regressing stock price synchronicity (SYNCH) on CEO age while simply controlling for firm-level variables. At the 5 % level, the coefficient is significantly negative (−0.248). We interpret these results to suggest that older CEOs' willingness to disclose more firm-specific information leads to lower stock price synchronicity. Including CEO traits as control variables in model 2 significantly enhances the results at the 1 % level. These findings support the study's first hypothesis, which postulates that the underlying economic mechanism for a negative relationship between CEO age and stock price synchronicity is caused by older CEOs' willingness to provide a range of firm-specific information that is incorporated into stock pricing, supporting the prediction of career concern models.

Turning to model 3, where the CEO age variable is subdivided into four groups, namely, CEO_AGEGroup1 (<51), CEO_AGEGroup2 (51–55), CEO_AGEGroup3 (56–60), and CEO_AGEGroup4 (>60), the model uses the last three groups as the main independent variables of interest. This classification aligns with Andreou et al. (2017) investigation into the connection between the age of a company's CEO and stock price crashes. The results show that the stock price synchronicity coefficient decreases monotonically from −0.021 to −0.131 when the CEO's age rises from groups two to four. We document a 0.11 % decrease in stock price synchronicity from the second to fourth CEO age categories. This indicates a statistically significant difference in the degree to which the three CEO groups provide firm-specific information incorporated into stock pricing.

Finally, in model 4, we use the CEO age dummy variable, which equals 1 for CEOs under 55 years old (*young CEOs*), otherwise zero. The results show a positive relationship between the younger CEO and stock price synchronicity. The younger CEO variable is statistically significant at a 10 % level. These results indicate a decrease in firm-specific information disclosure by younger CEOs, leading to an increase in stock price synchronicity.

These results align with earlier research by Andreou et al. (2017), who validate the notion that younger CEOs cause stock price crashes, and Qawasmeh and Azzam (2020), who demonstrate that younger CEOs

Table 4

CEO age and stock price synchronicity. The effect of earnings management.

Panel A. CEO age and earnings management		
	(1)	(2)
	Model 1	Model 2
	Dechow et al. (1995)	Kothari et al. (2005)
	DAccruals _{t-1}	KDaccruals _{t-1}
Log (CEO_AGE _{t-1})	-0.043** (-2.057)	-0.043** (-2.076)
Log (CEO_Tenure _{t-1})	-0.016 (-1.385)	-0.015 (-1.456)
CEO_Experience _{t-1}	0.000 (1.028)	0.000 (1.031)
CEO_Retirement _{t-1}	0.001 (0.184)	-0.003 (-0.919)
Log (SIZE _{t-1})	0.007 (1.011)	0.006 (0.942)
BTM _{t-1}	-0.037** (-2.315)	-0.041** (-2.190)
ROA _{t-1}	-0.203* (-1.843)	-0.206** (-2.179)
LEV _{t-1}	-0.089 (-1.632)	-0.088 (-1.571)
R&D _{t-1}	-0.175 (-0.967)	-0.147 (-0.696)
NCSkew _{t-1}	-0.002 (-1.085)	-0.002 (-1.459)
Log (FirmAge _{t-1})	-0.022 (-1.611)	-0.020 (-1.531)
RETURN _{t-1}	-0.077 (-1.029)	-0.057 (-0.936)
GOODWILL _{t-1}	-0.151* (-1.786)	-0.141* (-1.824)
Competitiveness _{t-1}	-0.131 (-0.838)	-0.152 (-0.881)
Foreign Presence _t	-0.009* (-1.991)	-0.012** (-2.629)
Audit Opinion _t	-0.001 (-0.218)	-0.003 (-0.528)
_cons	0.413*** (2.874)	0.412** (2.724)
N	20,517	20,515
Adj. R ²	0.095	0.069
Industry FE	YES	YES
Year FE	YES	YES

Panel B. CEO Age, discretionary accruals and stock price synchronicity

	(1)	(2)
	Model 1	Model 2
	SYNCH _t	SYNCH _t
Log (CEO_AGE _{t-1})	-0.228* (-1.977)	-0.324*** (-3.212)
KDaccruals _{t-1}	1.010*** (3.867)	0.983*** (3.785)
Log (CEO_AGE _{t-1}) * KDaccruals _{t-1}	-0.260*** (-3.581)	-0.252*** (-3.512)
Log (SIZE _{t-1})	-0.125*** (-5.919)	-0.125*** (-5.927)
BTM _{t-1}	0.393*** (5.259)	0.394*** (5.308)
ROA _{t-1}	-0.402* (-1.835)	-0.424* (-1.910)
LEV _{t-1}	0.427** (2.478)	0.443** (2.523)
R&D _{t-1}	0.665** (2.112)	0.641* (2.008)
NCSkew _{t-1}	-0.000 (-0.018)	-0.000 (-0.015)
Log (FirmAge _{t-1})	0.175* (2.009)	0.173* (2.003)
RETURN _{t-1}	-0.507**	-0.510**

Table 4 (continued)

Panel B. CEO Age, discretionary accruals and stock price synchronicity		
	(1)	(2)
	Model 1	Model 2
	SYNCH _t	SYNCH _t
GOODWILL _{t-1}	(-2.360) -0.293* (-1.739)	(-2.363) -0.290* (-1.718)
Competitiveness _{t-1}	-0.053 (-0.370)	-0.050 (-0.347)
Foreign Presence _t	-0.075** (-2.229)	-0.074** (-2.248)
Audit Opinion _t	-0.012 (-0.377)	-0.012 (-0.381)
Log (CEO_Tenure _{t-1})	0.036* (1.954)	0.036* (1.954)
CEO_Experience _{t-1}	0.002 (1.220)	0.002 (1.220)
CEO_Retirement _{t-1}	0.009 (0.164)	0.009 (0.164)
_cons	3.107*** (5.472)	3.406*** (6.543)
N	20,515	20,515
Adj. R ²	0.447	0.447
Industry FE	YES	YES
Year FE	YES	YES

Notes: In this table, panel A displays the results where the dependent variable is the discretionary accruals, measured by Dechow (1995) in model 1 (*DAccruals*) and Kothari (2005) in model 2 (*KDaccruals*), with CEO age serving as the main independent variable. Panel B shows the effect of earnings management on CEO age and stock price synchronicity. In this model, Kothari's (2005) earnings management (*KDaccruals*) is the primary independent variable. We are interested in the interaction between earnings management and CEO age. Column 1 does not include controls on CEO characteristics, whereas Column 2 does. All regressions incorporate year- and industry-fixed effects. Standard errors are clustered at the industry and year level and are robust to heteroscedasticity, as shown in parentheses. *, **, and *** designate the statistical significance levels at 10 %, 5 %, and 1 %.

manage earnings more aggressively. The findings in Table 3 support our first hypothesis, which states that there is a negative relationship between CEO age and stock price synchronicity. It's interesting to note that other corporate governance controls, including audit opinion and foreign presence, have negative coefficients. This is consistent with Tahinakis and Samarinas (2016), who found higher informativeness linked with unqualified audit views, and Bena et al. (2017), who confirmed that foreign investors are better monitors because they have no personal ties with the management.

4.2. Discretionary accruals, CEO age, and stock price synchronicity

In this subsection, we examine the role of discretionary accruals as a moderating variable in the association between CEO age and stock price synchronicity. Table 4 panel A presents results on the relationship between CEO age and earnings management (*discretionary accruals*). We follow Dechow et al. (1995) in Model 1 to estimate discretionary accruals. In Model 2, we adhere to the discretionary accruals estimate provided by (Kothari et al., 2005). The findings presented in Panel B show a regression of the interaction between CEO age and earnings management on stock price synchronicity. Table 4 is presented below.

In panel A, at the 5 % level, the coefficients of CEO age for both models exhibit negative significance. This shows that older CEOs are less aggressive in discretionary accruals. The results are consistent with the negative (positive) association between CEO age and earnings management (accounting conservatism) reported in previous studies (Ameila & Eriandani, 2021; Bouaziz et al., 2020; Le et al., 2020; Neifar & Ajili, 2019; Qawasmeh & Azzam, 2020). In panel B, we find that discretionary accruals are positively associated with the stock price

Table 5
Impact of regulatory requirements: The Sarbanes Oxley (SOX) Act 2002.

	(1)	(2)	(3)	(4)
	Pre-SOX (1992–2001)		Post-SOX (2002–2011)	
	SYNCH _{it}	SYNCH _{it}	SYNCH _{it}	SYNCH _{it}
Log (CEO_AGE _{t-1})	−0.468*		−0.184	
	(−2.149)		(−1.336)	
CEO_AGEGroup4(>60)		−0.144*		−0.104*
		(−1.980)		(−1.843)
CEO_AGEGroup3(56–60)		−0.054		−0.061
		(−0.614)		(−1.046)
CEO_AGEGroup2(51–55)		−0.084		0.036
		(−1.755)		(0.625)
Log (CEO_Tenure _{t-1})	−0.113**	−0.119**	0.069**	0.075**
	(−2.380)	(−2.430)	(2.562)	(2.632)
CEO Experience _{t-1}	0.001	0.001	0.000	0.000
	(0.777)	(0.633)	(0.060)	(0.100)
CEO Retirement _{t-1}	−0.096	−0.093	−0.057	−0.015
	(−1.099)	(−1.054)	(−0.956)	(−0.206)
Log (SIZE _{t-1})	−0.046	−0.048	−0.117***	−0.118***
	(−1.399)	(−1.401)	(−4.792)	(−4.807)
BTM _{t-1}	0.132	0.131	0.336***	0.335***
	(0.744)	(0.714)	(4.409)	(4.365)
ROA _{t-1}	−0.386	−0.398	−0.349	−0.349
	(−1.676)	(−1.729)	(−1.683)	(−1.716)
LEV _{t-1}	−0.110	−0.113	0.390**	0.387**
	(−0.370)	(−0.380)	(2.737)	(2.731)
R&D _{t-1}	0.963**	1.005*	−0.334	−0.357
	(2.411)	(2.341)	(−0.786)	(−0.843)
NCSkew _{t-1}	−0.022	−0.023	0.010	0.010
	(−0.863)	(−0.862)	(0.471)	(0.471)
Log (FirmAge _{t-1})	−0.075	−0.078	−0.005	−0.003
	(−1.353)	(−1.416)	(−0.078)	(−0.040)
RETURN _{t-1}	−0.464	−0.458	−0.598	−0.598
	(−1.469)	(−1.437)	(−1.580)	(−1.578)
GOODWILL _{t-1}	−0.637*	−0.637*	−0.315	−0.312
	(−2.162)	(−2.121)	(−1.173)	(−1.172)
Competitiveness _{t-1}	−0.246	−0.247	−0.397*	−0.403*
	(−1.111)	(−1.080)	(−1.990)	(−2.067)
Foreign Presence _t	−0.076	−0.076	−0.077	−0.078
	(−1.431)	(−1.445)	(−1.292)	(−1.291)
Audit Opinion _t	0.014	0.016	0.022	0.025
	(0.237)	(0.267)	(0.515)	(0.563)
_cons	3.564***	1.789***	3.410***	2.698***
	(3.937)	(7.733)	(5.261)	(8.580)
N	4818	4818	8454	8454
Adj. R ²	0.521	0.520	0.503	0.503
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Notes: This table reports the results of the relationship between CEO age and stock price synchronicity before and after the Sarbanes-Oxley Act of 2002. Columns 1 and 2 present regression results on the *pre-SOX*, while columns 3 and 4 show results on the *post-SOX*. All regressions incorporate year- and industry-fixed effects. Standard errors are clustered at the industry and year level and are robust to heteroscedasticity, as shown in parentheses. *, **, and *** designate the statistical significance levels at 10 %, 5 %, and 1 %.

synchronicity. The result aligns with earlier discoveries (Hutton et al., 2009; Neifar & Ajili, 2019). This implies that the transparent financial reporting of firms led by older CEOs may contribute to their lower price synchronicity. Even after controlling for discretionary accruals, we find a negative relationship between CEO age and stock price synchronicity. Furthermore, the positive relation between discretionary accruals and price synchronicity is less pronounced in firms managed by older CEOs. Generally, these results show that firms managed by older CEOs offer an information environment where investors can access comprehensive firm-specific information beyond the financial reporting on the likely obfuscated earnings.

4.3. The regulatory requirements; the Sarbanes Oxley (SOX) act

In 2002, the Sarbanes-Oxley (SOX) Act was passed, requiring

Table 6
Alternative measure stock price synchronicity.

	(1)	(2)	(3)	(4)
	Model 1	Model 2	Model 3	Model 4
	MSYNCH _{it}	MSYNCH _{it}	MSYNCH _{it}	MSYNCH _{it}
Log (CEO_AGE _{t-1})	−0.234*	−0.341***		
	(−1.845)	(−2.901)		
CEO_AGEGroup4(>60)			−0.117**	
			(−2.647)	
CEO_AGEGroup3(56–60)			−0.064*	
			(−1.706)	
CEO_AGEGroup2(51–55)			−0.022	
			(−0.552)	
YOUNG_CEO (<55)				0.067*
				(1.915)
Log (SIZE _{t-1})	−0.116***	−0.116***	−0.116***	−0.116***
	(−5.115)	(−5.092)	(−5.092)	(−5.074)
BTM _{t-1}	0.341***	0.343***	0.340***	0.339***
	(4.646)	(4.675)	(4.642)	(4.575)
ROA _{t-1}	−0.444**	−0.469**	−0.473**	−0.472**
	(−2.317)	(−2.431)	(−2.452)	(−2.443)
LEV _{t-1}	0.359**	0.379**	0.376**	0.377**
	(2.188)	(2.266)	(2.228)	(2.220)
R&D _{t-1}	0.483	0.459	0.469	0.488
	(1.453)	(1.371)	(1.410)	(1.448)
NCSkew _{t-1}	0.000	0.000	−0.000	−0.000
	(0.023)	(0.023)	(−0.001)	(−0.009)
Log (FirmAge _{t-1})	0.172*	0.171**	0.170*	0.168*
	(2.044)	(2.059)	(2.026)	(1.999)
RETURN _{t-1}	−0.462**	−0.467**	−0.464**	−0.462**
	(−2.142)	(−2.148)	(−2.134)	(−2.121)
GOODWILL _{t-1}	−0.295	−0.291	−0.293	−0.290
	(−1.689)	(−1.670)	(−1.700)	(−1.690)
Competitiveness _{t-1}	−0.135	−0.133	−0.134	−0.134
	(−0.856)	(−0.846)	(−0.850)	(−0.842)
Foreign Presence _t	−0.072**	−0.071**	−0.072**	−0.072**
	(−2.140)	(−2.144)	(−2.177)	(−2.237)
Audit Opinion _t	−0.013	−0.013	−0.013	−0.013
	(−0.449)	(−0.455)	(−0.435)	(−0.453)
Log (CEO_Tenure _{t-1})		0.033*	0.033*	0.029
		(1.955)	(1.897)	(1.594)
CEO Experience _{t-1}		0.003	0.003	0.003
		(1.584)	(1.472)	(1.353)
CEO Retirement _{t-1}		0.020	0.035	−0.002
		(0.424)	(0.736)	(−0.040)
_cons	3.172***	3.496***	2.193***	2.128***
	(5.276)	(6.126)	(7.736)	(7.537)
N	20,878	20,878	20,878	20,878
Adj. R ²	0.443	0.443	0.443	0.443
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Notes: We replicate Table 3 using a different measure of stock price synchronicity (*MSYNCH*). We follow Feng et al. (2016) to include the leads and lags in the market model and compute the transformed R² as a measure of stock price synchronicity. In all regressions, year and industry fixed effects are included. Standard errors are clustered at industry and year level and are robust to heteroscedasticity as shown in parentheses. The statistical significance level at 10 %, 5 %, 1 % are designated by *, ** and ***.

financial reporting to be more transparent. The Act's enactment aims to improve corporate information environments, potentially leading to a decrease in stock price synchronicity. The SOX Act's impact on disclosure has been the subject of conflicting research. According to Hutton et al. (2009), the SOX Act reduced earnings management. However, Fan et al. (2021) contend that despite the SOX Act's stricter rules, there is no discernible decline in earnings management overall. According to the study's hypothesis, the CEO's career and reputation considerations should take precedence over regulatory concerns when it comes to older CEOs' decisions to provide firm-specific information. This study examines the impact of the pre-SOX (1992–2001) and post-SOX (2002–2011) periods. Results are presented in Table 5.

The findings indicate that the negative relationship between CEO age and stock price synchronicity is more pronounced during pre-SOX

Table 7
Impact of economic downturn: The effect of COVID-19 crisis.

	(1)
	SYNCH _t
Log (CEO_AGE _{t-1})	−0.341*** (−3.093)
Log (CEO_AGE _{t-1}) * COVID19	−0.405*** (−4.590)
Log (CEO_Tenure _{t-1})	0.037 (1.456)
CEO Experience _{t-1}	0.003 (1.271)
CEO Retirement _{t-1}	0.019 (0.384)
Log (SIZE _{t-1})	−0.120*** (−4.805)
BTM _{t-1}	0.391*** (4.362)
ROA _{t-1}	−0.396* (−2.022)
LEV _{t-1}	0.401** (2.267)
R&D _{t-1}	0.565 (1.088)
NCSkew _{t-1}	−0.004 (−0.303)
Log (FirmAge _{t-1})	0.175* (2.038)
RETURN _{t-1}	−0.511** (−2.114)
GOODWILL _{t-1}	−0.295 (−1.551)
Competitiveness _{t-1}	−0.130 (−0.852)
Foreign Presence _t	−0.067* (−1.999)
Audit Opinion _t	−0.013 (−0.329)
_cons	3.518*** (6.487)
N	21,049
Adj. R ²	0.446
Industry FE	YES
Year FE	YES

Notes: This table shows the effect of *COVID-19 crisis* on the relationship between *CEO age* and *stock price synchronicity*. The COVID-19 is defined as the year 2020. Our main interest is in the interaction between CEO age and COVID-19 period. We include year and industry fixed effects in the regression model. Standard errors are clustered at industry and year level and are robust to heteroscedasticity as shown in parentheses. The statistical significance level at 10 %, 5 %, 1 % are designated by *, ** and ***.

period compared to the post-SOX period. The relationship remains negative but statistically insignificant after the Act's passage. These findings suggest that more stringent regulatory requirements make it harder for younger CEOs to hide firm-specific information for their career and reputational concerns. These results validate the study's hypothesis, which suggests that CEOs' concerns for their careers and reputations, rather than legal requirements, should drive their decisions to disclose firm-specific information that is incorporated into stock prices.

4.4. Robustness tests and additional explanations

This section estimates a number of supplementary tests to confirm the robustness and any other additional explanation of the primary results.

4.4.1. Alternative measure of stock price synchronicity

Table 6 employs a different stock price synchronicity metric (Feng et al., 2016). This measure accounts for non-synchronous returns that

Table 8
Impact of CEO compensation: Subsample based on CEO portfolio delta.

	(1)	(2)
	CEO Delta	CEO Delta
	Low	High
	SYNCH _t	SYNCH _t
Log (CEO_AGE _{t-1})	−0.356** (−2.394)	−0.096 (−0.528)
Log (CEO_Tenure _{t-1})	0.021 (0.591)	0.039 (1.056)
CEO Experience _{t-1}	0.006 (1.615)	0.000 (0.204)
CEO Retirement _{t-1}	−0.023 (−0.233)	0.027 (0.279)
Log (SIZE _{t-1})	−0.112*** (−4.414)	−0.101*** (−3.556)
BTM _{t-1}	0.401*** (5.319)	0.267** (2.257)
ROA _{t-1}	−0.689** (−2.739)	−0.409 (−1.287)
LEV _{t-1}	0.613*** (3.604)	0.157 (0.703)
R&D _{t-1}	0.530 (1.254)	0.176 (0.463)
NCSkew _{t-1}	−0.010 (−0.430)	−0.019 (−1.069)
Log (FirmAge _{t-1})	0.269** (2.097)	0.022 (0.387)
RETURN _{t-1}	−0.646** (−2.766)	0.030 (0.108)
GOODWILL _{t-1}	−0.414* (−1.728)	−0.200 (−1.059)
Competitiveness _{t-1}	−0.031 (−0.145)	−0.047 (−0.187)
Foreign Presence _t	−0.091* (−1.836)	0.001 (0.015)
Audit Opinion _t	0.099 (1.358)	−0.017 (−0.308)
_cons	3.056*** (4.726)	2.697*** (4.059)
N	7471	7470
Adj. R ²	0.426	0.503
Industry FE	YES	YES
Year FE	YES	YES

Notes: In this table, the variable Delta is subdivided into two, the sample of firms with above sample median CEO portfolio delta (*High CEO Delta*) and those with below median CEO portfolio delta (*Low CEO Delta*). Column 1 reports result on low CEO Delta while column 2 shows result on high CEO Delta. In all regressions, year and industry fixed effects are included. Standard errors are clustered at industry and year level and are robust to heteroscedasticity as shown in parentheses. The statistical significance level at 10 %, 5 %, 1 % are designated by *, ** and ***.

may arise from the use of daily returns by including leads and lags in the market model while computing stock price synchronicity.

The findings in Table 6 are robust to the main regression model, with CEO age and stock price synchronicity negative and statistically significant at the 10 % and 1 % levels in models 1 and 2, respectively. The results in Model 3 use the CEO age categorical variables. The findings confirm a monotonic decrease in stock price synchronicity as CEO age increases. Model 4 demonstrates that younger CEOs increase stock price synchronicity; the coefficient is positively significant at a 10 % level for CEOs below 55 years old.

4.4.2. The effect of COVID-19

In Table 7, we further investigate whether the primary findings can persist with market turbulence like COVID-19. Previous market crisis research has shown that stock values are prone to becoming unstable during crises. For instance, Barka et al. (2023); Cella et al. (2013); Morck et al. (2000) confirm a greater degree of uncertainty and high stock price synchronicity during the global financial crisis (GFC). A growing body of

Table 9
Impact of CEO turnover.

	(1)	(2)	(3)
	SYNCH _{it}	SYNCH _{it}	SYNCH _{it}
POST	−0.359** (−2.577)	−0.221 (−1.480)	−0.331** (−2.575)
NEW YOUNG CEO			−0.134** (−2.520)
POST * NEW YOUNG CEO			0.154* (1.983)
Log (CEO_Tenure _{t-1})	−0.165* (−2.038)	−0.110 (−1.106)	−0.096 (−1.160)
CEO Experience _{t-1}	−0.009 (−1.104)	0.008 (1.214)	0.005 (0.959)
CEO Retirement _{t-1}	−0.057 (−0.215)	−0.085 (−0.445)	0.053 (0.299)
Log (SIZE _{t-1})	−0.196*** (−3.644)	−0.142*** (−3.563)	−0.129*** (−4.291)
BTM _{t-1}	0.751*** (4.194)	0.393** (2.644)	0.559*** (4.929)
ROA _{t-1}	0.276 (0.785)	−1.879*** (−3.747)	−0.542 (−1.365)
LEV _{t-1}	0.533 (1.360)	0.508 (1.658)	0.473** (2.120)
R&D _{t-1}	−1.217 (−1.020)	1.718*** (3.081)	0.932 (1.037)
NCSkew _{t-1}	−0.103 (−1.649)	0.002 (0.045)	−0.045 (−1.209)
Log (FirmAge _{t-1})	−0.661 (−1.568)	−0.406 (−1.519)	−0.587** (−2.511)
RETURN _{t-1}	−1.243* (−1.979)	−0.381 (−0.709)	−0.644 (−1.583)
GOODWILL _{t-1}	−0.451 (−0.906)	−0.997*** (−2.888)	−1.009*** (−4.281)
Competitiveness _{t-1}	0.275 (0.997)	0.638* (1.882)	0.463 (1.316)
Foreign Presence _{it}	−0.066 (−0.469)	−0.189 (−0.868)	−0.213 (−1.495)
Audit Opinion _{it}	−0.150 (−0.988)	0.105 (0.870)	0.034 (0.406)
_cons	5.720*** (4.532)	4.003*** (4.235)	4.686*** (6.163)
N	413	996	1560
Adj. R ²	0.592	0.509	0.505
Industry FE	YES	YES	YES
Year FE	YES	YES	YES

Notes: Column 1 present results on the regression where the new CEO is older than the previous CEO. Column 2 present results where the new CEO is younger than the previous CEO. Column 3 present results that includes the interaction “POST” dummy variable and “new young CEO” The variable POST dummy is defined as one for the next three years following the CEO change otherwise zero. The new older CEO is defined as a dummy variable equal to one for firm-year observations before and after the CEO turnover when the new CEO is older. The new young CEO is defined as a dummy variable equal to one for the firm-year observations before and after the CEO turnover when the new CEO is younger than the previous CEO even after three years from appointment. In all regressions, year and industry fixed effects are included. Standard errors are clustered at industry and year level and are robust to heteroscedasticity as shown in parentheses. The statistical significance level at 10 %, 5 %, 1 % are designated by *, ** and ***.

research on the COVID-19 epidemic indicates that the stock market has suffered as a result of this disaster (Ashraf, 2020; Baker et al., 2020; Kumar & Zbib, 2022; Okorie & Lin, 2021). These studies note that the effects of COVID-19 have been far more disastrous, upsetting financial markets all around the world. We can relate between this crisis and the 1987 market crash, during which money managers sought solace in statistical data amid the market’s downturn. This suggests that younger CEOs, who are more concerned about their career and reputation, are more inclined to participate in ‘informational herding’ during COVID-19, seeking solace in numbers during market downturns. This study hypothesizes a persistent negative relationship between CEO age and stock price synchronicity, even during the COVID-19 crisis period.

The results in Table 7 show a substantial negative coefficient (−0.405) for the interaction between CEO age and the COVID-19 pandemic period. These findings point to a long-lasting negative relationship between CEO age and stock price synchronicity. Our findings suggest that the career and reputation perspectives serve as the primary underpinning mechanisms for explaining this relationship. Especially during crisis periods, younger CEOs are likely to follow the herd by disclosing generic market-based information and disregarding their own firm-specific information. Moreover, the entire market may bear the blame for any failure during such a period. This study extends investigations that only look at the relationship between stock price synchronicity and crisis (Barka et al., 2023; Morck et al., 2000). We show that the positive relationship between stock price synchronicity and crises becomes negative and significant with older CEOs. This speaks to the role of CEO age in creating a better information environment in a firm, which is fundamental for stock price predictability and investment decision-making.

4.4.3. Impact of compensation

Table 8 explores whether the CEOs’ incentives influence the primary conclusion. Gibbons and Murphy (1992) suggest that lower career concerns among older CEOs drive their explicit compensation contracts. However, X. Li et al. (2017) show that explicit compensation contracts have little effect on the link between CEO age and firms’ investment activity. We suggest that younger CEOs have longer career horizon that is likely to increase the compensation benefits from their CEO position. The longer career horizon may force younger CEOs to signal effectiveness through hoarding firm-specific information. Therefore, our findings may be partly explained by the compensation associated with career horizon of CEOs. Our findings are reported in Table 8.

We find that the negative relationship between CEO age and stock price synchronicity is more pronounced among older CEOs that receive low compensation compared to their counterparts. This suggests that the explicit incentive pay is not a driver for disclosure of firm-specific information for older CEOs. The findings, in particular, show that for the low-Delta CEO category, the impact of CEO age is more significant. The CEO age coefficient for the high Delta CEO category is negatively insignificant while negatively significant at 5 % level for the low Delta CEO category. Our findings are inconsistent with Hui and Matsunaga (2015), who posit a positive relationship between CEO annual bonus and disclosure quality. We suggest that their findings may be influenced by not considering the heterogeneity among CEOs such as CEO age.

4.4.4. Impact of CEO turnover

A management change is a notable occurrence that could potentially impact the disclosure of firm-specific information. Prior studies, such as Li et al. (2024); Weisbach (1995), document the effect of CEO turnover on corporate performance and restructuring decisions. In Table 9, we test whether a shift in CEOs is likely to impact the company’s information environment.

Table 9 shows the results of the relationship between the change in the CEO and stock price synchronicity. Column 1 captures the effect of a change in CEOs to an older one. At the 5 % level, the coefficient is negatively significant. Column 2 shows the results of the transition to a younger CEO. The coefficient is negative, though insignificant. Turning to column 3, the regression model includes an interaction between changes in the CEO and the new young CEO. This interaction captures the impact of a change from an older CEO to a younger one. Our findings reveal a coefficient that is positively significant at the 10 % level. These findings are consistent with prior studies such as Serfling (2014), whose study confirms that firms are likely to adjust their preferences when they change from older to younger CEOs. Their findings suggest that firms increase their financial leverage and stock return volatility as they transition from older CEOs to younger CEOs.

Table 10
CEO Tenure Effect.

Panel A. Control for non-linear effect of CEO tenure			
	(2)	(3)	(4)
	Model 1	Model 2	Model 3
	SYNCH _t	SYNCH _t	SYNCH _t
Log (CEO_AGE _{t-1})	−0.366*** (−3.290)		
CEO_AGEGroup4(>60)		−0.124*** (−2.880)	
CEO_AGEGroup3(56–60)		−0.062 (−1.702)	
CEO_AGEGroup2(51–55)		−0.036 (−0.795)	
YOUNG_CEO _{t-1} (<55)			0.080** (2.588)
Log (SIZE _{t-1})	−0.120*** (−5.805)	−0.120*** (−5.771)	−0.120*** (−5.777)
BTM _{t-1}	0.392*** (5.181)	0.390*** (5.127)	0.389*** (5.064)
ROA _{t-1}	−0.392* (−2.016)	−0.385* (−2.007)	−0.390* (−2.005)
LEV _{t-1}	0.402** (2.298)	0.400** (2.263)	0.400** (2.255)
R&D _{t-1}	0.555 (1.679)	0.576* (1.772)	0.589* (1.785)
NCSkew _{t-1}	−0.003 (−0.267)	−0.004 (−0.319)	−0.004 (−0.321)
Log (FirmAge _{t-1})	0.171* (2.033)	0.169* (1.990)	0.169* (1.979)
STOCK_RETURN _{t-1}	−0.513** (−2.389)	−0.512** (−2.377)	−0.509** (−2.361)
GOODWILL _{t-1}	−0.289 (−1.663)	−0.290 (−1.705)	−0.290* (−1.716)
Competitiveness _{t-1}	−0.128 (−0.844)	−0.131 (−0.851)	−0.130 (−0.845)
Foreign Presence _t	−0.067** (−2.070)	−0.068** (−2.094)	−0.069** (−2.111)
Audit Opinion _t	−0.014 (−0.498)	−0.013 (−0.474)	−0.014 (−0.503)
Log (CEO_Tenure _{t-1})	−0.377 (−1.505)	−0.375 (−1.495)	−0.370 (−1.483)
Log (CEO_Tenure _{t-1}) ²	0.556 (1.436)	0.551 (1.416)	0.541 (1.397)
Log (CEO_Tenure _{t-1}) ³	−0.260 (−1.280)	−0.259 (−1.266)	−0.253 (−1.242)
Log (CEO_Tenure _{t-1}) ⁴	0.041 (1.185)	0.041 (1.173)	0.039 (1.141)
CEO_Experience _{t-1}	0.002 (1.188)	0.002 (1.192)	0.002 (1.078)
CEO_Retirement _{t-1}	0.017 (0.307)	0.006 (0.109)	−0.016 (−0.294)
_cons	3.615*** (6.491)	2.217*** (7.455)	2.133*** (7.157)
N	21,049	21,049	21,049
Adj. R ²	0.446	0.446	0.446
Industry FE	YES	YES	YES
Year FE	YES	YES	YES

Panel B. The impact CEO tenure. Younger CEOs being also new CEOs

	(1)	(2)	(3)
	Model 1	Model 2	Model 3
	SYNCH _t	SYNCH _t	SYNCH _t
Log (CEO_AGE _{t-1})	−0.249* (−1.825)	−0.370*** (−2.859)	
CEO_AGEGroup4(>60)			−0.142** (−2.628)
CEO_AGEGroup3(56–60)			−0.074 (−1.505)
CEO_AGEGroup2(51–55)			−0.059 (−1.358)
Log (SIZE _{t-1})	−0.123***	−0.123***	−0.123***

(continued on next page)

Table 10 (continued)

Panel B. The impact CEO tenure. Younger CEOs being also new CEOs			
	(1)	(2)	(3)
	Model 1	Model 2	Model 3
	SYNCH _t	SYNCH _t	SYNCH _t
BTM _{t-1}	(−5.418) 0.418*** (5.384)	(−5.439) 0.418*** (5.407)	(−5.392) 0.417*** (5.390)
ROA _{t-1}	−0.318* (−1.910)	−0.330* (−1.947)	−0.331* (−1.977)
LEV _{t-1}	0.424** (2.431)	0.443** (2.483)	0.442** (2.482)
R&D _{t-1}	0.575 (1.493)	0.541 (1.417)	0.555 (1.466)
NCSkew _{t-1}	−0.004 (−0.319)	−0.003 (−0.293)	−0.004 (−0.309)
Log (FirmAge _{t-1})	0.220** (2.458)	0.213** (2.377)	0.211** (2.324)
RETURN _{t-1}	−0.464** (−2.173)	−0.469** (−2.178)	−0.467** (−2.165)
GOODWILL _{t-1}	−0.254 (−1.428)	−0.242 (−1.371)	−0.245 (−1.400)
Competitiveness _{t-1}	−0.106 (−0.611)	−0.105 (−0.602)	−0.105 (−0.600)
Foreign Presence _t	−0.059 (−1.283)	−0.057 (−1.282)	−0.057 (−1.286)
Audit Opinion _t	−0.018 (−0.544)	−0.017 (−0.519)	−0.017 (−0.505)
Log (CEO_Tenure _{t-1})		0.062** (2.450)	0.062** (2.377)
CEO Experience _{t-1}		0.003 (1.085)	0.002 (0.971)
CEO Retirement _{t-1}		0.006 (0.071)	0.023 (0.276)
_cons	3.062*** (5.269)	3.421*** (5.875)	2.015*** (7.109)
N	15,893	15,893	15,893
Adj. R ²	0.444	0.444	0.444
Industry FE	YES	YES	YES
Year FE	YES	YES	YES

Notes: Panel A replicates the results of Table 3 but adds CEO tenure variable at quadratic, cubic and quartic forms to control for any non-linear effects due to likely correlation between CEO age and tenure. Panel B accounts for the likely effect of new CEOs being also young CEOs, making it possible that the CEO age results are influenced by CEO tenure. The results exclude the first three years of CEO tenure observations in the whole sample. In all regressions, year and industry fixed effects are included. Standard errors are clustered at industry and year level and are robust to heteroscedasticity as shown in parentheses. The statistical significance level at 10 %, 5 %, 1 % are designated by *, ** and ***.

4.4.5. CEO tenure effect

In this subsection, we investigate if the results are not due to the non-linear effects of the likely correlation between CEO age and CEO tenure, as suggested by (Andreou et al., 2017). In order to account for any non-linear effects resulting from the likely correlation between CEO age and tenure, we control for the CEO tenure variable at quadratic (*CEO_Tenure-1*)² (second power of the variable CEO tenure), cubic (*CEO_Tenure-1*)³ (third power of the variable CEO tenure), and quartic (*CEO_Tenure-1*)⁴ (fourth power of the variable CEO tenure) in panel A of Table 10. In panel B, we remove the first three-year CEO tenure observations from all variables in the data sample, just like in (Andreou et al., 2017).

Panel A presents the results where we control for CEO tenure at different levels. There is still a negative relationship between the CEOs' age and stock price synchronicity. The results for various CEO age indicators are consistent with our primary findings. Overall, our findings imply that there is no correlation between CEO tenure and CEO age, which drives the study's primary findings. Next, the study's theoretical argument suggests an inverse correlation between CEO age and stock price synchronicity from a career and reputation perspective, but the possibility that young CEOs manage young firms might influence this link. To alleviate this concern, we remove the first three-year CEO tenure variable from all variables in the data sample. The results in panel B bear significant and statistical similarities to the primary findings.

4.4.6. Impact of firm characteristics

We also investigate whether the varying firm characteristics that these CEOs manage explain our results. The linear control factors included in our main model might not be enough to skew the results when the firm characteristics controlled by younger and older CEOs differ. Prior research by Han (2023) suggests that startups hire younger CEOs more frequently than more established ones, potentially driving our main conclusions. To alleviate this concern, we split the sample based on *firm age* and *firm size*. Table 11 reports the results.

Table 11 shows the results of the coefficients and t-statistics of CEO age and stock price synchronicity regressions based on sub-samples of *firm age* and *firm size*. According to Model 1, there is a higher degree of low stock price synchronicity in older organizations (5 % significant level) compared to younger enterprises (10 % significant level). However, it's interesting to note that in model 2, which compares small and large firms, the significance is higher for smaller firms with a coefficient of (−0.394) at the 5 % level than for larger firms with a coefficient of (−0.247) at the 10 % level. Overall, the company characteristics-based analysis essentially confirms that firm characteristics are not the primary reason for our findings.

4.4.7. Endogeneity issues

Finally, we address the endogeneity issues by employing the instrumental variable (IV) procedure and the entropy balancing

Table 11

The impact of firm characteristics.

	(1)	(2)	(3)	(4)
	Firm Age		Firm Size	
Dep. var. SYNCH _t	Young	Old	Small	Big
Log (CEO_AGE _{t-1})	−0.325* (−1.845)	−0.334** (−2.236)	−0.394** (−2.164)	−0.247* (−1.973)
Log (CEO_Tenure _{t-1})	0.003 (0.084)	0.054** (2.628)	0.016 (0.500)	0.048* (1.827)
CEO Experience _{t-1}	0.005* (1.988)	−0.000 (−0.018)	0.003 (1.214)	0.002 (0.694)
CEO Retirement _{t-1}	0.035 (0.501)	0.013 (0.200)	0.006 (0.060)	0.036 (0.484)
Log (SIZE _{t-1})	−0.092*** (−3.759)	−0.141*** (−4.966)	−0.113*** (−2.832)	−0.111*** (−4.480)
BTM _{t-1}	0.385*** (4.536)	0.361*** (4.486)	0.332*** (3.691)	0.490*** (5.186)
ROA _{t-1}	−0.225 (−0.834)	−0.615*** (−3.196)	−0.365** (−2.163)	−0.498 (−1.348)
LEV _{t-1}	0.345* (1.708)	0.469* (2.047)	0.313* (1.834)	0.558** (2.357)
R&D _{t-1}	0.672 (1.415)	0.657 (1.553)	0.996*** (3.484)	0.114 (0.182)
NCSkew _{t-1}	−0.004 (−0.337)	−0.001 (−0.059)	0.002 (0.182)	−0.016 (−1.078)
Log (FirmAge _{t-1})	0.324*** (2.852)	−0.356 (−1.492)	0.222** (2.127)	0.115 (1.253)
RETURN _{t-1}	−0.623*** (−2.913)	−0.315 (−1.037)	−0.415** (−2.421)	−0.684* (−1.981)
GOODWILL _{t-1}	−0.295 (−0.883)	−0.337** (−2.210)	−0.035 (−0.123)	−0.545*** (−3.417)
Competitiveness _{t-1}	−0.304 (−1.701)	0.119 (0.550)	−0.119 (−1.132)	−0.042 (−0.197)
Foreign Presence _t	−0.023 (−0.427)	−0.109** (−2.327)	−0.019 (−0.377)	−0.100* (−1.748)
Audit Opinion _t	−0.022 (−0.471)	−0.001 (−0.032)	0.023 (0.818)	−0.034 (−0.768)
_cons	2.724*** (3.535)	5.468*** (7.203)	3.300*** (4.060)	3.305*** (6.892)
N	10,677	10,370	10,523	10,521
Adj. R ²	0.432	0.471	0.460	0.445
Industry FE	YES	YES	YES	YES
Year FE	YES	YES	YES	YES

Notes: This table presents results based on firm characteristics sub-samples. Columns 1, and 2 based on firm age while columns 3 and 4 on firm size. In all regressions, year and industry fixed effects are included. Standard errors are clustered at industry and year level and are robust to heteroscedasticity as shown in parentheses. The statistical significance level at 10 %, 5 %, 1 % are designated by *, ** and ***.

technique. Initially, we use the CEO age of comparable industry peer firms as an instrumental variable. Specifically, we implement a new instrumental variable consistent with [Cepni et al. \(2024\)](#); [Reveley et al. \(2023\)](#) based on similar stock, the same industry, and a time-varying instrument; however, rather than using the mean, we utilize median CEO age. This aligns with the approach taken by [Feng et al. \(2016\)](#), who utilized the median number of analysts to instrument analyst coverage. They measure their instrumental variable as the natural logarithm of the median number of analysts for firms in similar industries to the target firm in a given period. By using a median instrumental variable, they are able to capture location distributions more accurately than the mean, are less susceptible to outliers, and reduce the tails of the conditional error distribution ([Sakata, 2007](#)).

Thus, we construct the natural logarithm of median CEO age as the instrumental variable by first employing the first two-digit SIC industry classification to categorize firms into three terciles according to their size within the same industry. Then, we determine the time-varying median age of CEOs, considering similar industries and comparable firm sizes while excluding the focal firm. Finally, we generate the natural logarithm of median CEO age (log MEDIAN_CEO AGE) as a novel instrument. Columns 1 and 2 of the [Table 12](#) presents the results

Table 12

Endogeneity Concern: Instrumental variable (IV) estimation and Entropy balancing approach.

	(1)	(2)	(3)
	IV First-Stage	IV Second-Stage	Entropy Balancing Method
	Log (CEO_AGE _{t-1})	SYNCH _t	SYNCH _t
Log (MEDIAN_CEO AGE _{t-1})	0.394*** (16.890)		
CEO_AGE_Fitted		−2.601* (−1.918)	
Log (CEO_AGE _{t-1})			−0.105*** (−2.902)
Log (CEO_Tenure _{t-1})	0.040*** (18.434)	0.115* (1.813)	0.034 (1.430)
CEO Experience _{t-1}	0.001*** (3.753)	0.007*** (2.838)	0.001 (0.428)
CEO Retirement _{t-1}	0.139*** (22.646)	0.327 (1.639)	0.020 (0.115)
BTM _{t-1}	0.017** (2.334)	0.435*** (5.517)	−0.149*** (−5.855)
ROA _{t-1}	0.014 (0.743)	−0.470** (−2.306)	0.349*** (4.411)
LEV _{t-1}	0.023 (1.173)	0.100 (0.629)	−0.336 (−1.541)
R&D _{t-1}	−0.232*** (−3.245)	0.131 (0.313)	0.585** (2.657)
NCSkew _{t-1}	0.002** (1.970)	0.001 (0.120)	0.356 (0.694)
Log (FirmAge _{t-1})	0.021*** (5.240)	0.130 (1.583)	−0.015 (−0.968)
RETURN _{t-1}	−0.014 (−1.282)	−0.460** (−2.345)	0.224** (2.520)
GOODWILL _{t-1}	−0.004 (−0.273)	−0.525*** (−2.634)	−0.553** (−2.301)
Competitiveness _{t-1}	−0.001 (−0.073)	−0.337** (−2.162)	−0.216 (−1.282)
Foreign Presence _t	0.005 (1.204)	−0.140*** (−4.155)	−0.063 (−0.378)
Audit Opinion _t	0.002 (0.499)	0.027 (0.913)	−0.099** (−2.532)
_cons	2.305*** (25.952)	12.590** (2.381)	0.002 (0.038)
N	19,498	19,498	21,049
Adj. R ²	0.233	0.427	0.475
Kleibergen-Paap rk LM statistic	14.15		
P-Value	0.0002		
Kleibergen-Paap Wald rk F statistic	272.88		
Stock-Yogo Test Critical Values at 10 %	16.38		
Industry FE	YES	YES	YES
Year FE	YES	YES	YES

Notes: This table presents results using instrumental variable estimation and the entropy balancing approach. We construct an instrumental variable (IV), MEDIAN_CEO AGE, which is the time-varying median age of CEOs within the industry (2-digit SIC classification) for comparable stocks while excluding the focal firm. The first step in our IV estimation regresses the main independent variable (log CEO Age) on the instrument (log MEDIAN_CEO AGE). The second step uses the fitted values from the first-stage regression (CEO_AGE_Fitted) as the independent variable to test the relationship between CEO age and stock price synchronicity. Column 1 presents the first-stage regression results, while column 2 reports the two-stage regression results. Column (3) uses the entropy-balanced observations. First, we establish two groups (Treatment and Control) using the averaged mean CEO age from the 2-digit SIC industry classification. The above mean CEO age (Treatment) equals 1; otherwise, it is zero (Control). Then the control variables are used for balancing constraints at the third moment to determine the weights. In column 3 presents results from the entropy-balanced sample. In all regressions, year and industry fixed effects are included. Standard errors are clustered at industry and year level and are robust to heteroscedasticity as shown in parentheses. The statistical significance level at 10 %, 5 %, 1 % are designated by *, ** and ***.

obtained using this new instrumental variable.

Secondly, in accordance with Cepni et al. (2024); Zou et al. (2024), we employ the entropy balancing method to mitigate any systematic observable discrepancies in our sample (McMullin & Schonberger, 2020). Initially, we establish two groups, Treatment and Control, using the average mean for CEO age for similar industries based on the first 2-digit SIC industry classification. We assign a value of 1 to the mean CEO age above the average (treatment); if it is below the average, it is 0 for the control group. We use the control variables to balance constraints at the third moment for weight determination, following Zou et al. (2024). This results in a similarity in covariates between the treatment and control groups after entropy balance matching. Finally, we re-estimate our main model of Table 3, column 2, using the entropy-weighted observation. Column 3 of Table 12 presents the results of this approach.

In column 1 of Table 12, we present the result of the first-stage regression. The instrument's coefficient is both positive and statistically significant at the 1 % level. This outcome fulfills the relevance criterion of the instrumental variable since Log (MEDIAN_CEO_AGE_{t-1}) can positively and significantly estimate Log (CEO_AGE_{t-1}). Further relevant test results validate the reliability of the IV estimation. The Kleibergen-Paap rk LM test statistic indicates a 1 % significance level, affirming the absence of under-identification of the instrument. We dismiss the null hypothesis that the median CEO age is an ineffective instrument, as the Kleibergen-Paap rk F statistic exceeds the Stock-Yogo critical value at the 10 % level. In Column 2, the CEO_AGE_{Fitted} is statistically significant and negative at the 10 % level. Although the estimate of the two-stage regression is smaller compared to our main findings, it remains negative and significant. These findings align with our primary findings, which suggest an inverse link between CEO age and stock price synchronicity.

Column 3 of Table 12 reports findings of the *entropy balancing approach*. This procedure preserves all observations, thereby maintaining crucial details about the entire sample. The coefficient of the main independent variable is negatively significant at the 1 % level. These findings validate our main results, which demonstrate a negative relationship between CEO age and stock price synchronicity. This suggests that the distribution of covariates among the treatment and control groups leaves our main findings robust. To eliminate any concerns that our results are driven by the classifying of firms into two groups based on CEO age, we further categorize firms into the top and bottom groups based on the 66th and the 33rd percentiles of stock price synchronicity, respectively, while eliminating the middle group. The entropy balancing observation results obtained with this exclusion align with the main findings.

5. Conclusion

We investigate how the CEO's age affects stock price synchronicity

Appendix A. Formulae and equations

$$Ret_{i,t} = \alpha + \beta_1 MktRet_t + \beta_2 MktRet_{t-1} + \beta_3 IndRet_{j,t} + \beta_4 IndRet_{j,t-1} + \varepsilon_{i,t} \quad (1)$$

Here, $Ret_{i,t}$ represents the daily holding return of firm i for day t . $MktRet_t$ is the value-weighted returns for the market at day t . While $IndRet_{j,t}$ is the industry j 's value-weighted returns excluding firm i 's daily returns.

$$SYNCH_{i,t} = \log \frac{R^2_{i,t}}{1 - R^2_{i,t}} \quad (2)$$

The R^2 is confined between zero and unit and is significantly skewed. According to Morck et al. (2000), a variable that is almost normally distributed can be obtained by using a logistic transformation. Thus, the firm's yearly stock price synchronicity measure $SYNCH_{i,t}$.

$$Ret_{i,t} = \alpha + \beta_1 MktRet_t + \beta_2 IndRet_{j,t} + \beta_3 MktRet_{t+1} + \beta_4 IndRet_{j,t+1} + \beta_5 MktRet_{t-1} + \beta_6 IndRet_{j,t-1} + \varepsilon_{i,t} \quad (3)$$

We use the logistic transformation of R^2 from the above regression model as our alternative measure of stock price synchronicity ($MSYNCH_{i,t}$).

from a reputation and career standpoint. The study findings show a significant negative relationship between CEO age and stock price synchronicity. When we factor earnings management as a possible economic channel that influences this relationship, our findings are statistically significant. This suggests that older CEOs engage less intensively in discretionary accruals. Furthermore, the relationship between CEO age and stock price synchronicity is more pronounced during the pre-SOX Act period than the post-SOX Act period. These findings reveal that the post-SOX period with more stringent regulatory requirements makes it harder for younger CEOs to hide firm-specific information for their career and reputation concerns. Overall, the study suggests that older CEOs serve as an important conduit for firms to reveal firm-specific information, prevent 'informational herding', and enhance transparency.

These findings, in light of the ongoing inverse link between CEO age and stock price synchronicity, have significance for investors, monitors, and other stock market participants. Investors need to take into account the older CEOs' ability to provide a range of firm-specific information that is incorporated into stock prices. Thus, when evaluating investment companies, investors should base their decisions not only on accounting information but also on firm-specific information linked to older CEOs.

By analyzing the likely effects of CEOs' age and stock price synchronicity from a career and reputation standpoint, various market monitors, particularly large institutional investors and investment advisors, will be able to acquire information at a relatively low cost and offer pertinent advice for investment decisions. In order to reduce stock price synchronicity, this study expands on Neifar and Ajili (2019)'s research by showing that older CEOs influence the extent of firm-specific information factored into stock prices. Thus, we demonstrate how crucial the behavioral function is to balancing the informational role in stock markets and financial reporting. Because this study only looks at the US stock market, generalizations about it are less relevant. Senior managers who are not CEOs may probably also influence the amount of firm-specific information disclosure. Future studies may explore other senior managers and other markets.

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$$SYNCH_{i,t} = \beta_0 + \beta_1 CEOAge_{k,t-1} + B_2 Contols_{i,t-1} + \varepsilon_{i,t} \quad (4)$$

Where; $SYNCH_{i,t}$ is the stock price synchronicity of the firm i in year t , $CEOAge_{k,t-1}$ is the lagged age of the CEO. $Contols_{i,t-1}$ are the lagged firm- and CEO-level control variables. We also include industry and year fixed effects to control for idiosyncratic differences among industries that can make it less or more difficult for CEOs to hide bad news and capture the unit-invariant heterogeneity due to time. The industry classification is based on a 2-digit SIC in the CRSP database. In examining the moderation role of discretionary accruals, the interaction between discretionary accruals and CEO age ($KDaccruals_{i,t-1} * CEOAge_{k,t-1}$), is introduced in the regression model.

$$SYNCH_{i,t} = \beta_0 + \beta_1 CEOAge_{k,t-1} + \beta_2 KDaccruals_{i,t-1} + \beta_3 (KDaccruals_{i,t-1} * CEOAge_{k,t-1}) + B_4 Contols_{i,t-1} + \varepsilon_{i,t} \quad (5)$$

Appendix B

Table 1A

Variable description.

Variable	Description	Authors
Stock price Synchronicity (SYNCH)	Stock price synchronicity (SYNCH) defined as transformed R^2 . R^2 estimated from a market model where firm i 's daily holding period return is regressed on the value-weighted market return and its lag, and industry return and its lag (omitting firm i 's return)	Gul et al. (2010)
Stock price Synchronicity (MSYNCH)	Stock price synchronicity (MSYNCH) defined as transformed R^2 . R^2 estimated from a market model where firm i 's daily holding period return is regressed on the value-weighted market return and its lag and leads and industry return and its lag and leads (omitting firm i 's return)	Feng et al. (2016)
CEO Age	Defined as number of years of CEO	Andreou et al. (2017)
CEO_AGEGroup1 < 51	An indicator variable that equals 1 if CEO's age is less than 51 years, and zero otherwise.	As above
CEO_AGEGroup2(51–55)	An indicator variable that equals 1 if CEO's age is between 51 and 55 years, and zero otherwise.	As above
CEO_AGEGroup3(56–60)	An indicator variable that equals 1 if CEO's age is between 56 and 60 years, and zero otherwise.	As above
CEO_AGEGroup4 > 60	An indicator variable that equals 1 if CEO's age is greater than 60 years, and zero otherwise.	As above
YOUNG_CEO (<55)	An indicator variable that equals 1 if CEO's age is less than 55 years, and zero otherwise.	As above
CEO Tenure	Number of years as CEO in a particular firm within the data sample.	Neifar and Ajili (2019)
CEO experience	Number of years since one became a CEO and left the CEO position.	As above
CEO Retirement	Dummy variable that equals 1 when the CEO is close to retirement (i.e., CEO age is 64–65 years), and zero otherwise.	Andreou et al. (2017)
DAccruals	DAccruals is defined as modified discretionary accruals which is a proxy for earning management using modified Jones 1995 model.	Dechow et al. (1995)
KDaccruals	KDaccruals is defined as discretionary accruals which is a proxy for earning management using Kothari model 2005.	Kothari et al. (2005)
Firm Controls		
Return on Assets (ROA)	Computed as Income before extraordinary items divided by book value of assets	An and Zhang (2013)
Firm size (SIZE)	Logarithm of total assets	Gul et al. (2010)
Book-to-market (BTM)	Book value per share/ Closing share price	An and Zhang (2013)
Leverage (LEV)	Leverage is defined as the ratio of total liabilities to total assets	Gul et al. (2010)
Research and Development expenses	Research & Development expenses divided by total asset. Where R&D expense is missing, is coded 0	Hutton et al. (2009)
Firm age	Number of years a firm appears in COMPUSTAT data.	Andreou et al. (2017)
Foreign presence	Indicator variable equal to 1 if a firm has foreign pre-tax income otherwise zero in COMPUSTAT	Slavov (2022)
NCSkew	The negative conditional skewness of firm specific daily return over the fiscal year t .	As above
RETURN	Average firm-specific daily returns during the fiscal year	As above
GOODWILL	The ratio of goodwill to total assets. Missing values of goodwill are replaced with zero.	As above
Competitiveness	Defined as the ratio of firm operating profit to sales. Firm operating profit is calculated by subtracting from sales the cost of goods sold and the selling, general, and administrative expenses.	As above
Audit opinion	Dummy variable equal to 1 for unqualified opinion otherwise zero	Wallace et al. (2006)

Data availability

The authors do not have permission to share data.

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